March 29, 1932. E. H. JOHNSON 1,851,630

BUILDER'S HARDWARE

Filed Sept. 21, 1928 2 Sheets-Sheet 1

Fig. 1

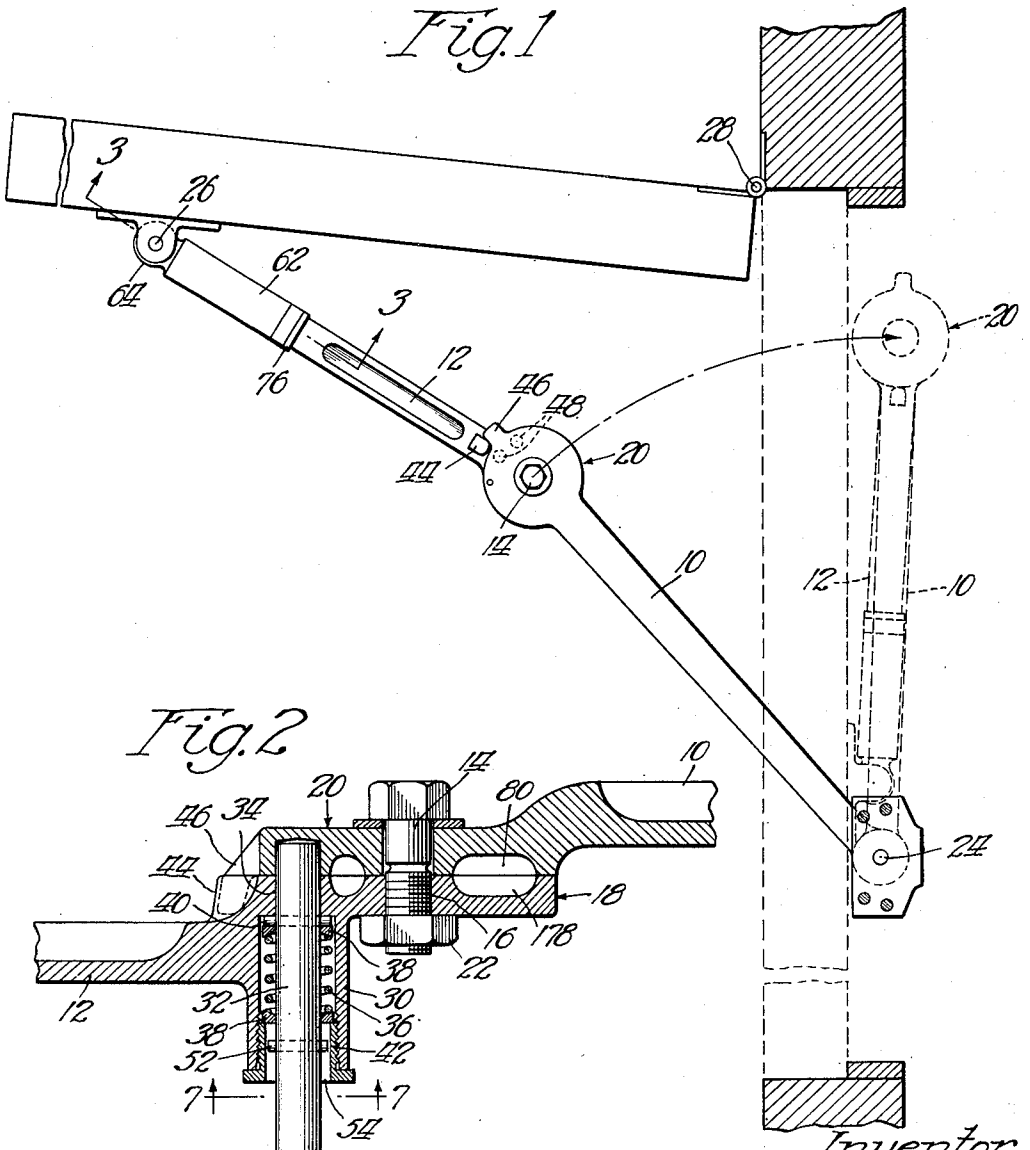
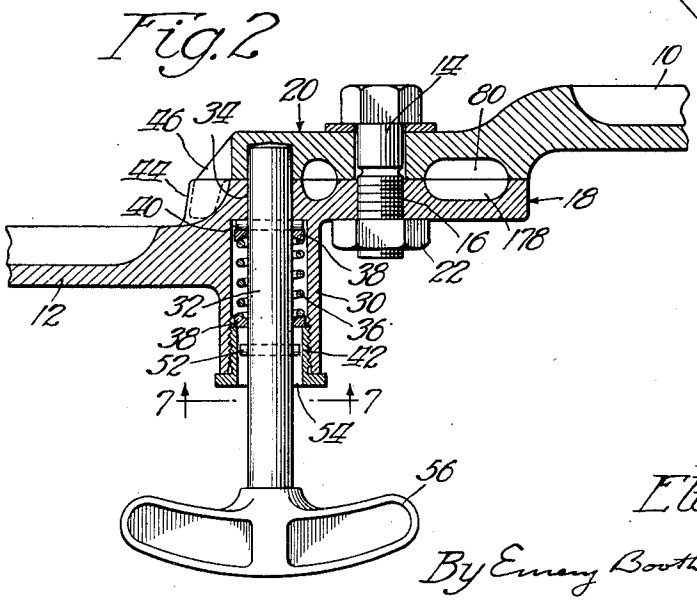


Fig. 2



Inventor
Elwin H. Johnson
By Emery Booth Janney and Varney Attys.

March 29, 1932. E. H. JOHNSON 1,851,630

BUILDER'S HARDWARE

Filed Sept. 21, 1928 2 Sheets-Sheet 2

Fig. 3

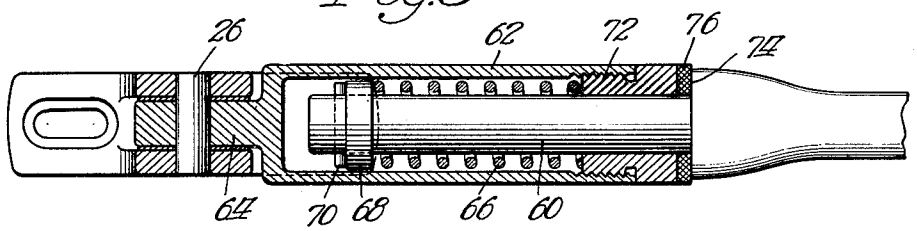


Fig. 4

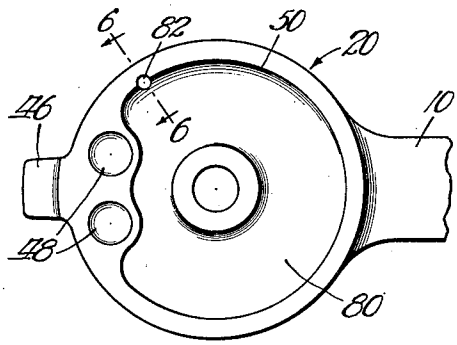


Fig. 5

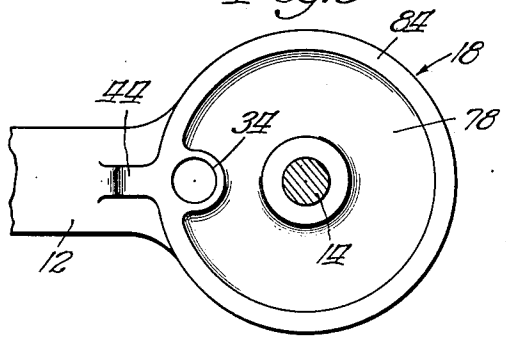


Fig. 6

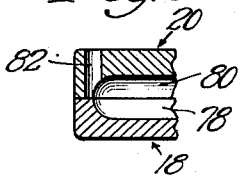
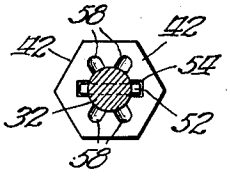


Fig. 7



Inventor
Elwin H. Johnson

By Emery Booth Janney and Varney Attys.

Patented Mar. 29, 1932 1,851,630

UNITED STATES PATENT OFFICE

ELVIN H. JOHNSON, OF WINNETKA, ILLINOIS

BUILDER'S HARDWARE

Application filed September 21, 1928. Serial No. 307,387.

My invention relates to builder's hardware, and includes among its objects and advantages the development of an improved holder of the type usually employed on doors and usually mounted overhead.

In the accompanying drawings,

Figure 1 is a plan diagram of a door and door casing indicating the application thereto of apparatus according to the invention;

Figure 2 is a vertical section through the middle pivotal connection;

Figure 3 is a section on line 3—3 of Figure 1;

Figure 4 is a bottom plan view of the head on the upper arm at the middle pivotal connection;

Figure 5 is a top plan view of the opposing head on the lower arm;

Figure 6 is a section on line 6—6 of Figure 4 with the heads in assembled positions; and

Figure 7 is a section on line 7—7 of Figure 2.

In the embodiment of the invention selected for illustration, the rigid arms 10 and 12 are connected at their adjacent ends by the middle pivot 14. The pivotal connection at this point is in the form of a bolt having threaded engagement at 16 with the head 18 of the lower arm 12, but having a smooth cylindrical portion passing through the head 20 of the upper arm 10. The bolt is fastened in place by a lock nut 22. When mounted overhead, the only portion of this pivotal connection accessible from below is the lock nut 22. Removal of this nut does not separate the pivotal connection, which can only be disassembled by getting at the upper end of the bolt 14. This materially reduces the ease with which a mischief-maker could separate the two arms.

The free ends of the arms 10 and 12 are pivotally connected to the door-supporting structure or casing and the door itself, as at 24 and 26. One of these pivots is farther from the hinge 28 than the other, so that when the door is closed they will not be vertically above one another. This affords better clearance for the use of a convenient size and shape of casting for the pivotal connections.

Latching means are provided for latching the parts in position to hold the door open. I have illustrated latching means associated with the middle pivot 14. For this purpose the adjacent ends of the arms 10 and 12 are enlarged to form the flat heads 18 and 20. The lower head carries a tubular housing 30 for the locking bolt 32. This bolt slides through a suitable bore at 34 and is urged into the position shown in Figure 2 by a suitable coil spring 36 provided with end abutment washers 38. The upper washer 38 bears against the cross-pin 40 in the bolt 32, and the lower washer rides on the retaining nut 42.

An upwardly extending lug 44 on the arm 12 is positioned in the path of a downwardly extending lug 46 on the edge of the head 20. This limits the straightening movement to the angular relationship indicated in full lines in Figure 1. By placing the lug 44 on the center line of the arm 12 and the lug 46 on the center line of the arm 10 and making the lugs of the right dimensions, the same device may be mounted on either right-hand or left-hand doors. Spaced holes 48 in the lower face of the head 20 form sockets for receiving the bolt 32 to latch the parts in the position shown in Figure 1, or in the corresponding position with the lug 46 on the other side of the lug 44 in case the door happens to be hinged the other way. When the parts are in any position other than that of Figure 1, the upper end of the bolt 32 rides on the rim 50 of the head 20. Upon movement to the position of Figure 1, the spring 36 will snap the bolt up into the position of Figure 2 and hold the parts against movement in either direction.

I have provided manually adjustable means

for rendering the spring 36 inoperative. Referring to Figures 2 and 7, the bolt 32 carries a second cross-pin 52, the ends of which slide in slots 54 in the retaining nut 42. The bolt is provided with a handle 56, by means of which it may be pulled down until the pin 52 moves out of the slots 54, after which a slight rotation of the bolt will carry the ends of the pin over the face of the nut 42 and prevent upward movement of the bolt. For convenience in retaining the parts in this position, I prefer to provide sockets 58 for receiving the ends of the pin 54 to prevent accidental rotation of the handle 56 back to the position of Figure 7.

Thus the user may fasten the door open in the position of Figure 1, or, when the door is closed he may position the bolt in the position of Figure 7 and the first person opening the door will cause it to become fastened in open position. This is an advantage in theatres and other public buildings where the caretaker anticipates the exit of a large number of people at a certain time, and the door should be held open at that time but not before.

The opening movement of the door to the position of Figure 1, either by the caretaker or by someone else, is apt to be made with considerable force, especially as such doors are usually equipped with a closing spring. As such a closing spring is old and well known in the prior art and per se forms no part of the present invention, I have not encumbered the drawings with the illustration of any particular type of spring. It may be understood that the spring is to be associated with the hinge 28 or with either of the pivots 24 or 26 or with the pivot 14. It would be equally effective in any one of the positions mentioned, although the customary positions are at the hinge 28 and at the pivot 24.

If the door is being subjected to considerable force or moving with considerable speed when it arrives at the position of Figure 1, the sudden interruption of the opening movement by the latching of the parts is apt to produce a severe shock that might damage the parts. The commonest form of damage is tearing out the supports for the pivotal connections at 24 and 26.

To relieve the abruptness of this action, I have formed the arm 12 in two telescoping portions with shock absorbing means interposed between them. Referring to Figure 3, the arm 12 terminates in a cylindrical portion 60 housed in a sleeve 62. The pivotal connection at 26 is by means of an ear 64 on the end of the sleeve 62. Between the cylindrical portion 60 and the sleeve 62 I position a fairly stiff compression spring 66. Abutment at one end is provided by a ring 68 bearing against a cross-pin 70 in the cylindrical portion 60, and at the other end by a retaining ring 72 threaded into the end of the sleeve 62. The outer surface of the retainer 72 is preferably flush with the sleeve 62 and smooth. Between the end of the retainer 72 and the abutment shoulder 74 at the base of the cylindrical portion 60 I position a sound deadening and shock absorbing washer 76 of suitable material such as tough leather.

I have provided means for storing a supply of lubricant at the middle pivot 14. For this purpose, the heads 18 and 20 are provided with annular depressions at 78 and 80 forming a storage receptacle for lubricant. The upper head is drilled with an oil hole 82. This hole preferably laps over slightly on the rim 84 of the lower head, so that the injection of lubricant through it will deposit a film on the rim 84 which slides in contact with the lip 50. Suitable lubricant up to the level of the upper face of the lower head may be injected through the oil hole 82, and the quantity thus stored is sufficient to keep the parts well lubricated over a long period of time.

Without further elaboration, the foregoing will so fully explain the gist of my invention that others may, by applying current knowledge, readily adapt the same for use under various conditions of service.

What I claim is:—

1. A door holder comprising, in combination, two arms pivoted to each other and to a door and door frame, the pivotal connection between said arms comprising enlarged superposed flat heads on the ends of said arms, a pintle coaxial with both heads and threaded through the lower one, a lock nut threaded on said pintle below said lower head, the upper face of said lower head having an annular depression for retaining lubricant, the lower face of said upper head having a similar depression, said upper head having a vertical oil hole positioned partly above the outer rim of said lower head and partly above the depression in said lower head, a vertical latching bolt movable upwardly through said lower head near the outer periphery thereof, lugs on said heads in alignment with said arms for holding said arms out of alignment when moved toward alignment in either direction, two sockets in said upper head for receiving the end of said bolt when said lugs are in abutment on either side, said upper head having a smooth annular portion around the remainder of its periphery slidable on the end of said bolt, spring means urging said bolt to latching position, and manually operable catch means for rendering said spring means inoperative.

2. A door holder comprising, in combination, two arms pivoted to each other and to a door and door frame, the pivotal connection between said arms comprising heads on the ends of said arms, a latching bolt movable through the lower head near the outer periphery thereof, lugs on said heads for hold-

ing said arms out of alignment when moved toward alignment in either direction, two sockets in the upper head for receiving the end of said bolt when said lugs are in abutment on either side, said upper head having a smooth annular portion around the remainder of its periphery slidable on the end of said bolt, spring means urging said bolt to latching position, and manually operable catch means for rendering said spring means inoperative.

3. A door holder comprising, in combination, two arms pivoted to each other and to a door and door frame, the pivotal connection between said arms comprising superposed heads on the ends of said arms, a pintle coaxial with both heads and threaded through the lower one, a lock nut threaded on said pintle below said lower head, the upper face of said lower head having an annular depression for retaining lubricant, the lower face of said upper head having a similar depression, said upper head having an oil hole positioned partly above the outer rim of said lower head and partly above the depression in said lower head.

4. In a door holder, in combination: pivoted arms having opposite bearing surfaces adjacent the pivotal axis; interengaging means on said arms for limiting their movement toward that position of alignment wherein the arms extend oppositely from the pivotal axis, said means stopping the arms in an angular position before alignment is reached; a locking member carried on one of said arms; socket means in the other arm for receiving said locking member only in that position in the range of movement of the arms wherein the arms are substantially in stopped position; and means for automatically moving said locking member into locking position when said arms are moved to such a stopped position; said member and the socket-means-carrying arm being shaped to render locking engagement impossible at any other position in the range of movement of said arms.

5. In a door holder adapted to be installed on either a right-hand or a left-hand door, in combination: pivoted arms having opposite bearing surfaces adjacent the pivotal axis; interengaging means on said arms for limiting their movement toward that position of alignment wherein the arms extend oppositely from the pivotal axis, said means stopping the arms in an angular position before alignment is reached, on that side of alignment corresponding to the swing of the door on which the holder is installed; a locking member carried on one of said arms; socket means in the other arm for receiving said locking member only in those positions of the arms, one on either side of alignment, wherein the arms are substantially in stopped position; and means for automatically moving said locking member into locking position when said arms are moved to either stopped position; said member and the socket-means-carrying arm being shaped to render locking engagement impossible at any other position in either of the ranges of movement of said arms.

In testimony whereof, I have signed my name to this specification.

ELVIN H. JOHNSON.