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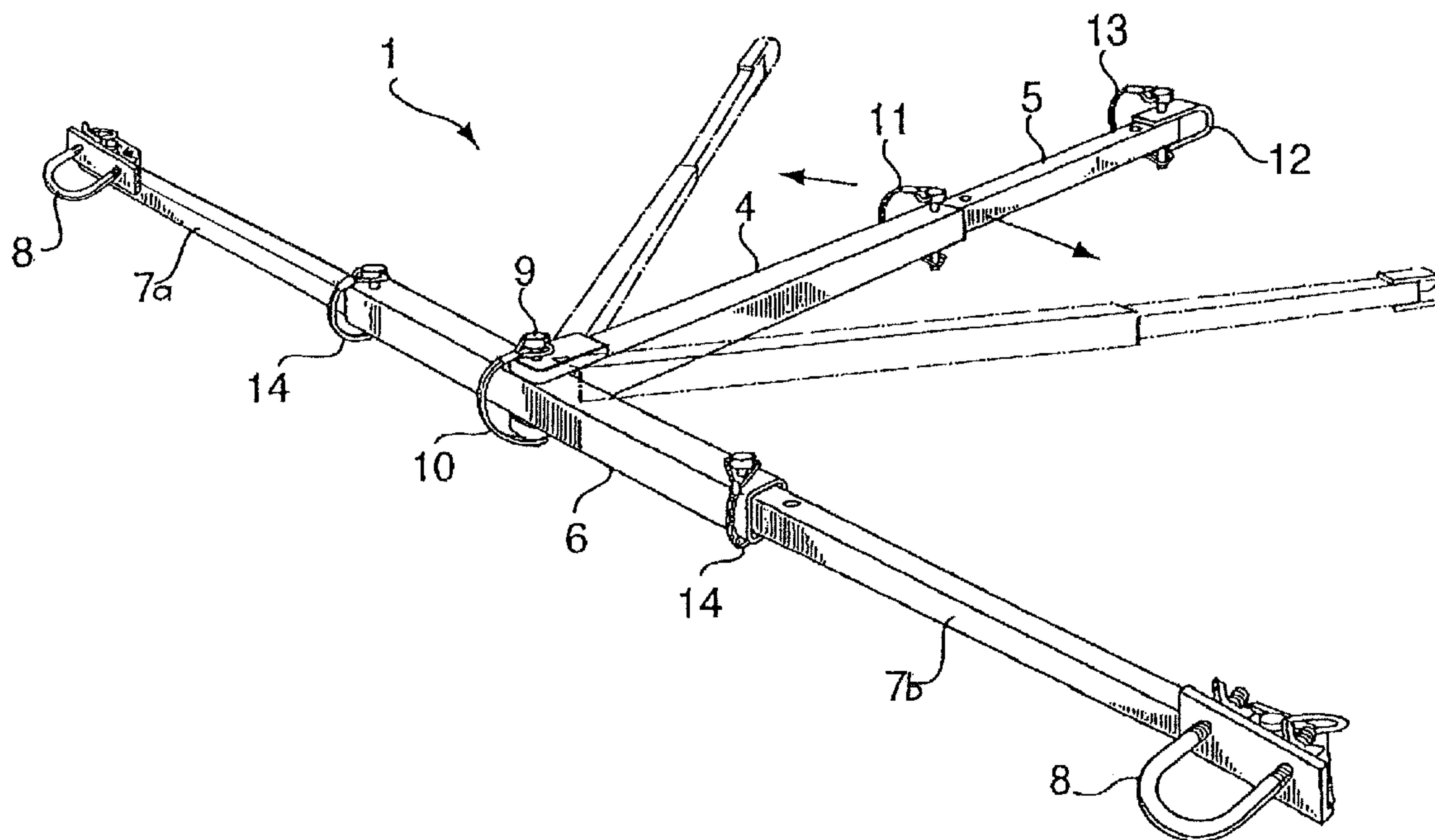
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(54) Titre : DISPOSITIF DE REMORQUAGE DE MOTONEIGE

(54) Title: SNOWMOBILE TOWING APPARATUS



(57) Abrégé/Abstract:

A snowmobile towing apparatus adapted to tow a disabled snowmobile by another snowmobile is provided comprising a towbar adapted to be removably connected to the rear of a lead snowmobile and a crossbar adapted to be removably connected to the towbar and to both skis of a trailing snowmobile. The angle formed by the towbar and crossbar may vary during towing in response to, for example, the path followed by the lead snowmobile and trailing snowmobile and the terrain topography. Both the length of the towbar and the length of the crossbar are adjustable in order to provide improved towing according to different circumstances such as snowmobile dimensions, including the distance between trailing snowmobile skis, and terrain.

ABSTRACT

A snowmobile towing apparatus adapted to tow a disabled snowmobile by another snowmobile is provided comprising a towbar adapted to be removably connected to the rear of a lead snowmobile and a crossbar adapted to be removably connected to the towbar and to both skis of a trailing snowmobile. The angle formed by the towbar and crossbar may vary during towing in response to, for example, the path followed by the lead snowmobile and trailing snowmobile and the terrain topography. Both the length of the towbar and the length of the crossbar are adjustable in order to provide improved towing according to different circumstances such as snowmobile dimensions, including the distance between trailing snowmobile skis, and terrain.

SNOWMOBILE TOWING APPARATUS

This invention relates generally to the field of towing and more specifically to towing of a snowmobile, for example a disabled snowmobile.

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Various devices to tow snowmobiles are known in the art such as the device taught in United States Patent No. 3,797,846 (Pevic). Pevic discloses a towing bar attachable to the rear of a lead snowmobile and to the skis of a trailing snowmobile.

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A swivel hitch at the point of the connection to the lead snowmobile allows for relative movement in the horizontal plane between the two snowmobiles. A pivot connection at the T-junction permits relative side tilting and vertical movement between the two vehicles. However, the device taught by Pevic does not give rise to a suitable slavish following of a trailing snowmobile because of its configuration including its allowable movement and lack of allowable movement. The deficiencies of the device described by Pevic will become more apparent from the description of the present invention as taught herein.

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It is an object of the present invention to provide a towing apparatus to permit a trailing snowmobile to be towed by a lead snowmobile while facilitating suitable slavish following of the lead snowmobile by the trailing snowmobile and which is collapsible for easy storage.

SUMMARY OF THE INVENTION

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A snowmobile apparatus according to the present invention adapted for towing one snowmobile by another snowmobile comprises a towbar adapted to be removably

connected to the rear of the lead snowmobile, preferably to the rear handle, or alternatively to a hitch, if present, and a crossbar adapted to be removably connected to the towbar and to both skis of the trailing snowmobile. This apparatus is particularly useful for towing a disabled snowmobile without requiring a driver for the disabled snowmobile. The degree of disablement of a trailing snowmobile is, of course, not intended to extend to types of disablement which would render towing by the apparatus of the present invention impossible or virtually impossible. The angle formed by the towbar and crossbar is variable and has a restricted pivot angle to prevent collapse and collision between the two vehicles when stopping or braking. This angle may vary during towing without adjustment thereof by a user but rather in response to, for example, the path followed by the lead snowmobile and trailing snowmobiles and to the terrain topography. Both the length of the towbar and the length of the crossbar are adapted to be adjustable in order to obtain improved towing according to different circumstances, such as snowmobile dimensions including a varied distance between trailing snowmobile skis and terrain.

BRIEF DESCRIPTION OF DRAWINGS

Embodiments of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of an apparatus according to an embodiment of the present invention in use;

Figure 2 is a perspective partial shadow view of the apparatus according to an embodiment of the present invention;

Figure 3 is a plan view of the portion of the apparatus for attaching to the ski of a trailing snowmobile;

Figure 4 is an end view of the portion of Figure 3; and

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Figure 5 is an exploded plan view of the apparatus according to an embodiment of the present invention

DESCRIPTION OF PREFERRED EMBODIMENTS

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Referring to Figures 1 to 5, the towing apparatus 1 according to an embodiment of the present invention includes a towbar 2 which, when in use, extends approximately away from the direction of towing and a crossbar 3 which, when in use, is generally perpendicular to the direction of towing. The towbar 2 comprises a hollow exterior towbar 4 adapted to be removably connected to the crossbar 3, by way of, for example, a fastening pin 10, and an interior towbar 5 (preferably hollow) partially fitting inside of the exterior towbar 4 and slidable within. The length of the towbar 2 is varied by moving the interior towbar 5 relative to the exterior towbar 4 along the longitudinal axes thereof and removably fastening the interior towbar 5 to the exterior towbar 4 by way of, for example, a fastening pin 11.

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The exterior towbar 4 has a square U-shaped end 9 which fits around an exterior crossbar 6 of the crossbar 3. The exterior crossbar 6 is centered around the halfway point between two interior crossbar portions 7a and 7b of the crossbar 3. The end 9 is removably connected to the exterior crossbar 6 with, for example a fastening pin 10 passing through one branch of the square U-shaped end 9, the exterior crossbar

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portion 6 and the other branch of the square U-shaped end 9, respectively, which allows for variation in the angle formed by the crossbar 3 and towbar 2. This angle may vary between approximately 45 and 90 degrees. The angle may preferably vary between 60 and 90 degrees. For clarity, the above-mentioned angle refers to the smaller of the two angles formed by the towbar 2 and the crossbar 3. The lower limit of the angle formed by the towbar 2 and crossbar 3 has a restricted pivot angle and is limited by, for example, the contact of the interior of the square U-shaped end 9 of the exterior crossbar 6.

The end of the towbar 2 opposite to the end attachable to the exterior crossbar 6 is equipped with a means for removably connecting the apparatus to the lead snowmobile 15. Such a means may be, for example, a square U-shaped piece 12 which can be removably connected to the rear of the lead snowmobile, for example to a handle or hitch 16 at the rear of a snowmobile, and attached to the end of the interior towbar 5 with, for example, a fastening pin 13 passing through one branch of the square U-shaped piece 12, through the interior towbar 5, and through the other branch of the square U-shaped piece 12, respectively. The end of the interior towbar 5 may be adapted to allow one or more positions of the U-shaped piece 12. Having more than one position accommodates different configurations at the rear of a snowmobile, including a variety of widths of the rear handle by varying the effective cavity formed by the U-shaped piece and the end of the interior bar 5 and is therefore preferred.

The crossbar 3 comprises a hollow exterior crossbar 6 and two interior crossbars 7a and 7b (preferably hollow), which interior crossbars 7a and 7b partially fit inside and are slidable within the exterior crossbar 6. The length of the crossbar 3 may be

adjusted by moving the interior crossbars 7a and 7b relative to the exterior crossbar 6 along the longitudinal axes thereof and removably connecting the interior crossbars 7a and 7b to the exterior crossbar 6 by way of, for example, a fastening pin 14 for each of the interior crossbars 7a and 7b. The apparatus may be used to tow snowmobiles with various dimensions including different ski center widths. The apparatus is preferably used to tow snowmobiles with a ski center width of from 38 to 45 inches.

The end of each interior crossbar 7a and 7b is provided with a means for attaching the apparatus to the skis of the trailing snowmobile. Each of these means may comprise, for example, a U-shaped screw piece 8. This connection means is preferably configured such that the skis 17 of the trailing snowmobile 18 may partially rotate about an axis substantially parallel with the towbar 2. This partial rotation may be between a position in which the means for attaching to the skis of the trailing snowmobile extends substantially perpendicular to the length of the crossbar in the plane made by the tow bar and the crossbar and a position where the same means is rotated toward the T-junction as seen in Figure 3. The angle of permitted maximum rotation in this manner is preferably between 30 and 60 degrees, more preferably between 40 and 50 degrees, and still more preferably approximately 45 degrees as seen in Figure 3. The skis may therefore move, in part, independently of each other based on the topography of the terrain, since it is possible for one of the means to rotate without rotation of the other means. In a preferred embodiment the means for attaching the apparatus to the skis may be provided with a means to prevent damage to the device or skis such as, for example, a piece of rubber tubing fitting, for example, around a U-shaped screw piece as described above.

According to another embodiment, the device may be assembled, disassembled, adjusted and used without requiring tools.

5 Although the invention has been described herein as having distinct parts, the invention should not be understood to be limited to such configurations. It is understood that for a variety of reasons, including ease of use and ease of manufacture, the apparatus according to the present invention may comprise any number of distinct component(s).

10 In another embodiment of the present invention a plurality of apparatuses may be used in order to tow more than one snowmobile using a single snowmobile. In this way, one apparatus is attached to a lead snowmobile and to a first trailing snowmobile and a second apparatus is attached to the rear of the first trailing apparatus and to the skis of a second trailing snowmobile, and so on. This
15 embodiment is, of course, limited by the power capacity inherent to the leading snowmobile. Using a plurality of apparatuses in a similar manner, more than two snowmobiles could also be used to tow one or more snowmobiles.

20 In order to use the apparatus according to the present invention a driver on the trailing snowmobile is not required, however at least one person may ride on the trailing snowmobile.

25 The apparatus is adapted to be collapsible and compact thus allowing the apparatus to be stored in the engine compartment of a snowmobile, as seen from the exploded view of Figure 5. This apparatus is adapted to keep the skis of the trailing snowmobile aligned, thereby reducing the chance of injury or damage to a

snowmobile or other property. The trailing snowmobile follows the lead snowmobile and the structure of the apparatus maintains separation between the lead and trailing snowmobile during towing including upon braking.

5 In another embodiment according to the present invention, the interior towbar 5 may be adapted to fit entirely or near entirely inside the exterior towbar 4 to facilitate storage. In a similar manner the interior crossbars 7a and 7b may be adapted to fit
10 entirely or near entirely inside the exterior crossbar 6 where one interior crossbar 7a has a smaller cross section than the other interior crossbar 7b such that one may fit inside the other while both are inside the exterior crossbar 6. These contractions may be secured in place in order to facilitate storage.

In another embodiment according to the present invention, the towbar 2 and crossbar 3 may be so structured to be telescopically extendible as described above
15 where instead of using fastening pins a locking mechanism is used. In this way the towbar 2 and crossbar 3 may be fully contracted for storage and locked in place, and thereafter extended to the appropriate length and locked in place thereby further facilitating the use of the apparatus. Any number of lockable positions may be provided. In fact, continuous position variation may be provided. The junction of
20 the crossbar 3 and towbar 2 may be so configured that, when the apparatus is contracted for storage, the towbar 2 and crossbar 3 become nearly parallel. When the apparatus is transformed into a configuration suitable for use, the towbar 2 and crossbar 3 may be locked into position in order to restore the aforementioned allowable movement wherein the angle formed by the towbar 2 and crossbar 3
25 varies when towing. In order to further facilitate use of the apparatus, there may be provided a means to display the adjustable dimensions, for instance, on the exterior

surface of the crossbar, so that, for example, the user, possessing the ski center width of the trailing snowmobile, may adjust the crossbar 3 to the appropriate length and simply proceed to attach the apparatus to the skis.

5 In another embodiment according to the present invention, the means for attaching the apparatus to the lead snowmobile, exemplified above by the U-shaped piece 12, may be so configured to allow for attachment using a means which is fixed to the apparatus.

10 In another embodiment according to the present invention, the means for attaching the apparatus to the skis of the trailing snowmobile, exemplified above by the U-shaped screw pieces 8, may be so configured to allow for using a means which is fixed to the apparatus.

15 In another embodiment according to the present invention, the apparatus may be used to tow a skier or another object, such as, for example a vehicle other than a snowmobile having skis or runners, such as a sled or toboggan, or may be attached to another vehicle for towing, such as, for example, an off-road vehicle or an on-road vehicle.

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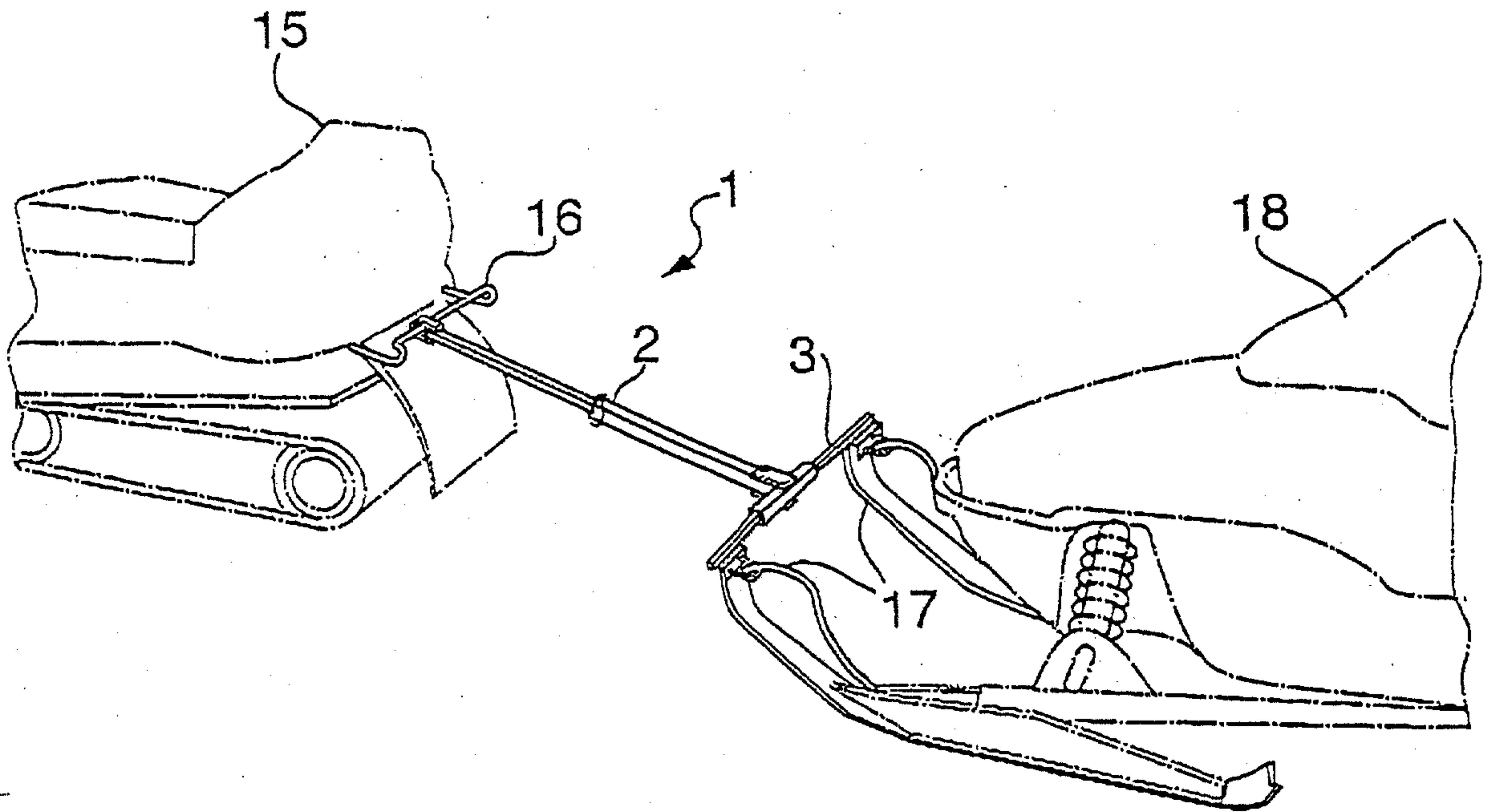


FIG. 1

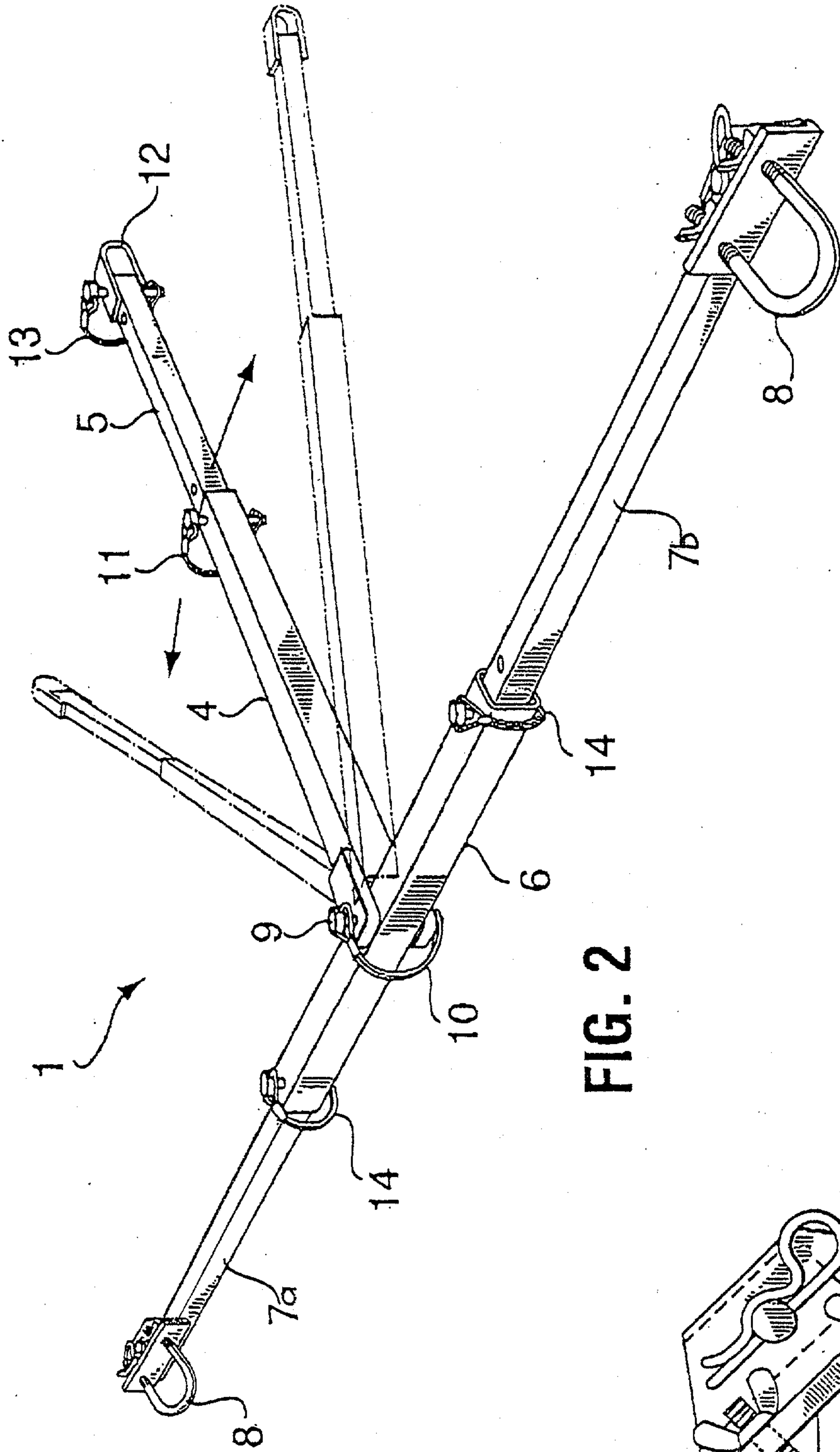


FIG. 2

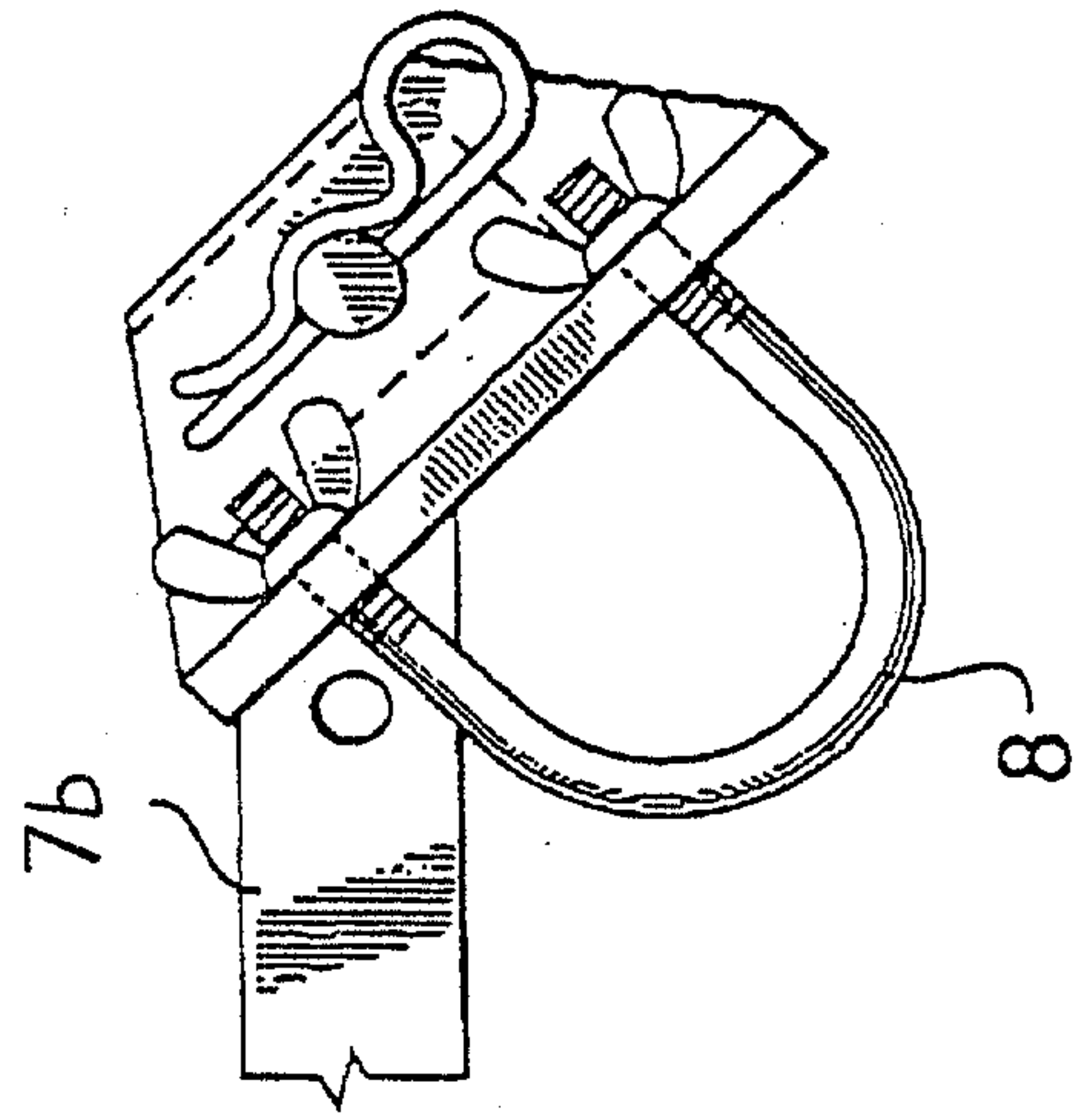


FIG. 3

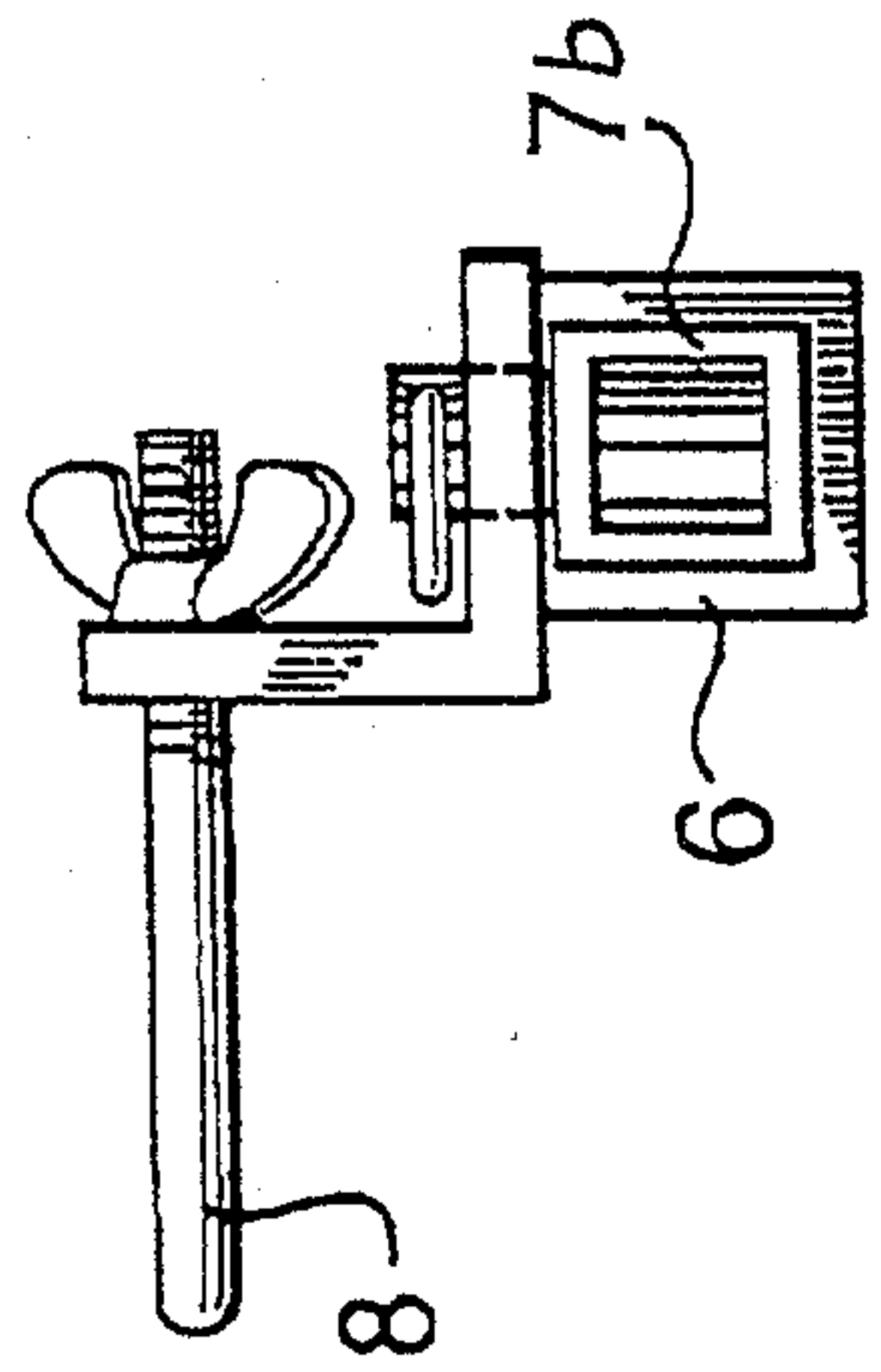


FIG. 4

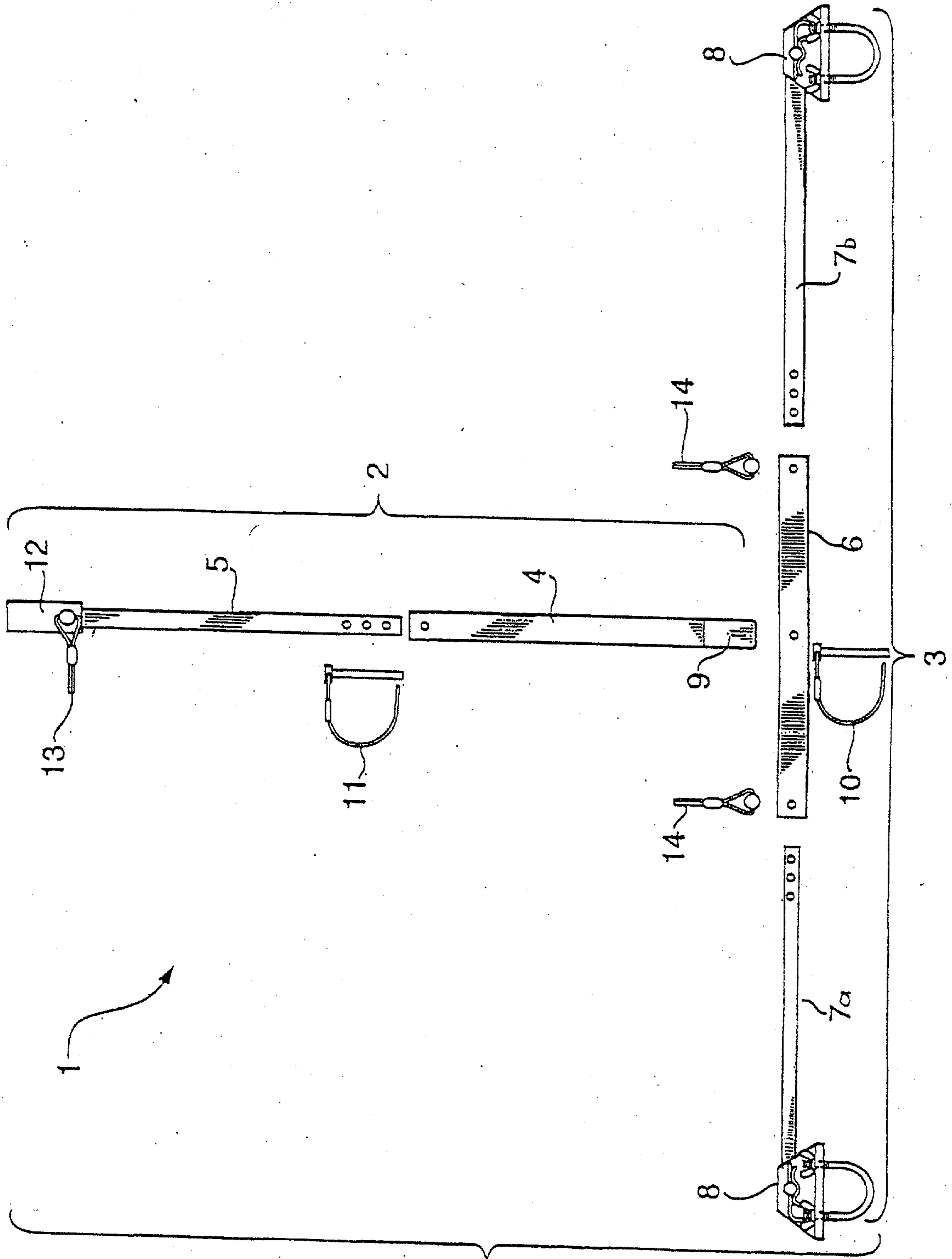


FIG. 5

