Jan. 14, 1964 J. P. MOORHEAD 3,117,532

DOORBAR LATCH

Filed March 21, 1962 3 Sheets-Sheet 1

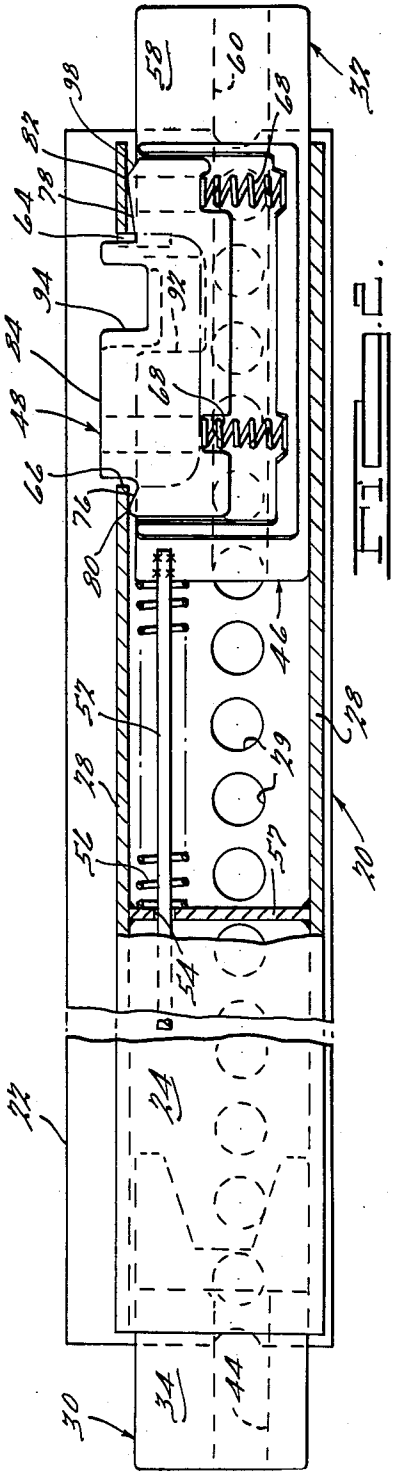


FIG. 2.

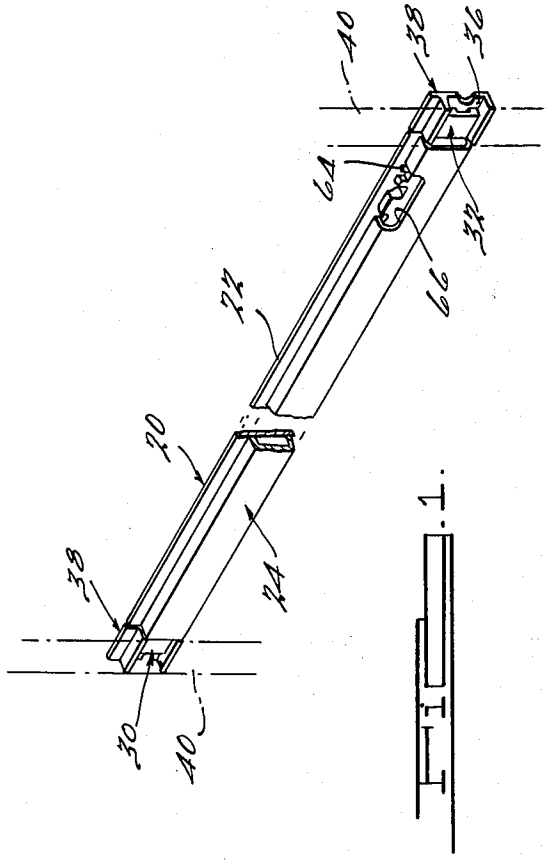


FIG. 1.

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Filed March 21, 1962 3 Sheets-Sheet 2

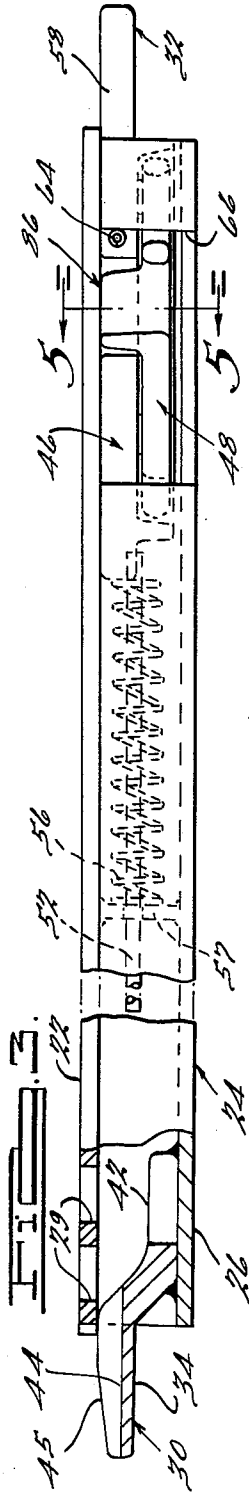


Fig. 3.

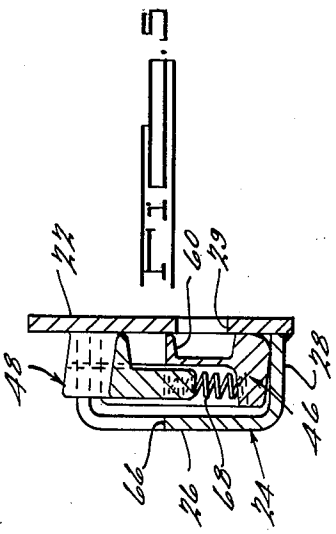


Fig. 5.

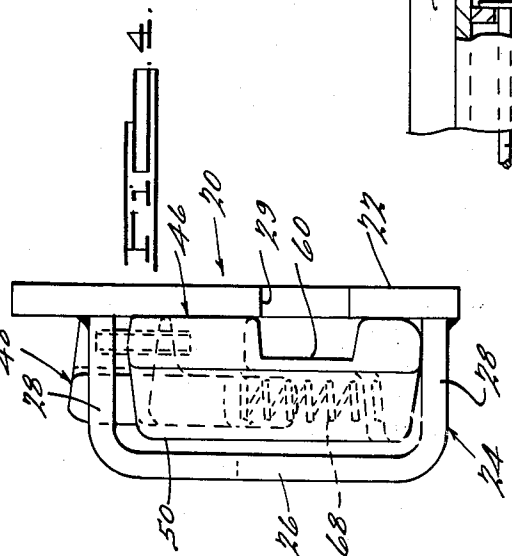


Fig. 4.

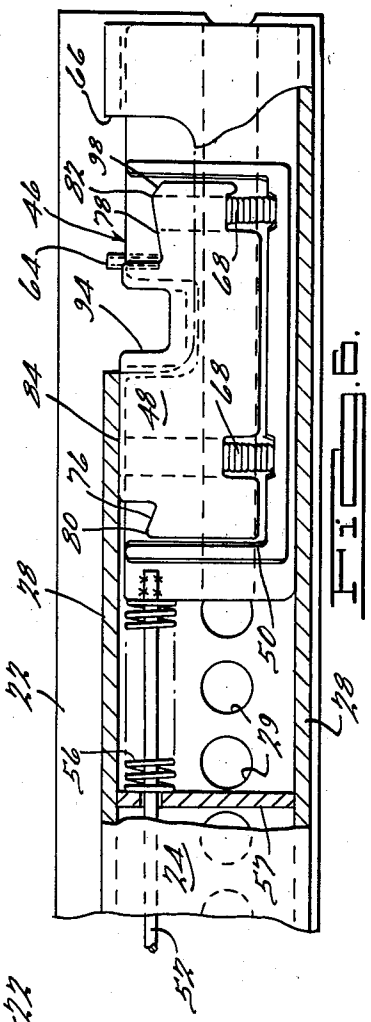


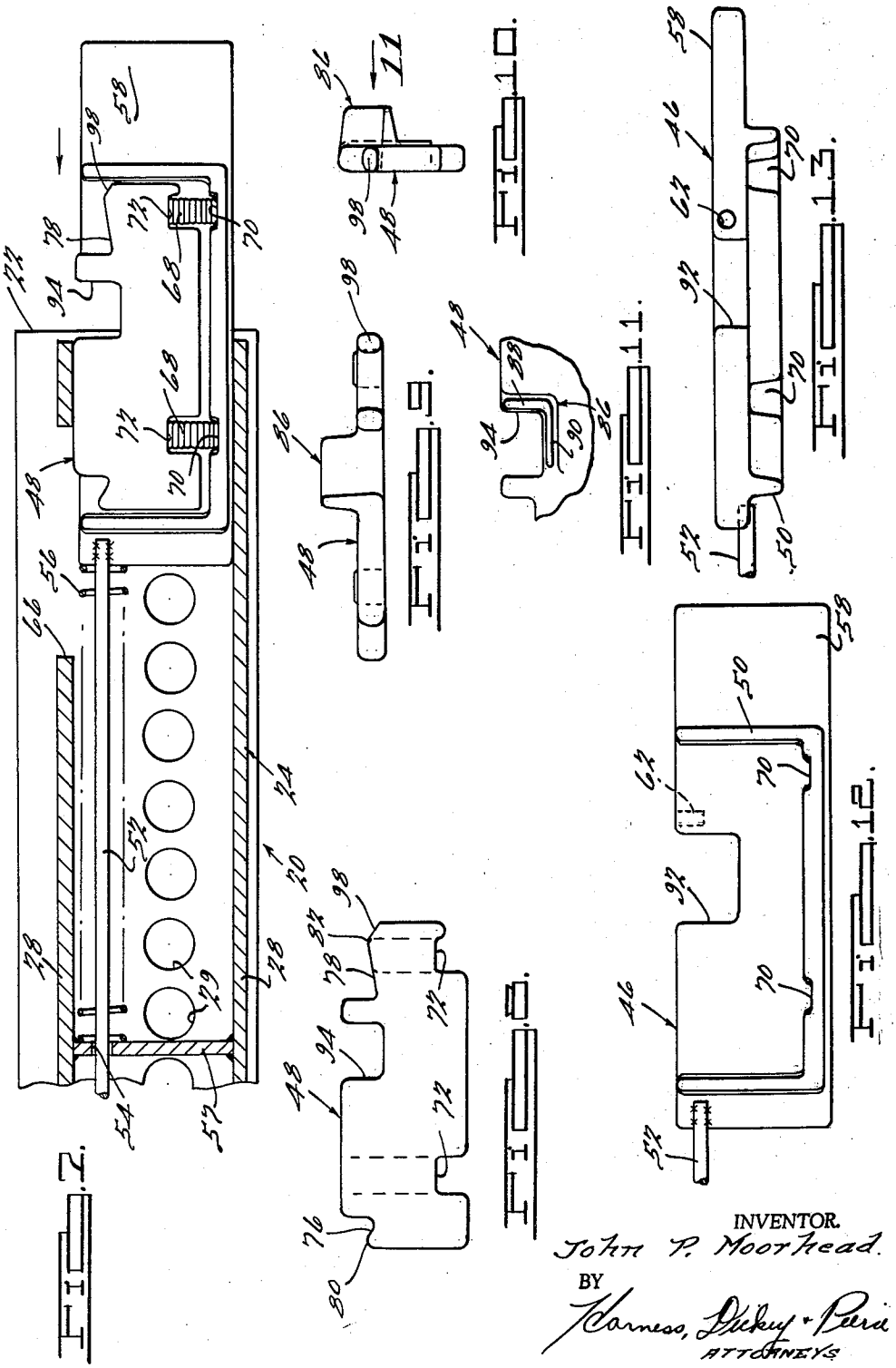
Fig. 6.

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Jan. 14, 1964 J. P. MOORHEAD 3,117,532

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Filed March 21, 1962 3 Sheets-Sheet 3



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DOORBAR LATCH

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5 Claims. (Cl. 105—369)

The present invention relates to freight bracing equipment and more particularly to an improved removable member adapted for use in openings such for example as in the doorway opening of a railway boxcar. The improved member of the present invention is adapted to provide a continuation across the boxcar doorway opening of the side-wall members commonly known as belt rails and which provide support and attachment means for co-operation with the opposite ends of crossbars extending across the boxcar for bracing and/or supporting freight. In the preferred form illustrated and described herein the improved member of the present invention is adapted for use with the belt rails and cross members of the type illustrated and described in the copending application of Henry L. Dunlap, Serial Number 836,168, filed August 26, 1959, now Patent No. 3,071,086.

It is an object of the present invention to provide an improved removable doorway member which is simple in design, economical to manufacture, durable in construction, and reliable and efficient in use.

More specifically it is an object of the present invention to provide an improved removable doorway member of the above-mentioned type having improved latch means for securely holding the member in place while permitting ready removal of the member when desired.

It is a further object of the invention to provide a removable member incorporating improved latch means including improved means positively holding the latch bolt against movement from its extended position.

Other and more detailed objects of the present invention will be apparent to those skilled in the art from a consideration of the following specification, the appended claims, and the accompanying drawings, wherein:

FIGURE 1 is a perspective view of a removable member constructed according to the present invention mounted in a doorway opening and supported at the opposite sides thereof by associated supporting structure;

FIGURE 2 is a broken elevational view partly in section of the removable member shown in FIGURE 1;

FIGURE 3 is a broken plan view partly in section of the member illustrated in FIGURE 2;

FIGURE 4 is an end elevational view of the right-hand end of the member illustrated in FIGURE 2;

FIGURE 5 is a sectional view of the structure illustrated in FIGURE 3 taken substantially along the line 5—5 thereof;

FIGURE 6 is a broken elevational view partly in section similar to the right-hand end portion of FIGURE 2 but showing the latch in its fully retracted position;

FIGURE 7 is a broken view similar to FIGURE 6 and showing a position of the latch parts during the assembly of the latch parts with the body portion of the removable doorway member;

FIGURE 8 is a side elevational view of the latch retainer element;

FIGURE 9 is a plan view of the latch retainer element;

FIGURE 10 is an end elevational view of the latch retainer element;

FIGURE 11 is a broken elevational view of the structure illustrated in FIGURE 10 looking in the direction of the arrow 11;

FIGURE 12 is a side elevational view of the latch element; and

FIGURE 13 is a plan view of the latch element.

Referring to the drawings, the removable doorway member is generally indicated at 20 and in the preferred embodiment illustrated is fabricated and includes an elongated vertically disposed plate 22 and a reinforcing channel 24 having its web portion 26 (see FIG. 4) extending vertically and disposed in spaced parallel relation to the plate 22 and its legs 28 welded to the plate 22. The plate 22 has a series of uniformly spaced apertures 29 opening therethrough into the space defined by the plate 22 and the channel 24. At one end the member 20 may be provided with a fixed end fitting and at at least one end it is provided with a retractable latch. In the preferred embodiment illustrated the member as shown in FIGURES 1, 2 and 3 is provided with a fixed end fitting 30 at the left-hand end and a retractable latch fitting 32 at the right-hand end.

The fixed end fitting 30, which is shown in FIGURES 2 and 3, has an outer bar-shaped portion 34 adapted to extend into a co-operating recess 36 provided in a selected one of a series of latch keepers 38 carried on the door posts 40 at opposite sides of the doorway opening. The fixed end fitting 30 also has a bifurcated support portion 42 which extends into the end of the channel 24 and is offset relative to the outer portion 34 so that it overlies and is welded to the inner surface of the web 28 of the channel 24. The outer bar-shaped portion 34 has a channel 44 formed in its surface facing toward the plate 22 to provide clearance at the elevation of the holes 29 in the plate 22. The offset whereby the bifurcated inner end 42 is disposed against the web 28 provides clearance behind the holes 29 and the taper of the bifurcated portion 42 provides a gradual change in section modulus and thus avoids any sharp change in strength which would provide a point of likely failure. Also it will be noted that outer portion 34 tapers as indicated at 45 to facilitate the insertion into and removal from the latch keepers 38.

The retractable latch fitting 32 at the right-hand end of the member 20, as viewed in FIGURES 1, 2 and 3, generally comprises a latch element 46 shown in detail in FIGURES 12 and 13 and a latch retainer 48 shown in detail in FIGURES 8 to 11 inclusive. Both the latch element 46 and the latch retainer 48 in the preferred embodiment illustrated are forgings. The latch element 46 is generally flat and is received in the end of the channel 24 in sliding engagement with the inner surface of the plate 22. At the side remote from the plate 22 and adjacent its inner end the latch element 46 has an integrally formed upwardly opening channel-shaped flange 50 adapted to receive and support the latch retainer 48 between the latch element 46 and the web 26 of the elongated channel 24. The latch element 46 carries a spring guide wire or rod 52, one end of which is welded to the latch element 46 and the other end of which is slidably received in an aperture 54 in a spring abutment plate 57 which extends between and is welded to the flanges 28 of the channel 24 and is disposed between adjacent holes 29. The latch element 46 is urged outwardly of the channel 24 by a coil spring 56 received on the spring guide 52 and one end of which abuts the plate 57 and the other end of which engages the latch element 46.

The latch element 46 has an outer end portion 58 adapted, like the outer end portion 34 of the fixed end fitting 30, to be received in a recess 36 provided in a selected one of a series of latch keepers 38 carried on the door posts 40. Also like the fixed end fitting outer end 34, the outer end portion 58 of the latch element has a similar longitudinally extending channel-shaped groove 60 aligned with the openings 29 of the plate 22. The latch element 46 is also provided with an opening 62 in its upper edge adapted to receive a stop pin 64 in

the form of a split or roll pin which extends upwardly through an opening 66 provided in the upper flange 28 and extending into the web 26 of the channel 24 adjacent the right-hand end thereof as seen in FIGURES 1, 2 and 3. This stop pin engages the upper flange 28 at the right-hand side of the opening 66 to limit movement of the latch element 46 outwardly of the channel 24.

The latch retainer 48 is also generally flat and is received in the upwardly opening channel-shaped flange 50 on the latch element 46. The latch retainer 48 is yieldably urged upwardly by a pair of coil springs 68 which are vertically disposed with their lower ends received in seats 70 provided in the flange 50 (see FIG. 12) and their upper ends engaged in notches 72 provided in the lower edge of the latch retainer 48. The latch retainer 48 is provided with bearing bosses 74 in spaced relation to its opposite ends for providing a reduced area contact with the latch element 46 during relative movement therebetween. Adjacent its opposite ends the upper edge of the latch retainer is provided with upwardly inclined portions 76 and 78 leading to high points 80 and 82 adjacent opposite ends providing limited area contact with the underside of the upper flange 28 of the channel 24 as shown in FIGURE 2, when the latch element 46 and the latch retainer 48 are in their operative positions there shown and also providing clearance avoiding interference with the edges of the hole 66 in the channel 24.

Intermediate the sloping surfaces 76 and 78 the latch retainer 48 has a central portion 84 which extends outwardly through the opening 66 as illustrated in FIGURE 2 when the latch element 46 and the latch retainer 48 are in operative positions, to thereby prevent inadvertent movement of the latch element 46 to the retracted position illustrated in FIGURE 6. To provide for moving the latch retainer 48 and latch 46 from the operative positions illustrated in FIGURE 2 to the retracted positions illustrated in FIGURE 6, the latch retainer has a laterally extending handle portion 86 including a vertical flange 88 and a horizontal flange 90 as best illustrated in FIGURE 11. This handle portion 86 is received in a cooperating notch 92 provided in the upper edge of the latch element 46. At the handle portion 86 the latch retainer 48 is provided with a notch 94 which the operator may engage to move the latch retainer downwardly against the action of the springs 68 and then move the latch retainer 48 together with the latch element 46 longitudinally of the channel 24 to the retracted position of FIGURE 6.

During assembly it will be appreciated that as illustrated in FIGURE 7, the assembly of the latch element 46 and the latch retainer 48, with the springs 68 in place, is moved into the end of the channel with the spring 56 in place on the spring guide 52 and the end of the spring guide inserted into the opening 54 in the spring abutment plate 56. As the assembly is moved beyond the position illustrated in FIGURE 7 and to the position of FIGURE 2, the latch retainer 48 will snap upwardly moving the central projection 84 thereof into the opening 66. The stop pin 64 may then be put in place.

In normal use, when the operator releases the latch retainer 48 when the parts are in the retracted position illustrated in FIGURE 6, the springs 56 and 68 will return the parts to the operative position of FIGURE 2. During this movement the right-hand end of the latch retainer 48 as viewed in FIGURE 6 may rise slightly beyond its final position illustrated in FIGURE 2. The sloping cam surface 96 to the right of the high point 98 insures that if this happens the righthand end of the latch retainer will be cammed down sufficiently so that the high point 82 will move under the upper flange 28 of the channel to the position illustrated in FIGURE 2.

While only one specific embodiment has been illustrated and described in detail herein, it will be readily appreciated by those skilled in the art that numerous modifications and changes may be made therein without departing from the spirit of the present invention.

What is claimed is:

1. A removable freight bracing apparatus member for spanning between two spaced supports and supporting one end of a freight bracing crossbar and adapted to extend at its opposite ends into co-operating recesses in spaced support elements for supporting the opposite ends of said member on said elements, and having attachment means therealong for attachment of said one end of said crossbar thereto said freight bracing member comprising an elongated body member defining longitudinally extending chambers opening through the opposite ends thereof, and end fittings mounted in said body member at the opposite ends thereof in said chambers and extending outwardly thereof and adapted for reception in said recesses of said support elements, at least one of said end fittings comprising a latch element mounted in the one of said chambers at one end of said body member for movement longitudinally of said body member between an operative extended position in which said latch element extends substantially beyond the open end of said one of said chambers and a retracted position in which said latch element is withdrawn inwardly of said one of said chambers from said operative position, spring means mounted in said one of said chambers and yieldably urging said latch element toward said operative position, a latch retainer disposed in said one of said chambers adjacent said latch element, co-operating means on said latch element and on said latch retainer for preventing any substantial movement of said latch retainer relative to said latch element in a direction longitudinally of said body member and mounting said latch retainer for movement relative to said latch element in a direction transverse to said body member, said body member having an opening adjacent said one end thereof extending transversely thereof and communicating with said one of said chambers, said latch retainer having a projecting portion adapted in one position of said latch retainer to project into said opening and adapted in a second position of said retainer to be disposed wholly within said one of said chambers, and spring means carried by said latch element and yieldably holding said retainer in said one position so that said retainer will engage said body member at the longitudinally opposite ends thereof to substantially prevent movement of said retainer and said latch element longitudinally of said body member, and stop means on said retainer engaging said body member adjacent said opening when said retainer is in said one position to prevent movement of said retainer transversely of said body member outwardly through said opening beyond said one position.

2. A removable freight bracing apparatus as defined in claim 1 including handle means on said retainer engageable by an operator to move said retainer transversely of said body member to said second position and to move said latch element from said operative position to said retracted position.

3. A removable freight bracing apparatus member as defined in claim 2 wherein said stop means comprises high points on opposite sides of and spaced from said projecting portion.

4. A removable freight bracing apparatus member as defined in claim 3, a cam surface on said latch retainer sloping downwardly from the outer one of said high points to the outer end of said retainer adapted to engage said body member at the longitudinally outer side of said opening during movement of said latch element from said retracted position to said operative position.

5. A removable freight bracing apparatus member as defined in claim 2 including a stop element mounted on said latch element and engaging said body member at the longitudinally outer side of said opening to prevent movement of said latch element outwardly of said one of said chambers beyond said operative position.

No references cited.