Nov. 18, 1947. H. H. WOLFE 2,430,901

PILOT DOOR LATCH AND OPERATING MEANS

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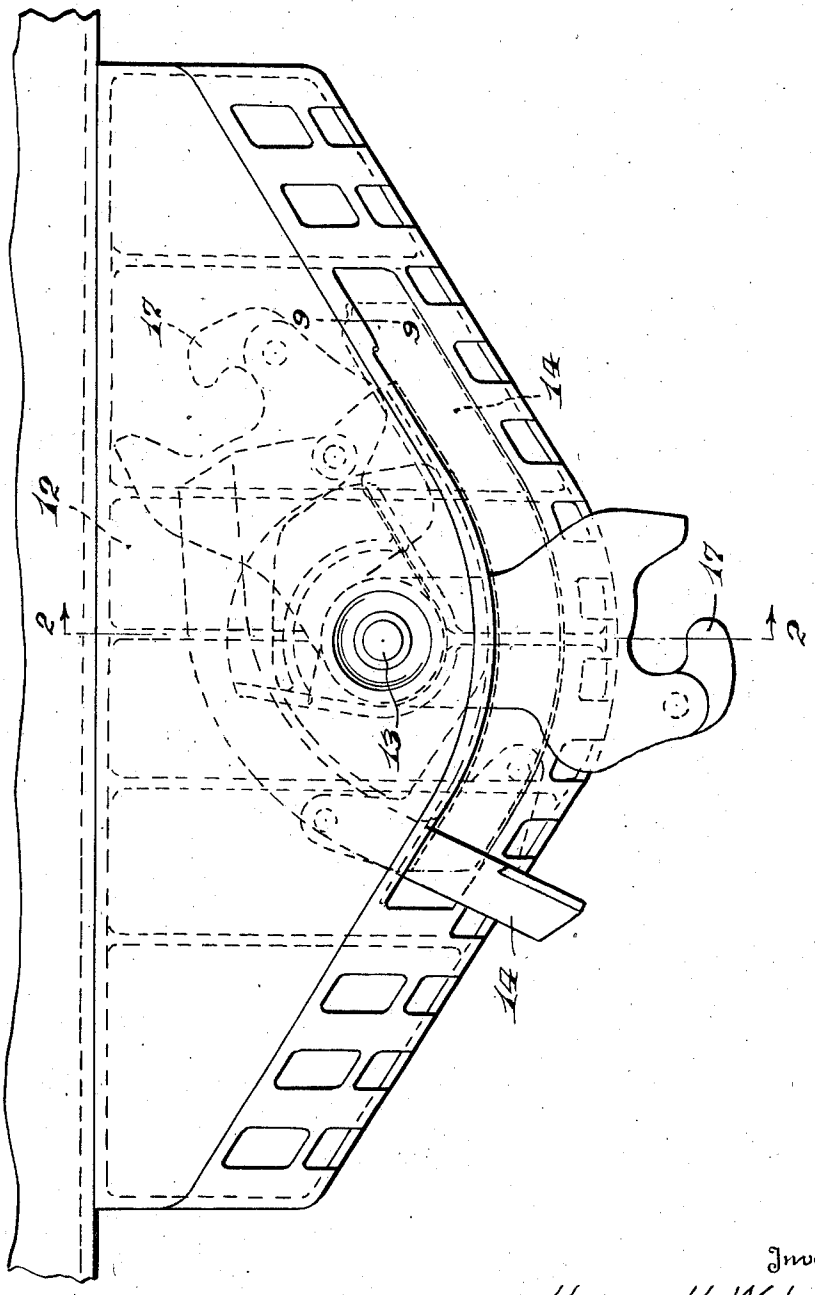


Fig. 1

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Fig. 2

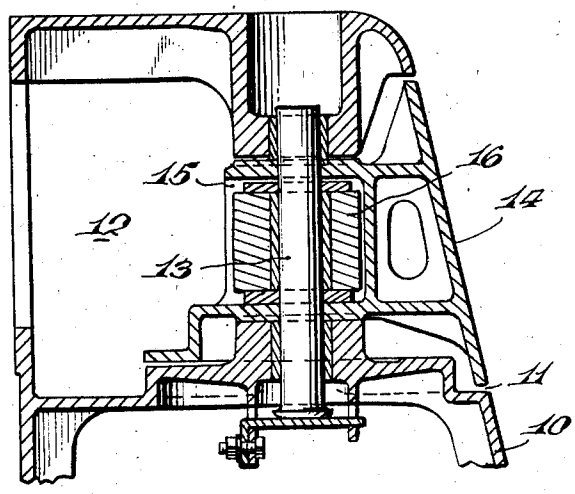


Fig. 7

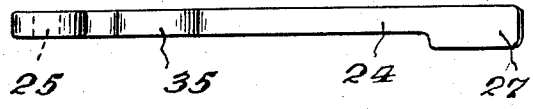
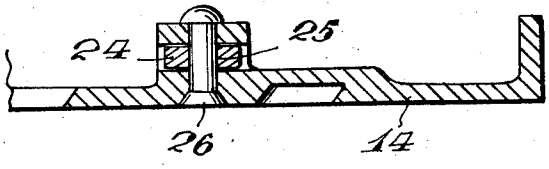


Fig. 8



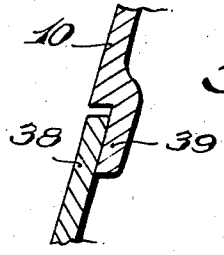


Fig. 9

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Fig. 3

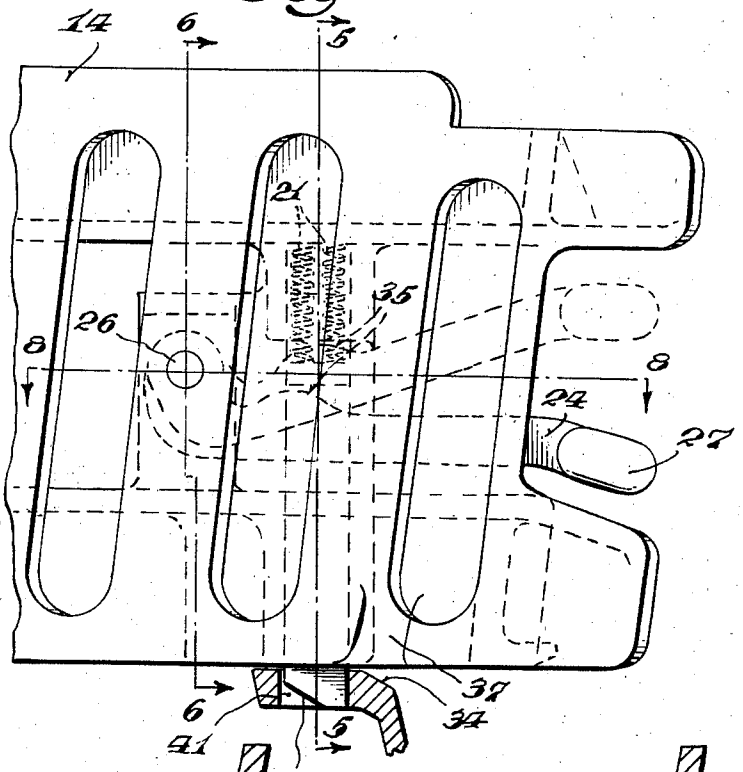
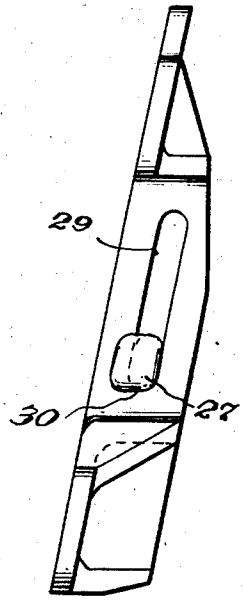


Fig. 4



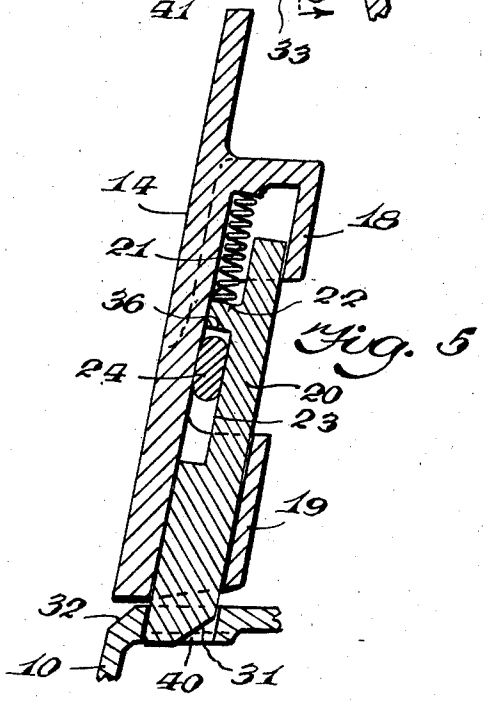


Fig. 5

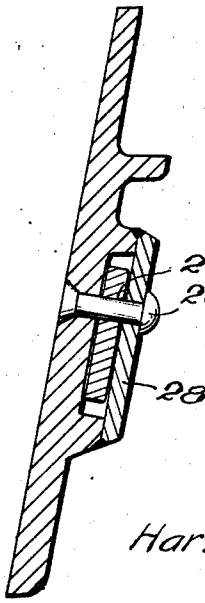


Fig. 6

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PILOT DOOR LATCH AND OPERATING MEANS

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Application June 19, 1944, Serial No. 540,949

7 Claims. (Cl. 292—173)

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This invention relates to improvements in combined latch and operating means for pilot doors, and more particularly to such means employed in connection with the couplers of locomotives or the like.

Locomotive pilots having retractable couplers are known, in which a pilot door rigidly united with a coupler pocket swings concentric with the coupler swivel pin. When the door is moved to open position, the coupler is automatically brought to coupling position, and when the door is closed, the coupler is retracted into the pilot.

Heretofore, it has been necessary to unlatch the door when in the closed position and hold the latch open while moving the door to open position, and then relatch the door and vice versa. Due to the location of the latch or latch pin, it has generally required two men to perform this operation, one to hold the latch in unlatched position, while the other moved the door.

One of the objects of the present invention is to provide a means enabling one man to handle the latch and move the door into either open or closed position. In accordance with the invention, the latch handle is conveniently located when the door is either open or closed, and after the latch is moved to unlatched position and the door is moved slightly, it is unnecessary for the operator to hold the latch in retracted position, as the structure is such that the latch will be automatically moved into latching position whether the door is moved to open or closed position.

Another object of the invention is to provide a novel structure including a latch handle that can be used to release the latch and subsequently move the door. In accordance with the invention, the latch is preferably spring-operated whereby when the door is fully opened or fully closed, the latch will be automatically projected to latched position, and the same latch may be employed to hold the door in either open or closed position.

Further objects will be apparent from a reading of the following description and claims and from a consideration of the accompanying drawings, showing an embodiment of my invention, in which:

Fig. 1 is a top plan view of a pilot provided with a coupler and door of the type to which I have applied my improvements. In this view the door is shown in open position and the coupler is shown in coupling position. The coupler is also shown in retracted position in dotted lines.

Fig. 2 is a vertical sectional view taken on the line 2—2 of Fig. 1.

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Fig. 3 is an enlarged vertical sectional view of the pilot with the door in open position, certain parts being omitted to facilitate illustration.

Fig. 4 is an end view of the door.

Figs. 5 and 6 are vertical sectional views, respectively, taken on the lines 5—5 and 6—6 of Fig. 3.

Fig. 7 is a top plan view of the latch lifter.

Fig. 8 is a horizontal sectional view taken on the line 8—8 of Fig. 3.

Fig. 9 is a vertical sectional view taken on the line 9—9 of Fig. 1.

Referring to the drawings, 10 designates a pilot having a doorway 11 opening into a compartment 12. A vertical pivot pin 13 extends from the top to the bottom of said compartment and serves as a journal for a door 14. The latter is provided at its rear with a pocket 15 to receive the shank 16 of a coupler 17, swiveled on the pin 13.

When the coupler is not in use, it is housed within the compartment 12 as indicated in dotted lines in Fig. 1, rearwardly of the door 14, but when the door is in open position, as shown in full lines in this figure, the coupler projects forwardly from the pivot pin 13, as will be obvious.

In accordance with the present invention, the door (Fig. 5) is provided at its rear with upper and lower guides 18 and 19 for an upwardly and downwardly movable bolt 20. The latter is preferably urged downwardly by a spring or springs 21, positioned between a portion of the guide 18 and a shoulder 22 of the bolt. At one side the bolt is provided with a notch 23 for the reception of a portion of a latch lifter 24, pivotally connected at one end at 25 to a rivet 26 for movement about a substantially horizontal axis and provided at its opposite end with a thickened part 27, forming a handle. The rivet 26 passes through a plate 28 that may be welded to the back of the door to form with the latter a bracket for the mounting of the lifter.

As shown in Fig. 4, the door is provided at one end with a substantially vertical slot 29 in which the lifter moves, and normally the lifter rests at the bottom of the slot, as indicated at 30.

Referring to Fig. 5 which shows the latch holding the door in closed position, it will be noted that the bolt is provided at its bottom with a chamfered surface 31 adapted to coact with a complementary stationary surface 32 of the pilot 10 to automatically raise the bolt 20 when the door is moved into closed position. The bolt has another chamfered surface 33 at its bottom, arranged at 90° to the surface 31 and adapted to

coact with another chamfered surface 34 on the pilot for automatically raising the bolt when the door is moved to open position.

To facilitate smooth working of the lifter and latch, I prefer that the lifter be provided with a convex hump 35 positioned in the notch 23 and adapted to slidably engage the upper end 36 of the notch.

When the door is moved into open position, an abutment surface 37 thereof will abut the lower left corner of the doorway, whereas when the door is in closed position, the upper right corner 38 of the door (Fig. 9) will abut a stop 39 of the pilot 10.

To open the pilot door so as to move the coupler to operating position, handle 27 is raised and lifter 24 pivots on rivet 26. Hump 35 of the lifter contacts the upper end 36 of the notch in the bolt, compressing springs 21, and releasing the bolt from the slot 40 (Fig. 5) of the pilot. The door may now be swung about the axis of the pivot 13 into open position and even though the lifter at this time may be in its lowermost position, as the door nears its full open position, the bolt will rise due to the action of chamfer 33 on chamfer 34. As the door reaches fully opened position, the abutment 37 will strike the left side of the doorway of the pilot and the bolt will be in position to drop into slot 41, thus latching the door in open position.

To close the door, the lifter is again raised so as to elevate the bolt and the door is then swung to closed position, during which operation chamfer 31 on the bolt will climb chamfer 32 on the pilot, and when the upper right-hand corner 38 of the door strikes stop 39 on the pilot, the bolt will be in position to drop into the opening 40 and thus latch the door in closed position.

From the foregoing, it is believed that the construction, operation and advantages of my improved latching and door operating means may be readily understood, and I am aware that changes may be made in the details disclosed without departing from the spirit of the invention as expressed in the claims.

What I claim and desire to secure by Letters Patent is:

1. In a pilot of the type having a coupler receiving pocket and a door for closing the same, the improvement comprising a substantially vertically movable bolt carried by the door and adapted by downward movement to latch the door to the pilot in either open or closed position, and an operating member for the bolt accessible from the front of the door, arranged in its entirety rearwardly of the front face of the door and serving as a handle by which the door may be moved to either open or closed position.

2. In a structure of the kind claimed in claim 1, means independent of the operating member for yieldingly moving the bolt downwardly.

3. A structure as claimed in claim 1, including cooperating means on the bolt and pilot for moving the bolt into retracted position.

4. A structure as claimed in claim 1, in which the bolt normally projects from the bottom of the door and there is cooperating means on the bolt and pilot for moving the bolt into retracted position when the door is moved to one of its extreme positions.

5. A structure as claimed in claim 1, in which the operating member is pivotally mounted for movement about a horizontal axis and is provided with a curved hump engageable with the bolt for moving the latter upwardly.

6. A structure as claimed in claim 1, in which the bolt is provided with a notch and the operating member if pivotally connected to the door and has a portion of less height than the notch extending through the latter.

7. In a pilot of the type having a coupler receiving pocket and a door for closing the same, the improvement comprising guides carried at the rear of the door, an upwardly and downwardly movable bolt guided by said guides and engageable with the pilot, by downward movement, for latching the door, spring means cooperating with the bolt for yieldingly urging it downwardly into latching position, said bolt being provided with a notch, and an operating member for the bolt pivotally connected to the door and having a portion of less height than the notch extending through the latter, said operating member being accessible from the front of the door, arranged in its entirety rearwardly of the front face of the door and serving as a handle by which the door may be moved to either open or closed position, said door being provided at one side edge portion with a recess and with a substantially vertical slot through which the operating member extends into said recess.

HARRY H. WOLFE.

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