April 3, 1945. R. S. TURNER 2,372,802

SEAT SECURING MEANS

Filed Oct. 14, 1943 2 Sheets-Sheet 1

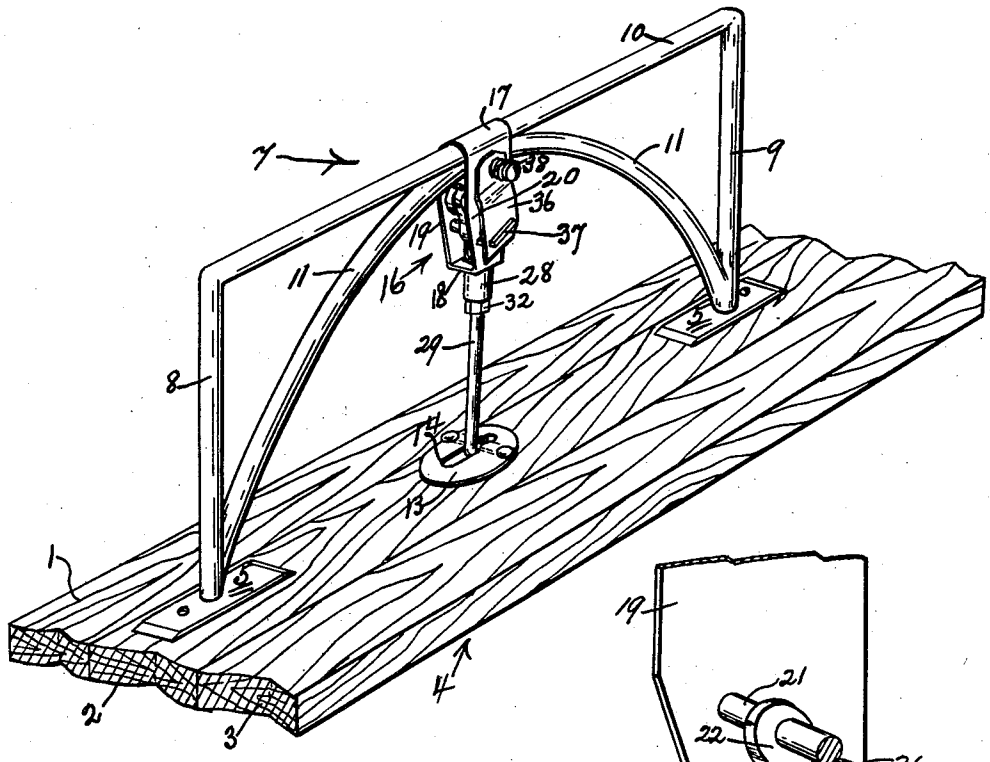


FIG. 1

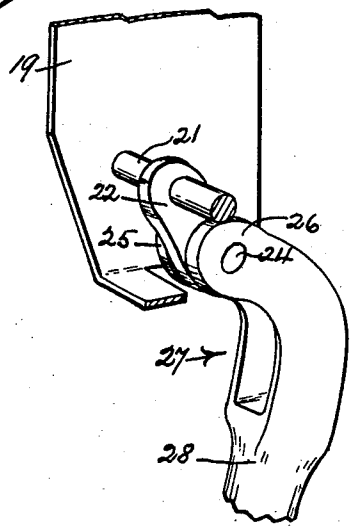


FIG. 4

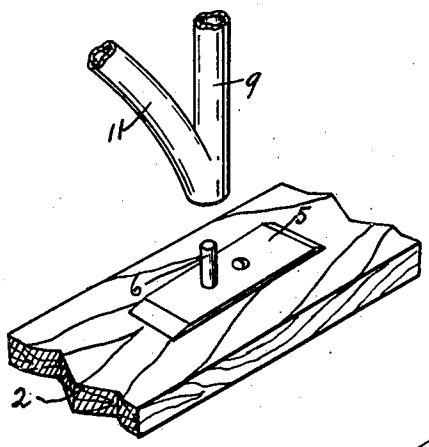


FIG. 2

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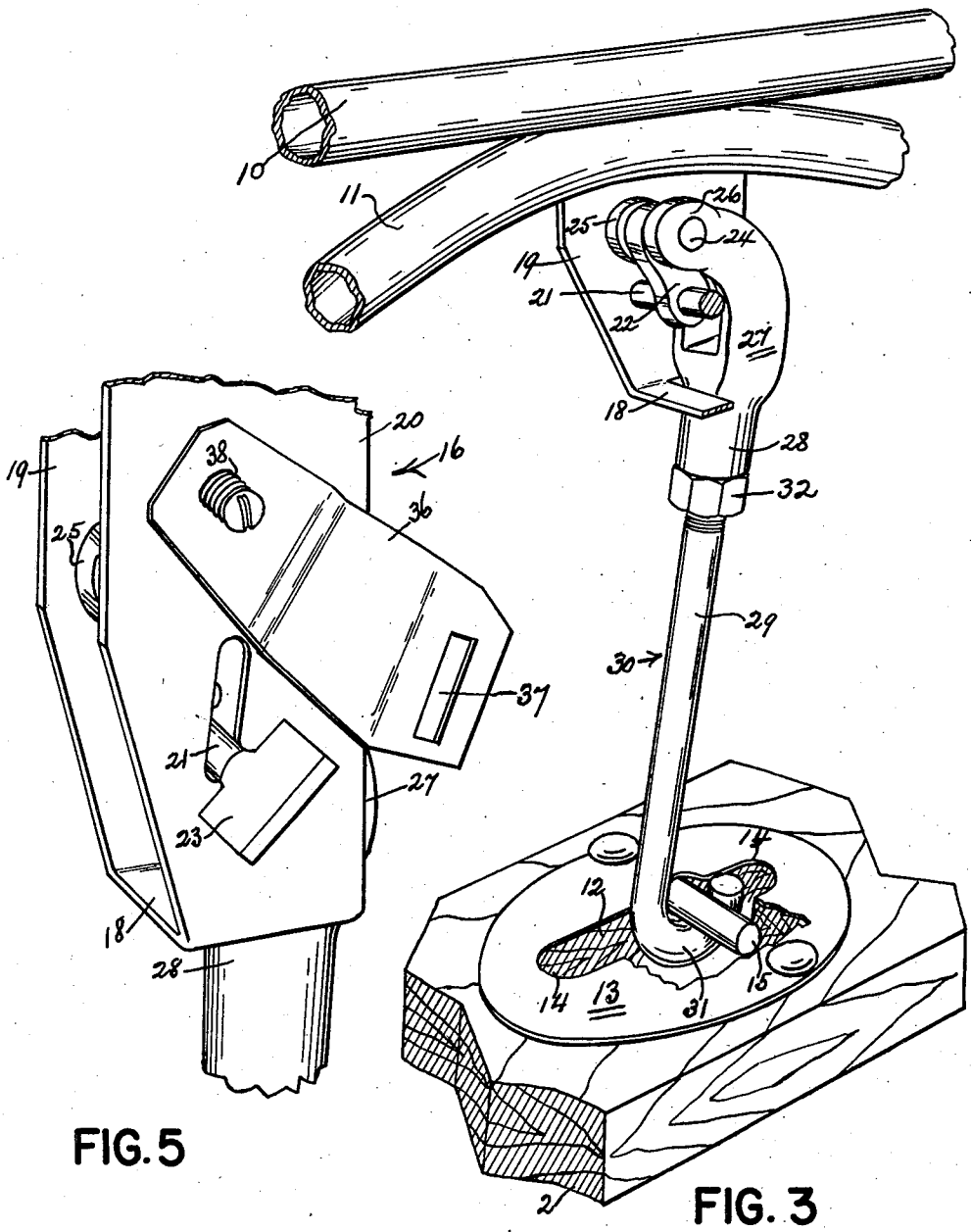


FIG. 5

FIG. 3

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SEAT SECURING MEANS

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Application October 14, 1943, Serial No. 506,285

9 Claims. (Cl. 45—137.6)

The invention relates to means for securing seats to floors, and more particularly to securing seats to the floors of vehicles.

In vehicles, such as street cars, train coaches, airplanes, busses, and the like, it is positively necessary that the seats be anchored firmly to the floor. At the present time, such seats are bolted to the floor, and when removal is desired, the services of two men are required, one above and one beneath the the floor. The use of wood screws has proven impractical due to the strain placed upon the seats by starting, stopping and the movement of jolting of the various vehicles.

When usual bolts are used, it requires two men approximately one full working day to remove the seats of a usual street car, or single deck bus. With my securing means in use, the same number of seats can be removed in approximately thirty minutes by one person.

It is therefore the prime object of the present invention to provide a seat securing means which may be easily and quickly operated by one person, either in disconnecting the seats from the floor or in anchoring the seats thereto.

Another object is to provide a seat securing means of this class which will anchor a seat as firmly and positively as does the usual plurality of bolts.

A further object is to provide a new and novel locking mechanism for the seat securing means, whereby the means cannot be inadvertently released from its anchoring position.

A still further object is to provide a device of this class which may be operated by an unskilled person, and without the use of any special tools.

Yet another object of the present invention is to provide a seat securing means of the class described which will have few moving parts to become worn or which will readily and easily get out of order.

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

Figure 1 is a perspective view of the preferred embodiment of the device installed upon a floor;

Figure 2 is a fragmentary perspective view detailing the bracket anchoring floor stud;

Figure 3 is a fragmentary perspective view showing the seat securing or clamping mechanism in closed or anchoring position;

Figure 4 is a fragmentary perspective view, partially broken away to disclose the upper end of the seat securing or clamping mechanism in open or released position; and,

Figure 5 is a fragmentary perspective view of the upper portion of the securing mechanism, the lock being shown in open position.

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

In the drawings:

The reference numerals 1, 2 and 3 indicate fragments of boards which combine to constitute a base or floor indicated as a whole by the reference numeral 4. The board 2 is provided with two spaced plates 5 which are firmly anchored thereto, and each of which is provided with an upstanding stud or dowell 6.

The reference numeral 7 indicates, as a whole, a seat supporting bracket consisting of two spaced vertically disposed supporting members or legs 8 and 9 integrally connected at their upper ends by a horizontal element 10. The bracket 7 could be made of any desired rigid material and in many different forms, but for the present instance, and only for the sake of illustration, the drawings show it as including an arcuate brace 11 connecting the legs 8 and 9 and the horizontal element 10 together, the whole being shown as formed of hollow pipe. The studs 6 are correctly spaced on the board 2 to project upwardly into the bore of the hollow legs 8 and 9, but if the bracket were to be formed of solid material, such as metal rods, the lower ends of the legs 8 and 9 would have to be axially bored to a sufficient distance to receive the studs 6. When the bracket is placed with its legs over the studs, the studs prevent its movement along the board 2 in any direction, in an obvious manner.

As a means for firmly, yet releasably anchoring or clamping the bracket 7 to the board 2, the following described mechanism is provided:

The board 2 is provided with an elongated through-slot 12 over which is firmly attached a rigid plate 13 having a slot 14 to coincide with the slot 12 in the board. The plate 13 carries a rigidly connecting anchoring rod 15 which extends horizontally across the slot 14 intermediate the ends thereof.

Intermediate its ends, the horizontal element 10 supports strap metal stirrup 16 which consists of an arcuate upper end 17, a flat lower end 18, and two spaced vertical sides or legs 19 and 20 which integrally connect the ends 17 and 18 to form the continuous stirrup 16.

Journalled for rotation in the two stirrup sides or legs 19 and 20, is a horizontally disposed shaft 21 having a crank 22 rigidly connected thereto by welding, or the like. One end of the shaft 21 projects outwardly beyond the stirrup side 20 and

is provided with a polygonal head 23 adapted to receive a tool, not shown, whereby the shaft may be partially rotated manually.

The end of the crank 22 which lies opposite to the end which is mounted upon the shaft 21, is through-bored to receive a pivot pin 24 which extends laterally in both directions beyond the crank 22. The outwardlly extending end portions of the pin 24 pivotally supports the tines 25 and 26 of the upper end portion of a bifurcated clevis 27 having an integral interiorly threaded central extension 28. The extension 28 threadedly receives the upper end of a shank 29 which forms a part of a hook 30 having a lower arcuate end portion 31. The arcuate lower end portion 31 of the hook 30 is adapted to be inserted into the slots 12 and 14, and to be passed beneath the anchoring rod 15 of the plate 13. The shank 29 of the hook 30 is equipped with a lock-nut 32 whereby vertical adjustment between the shank and the extension 28 of the clevis 27 may be selectively set.

In operation the legs 8 and 9 of the bracket 7 are placed over the studs 6 of the plate 5. The shaft 21 is manually rotated so as to bring the pin 24 of the crank 22 to the lower end of its throw, as best illustrated in Fig. 4. This lowers the arcuate lower end 31 of the hook 30 sufficiently to permit its insertion into the slot 12 in the board 2 from whence it may be passed under the anchoring rod 15. A suitable tool, such as a wrench, is manually engaged about the head 23 of the shaft 21, and the shaft is thereby rotated in an anti-clockwise direction sufficiently to bring the pivot pin 24 of the crank 22 to the upper end of its permitted travel and beyond center of the shaft 21 (Fig. 3). This movement of the crank positively engages the curved portion 31 of the hook 30 beneath the anchoring rod 15 and clamps the bracket 7 firmly to the floor board 2.

When it is desired to release the bracket, the crank shaft 21 is merely rotated partially in an opposite direction by use of the wrench.

In order to prevent inadvertent rotation of the shaft 21 from a clamping position, a locking mechanism has been provided. This locking mechanism is best illustrated in Figs. 1 and 5, and consists substantially of the following described parts.

To the outer face of the side 20 of the stirrup 16 is pivotally mounted, upon a pivot pin 35, a strap metal locking tongue 36 having an aperture 37 of a size and shape to closely envelope the head 23 of the shaft 21. A coiled compression spring 38 is provided around the pivot pin between the side 20 and the tongue, in order to urge the pivoted end of the tongue in an inward direction. The free end can therefore be moved outwardly from the side 20 in order to engage its aperture over the head, and when so engaged, the head is held against rotation in an obvious manner. Figure 1 illustrates the tongue 36 in head locking position, while in Figure 5 the tongue is shown disengaged from the head and swings out of the way so that a wrench may be applied to the head.

From the foregoing description it is thought to be apparent that the present invention provides a novel, as well as a substantial and positive, means for securing a seat supporting bracket to a floor in such a manner that it may be easily and quickly installed and removed.

I claim:

1. The combination with a seat supporting bracket including a horizontally disposed member supported above a floor by spaced vertical elements, and with an eye anchored to the floor beneath the member, of: a loop-like stirrup depending from the member and having two spaced sides with their lower ends connected by a horizontal end member; a horizontally disposed shaft rotatably carried by and extending between the sides of the stirrup; a crank located medially of the ends of said shaft and lying between said sides; a hook having its shank extending upwardly through the horizontal end member of said stirrup, and being pivotally connected to said crank, the curved lower end portion of said hook adapted to engage said eye; and means carried by the shaft for enabling the manual partial rotation thereof.

2. The combination as described in claim 1, and means for locking said shaft against inadvertent rotation.

3. The combination with a seat supporting bracket including a horizontally disposed member spacedly supported above a floor, of means for securing the bracket to the floor, including: a loop-like stirrup depending from the member and having two spaced sides with their lower ends connected by a horizontal end member; a horizontally disposed shaft rotatably carried by and extending between the sides of the stirrup; a crank located medially of the ends of the shaft and lying between said sides; a hook having its shank extending upwardly through the horizontal end member of said stirrup, and being pivotally connected to the crank; means anchored to the floor for engaging the hook; and means carried by the shaft for receiving a tool for accomplishing the manual partial rotation of the shaft.

4. The combination with a seat supporting bracket including a horizontally disposed member spacedly supported above a floor, of means for securing the bracket to the floor, including: a loop-like stirrup depending from the member and having two spaced sides with their lower ends connected by a horizontal end member; a horizontally disposed shaft rotatably carried by and extending between the sides of the stirrup; a crank located medially of the ends of the shaft and lying between said sides; a hook having its shank extending upwardly through the horizontal end member of said stirrup, and being pivotally connected to the crank; means anchored to the floor for engaging the hook; means carried by the shaft for receiving a tool for accomplishing the manual partial rotation of the shaft, and means for locking the shaft against inadvertent rotation.

5. The combination as described in claim 4, in which the locking means includes: a pivoted element carried by one side of the stirrup and having an aperture adapted to fit about the tool receiving means for preventing its rotation.

6. The combination with a seat supporting bracket including a horizontally disposed member supported upon a floor by spaced legs having hollow lower ends, of means for securing the bracket to the floor, including: spaced upwardly projecting studs rigidly mounted on the floor and adapted to enter the lower ends of said legs; a horizontally disposed shaft rotatably carried by the member and having a crank; a hook having its shank pivotally connected to the crank; means anchored to the floor for engaging the hook; and means carried by the shaft for receiving a tool

for accomplishing the manual partial rotation of the shaft.

7. The combination with a seat supporting bracket including a horizontally disposed member supported upon a floor by spaced legs having hollow lower ends, of means for securing the bracket to the floor, including: spaced upwardly projecting studs rigidly mounted on the floor and adapted to enter the lower ends of said legs; a horizontally disposed shaft rotatably carried by the member and having a crank; a hook having its shank pivotally connected to the crank; means anchored to the floor for engaging the hook; means carried by the shaft for receiving a tool for accomplishing the manual partial rotation of the shaft; and means for locking the shaft against inadvertent rotation.

8. The combination as described in claim 7, in which the locking means includes: a pivoted element carried by the horizontal member and having an aperture adapted to fit about the tool for receiving means for preventing its rotation.

9. The combination with a seat supporting bracket including a horizontally disposed member supported upon a floor by spaced vertical elements, of means for securing the bracket to the floor, including a loop-like stirrup depending from the member and having two spaced sides with their lower ends connected by a horizontal end member; a horizontally disposed shaft rotatably carried by and extending between the sides of the stirrup; a crank located medially of the ends of the shaft and lying between said sides; a hook having its shank pivotally connected to the crank; means anchored to the floor for engaging the hook; means carried by the shaft for receiving a tool for accomplishing the manual partial rotation of the shaft, and a pivoted locking element carried by the horizontal member and having an aperture adapted to fit about the tool receiving means for preventing its rotation.

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