United States Patent

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[54] **END FITTING FOR FREIGHT RETAINING DEVICES**
7 Claims, 4 Drawing Figs.

[52] **U.S. Cl.** **105/369**
[51] **Int. Cl.** **B61d 45/00**
[50] **Field of Search** ..... 105/369(B); 280/179.2

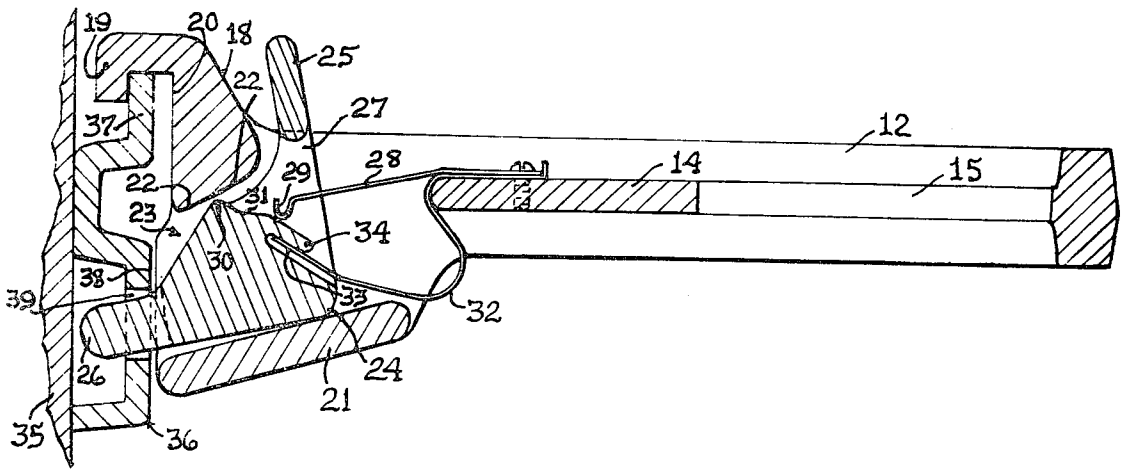
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ABSTRACT: An end fitting, including a latch structure, for removably connecting freight retaining devices to supporting members carried by the spaced apart walls of freight storage compartments and the like. The latch structure is so constructed and arranged in the end fitting that it may be moved generally horizontally and vertically permitting it to be accommodated in varying environments, including supporting members having different constructions and configurations.



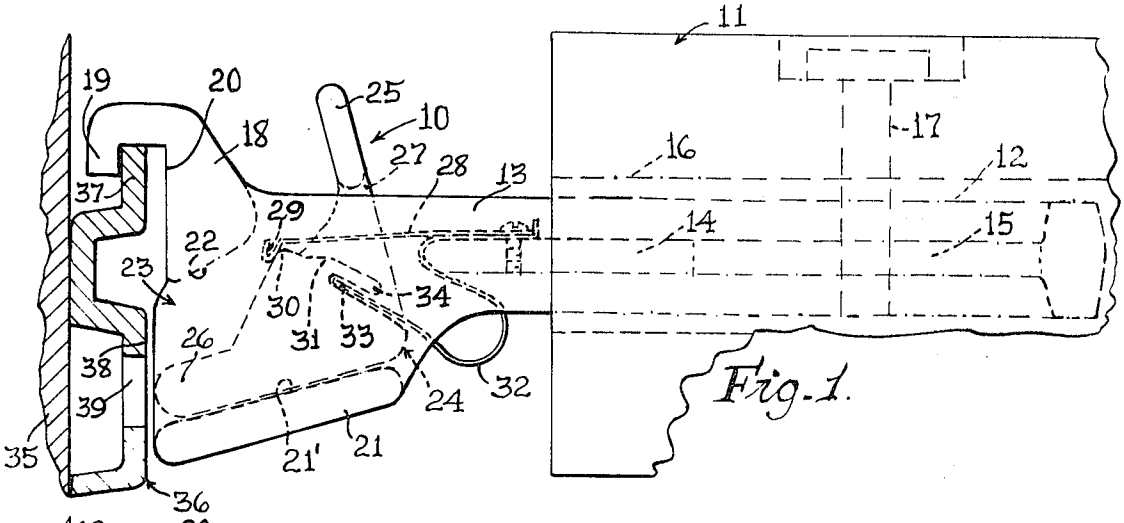


Fig. 1.

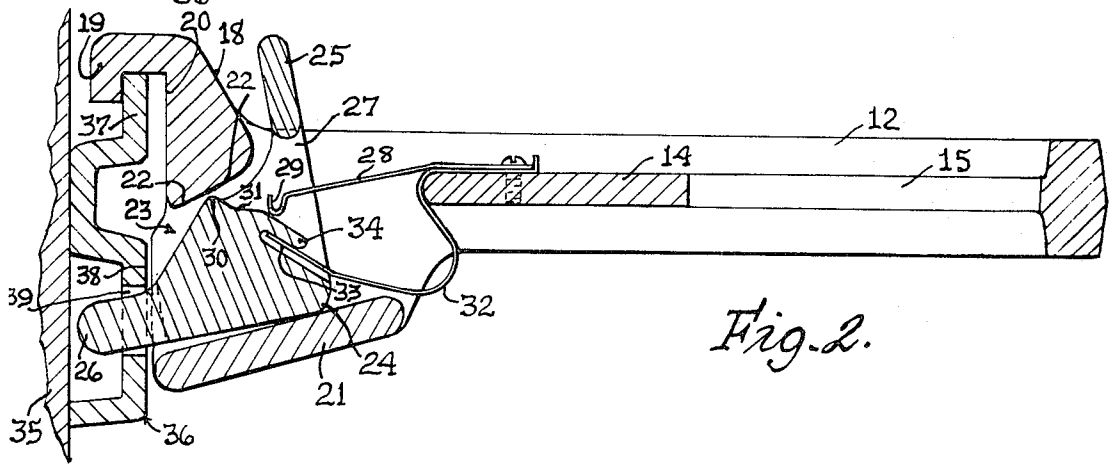


Fig. 2.

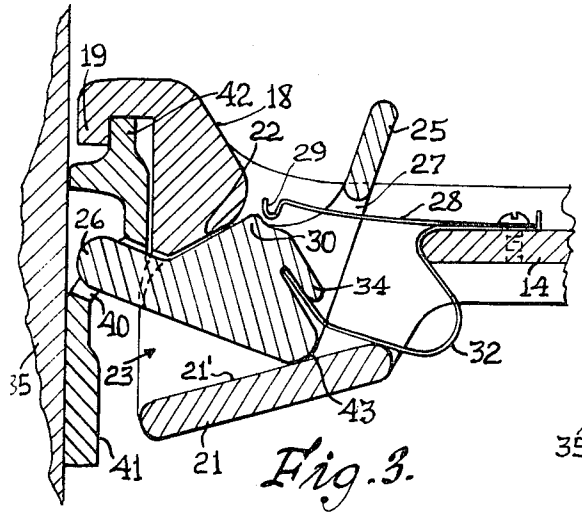


Fig. 3.

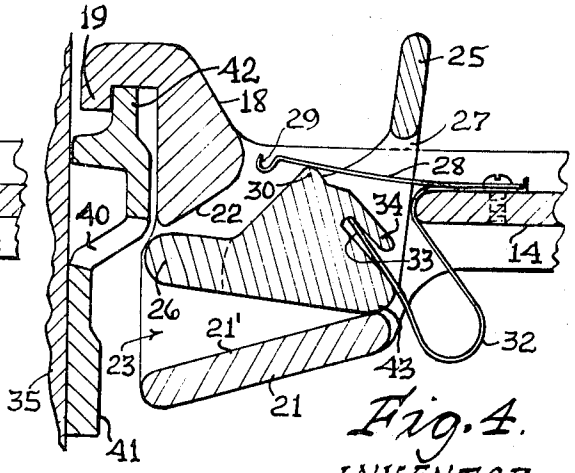


Fig. 4.

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END FITTING FOR FREIGHT RETAINING DEVICES

SUMMARY OF THE INVENTION

An apparatus for removably latching freight supporting and bracing bars upon supporting members provided by storage compartments and the like, including an end fitting structure carried by the opposite ends of the bar with the end fitting comprising a hollow head structure providing a substantially flat vertically extending front wall, and in which is carried a restrained movable latch member having a latch pin projectable out of the head structure through various angular planes relative to the flat vertical front wall so as to be accommodated in latching engagement with supporting members of various constructions and configurations.

The invention will be best understood by reference to the accompanying drawings in which there is shown a preferred form of construction of the improved end fitting, and in which:

FIG. 1 is a fragmentary side elevational view of the end fitting with a supporting member shown in section,

FIG. 2 is a detailed sectional view of the end fitting with the latch member in its extended or latching position.

FIG. 3 is a fragmentary detailed sectional view showing the end fitting associating with a supporting member having a different construction and configuration, and

FIG. 4 is a fragmentary detailed sectional view similar to FIG. 3, with the latching member in its retracted or unlatched position.

The end fitting 10 of the present invention is adapted to be carried at the opposite ends of a freight bracing or supporting bar 11 generally known as a crossbar. The end fittings 10 may be fixedly connected to the ends of the crossbar 11, or as shown, telescopically mounted therein in any suitable manner well known in the art.

As shown in FIG. 1, the end fitting 10 includes an elongated neck 12 formed to provide side walls 13 connected together by a central web 14, which has formed therein adjacent one end of the neck 12 an elongated slot 15. The neck 12 is adapted to be projected into an axially extending opening 16 formed in the crossbar 11, with the elongated slot 15 receiving the shank of a connecting bolt 17 projected transversely through the opening 16, such that the end fitting may be telescopically moved through the opening 16 and out of the end of the crossbar 11 a distance equal to the length of the slot 15.

The side walls 13 of the neck 12 terminate at their outer free ends into raised wall abutments 18. These wall abutments 18 provide hook-shaped hangers 19, which extend laterally from a substantial flat front wall 20, which lies in substantial vertical alignment with the front edge of a bottom wall 21. The inner lower wall 22 of the wall abutments 18 together with the bottom wall 21 which extends transversely with respect to the wall abutments 18 define an opening 23, which extends substantially axially of the end fitting 10.

The bottom wall 21 is disposed to lie in an inclined plane so that it extends outwardly and downwardly from the longitudinal plane of the neck 12 so as to provide a wall surface 21', which is spaced from the similarly angled inner lower wall 22 of the wall abutments 18.

A latch member 24 is adapted to sit in the opening 23 upon the inclined wall surface 21' of the bottom wall 21 as seen in FIG. 1. The latch member 24 provides a latch lever 25 that extends upwardly out of the top of the opening 23 between the side walls 13 of the neck 12. The latch 24 provides spaced latch pins 26 (only one being shown) which extend substantially at right angles to the latch lever 25, and which are adapted to be projected out of the opening 23 beyond the flat front wall 20 of the abutments 18 and the front edge of the lower wall 21.

The latch lever 25 has an opening 27 formed therein extending substantially parallel to the side walls 13 of the end fitting 10.

Extending through the opening 27 formed in the latch lever 25 is a flat spring 28. One end of the flat spring 28 is connected to the center web 14 while its opposite free end provides a catch 29, which will normally engage a corner 30 of the wall 31, which defines the bottom of the opening 27 so as to retain the latch 24 in its retracted or inoperative position as shown in FIG. 1.

A second coil spring 32 has one end connected to the center web 14 and its free end projected into a slot 33 formed beneath a finger 34 provided by the wall 31. This second spring 32 operates in direct opposite to the spring 28 in that when the latch 24 is caused to be moved by an operator in such a manner that the catch 29 of the spring 28 is disengaged from the corner 30, the spring 32 will urge the latch 24 through the opening 23 so that the latch pins 26 thereof are projected beyond the flat wall 22 of the wall abutments 18 and the outer edge of the bottom wall 21.

The crossbar 11 through its end fittings 10 is adapted to be connected to the side walls 35 of the freight storage compartment so as to retain freight therein. To accomplish this function a series of horizontally aligned vertically extending supporting members or belt rails 36 are mounted on the walls 35 of the compartment. These belt rails provide an upstanding flange edge 37 which is normally spaced from the wall 35 as well as a vertically extending wall 38, which is in vertical alignment with the flange 37 and likewise spaced from the wall 35. Formed in the wall portion 38 of the belt rail 36 is a series of horizontally aligned apertures 39. Belt rails of this construction are well known in the art, and make up no part of the present invention.

In positioning the crossbar 11 between horizontally aligned belt rails the hook-shaped hangers 19 of the end fittings 10 are placed upon the upstanding flange 37 of the belt rail 36 as shown in FIG. 1. The operator will move the latch lever 25 so as to disengage the catch 29 of spring 28 from the corner 30 of the wall 31 of the latch 24. The spring 32 will urge the latch 24 so that the same will move down the inclined wall surface 21' of the bottom wall 21 until the latch pins 26 of the latch 24 are projected out of the opening 23 and into the apertures 39 formed in the belt rail 36. It should be noted that at this point the corner 30 will engage the inner lower wall 22 of the wall abutments 18 to prevent further outward projection of the latch 24 through the opening 23.

The crossbar 11 will be restrained against movement in a direction along the belt rails 36 by the latch pins 26, and be prevented from moving away from the belt rail 36 by the hook-shaped hanger 19 embracing the flange 37 of the belt rail 36.

In the event that the end fitting 10 is to be connected to a belt rail having a different configuration such as that shown in FIGS. 3 and 4 wherein the horizontally aligned apertures 40 of the modified form belt rail 41 are formed in an angular wall portion rather than in vertical alignment with the upstanding flange 42, the operator, through movement of the latch lever 25 in a direction away from the hook-shaped hangers 19, may pivot the latch 24 about its inner corner 43 as such corner 43 rests upon the wall surface 21' of the bottom wall 21 such as is shown in FIG. 3. In this position the spring 32 will urge the latch 24 outwardly of the opening 23 with the latching pins 26 movable through a substantial vertical component until they are projected into the apertures 40 formed in the angular portion of the belt rail 41. Thus, it is evident that the end fitting 10 and its novel movable latch 24 is capable of being accommodated in different latching positions to conform to the construction and configuration of the associated belt rail.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modification as come within the scope of the appended claims.

I claim:

1. An end fitting for a freight supporting and retaining crossbar having means at one end for connection to the end of the crossbar and means at the opposite end thereof for removable

connection to fixed associated support members having different connecting surface configurations wherein the improvement comprises:

a. said means at the opposite end of the end fitting including an enlarged head portion having an opening formed therein extending substantially longitudinally of the end fitting;

b. hook-shaped hangers on said head portion extending laterally from the front edge thereof for supporting the end fitting on the fixed associated support member;

c. a latch including locking pins at one end thereof disposed within said opening and movable telescopically therein and pivotable vertically therethrough;

d. an actuating lever provided at the other end of said latch and extending substantially vertically out of one end of said opening and movable substantially horizontally therethrough to telescope and pivot said latch within said opening;

e. means movably connecting said latch in said opening and normally urging said locking pins in a direction out of said opening while permitting pivotal movement of said locking pins through a vertical plane and out of said opening for engagement with different connecting surface configurations of an associated support member; and

f. means for releasably holding said latch in said opening with said locking pins disposed within the confines of said head portion and out of engagement with the associated support member.

2. An end fitting for a freight supporting and retaining crossbar as defined by claim 1 wherein said means movably connecting said latch in said opening comprises a spring normally urging said latch and said locking pins in a direction out of said opening.

3. An end fitting for a freight supporting and retaining crossbar as defined by claim 1 wherein certain confronting walls of said head portion defining said opening are spaced apart a distance less than the thickness of said latch so as to prevent displacement of said latch and said locking pins in one direction out of said opening, and for guiding the movement of said latch within said opening.

4. An end fitting for a freight supporting and retaining crossbar as defined by claim 3 wherein said means movably connecting said latch in said opening comprises a spring normally urging said latch and said locking pins in a direction out of said opening.

5. An end fitting for a freight supporting and retaining crossbar as defined by claim 1 wherein said means for releasably holding said latch in said opening comprises a yieldable catch engageable with a portion of said latch and disengaged by movement of said latch by its actuating lever through said opening in said head portion.

6. An end fitting for a freight supporting and retaining crossbar as defined by claim 5 wherein said means movably connecting said latch in said opening comprises a spring normally urging said latch and said locking pins in a direction out of said opening.

7. An end fitting for a freight supporting and retaining crossbar as defined by claim 5 and further defined by having certain confronting walls of said head portion defining said opening are spaced apart a distance less than the thickness of said latch and said locking pins in one direction out of said opening, and for guiding the movement of said latch within said opening.