US011305829B2

(12) **United States Patent**
Dandurand et al.

(10) **Patent No.: US 11,305,829 B2**
(45) **Date of Patent: Apr. 19, 2022**

(54) **TRACK SYSTEM FOR TRACTION OF A VEHICLE**

(71) Applicant: **CAMSO INC.**, Magog (CA)

(72) Inventors: **Jules Dandurand**, Sherbrooke (CA); **Andy Levesque**, Coaticook (CA)

(73) Assignee: **CAMSO INC.**, Magog (CA)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 739 days.

(21) Appl. No.: **16/046,318**

(22) Filed: **Jul. 26, 2018**

(65) **Prior Publication Data**

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Related U.S. Application Data

(63) Continuation-in-part of application No. PCT/CA2017/051567, filed on Dec. 20, 2017.
(Continued)

(51) **Int. Cl.**
B62D 55/24 (2006.01)
B32B 3/30 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC ***B62D 55/244*** (2013.01); ***B32B 3/30*** (2013.01); ***B32B 27/20*** (2013.01); ***B62D 55/26*** (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC B62D 55/24; B62D 55/244; B62D 55/26
See application file for complete search history.

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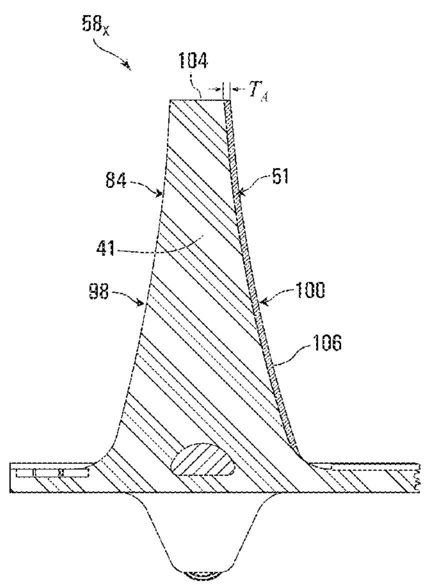
Primary Examiner — Jason R Bellinger
(74) *Attorney, Agent, or Firm* — Smart & Biggar LLP

(57) **ABSTRACT**

A track system for traction of a vehicle (e.g., a snowmobile, an all-terrain vehicle (ATV) etc.) including a track and a track-engaging assembly for driving and guiding the track around the track-engaging assembly. The track system has features to enhance its performance. The track may include reinforcing material (e.g., reinforcing polymeric material) that is stronger (e.g., stiffer, harder, and/or more resistant to wear) than elastomeric material of the track, such as to improve rigidity characteristics of the track, reduce noise generated by the track system, improve a resistance to wear of the track, enhance heat management (e.g., improve heat dissipation or reduce heat build-up) within the track, and/or reduce a weight of the track. The reinforcing material may be provided as one or more thin layers constituting at least part (e.g., of a periphery) of one or more components of the track (e.g., a carcass, traction projections, and/or drive/guide lugs).

48 Claims, 47 Drawing Sheets



Related U.S. Application Data

(60) Provisional application No. 62/436,845, filed on Dec. 20, 2016.

(51) **Int. Cl.**
B32B 27/20 (2006.01)
B62D 55/26 (2006.01)
B62M 27/02 (2006.01)

(52) **U.S. Cl.**
CPC ***B62M 27/02*** (2013.01); *B32B 2605/00* (2013.01); *B62M 2027/027* (2013.01)

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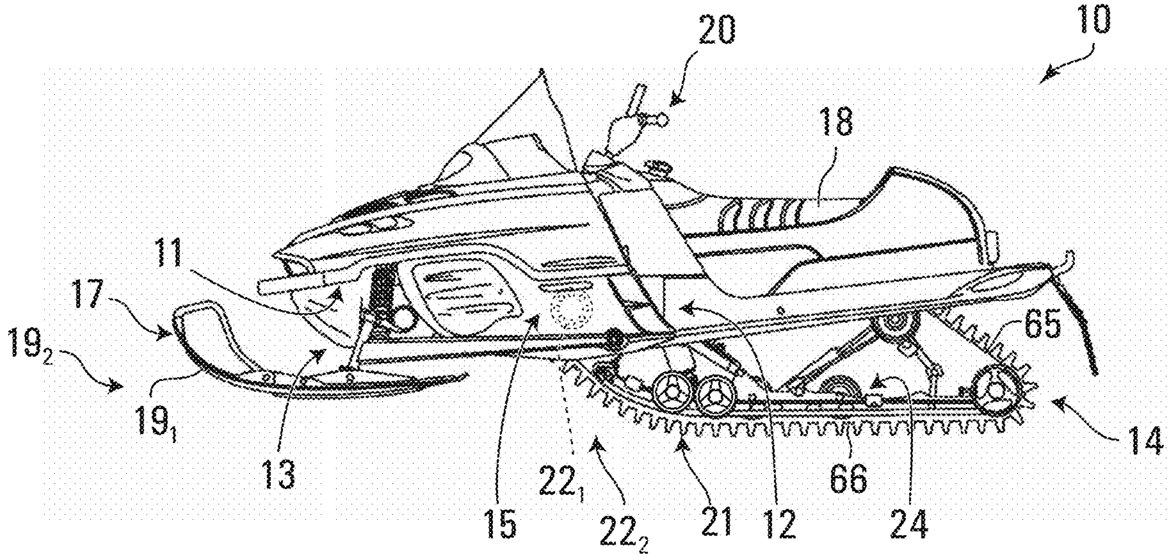


FIG. 1

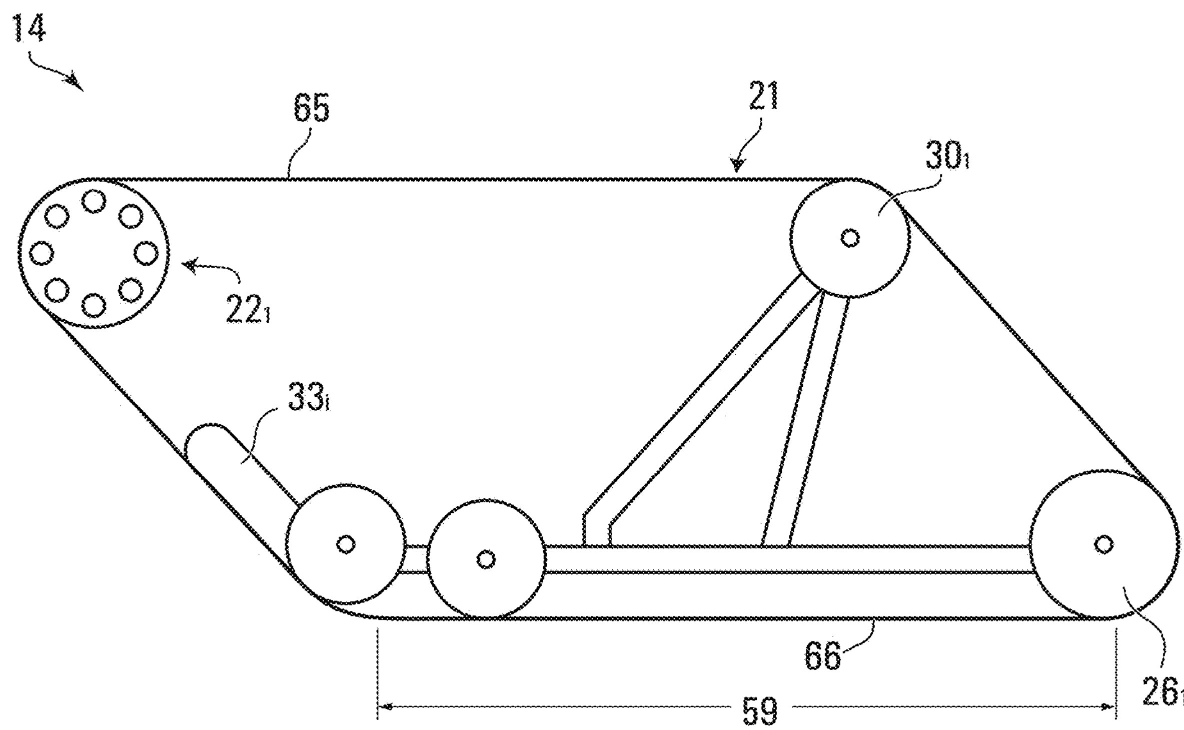
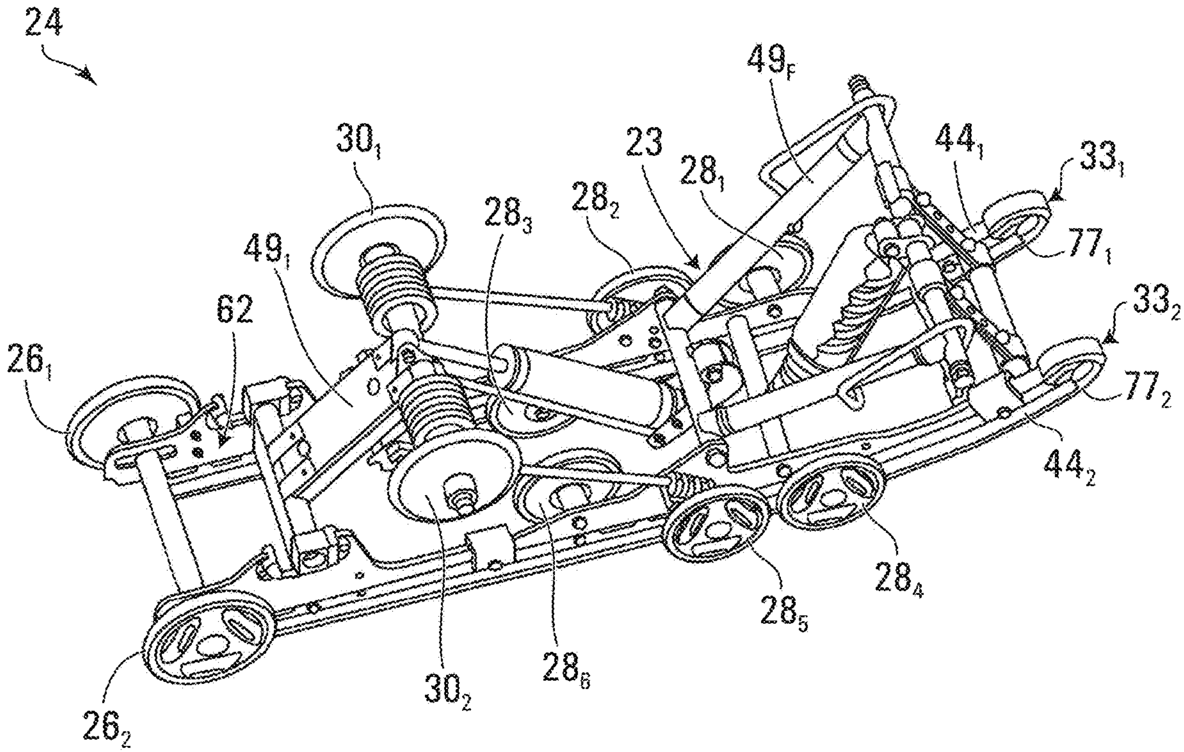


FIG. 2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28_1
44_1
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28_2
77_1
49_1
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26_1
77_2
44_2
28_4
28_5
30_2
28_6
26_2

FIG. 3

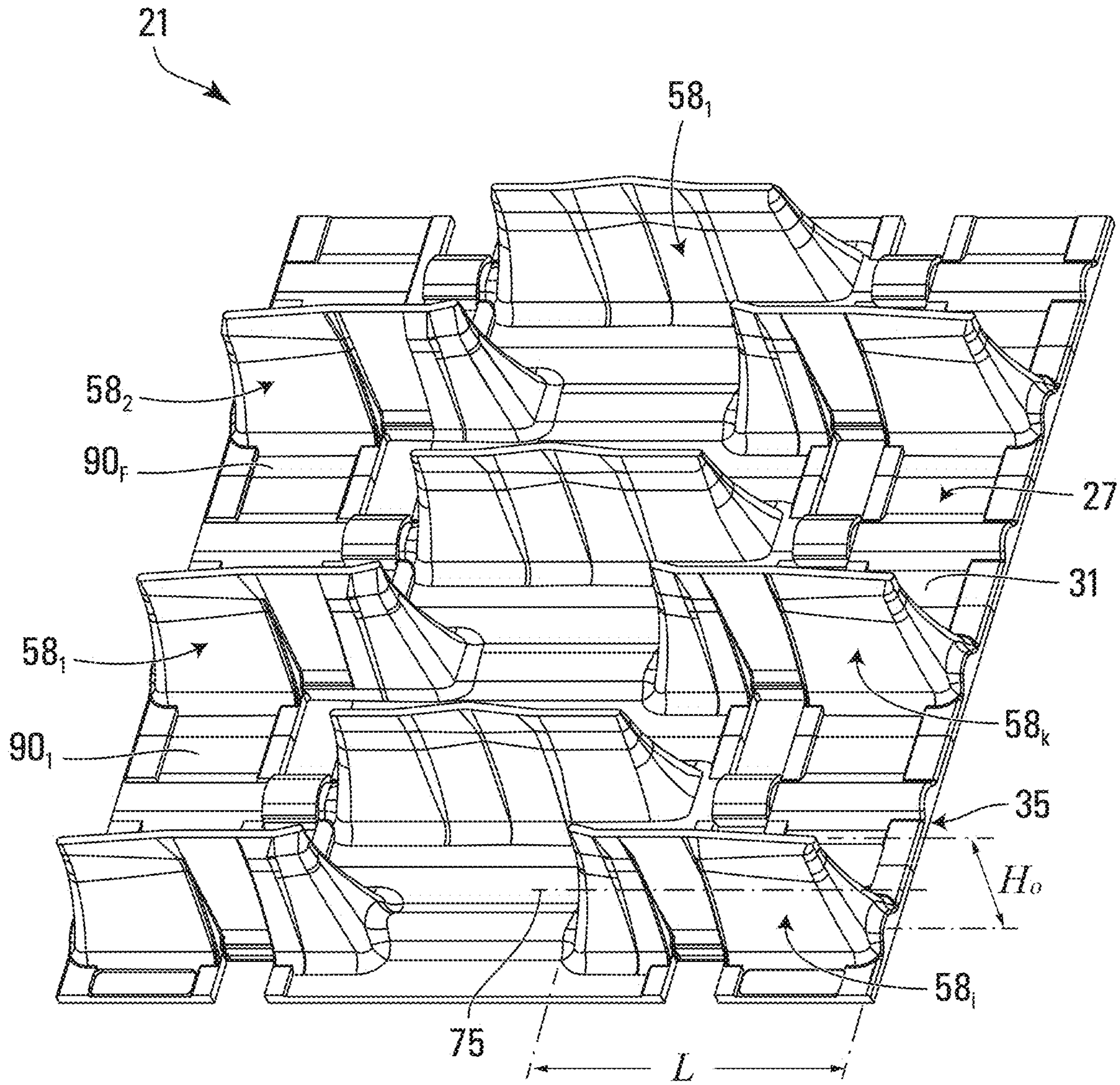
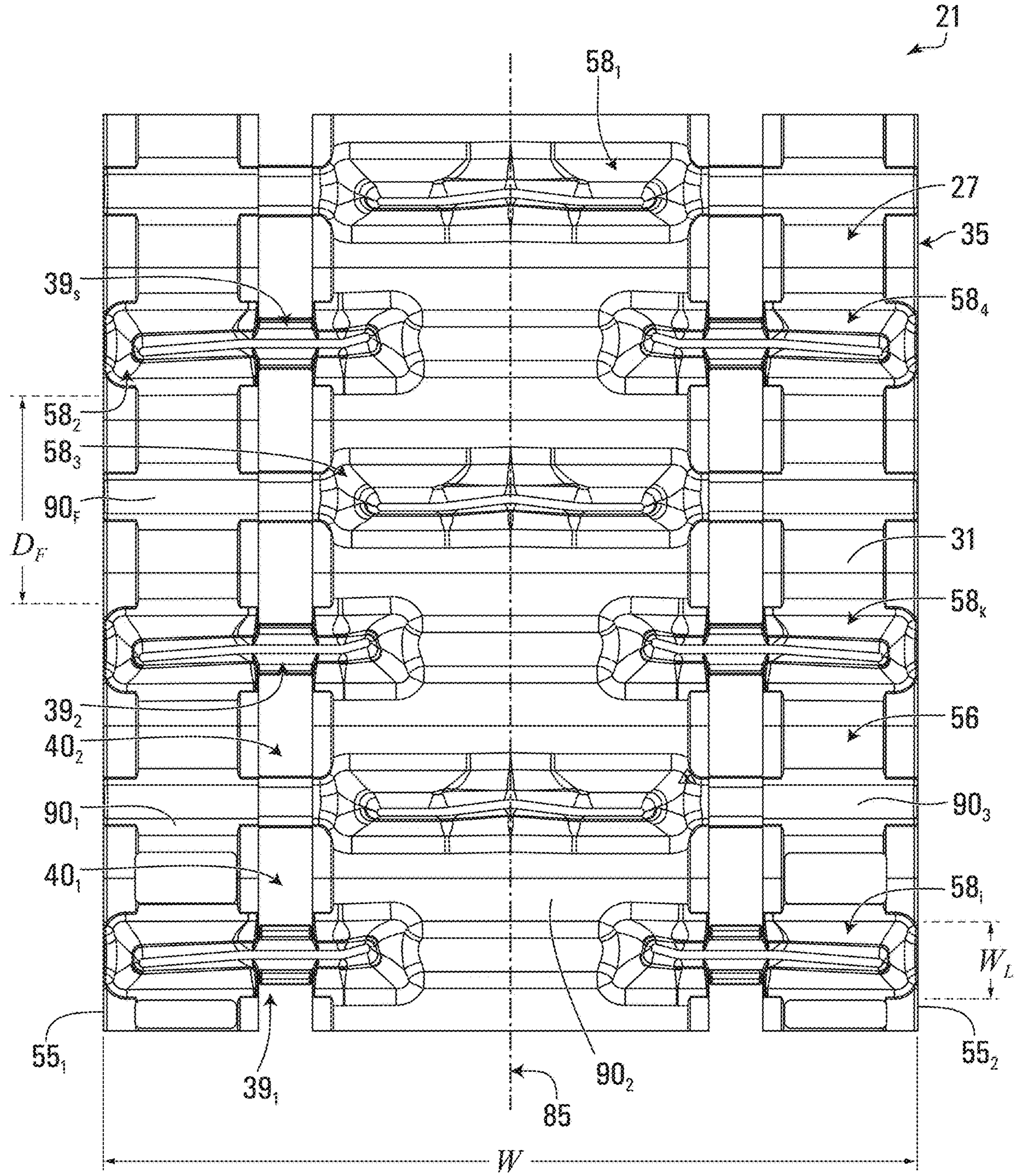


FIG. 4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58_1
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39_s
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58_2
58_3
90_F
D_F
31
58_k
39_2
40_2
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90_1
90_3
40_1
58_i
W_L
55_1
39_1
90_2
85
55_2
W

FIG. 5

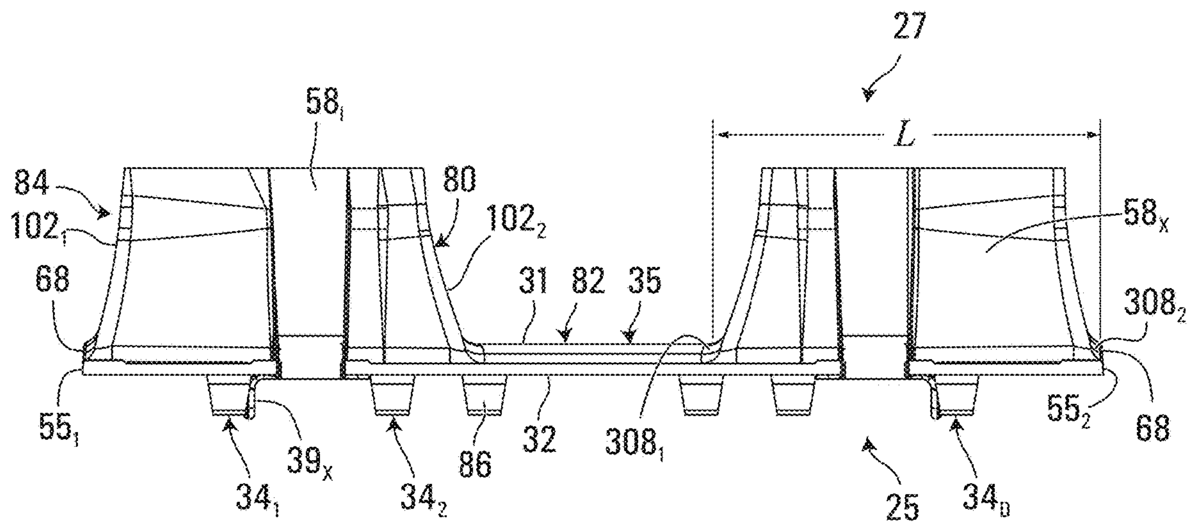
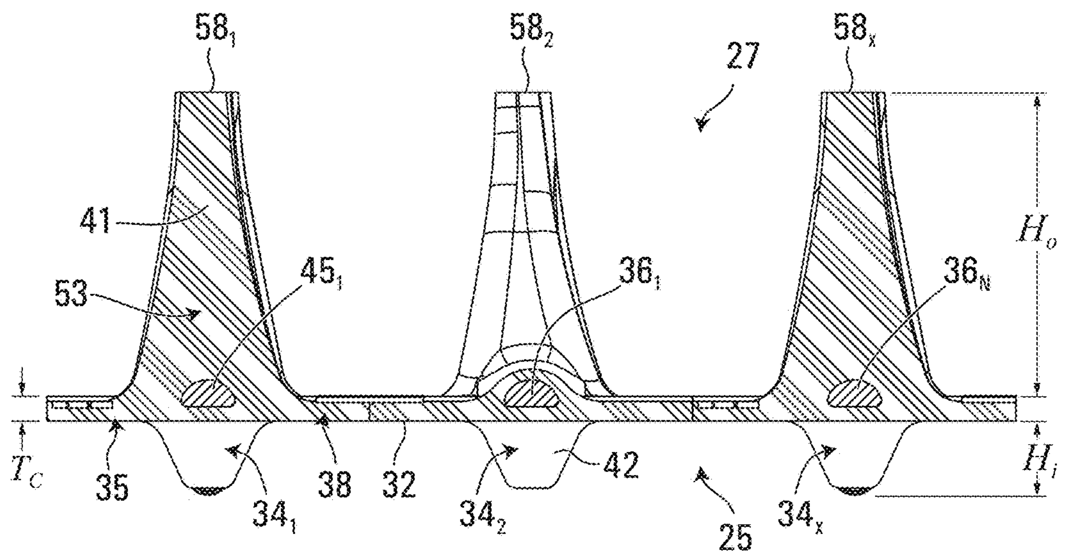

27
L
58i
84
80
102₁
102₂
58x
68
31 82 35
308₂
55₁
39x
32
308₁
55₂
68
34₁
34₂
86
25
34D

FIG. 6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58₂
58x
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41
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53
45₁
36₁
36N
TC
35
34₁
38
32
34₂
42
25
34x
Hi

FIG. 7

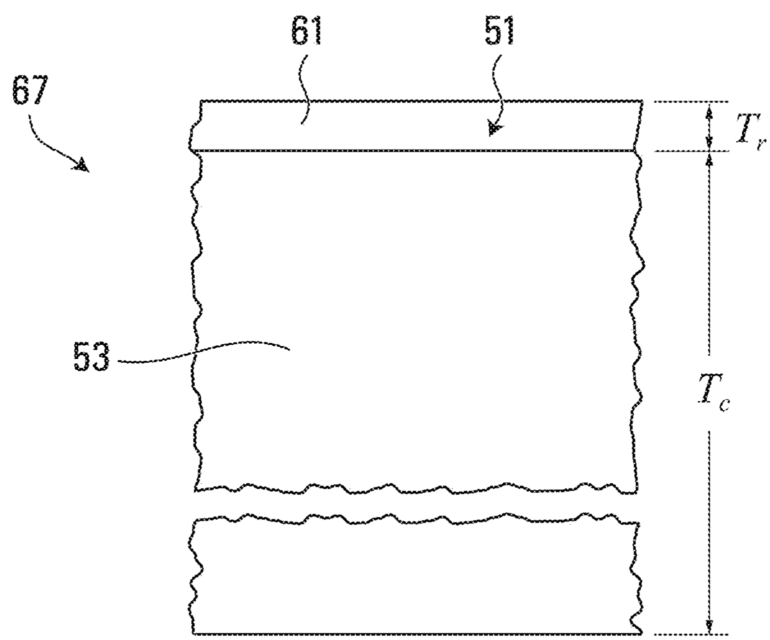


FIG. 8

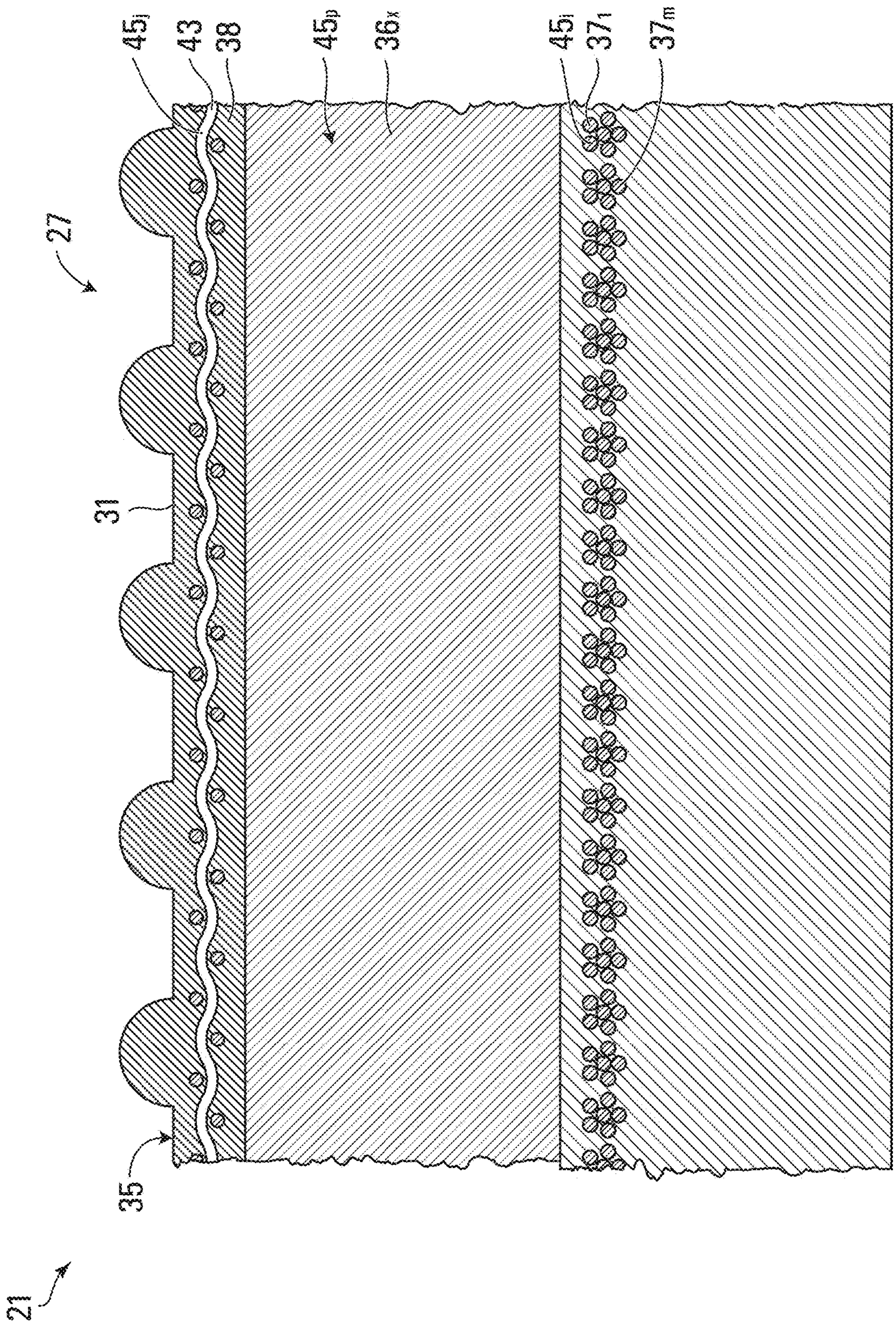


FIG. 9A

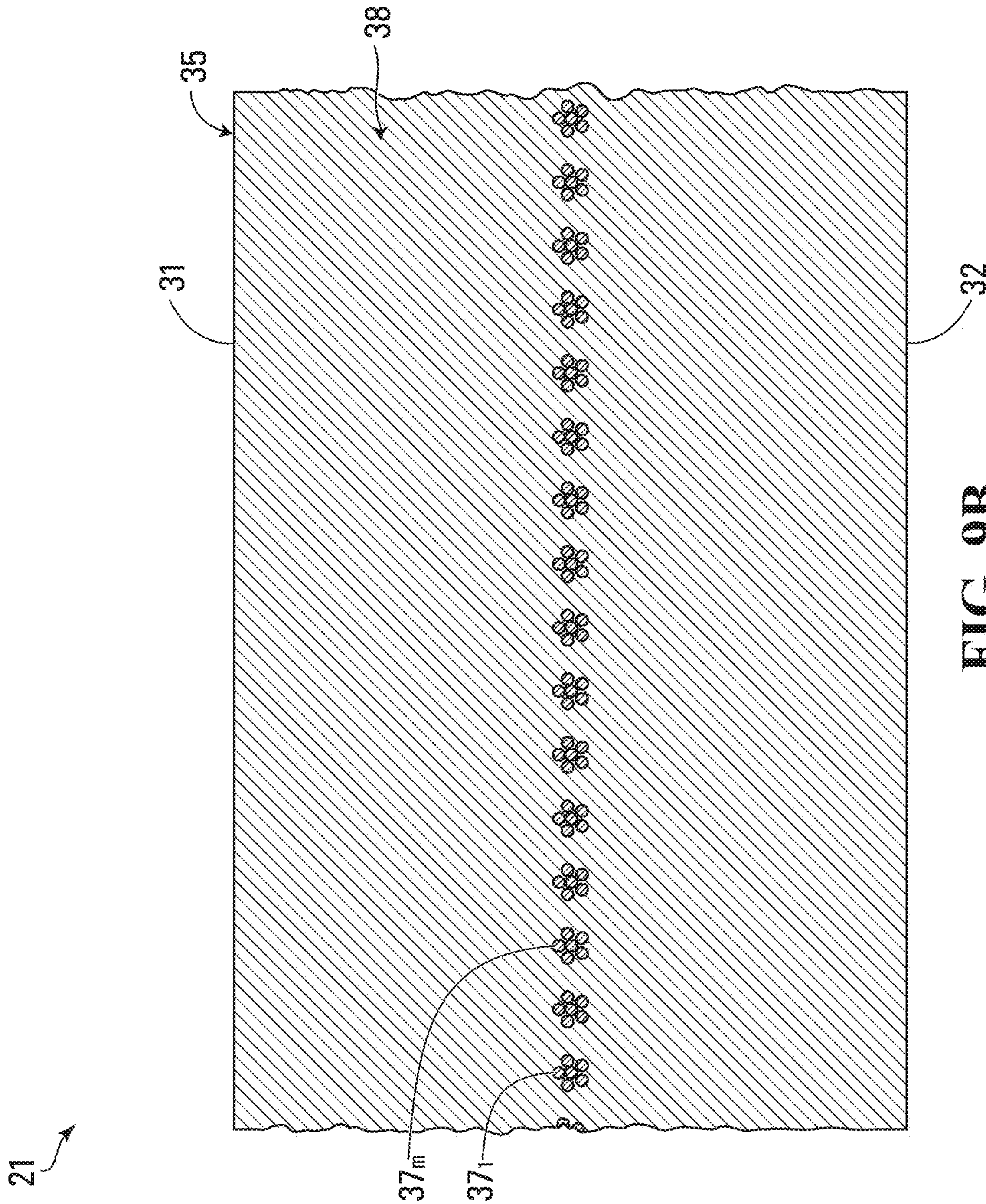


FIG. 9B

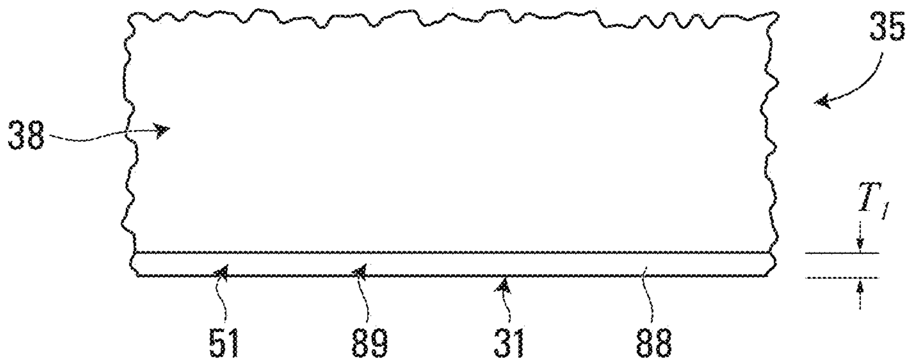


FIG. 10

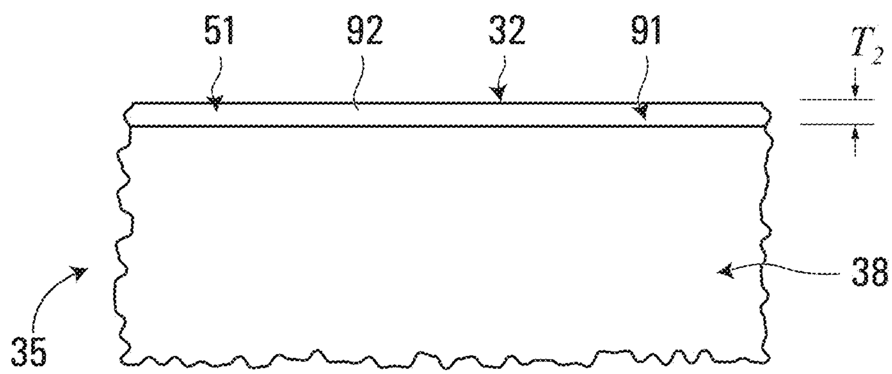


FIG. 11

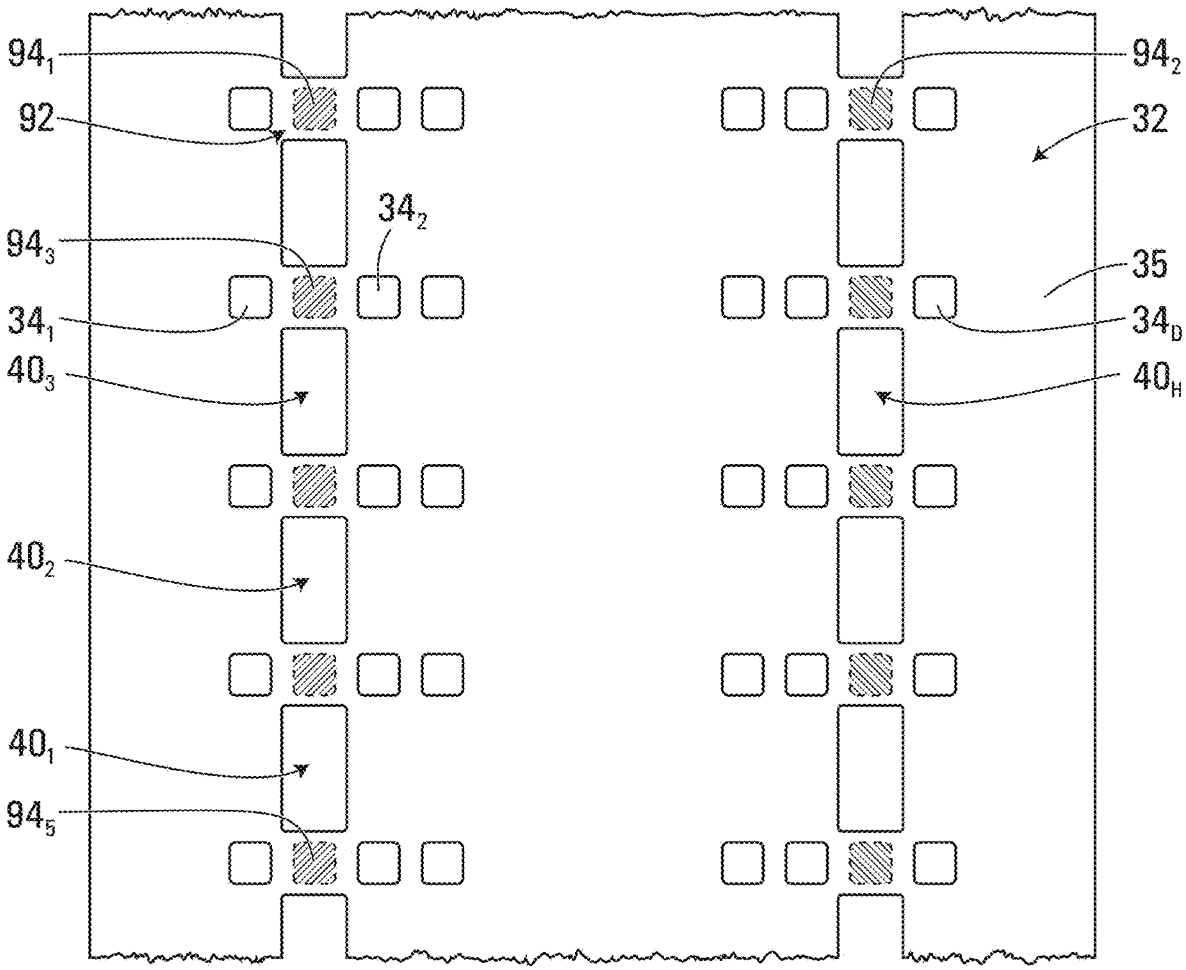


FIG. 12

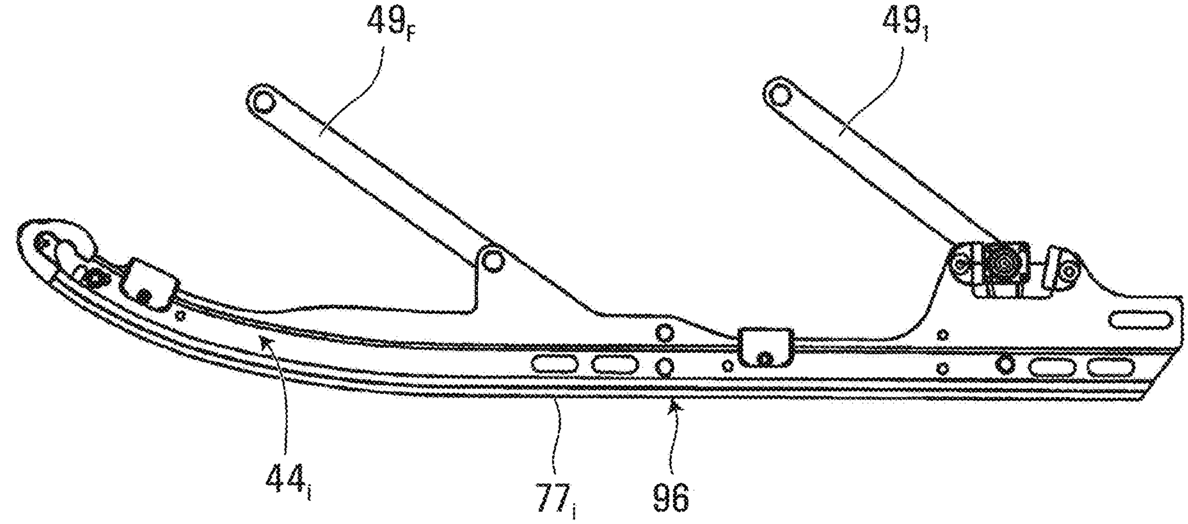


FIG. 13

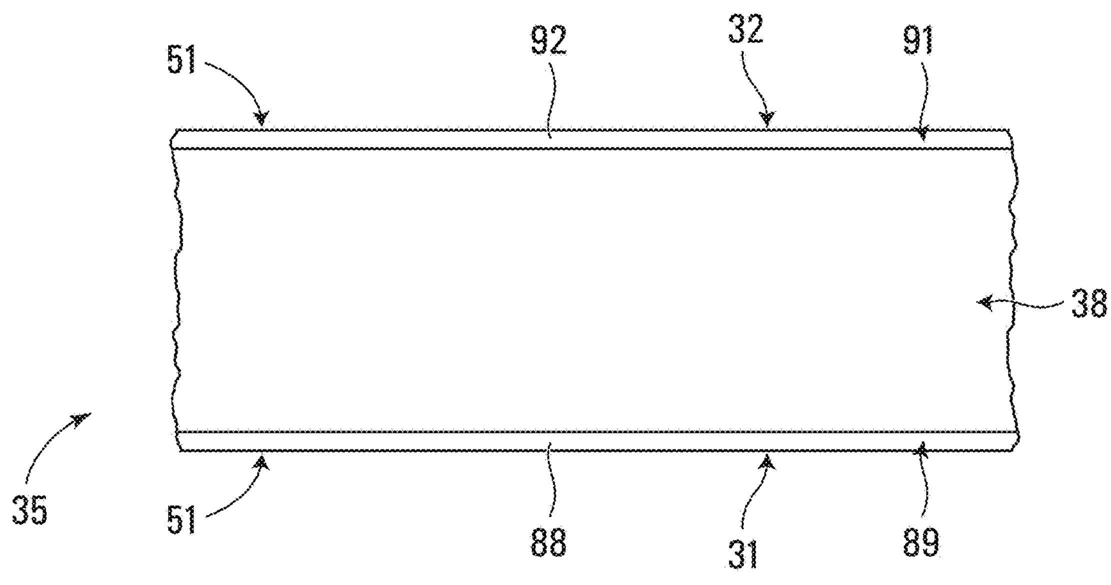
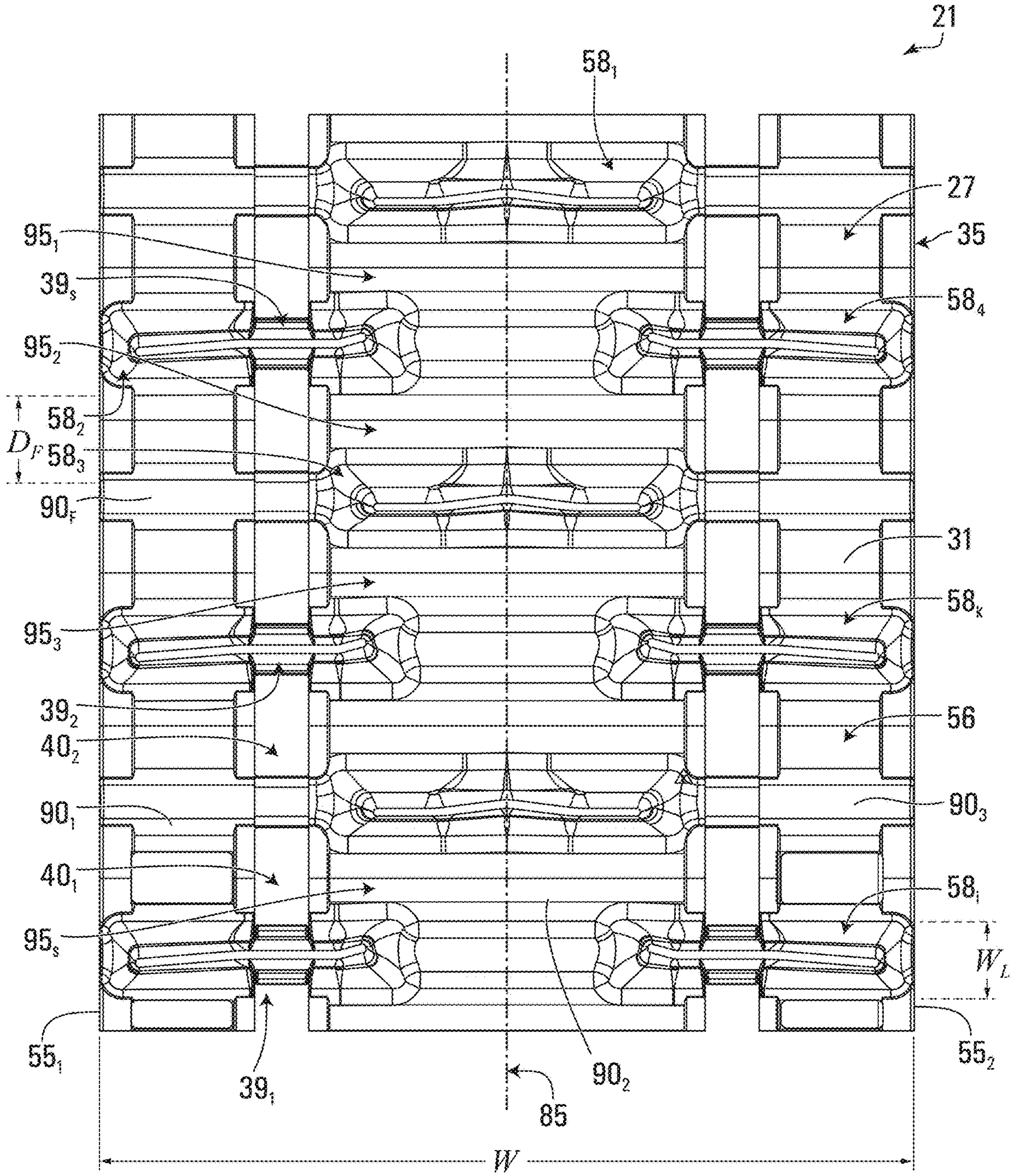


FIG. 14A


21
58₁
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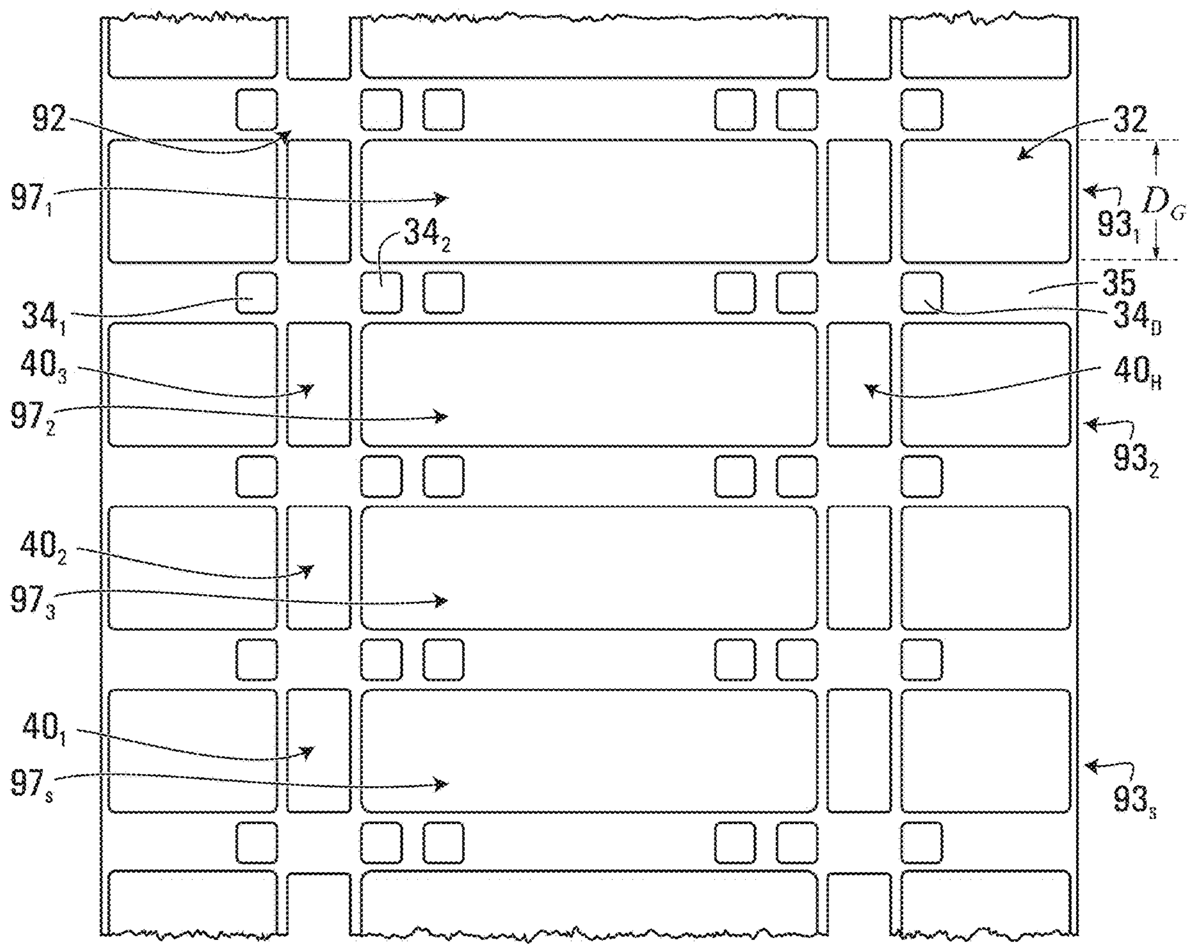
95₁
39ₛ
58₄
95₂
58₂
D_F
58₃
90_F
31
95₃
58_k
39₂
56
40₂
90₁
90₃
40₁
58ᵢ
95ₛ
W_L
55₁
39₁
90₂
85
55₂
W

FIG. 14B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34₁
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40_H
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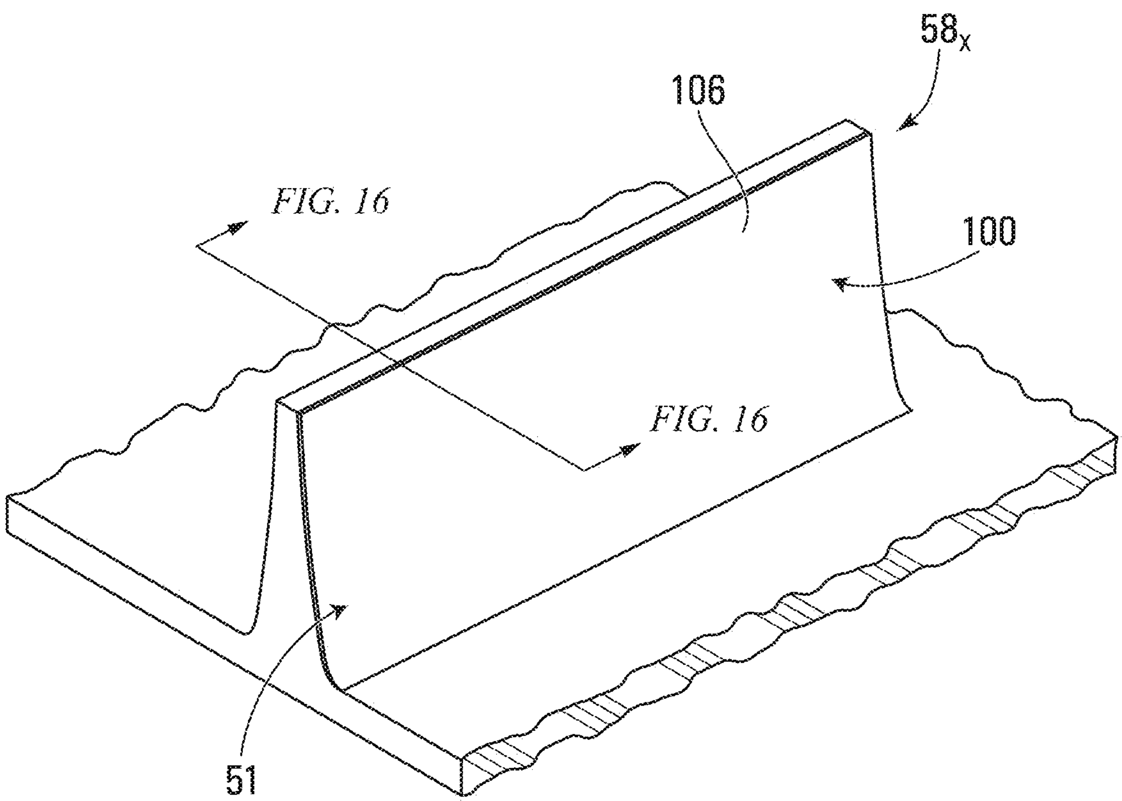
93₂
40₂
97₃
40₁
97_s
93_s

FIG. 14C



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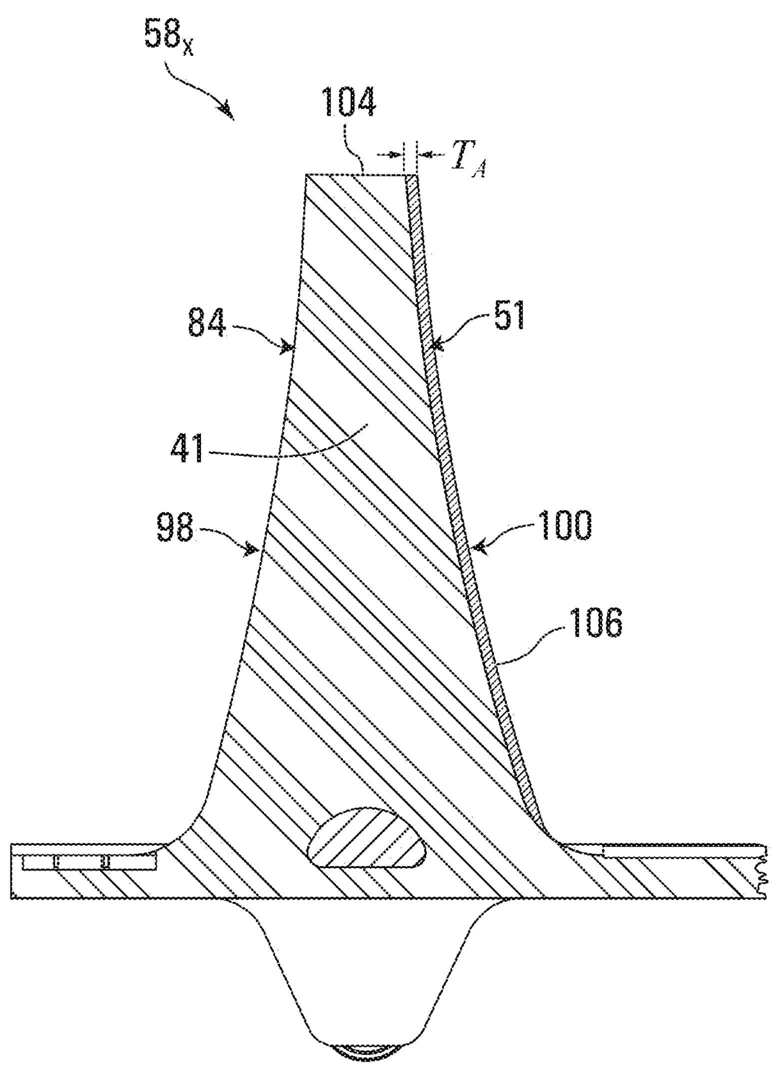
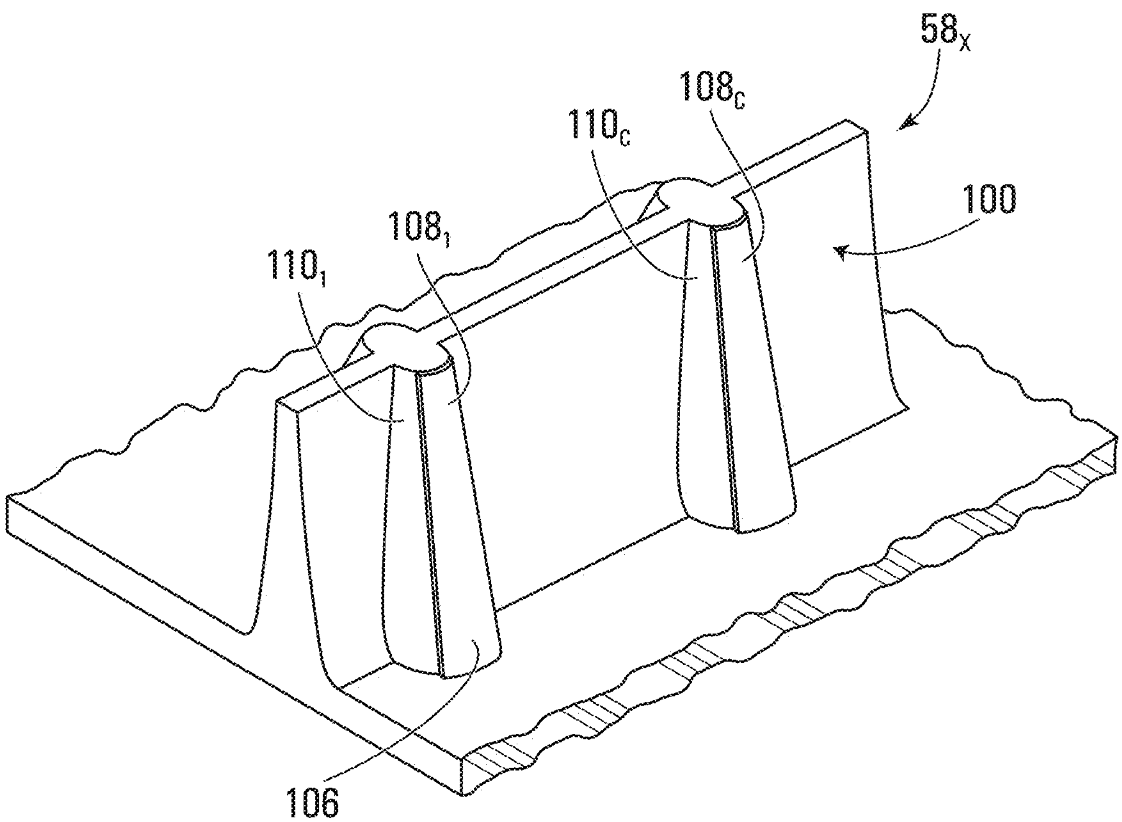


FIG. 16



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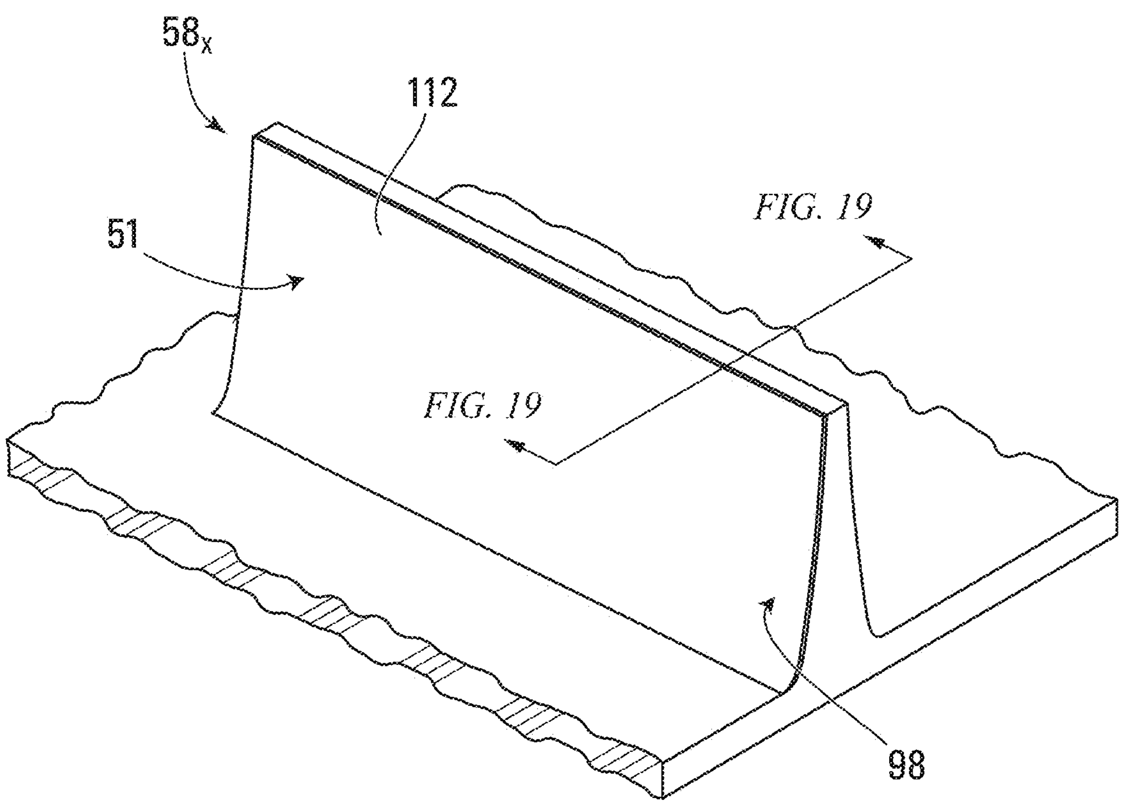


FIG. 18

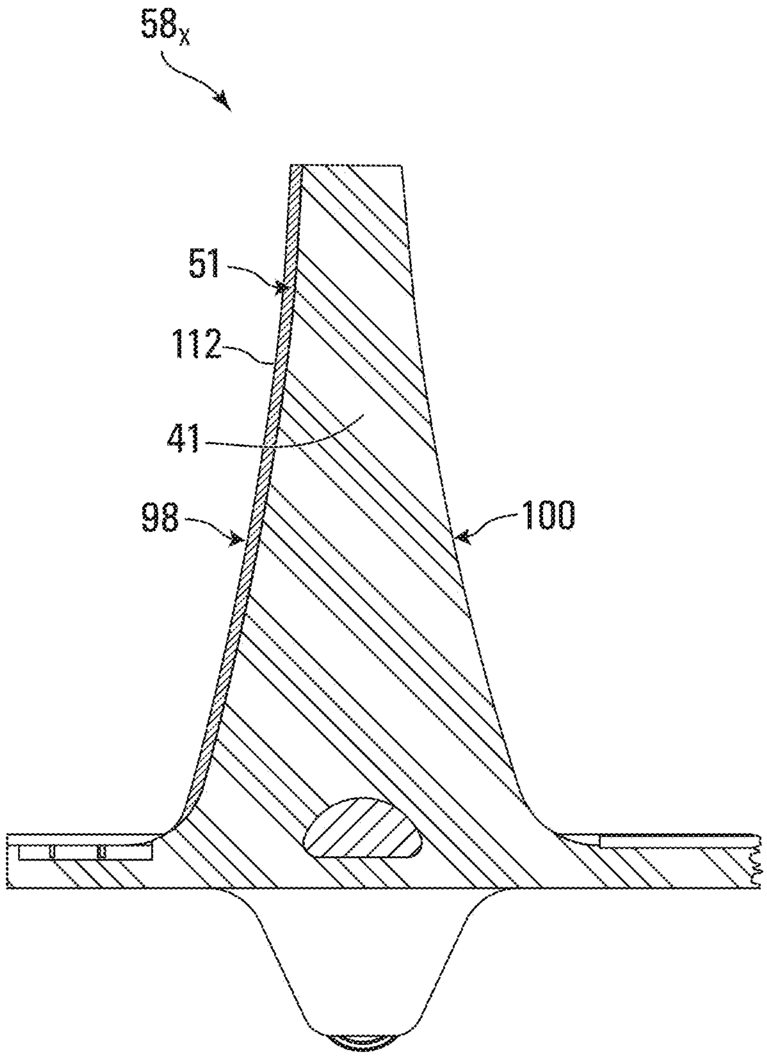


FIG. 19

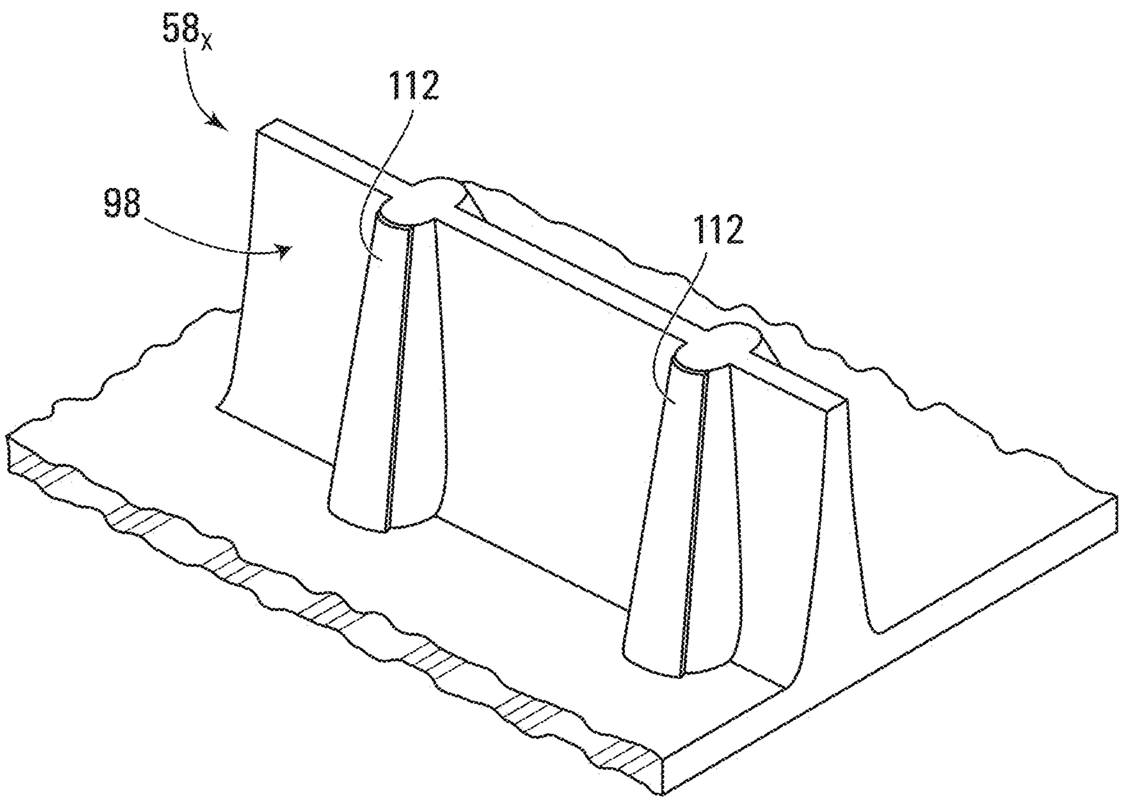
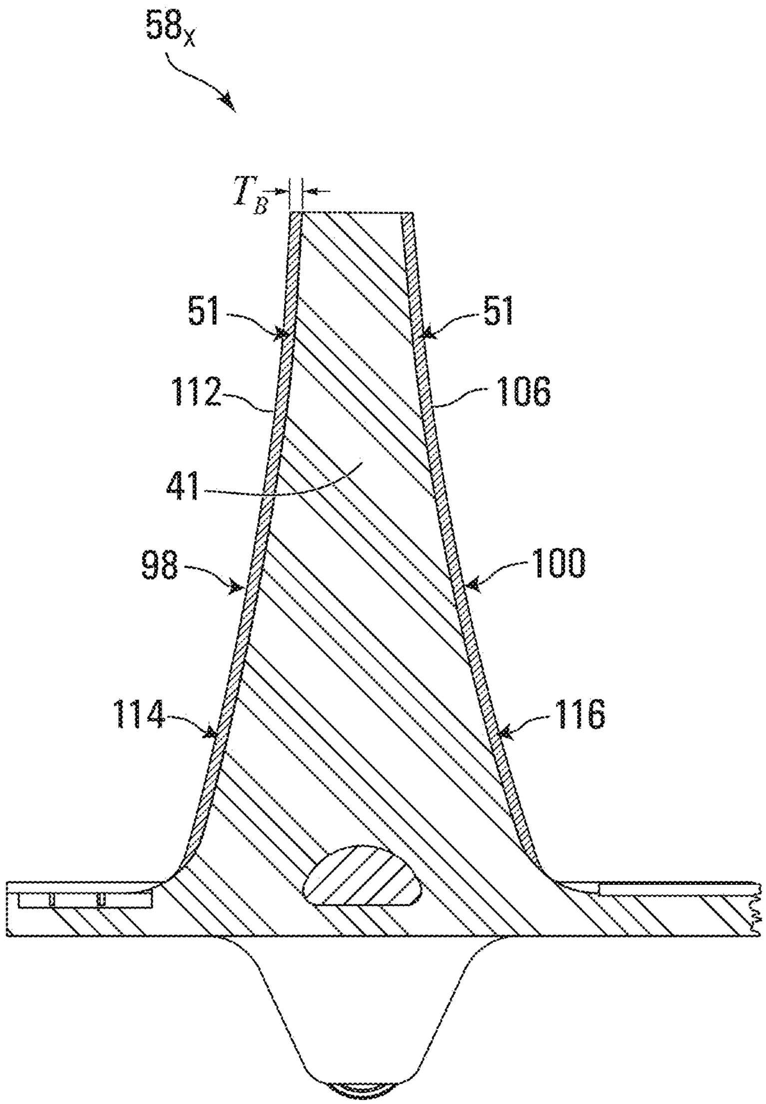


FIG. 20



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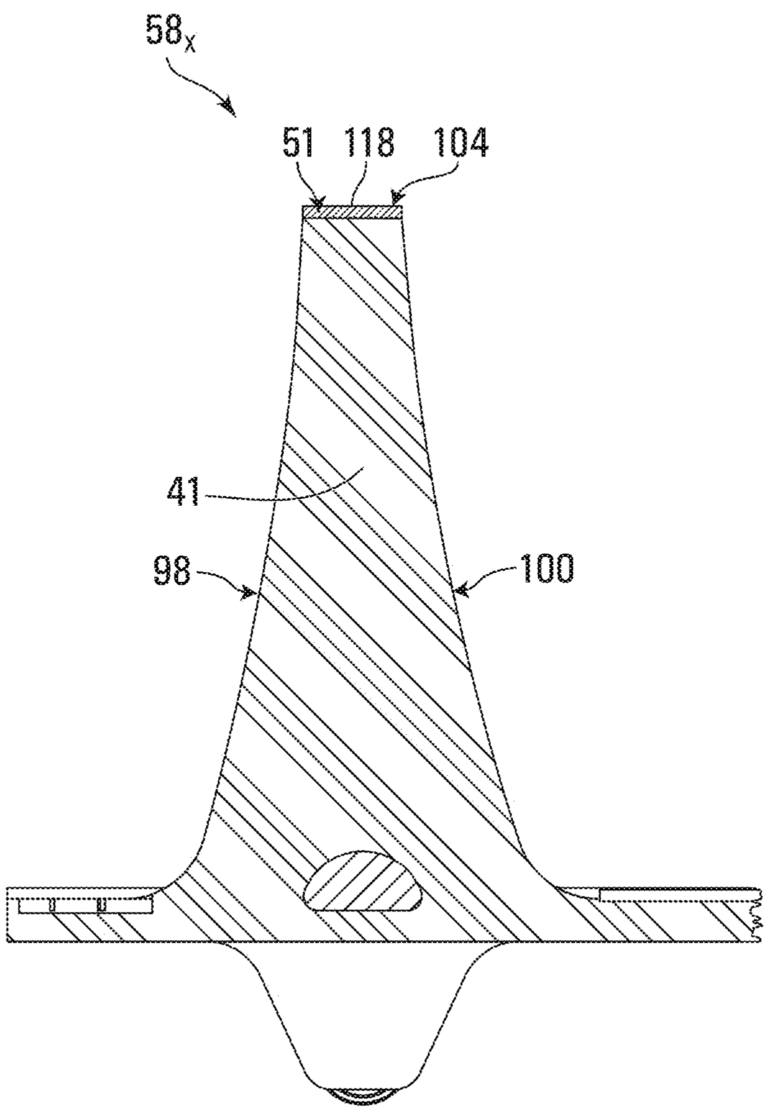


FIG. 22

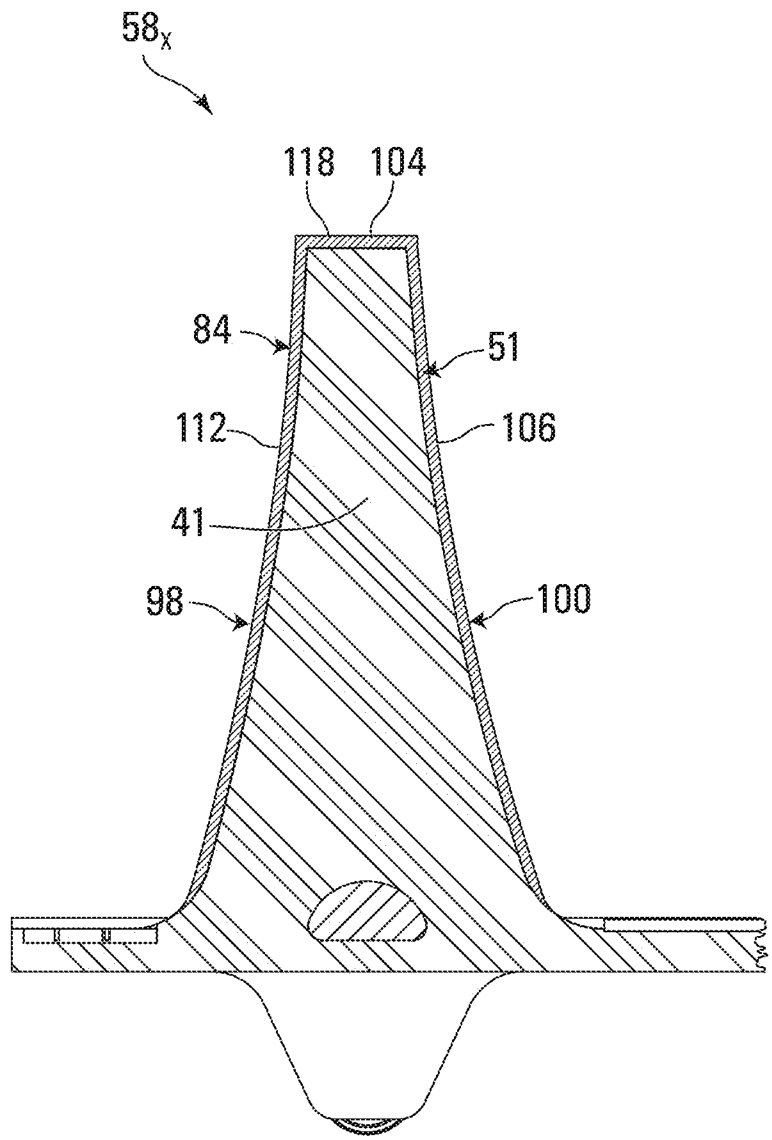


FIG. 23

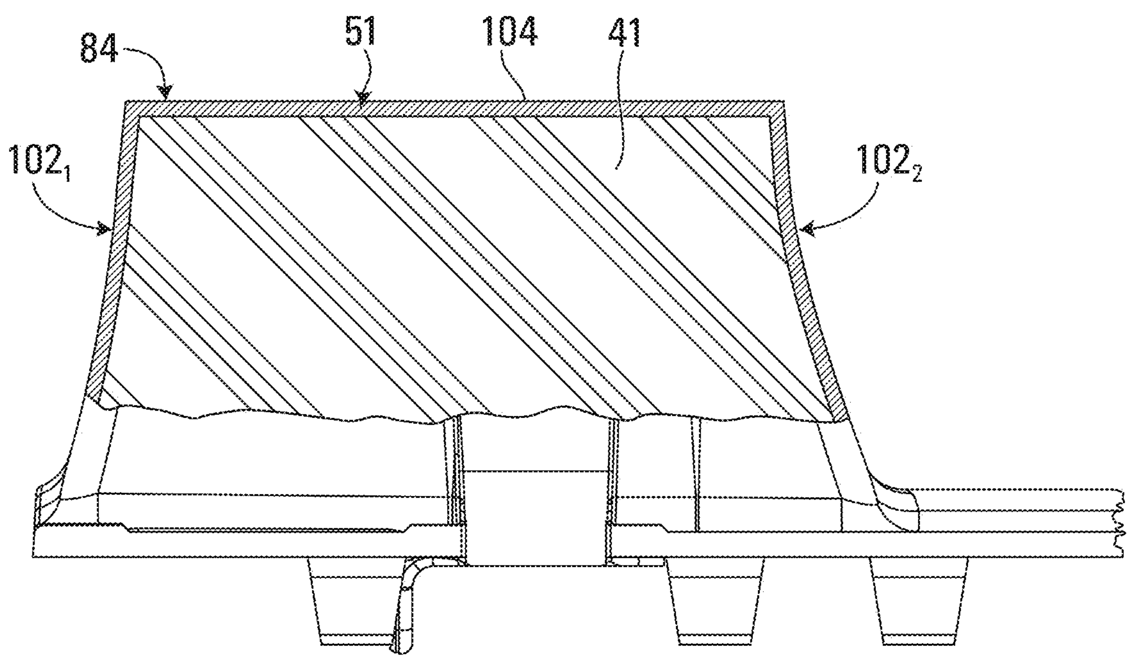


FIG. 24

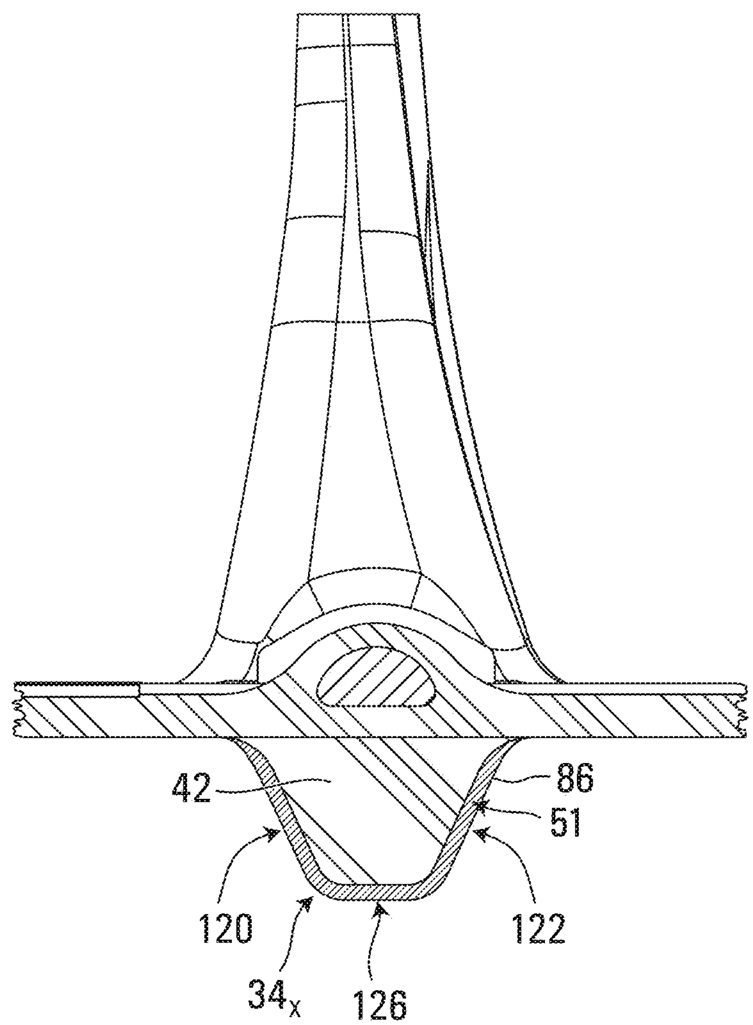


FIG. 25

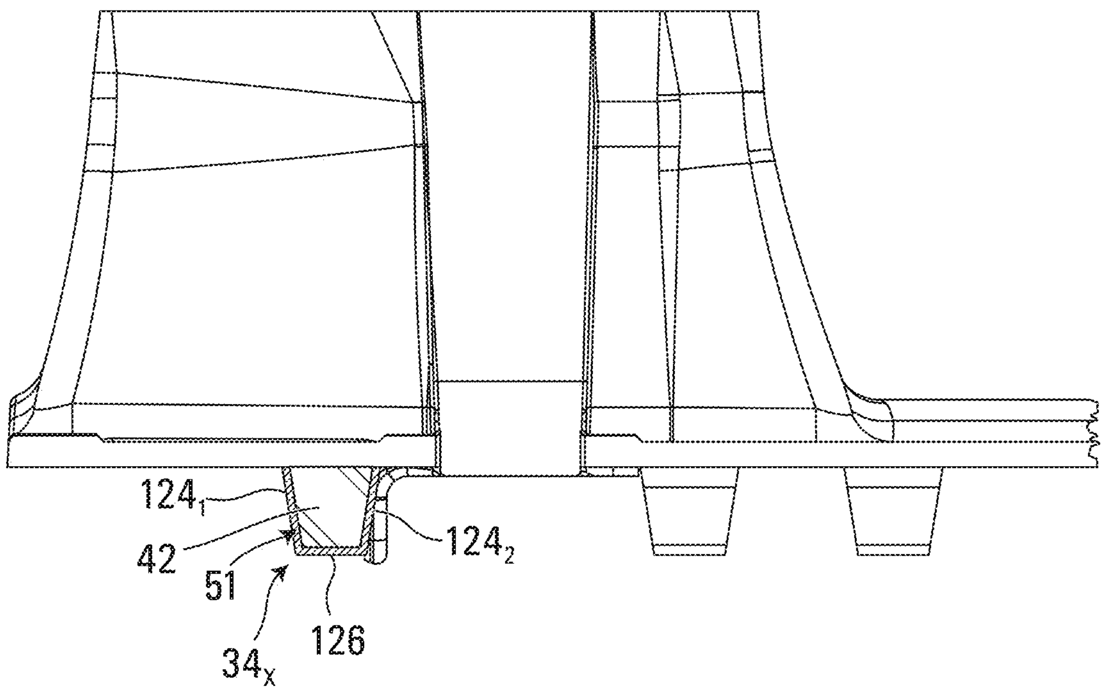


FIG. 26

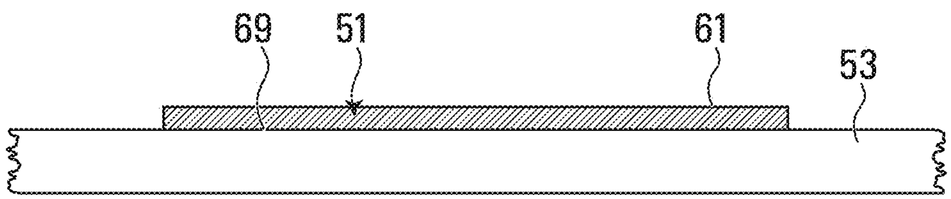


FIG. 27

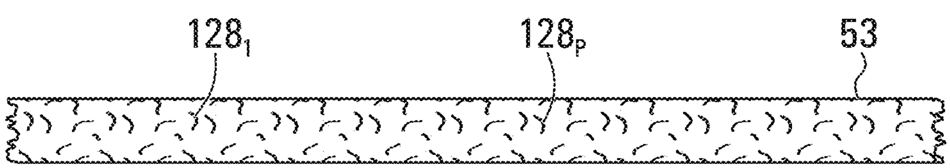


FIG. 28

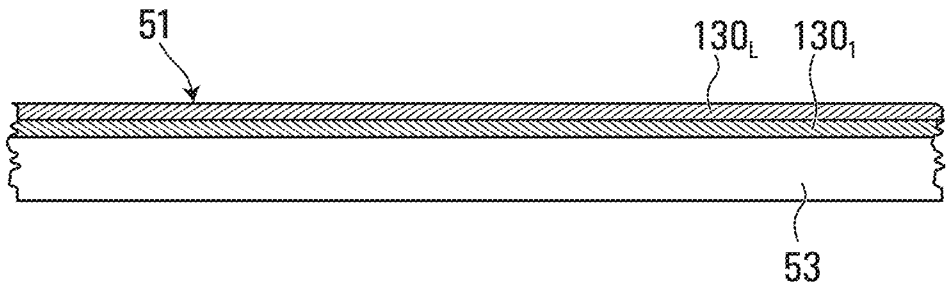


FIG. 29

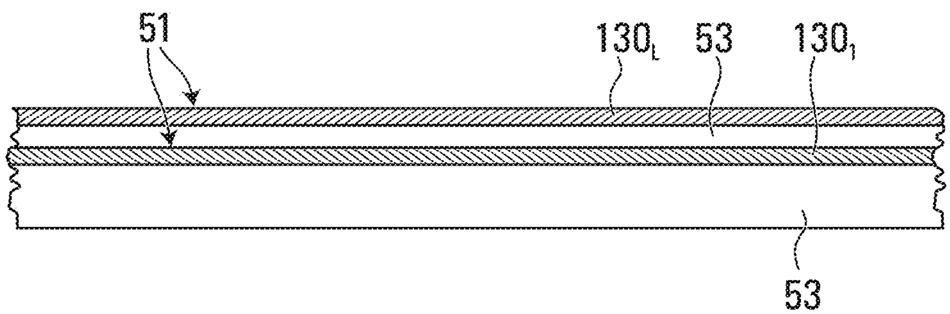
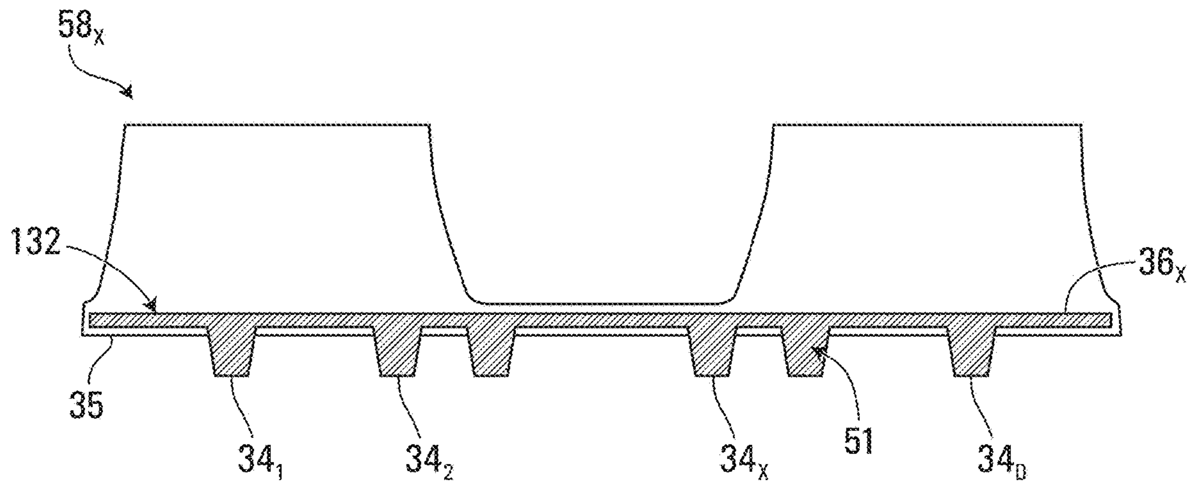


FIG. 30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36_X
35
34_1
34_2
34_X
51
34_D

FIG. 31

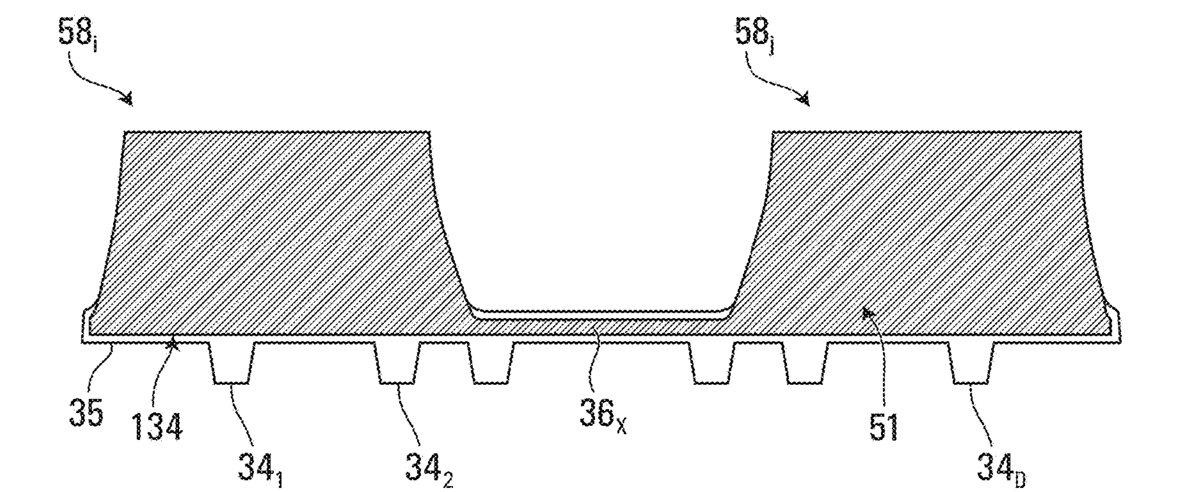

58_i
58_j
35
134
34_1
34_2
36_X
51
34_D

FIG. 32

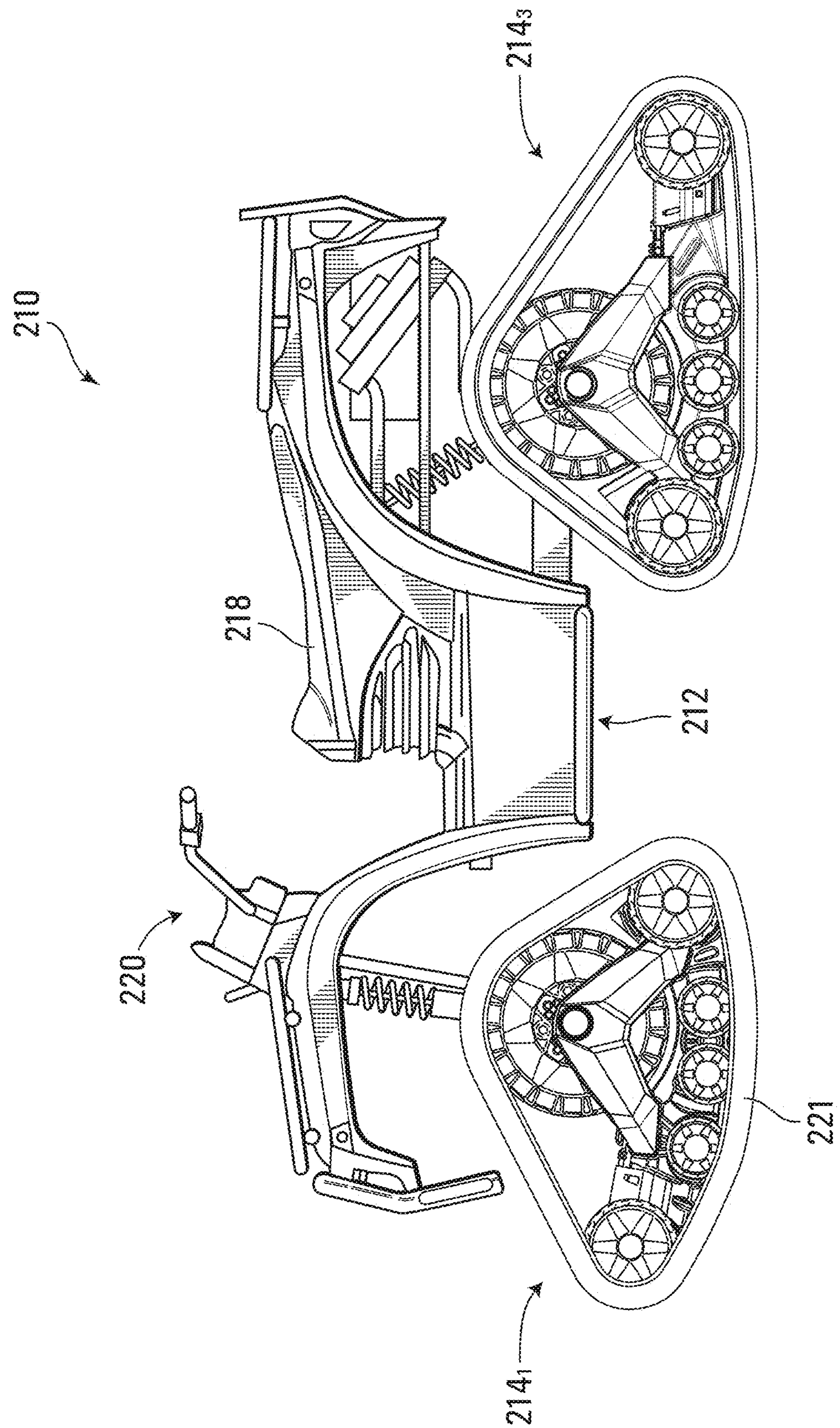


FIG. 33

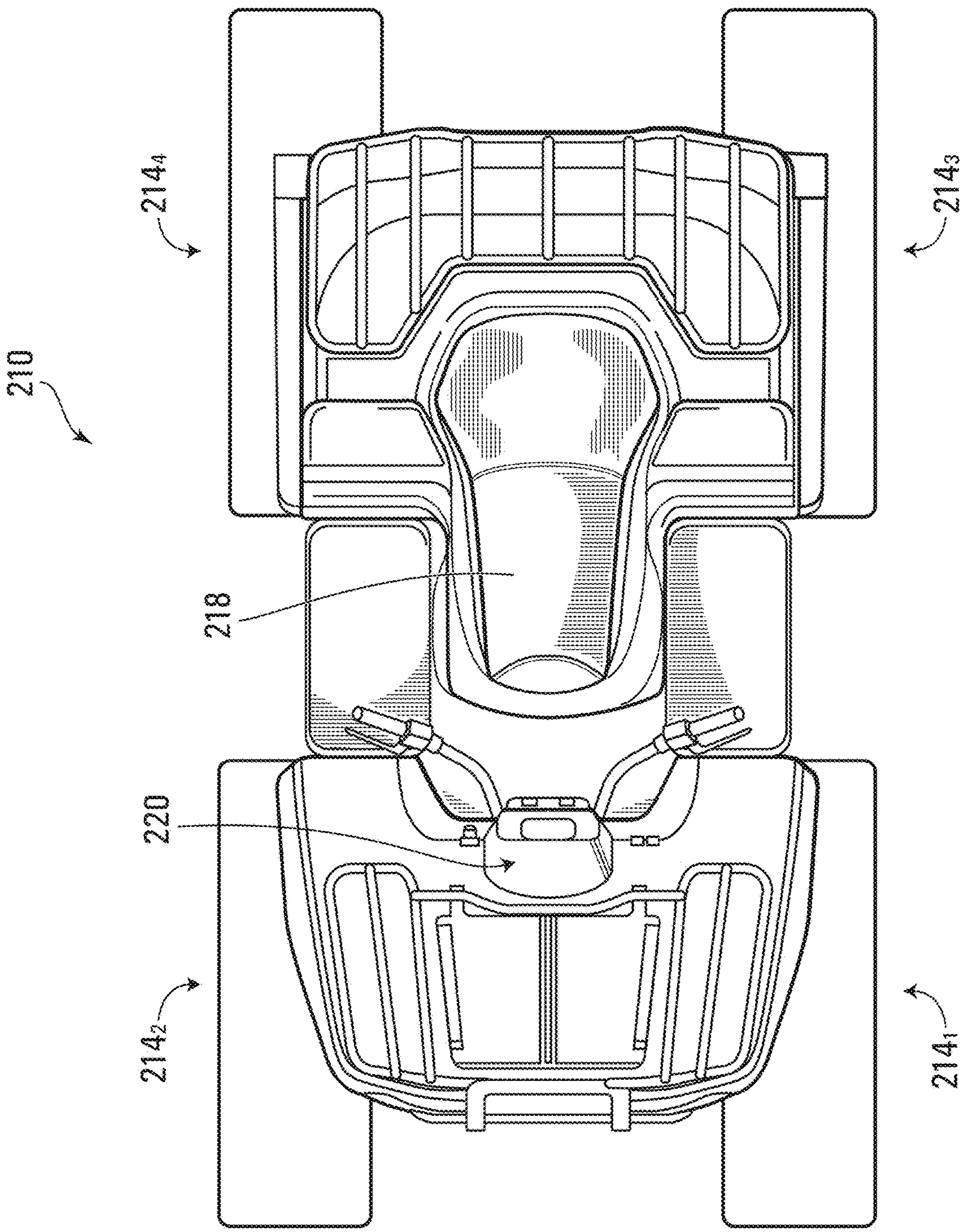


FIG. 34

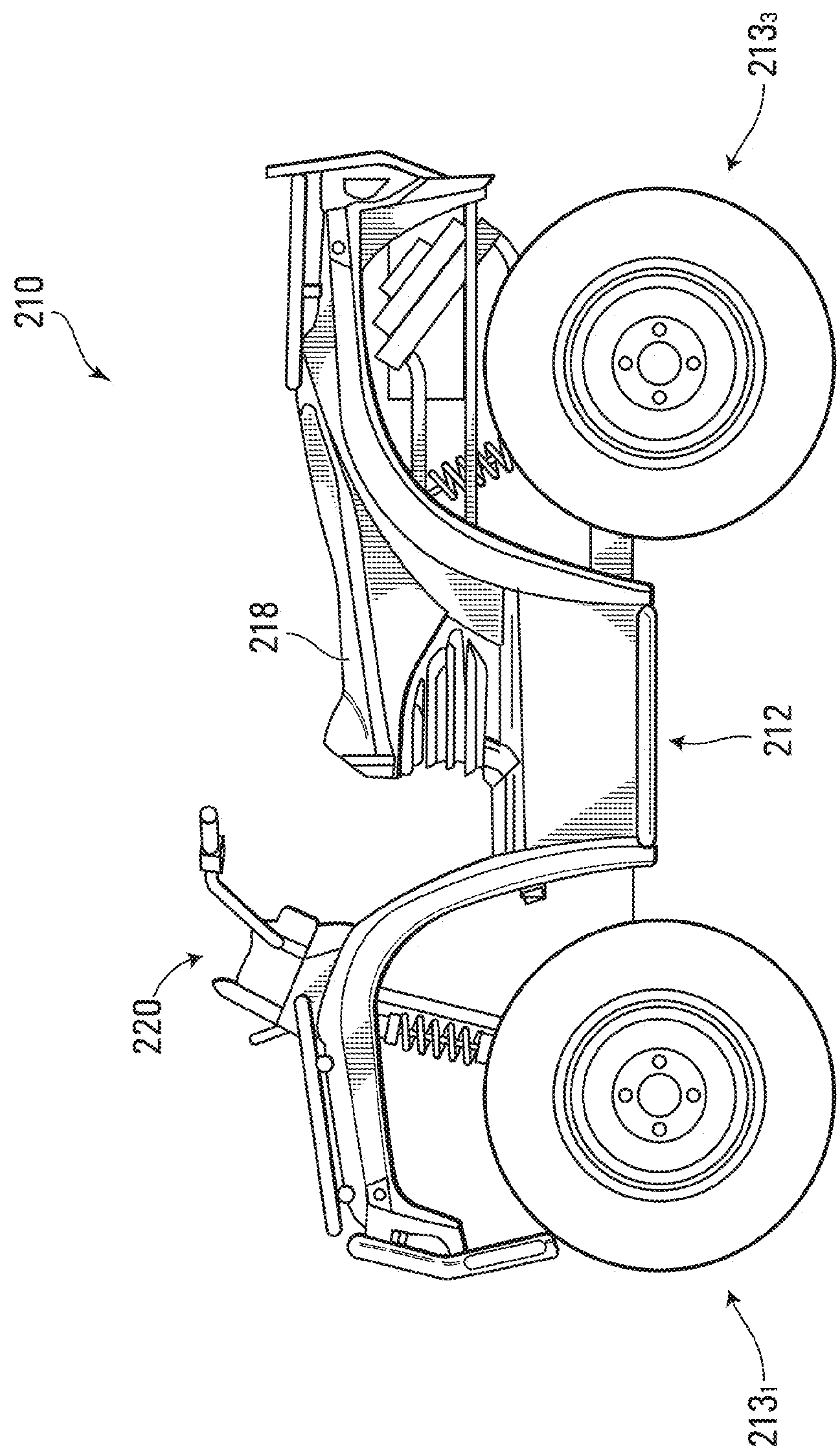


FIG. 35

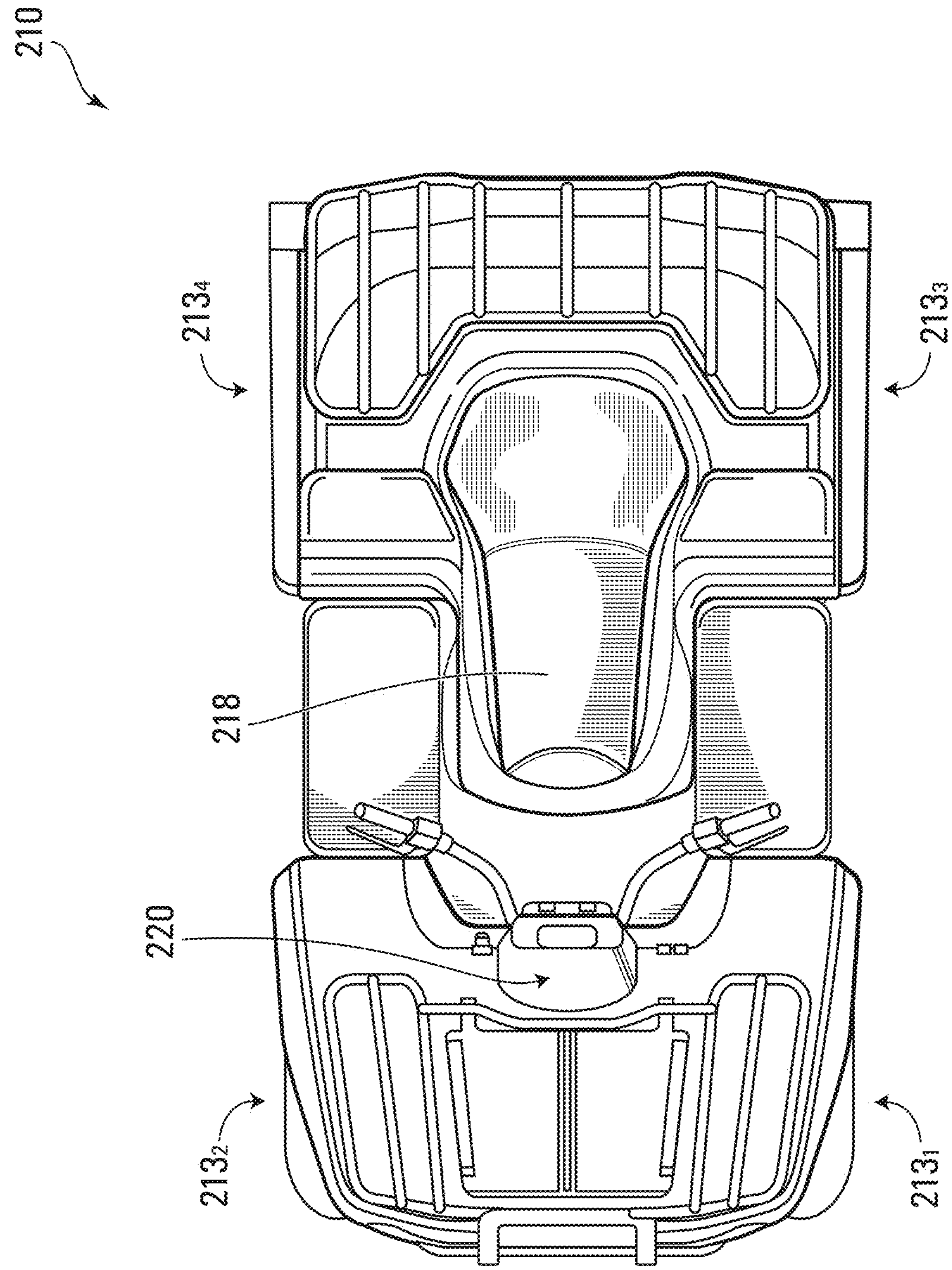
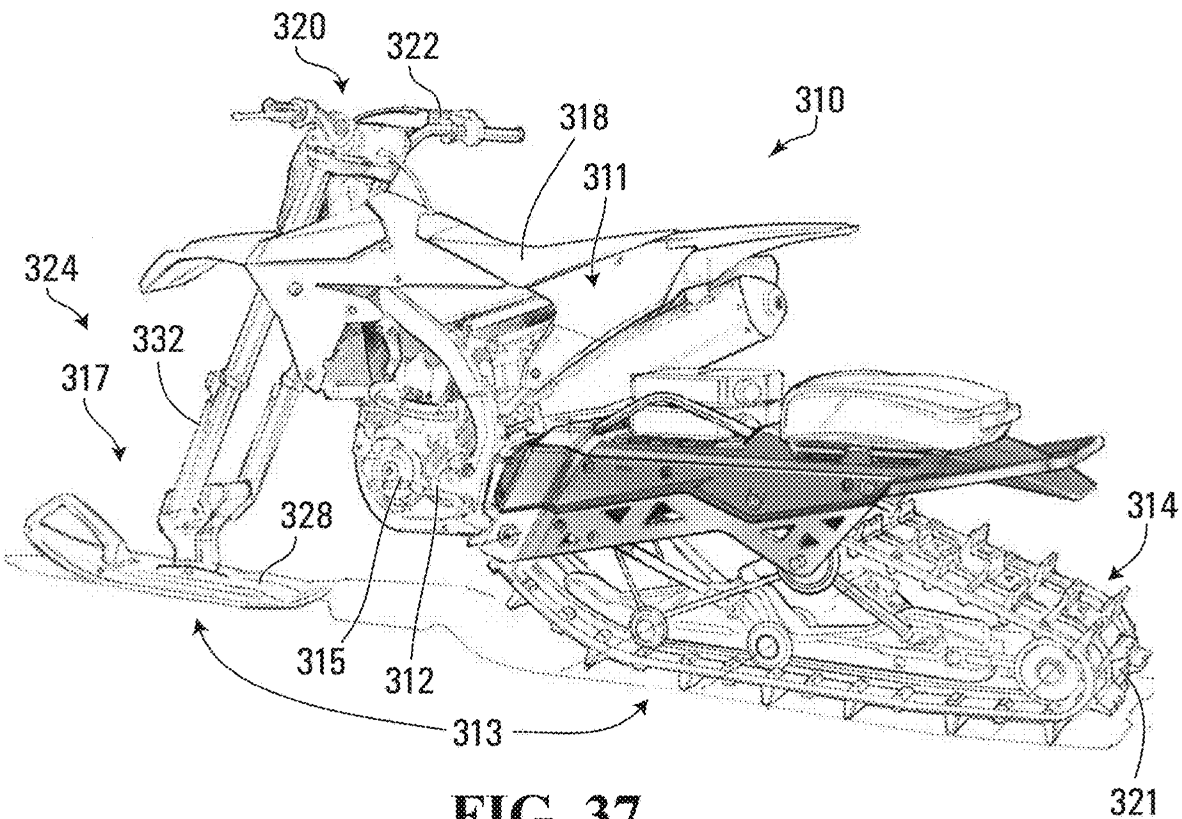


FIG. 36



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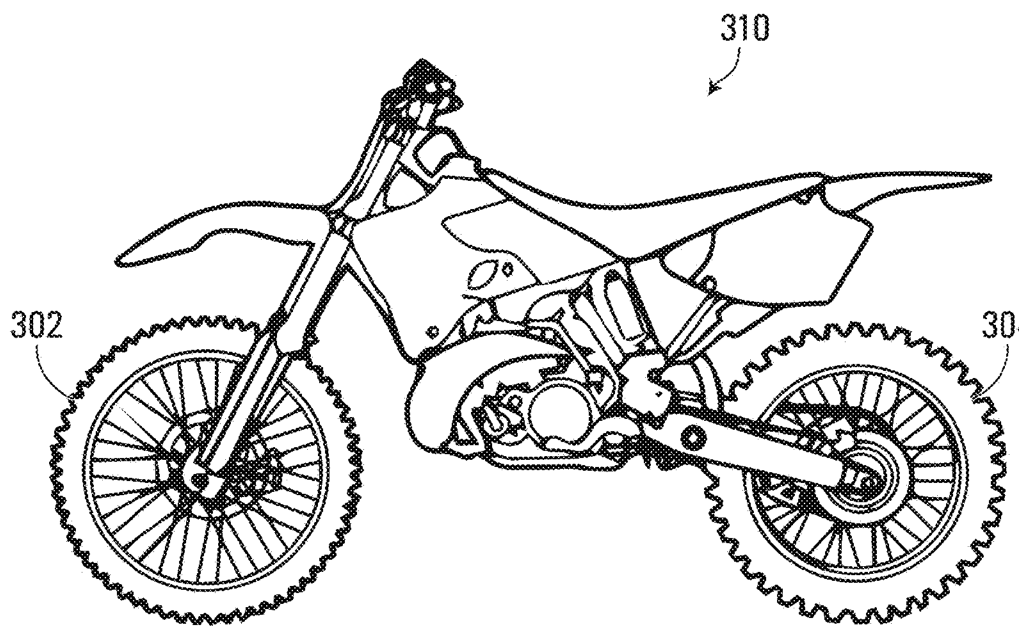
313
321

FIG. 37



310
302
304

FIG. 38

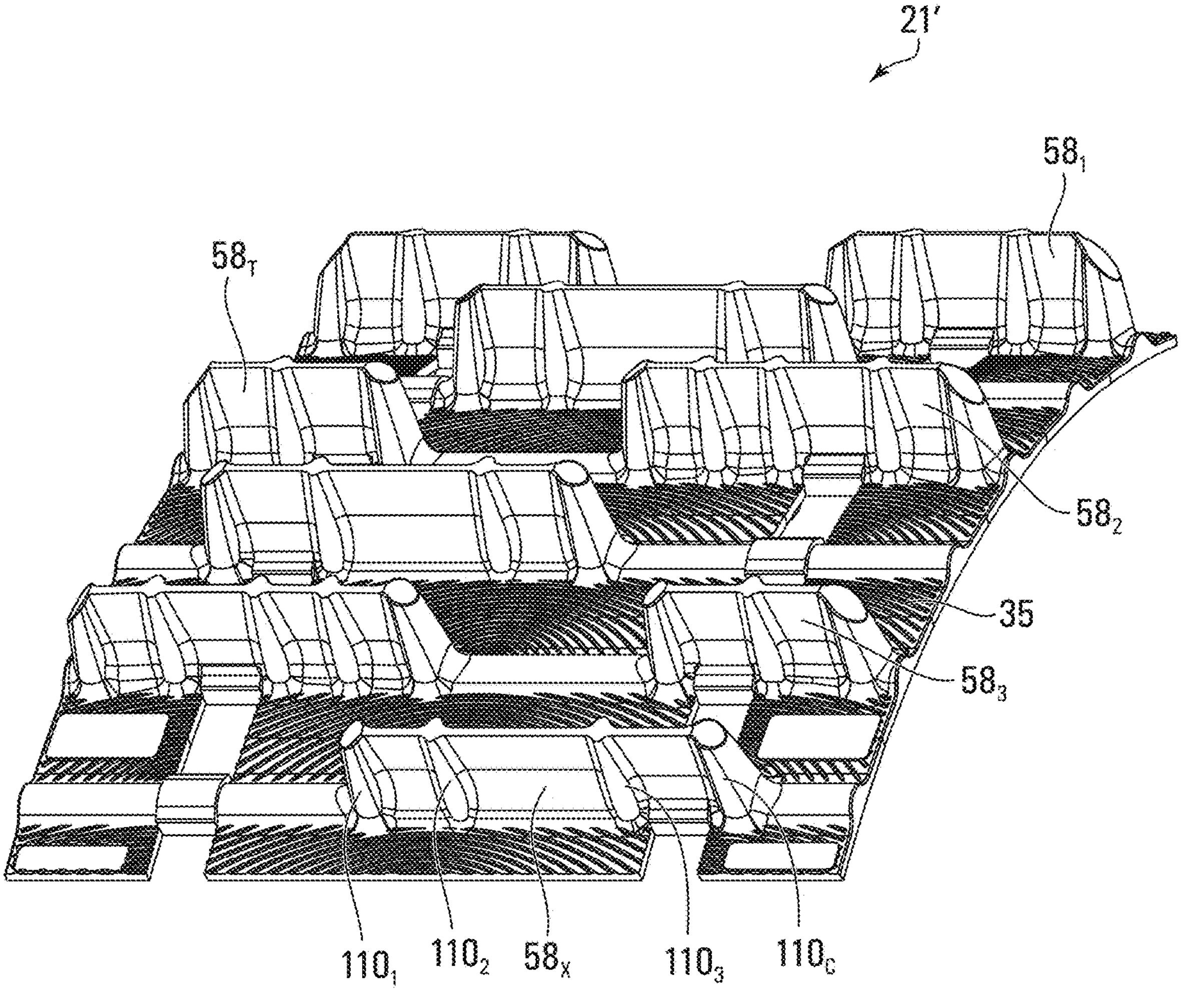


FIG. 39

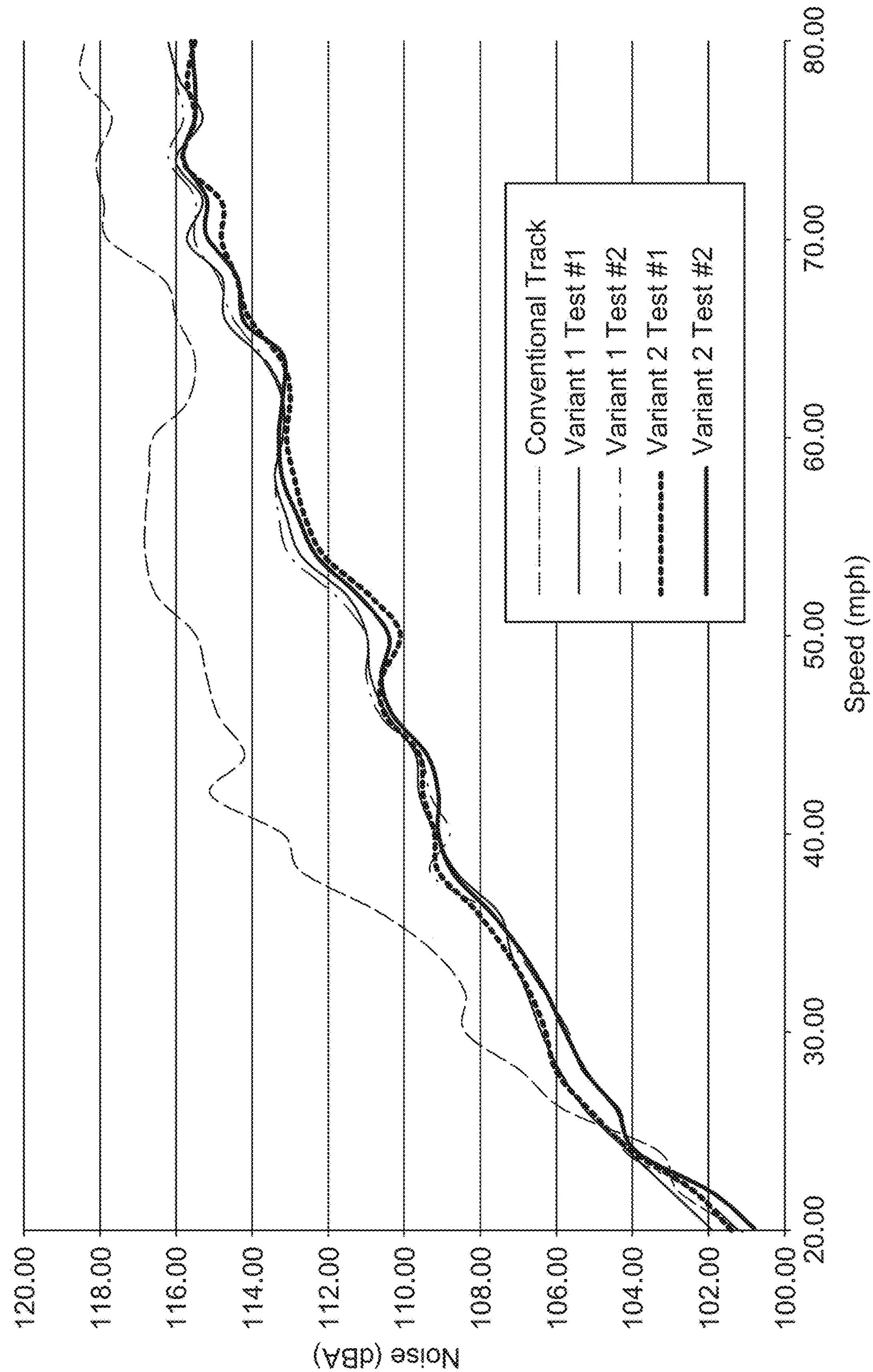

Noise (dBA)
120.00
118.00
116.00
114.00
112.00
110.00
108.00
106.00
104.00
102.00
100.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
Speed (mph)
Conventional Track
Variant 1 Test #1
Variant 1 Test #2
Variant 2 Test #1
Variant 2 Test #2

FIG. 40

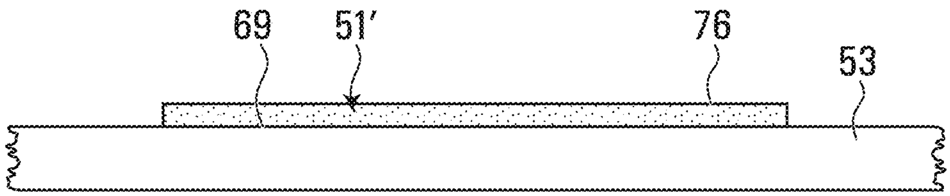


FIG. 41

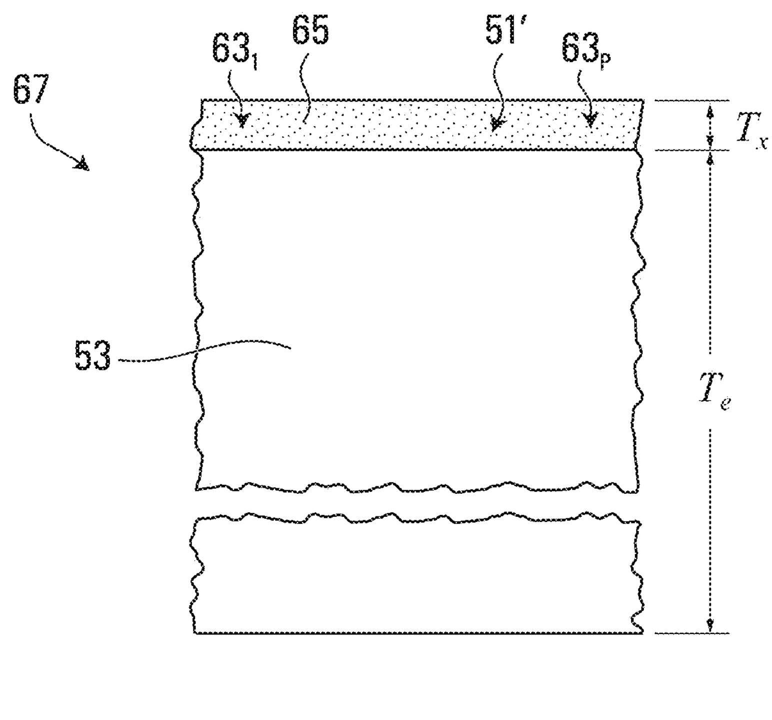


FIG. 42

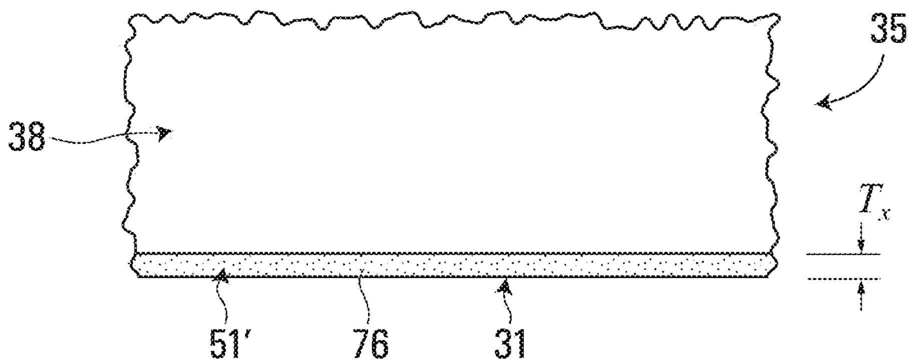


FIG. 43

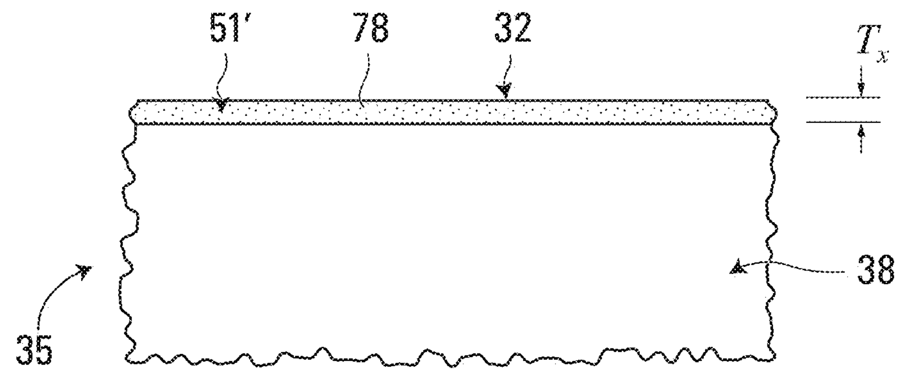


FIG. 44

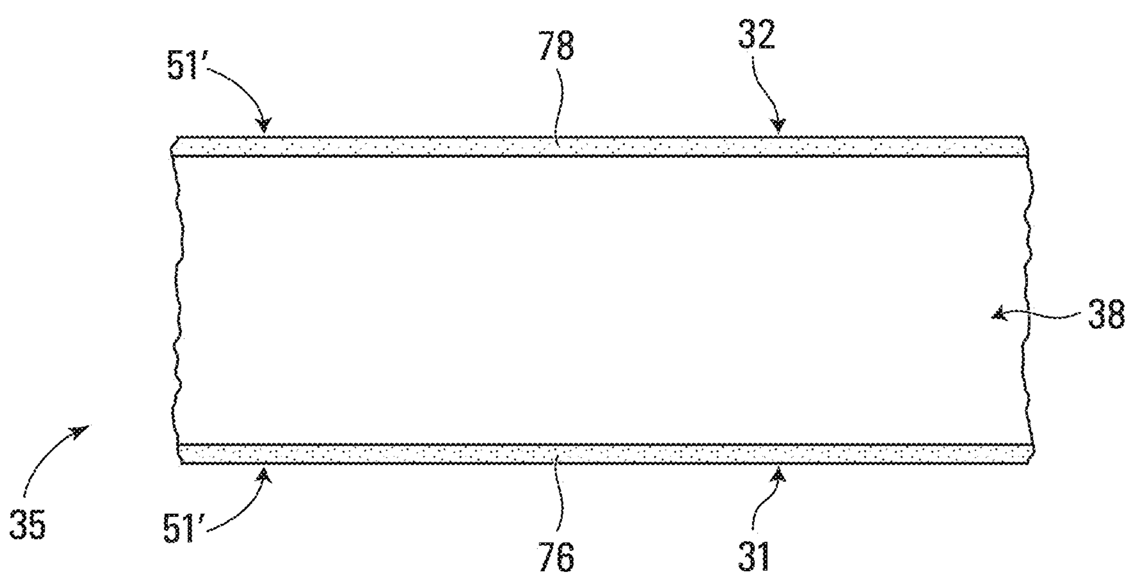
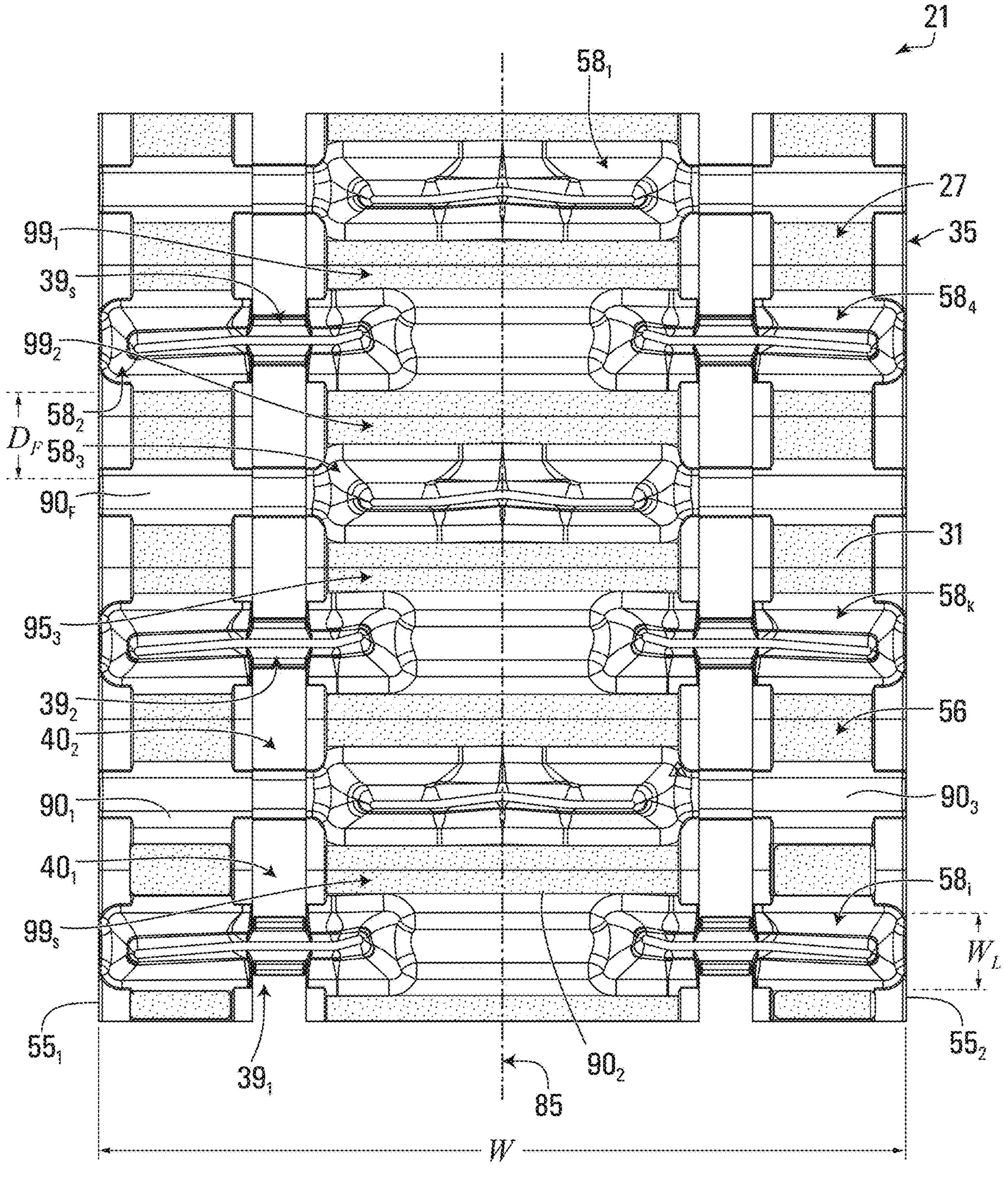


FIG. 45A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99_2
58_2
D_F
58_3
90_F
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95_3
39_2
56
40_2
90_1
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58_i
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W_L
55_1
55_2
39_1
90_2
85
W

FIG. 45B

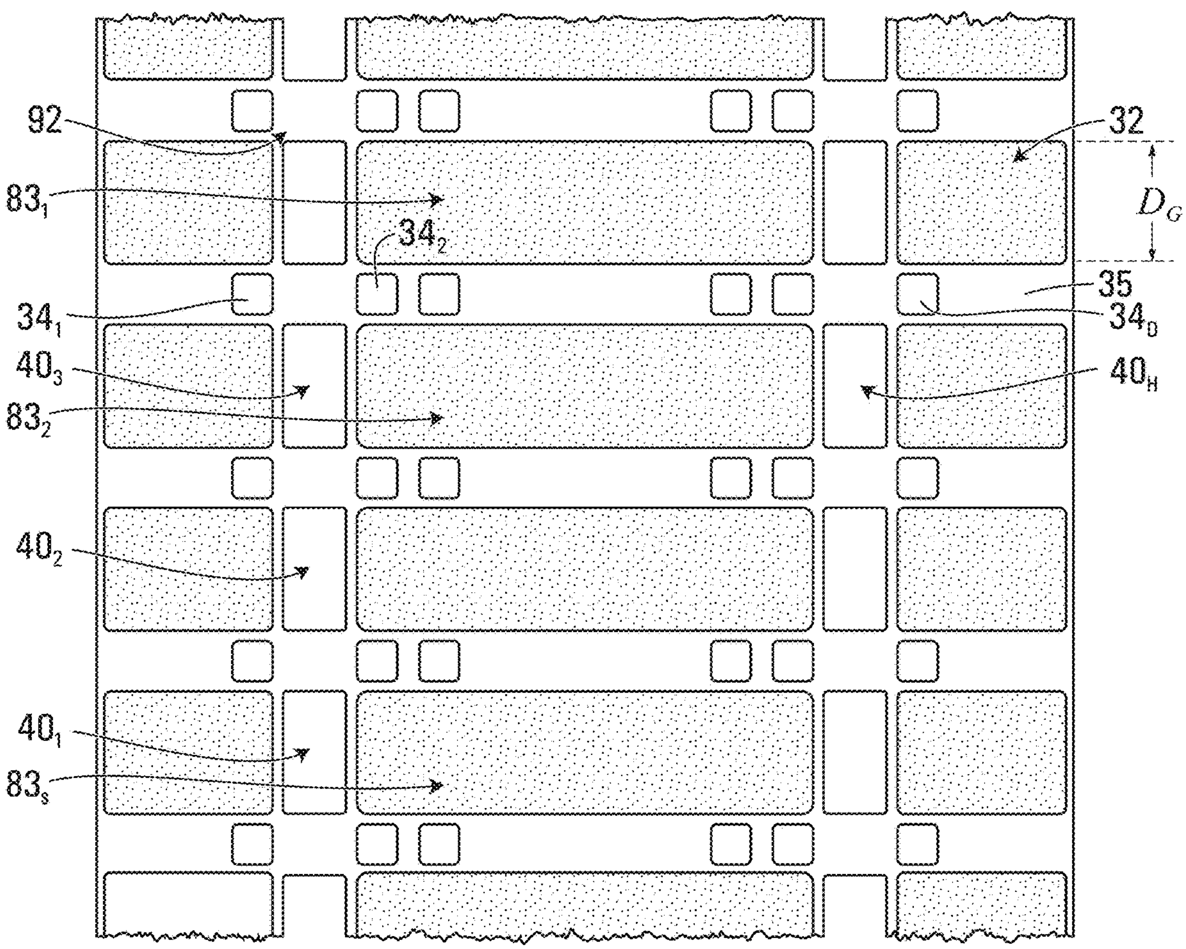

FIG. 45C

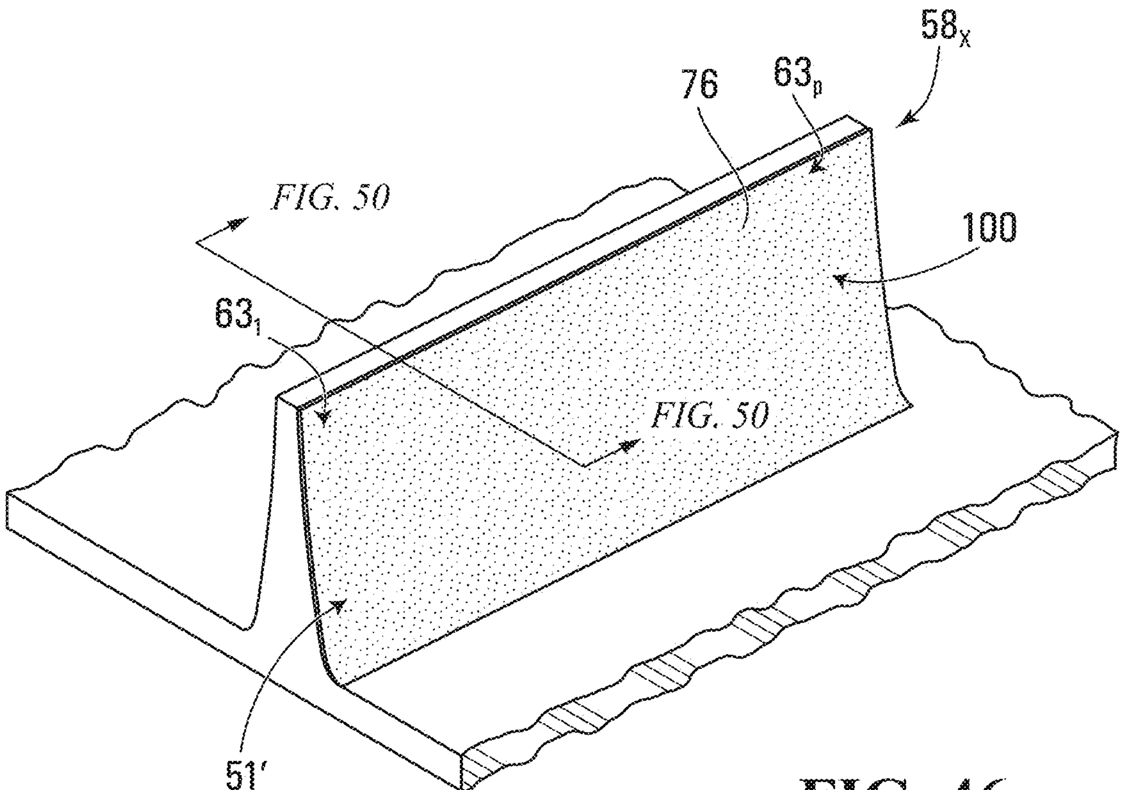

FIG. 46

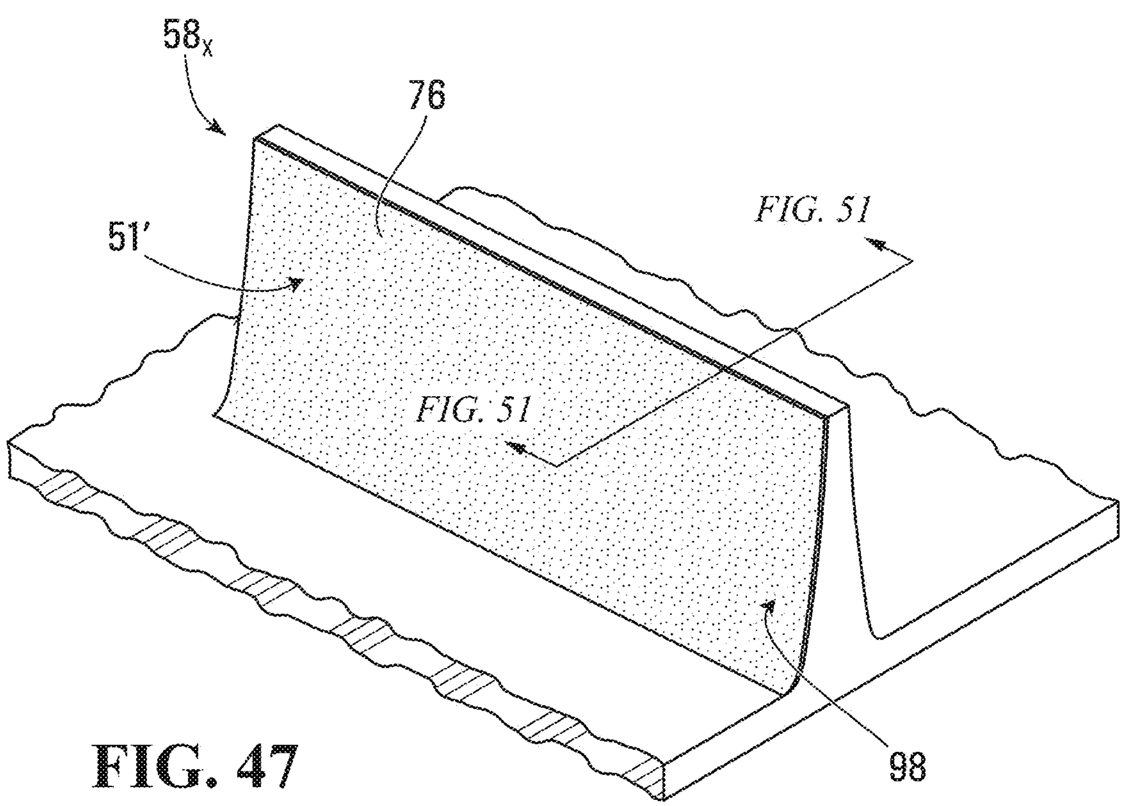

FIG. 47

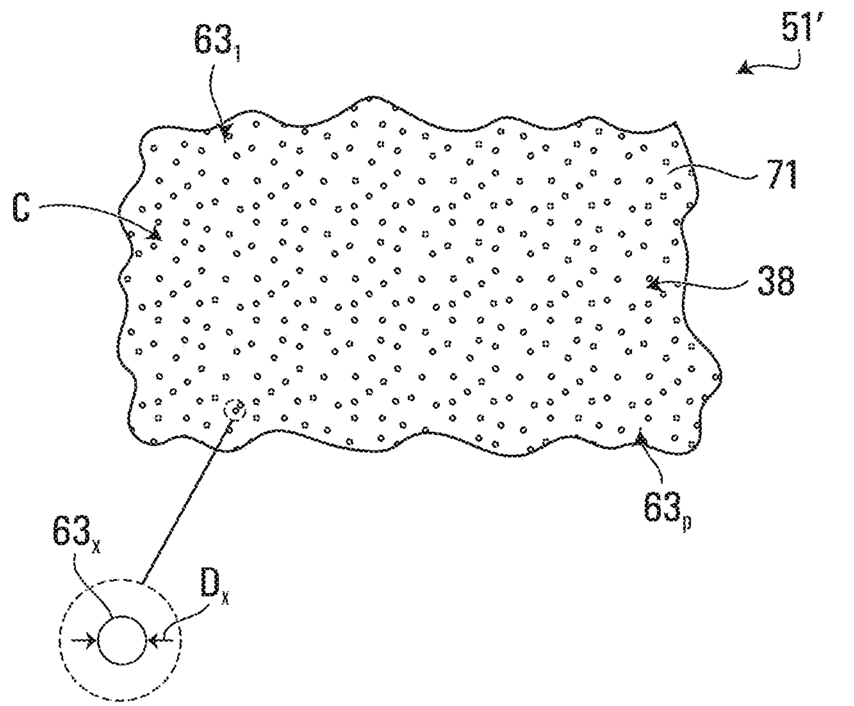

FIG. 48

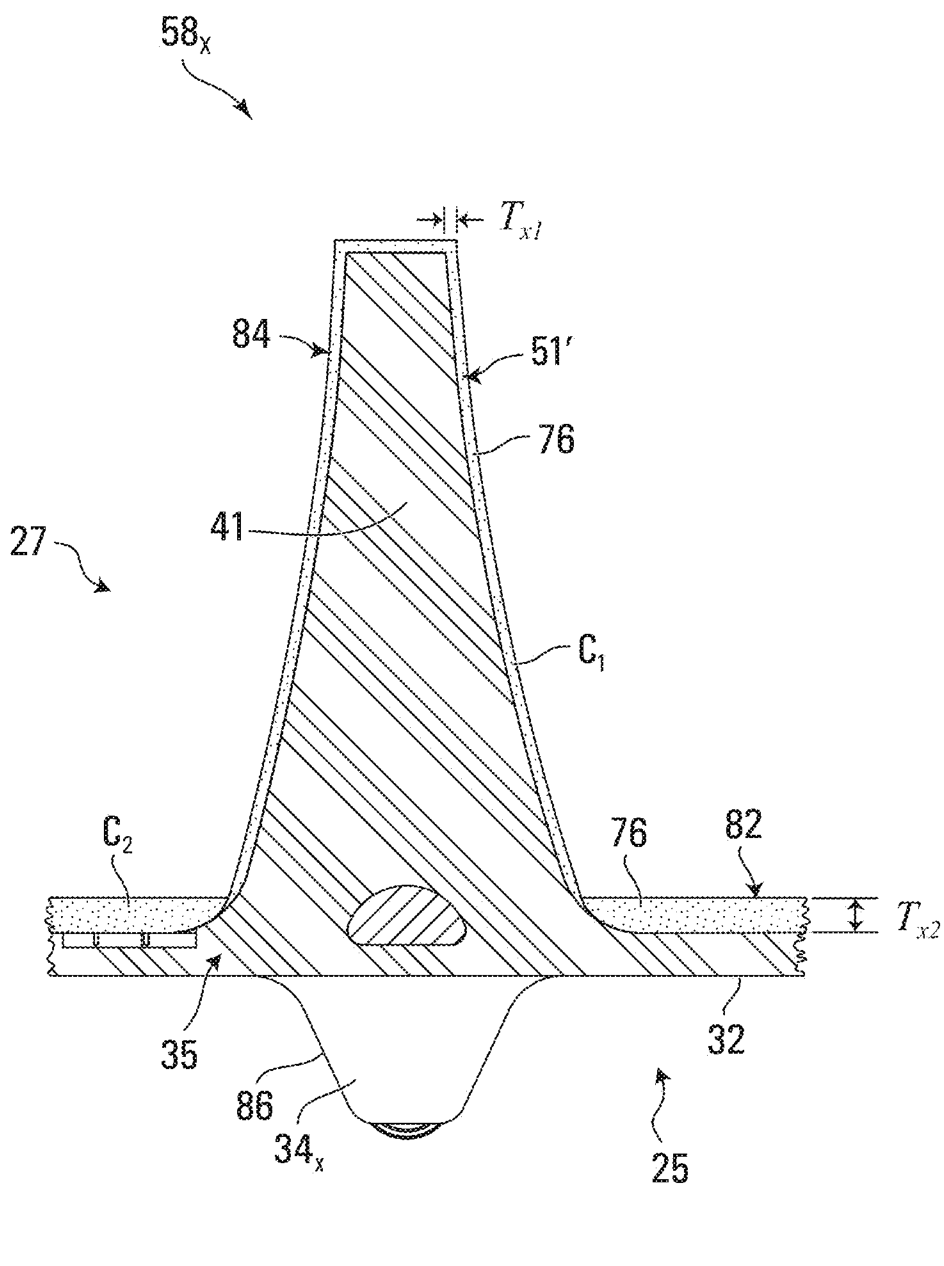

FIG. 49

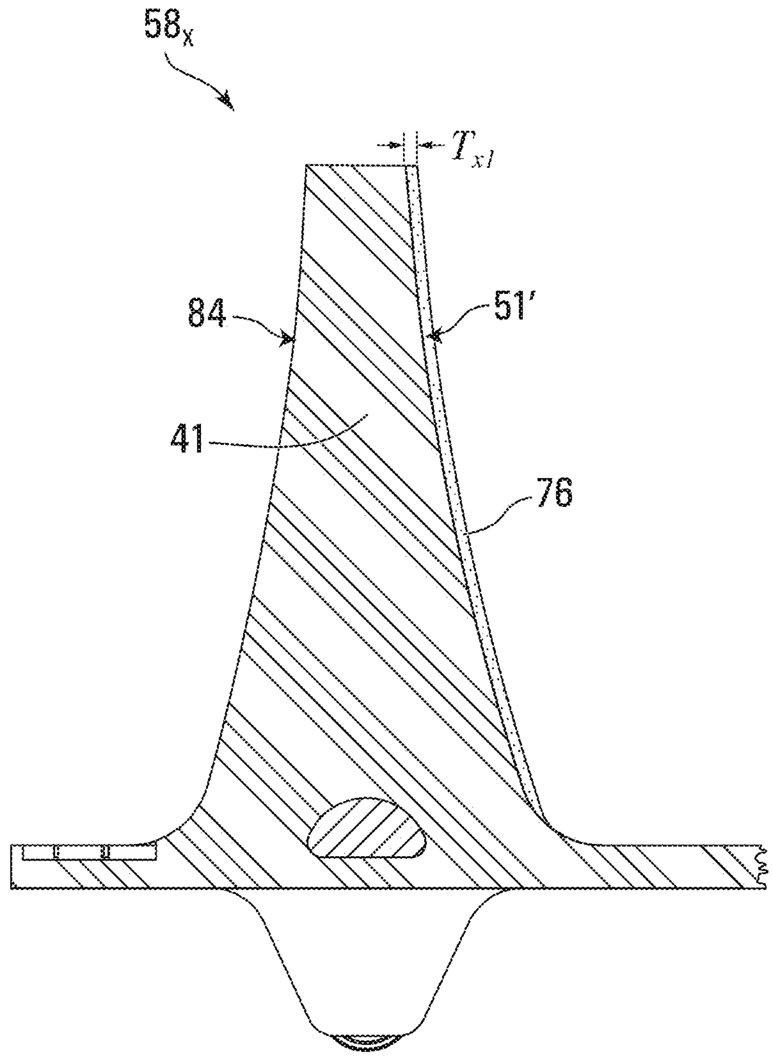

FIG. 50

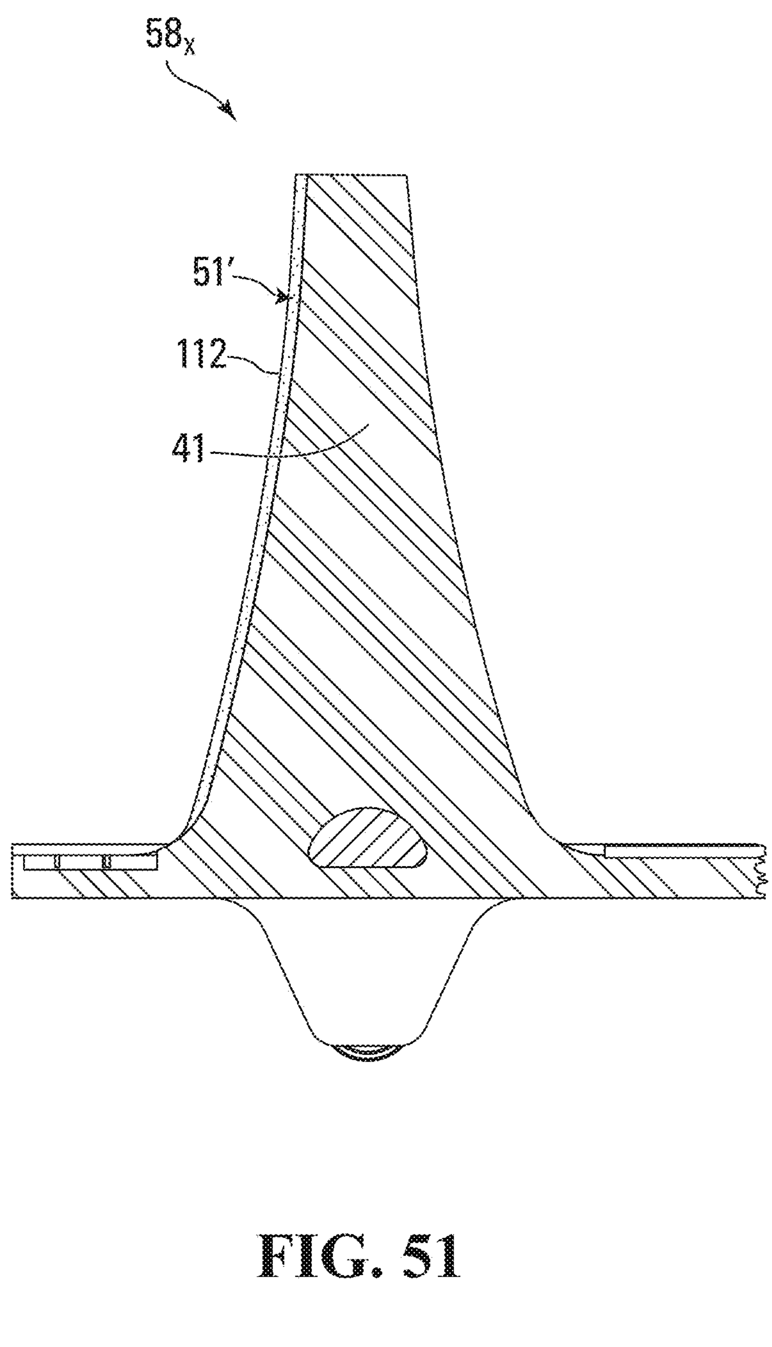

FIG. 51

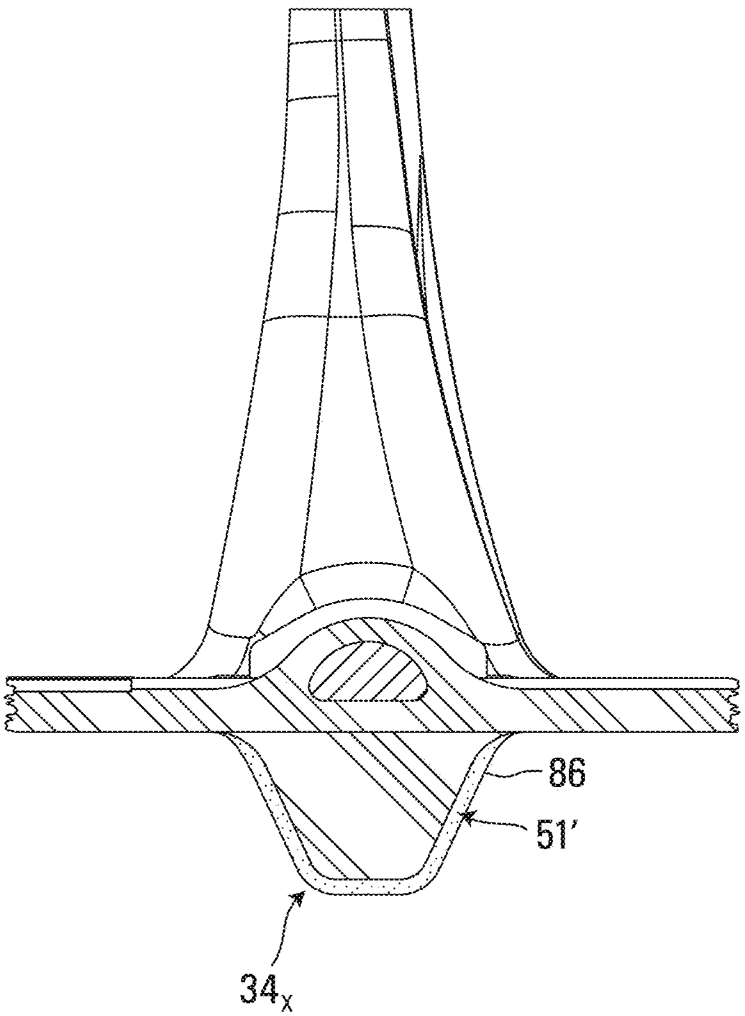

FIG. 52

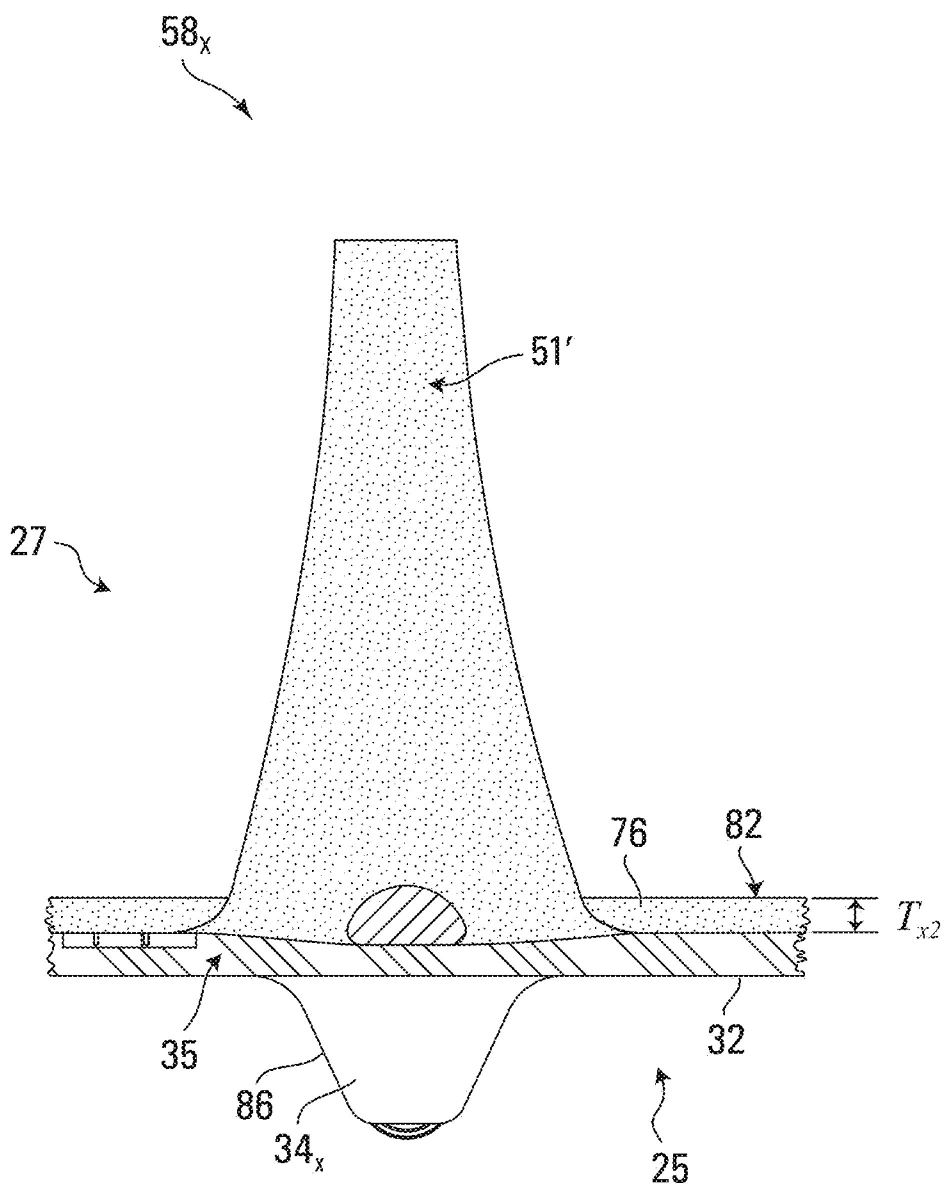

FIG. 53

TRACK SYSTEM FOR TRACTION OF A VEHICLE

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation-in-part of International Application PCT/CA2017/051567 filed on Dec. 20, 2017 and claiming priority from U.S. Provisional Patent Application No. 62/436,845 filed on Dec. 20, 2016, all of which are hereby incorporated by reference herein.

FIELD

The invention relates generally to track systems for traction of vehicles such as snowmobiles, all-terrain vehicles (ATVs), and other off-road vehicles.

BACKGROUND

Certain vehicles may be equipped with track systems which enhance their traction and floatation on soft, slippery and/or irregular grounds (e.g., snow, ice, soil, mud, sand, etc.) on which they operate.

For example, snowmobiles allow efficient travel on snowy and in some cases icy grounds. A snowmobile comprises a track system which engages the ground to provide traction. The track system comprises a track-engaging assembly and a track that moves around the track-engaging assembly and engages the ground to generate traction. The track typically comprises an elastomeric body in which are embedded certain reinforcements, such as transversal stiffening rods providing transversal rigidity to the track, longitudinal cables providing tensional strength, and/or fabric layers. The track-engaging assembly comprises wheels and in some cases slide rails around which the track is driven.

A snowmobile, including its track system, may face a number of challenges while riding. For example, the track system may generate noise that can be significant (e.g., for a rider and/or the snowmobile's environment), the track may be exposed to factors (e.g., snow conditions, ground unevenness, etc.) that affect its traction and/or floatation and/or cause wear, etc.

Similar considerations may arise for track systems of other types of off-road vehicles (e.g., all-terrain vehicles (ATVs), agricultural vehicles, or other vehicles that travel on uneven grounds) in certain situations.

For these and other reasons, there is a need to improve track systems for traction of vehicles.

SUMMARY

In accordance with various aspects of the invention, there is provided a track system for traction of a vehicle. The track system comprises a track and a track-engaging assembly for driving and guiding the track around the track-engaging assembly. The track system may have features to enhance its traction, floatation, and/or other aspects of its performance, including the track that may comprise reinforcing material (e.g., reinforcing polymeric material) that is stronger (e.g., stiffer, harder, and/or more resistant to wear) than elastomeric material of the track, such as to improve rigidity characteristics of the track, reduce noise generated by the track system, improve a resistance to wear (e.g., to cutting, chipping, chunking, cracking and/or tearing) of the track, enhance heat management (e.g., improve heat dissipation or reduce heat build-up) within the track, and/or reduce a weight of the track. The reinforcing material may be provided as one or more thin layers constituting at least part (e.g., of a periphery) of one or more components of the track (e.g., a carcass, traction projections, and/or drive/guide lugs).

For example, in accordance with an aspect, there is provided a track for traction of a vehicle. The track is mountable around a plurality of wheels. The track comprises a ground-engaging outer surface and an inner surface opposite to the ground-engaging outer surface. The track comprises elastomeric material allowing the track to flex around the wheels and reinforcing material stronger than the elastomeric material and constituting at least part of a periphery of the track.

In accordance with another aspect, there is provided a track for traction of a vehicle. The track is mountable around a plurality of wheels. The track comprises a ground-engaging outer surface and an inner surface opposite to the ground-engaging outer surface. The track comprises elastomeric material allowing the track to flex around the wheels and ultra-high-molecular-weight polyethylene constituting at least part of a periphery of the track.

In accordance with another aspect, there is provided a track for traction of a vehicle. The track is mountable about a plurality of wheels. The track is elastomeric to flex around the wheels. The track comprises a ground-engaging outer surface, an inner surface opposite to the ground-engaging outer surface, and a plurality of traction projections that project from the ground-engaging outer surface. The track comprises a first elastomeric material and a second elastomeric material overlying the first elastomeric material. The second elastomeric material constitutes at least part of a periphery of the track and includes an elastomeric matrix and reinforcing particles embedded in the elastomeric matrix.

In accordance with another aspect, there is provided a track for traction of a vehicle. The track is mountable about a plurality of wheels. The track is elastomeric to flex around the wheels. The track comprises a ground-engaging outer surface, an inner surface opposite to the ground-engaging outer surface, and a plurality of traction projections that project from the ground-engaging outer surface. The track comprises a first elastomeric material and a second elastomeric material adjacent to the first elastomeric material. The second elastomeric material includes an elastomeric matrix and reinforcing particles embedded in the elastomeric matrix.

In accordance with another aspect, there is provided a track for traction of a vehicle. The track is mountable about a plurality of wheels. The track is elastomeric to flex around the wheels. The track comprises a ground-engaging outer surface, an inner surface opposite to the ground-engaging outer surface, and a plurality of traction projections projecting from the ground-engaging outer surface. The track comprises: an elastomeric material; and a plurality of reinforcing segments that are spaced from one another in a longitudinal direction of the track, constitute at least part of a periphery of the track, and include reinforcing material stronger than the elastomeric material.

These and other aspects of the invention will now become apparent to those of ordinary skill in the art upon review of the following description of embodiments of the invention in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

A detailed description of embodiments of the invention is provided below, by way of example only, with reference to the accompanying drawings, in which:

FIG. 1 shows an example of a vehicle comprising a track system in accordance with an embodiment of the invention, in which the vehicle is a snowmobile;

FIG. 2 shows a side view of the track system;

FIG. 3 shows a perspective view of a track-engaging assembly of the track system;

FIGS. 4 to 7 respectively show a perspective view, a plan view, an elevation view, and a longitudinal cross-sectional view of part of a track of the track system;

FIG. 8 shows a reinforcing material of the track overlying an elastomeric material of the track;

FIG. 9A shows a widthwise cross-sectional view of part of the track;

FIG. 9B shows a widthwise cross-sectional view of part of the track in accordance to another embodiment;

FIG. 10 shows a layer of reinforcing polymeric material of the reinforcing material of the track constituting at least part of a ground-engaging outer surface of a carcass of the track;

FIG. 11 shows a layer of reinforcing polymeric material of the reinforcing material of the track constituting at least part of an inner surface of the carcass of the track;

FIG. 12 shows the layer of reinforcing polymeric material of FIG. 11 in accordance with an embodiment in which it includes a plurality of segments that are spaced apart from one another;

FIG. 13 shows a side elevation view of a rail of the track-engaging assembly of the track system;

FIGS. 14A to 14C show other embodiments in which the reinforcing material of the track comprises a layer of reinforcing polymeric material constituting at least part of the ground-engaging outer surface of the carcass and a layer of reinforcing polymeric material constituting at least part of the inner surface of the carcass;

FIG. 15 shows a perspective view of a traction projection of the track where a layer of reinforcing polymeric material of the reinforcing material of the track constitutes at least part of a rear surface of the traction projection;

FIG. 16 shows a cross-sectional view of the traction projection as indicated in FIG. 15;

FIG. 17 shows a perspective view of the traction projection of the track in accordance with another embodiment in which a layer of reinforcing polymeric material that constitutes at least part of the rear surface of the traction projection includes a plurality of segments spaced apart from one another;

FIG. 18 shows a perspective view of the traction projection of the track in accordance with another embodiment in which a layer of reinforcing polymeric material of the reinforcing material of the track constitutes at least part of a front surface of the traction projection;

FIG. 19 shows a cross-sectional view of the traction projection as indicated in FIG. 18;

FIG. 20 shows a perspective view of the traction projection of the track in accordance with another embodiment in which a layer of reinforcing polymeric material that constitutes at least part of the front surface of the traction projection includes a plurality of segment spaced apart from one another;

FIG. 21 shows a longitudinal cross-sectional view of the traction projection of the track in accordance with another embodiment in which the reinforcing material of the track comprises a layer of reinforcing polymeric material constituting at least part of the front surface of the traction projection and a layer of reinforcing polymeric material constituting at least part of the rear surface of the traction projection;

FIG. 22 shows a longitudinal cross-sectional view of the traction projection of the track in accordance with another embodiment in which the reinforcing material of the track comprises a layer of reinforcing polymeric material constituting at least part of a tip of the traction projection;

FIG. 23 shows a longitudinal cross-sectional view of the traction projection of the track in accordance with another embodiment in which the reinforcing material of the track comprises a layer of reinforcing polymeric material constituting at least part of the front surface of the traction projection, a layer of reinforcing polymeric material constitutes at least part of the rear surface of the traction projection and a layer of reinforcing polymeric material constitutes at least part of the tip of the traction projection;

FIG. 24 shows a widthwise cross-sectional view of the traction projection of the track in accordance with another embodiment in which the reinforcing material of the track constitutes an entirety of the periphery of the traction projection;

FIGS. 25 and 26 show a longitudinal and a widthwise cross-sectional view of a drive/guide lug of the track in accordance in an embodiment in which the reinforcing material of the track constitutes at least part of a periphery of the drive/guide lug;

FIG. 27 shows an example of an embodiment in which the reinforcing material of the track is bonded to a portion of an elastomeric material of the track before molding of the track;

FIG. 28 an example of an embodiment in which the elastomeric material of the track is loaded with particles of reinforcing fabric material;

FIG. 29 shows an example of an embodiment in which the reinforcing material of the track includes a plurality of layers of reinforcing polymeric material that are adjacent to one another;

FIG. 30 shows an example of an embodiment in which the reinforcing material of the track includes a plurality of layers of reinforcing polymeric material that are spaced apart from one another;

FIG. 31 shows an example of an embodiment in which the reinforcing material of the track constitutes at least part of a reinforcement embedded in the carcass of the track and selected drive/guide lugs of the track;

FIG. 32 shows an example of an embodiment in which the reinforcing material of the track constitutes at least part of a reinforcement embedded in the carcass of the track and selected traction projections of the track;

FIGS. 33 to 36 show an example of an all-terrain vehicle (ATV) comprising track systems in accordance with another embodiment of the invention, instead of being equipped with ground-engaging wheels;

FIGS. 37 and 38 show an example of a snow bike comprising a track system in accordance with another embodiment of the invention, instead of being equipped with a rear wheel;

FIG. 39 shows an example of another embodiment in which the traction projections of the track comprise columns;

FIG. 40 shows a graph of test data evaluating noise generated at given speeds by a conventional track compared to the track of FIG. 10;

FIG. 41 shows an example of a variant in which the reinforcing material includes a polymeric matrix loaded with reinforcing particles disposed on a portion of the elastomeric material of the track;

FIG. **42** shows an example of a variant in which the reinforcing material, including a polymeric matrix loaded with reinforcing particles, of the track overlies an elastomeric material of the track;

FIG. **43** shows an example of a variant in which a layer of the reinforcing polymeric material of the reinforcing material including a polymeric matrix loaded with reinforcing particles constitutes at least part of a ground-engaging outer surface of a carcass of the track;

FIG. **44** shows an example of a variant in which a layer of the reinforcing polymeric material of the reinforcing material including a polymeric matrix loaded with reinforcing particles constitutes at least part of an inner surface of the carcass of the track;

FIGS. **45**A to **45**C shows examples of variants in which the reinforcing material of the track comprises a layer of reinforcing polymeric material constituting at least part of the ground-engaging outer surface of the carcass and a layer of reinforcing polymeric material constituting at least part of the inner surface of the carcass;

FIG. **46** shows a perspective view of an example of a variant of a traction projection of the track where a layer of reinforcing polymeric material of the reinforcing material, which includes a polymeric matrix loaded with reinforcing particles, of the track constitutes at least part of a rear surface of the traction projection;

FIG. **47** shows a perspective view of an example of a variant of the traction projection of the track in which a layer of reinforcing polymeric material of the reinforcing material, which includes a polymeric matrix loaded with reinforcing particles, of the track constitutes at least part of a front surface of the traction projection;

FIG. **48** shows an illustration of an example of reinforcing material which includes a polymeric matrix loaded with reinforcing particles;

FIG. **49** shows a longitudinal cross-sectional view of an example of a variant of the traction projection of the track in which the reinforcing material includes a polymeric matrix loaded with reinforcing particles of the track and comprises a layer of reinforcing polymeric material constituting at least part of the periphery of the traction projection and a layer of reinforcing polymeric material constituting at least part of the ground-engaging outer surface of the carcass of the track;

FIG. **50** shows a cross-sectional view of an example of a variant of the traction projection of the track where a layer of reinforcing polymeric material of the reinforcing material, which includes a polymeric matrix loaded with reinforcing particles, of the track constitutes at least part of a rear surface of the traction projection;

FIG. **51** shows a cross-sectional view of an example of a variant of the traction projection of the track where a layer of reinforcing polymeric material of the reinforcing material, which includes a polymeric matrix loaded with reinforcing particles, of the track constitutes at least part of a front surface of the traction projection;

FIG. **52** shows a longitudinal cross-sectional view of an example of a variant of a drive/guide lug of the track in which the reinforcing material of the track includes a polymeric matrix loaded with reinforcing particles and constitutes at least part of a periphery of the drive/guide lug; and

FIG. **53** shows a cross-sectional view of an example of a variant of the traction projection of the track where the reinforcing material, which includes a polymeric matrix loaded with reinforcing particles, of the track constitutes an entirety of a traction projection and a layer of reinforcing polymeric material of the reinforcing material constitutes at least part of the outer surface of the carcass.

It is to be expressly understood that the description and drawings are only for the purpose of illustrating certain embodiments of the invention and are an aid for understanding. They are not intended to be a definition of the limits of the invention.

DETAILED DESCRIPTION OF EMBODIMENTS

FIG. **1** shows an example of a vehicle **10** comprising a track system **14** in accordance with an embodiment of the invention. In this embodiment, the vehicle **10** is a snowmobile. The snowmobile **10** is designed for travelling on snow and in some cases ice.

The snowmobile **10** comprises a frame **11**, a powertrain **12**, the track system **14**, a ski system **17**, a seat **18**, and a user interface **20**, which enables a user to ride, steer and otherwise control the snowmobile **10**. The track system **14** comprises a track **21** to engage the ground for traction of the snowmobile **10**.

In various embodiments, as further discussed below, the track system **14**, including the track **21**, may have features to enhance its traction, floatation, and/or other aspects of its performance, including the track **21** that may comprise reinforcing material (e.g., reinforcing polymeric material) that is stronger (e.g., stiffer, harder, and/or more resistant to wear) than elastomeric material of the track **21**, such as to improve rigidity characteristics of the track **21**, reduce noise generated by the track system **14**, improve a resistance to wear (e.g., to cutting, chipping, chunking, cracking and/or tearing) of the track **21**, enhance heat management (e.g., improve heat dissipation or reduce heat build-up) within the track **21**, and/or reduce a weight of the track **21**.

The powertrain **12** is configured for generating motive power and transmitting motive power to the track system **14** to propel the snowmobile **10** on the ground. To that end, the powertrain **12** comprises a prime mover **15**, which is a source of motive power that comprises one or more motors (e.g., an internal combustion engine, an electric motor, etc.). For example, in this embodiment, the prime mover **15** comprises an internal combustion engine. In other embodiments, the prime mover **15** may comprise another type of motor (e.g., an electric motor) or a combination of different types of motor (e.g., an internal combustion engine and an electric motor). The prime mover **15** is in a driving relationship with the track system **14**. That is, the powertrain **12** transmits motive power from the prime mover **15** to the track system **14** in order to drive (i.e., impart motion to) the track system **14**.

The ski system **17** is turnable to allow steering of the snowmobile **10**. In this embodiment, the ski system **17** comprises a pair of skis $\mathbf{19}_1$, $\mathbf{19}_2$ connected to the frame **11** via a ski-supporting assembly **13**.

The seat **18** accommodates the user of the snowmobile **10**. In this case, the seat **18** is a straddle seat and the snowmobile **10** is usable by a single person such that the seat **18** accommodates only that person driving the snowmobile **10**. In other cases, the seat **18** may be another type of seat, and/or the snowmobile **10** may be usable by two individuals, namely one person driving the snowmobile **10** and a passenger, such that the seat **18** may accommodate both of these individuals (e.g., behind one another) or the snowmobile **10** may comprise an additional seat for the passenger.

The user interface **20** allows the user to interact with the snowmobile **10** to control the snowmobile **10**. More particularly, the user interface **20** comprises an accelerator, a brake control, and a steering device that are operated by the user to control motion of the snowmobile **10** on the ground. In this case, the steering device comprises handlebars, although it may comprise a steering wheel or other type of steering element in other cases. The user interface **20** also comprises an instrument panel (e.g., a dashboard) which provides indicators (e.g., a speedometer indicator, a tachometer indicator, etc.) to convey information to the user.

The track system **14** is configured to engage the ground to generate traction for the snowmobile **10**. With additional reference to FIGS. **2** and **3**, the track system **14** comprises the track **21** and a track-engaging assembly **24** for driving and guiding the track **21** around the track-engaging assembly **24**. More particularly, in this embodiment, the track-engaging assembly **24** comprises a frame **23** and a plurality of track-contacting wheels which includes a plurality of drive wheels $\mathbf{22}_1$, $\mathbf{22}_2$ and a plurality of idler wheels that includes rear idler wheels $\mathbf{26}_1$, $\mathbf{26}_2$, lower roller wheels $\mathbf{28}_1$-$\mathbf{28}_6$, and upper roller wheels $\mathbf{30}_1$, $\mathbf{30}_2$. As it is disposed between the track **21** and the frame **11** of the snowmobile **10**, the track-engaging assembly **24** can be viewed as implementing a suspension for the snowmobile **10**. The track system **14** has a longitudinal direction and a first longitudinal end and a second longitudinal end that define a length of the track system **14**, a widthwise direction and a width that is defined by a width W of the track **21**, and a heightwise direction that is normal to its longitudinal direction and its widthwise direction.

The track **21** is configured to engage the ground to provide traction to the snowmobile **10**. A length of the track **21** allows the track **21** to be mounted around the track-engaging assembly **24**. In view of its closed configuration without ends that allows it to be disposed and moved around the track-engaging assembly **24**, the track **21** can be referred to as an "endless" track. With additional reference to FIGS. **4** to **7**, the track **21** comprises an inner side **25** for facing the track-engaging assembly **24** and a ground-engaging outer side **27** for engaging the ground. A top run **65** of the track **21** extends between the longitudinal ends of the track system **14** and over the track-engaging assembly **24** (including over the wheels $\mathbf{22}_1$, $\mathbf{22}_2$, $\mathbf{26}_1$, $\mathbf{26}_2$, $\mathbf{28}_1$-$\mathbf{28}_6$, $\mathbf{30}_1$, $\mathbf{30}_2$), and a bottom run **66** of the track **21** extends between the longitudinal ends of the track system **14** and under the track-engaging assembly **24** (including under the wheels $\mathbf{22}_1$, $\mathbf{22}_2$, $\mathbf{26}_1$, $\mathbf{26}_2$, $\mathbf{28}_1$-$\mathbf{28}_6$, $\mathbf{30}_1$, $\mathbf{30}_2$). The bottom run **66** of the track **21** defines an area of contact **59** of the track **21** with the ground which generates traction and bears a majority of a load on the track system **14**, and which will be referred to as a "contact patch" of the track **21** with the ground. The track **21** has a longitudinal axis **85** which defines a longitudinal direction of the track **21** (i.e., a direction generally parallel to its longitudinal axis) and transversal directions of the track (i.e., directions transverse to its longitudinal axis), including a widthwise direction of the track (i.e., a lateral direction generally perpendicular to its longitudinal axis). The track **21** has a thickness direction normal to its longitudinal and widthwise directions.

The track **21** is elastomeric, i.e., comprises elastomeric material **53**, to be flexible around the track-engaging assembly **24**. The elastomeric material **53** of the track **21** can include any polymeric material with suitable elasticity. In this embodiment, the elastomeric material of the track **21** includes rubber. Various rubber compounds may be used and, in some cases, different rubber compounds may be present in different areas of the track **21**. In other embodiments, the elastomeric material **53** of the track **21** may include another elastomer in addition to or instead of rubber (e.g., polyurethane elastomer).

In this embodiment, as further discussed later, as shown in FIG. **8**, the track **21** also comprises reinforcing material **51** (e.g., reinforcing polymeric material) that is significantly stronger (e.g., stiffer, harder, and/or more resistant to wear) than the elastomeric material **53**. This may enhance various aspects of the track system **14**, such as, for example, by improving the rigidity characteristics of the track **21**, reducing the noise generated by the track system **14**, improving a resistance to wear (e.g., to cutting, chipping, chunking, cracking and/or tearing) of the track **21**, enhance heat management
(e.g., improve heat dissipation or reduce heat build-up) within the track **21**, and/or reduce a weight of the track **21**.

More particularly, the track **21** comprises an endless body **35** underlying its inner side **25** and ground-engaging outer side **27**. In view of its underlying nature, the body **35** will be referred to as a "carcass". The carcass **35** is elastomeric in that it comprises elastomeric material **38** which allows the carcass **35** to elastically change in shape and thus the track **21** to flex as it is in motion around the track-engaging assembly **24**. The elastomeric material **38**, which is part of the elastomeric material **53** of the track **21**, can be any polymeric material with suitable elasticity. In this embodiment, the elastomeric material **38** includes rubber. Various rubber compounds may be used and, in some cases, different rubber compounds may be present in different areas of the carcass **35**. In other embodiments, the elastomeric material **38** may include another elastomer in addition to or instead of rubber (e.g., polyurethane elastomer).

In this embodiment, as shown in FIGS. **9**A and **9**B, the carcass **35** comprises a plurality of reinforcements $\mathbf{45}_1$-$\mathbf{45}_P$ embedded in its rubber **38**. These reinforcements $\mathbf{45}_1$-$\mathbf{45}_P$ can take on various forms.

For example, in this embodiment, a subset of the reinforcements $\mathbf{45}_1$-$\mathbf{45}_P$ is a plurality of transversal stiffening rods $\mathbf{36}_1$-$\mathbf{36}_N$ that extend transversally to the longitudinal direction of the track **21** to provide transversal rigidity to the track **21**. More particularly, in this embodiment, the transversal stiffening rods $\mathbf{36}_1$-$\mathbf{36}_N$ extend in the widthwise direction of the track **21**. Each of the transversal stiffening rods $\mathbf{36}_1$-$\mathbf{36}_N$ may have various shapes and be made of any suitably rigid material (e.g., metal, polymer or composite material).

As another example, in this embodiment, the reinforcements $\mathbf{45}_i$, $\mathbf{45}_j$ are reinforcing layers that are flexible in the longitudinal direction of the track **21**.

For instance, in this embodiment, the reinforcement $\mathbf{45}_i$ is a layer of reinforcing cables $\mathbf{37}_1$-$\mathbf{37}_M$ that are adjacent to one another and extend generally in the longitudinal direction of the track **21** to enhance strength in tension of the track **21** along its longitudinal direction. In this case, each of the reinforcing cables $\mathbf{37}_1$-$\mathbf{37}_M$ is a cord including a plurality of strands (e.g., textile fibers or metallic wires). In other cases, each of the reinforcing cables $\mathbf{37}_1$-$\mathbf{37}_M$ may be another type of cable and may be made of any material suitably flexible longitudinally (e.g., fibers or wires of metal, plastic or composite material). In some examples of implementation, respective ones of the reinforcing cables $\mathbf{37}_1$-$\mathbf{37}_M$ may be constituted by a single continuous cable length wound helically around the track **21**. In other examples of implementation, respective ones of the transversal cables $\mathbf{37}_1$-$\mathbf{37}_M$ may be separate and independent from one another (i.e., unconnected other than by rubber of the track **21**).

Also, in this embodiment, the reinforcement $\mathbf{45}_j$ is a layer of reinforcing fabric **43**. The reinforcing fabric **43** comprises thin pliable material made usually by weaving, felting, knitting, interlacing, or otherwise crossing natural or synthetic elongated fabric elements, such as fibers, filaments, strands and/or others, such that some elongated fabric elements extend transversally to the longitudinal direction of the track **21** to have a reinforcing effect in a transversal direction of the track **21**. For instance, the reinforcing fabric **43** may comprise a ply of reinforcing woven fibers (e.g., nylon fibers or other synthetic fibers). For example, the reinforcing fabric **43** may protect the transversal stiffening rods 36_1-36_N, improve cohesion of the track **21**, and counter its elongation.

In some embodiments, as shown in FIG. **9**B, the carcass **35** may comprise only one type of reinforcement (e.g., the reinforcing cables 37_1-37_M) or any other selected combination of the above-mentioned reinforcements 45_1-45_P.

The carcass **35** may be molded into shape in a molding process during which the rubber **38** is cured. For example, in this embodiment, a mold may be used to consolidate layers of rubber providing the rubber **38** of the carcass **35**, the reinforcing cables 37_1-37_M and the layer of reinforcing fabric **43**.

The ground-engaging outer side **27** of the track **21** comprises a ground-engaging outer surface **31** of the carcass **35** and a plurality of traction projections 58_1-58_T (including traction projections 58_1, 58_2, 58_3, 58_4, 58_i, 58_k, 58_x, 58_T, and so on) that project from the ground-engaging outer surface **31** to enhance traction on the ground. The traction projections 58_1-58_T, which can be referred to as "traction lugs" or "traction profiles", may have any suitable shape (e.g., straight shapes, curved shapes, shapes with straight parts and curved parts, etc.).

A height H_o of a traction projection 58_x may have any suitable value. For example, in some embodiments, the height H_o of the traction projection 58_x may be at least 2 inches, in some cases at least 4 inches, in some cases at least 6 inches, and in some cases even more. The height of the traction projection 58_x may have any other suitable value in other embodiments. The traction projection 58_x also has a longitudinal axis **75** and a first longitudinal end 308_1 and a second longitudinal end 308_2 that define a length L of the traction projection 58_x. The longitudinal axis **75** of the traction projection 58_x extends transversally to the longitudinal direction of the track **21**, in this example in the widthwise direction of the track **21**.

In this embodiment, each of the traction projections 58_1-58_T is an elastomeric traction projection in that it comprises elastomeric material **41**. The elastomeric material **41**, which is part of the elastomeric material **53** of the track **21**, can be any polymeric material with suitable elasticity. More particularly, in this embodiment, the elastomeric material **41** includes rubber. Various rubber compounds may be used and, in some cases, different rubber compounds may be present in different areas of each of the traction projections 58_1-58_T. In other embodiments, the elastomeric material **41** may include another elastomer in addition to or instead of rubber (e.g., polyurethane elastomer).

The traction projections 58_1-58_T may be provided on the ground-engaging outer side **27** in various ways. For example, in this embodiment, the traction projections 58_1-58_T are provided on the ground-engaging outer side **27** by being molded with the carcass **35**.

The inner side **25** of the track **21** comprises an inner surface **32** of the carcass **35** and a plurality of inner projections 34_1-34_D that project from the inner surface **32** and are positioned to contact the track-engaging assembly **24** (e.g., at least some of the wheels 22_1, 22_2, 26_1, 26_2, 28_1-28_6, 30_1, 30_2) to do at least one of driving (i.e., imparting motion to) the track **21** and guiding the track **21**. Since each of them is used to do at least one of driving the track **21** and guiding the track **21**, the inner projections 34_1-34_D can be referred to as "drive/guide projections" or "drive/guide lugs". In some cases, a drive/guide lug 34_x may interact with a given one of the drive wheels 22_1, 22_2 to drive the track **21**, in which case the drive/guide lug 34_x is a drive lug. In other cases, a drive/guide lug 34_x may interact with a given one of the idler wheels 26_1, 26_2, 28_1-28_2, 30_1, 30_2 and/or another part of the track-engaging assembly **24** to guide the track **21** to maintain proper track alignment and prevent de-tracking without being used to drive the track **21**, in which case the drive/guide lug 34_x is a guide lug. In yet other cases, a drive/guide lug 34_x may both (i) interact with a given one of the drive wheels 22_1, 22_3 to drive the track **21** and (ii) interact with a given one of the idler WHEELS 26_1, 26_2, 28_1-28_6, 30_1, 30_2 and/or another part of the track-engaging assembly **24** to guide the track **21**, in which case the drive/guide lug 34_x is both a drive lug and a guide lug. A height H_i of a drive/guide lug 34_x may have any suitable value.

In this embodiment, each of the drive/guide lugs 34_1-34_D is an elastomeric drive/guide lug in that it comprises elastomeric material **42**. The elastomeric material **42**, which is part of the elastomeric material **53** of the track **21**, can be any polymeric material with suitable elasticity. More particularly, in this embodiment, the elastomeric material **42** includes rubber. Various rubber compounds may be used and, in some cases, different rubber compounds may be present in different areas of each of the drive/guide lugs 34_1-34_D. In other embodiments, the elastomeric material **42** may include another elastomer in addition to or instead of rubber (e.g., polyurethane elastomer).

The drive/guide lugs 34_1-34_D may be provided on the inner side **25** in various ways. For example, in this embodiment, the drive/guide lugs 34_1-34_D are provided on the inner side **25** by being molded with the carcass **35**.

In this embodiment, the carcass **35** has a thickness T_c which is relatively small. The thickness T_c of the carcass **35** is measured from the inner surface **32** to the ground-engaging outer surface **31** of the carcass **35** between longitudinally-adjacent ones of the traction projections 58_1-58_T. For example, in some embodiments, the thickness T_c of the carcass **35** may be no more than 0.25 inches, in some cases no more than 0.22 inches, in some cases no more than 0.20 inches, and in some cases even less (e.g., no more than 0.18 or 0.16 inches). The thickness T_c of the carcass **35** may have any other suitable value in other embodiments.

The track-engaging assembly **24** is configured to drive and guide the track **21** around the track-engaging assembly **24**.

Each of the drive wheels 22_1, 22_2 is rotatable by an axle for driving the track **21**. That is, power generated by the prime mover **15** and delivered over the powertrain **12** of the snowmobile **10** rotates the axle, which rotates the drive wheels 22_1, 22_2, which impart motion of the track **21**. In this embodiment, each drive wheel 22_i comprises a drive sprocket engaging some of the drive/guide lugs 34_1-34_D of the inner side **25** of the track **21** in order to drive the track **21**. In other embodiments, the drive wheel 22_i may be configured in various other ways. For example, in embodiments where the track **21** comprises drive holes, the drive wheel 22_i may have teeth that enter these holes in order to drive the track **21**. As yet another example, in some embodiments, the drive wheel 22_i may frictionally engage the inner side **25** of the track **21** in order to frictionally drive the track **21**. The drive wheels 22_1, 22_2 may be arranged in other configurations and/or the track system **14** may comprise more or less drive wheels (e.g., a single drive wheel, more than two drive wheels, etc.) in other embodiments.

The idler wheels **26**$_1$, **26**$_2$, **28**$_1$-**28**$_6$, **30**$_1$, **30**$_2$ are not driven by power supplied by the prime mover **15**, but are rather used to do at least one of guiding the track **21** as it is driven by the drive wheels **22**$_1$, **22**$_2$, tensioning the track **21**, and supporting part of the weight of the snowmobile **10** on the ground via the track **21**. More particularly, in this embodiment, the rear idler wheels **26**$_1$, **26**$_2$ are trailing idler wheels that maintain the track **21** in tension, guide the track **21** as it wraps around them, and can help to support part of the weight of the snowmobile **10** on the ground via the track **21**. The lower roller wheels **28**$_1$-**28**$_6$ roll on the inner side **25** of the track **21** along the bottom run **66** of the track **21** to apply the bottom run **66** on the ground. The upper roller wheels **30**$_1$, **30**$_2$ roll on the inner side **25** of the track **21** along the top run **65** of the track **21** to support and guide the top run **65** as the track **21** moves. The idler wheels **26**$_1$, **26**$_2$, **28**$_1$-**28**$_6$, **30**$_1$, **30**$_2$ may be arranged in other configurations and/or the track assembly **14** may comprise more or less idler wheels in other embodiments.

The frame **23** of the track system **14** supports various components of the track-engaging assembly **24**, including, in this embodiment, the idler wheels **26**$_1$, **26**$_2$, **28**$_1$-**28**$_6$, **30**$_1$, **30**$_2$. More particularly, in this embodiment, the frame **23** comprises an elongate support **62** extending in the longitudinal direction of the track system **14** along the bottom run **66** of the track **21** and frame members **49**$_1$-**49**$_F$ extending upwardly from the elongate support **62**.

The elongate support **62** comprises rails **44**$_1$, **44**$_2$ extending in the longitudinal direction of the track system **14** along the bottom run **66** of the track **21**. In this example, the idler wheels **26**$_1$, **26**$_2$, **28**$_1$-**28**$_6$ are mounted to the rails **44**$_1$, **44**$_2$. In this embodiment, the elongate support **62** comprises sliding surfaces **77**$_1$, **77**$_2$ for sliding on the inner side **25** of the track **21** along the bottom run **66** of the track **21**. Thus, in this embodiment, the idler wheels **26**$_1$, **26**$_2$, **28**$_1$-**28**$_6$ and the sliding surfaces **77**$_1$, **77**$_2$ of the elongate support **62** can contact the bottom run **66** of the track **21** to guide the track **21** and apply it onto the ground for traction. In this example, the sliding surfaces **77**$_1$, **77**$_2$ can slide against the inner surface **32** of the carcass **35** and can contact respective ones of the drive/guide lugs **34**$_1$-**34**$_D$ to guide the track **21** in motion. Also, in this example, the sliding surfaces **77**$_1$, **77**$_2$ are curved upwardly in a front region of the track system **14** to guide the track **21** towards the drive wheels **22**$_1$, **22**$_2$. In some cases, as shown in FIGS. **5** and **6**, the track **21** may comprise slide members **39**$_1$-**39**$_s$ that slide against the sliding surfaces **77**$_1$, **77**$_2$ to reduce friction. The slide members **39**$_1$-**39**$_s$, which can sometimes be referred to as "clips", may be mounted via holes (i.e., windows) **40**$_1$-**40**$_H$ (including holes **40**$_1$, **40**$_2$, **40**$_3$, **40**$_H$, and so on) of the track **21**. In other cases, the track **21** may be free of such slide members.

In this embodiment, the elongate support **62** comprises sliders **33**$_1$, **33**$_2$ mounted to respective ones of the rails **44**$_1$, **44**$_2$ and comprising respective ones of the sliding surfaces **77**$_1$, **77**$_2$. In this embodiment, the sliders **33**$_1$, **33**$_2$ are mechanically interlocked with the rails **44**$_1$, **44**$_2$. In other embodiments, instead of or in addition to being mechanically interlocked with the rails **44**$_1$, **44**$_2$, the sliders **33**$_1$, **33**$_2$ may be fastened to the rails **44**$_1$, **44**$_2$. For example, in some embodiments, the sliders **33**$_1$, **33**$_2$ may be fastened to the rails **44**$_1$, **44**$_2$ by one or more mechanical fasteners (e.g., bolts, screws, etc.), by an adhesive, and/or by any other suitable fastener.

In some examples, each slider **33**$_i$ may comprise a low-friction material which may reduce friction between its sliding surface **77**$_i$ and the inner side **25** of the track **21**. For instance, the slider **33**$_i$ may comprise a polymeric material having a low coefficient of friction with the rubber of the track **21**. For example, in some embodiments, the slider **33**$_i$ may comprise a thermoplastic material (e.g., a Hifax® polypropylene). The slider **33**$_i$ may comprise any other suitable material in other embodiments. For instance, in some embodiments, the sliding surface **77**$_i$ of the slider **33**$_i$ may comprise a coating (e.g., a polytetrafluoroethylene (PTFE) coating) that reduces friction between it and the inner side **25** of the track **21**, while a remainder of the slider **33**$_i$ may comprise any suitable material (e.g., a metallic material, another polymeric material, etc.).

While in embodiments considered above the sliding surface **77**$_i$ is part of the slider **33**$_i$ which is separate from and mounted to each rail **44**$_i$, in other embodiments, the sliding surface **77**$_i$ may be part of the rail **44**$_i$. That is, the sliding surface **77**$_i$ may be integrally formed (e.g., molded, cast, or machined) as part of the rail **44**$_i$.

The frame members **49**$_1$-**49**$_F$ extend upwardly from the elongate support **62** to hold the upper roller wheels **30**$_1$, **30**$_2$ such that the upper roller wheels **30**$_1$, **30**$_2$ roll on the inner side **25** of the track **21** along the top run **65** of the track **21**.

The track-engaging assembly **24** may be implemented in any other suitable way in other embodiments.

The reinforcing material **51** of the track **21**, which is significantly stronger (e.g., stiffer, harder, and/or more resistant to wear) than the elastomeric material **53** of the track **21**, may be useful for various purposes. For example, in some embodiments, the reinforcing material **51** may improve the rigidity characteristics of the track **21**, reduce the noise generated by the track system **14**, improve the resistance to wear (e.g., to cutting, chipping, chunking, cracking and/or tearing) of the track **21**, enhance heat management (e.g., improve heat dissipation or reduce heat build-up) within the track **21**, and/or reduce a weight of the track **21**.

In various embodiments, the reinforcing material **51** of the track **21** may constitute at least part of one or more components of the track **21**, such as the carcass **35**, the traction projections **58**$_1$-**58**$_T$ and/or the drive/guide lugs **34**$_1$-**34**$_D$. For example, in some embodiments, the reinforcing material **51** of the track **21** may constitute at least part of a periphery **80** of the track **21**, such as at least part of a periphery **82** of the carcass **35**, a periphery **84** of a traction projection **58**$_x$ and/or a periphery **86** of a drive/guide lug **34**$_x$.

The reinforcing material **51** of the track **21** has a continuous material structure and is therefore not reinforcing fabric (e.g., such as the reinforcing fabric **43**) or reinforcing cables (e.g., such as the reinforcing cables **37**$_1$-**37**$_M$).

More particularly, in various embodiments, the reinforcing material **51** of the track **21** may comprise a layer of reinforcing material **61** contiguous to (e.g., overlying) the elastomeric material **53** of a given component **67** of the track **21** (e.g., the carcass **35**, a traction projection **58**$_x$ or a drive/guide lug **34**$_x$). The layer of reinforcing material **61** may be thin, notably significantly thinner than the elastomeric material **53** of the given component **67** of the track **21**. For example, in some embodiments, a ratio of a thickness T_r of the layer of reinforcing material **61** over a thickness T_e of the elastomeric material **53** of the given component **67** of the track **21** may be no more than 0.1, in some cases no more than 0.075, in some cases no more than 0.05, in some cases no more than 0.025, in some cases no more than 0.01, and in some cases even less. For instance, in some embodiments, the thickness T_r of the layer of reinforcing material **61** may be no more than 0.02 inches, in some cases no more than 0.015 inches, in some cases no more than 0.012 inches, in some cases no more than 0.01 inches, in some cases no more than 0.005 inches, and in some cases even less. The layer of reinforcing material **61** may thus include a sheet (e.g., a film or other thin sheet) of the reinforcing material **51**.

The reinforcing material **51** of the track **21** may be significantly stronger than the elastomeric material **53** of the track **21** in various ways. For example, in some embodiments:

The reinforcing material **51** may be stiffer than the elastomeric material **53**. For instance, in some embodiments, a ratio of a modulus of elasticity (i.e., Young's modulus) of the reinforcing material **51** over a modulus of elasticity of the elastomeric material **53** may be at least 10, in some cases at least 50, in some cases at least 80, in some cases at least 100, in some cases at least 120 and in some cases even more. For example, in some embodiments, the modulus of elasticity of the reinforcing material **51** may be at least 80 MPa, in some cases at least 200 MPa, in some cases at least 500 MPa, in some cases at least 800 MPa, in some cases at least 1000 MPa and in some cases even more;

The reinforcing material **51** may be harder than the elastomeric material **53**. For instance, in some embodiments, a ratio of a hardness (e.g., on a Shore D scale) of the reinforcing material **51** over a hardness of the elastomeric material **53** may be at least 1.2, in some cases at least 1.5, in some cases at least 2, in some cases at least 2.5 and in some cases even more. For example, in some embodiments, the hardness of the reinforcing material **51** may be at least 40 Shore D, in some cases at least 50 Shore D, in some cases at least 60 Shore D, in some cases at least 70 Shore D, in some cases at least 80 Shore D and in some cases even more; and/or

The reinforcing material **51** may be more resistant to wear (e.g., abrasion) than the elastomeric material **53**. For instance, in some embodiments, a ratio of a wear resistance of the reinforcing material **51** over a wear resistance of the elastomeric material **53** may be no more than 0.95, in some cases no more than 0.8, in some cases no more than 0.7, in some cases no more than 0.6, in some cases no more than 0.5 and in some cases even less. The wear resistance of the reinforcing material **51** can be taken as an abrasion resistance of the reinforcing material **51** and the wear resistance of the elastomeric material **53** can be taken as an abrasion resistance of the elastomeric material **53**. For example, the wear resistance of each of the reinforcing material **51** and the elastomeric material **53**, expressed as its abrasion resistance, may be measured under ASTM D-5963 conditions (e.g., sample dimensions; loading conditions; etc.). For instance, in some embodiments, the abrasion resistance of the reinforcing material **51** may be at least 40 mm^3, in some cases at least 60 mm^3, in some cases at least 80 mm^3, in some cases at least 100 mm^3, in some cases at least 120 mm^3, in some cases at least 150 mm^3 and in some cases even more.

In this embodiment, the reinforcing material **51** is reinforcing polymeric material. For example, in some embodiments, the reinforcing polymeric material **51** may be non-elastomeric (i.e., not be an elastomer). In some cases, the reinforcing polymeric material **51** may comprise thermoplastic material. For instance, in some embodiments, the reinforcing polymeric material **51** may comprise ultra-high-molecular-weight polyethylene (UHMW or UHMWPE). The reinforcing polymeric material **51** may comprise any other suitable polymer in other embodiments, such as polyethylene (PE) (e.g., low-density polyethylene (LDPE) or high-density polyethylene (HDPE)), polypropylene (PP), polytetrafluoroethylene (PTFE), a thermoplastic elastomer (TPE) such as thermoplastic polyurethane (TPU), polyether ether ketone (PEEK) or other polyaryletherketone (PAEK), polycarbonate, nylon or other polyamide, etc.

In some examples of implementation, the reinforcing polymeric material **51** may be a composite material. For instance, the reinforcing polymeric material **51** may be a fiber-matrix composite material that comprises a polymeric matrix in which fibers are embedded (i.e., a fiber-reinforced polymeric material). The polymeric matrix may include any suitable polymeric resin (e.g., a thermoplastic or thermosetting resin, such as epoxy, polyethylene, polypropylene, acrylic, thermoplastic polyurethane (TPU), polyether ether ketone (PEEK) or other polyaryletherketone (PAEK), polyethylene terephthalate (PET), polyvinyl chloride (PVC), poly(methyl methacrylate) (PMMA), polycarbonate, acrylonitrile butadiene styrene (ABS), nylon, polyimide, polysulfone, polyamide-imide, self-reinforcing polyphenylene, polyester, vinyl ester, vinyl ether, polyurethane, cyanate ester, phenolic resin, etc., a hybrid thermosetting-thermoplastic resin, or any other suitable resin. The fibers may be made of any suitable material (e.g., carbon fibers, aramid fibers (e.g., Kevlar fibers), boron fibers, silicon carbide fibers, etc.).

Examples of embodiments in which the reinforcing polymeric material **51** of the track **21** may be provided in various ways will now be discussed.

1. Carcass's Periphery

In some embodiments, the reinforcing polymeric material **51** of the track **21** may constitute at least part of the periphery **82** of the carcass **35**, such as at least part of the inner surface **32** and/or at least part of the ground-engaging outer surface **31** of the carcass **35**. This may improve rigidity characteristics of the carcass **35** and thus those of the track **21**, reduce the noise generated by the track system **14**, improve a resistance to wear of the carcass **35**, and/or reduce a weight of the carcass **35** and thus the weight of the track **21**.

For example, in some embodiments, as shown in FIG. **10**, the reinforcing polymeric material **51** may comprise a layer of reinforcing polymeric material **88** constituting at least part of the ground-engaging outer surface **31** of the carcass **35**.

Where the layer of reinforcing polymeric material **88** is stiffer than the elastomeric material **38** of the carcass **35**, this may help to increase a longitudinal rigidity of the carcass **35**, i.e., a rigidity of the carcass **35** in the longitudinal direction of the track **21** which refers to the carcass's resistance to bending about an axis parallel to the widthwise direction of the track **21**, and/or (2) a widthwise rigidity of the carcass **35**, i.e., a rigidity of the carcass **35** in the widthwise direction of the track **21** which refers to the carcass's resistance to bending about an axis parallel to the longitudinal direction of the track **21**.

Increasing the widthwise rigidity of the carcass **35** may help to improve traction and floatation.

Increasing the longitudinal rigidity of the carcass **35** may help to reduce noise generated by the track system **14**, such as in cases where the carcass **35** comprises the transversal stiffening rods $\mathbf{36}_1$-$\mathbf{36}_N$ by reducing a difference in rigidity between areas which have the transversal stiffening rods $\mathbf{36}_1$-$\mathbf{36}_N$ and areas that do not have the transversal stiffening rods $\mathbf{36}_1$-$\mathbf{36}_N$ when the roller wheels $\mathbf{28}_1$-$\mathbf{28}_6$, $\mathbf{30}_1$, $\mathbf{30}_2$ pass over these areas. In other words, the increased longitudinal rigidity of the carcass **35** may reduce deformation of the carcass **35** against impacts such as when the roller wheels

28_1-28_6, 30_1, 30_2 roll over the carcass **35**. This in turn may cause a reduction in noise generated by the track system **14**.

For instance, in some embodiments, the track **21** may generate less noise than if the layer of reinforcing polymeric material **88** was omitted but the track **21** was otherwise identical. For instance, in some embodiments, a noise level generated by the track **21** at a given speed may be at least 2%, in some cases at least 4%, and in some cases at least 6% less than that which would be generated if the layer of reinforcing polymeric material **88** was omitted. More specifically, tests have been performed to compare the noise generated by a conventional track (i.e., a track without the layer of polymeric reinforcing material **88** but otherwise identical to the track **21**) to the noise generated by two variants of the track **21** which include the layer of reinforcing polymeric material **88**. As shown in FIG. **40**, test data indicates that at a vehicle speed of approximately 27 mph and above, the noise generated by the track **21** (i.e., with the layer of reinforcing polymeric material **88**) is less than the noise generated by the conventional track at the same vehicle speed. More particularly, in the vehicle speed range between 38 mph and 60 mph, the noise generated by the track **21** is over 3% less than the noise generated by the conventional track. For instance, the noise generated by the track **21** in this vehicle speed range may be between 3% and 6% less than the noise generated by the conventional track at a similar vehicle speed range.

Where the layer of reinforcing polymeric material **88** is more resistant to wear (e.g., abrasion and/or tearing) than the elastomeric material **38** of the carcass **35**, this may help to protect the carcass **35** and reduce wear of the carcass **35** as the track **21** travels on the ground.

This may also help to reduce the thickness T_c of the carcass **35**, such as by using less of the elastomeric material **38** of the carcass **35**. In turn, this may reduce the weight of the carcass **35** and, thus, the weight of the track **21**. For example, in some embodiments, the thickness T_c of the carcass **35** may be no more than 0.2 inches, in some cases no more than 0.018 inches, in some cases no more than 0.016 inches, in some cases no more than 0.014 inches, in some cases no more than 0.012 inches and in some cases even less.

In this embodiment, the layer of reinforcing polymeric material **88** occupies at least a substantial part of each of a plurality of traction-projection-free areas 90_1-90_F of the ground-engaging outer surface **31**, i.e., areas of the ground-engaging outer surface **31** that are disposed between respective ones of the traction projections 58_1-58_T and that are free of traction projections. For instance, the layer of reinforcing polymeric material **88** may occupy at least a majority (i.e., a majority or an entirety) of the width W of the track **21**. More specifically, in this embodiment, the layer of reinforcing polymeric material **88** occupies the entirety of the width W of the track **21**. Moreover, the layer of reinforcing polymeric material **88** may occupy at least a majority (i.e., a majority or an entirety) of a dimension D_F of a traction-projection-free area 90_i in the longitudinal direction of the track **21**. In this embodiment, the layer of reinforcing polymeric material **88** occupies the entirety of the dimension D_F.

Furthermore, in this embodiment, the layer of reinforcing polymeric material **88** is thin. For instance, in this embodiment, a thickness T_1 of the layer of reinforcing polymeric material **88** is less than the thickness T_c of the carcass **35**. For example, in some cases, a ratio of the thickness T_1 of the layer of reinforcing polymeric material **88** over the thickness T_c of the carcass **35** may be no more than 0.15, in some cases no more than 0.1, in some cases no more than 0.05, and in some cases even less (e.g., 0.02).

As another example, as shown in FIG. **11**, the reinforcing polymeric material **51** may comprise a layer of reinforcing polymeric material **92** constituting at least part of the inner surface **32** of the carcass **35**.

This may have similar effects as described above in respect of the layer of reinforcing polymeric material **88** constituting at least part of the ground-engaging outer surface **31** of the carcass **35**.

In this embodiment, the layer of reinforcing polymeric material **92** may occupy at least a majority (i.e., a majority or an entirety) of the width W of the track **21**. More specifically, in this embodiment, the layer of reinforcing polymeric material **92** occupies the entirety of the width W of the track **21**.

Also, in this embodiment, the layer of reinforcing polymeric material **92** may occupy at least a substantial part of each of a plurality of drive/guide-lug-free areas 93_1-93_F of the inner surface **32**, i.e., areas of the inner surface **32** that are disposed between respective ones of the drive/guide lugs 34_1-34_D and that are free of drive/guide lugs. For instance, the layer of reinforcing polymeric material **88** may occupy at least a majority (i.e., a majority or an entirety) of the width W of the track **21**. More specifically, in this embodiment, the layer of reinforcing polymeric material **88** occupies the entirety of the width W of the track **21**. Moreover, the layer of reinforcing polymeric material **88** may occupy at least a majority (i.e., a majority or an entirety) of a dimension D_G of a drive/guide-lug-free area 93_i in the longitudinal direction of the track **21**. In this embodiment, the layer of reinforcing polymeric material **92** occupies the entirety of the dimension D_G.

Furthermore, in this embodiment, the layer of reinforcing polymeric material **92** is thin. For instance, a thickness T_2 of the layer of reinforcing polymeric material **92** is less than the thickness T_c of the carcass **35**. For example, in some cases, a ratio of the thickness T_2 of layer of reinforcing polymeric material **92** over the thickness T_c of the carcass **35** may be no more than 0.15, in some cases no more than 0.1, in some cases no more than 0.05 and in some cases even less (e.g., 0.02).

As another example, in some embodiments, as shown in FIG. **12**, the layer of reinforcing polymeric material **92** may include a plurality of segments 94_1-94_s that are spaced apart from one another and constitute respective parts of the inner surface **32** of the carcass **35**. This may be useful to rigidify, protect and/or otherwise enhance certain regions of the inner surface **32** of the carcass **35**.

For instance, in this embodiment, the segments 94_1-94_s of the layer of reinforcing polymeric material **92** may be disposed to engage the sliding surfaces 77_1, 77_2 of the rails 44_1, 44_2 and/or the the idler wheels 26_1, 26_2, 28_1-28_6 of the track-engaging assembly **24** of the track system **14**. This may help to facilitate relative motion (e.g., reduce friction) between the bottom run **66** of the track **21** and the sliding surfaces 77_1, 77_2 and/or the the idler wheels 26_1, 26_2, 28_1-28_6.

Where a coefficient of friction between the reinforcing polymeric material **51** and the sliding surfaces 77_1, 77_2 and/or the the idler wheels 26_1, 26_2, 28_1-28_6 is less than a coefficient of friction between the elastomeric material **38** of the carcass **35** and the sliding surfaces 77_1, 77_2 and/or the the idler wheels 26_1, 26_2, 28_1-28_6, this may help to reduce frictional effects between these components.

More particularly, in this embodiment, the segments 94_1-94_s of the layer of reinforcing polymeric material **92** are disposed to slide against the sliding surfaces 77_1, 77_2 of the rails 44_1, 44_2 of the track-engaging assembly **24**. This allows the track **21** to be free of slide members (e.g., clips), such as the the slide members 39_1-39_S discussed above in respect of FIGS. **5** and **6**, which could otherwise be used to slide against the sliding surfaces 77_1, 77_2 to reduce friction. This freeness from slide members may help to reduce the weight of the track **21**.

In some cases, as shown in FIG. **13**, the sliding surfaces 77_1, 77_2 of the rails 44_1, 44_2 of the track-engaging assembly **24** may be made of a material **96** that slides well against the segments 94_1-94_s of the inner side **25** of the track **21**. For example, in some embodiments, the material **96** of the sliding surfaces 77_1, 77_2 of the rails 44_1, 44_2 of the track-engaging assembly **24** may be metallic material, such as aluminum.

As another example, in some embodiments, as shown in FIG. **14**A, the reinforcing polymeric material **51** may comprise the layer of reinforcing polymeric material **92** constituting at least part of the inner surface **32** of the carcass **35** and the layer of reinforcing polymeric material **88** constituting at least part of the ground-engaging outer surface **31** of the carcass **35**.

In some embodiments, the layer of reinforcing polymeric material **92** constituting at least part of the inner surface **32** of the carcass **35** and the layer of reinforcing polymeric material **88** constituting at least part of the ground-engaging outer surface **31** of the carcass **35** may be substantially identical in thickness and material composition. That is, the thickness T_1 of the layer of reinforcing polymeric material **88** is substantially identical to the thickness T_2 of the layer of reinforcing polymeric material **92** and a material composition of the layer of reinforcing polymeric material **88** is substantially identical to a material composition of the layer of reinforcing polymeric material **92**.

In other embodiments, the layer of reinforcing polymeric material **92** constituting at least part of the inner surface **32** of the carcass **35** and the layer of reinforcing polymeric material **88** constituting at least part of the ground-engaging outer surface **31** of the carcass **35** may differ in thickness and/or material composition. That is, the thickness T_1 of the layer of reinforcing polymeric material **88** is different from the thickness T_2 of the layer of reinforcing polymeric material **92** and/or the material composition of the layer of reinforcing polymeric material **88** is different from the material composition of the layer of reinforcing polymeric material **92**.

For instance, in some embodiments, a stiffness of the layer of reinforcing polymeric material **92** constituting at least part of the inner surface **32** of the carcass **35** may be different from a stiffness of the layer of reinforcing polymeric material **88** constituting at least part of the ground-engaging outer surface **31** of the carcass **35**.

Notably, the layer of reinforcing polymeric material **88** constituting at least part of the ground-engaging outer surface **31** of the carcass **35** may be stiffer than the layer of reinforcing polymeric material **92** constituting at least part of the inner surface **32** of the carcass **35**. This may be implemented in various ways. For example, the thickness T_1 of the layer of reinforcing polymeric material **88** may be greater than the thickness T_2 of the layer of reinforcing polymeric material **92**. For instance, in some cases, a ratio T_1/T_2 of the thickness T_1 of the layer of reinforcing polymeric material **88** over the thickness T_2 of the layer of reinforcing polymeric material **92** may be at least 1.1, in some cases at least 1.3, in some cases at least 1.5, in some cases at least. 1.7, in some cases at least 2 and in some cases even more.

Alternatively or additionally, a material **89** of the layer of reinforcing polymeric material **88** constituting at least part of the ground-engaging outer surface **31** of the carcass **35** may be stiffer than a material **91** of the layer of reinforcing polymeric material **92** constituting at least part of the inner surface **32** of the carcass **35**. For instance, in some cases, a ratio of the modulus of elasticity of the material **89** of the layer of reinforcing polymeric material **88** over the modulus of elasticity of the material **91** of the layer of reinforcing polymeric material **92** may be at least 2, in some cases at least 5, in some cases at least 10, in some cases at least 20, in some cases at least 35 and in some cases even more.

In other embodiments, the layer of reinforcing polymeric material **92** constituting at least part of the inner surface **32** of the carcass **35** may be stiffer than the layer of reinforcing polymeric material **88** constituting at least part of the ground-engaging outer surface **31** of the carcass **35**.

For example, the thickness T_2 of the layer of reinforcing polymeric material **92** may be greater than the thickness T_1 of the layer of reinforcing polymeric material **88**. For instance, in some cases, a ratio T_2/T_1 of the thickness T_2 of the layer of reinforcing polymeric material **92** over the thickness T_1 of the layer of reinforcing polymeric material **88** may be at least 1.1, in some cases at least 1.3, in some cases at least 1.5, in some cases at least. 1.7, in some cases at least 2 and in some cases even more.

Alternatively or additionally, the material **91** of the layer of reinforcing polymeric material **92** constituting at least part of the inner surface **32** of the carcass **35** may be stiffer than the material **89** of the layer of reinforcing polymeric material **88** constituting at least part of the ground-engaging outer surface **31** of the carcass **35**. For instance, in some cases, a ratio of the modulus of elasticity of the material **91** of the layer of reinforcing polymeric material **92** over the modulus of elasticity of the material **89** of the layer of reinforcing polymeric material **88** may be at least 2, in some cases at least 5, in some cases at least 10, in some cases at least 20, in some cases at least 35 and in some cases even more.

In some embodiments, as shown in FIGS. **14**B and **14**C, as discussed above, the layer of reinforcing polymeric material **88** may occupy at least a substantial part of each of respective ones of the traction-projection-free areas 90_1-90_F of the ground-engaging outer surface **31** and the layer of reinforcing polymeric material **92** may occupy at least a substantial part of each of respective ones of the drive/guide-lug-free areas 93_1-93_F of the inner surface **32**. For instance, each of the layer of reinforcing polymeric material **88** and the layer of reinforcing polymeric material **92** may occupy at least a majority (i.e., a majority or an entirety) of the width W of the track **21**. More specifically, in this embodiment, each of the layer of reinforcing polymeric material **88** and the layer of reinforcing polymeric material **92** occupies the entirety of the width W of the track **21**. Moreover, each of the layer of reinforcing polymeric material **88** and the layer of reinforcing polymeric material **92** may occupy at least a majority (i.e., a majority or an entirety) of each of the dimension D_F of a traction-projection-free area 90_i in the longitudinal direction of the track **21** and the dimension D_G of a drive/guide-lug-free area 93_i in the longitudinal direction of the track **21**. In this embodiment, the layer of reinforcing polymeric material **88** occupies the entirety of the dimension D_F and the layer of reinforcing polymeric material **92** occupies the entirety of the dimension D_6. For instance, in this embodiment, the layer of reinforcing polymeric material **88** comprises a plurality of laterally-extending segments 95_1-95_S (e.g., bands) that are elongated transversally to the longitudinal direction of the track **21** (e.g., in the widthwise direction of the track **21**), spaced from one another in the longitudinal direction of the track **21**, and disposed between longitudinally-adjacent ones of the traction projections 58_1-58_T, while the layer of reinforcing polymeric material **92** comprises a plurality of laterally-extending segments 97_1-97_S (e.g., bands) that are elongated transversally to the longitudinal direction of the track **21** (e.g., in the widthwise direction of the track **21**), spaced from one another in the longitudinal direction of the track **21**, and disposed between longitudinally-successive ones of the drive/guide lugs 34_1-34_D.

2. Traction Projection's Periphery

In some embodiments, as shown in FIGS. **15** and **16**, the reinforcing polymeric material **51** of the track **21** may constitute at least part of the periphery **84** of a traction projection 58_x of the track **21**, such as at least part of a front surface **98**, a rear surface **100**, lateral surfaces 102_1, 102_2, and/or a tip **104** of the traction projection 58_x. This may improve rigidity characteristics of the traction projection 58_x, improve a resistance to wear of the traction projection 58_x, and/or reduce a weight of the traction projection 58_x and thus the weight of the track **21**.

For example, in this embodiment, the reinforcing polymeric material **51** may comprise a layer of reinforcing polymeric material **106** constituting at least part of a given one of the front surface **98** and the rear surface **100** of the traction projection 58_x, while the other one of the front surface **98** and the rear surface **100** of the traction projection 58_x is free of reinforcing polymeric material. More particularly, in this embodiment, the layer of reinforcing polymeric material **106** constitutes at least part of the rear surface **100** of the traction projection 58_x, while the front surface **98** of the traction projection 58_x is free of reinforcing polymeric material.

Where the layer of reinforcing polymeric material **106** is stiffer than the elastomeric material **41** of the traction projection 58_x, this may help to increase a rigidity of the traction projection 58_x. Also, in this example, this may make it easier for the traction projection 58_x to flex in a given way (e.g., forwardly) in the longitudinal direction of the track **21** than to flex in an opposite way (e.g., rearwardly) in the longitudinal direction of the track **21**, thus creating an “asymmetrical” bending stiffness of the traction projection 58_x.

Where the layer of reinforcing polymeric material **106** is more resistant to wear (e.g., abrasion and/or tearing) than the elastomeric material **41** of the traction projection 58_x, this may help to protect the traction projection 58_x and reduce wear of the traction projection 58_x as the track **21** travels on the ground.

This may also help to reduce a size of the traction projection 58_x, such as by using less of the elastomeric material **41** of the traction projection 58_x. In turn, this may reduce the weight of the traction projection 58_x and, thus, the weight of the track **21**.

In this embodiment, the layer of reinforcing polymeric material **106** may occupy at least a majority (i.e., a majority or an entirety) of the length L of the traction projection 58_x in the widthwise direction of the track **21**. In this embodiment, the layer of reinforcing polymeric material **106** occupies the entirety of the length L.

The layer of reinforcing polymeric material **106** is thin. For instance, in this embodiment, a thickness T_A of the layer of reinforcing polymeric material **106** is less than a dimension W_L of the traction projection 58_x in the longitudinal direction of the track **21**. For example, in some cases, a ratio T_A/W_L of the thickness T_A of the layer of reinforcing polymeric material **106** over the dimension W_L of the traction projection 58_x in the longitudinal direction of the track **21** may be no more than 0.2, in some cases no more than 0.1, in some cases no more than 0.05, in some cases no more than 0.01 and in some cases even less (e.g., 0.004).

As another example, in some embodiments, as shown in FIG. **17**, the layer of reinforcing polymeric material **106** includes a plurality of segments 108_1-108_C that are spaced apart from one another and constitute respective parts of the rear surface **100** of the traction projection 58_x. This may be useful to rigidify, protect and/or otherwise enhance certain regions of the traction projection 58_x.

More particularly, in this embodiment, with additional reference to FIG. **39**, the segments 108_1-108_C are part of columns 110_1-110_C of the traction projection 58_x of a track **21'** that is otherwise similar to the track **21**. The columns 110_1-110_C constitute parts of the traction projection 58_x that are enlarged relative to a majority of the traction projection 58_x in the longitudinal direction of the track **21**. In this embodiment, the columns 110_1-110_C extend in a height direction of the traction projection 58_x for a majority (i.e., a majority or an entirety) of the height H_o of the traction projection 58_x. More specifically, in this embodiment the columns 110_1-110_C are ribs that rigidify the traction projection 58_x. The presence of the segments 108_1-108_C on the columns 110_1-110_C may further enhance the rigidifying effect that the columns 110_1-110_C have on the traction projection 58_x.

As another example, in some embodiments, as shown in FIGS. **18** to **20**, the reinforcing polymeric material **51** may comprise a layer of reinforcing polymeric material **112** constituting at least part of the front surface **98** of the traction projection 58_x, while the rear surface **100** of the traction projection 58_x is free of reinforcing polymeric material. This may have similar effects as described above in respect of the layer of reinforcing polymeric material **106** constituting at least part of the rear surface **100** of the traction projection 58_x.

As another example, in some embodiments, as shown in FIG. **21**, the reinforcing polymeric material **51** may comprise the layer of reinforcing polymeric material **112** constituting at least part of the front surface **98** of the traction projection 58_x and the layer of reinforcing polymeric material **106** constituting at least part of the rear surface **100** of the traction projection 58_x. This may have similar effects as described above.

In some embodiments, the layer of reinforcing polymeric material **106** constituting at least part of the rear surface **100** of the traction projection 58_x and the layer of reinforcing polymeric material **112** constituting at least part of the front surface **98** of the traction projection 58_x may be substantially identical in thickness and material composition. That is, the thickness T_A of the layer of reinforcing polymeric material **106** is substantially identical to a thickness T_B of the layer of reinforcing polymeric material **112** and a material composition of the layer of reinforcing polymeric material **106** is substantially identical to a material composition of the layer of reinforcing polymeric material **112**.

In other embodiments, the layer of reinforcing polymeric material **106** constituting at least part of the rear surface **100** of the traction projection 58_x and the layer of reinforcing polymeric material **112** constituting at least part of the front surface **98** of the traction projection 58_x may differ in thickness and/or material composition. That is, the thickness T_A of the layer of reinforcing polymeric material **106** is different from the thickness T_B of the layer of reinforcing polymeric material **112** and/or the material composition of the layer of reinforcing polymeric material **106** is different from the material composition of the layer of reinforcing polymeric material **112**.

For instance, in some embodiments, a stiffness of the layer of reinforcing polymeric material **106** constituting at least part of the rear surface **100** of the traction projection 58_x may be different from a stiffness of the layer of reinforcing polymeric material **112** constituting at least part of the front surface **98** of the traction projection 58_x.

Notably, the layer of reinforcing polymeric material **112** constituting at least part of the front surface **98** of the traction projection 58_x may be stiffer than the layer of reinforcing polymeric material **106** constituting at least part of the rear surface **100** of the traction projection 58_x. This may be implemented in various ways. For example, the thickness T_B of the layer of reinforcing polymeric material **112** may be greater than the thickness T_A of the layer of reinforcing polymeric material **106**. For instance, in some cases, a ratio T_B/T_A of the thickness T_B of the layer of reinforcing polymeric material **112** over the thickness T_A of the layer of reinforcing polymeric material **106** may be at least 1.2, in some cases at least 1.5, in some cases at least 2, in some cases at least 3, in some cases at least 4 and in some cases even more.

Alternatively or additionally, a material **114** of the layer of reinforcing polymeric material **112** constituting at least part of the front surface **98** of the traction projection 58_x may be stiffer than a material **116** of the layer of reinforcing polymeric material **106** constituting at least part of the rear surface **100** of the traction projection 58_x. For instance, in some cases, a ratio of the modulus of elasticity of the material **114** of the layer of reinforcing polymeric material **112** over the modulus of elasticity of the material **116** of the layer of reinforcing polymeric material **106** may be at least 2, in some cases at least 5, in some cases at least 10, in some cases at least 20, in some cases at least 35 and in some cases even more.

In other embodiments, the layer of reinforcing polymeric material **106** constituting at least part of the rear surface **100** of the traction projection 58_x may be stiffer than the layer of reinforcing polymeric material **112** constituting at least part of the front surface **98** of the traction projection 58_x.

For example, the thickness T_A of the layer of reinforcing polymeric material **106** may be greater than the thickness T_B of the layer of reinforcing polymeric material **112**. For instance, in some cases, a ratio T_A/T_B of the thickness T_A of the layer of reinforcing polymeric material **106** over the thickness T_B of the layer of reinforcing polymeric material **112** may be at least 1.2, in some cases at least 1.5, in some cases at least 2, in some cases at least 3, in some cases at least 4 and in some cases even more.

Alternatively or additionally, the material **116** of the layer of reinforcing polymeric material **106** constituting at least part of the rear surface **100** of the traction projection 58_x may be stiffer than the material **114** of the layer of reinforcing polymeric material **112** constituting at least part of the front surface **98** of the traction projection 58_x. For instance, in some cases, a ratio of the modulus of elasticity of the material **116** of the layer of reinforcing polymeric material **106** over the modulus of elasticity of the material **114** of the layer of reinforcing polymeric material **112** may be at least 2, in some cases at least 5, in some cases at least 10, in some cases at least 20, in some cases at least 35 and in some cases even more.

As another example, in some embodiments, as shown in FIG. **22**, the reinforcing polymeric material **51** may comprise a layer of reinforcing polymeric material **118** constituting at least part of the tip **104** of the traction projection 58_x. This may help to protect the traction projection 58_x against wear. This may also help to reduce or avoid markings on the ground by the elastomeric material **41** of the traction projection 58_x (e.g., emulating a type of "non-marking" rubber).

As another example, in some embodiments, as shown in FIG. **23**, the reinforcing polymeric material **51** may comprise the layer of reinforcing polymeric material **112** constituting at least part of the front surface **98** of the traction projection 58_x, the layer of reinforcing polymeric material **106** constituting at least part the rear surface **100** of the traction projection 58_x, and the layer of reinforcing polymeric material **118** constituting at least part of the tip **104** of the traction projection 58_x.

For instance, in this embodiment, as shown in FIG. **24**, the reinforcing polymeric material **51** may constitute at least a majority (e.g. less than an entirety) of the periphery **84** of the traction projection 58_x. In this example, the reinforcing polymeric material **51** constitutes an entirety of the periphery **84** of the traction projection 58_x, such that the elastomeric material **41** of the traction projection 58_x is completely covered by the reinforcing polymeric material **51**.

3. Drive/Guide's Lug Periphery

In some embodiments, as shown in FIGS. **25** and **26**, the reinforcing polymeric material **51** of the track **21** may constitute at least part of the periphery **86** of a drive/guide lug 34_x of the track **21**, such as at least part of a front surface **120**, a rear surface **122**, lateral surfaces 124_1, 124_2, and/or a tip **126** of the drive/guide lug 34_x. This may improve rigidity characteristics of the drive/guide lug 34_x, improve a resistance to wear of the drive/guide lug 34_x, and/or reduce a weight of the drive/guide lug 34_x and thus the weight of the track **21**. This may be effected as discussed above in respect of the reinforcing polymeric material **51** constituting at least part of the periphery **84** of a traction projection 58_x of the track **21**.

The track **21**, including the reinforcing polymeric material **51**, may be manufactured in any suitable way.

For example, in some embodiments, as mentioned above, the carcass **35** may be molded into shape in the molding process during which the rubber **38** is cured, such as by consolidating layers of rubber providing the rubber **38** of the carcass **35** in the mold, while the reinforcing cables 37_1-37_M and the layer of reinforcing fabric **43**, and the traction projections 58_1-58_T and the drive/guide lugs 34_1-34_D are provided on the ground-engaging outer side **27** and the inner side **25** by being molded with the carcass **35** in the mold. In some examples of implementation, the elastomeric material **41** of one or more of the traction projections 58_1-58_T and/or the elastomeric material **42** of one or more of the drive/guide lugs 34_1-34_D may be at least partly formed by the layers of rubber provided in the mold to also provide the rubber **38** of the carcass **35**. In other examples of implementation, the elastomeric material **41** of one or more of the traction projections 58_1-58_T and/or the elastomeric material **42** of one or more of the drive/guide lugs 34_1-34_D may be at least partly provided by distinct pieces (e.g., blocks) of elastomeric material placed in the mold and spaced in the longitudinal direction of the track **21**.

The reinforcing polymeric material **51** may be provided in any suitable way in various embodiments.

For instance, in some embodiments, as shown in FIG. **27**, the reinforcing polymeric material **51** may be bonded to a portion **69** of the elastomeric material **53** of the track **21** before molding of the track **21**. For instance, in some cases, the layer of reinforcing polymeric material **61** may be provided as a thin sheet bonded to a sheet of the elastomeric material **53**. The layer of reinforcing polymeric material **61** may be provided as a thin sheet by calendering or extrusion of the layer of reinforcing polymeric material **61** or in any other suitable manner. The layer of reinforcing polymeric material **61** may be bonded to the sheet of elastomeric material **53** by applying pressure and heat between the layer of reinforcing polymeric material **61** and the sheet of elastomeric material **53**. In addition or alternatively, in some cases, an adhesive may be used at an interface between the layer of reinforcing polymeric material **61** and the sheet of elastomeric material **53** in order to bond these to one another.

In some embodiments, as shown in FIG. **28**, the elastomeric material **53** of the track **21** may be loaded with particles of reinforcing fabric material $\mathbf{128}_1$-$\mathbf{128}_P$ that correspond to the reinforcing polymeric material **51** to enhance bonding between the elastomeric material **53** and the reinforcing polymeric material **51**. For instance, the rubber **53** may be loaded with the particles of reinforcing fabric material $\mathbf{128}_1$-$\mathbf{128}_P$ (e.g., in powder form) during manufacturing of the rubber **53**. Upon the sheet of reinforcing polymeric material **61** being provided on the sheet of rubber **53** (e.g., during calendering or otherwise), the sheet of reinforcing polymeric material **61** chemically interacts with the particles of reinforcing fabric material $\mathbf{128}_1$-$\mathbf{128}_P$ in the sheet of rubber **53** to enhance their bonding.

In addition to enhancing the track **21**, in some embodiments, the reinforcing polymeric material **51** may act as an unmolding agent (i.e., mold release agent) that facilitates release and removal of the track **21** from the mold upon completion of the molding process.

For instance, a friction coefficient between the reinforcing polymeric material **51** and a material of the mold in which the track **21** is molded may be lower than a friction coefficient between the elastomeric material **53** of the track **21** and the material of the mold. This may allow the molding process of the track **21** to be carried out without or with less of conventional mold release agent such as a silicone based release agent (e.g., a silicone resin) or polytetrafluoroethylene (PTFE).

The track **21**, including the reinforcing material **51**, may be implemented in various other ways in other embodiments.

For example, the reinforcing material **51** may be disposed elsewhere than at the periphery **80** of the track **21** (e.g., instead of or in addition to being disposed at the periphery **80** of the track **21**). For example, the reinforcing material **51** may be disposed internally within the carcass **35**, a traction projection $\mathbf{58}_x$ or a drive/guide lug $\mathbf{34}_x$

As another example, the reinforcing material **51** may include two or more different constituents. For example, the reinforcing material **51** may include a plurality of layers of reinforcing polymeric material $\mathbf{130}_1$-$\mathbf{130}_L$, where reinforcing polymeric materials of these layers are different from one another.

For instance, in one example of implementation, as shown in FIG. **29**, the layers of reinforcing polymeric material $\mathbf{130}_1$-$\mathbf{130}_L$ may be adjacent to one another (e.g., stacked). Alternatively, in another example of implementation, as shown in FIG. **30**, the layers of reinforcing polymeric material $\mathbf{130}_1$-$\mathbf{130}_L$ may be spaced apart from one another.

As another example, in some embodiments, as shown in FIGS. **31** and **32**, the reinforcing material **51** may constitute (i) at least part of a reinforcement $\mathbf{45}_x$ embedded in the rubber **38** of the carcass **35** and (ii) at least part of a drive/guide lug $\mathbf{34}_x$ and/or at least part of a traction projection $\mathbf{58}_x$ that are integral with one another such that they are a one-piece structure, i.e., (1) the reinforcement $\mathbf{45}_x$ and (2) the drive/guide lug $\mathbf{34}_x$ and/or the traction projection $\mathbf{58}_x$ are a single unitary piece. This may help to enhance the rigidity characteristics of the track **21**.

For instance, in this embodiment, the reinforcing material **51** may constitute at least part of a transversal stiffening rod $\mathbf{36}_x$ and at least part of the drive/guide lugs $\mathbf{34}_1$-$\mathbf{34}_D$ that are integral with one another such that they are a one-piece structure. That is, in this example of implementation, as shown in FIG. **31**, the transversal stiffening rod $\mathbf{36}_x$ and selected ones of the drive/guide lugs $\mathbf{34}_1$-$\mathbf{34}_D$ aligned with the transversal stiffening rod $\mathbf{36}_x$ in the longitudinal direction of the track **21** constitute a single integral component **132** comprising the reinforcing material **51**. This may be achieved, for example, by molding the transversal stiffening rod $\mathbf{36}_x$ and the selected ones of the drive/guide lugs $\mathbf{34}_1$-$\mathbf{34}_D$ together out of the reinforcing material **51** to obtain the single integral component **132** which comprises the transversal stiffening rod $\mathbf{36}_x$ and the selected ones of the drive/guide lugs $\mathbf{34}_1$-$\mathbf{34}_D$. The single integral component **132** may then be overmolded by the elastomeric material **53** to form the track **21**.

While in the embodiment of FIG. **31**, the drive/guide lugs $\mathbf{34}_1$-$\mathbf{34}_D$ are shown as being made entirely of the reinforcing material **51**, this may not necessarily be the case. For instance, in some cases, the reinforcing material **51** may be provided only along the periphery **86** the drive/guide lugs $\mathbf{34}_1$-$\mathbf{34}_D$ (e.g., as a thin sheet) such as to cover at least partially (or entirely) the elastomeric material **42** of the drive/guide lugs $\mathbf{34}_1$-$\mathbf{34}_D$. In order to achieve such a configuration, the reinforcing material **51** constituting the transversal stiffening rod $\mathbf{36}_x$ and the selected ones of the drive/guide lugs $\mathbf{34}_1$-$\mathbf{34}_D$ may first be molded over the elastomeric material **42** of the drive/guide lugs $\mathbf{34}_1$-$\mathbf{34}_D$.

In some embodiments, as shown in FIG. **32**, the reinforcing material **51** may constitute at least part of a transversal stiffening rod $\mathbf{36}_x$ and at least part of the traction projections $\mathbf{58}_1$-$\mathbf{58}_T$ that are integral with one another such that they are a one-piece structure. That is, the transversal stiffening rod $\mathbf{36}_x$ and selected ones of the traction projections $\mathbf{58}_1$-$\mathbf{58}_T$ aligned with the transversal stiffening rod $\mathbf{36}_x$ in the longitudinal direction of the track **21** constitute a single integral component **134** comprising the reinforcing material **51**. This may be achieved, for example, by molding the transversal stiffening rod $\mathbf{36}_x$ and the selected ones of the traction projections $\mathbf{58}_1$-$\mathbf{58}_T$ together out of the reinforcing material **51** to obtain the single integral component **134** which comprises the transversal stiffening rod $\mathbf{36}_x$ and the selected ones of the traction projections $\mathbf{58}_1$-$\mathbf{58}_T$. The single integral component **134** may then be overmolded by the elastomeric material **53** to form the track **21**.

While in the embodiment of FIG. **32**, the traction projections $\mathbf{58}_1$-$\mathbf{58}_T$ are shown as being made entirely of the reinforcing material **51**, this may not necessarily be the case. For instance, in some cases, the reinforcing material **51** may be provided only along the periphery **84** the traction projections $\mathbf{58}_1$-$\mathbf{58}_T$ (e.g., as a thin sheet) such as to cover at least partially (or entirely) the elastomeric material **41** of the traction projections $\mathbf{58}_1$-$\mathbf{58}^{-}_T$. In order to achieve such a configuration, the reinforcing material **51** constituting the transversal stiffening rod $\mathbf{36}_x$ and the selected ones of the traction projections $\mathbf{58}_1$-$\mathbf{58}_T$ may first be molded over the elastomeric material **41** of the traction projections $\mathbf{58}_1$-$\mathbf{58}$-$_T$.

In some variants, the reinforcing material **51** may be used similarly as discussed above with respect to previously-presented embodiments, but may be implemented differently. For instance, in some variants, the reinforcing material **51** may be at least partly elastomeric (i.e., part or all of the reinforcing material **51** may be elastomeric). For example, in some embodiments, the reinforcing material **51** may be at least predominantly (i.e., predominantly or entirely) elastomeric. In some cases, the reinforcing material **51** may include an elastomeric substance, alone or in combination with one or more other materials such as one or more performance additives.

For instance, in some embodiments, this may help to have improved heat dissipation and/or reduced heat build-up, improved resistance to abrasion, cutting, chipping, chunking and/or tearing.

As an example, in some embodiments, in variants shown in FIGS. **41** to **51**, the reinforcing material **51**, which is denoted **51'**, is an elastomeric material that is different from the elastomeric material **53** of the track **21** and includes an elastomeric matrix **71** and reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$ embedded in the elastomeric matrix **71**. The reinforcing elastomeric material **51'** may overly the elastomeric material **53** and constitute at least part of the periphery **80** of the track **21**, such as at least part of the periphery **82** of the carcass **35**, the periphery **84** of a traction projection $\mathbf{58}_x$ and/or the periphery **86** of a drive/guide lug $\mathbf{34}_x$, as discussed above.

This may have certain similarities to the embodiment shown in FIG. **28** where the elastomeric material **53** of the track **21** is loaded with the particles of reinforcing fabric material $\mathbf{128}_1$-$\mathbf{128}_P$, except that, in this embodiment, the elastomeric material **53** of the track **21** is free of (i.e., substantially does not contain) reinforcing particles. That is, the elastomeric material **53** of the track **21** is purely elastomeric without reinforcing particles, while the reinforcing elastomeric material **51'**, including its reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$, overlies the elastomeric material **53**. Thus, in this embodiment, the reinforcing elastomeric material **51'**, including its reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$, constitutes a much smaller portion of the track **21** than the elastomeric material **53**, which has no reinforcing particles and forms a bulk of the track **21**. This may help to benefit from desired effects of the reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$ while managing the weight of the track **21**.

More particularly, in this variant, the elastomeric matrix **71** of the reinforcing material **51'** includes rubber **38**. Various rubber compounds may be used and, in some cases, different rubber compounds may be present in the elastomeric matrix **71**. For instance, the elastomeric matrix **71** may include a mixture of different rubber compounds in an uncured state, or a plurality of pre-cured layers or parts (e.g. pre-cured calendered layers or parts) of rubber compounds differing (or identical) in their composition such as to form the elastomeric matrix **71** of the reinforcing material **51'** once cured. In other variants, the elastomeric matrix **71** may include another elastomer in addition to or instead of rubber **38** (e.g., polyurethane elastomer).

The reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$ enhance overall properties of the reinforcing material **51'** compared to the elastomeric matrix **71** alone, and in turn to one or more components of the track **21** that are at least partly constituted of the reinforcing material **51'**. For instance, in some cases, this may help to improve heat dissipation, reduce heat build-up, improve a resistance to abrasion, cutting, chipping, chunking and/or tearing of the one or more components of the track **21**, such as the carcass **35**, the traction projections $\mathbf{58}_1$-$\mathbf{58}_T$ and/or the drive/guide lugs $\mathbf{34}_1$-$\mathbf{34}_D$ which may be constituted at least in part of the reinforcing material **51'**.

In this variant, the reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$ are polymeric reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$. More particularly, in this variant, the polymeric reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$ comprise ultra-high-molecular-weight polyethylene (UHMW or UHMWPE). The polymeric reinforcing particles $\mathbf{63}_1$-$\mathbf{63}P$ may comprise any other suitable polymer in other cases, such as polyethylene (PE) (e.g., low-density polyethylene (LDPE) or high-density polyethylene (HDPE)), polypropylene (PP), polytetrafluoroethylene (PTFE), a thermoplastic elastomer (TPE) such as thermoplastic polyurethane (TPU), polyether ether ketone (PEEK) or other polyaryletherketone (PAEK), polycarbonate, nylon or other polyamide, etc.

In other cases, the reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$ may include any other suitable performance additives instead of or in addition to the above materials. For instance, in other cases, the reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$ may comprise fibers (e.g., carbon fibers, aramid fibers (e.g., Kevlar fibers), boron fibers, silicon carbide fibers, etc.).

Some characteristics of the reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$ other than or in addition to their material may affect properties of the reinforcing material **51'**, and in turn the characteristics of the one or more components of the track **21** that are at least partly constituted of the reinforcing material **51'**, as discussed below.

The reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$ may be relatively fine and/or compact. For instance, in this variant, the reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$ are provided as powder when combined with the elastomeric matrix **71**.

For example, in some embodiments, the reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$ may be non-elongated (e.g., may be spherical-like). For example, in some embodiments, an average sphericity of the reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$ may be at least 0.5, in some cases at least 0.7, in some cases at least 0.9, and in some cases even higher (e.g., close to or equal to 1, in which case the reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$ may be generally spherical particles). Sphericity of a reinforcing particle $\mathbf{63}_x$ may be calculated as a ratio of a surface area of a sphere, which has a volume corresponding to that of the reinforcing particle $\mathbf{63}_x$, to a surface area of the reinforcing particle $\mathbf{63}_x$. Thus, in such embodiments, the reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$ may not be elongated fibers.

In some embodiments, an average aspect ratio of the reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$, which refers to an average ratio of a maximal dimension of each reinforcing particle $\mathbf{63}_x$ over a minimal dimension of the reinforcing particle $\mathbf{63}_x$, may be no more than 8, in some cases no more than 6, in some cases no more than 4, in some cases no more than 2, and in some cases even less.

Also, in some embodiments, an average diameter D_x of the reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$ may be no more than 200 μm, in some cases no more than 100 μm, in some cases no more than 50 μm, in some cases no more than 25 μm, and in some cases even less. For instance, in some embodiments, the average diameter D_x of the reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$ may range between 100 μm and 200 μm, in some cases between 60 μm and 100 μm, in some cases between 30 μm and 60, and in some cases between 10 μm and 30 μm.

Fineness and/or compactness of the reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$ may provide greater adherence of the reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$ within the elastomeric matrix **71** and/or impart isotropic properties to the reinforcing material **51'** composed therewith, as opposed to elongated fibers, which may tend to align (e.g., in a calendering or extruding direction) during manufacturing, thereby imparting anisotropic properties.

There may be any suitable quantity of the reinforcing particles **63_1-63_P** in a given volume of the reinforcing material **51'**. This may impact the properties of the reinforcing material **51'**, and in turn affect the performance of the track **21**. For instance, in some cases where the elastomeric matrix **71** of the reinforcing material **51'** includes rubber, a concentration C of the reinforcing particles **63_1-63_P** may be measured in parts per hundred rubber (PHR) and may range between 1 and 10 PHR. More particularly, in some cases, the concentration C of the reinforcing particles **63_1-63_P** in the reinforcing material **51'** may be at least 1 PHR, in some cases at least 5 PHR, in some cases at least 8 PHR, and in some cases even more, and/or no more than 10 PHR, in some cases no more than 5 PHR, and in some cases no more than 1 PHR.

As discussed above, the reinforcing material **51'** may constitute at least part of one or more components of the track **21**, such as the carcass **35**, the traction projections **58_1-58_T** and/or the drive/guide lugs **34_1-34_D**. For example, the reinforcing material **51'** of the track **21** may constitute at least part of the periphery **80** of the track **21**, such as at least part of the periphery **82** of the carcass **35**, the periphery **84** of a traction projection **58_x** and/or the periphery **86** of a drive/guide lug **34_x** as discussed above with respect to some embodiments. That is, the reinforcing material **51'** of the track **21** may define at least part of the ground engaging outer side **27** of the track, at least part of the inner side **25** of the track **21**, or at least part of both the ground engaging outer side **27** and the inner side **25** of the track **21**.

The reinforcing material **51'** may be provided on at least part of the ground-engaging outer side **27** and/or at least part of the inner side **25** of the track **21** in various ways. For example, in this variant, the reinforcing material **51'** is molded with the carcass **35**, the traction projections **58_1-58_T** and/or the drive/guide lugs **34_1-34_D** of the track **21**. More particularly, in this variant, the reinforcing material **51'** constitutes at least a majority (i.e., a majority or an entirety) of the ground-engaging outer surface **31** of the carcass **35** and at least a majority of the periphery **84** of each of the traction projections **58_1-58_T**. This may improve a resistance to abrasion, cutting, chipping, chunking and/or tearing of the ground-engaging outer side **27** of the track **21**, which may be imparted by repetitive ground contacts during use of the track **21**. This may also improve heat dissipation or reduce heat build-up within the track **21**, as the reinforcing material **51'** may work as a heat barrier or heat diffuser during use, and thus this may also improve indirectly a durability of the track **21**.

For example, in some embodiments, as shown in FIG. **43**, the reinforcing material **51'** may comprise a layer of reinforcing material **76** constituting at least part of the ground-engaging outer surface **31** of the carcass **35**, as discussed above in relation to the layer of reinforcing material **88**. The layer of reinforcing material **76** may be a continuous layer or it may include a plurality of segments that are spaced apart from one another and constitute respective areas of the track **21** including the reinforcing material **51'**.

The layer of reinforcing material **76** may be thin, notably significantly thinner than the elastomeric material **53** of a given component **67** of the track **21** (e.g., the carcass **35**, a traction projection **58_x** or a drive/guide lug **34_x**). For example, in some cases, a ratio of a thickness T_x of the layer of reinforcing material **76** over a thickness T_e of the elastomeric material **53** of the given component **67** of the track **21** may be no more than 0.3, in some cases no more than 0.2, in some cases no more than 0.1, in some cases no more than 0.05, in some cases no more than 0.01, and in some cases an even smaller ratio. For example, in some cases, the thickness T_x of the layer of reinforcing material **76** may be no more than 1 inch, in some cases no more than 0.5 inch, in some cases no more than 0.25 inch, in some cases no more than 0.1 inch, in some cases no more than 0.05 inch, in some cases no more than 0.025 inch, and in some cases even less.

The layer of reinforcing material **76** may also vary in thickness, depending on respective areas of the track **21** including the reinforcing material **51'**. This may help to enhance the durability of the track **21**, more particularly in areas of the track **21** that usually wear quicker than the remainder of the track **21**, such as the traction projections **58_1-58_T** and/or the traction-projection-free areas **90_1-90_F** due to repetitive ground contacts. For instance, in this variant, a thickness T_{x1} of the layer of reinforcing material **76** constituting at least part of (in this case an entirety of) the periphery **84** of a traction projection **58_x** is greater than a thickness T_{x2} of the layer of reinforcing material **76** constituting at least part of (in this case an entirety of) the periphery **82** of the carcass **35** at a traction-projection-free area. For example, in some cases, a ratio of the thickness T_{x1} of the layer of reinforcing material **76** constituting at least part of the periphery **84** of a traction projection **58_x** over the thickness T_{x2} of the layer of reinforcing material **76** constituting at least part of the periphery **82** of the carcass **35** at the traction-projection-free area may be at least 1.1, in some cases at least 1.5, in some cases at least 2, in some cases at least 5, and in some cases an even greater ratio. Also, in other cases, the thickness T_{x1} of the layer of reinforcing material **76** constituting at least part of the periphery **84** of a traction projection **58_x** is smaller than the thickness T_{x2} of the layer of reinforcing material **76** constituting at least part of the periphery **82** of the carcass **35** at a traction-projection-free area.

The concentration C of the reinforcing particles **63_1-63_P** may also vary in the layer of reinforcing material **76**, depending on respective areas of the track **21** including the reinforcing material **51'**, in addition to or instead of a variation in thickness of the layer of reinforcing material **76**. For instance, in some cases, the concentration C_1 of the reinforcing particles **63_1-63_P** of the reinforcing material **51'** constituting at least part of the periphery **84** of a traction projection **58_x** may be greater than the concentration C_2 of the reinforcing particles **63_1-63_P** in the reinforcing material **51** constituting at least part of the periphery **82** of the carcass **35** in a traction-projection-free area. For instance, in some cases, a ratio of the concentration C_1 over the concentration C_2 is at least 1.1, in some cases at least 1.2, in some cases at least 1.5, in some cases at least 2.0, and in some cases even more. In other cases, the concentration of C_i of the reinforcing particles **63_1-63_P** in the reinforcing material **51'** constituting at least part of the periphery **84** of a traction projection **58_x** may be smaller than the concentration C_2 of the reinforcing particles **63_1-63_P** in the reinforcing material **51'** constituting at least part of the periphery **82** of the carcass **35** at a traction-projection-free area.

The concentration of reinforcing particles **63_1-63_P** may also vary in a thickness direction of the layer of reinforcing material **76**, such that higher or lower concentrations of reinforcing particles **63_1-63_P** may be voluntarily obtained in selected parts of the track including the reinforcing material **51'**. This may be implemented for instance when the layer of reinforcing material **76** includes a plurality of sub-layers of reinforcing material **51'** stacked on one another. For instance, in some cases, the concentration C of reinforcing particles 63_1-63_P within the layer of reinforcing material **76** decreases in the layer of reinforcing material **76** in a given direction (i.e. the concentration of reinforcing particles **76** may be higher in an outer region of the layer of reinforcing material **76** than at an inner region of the layer of reinforcing material **76**). This may provide a progressive change in the material properties of the reinforcing layer **51'** and thus less stress concentrations at the junction between the reinforcing material **51'** and the elastomeric material **53** underlying the reinforcing material **51'**. The concentration of reinforcing particles 63_1-63_P may vary differently in other cases.

In some embodiments, as shown in FIG. **44**, the reinforcing polymeric material **51** may comprise a layer of reinforcing polymeric material **78** constituting at least part of the inner surface **32** of the carcass **35**, as discussed above in relation to the layer of reinforcing polymeric material **92**.

The reinforcing material **51'** including the elastomeric matrix **71** loaded with the reinforcing particles 63_1-63_P may be significantly stronger than the elastomeric material **53** of the track **21** in various ways, and thus the presence of such reinforcing material **51'** may help the track **21** to better perform when compared to a similar track free of such reinforcing material **51'**. Notably, in some cases:

the reinforcing material **51'** including the elastomeric matrix **71** loaded with the reinforcing particles 63_1-63_P may be stiffer than the elastomeric material **53**. For example, in some cases, a ratio of modulus of elasticity (i.e., Young's modulus) of such reinforcing material **51'** over a modulus of elasticity of the elastomeric material **53** is at least 2, in some cases at least 5, in some cases at least 10, in some cases at least 20, in some cases at least 40 and in some cases even more. For instance, in some cases, the modulus of elasticity of such reinforcing material **51'** is at least 1.5 MPa, in some cases at least 4 MPa, in some cases at least 6 MPa, in some cases at least 8 MPa, in some cases at least 10 MPa and in some cases even more;

the reinforcing material **51'** including the elastomeric matrix **71** loaded with the reinforcing particles 63_1-63_P may be harder than the elastomeric material **53**. For instance, in some cases, a ratio of a hardness on a Shore A hardness scale of such reinforcing material **51'** over a hardness of the elastomeric material **53** is at least 1.2, in some cases at least 1.5, in some cases at least 2, in some cases at least 2.5 and in some cases even more. For instance, in some cases, the hardness on the Shore A hardness scale of such reinforcing material **51'** is at least 50, in some cases at least 60, in some cases at least 70, in some cases at least 80, in some cases at least 90 and in some cases even more; and/or

the reinforcing material **51'** including the elastomeric matrix **71** loaded with the reinforcing particles 63_1-63_P may be more resistant to abrasion than the elastomeric material **53**. For instance, in some cases, a ratio of a wear resistance of such reinforcing material **51'** over a wear resistance of the elastomeric material **53** is no more than 0.95, in some cases no more than 0.8, in some cases no more than 0.7, in some cases no more than 0.6, in some cases no more than 0.5 and in some cases even less. The wear resistance of such reinforcing material **51'** can be taken as an abrasion resistance of such reinforcing material **51'** and the wear resistance of the elastomeric material **53** can be taken as an abrasion resistance of the elastomeric material **53**. For instance, the wear resistance of such reinforcing material **51'** and of the elastomeric material **53**, expressed as its abrasion resistance, may be measured under ASTM D-5963 conditions (e.g., sample dimensions; loading conditions; etc.). For instance, in some embodiments, the abrasion resistance of such reinforcing material **51'** is at least 40 mm^3, in some cases at least 60 mm^3, in some cases at least 80 mm^3, in some cases at least 100 mm^3, in some cases at least 120 mm^3, in some cases at least 150 mm^3 and in some cases even more.

Where the layer of reinforcing polymeric material **76** of the reinforcing material **51'** including the elastomeric matrix **71** loaded with the reinforcing particles 63_1-63_P is stiffer than the elastomeric material **53** of the carcass **35**, as discussed above, this may help to increase a longitudinal rigidity of the carcass **35**, i.e., a rigidity of the carcass **35** in the longitudinal direction of the track **21** which refers to the carcass's resistance to bending about an axis parallel to the widthwise direction of the track **21**, and/or (2) a widthwise rigidity of the carcass **35**, i.e., a rigidity of the carcass **35** in the widthwise direction of the track **21** which refers to the carcass's resistance to bending about an axis parallel to the longitudinal direction of the track **21**.

Increasing the widthwise rigidity of the carcass **35** may help to improve traction and floatation.

Increasing the longitudinal rigidity of the carcass **35** may help to reduce noise generated by the track system **14**, such as in cases where the reinforcing material **51'** including the elastomeric matrix **71** loaded with the reinforcing particles 63_1-63_P defines at least part of the ground engaging outer side **27** of the track, at least part of the inner side **25** of the track **21**, or at least part of both the ground engaging outer side **27** and the inner side **25** of the track **21**. In other words, the increased longitudinal rigidity of the carcass **35** may reduce deformation of the carcass **35** against impacts such as when the roller wheels 28_1-28_6, 30_1, 30_2 roll over the carcass **35**. This in turn may cause a reduction in noise generated by the track system **14**.

For instance, in some variants where the reinforcing material **51'** including the elastomeric matrix **71** loaded with the reinforcing particles 63_1-63_P defines at least part of the ground engaging outer side **27** of the track, at least part of the inner side **25** of the track **21**, or at least part of both the ground engaging outer side **27** and the inner side **25** of the track **21**, the track **21** may generate less noise than if the reinforcing polymeric material **51'** was omitted but the track **21** was otherwise identical. For instance, in some embodiments, a noise level generated by the track **21** at a given speed may be at least 2%, in some cases at least 4%, and in some cases at least 6% less than that which would be generated if the layer of reinforcing polymeric material **88** was omitted.

In some embodiments, as shown in FIGS. **45**B and **45**C, as discussed above, the layer of reinforcing polymeric material **76** may occupy at least a substantial part of each of respective ones of the traction-projection-free areas 90_1-90_F of the ground-engaging outer surface **31** and the layer of reinforcing polymeric material **78** may occupy at least a substantial part of each of respective ones of the drive/guide-lug-free areas 93_1-93_F of the inner surface **32**. For instance, each of the layer of reinforcing polymeric material **76** and the layer of reinforcing polymeric material **78** may occupy at least a majority (i.e., a majority or an entirety) of the width W of the track **21**. More specifically, in this embodiment, each of the layer of reinforcing polymeric material **76** and the layer of reinforcing polymeric material **78** occupies the entirety of the width W of the track **21**. Moreover, each of the layer of reinforcing polymeric material **76** and the layer of reinforcing polymeric material **78** may occupy at least a majority (i.e., a majority or an entirety) of each of the dimension D_F of a traction-projection-free area 90_i in the longitudinal direction of the track **21** and the dimension D_G of a drive/guide-lug-free area $\mathbf{93}_i$ in the longitudinal direction of the track **21**. In this embodiment, the layer of reinforcing polymeric material **76** occupies the entirety of the dimension D_F and the layer of reinforcing polymeric material **78** occupies the entirety of the dimension D_6. For instance, in this embodiment, the layer of reinforcing polymeric material **76** comprises a plurality of laterally-extending segments $\mathbf{99}_1$-$\mathbf{99}_S$ (e.g., bands) that are elongated transversally to the longitudinal direction of the track **21** (e.g., in the widthwise direction of the track **21**), spaced from one another in the longitudinal direction of the track **21**, and disposed between longitudinally-adjacent ones of the traction projections $\mathbf{58}_1$-$\mathbf{58}_T$, while the layer of reinforcing polymeric material **78** comprises a plurality of laterally-extending segments $\mathbf{83}_1$-$\mathbf{83}_S$ that are elongated transversally to the longitudinal direction of the track **21** (e.g., in the widthwise direction of the track **21**), spaced from one another in the longitudinal direction of the track **21**, and disposed between longitudinally-successive ones of the drive/guide lugs $\mathbf{34}_1$-$\mathbf{34}_D$.

In other cases, the reinforcing material **51'** may constitute more of a given component **67** of the track **21**. For instance, in some embodiments, the reinforcing material **51'** may constitute at least a majority (i.e., a majority or an entirety) of a given component **67** of the track **21** instead of the elastomeric material **53**. For instance, instead of being provided as a layer of reinforcing material **76**, the reinforcing material **51'** may be provided as an extruded piece (e.g., bar) of reinforcing material **51'**, whereby the extruded piece of reinforcing material **51'** may be used for forming a given component **67** (e.g. forming a substantial portion of a traction projection $\mathbf{58}_x$ or a drive/guide lug $\mathbf{34}_x$). In cases where the reinforcing material **51'** constitutes a majority (e.g. a majority or an entirety) of a given component **67** of the track **21** such as a traction projections $\mathbf{58}_x$, as discussed above, the thickness T_{x2} of the layer of reinforcing material **76** constituting at least part of the periphery **82** of the carcass **35** at a traction-projection-free area may take the same values as discussed above with respect to previously-presented cases. For instance, in some cases, the reinforcing material **51'** may constitute at least a bulk (e.g., a majority or an entirety) of a traction projection $\mathbf{58}_x$ or drive/guide lug $\mathbf{34}_x$ and a layer of reinforcing material **76** forming at least part of the inner surface **32** or the outer surface **31** of the carcass. For instance, in the embodiment shown in FIG. **53**, the reinforcing material **51'** constitutes an entirety of a traction projection $\mathbf{58}_x$ and a layer of reinforcing material **76** forms at least part of the outer surface **31** of the carcass.

In some embodiments, the reinforcing material **51'** including the elastomeric matrix **71** and the reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$ may constitute another part of the track **21**, in addition to or instead of at least part of the periphery **80** of the track **21**, and may be configured as described above, including for the concentration of the reinforcing particles $\mathbf{63}_1$-$\mathbf{63}_P$, the size and shape of the reinforcing particles, etc. For example, in some embodiments, the reinforcing material **51'** may constitute an internal part of the track **21** that underlies the periphery **80** of the track **21**, which may be made of elastomeric material (e.g., without any reinforcing particles) or a layer of the reinforcing material **51** previously discussed in other embodiments.

While in embodiments considered above the track system **14** is part of the snowmobile **10**, a track system constructed according to principles discussed herein may be used as part of other off-road vehicles in other embodiments.

For example, in some embodiments, a track system constructed according to principles discussed herein may be used as part of an all-terrain vehicle (ATV).

FIGS. **33** to **36** show an ATV **210** comprising a set of track systems $\mathbf{214}_1$-$\mathbf{214}_4$ providing traction to the ATV on the ground. The ATV **210** comprises a prime mover **212** in a driving relationship with the track systems $\mathbf{214}_1$-$\mathbf{214}_4$ via the ATV's powertrain, a seat **218**, and a user interface **220**, which enable a user of the ATV **210** to ride the ATV **210** on the ground. In this case, the seat **218** is a straddle seat and the ATV **210** is usable by a single person such that the seat **218** accommodates only that person driving the ATV **210**. In other cases, the seat **218** may be another type of seat, and/or the ATV **210** may be usable by two individuals, namely one person driving the ATV **210** and a passenger, such that the seat **218** may accommodate both of these individuals (e.g., behind one another or side-by-side) or the ATV **210** may comprise an additional seat for the passenger. For example, in other embodiments, the ATV **210** may be a side-by-side ATV, sometimes referred to as a "utility terrain vehicle" or "UTV". The user interface **220** comprises a steering device operated by the user to control motion of the ATV **210** on the ground. In this case, the steering device comprises handlebars. In other cases, the steering device may comprise a steering wheel or other type of steering element. Each of the front track systems $\mathbf{214}_1$, $\mathbf{214}_2$ is pivotable about a steering axis of the ATV **210** in response to input of the user at the handlebars in order to steer the ATV **210** on the ground.

In this embodiment, each track system $\mathbf{214}_i$ is mounted in place of a ground-engaging wheel $\mathbf{213}_i$ that may otherwise be mounted to the ATV **210** to propel the ATV **210** on the ground. That is, the ATV **210** may be propelled on the ground by four ground-engaging wheels $\mathbf{213}_1$-$\mathbf{213}_4$ with tires instead of the track systems $\mathbf{214}_1$-$\mathbf{214}_4$. Basically, in this embodiment, the track systems $\mathbf{214}_1$-$\mathbf{214}_4$ may be used to convert the ATV **210** from a wheeled vehicle into a tracked vehicle, thereby enhancing its traction and floatation on the ground.

Any feature described herein with respect to the track system **14** of the snowmobile **10**, including its track **21**, may be applied to a track system $\mathbf{214}_i$ of the ATV **210**, including its track **221**.

The snowmobile **10** and the ATV **210** considered above are examples of tracked recreational vehicles. While they can be used for recreational purposes, such tracked recreational vehicles may also be used for utility purposes in some cases.

As another example, in some embodiments, a track system constructed according to principles discussed herein may be used as part of a snow bike. FIG. **37** shows a snow bike **310** comprising a frame **311**, a powertrain **312**, a ski system **317**, a track system **314**, a seat **318**, and a user interface **320** which enables a user to ride, steer and otherwise control the snow bike **310**.

In this embodiment, as shown in FIG. **38**, the snow bike **310** is a motorcycle equipped with the ski system **317** mounted in place of a front wheel **302** of the motorcycle **310** and the track system **314** mounted in place of a rear wheel **304** of the motorcycle **310**. In this example, the track system **314** also replaces a rear suspension unit (e.g., a shock absorber and a swing arm) of the motorcycle. Basically, in this embodiment, the ski system **317** and the track system **314** are part of a conversion system **313** that converts the motorcycle into a skied and tracked vehicle for travelling on snow.

The powertrain **312** is configured for generating motive power and transmitting motive power to the track system

314 to propel the snow bike **310** on the ground. To that end, the powertrain **312** comprises a prime mover **315**, which is a source of motive power that comprises one or more motors (e.g., an internal combustion engine, an electric motor, etc.). For example, in this embodiment, the prime mover **315** comprises an internal combustion engine. In other embodiments, the prime mover **315** may comprise another type of motor (e.g., an electric motor) or a combination of different types of motor (e.g., an internal combustion engine and an electric motor). The prime mover **315** is in a driving relationship with the track system **314**. That is, the powertrain **312** transmits motive power from the prime mover **315** to the track system **314** in order to drive (i.e., impart motion to) the track system **314**.

The seat **318** accommodates the user of the snow bike **310**. In this case, the seat **318** is a straddle seat and the snow bike **310** is usable by a single person such that the seat **318** accommodates only that person driving the snow bike **310**. In other cases, the seat **318** may be another type of seat, and/or the snow bike **310** may be usable by two individuals, namely one person driving the snow bike **310** and a passenger, such that the seat **318** may accommodate both of these individuals (e.g., behind one another).

The user interface **320** allows the user to interact with the snow bike **310** to control the snow bike **310**. More particularly, in this embodiment, the user interface **320** comprises an accelerator, a brake control, and a steering device comprising handlebars **322** that are operated by the user to control motion of the snow bike **510** on the ground. The user interface **320** also comprises an instrument panel (e.g., a dashboard) which provides indicators (e.g., a speedometer indicator, a tachometer indicator, etc.) to convey information to the user.

The ski system **317** is disposed in a front **324** of the snow bike **310** to engage the ground and is turnable to steer the snow bike **310**. To that end, the ski system **14** is turnable about a steering axis of the snow bike **310**. The ski system **317** comprises a ski **328** to slide on the snow and a ski mount **330** that connects the ski **328** to a front steerable member **332** of the snow bike **310**. In this embodiment where the snow bike **310** is a motorcycle and the ski system **317** replaces the front wheel **302** of the motorcycle, the front steerable member **332** comprises a front fork **334** of the snow bike **310** that would otherwise carry the front wheel **302**.

The ski **328** is a sole ski of the snow bike **310**. That is, the snow bike **310** has no other ski. Notably, the ski **328** is disposed in a center of the snow bike **310** in a widthwise direction of the snow bike **310**. In this embodiment in which the snow bike **310** is a motorcycle and the ski system **317** replaces the front wheel **302** of the motorcycle, the ski **328** contacts the ground where the front wheel **302** would contact the ground.

Any feature described herein with respect to the track system **14** of the snowmobile **10**, including its track **21**, may be applied to the track system **314** of the snow bike **310**, including its track **321**.

In other embodiments, a track system constructed according to principles discussed herein may be used as part of an agricultural vehicle (e.g., a tractor, a harvester, etc.), as part of a construction vehicle, forestry vehicle or other industrial vehicle, or as part of a military vehicle.

Certain additional elements that may be needed for operation of some embodiments have not been described or illustrated as they are assumed to be within the purview of those of ordinary skill in the art. Moreover, certain embodiments may be free of, may lack and/or may function without any element that is not specifically disclosed herein.

Any feature of any embodiment discussed herein may be combined with any feature of any other embodiment discussed herein in some examples of implementation.

Although various embodiments and examples have been presented, this was for the purpose of describing, but not limiting, the invention. Various modifications and enhancements will become apparent to those of ordinary skill in the art and are within the scope of the invention, which is defined by the appended claims.

The invention claimed is:

1. A track for traction of a vehicle, the track being mountable about a plurality of wheels, the track being elastomeric to flex around the wheels, the track comprising a ground-engaging outer side and an inner side opposite to the ground-engaging outer side, the ground-engaging outer side comprising a ground-engaging outer surface and a plurality of traction projections projecting from the ground-engaging outer surface, the track comprising:

a first elastomeric material; and

a second elastomeric material overlying the first elastomeric material, constituting at least part of a periphery of the track, and including an elastomeric matrix and reinforcing particles embedded in the elastomeric matrix, the second elastomeric material forming at least part of the ground-engaging outer side.

2. The track claimed in claim **1**, wherein a thickness of the second elastomeric material is less than a thickness of the first elastomeric material.

3. The track claimed in claim **2**, wherein a ratio of the thickness of the second elastomeric material over the thickness of the first elastomeric material is no more than 0.2.

4. The track claimed in claim **2**, wherein a ratio of the thickness of the second elastomeric material over the thickness of the first elastomeric material is no more than 0.1.

5. The track claimed in claim **2**, wherein a ratio of the thickness of the second elastomeric material over the thickness of the first elastomeric material is no more than 0.05.

6. The track claimed in claim **2**, wherein the thickness of the second elastomeric material is no more than 0.5.

7. The track claimed in claim **2**, wherein the thickness of the second elastomeric material is no more than 0.25.

8. The track claimed in claim **2**, wherein the thickness of the second elastomeric material is no more than 0.1.

9. The track claimed in claim **1**, wherein the second elastomeric material forms less than an entirety of the periphery of the track.

10. The track claimed in claim **1**, wherein the first elastomeric material forms a first part of the periphery of the track and the second elastomeric material forms a second part of the periphery of the track.

11. The track claimed in claim **1**, wherein the second elastomeric material forms at least part of the ground-engaging outer surface.

12. The track claimed in claim **1**, wherein the second elastomeric material forms at least part of a peripheral surface of each of the traction projections.

13. The track claimed in claim **1**, wherein the second elastomeric material forms at least part of the inner side.

14. The track claimed in claim **1**, wherein a concentration of the reinforcing particles measured in Parts per Hundred Rubber is at least 1 PHR.

15. The track claimed in claim **1**, wherein a concentration of the reinforcing particles measured in Parts per Hundred Rubber is at least 5 PHR.

16. The track claimed in claim 1, wherein a concentration of the reinforcing particles measured in Parts per Hundred Rubber is at least 10 PHR.

17. The track claimed in claim 1, wherein a concentration of the reinforcing particles measured in Parts per Hundred Rubber is no more than 1 PHR.

18. The track claimed in claim 1, wherein a concentration of the reinforcing particles measured in Parts per Hundred Rubber is no more than 5 PHR.

19. The track claimed in claim 1, wherein a concentration of the reinforcing particles measured in Parts per Hundred Rubber is no more than 10 PHR.

20. The track claimed in claim 1, wherein the track is configured to generate less noise than if the second elastomeric material was omitted.

21. The track claimed in claim 1, wherein a noise level generated by the track at a given speed is at least 2% less than that which would be generated if the second elastomeric material was omitted.

22. The track claimed in claim 1, wherein the reinforcing particles are polymeric reinforcing particles.

23. The track claimed in claim 22, wherein the polymeric reinforcing particles include ultra-high-molecular-weight polyethylene particles.

24. The track claimed in claim 1, wherein the reinforcing particles are non-elongated particles.

25. The track claimed in claim 1, wherein an average sphericity of the reinforcing particles is at least 0.5.

26. The track claimed in claim 1, wherein an average sphericity of the reinforcing particles is at least 0.7.

27. The track claimed in claim 1, wherein an average sphericity of the reinforcing particles is at least 0.9.

28. The track claimed in claim 1, wherein the elastomeric matrix includes rubber.

29. The track claimed in claim 1, wherein the elastomeric matrix includes a mixture of different rubber compounds.

30. The track claimed in claim 1, wherein the second elastomeric material is molded with the first elastomeric material.

31. The track claimed in claim 1, wherein the elastomeric matrix is a rubber matrix and the reinforcing particles are polymeric reinforcing particles that impart isotropic properties to the second elastomeric material.

32. The track claimed in claim 1, wherein the second elastomeric material comprises a layer of reinforcing material forming at least part of a peripheral surface of each of the traction projections and at least part of the ground-engaging outer surface.

33. The track claimed in claim 32, wherein a thickness of the layer of reinforcing material at the peripheral surface of each of the traction projections is different from a thickness of the layer of reinforcing material forming at least part of the ground-engaging outer surface.

34. The track claimed in claim 33, where a ratio of the thickness the layer of reinforcing material forming at least part of the peripheral surface of each of the traction projections over the thickness of the layer of reinforcing material forming at least part of the ground-engaging outer surface is at least 1.1.

35. The track claimed in claim 33, where a ratio of the thickness the layer of reinforcing material forming at least part of the peripheral surface of each of the traction projections over the thickness of the layer of reinforcing material forming at least part of the ground-engaging outer surface is at least 1.5.

36. The track claimed in claim 33, where a ratio of the thickness the layer of reinforcing material forming at least part of the peripheral surface of each of the traction projections over the thickness of the layer of reinforcing material forming at least part of the ground-engaging outer surface is at least 2.

37. The track claimed in claim 1, wherein the second elastomeric material comprises a layer of reinforcing material, and a concentration of the reinforcing particles in the layer of reinforcing material varies such that the concentration of the reinforcing particles in a first part of the layer of reinforcing material is higher than in a second part of the layer of reinforcing material.

38. The track claimed in claim 11, wherein the second elastomeric material forms at least part of a peripheral surface of each of the traction projections.

39. The track claimed in claim 38, wherein the second elastomeric material forms an entirety of the peripheral surface of each of the traction projections and an entirety of the ground-engaging outer surface.

40. The track claimed in claim 1, wherein an average aspect ratio of the reinforcing particles is no more than 8.

41. The track claimed in claim 1, wherein an average aspect ratio of the reinforcing particles is no more than 4.

42. The track claimed in claim 1, wherein an average aspect ratio of the reinforcing particles is no more than 2.

43. The track claimed in claim 1, wherein the track is a snowmobile track.

44. A track system for traction of a vehicle, the track system comprising the track claimed in claim 1.

45. A vehicle comprising the track claimed in claim 1.

46. The vehicle of claim 45, wherein the vehicle is a snowmobile.

47. A track for traction of a vehicle, the track being mountable about a plurality of wheels, the track being elastomeric to flex around the wheels, the track comprising a ground-engaging outer side and an inner side opposite to the ground-engaging outer side, the ground-engaging outer side comprising a ground-engaging outer surface and a plurality of traction projections projecting from the ground-engaging outer surface, the track comprising:

a first elastomeric material; and

a second elastomeric material adjacent to the first elastomeric material and including an elastomeric matrix and reinforcing particles embedded in the elastomeric matrix, the second elastomeric material forming at least part of the ground-engaging outer side.

48. A track for traction of a vehicle, the track being mountable about a plurality of wheels, the track being elastomeric to flex around the wheels, the track comprising a ground-engaging outer surface, an inner surface opposite to the ground-engaging outer surface, and a plurality of traction projections projecting from the ground-engaging outer surface, the track comprising:

a first elastomeric material; and

a second elastomeric material overlying the first elastomeric material, constituting at least part of a periphery of the track, and including an elastomeric matrix and reinforcing particles embedded in the elastomeric matrix, the second elastomeric material forming at least part of the ground-engaging outer surface.

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