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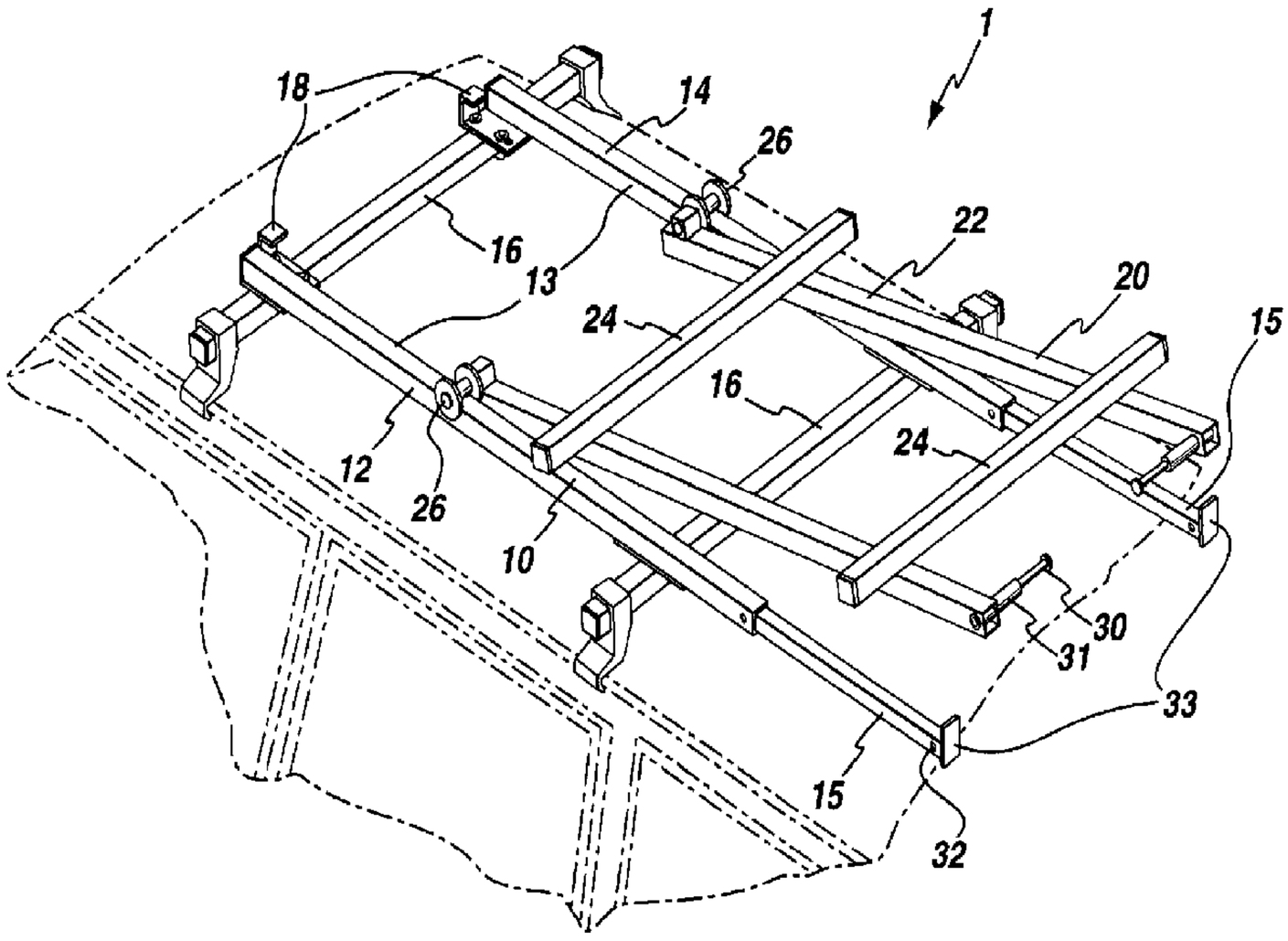
(54) **PORTE BAGAGE POUR VEHICULE**

(54) **LOAD-CARRIER FOR VEHICLE**



(57) A load carrier for automobile vehicle comprising a frame adapted for attachment on top of a vehicle, said frame comprising a set of substantially parallel telescopic members, a carriage pivotally mounted along an axis substantially parallel to the telescopic member plane and perpendicular to said members and slidingly mounted to said telescopic members to allow axial movement of said carriage along said telescopic members.

ABSTRACT

A load carrier for automobile vehicle comprising a frame adapted for attachment on top of a vehicle, said frame comprising a set of substantially parallel telescopic members, a carriage pivotally mounted along an axis substantially parallel to the telescopic member plane and perpendicular to said members and slidingly mounted to said telescopic members to allow axial movement of said carriage along said telescopic members.

Load-carrier for vehicle

Field of the invention

The invention relates to a load carrier for automobile vehicle, and more particularly to a load carrier provided with a movable carrier to make the loading/unloading operations easier.

Background of the invention

Load carriers for vehicles are well known. Traditionally, a load carrier comprises a surface adapted to receive a load and means to mount the device on top of a vehicle. The user who wants to install a load or remove it, simply lifts it up, and places it on the carrier, or lifts it up to remove it and places it on the ground. This operation may be easy for light objects, provided the user is healthy and the vehicle is small.

But if the load is heavy or bulky, the user is unhealthy, or the vehicle top is high, this operation may become difficult or even hazardous.

Considering the increasing number of high vehicles such as 4X4 vehicles or minivans, there is a strong demand for an improved load carrier of an easier and safer use.

Objects and statement of the invention

It is thus an object of the invention to provide a load carrier easy to load and/or unload.

It is another object of the invention to provide a light weight load carrier of a simple and reliable construction.

It is another object of the invention to provide a load carrier better suited to vehicles such as 4X4 vehicles or minivans.

As embodied and broadly described herein, the invention provides a load carrier for automobile vehicles comprising a frame adapted for attachment on top of a vehicle, said frame comprising a set of substantially parallel telescopic members, a carriage pivotally mounted along an axis substantially parallel to the telescopic member plane and perpendicular to said members and slidingly mounted to said telescopic members to allow axial movement of said carriage along said telescopic members.

As the mobile carriage can translate and pivot, it allows an easy manipulation. The carriage may be placed on the top of the vehicle very easily and pivoted to be lowered. This provides easy access, even if the top of the vehicle is high. The user does not have to lift the entire weight of the load, since one side or one end of the carriage may remain attached to the frame.

The carriage advantageously comprises, in a first end portion, a set of pivot members adapted to cooperate with said telescopic members to provide axially mobile support and pivotally free support to said first ending portion in relation to said telescopic members.

This is a very simple, reliable and economical way to design the load carrier of the invention.

The telescopic members are preferably extendable between a first transport position in which said telescopic members are retracted and a second

loading/unloading position in which said telescopic members are partially or fully extended.

The carriage is advantageously movable along said telescopic members between a first transport position in which said telescopic members are retracted and said carriage is pivotally and axially locked and a second loading/unloading position in which said telescopic members are partially or fully extended and said carriage is free to move axially along said telescopic members and pivotally about said pivot members.

The first transportation position provides full safety. The second position (loading /unloading) avoids the user to lift heavy loads with his arms. The loading/unloading operations are very easy to achieve, even if the user is not healthy.

The telescopic members advantageously comprise a fixed portion and a mobile portion. In one embodiment, the mobile portion is slidingly mounted into a substantially axial hollow portion of said fixed portion. In another embodiment, the mobile portion is slidingly mounted adjacent to said fixed portion. This provides a lightweight device of a simple construction that is reliable and cost effective too.

The load carrier advantageously comprises a stopper member disposed in a first end portion of said telescopic members. It may also comprise a locking member adapted to attach a second end portion of said carriage opposite said first end portion to said frame.

Other objects and features of the invention will become apparent by reference to the following description and drawings.

Brief description of the drawings

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

Figure 1 is a side elevational view illustrating the load carrier according to the invention, installed on top of a vehicle and in the transportation position;

Figure 2 is a side elevational view illustrating the load carrier according to the invention, installed on top of a vehicle and in the loading/unloading position;

Figure 3 is an enlarged view of the load carrier shown in figure 2 ;

Figure 4 is a perspective view of the load carrier according to the invention;

Figure 5 is a further perspective view of the load carrier according to the invention;

Figure 6 is an enlarged perspective view of the front portion of the load carrier according to the invention;

Figures 7 and 8 are elevational enlarged views of a telescopic member;

Figure 9 is a perspective view of one side of a second embodiment of a load carrier according to the invention;

Figure 10 is an elevational view showing the interconnection between the portions of the telescopic member;

Figures 11a, 11b and 11c illustrate partial views of further details of the second embodiment;

Figure 12 is a perspective view of a variant of the second embodiment of the load carrier according to the invention (one side only);

Figure 13 is an elevational view of the telescopic member of the variant of figure 12;

Figure 14 is a perspective view of a variant of the first embodiment of the load carrier according to the invention (one side only);

Figure 15 is an enlarged view of the rear portion of the embodiment of figure 14;

Figure 16 is an elevational view showing the interconnection between the portions of the telescopic member of the embodiment of figure 14.

In the drawings, preferred embodiments of the invention are illustrated by way of examples. It is to be expressly understood that the description and drawings are only for the purpose of illustration and are an aid for understanding. They are not intended to be a definition of the limits of the invention.

Detailed description of preferred embodiments

Figures 1 to 3 illustrate the operation of the load carrier according to the invention. When the user wishes to put an object on the carrier or take it out of it, the carriage of the load carrier is easily displaced from the central

portion of the top of the vehicle, where the access is limited due to the height and the width of the vehicle.

The telescopic members 12 and 14 allow a longitudinal or lateral displacement of the carriage 20. Once the latter is off the vehicle body, pivot members 26 allow to lower at least one end of the carriage up to the ground surface for example.

In figure 1, the load carrier 1 is shown installed on top of a motor vehicle. The telescopic members 1 are in their retracted position. In figures 2 and 3, the telescopic members are extended rearwards. The carriage is displaced off the vehicle body, in a pivoted position. From this position, it is of an easy access. It could also be taken out of its rails to be entirely laid down on the ground.

In another embodiment, in which the telescopic members are disposed transversally, the extension is achieved by pulling the telescopic members sideward.

Figure 4 illustrates a first embodiment of the load carrier assembly 1 from the top. In this embodiment, the frame10 comprises two telescopic members 12 and 14 that are arranged to extend longitudinally over the top of the vehicle. In this example, they are connected to bridging members 16, of known type, removably secured in a traditional way on top of the vehicle. In the description, the expression frontal portion or frontal member or the like is used to designate an element placed near or towards the front of the vehicle; the expression rear portion, rear member or the like is used to designate an element placed or near or towards the rear of the vehicle.

Figures 4 illustrates an embodiment with two bridging members 16, but other arrangements are also possible. The attachment to the vehicle is possible by

using attachment points, provided on the top of most recent vehicles, or more traditionally, by using the top side rails generally used to protect the vehicle sides from rain and water. The frame 10 could also be provided without any bridging members. In such a case, the frame could be attached to connecting bars already installed on top of the vehicle.

Each telescopic member 12 and 14 comprises a fixed portion 13 and a mobile or extendable portion 15. In the embodiment shown in figure 4, the mobile portion 15 is slidingly arranged in the hollow part of the fixed portion. As shown in figure 2, the telescopic members are advantageously arranged to be extendable towards the rear of the vehicle. Other types of arrangements are possible, as they will be further described herein below.

The load carrier also comprises a mobile carriage 20, adapted to translate and pivot along the telescopic members 12 and 14. In the embodiment illustrated in figure 4, the carriage comprises two elongate bars 22 extending longitudinally and maintained spaced apart from one another by bridging members 24, extending transversally and connected to each bar 22. The shape, number and arrangement of the bridging members 24 could be modified without departing from the spirit of the invention.

As shown in figures 2 and 3, the dimensions of the frame, and more particularly of the telescopic members, are preferably established to allow the rear extremity of the mobile portions 15 to travel substantially up to the rear of the vehicle, and to allow the carriage to pivot downwardly, as close as possible to the rear plane of the vehicle. The carriage 20 is shaped and dimensioned so that the elongate bars 22 are substantially parallel to the telescopic members and positioned inwardly with respect to the latter when the carriage is mounted on the frame. This configuration is given only as a purpose of illustration. Other configurations are also possible.

The front portion of the carriage 20 comprises at least one pivot member 26. In the illustrated embodiment (figure 4), the two pivot members comprise a wheel-like member having a central portion 29 with a smaller diameter than the outer portions 27, forming a central contact portion and lateral guards (see figure 7). The pivot members 26 are connected to the front end portion of the elongate bars and they extend outwardly to cooperate with the telescopic members when the carriage is mounted on the frame.

The pivot members are either fixed and will thus slide on the telescopic members, or rotatable and the wheels will rotate along the telescopic members. The pivot members allow the carriage 20 to translate along the telescopic members and to pivot about the pivot members axis.

The load carrier illustrated in figure 4 further comprises at least one locking member 30. This member is used to secure the carriage during the transportation. The rear extremity of the carriage is thus secured to the frame and can not move backwardly or vertically. As shown in more details in figure 8, the locking member comprises an elongate pin or rod, movable between a first free position, indicated "*free*" on figure 8, and a second locked position, indicated "*locked*" on figure 8.

In the locked position, the pin is inserted into corresponding locking apertures 32 provided co-axially to the pin in the rear extremity region of the fixed portion 13 and the mobile portion 15 of the telescopic member. This secures the carriage to the frame, but also locks the telescopic member in its retracted position. In the free position, the pin is extracted from the aperture. Other locking arrangements are also possible.

The load carrier illustrated in figure 4 also comprises one stopper 18 at least. As shown in more details in figure 6, a C-shaped member, with the aperture oriented towards the extremity of the telescopic member, is mounted on the

front portion of the frame 10, to cooperate with this extremity when the carriage is placed in the most forward position. The stopper prevents the carriage from travelling too far in the forward direction, and also secures the carriage to avoid vertical movement, especially during transportation.

The carriage 20 advantageously comprises at least one handle 31, provided in the rear portion of the carriage. The carriage handling is thus made easier and more convenient. In the embodiment illustrated in figure 4, the handle comprises a hollow tube, mounted normal in relation to the bar 22, and forming a housing for the locking member rod.

Several modifications to the described embodiment are possible. For instance, the carriage is shown with bridging members 24. These members could be used to support any type of support or loading device, for instance a container, a ski rack, a bicycle rack, a luggage rack, etc. They could also be replaced with such an element.

The members or elements 12, 13, 14, 15, 16, 20, 22, 24 are shown with hollow square profiles. These shapes could be modified without departing from the invention. The materials used for these elements are advantageously selected to be as light as possible and to offer good strength and stiffness properties. Examples of such materials are aluminum, steel, composite, etc.

The load carrier of the invention operates as follows:

In the transportation mode or position, the carriage is normally in the most forward position. The front extremities of the bars 22 cooperate with the stoppers 18. The telescopic members are in the retracted position. The locking members are in the locked position. The carriage is thus well secured

and can not move forward, backward or vertically. This is very important for safety reasons, namely when the vehicle is moving.

To load or unload the load carrier, when the vehicle is stopped, the locking members are put in the free position. The mobile portion 15 of the telescopic members can thus be extracted and the carriage can translate rearwards. The handles 31 will help for this operation. The bottom face of the bridging members 24 may be provided with wheels or sliding pads, arranged to cooperate with the adjacent upper face of the telescopic member, in order to provide easier translation movement.

Once the telescopic members are sufficiently elongated, the carriage is moved rearward. A locking member (not shown) may be provided to secure the telescopic member in the extracted position. The carriage may finally be pivoted downwardly about the pivot members, in abutment against the rear stopper 33 provided at the rear extremity of the mobile portion 15 (see figure 2 and 3). The loading/unloading operations are thus considerably easier to carry on. If desired, the carriage may be totally removed from the frame and put on the ground or on a stand.

Figures 9, 10 and 11a, 11b, 11c illustrate a second embodiment of the load carrier according to the invention. Similar elements are designated with the same numeral references. Figure 9 illustrates one side of the load carrier. According to this embodiment, the mobile portion 15' is slidingly mounted side by side with respect to the fixed portion 13'. Figure 10 illustrates the arrangement of these elements in more details. An interconnecting member 40 extends transversally between the fixed portion 13' and the mobile portion 15'.

On a first side, the mobile portion 15' is connected to the interconnecting member with a fastener 43, for instance a rivet, a screw or the like. On the

second side, the fixed portion is slidingly connected to the interconnecting member with a T-shaped member 41 extending upwardly from the member 41 into a slot 42 provided in the bottom face of the fixed portion. The slot 42 extends along the fixed portion 13' on a length corresponding to the path of the mobile portion 15'.

Advantageously, the connection to the mobile portion is provided in the front region of the mobile portion. The remaining portion of the mobile portion rests on the top surface of the rear bridging member 16. Of course, the described arrangement may easily be modified: for instance, the slot could be provided on the mobile portion, with the interconnecting member mounted on the fixed portion.

The telescopic member is thus adapted to be positioned in a retracted position and an extended position, in a way similar to the above described first embodiment.

In this second embodiment, a carriage, as illustrated in figure 4, could be used. The pivot member could be adapted to move on the top surface of the fixed portion 13' illustrated in figure 9. However, the translation movement of the carriage would be limited in comparison to the first embodiment because the pivot member could not continue its motion along the extended mobile portion. This is due to the fact that the two portions of the telescopic member are not on the same axis.

This limitation may be avoided in using a second wheel or sliding member, for instance below the front extremity of the carriage, adapted to support the carriage against the mobile portion. The motion of the carriage could thus be achieved all along the extended telescopic member.

Another solution is illustrated in figures 9, 11a, 11b and 11c. The mobile portion 15' is provided with a front securing slot 51. This slot has an opening in the upper face of the element 15'. It is advantageously slightly inclined rearwardly. This facilitates the insertion/extraction of the carriage protruding member into/out of the slot. The mobile portion 15' is also provided with a rear securing slot 53, similar to the front one but inclined forwardly. Though not shown in figures 9 to 11, the other telescopic member is provided with a similar arrangement.

The elongate bars of the carriage 20 are provided with front securing pins 61 and rear securing pins 63. The pins are provided below the bars and comprise a pin or rod arranged to be substantially normal with respect to the slots 51 and 53.

When the carriage is in the transportation position, the front pins 61 are engaged in the front slots 51. The rear pins 63 are engaged in the rear slots 53. The rear stopper 55, extending vertically from the bottom of the slot 53, secures the carriage and avoids any rearward movement. The front slot 51 being inclined, it comprises a small portion extending over the front securing pin 61 when the latter is in the transportation position, with the pins 61 and 63 inserted in the slot 51 and 53. The stopper avoids any rearward movement and the front slot avoids any vertical movement as long as the carrier does not move backward, to create an oblique movement along the inclined slot 51.

A locking member (not shown) may also be provided to secure the rear securing pin 63 and stop any vertical movement. Thus, the carriage is locked in the transportation position. Advantageously, the mobile portion of the carrier is provided with a further locking member, for instance of a similar type as described in the first embodiment, to secure the mobile portion against the fixed portion.

To load or unload the carrier, the pins and the mobile portions are unlocked, the rear portion of the carrier is moved vertically so that the rear securing pin 63 slides along the rear stopper until it comes out from the slot. After a slight rearward movement of the carriage, the front pin 61 comes out of the front slot 51. The carriage is thus free to translate and pivot in a way similar to the first embodiment. The main difference is that the mobile portion 15' slides besides the fixed portion 13' instead of inside.

In the loading/unloading position, the front pin 61 is inserted in the rear slot 53, ensuring a safe pivoting movement of the carriage about the rear pin axis (see figure 11c). If desired, the carriage may be removed from the telescopic member and placed on the ground.

In a variant, illustrated in figures 12 and 13, the mobile portion 15' of the telescopic members 12 and 14 are slidingly mounted on top of the fixed member 13'. The interconnecting member of figure 10 may be replaced with a sliding arrangement comprising one or more U-shaped members 71 as illustrated in figure 13, or any arrangement allowing a sliding arrangement between the two members. A rail arrangement 70 maintains the upper mobile portion 15' safely in place against the fixed portion 13'.

Figures 14, 15 and 16 illustrate a variant of the first embodiment. The mobile portion 15 of the telescopic members 12 and 14 are provided with slotted rails 80 in which a sliding and pivoting member 82, connected to the mobile portion 15, is slidingly mounted. The mobile portion 15 is thus slidingly and pivotally mounted on the rails 80 rather than on top of the fixed member 13 as shown in figure 4. The other characteristics and operation are similar to those described for the first embodiment.

The above description of preferred embodiments should not be interpreted in a limiting manner since other variations, modifications and refinements are possible within the spirit and scope of the present invention. For instance, the carriage described in the different embodiments may be completed or replaced with any other type of device allowing to transport a given load, such as a container, a ski rack, a bicycle rack, etc.

The scope of the invention is defined in the appended claims and their equivalents.

The embodiments of the invention for which an exclusive privilege or property is claimed are defined as follows:

1. A load carrier for automobile vehicles comprising a frame adapted for attachment on top of a vehicle, said frame comprising a set of substantially parallel telescopic members, a carriage pivotally mounted along an axis substantially parallel to the telescopic member plane and perpendicular to said members and slidingly mounted to said telescopic members to allow axial movement of said carriage along said telescopic members.

2. A load carrier as claimed in claim 1, said carriage further comprising in a first end portion a set of pivot members adapted to cooperate with said telescopic members to provide axially mobile support and pivotally free support to said first ending portion in relation to said telescopic members.

3. A load carrier as claimed in any one of preceding claims, wherein said telescopic members are extendable between a first transport position in which said telescopic members are retracted and a second loading/unloading position in which said telescopic members are partially or fully extended.

4. A load carrier as claimed in any one of preceding claims, wherein said carriage is movable along said telescopic members between a first transport position in which said telescopic members are retracted and said carriage is pivotally and axially locked and a second loading/unloading position in which said telescopic members are partially or fully extended and said carriage is free to move axially along said telescopic members and pivotally about said pivot members.

5. A load carrier as claimed in any one of preceding claims, wherein said telescopic members comprise a fixed portion and a mobile portion.

6. A load carrier as claimed in claim 5, wherein said mobile portion is slidingly mounted into a substantially axial hollow portion of said fixed portion.

7. A load carrier as claimed in claim 5, wherein said mobile portion is slidingly mounted adjacent to said fixed portion.

8. A load carrier as claimed in any one of preceding claims, further comprising a stopper member disposed in a first end portion of said telescopic members.

9. A load carrier as claimed in any one of preceding claims, further comprising a locking member adapted to attach a second end portion of said carriage opposite said first end portion to said frame.

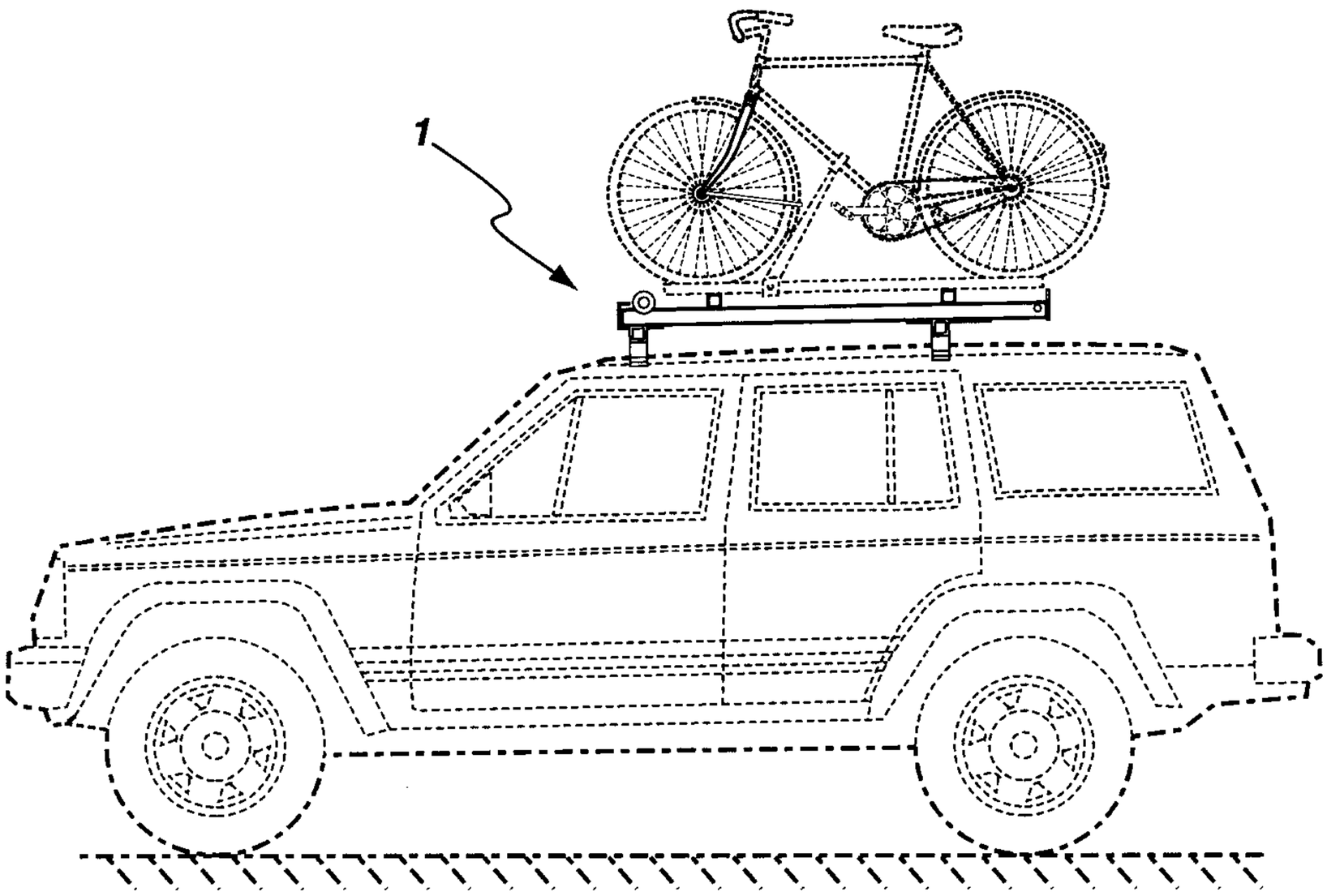


Fig.1

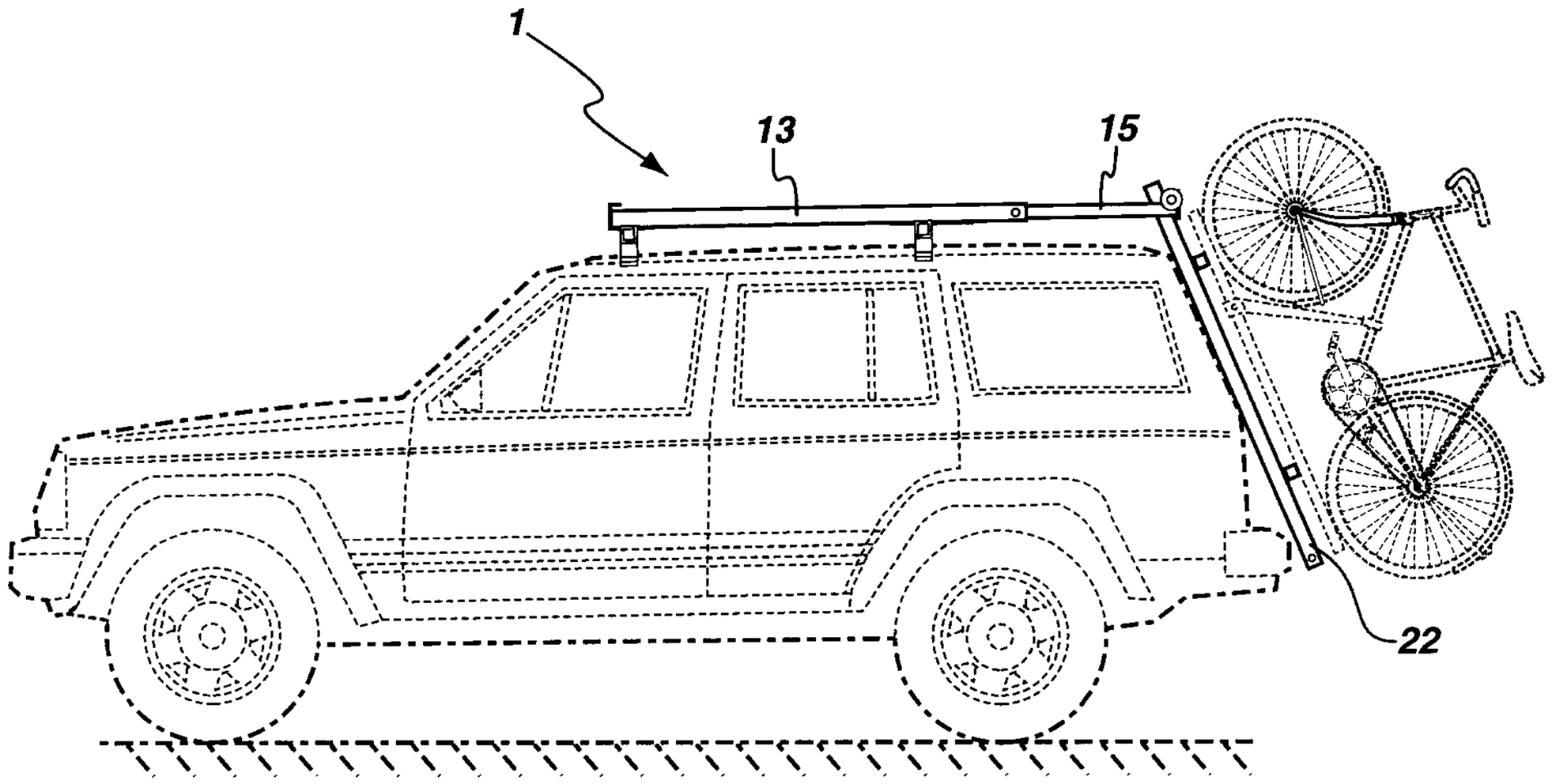


Fig.2

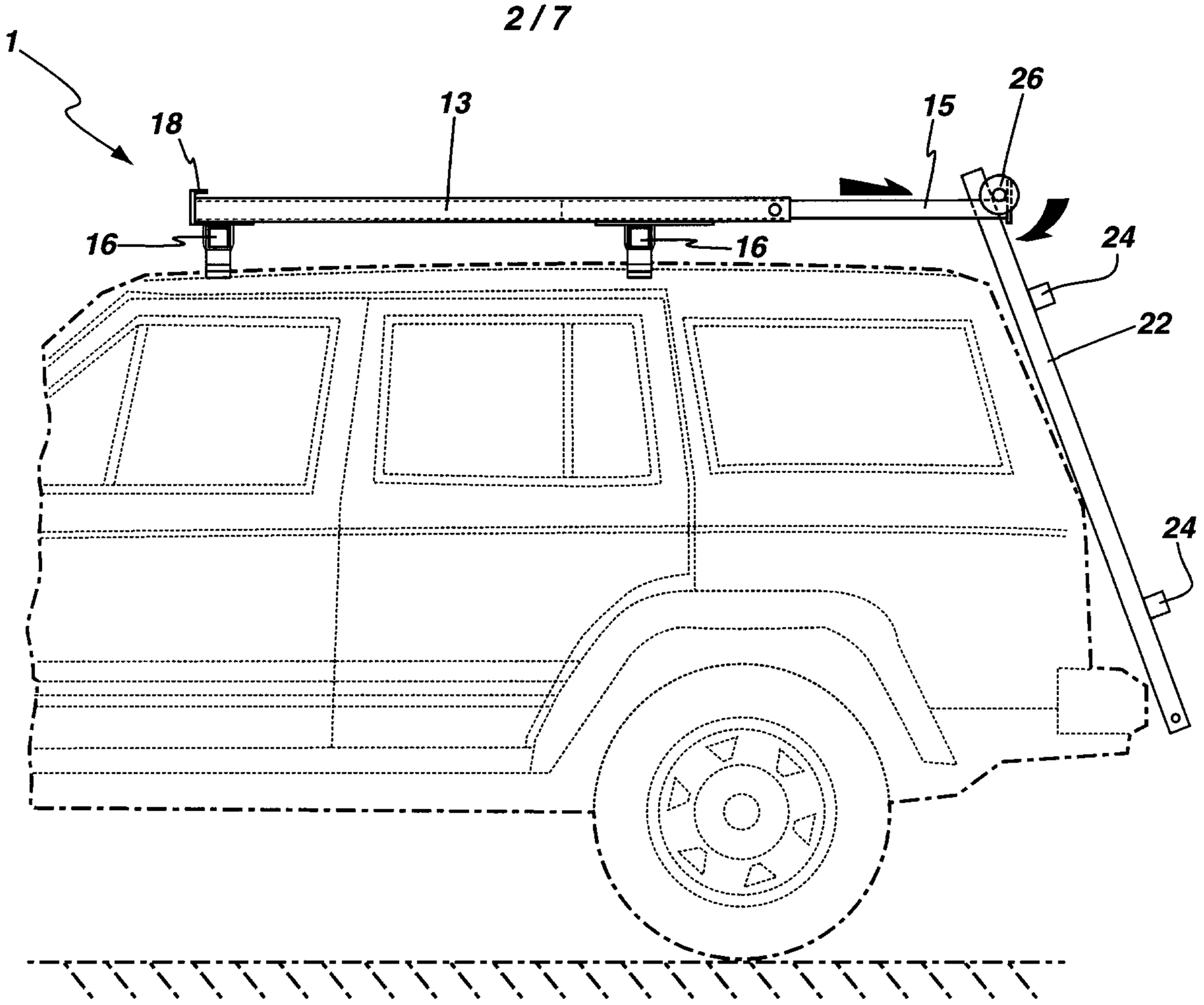

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Fig.3

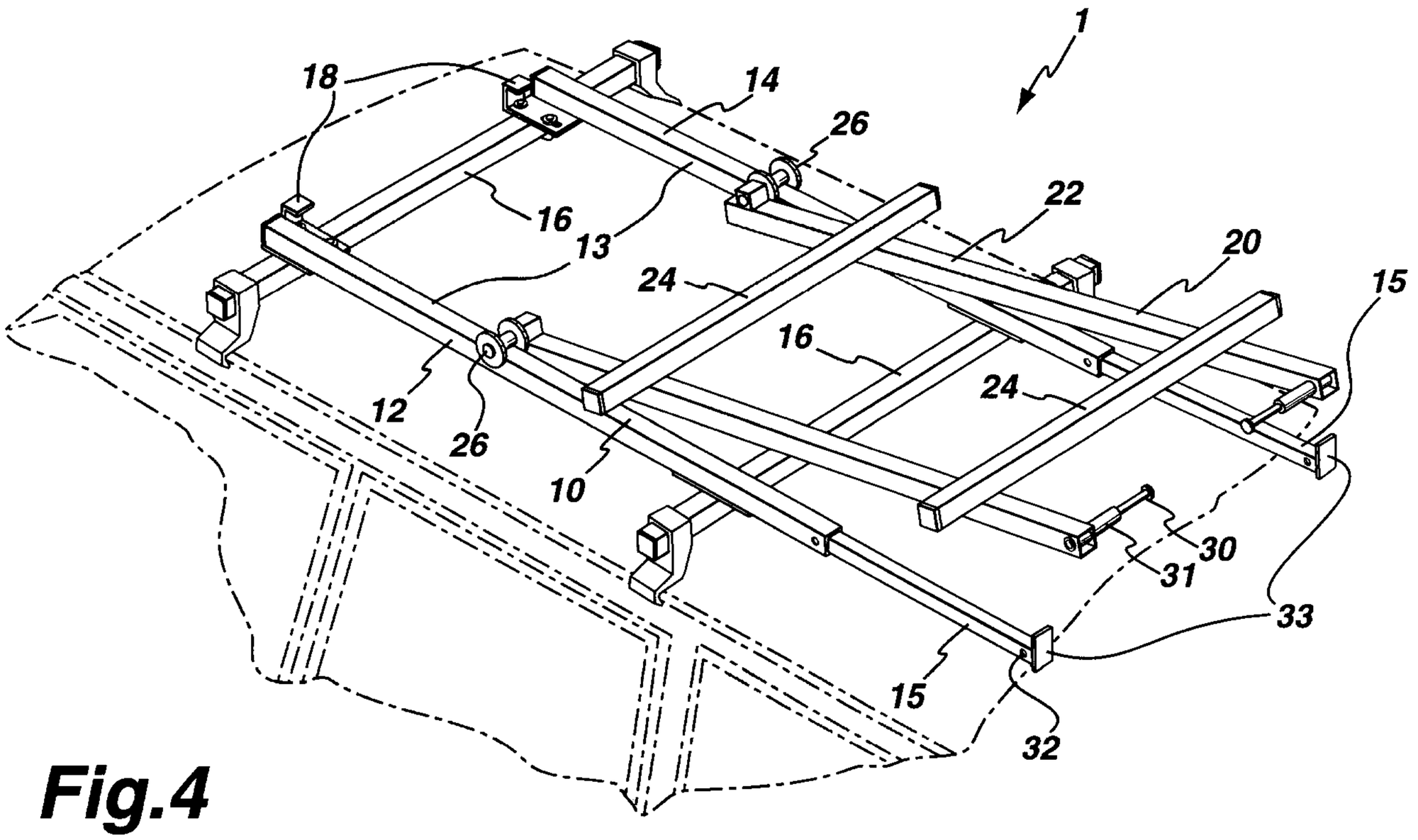
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Fig.4

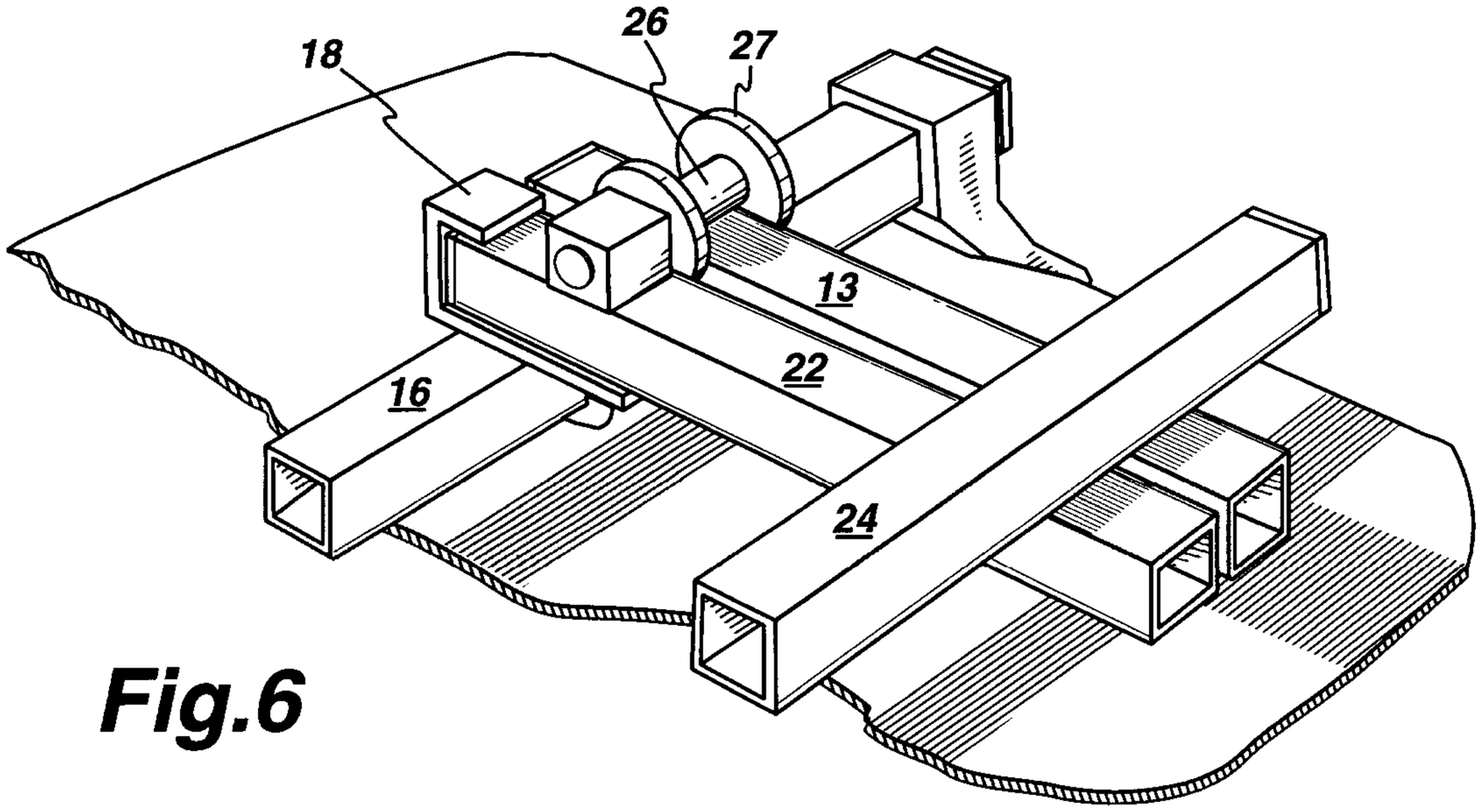


Fig.6

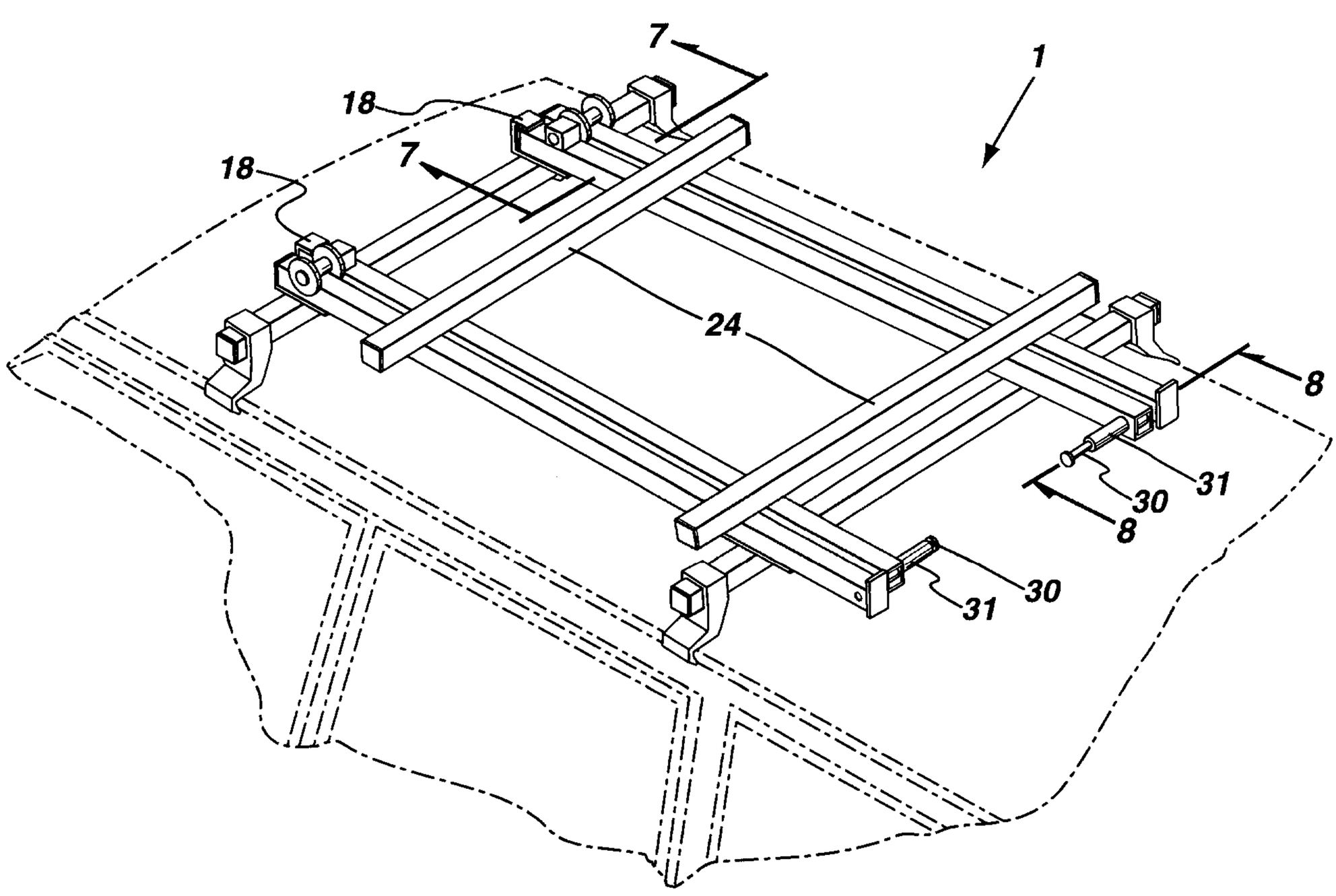


Fig.5

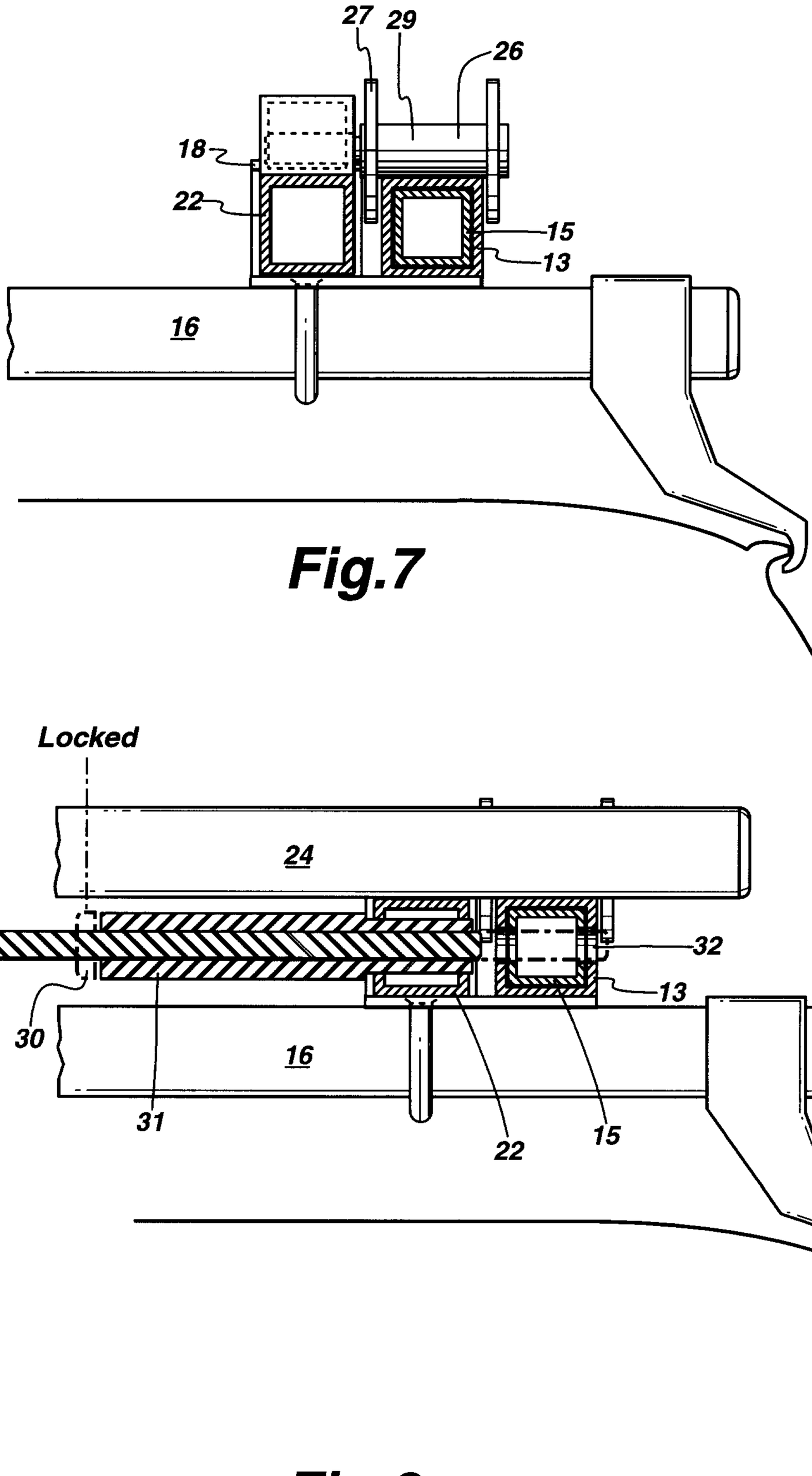


Fig.7

Fig.8

Fig.10

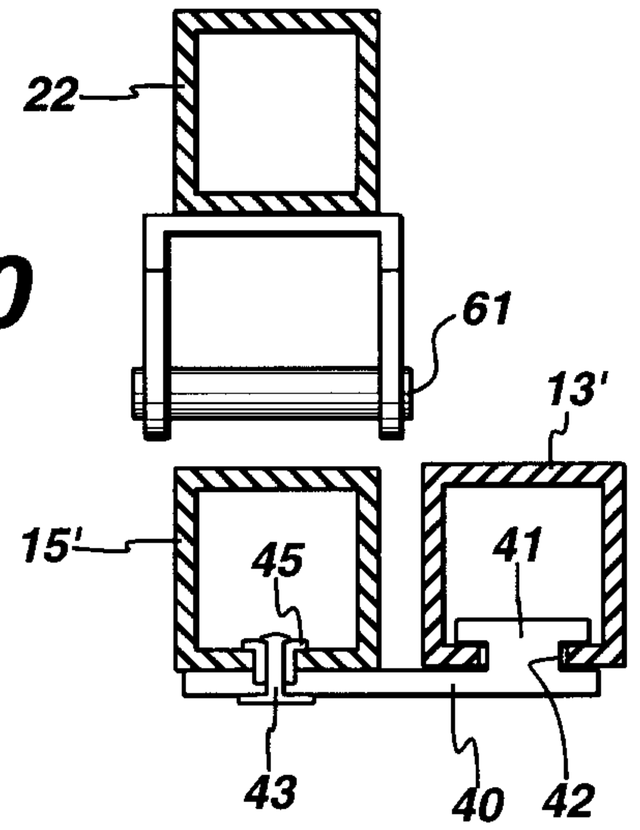


Fig.9

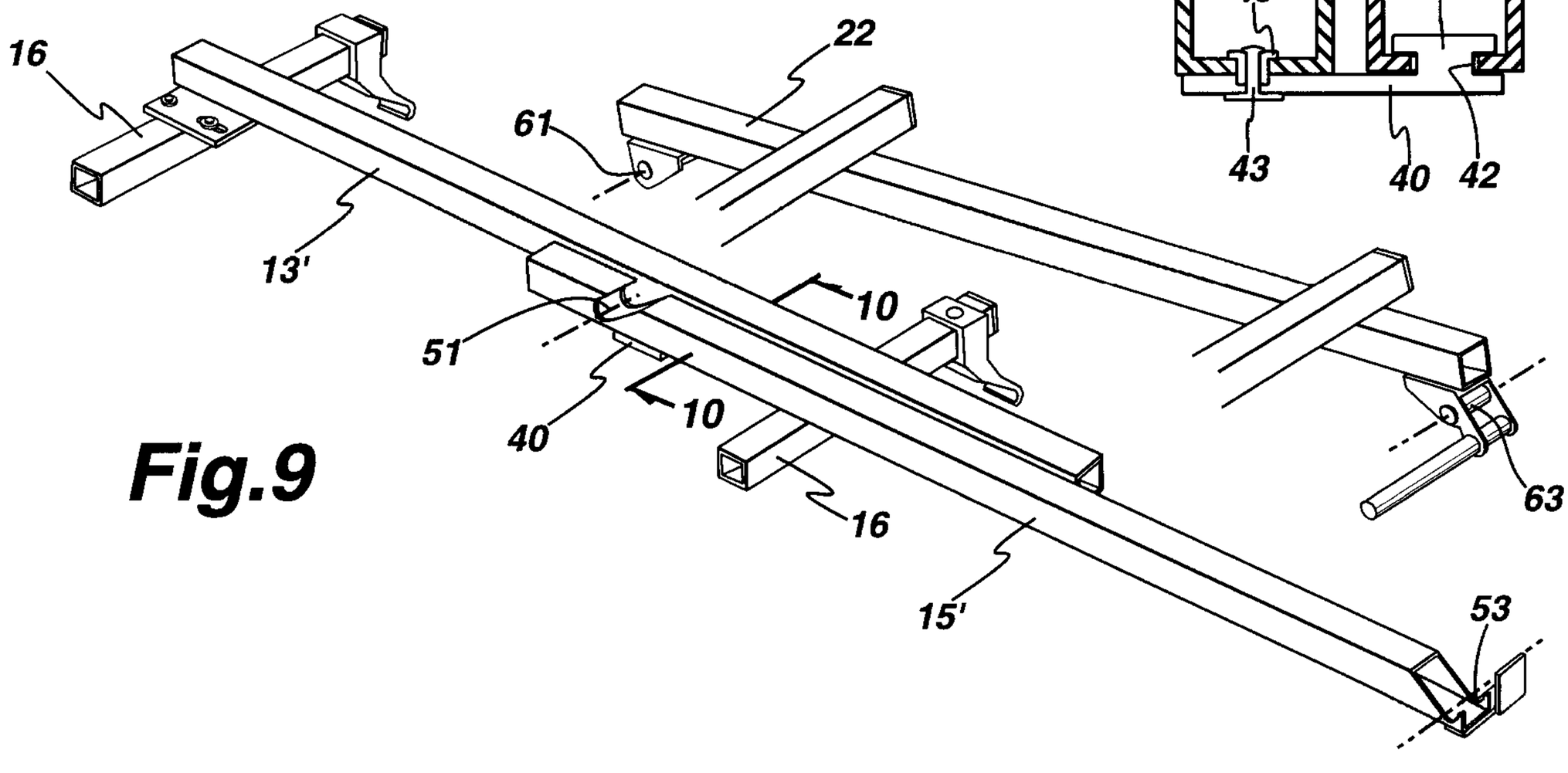


Fig.11a

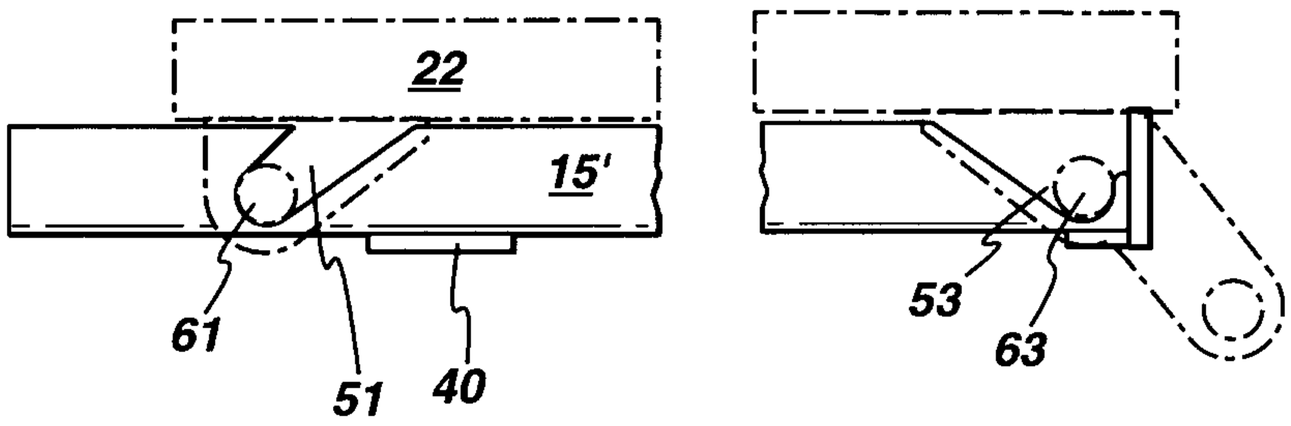


Fig.11b

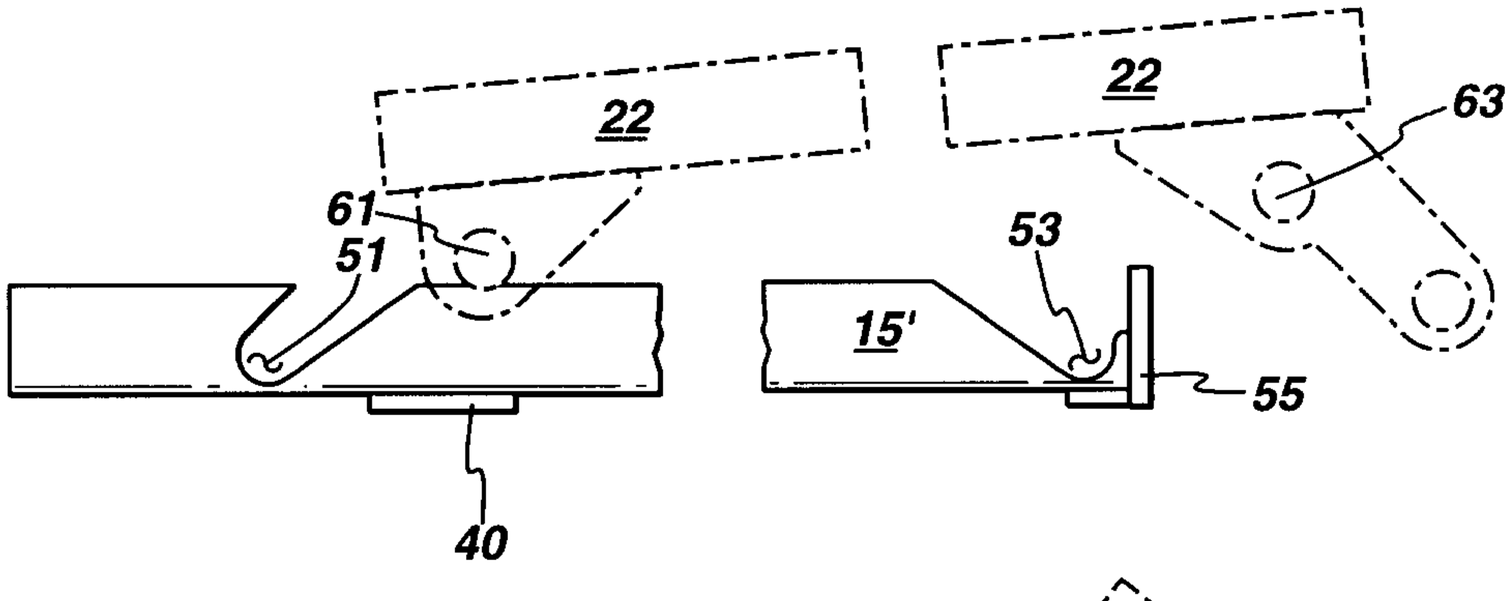
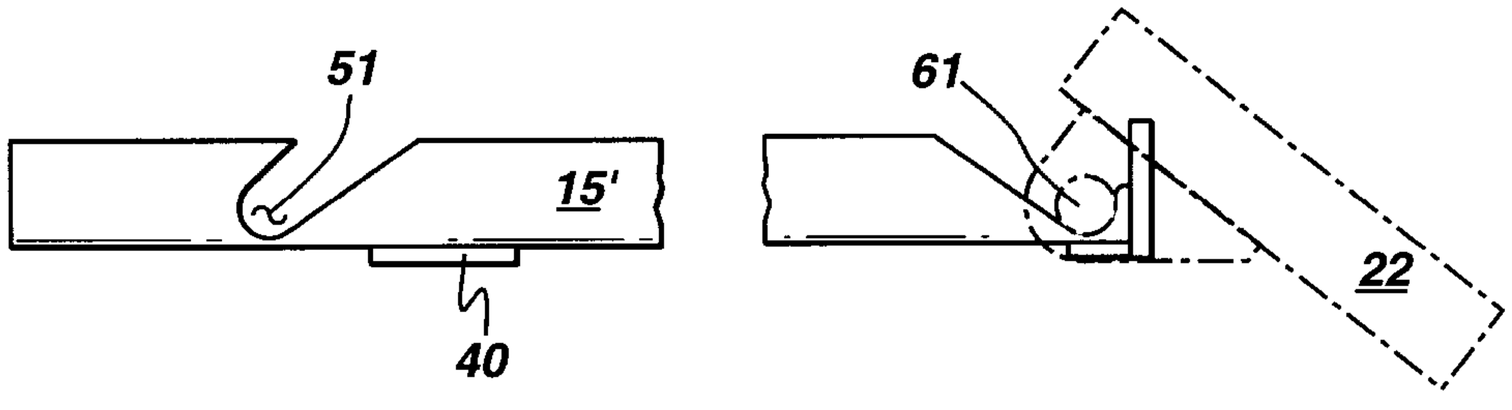


Fig.11c



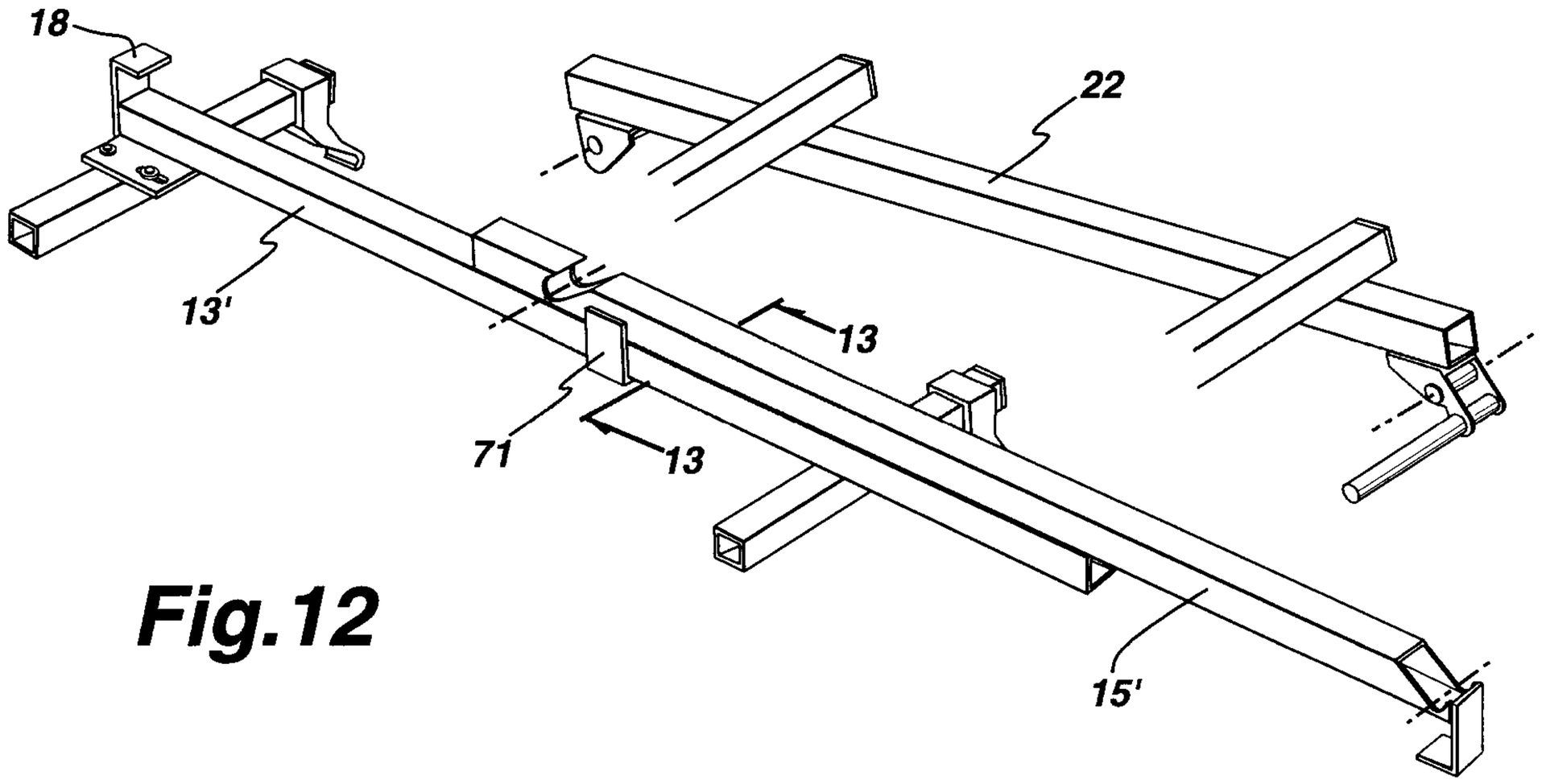


Fig.12

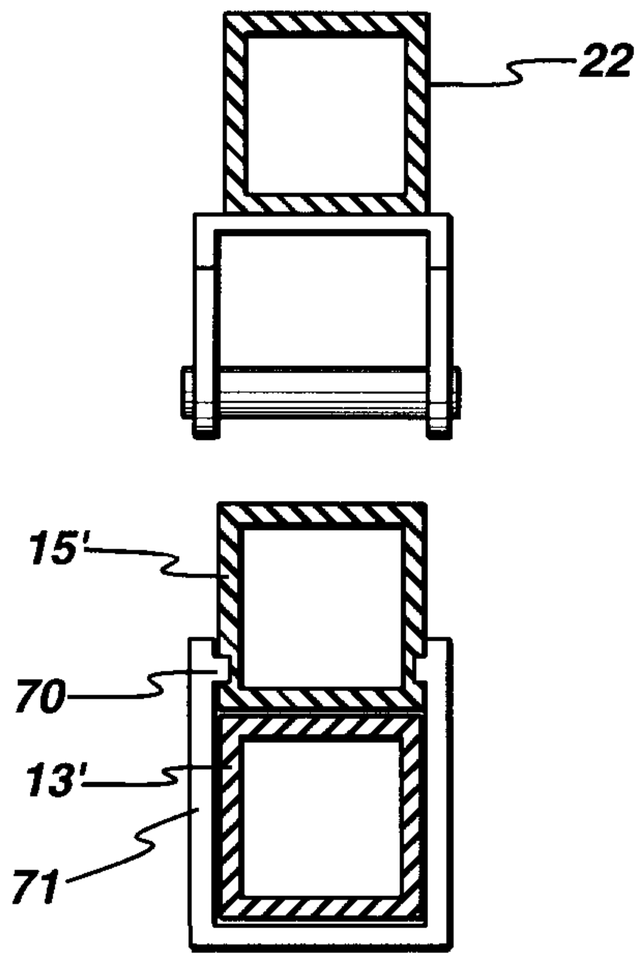


Fig.13

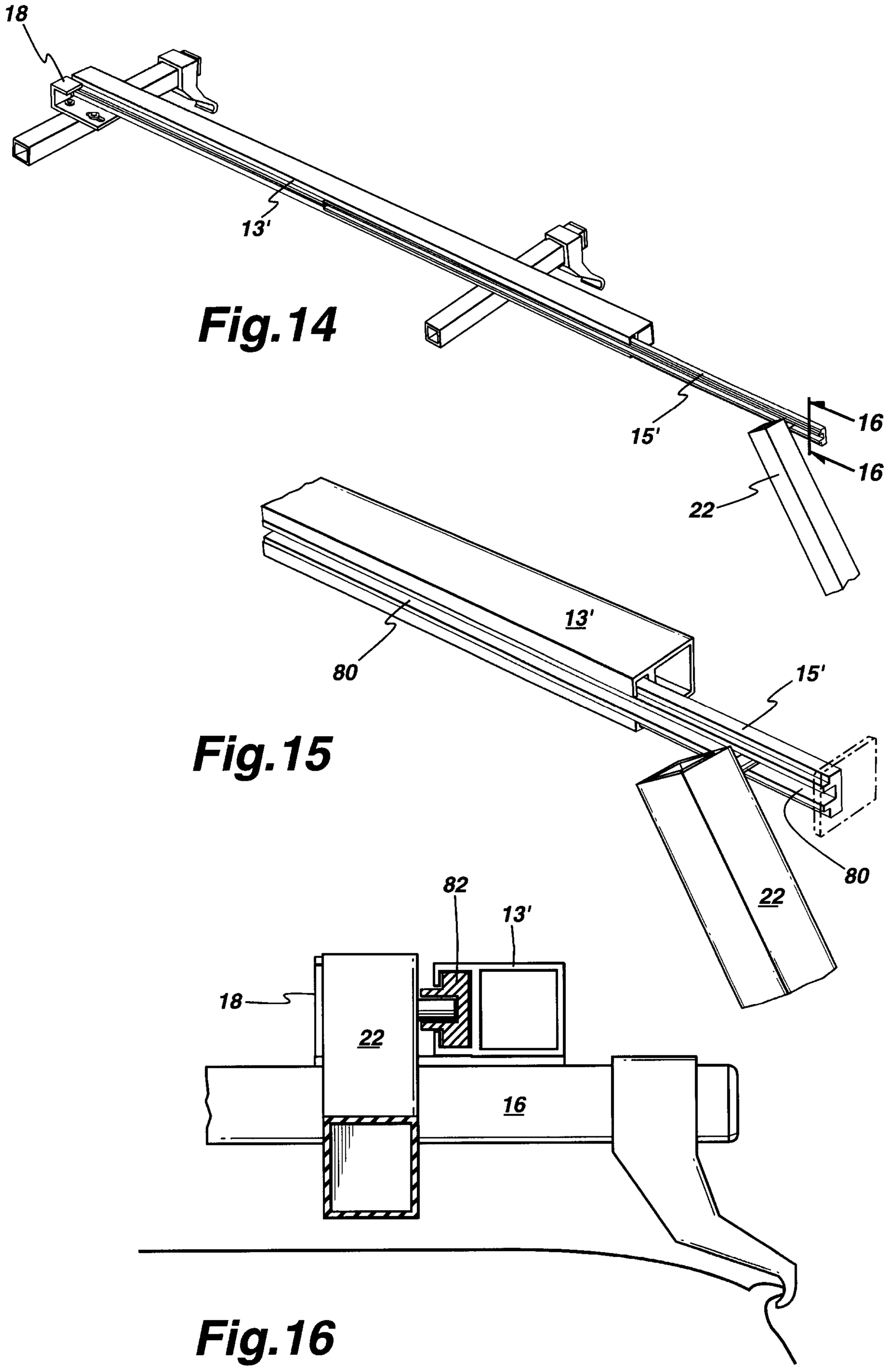


Fig.14

Fig.15

Fig.16