April 3, 1945. R. S. TURNER 2,372,803

ANCHORING MEANS FOR VEHICLE SEATS

Filed Dec. 2, 1943 2 Sheets-Sheet 1

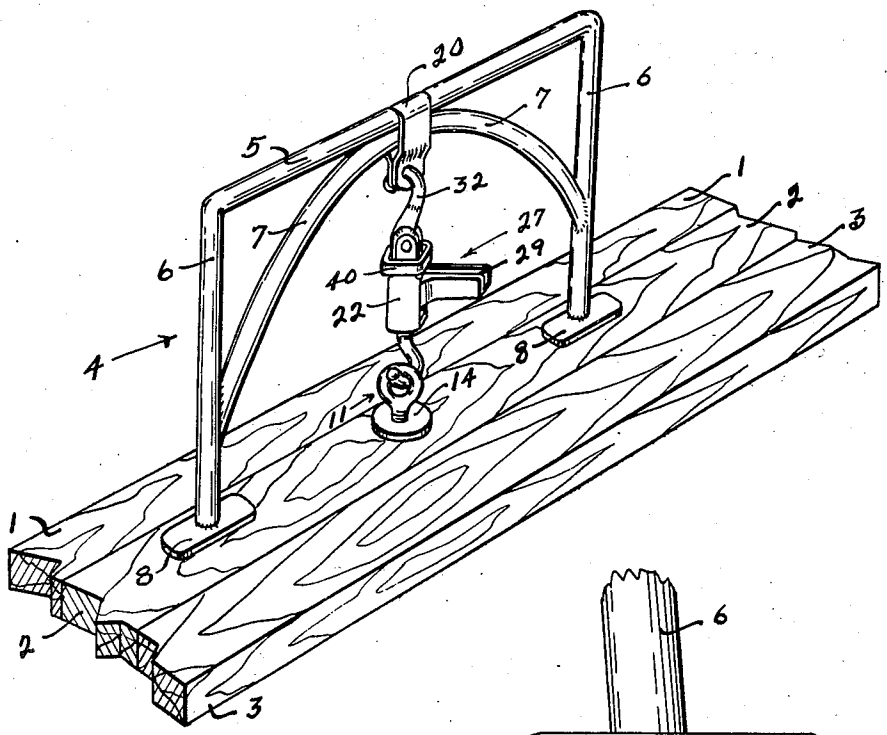


FIG. 1

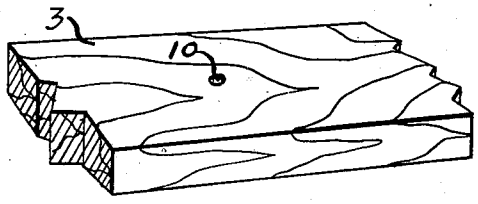


FIG. 2

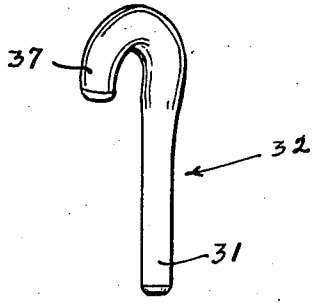


FIG. 5

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ANCHORING MEANS FOR VEHICLE SEATS

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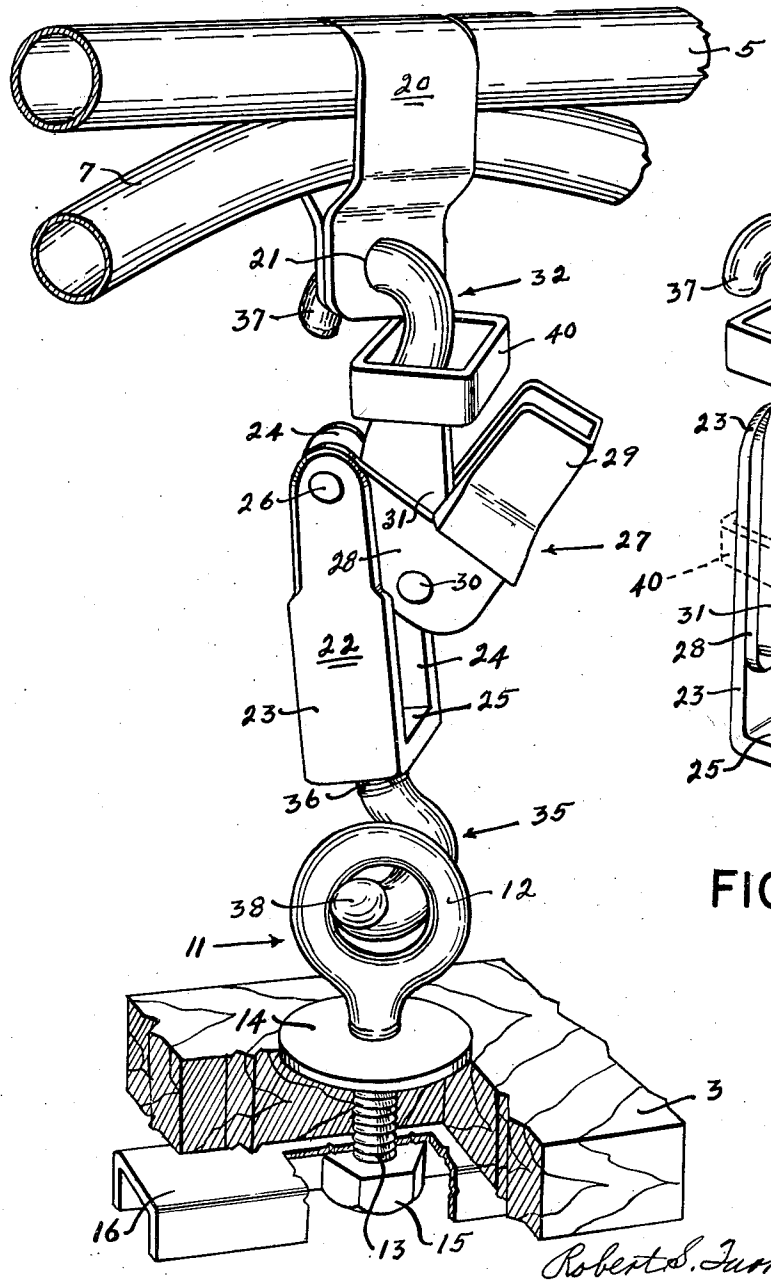


FIG. 3

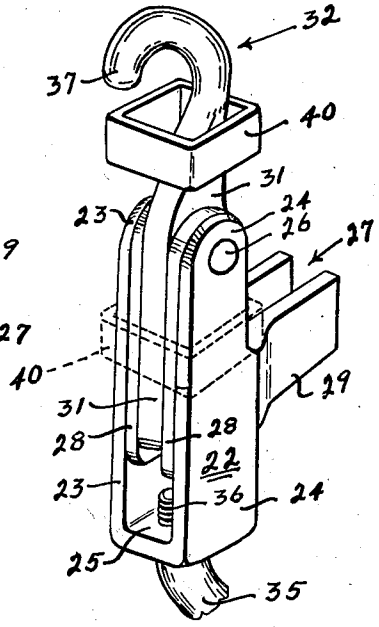


FIG. 4

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ANCHORING MEANS FOR VEHICLE SEATS

Robert S. Turner, Oklahoma City, Okla.

Application December 2, 1943, Serial No. 512,655

6 Claims. (Cl. 45—137)

My invention relates to means for removably anchoring vehicle seat frames to floors.

When the frames of seats such as used in busses, trains, etc., are bolted to the floor, as is the usual practice, much labor is entailed in accomplishing their removal. Such removal becomes necessary when certain repairs to the vehicle are needed, and when the seat frames are bolted in place, requires the labor of two men, one above and one beneath the floor. The same is true when the seats are to be re-installed.

The prime object of the present invention is to provide a seat anchoring means which may be quickly operated by one person from a position above the vehicle floor, yet which will hold the seat frame as firmly in place as do the bolts of present use.

The present invention is intended as an improvement over my pending patent application, Serial Number 506,285, and filed on the 14th day of October, 1943. It is also intended as an improvement over United States Patent No. 2,331,060 issued to me on the 5th day of October, 1943, and entitled: Seat or chair securing means. In both of those seat anchoring mechanisms the clamping or anchoring device was permanently carried either by the floor or the seat frame.

It is the object of the present invention to provide a seat frame anchoring mechanism which may be used in connection with seat frames of present construction, and which will require little or no re-modification of such seat frames.

A further object is to provide a removable seat anchoring mechanism which requires a minimum of re-modification of the floor.

A still further object is to provide a mechanism of this class which is not permanently anchored to either the seat frame or to the vehicle floor.

Yet another object is to provide a device of this class which is adjustable to seat frames of various heights above the floor.

An additional object is to provide a positive locking means for a device of this class, which locking means will re-inforce and strengthen the device as well as prevent floor warp, vibration, etc., from opening the same.

Other objects will be apparent from the following description when taken in connection with the accompanying two-sheet drawings, wherein:

Figure 1 is a fragmentary perspective view of a vehicle floor with a conventional seat bracket thereon, the anchoring or clamping device being shown operatively connected to the two, and being in a fully closed and locked position;

Figure 2 is a fragmentary perspective view detailing the manner in which the bottoms of the seat bracket legs are engaged with the floor to prevent sliding movement;

Figure 3 is an enlarged fragmentary view of the mechanism shown in Fig. 1, with the clamping mechanism shown in a partially closed or clamping position, a portion of the floor being broken away;

Figure 4 is a fragmentary perspective view of the clamping mechanism in a completely closed position, the lock member being shown in full lines its un-locked position, and the dotted lines illustrating its position when it is in locking position; and,

Figure 5 is an elevational view of the upper hook, looking at the narrow edge of the flat shank, and illustrating the twisted hook portion.

Like characters of reference illustrate like parts in all the figures.

In the drawings:

The reference numerals 1, 2, and 3 indicate usual boards of a vehicle floor, and the reference numeral 4 indicates as a whole a conventional seat bracket, of pipe construction, and being similar to many seat brackets now in use. So far as they pertain to the present invention, the floor could well be of any material, and the bracket could well be of any design so long as it includes a horizontal member 5 spaced above the floor in some manner, for instance, the two legs 6. A brace 7 may be employed if desirable. In rendering my invention practical, it is necessary that the bracket 4 be prevented from lateral sliding movement along the floor, and to this end a simple manner has been shown in Fig. 2, wherein the bottom of the leg 6 has a footplate 8 equipped on its nether surface with a dowel pin adapted to fit within a perforation 10 in the floor board 2.

A further necessity in rendering my clamping mechanism practical is the provision in the floor of some suitable hook-engaging means. In the present instance I have shown for this office a conventional eye-bolt 11 consisting of an eye portion 12 and an integral exteriorly threaded bolt portion 13. Such a hook-engaging means has been found to be easy to install, reliable, and comparatively cheap to manufacture. The eye-bolt 11 is installed by merely putting a plate 14 around the bolt portion 13, thrusting the bolt portion through a perforation in the floor, and installing a suitable nut 15. In the present instance, there has been shown a metal channel

iron 16 beneath the floor board 3 and through which the portion 13 extends.

The invention per se includes a stirrup 20 for enveloping the member 5 of the bracket 4 at a point directly above the eye-bolt 11. This stirrup may be of any suitable form so long as it includes a depending hook-engaging loop, such as a perforation 21.

The clamping or anchoring mechanism includes a rigidly constructed body or shackle 22 having two spaced parallel sides or legs 23 and 24, which have their lower ends integrally connected by a floor 25. The upper ends of the legs 23 and 24 are alignedly perforated transversely to receive a pivot pin 26. A substantially L-shaped lever arm 27 has one end confined between the upper ends of the legs 23 and 24, and this end is perforated transversely to also receive the pivot pin 26 whereby the lever may pivotally swing upon the pin. The pin 26 should be held rigidly with relation to the legs 23 and 24 by some suitable means, for instance, by spot welding. In cross-section the lever 27 is channel-shaped throughout its entire length as is clearly discernible in Figs. 1, 3 and 4.

Adjacent the juncture of its two right angle portions 28 and 29, the lever 27 is transversely perforated to receive a pivot pin 30, and the pin 30 passes through the lower flattened portion or shank 31 of an upper hook 32 which is adapted to be removably engaged within the perforation or loop 21 of the stirrup 20.

As a means for removably engaging the lower end of the shackle 22 with the eye-bolt 11, there is provided a lower hook 35 having its shank 36 threaded to engage a perforation in the floor 25 of the shackle 22. The threaded shank 36 makes it possible to adjust the clamping mechanism to compensate for varying distances which might occur between floor and the member 5 of the seat bracket.

It is pointed out that the hook portions, or the free ends 37 and 38 respectively of the hooks 32 and 35, may be twisted slightly side-wise to facilitate their installation within the loop 21 and eye 12. This feature is illustrated in Fig. 5 with relation to the upper hook 32.

It is obvious that the above described clamping or anchoring mechanism may be installed upon any floor by merely boring suitable holes for the eye-bolt 12, and by providing a suitable stirrup 20 to fit the configuration of the horizontal member 5 of the brace at hand.

In operation, the hook member 32 is inserted in the loop or perforation in the stirrup 20. The lower hook 35 is inserted in the eye of the eye-bolt 12. The hook 35 may be rotated in the floor 25 of the shackle 22 to so adjust the over-all length of the clamp, when closed, so that a positive downward pressure will be placed upon the horizontal element 5 of the seat bracket.

After the hooks are in place as illustrated in Fig. 3, a piece of pipe or other suitable handle will be placed over the leg 29 of the L-shaped lever 27, and the leg will be forced downwardly to the position as shown in Fig. 4.

As a means for locking the lever 27 in such closed position, there is provided an endless substantially square loop 40 which is located around the shank of the upper hook member 32. The locking loop 40 is of the proper dimension to closely envelope the upper portion of the shackle 22. When lowered into place, as shown in dotted lines in Fig. 4, it rests upon the then upper edges of the leg 29 of the lever 27, and positively holds the leg 28 thereof in longitudinal alignment between the legs 23 and 24 of the shackle.

It is pointed out that the locking loop 40 also acts to reinforce and strengthen the entire clamping mechanism, and due to its presence the shackle legs 23 and 24, and the lever 27 can be made of lighter construction than would otherwise be necessary. In fact, there is actually less material in the entire mechanism, including the stirrup 20 and the eye-bolt 11 and associated parts, than is now present in the nuts and bolts usually used to anchor a vehicle seat to the floor. There are only two of the present mechanisms required to hold each vehicle seat firmly in place upon the floor.

It is thought to be obvious that the above described seat anchoring mechanism provides an efficient means for holding a seat firmly anchored to the floor, yet is so designed that it may readily be attached to and will then function with usual seat brackets.

I claim:

1. The combination with a floor having a rigid anchoring member, and with a seat frame having a horizontal element spaced above said member, of means for clamping the member and element in rigid spaced relation, including: a stirrup enveloping said element and providing a depending loop having a perforation; a substantially U-shaped shackle with upstanding legs, said shackle having a threaded perforation through its lower central portion; a depending hook having a threaded shank adjustably engaged within said perforation; an L-shaped lever having one end pivotally engaged between the upper ends of the shackle; an upper hook engaged within said perforation and having its depending shank pivotally connected to the lever at a point spaced from the pivoted end thereof; and means for locking the lever with its free end located at the lowermost end of its permitted travel.

2. The combination with a floor having a rigid anchoring member, and with a seat frame having a horizontal element spaced above said member, of means for clamping the member and element in rigid spaced relation, including: a stirrup enveloping said element and providing a depending loop having a perforation; a substantially U-shaped shackle with upstanding legs, said shackle having a threaded perforation through its lower central portion; a depending hook having a threaded shank adjustably engaged within said perforation; an L-shaped lever having one end pivotally engaged between the upper ends of the shackle; an upper hook engaged within said perforation and having its depending shank pivotally connected to the lever at a point spaced from the pivoted end thereof; and a locking loop adapted to surround the shackle and lever for locking the lever in a position at which its free end is located at the lowermost end of its permitted travel.

3. The combination with a floor having a rigid anchoring member, and with a seat frame having a horizontal element spaced above said member, of means for clamping the member and element in rigid spaced relation, including: a stirrup enveloping said element and providing a depending loop having a perforation; a substantially U-shaped shackle with upstanding legs, said shackle having a threaded perforation through its lower central portion; a depending hook having a threaded shank adjustably engaged within said perforations; a substantially L-shaped lever having one end pivotally engaged between the upper ends of the shackle; an upper hook engaged with-

in said perforation and having its depending shank pivotally connected to the lever at a point adjacent its angle; and means for locking the lever in a position at which its free end is located at the lowermost end of its permitted travel.

4. The combination with a floor having a rigid anchoring member, and with a seat frame having a horizontal element spaced above said member, of means for clamping the member and element in rigid spaced relation, including: a stirrup enveloping said element and providing a depending loop having a perforation; a substantially U-shaped shackle with upstanding legs, said shackle having a threaded perforation through its lower central portion; a depending hook having a threaded shank adjustably engaged within said perforation; a substantially L-shaped lever having one end pivotally engaged between the upper ends of the shackle; an upper hook engaged within said perforation and having its depending shank pivotally connected to the lever at a point adjacent its angle; and a locking loop adapted to surround the shackle and lever for locking the lever in a position at which its free end is located at the lowermost end of its permitted travel.

5. The combination with a floor having a rigid anchoring member, and with a seat frame having a horizontal element spaced above said member, of means for clamping the member and element in rigid spaced relation, including: a stirrup enveloping said element and providing a depending loop having a perforation; a substantially U-shaped shackle with upstanding legs, said shackle having a threaded perforation through its lower central portion; a depending hook having a threaded shank adjustably engaged within said perforation; an L-shaped lever having one end pivotally engaged between the upper ends of the shackle; an upper hook engaged within said perforation and having its depending shank pivotally connected to the lever at a point spaced from the pivoted end thereof; and a locking loop slidably disposed about the upper hook and adapted to be lowered into a position in which it surrounds the legs of the shackle, a portion of the lever, and the shank of the upper hook, whereby the lever is held against movement with relation to the shackle.

6. The combination with a floor having a rigid anchoring member, and with a seat frame having a horizontal element spaced above said member, of means for clamping the member and element in rigid spaced relation, including: a stirrup enveloping said element and providing a depending loop having a perforation; a substantially U-shaped shackle with upstanding legs, said shackle having a threaded perforation through its lower central portion; a depending hook having a threaded shank adjustably engaged within said perforation; an L-shaped lever having one end pivotally engaged between the upper ends of the shackle; an upper hook engaged within said perforation and having its depending shank pivotally connected to the lever at a point spaced from the pivoted end thereof; and a locking loop slidably disposed about the upper hook and adapted to be lowered into a position in which it surrounds the legs of the shackle, a portion of the lever, and the shank of the upper hook, whereby the lever and shank are held against movement with relation to the shackle.

ROBERT S. TURNER.