

July 10, 1934.

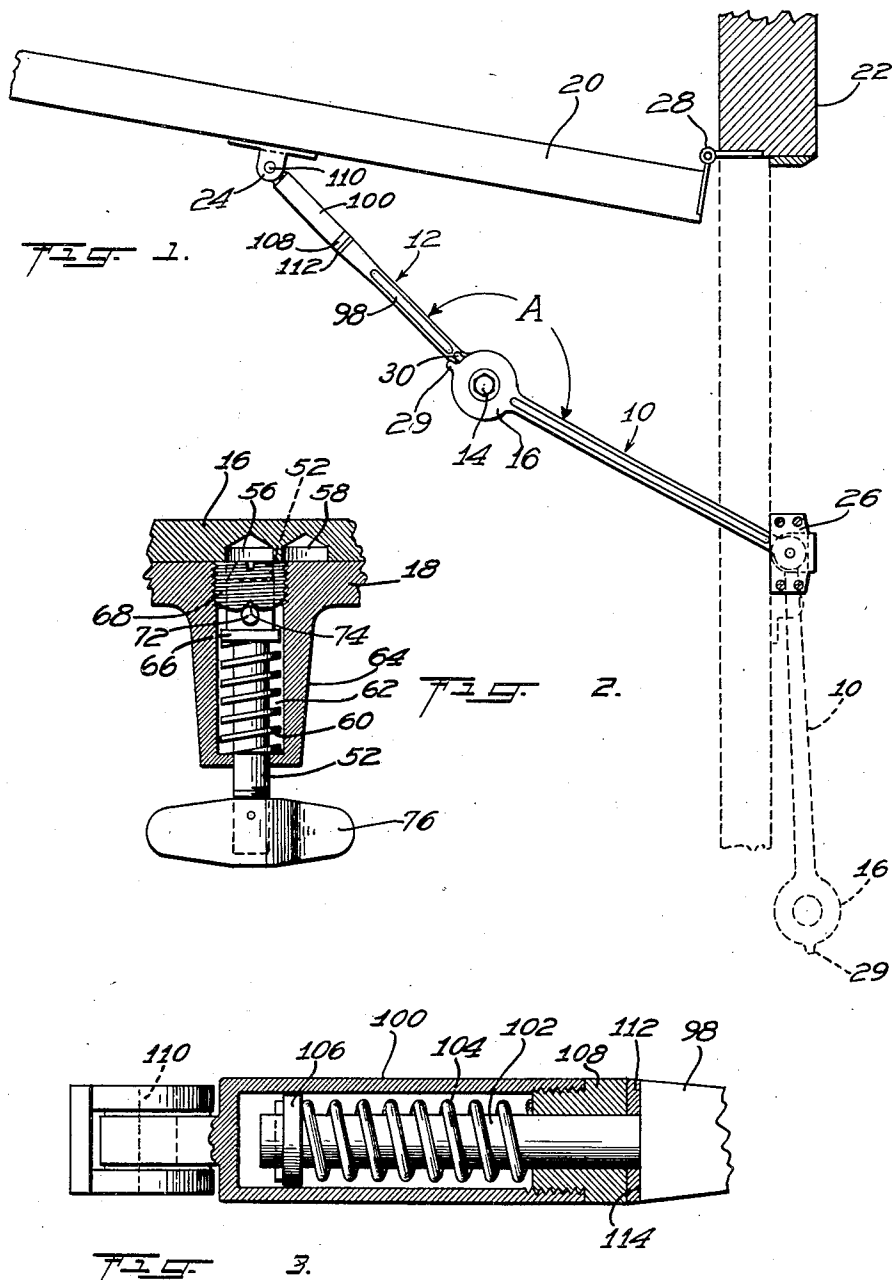
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1,966,205

BUILDER'S HARDWARE

Filed June 8, 1931

2 Sheets-Sheet 1



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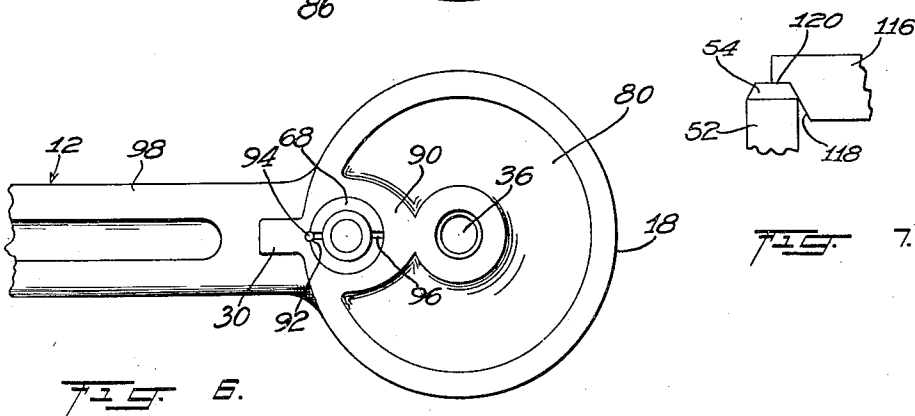
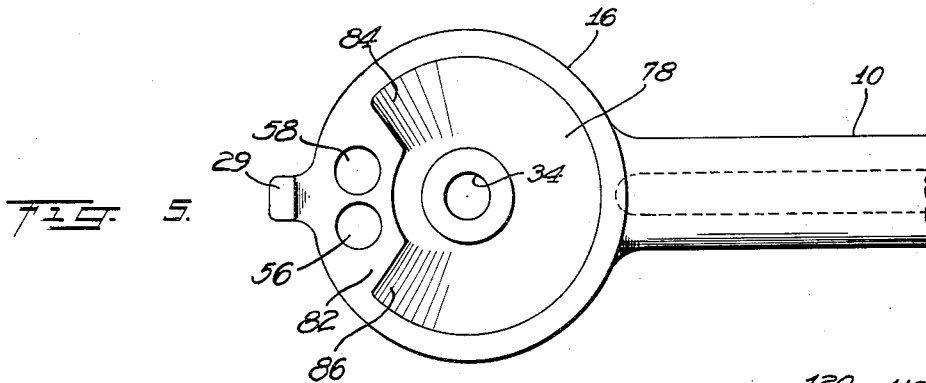
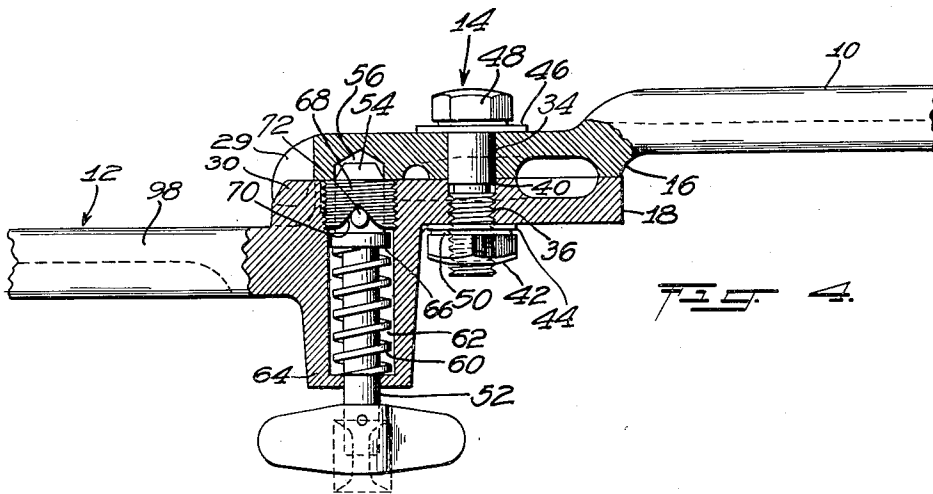
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UNITED STATES PATENT OFFICE

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BUILDER'S HARDWARE

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2 Claims. (Cl. 292-263)

My invention relates to builder's hardware, and includes among its objects and advantages the provision of an improved door holder.

In the accompanying drawings:

5 Figure 1 is a diagrammatic view of a door provided with a door holder according to my invention;

Figure 2 is a sectional detail view showing the stop means in a retracted position;

10 Figure 3 is a sectional view of the yielding means associated with one of the arms;

Figure 4 is a sectional view of the central pivot and adjacent portions of the arm;

15 Figure 5 is a bottom plan view of a portion of one of the arms;

Figure 6 is a top plan view of a portion of the companion arm; and

Figure 7 is a diagram of a machining operation.

20 In the embodiment selected to illustrate the invention, the holder comprises arms 10 and 12 which are connected by a pintle 14. The pintle passes through head portions 16 and 18 formed integrally with the arms 10 and 12 respectively. One end of the arm 12 is pivotally connected with a door 20 while one end of the arm 10 is similarly connected with a door casing 22. Attaching members 24 and 26 respectively connect the arms 12 and 10 with the door 20 and the casing 22. The attaching members 24 and 26 are positioned in such a manner with respect to the hinges 28 that the parts may be moved to either of the positions indicated in dotted and full lines in Figure 1.

35 In referring to Figure 1 it will be noted that the arms 10 and 12 define an angle A which is less than 180° when the door is in its full open position, so that the arms will always move in a predetermined manner. I have provided means 40 for preventing the arms 10 and 12 from moving beyond the open position shown in Figure 1. The head 16 is provided with a lug 29 which is positioned to engage a similar lug 30 upon the head 18 when the arms have been moved to the position shown. The lugs are symmetrically arranged with respect to the center lines of the arms 10 and 12 so that the arms will operate with equal facility even though the hinge 28 is positioned at the other side of the door casing. 45 At this time the opposite sides of the lugs will strike each other when the arms reach their full open position.

50 The heads 16 and 18 are respectively provided with central aligned openings 34 and 36 for receiving the pintle 14. The opening 36 is partly

threaded for receiving the threaded portion of the pintle. The smooth portion of the pintle passes through the opening 34 and extends partly into the opening 36. This feature permits transfer of the load at the point 40 so that the threaded portion of the pintle serves merely as a means for holding the pintle in place. A nut 42 is positioned upon the threaded end of the pintle and bears against a washer 44 upon the pintle between the nut and the head 18. This nut functions as a lock nut for holding the pintle against shifting which would tighten or loosen the bearing relation between the heads 16 and 18. A washer 46 is positioned between the head 48 of the pintle 14 and the head 16. The nut 42 and the head 48 are provided with annular raised portions 50 which prevent the nut and the head from scoring their respective washers.

Means for positively locking the arms 10 and 12 in the full line position shown in Figure 1 with a force materially greater than that of the closing spring that may be associated with the door 20 or the door holder, comprises a bolt 52 having a tapered end 54 arranged to enter one of a pair of recesses 56 and 58 when the arms have been moved to their full open position. After the device is installed as in Figure 1, the recess 58 has no function. If the holder were mounted to open in the other direction, the bolt 52 would cooperate with the recess 58 and not with the recess 56. Thus the two recesses provide for mounting the device in any conceivable position.

The bolt 52 is urged in the direction of the head 16 by means of a spring 60 which is positioned within a bore 62 in a depending portion 64 formed integrally with the head 18. One end of the spring bears against the bottom of the bore while the opposite end bears against the flange 66 upon the bolt 52. The end of the bolt above the flange 66 is slightly larger in diameter than the remaining portion of the bolt, and passes through a sleeve 68. The sleeve 68 is provided with a pair of deep V-shaped grooves 70 for receiving the ends of a pin 72 carried by the bolt. When the bolt is positioned so that the ends of the pin 72 align with the grooves 70, the tapered end 54 is free to enter the opening 56 when the arms are moved to their open position, and will snap up into the full line position of Figure 4 and tend to hold the door open. The sleeve is also provided with a pair of smaller grooves 74 (see Figure 2) which are aligned at right angles to the grooves 70 for receiving the ends of the pin 72 when the bolt is rotated 90°. 110

When the pin is positioned in the grooves 74, the tapered end 54 will not extend above the face of the head 18 contacting with the head 16. The arms 10 and 12 may be opened and closed at this time without interference from the bolt 52. A handle 76 is fastened upon the outer end of the bolt so that the latter may be rotated. The walls of the grooves 70 function as cam surfaces so that the bolt 52 may be easily rotated for moving the bolt to its retracted position.

The recesses 56 and 58 are cylindrical. It will thus be seen that a sharp corner will move against the tapered end 54 for depressing the bolt against the tension of the spring 60 when the door is forcibly closed. The bolt 52 is resiliently urged in the direction of the head 10 with a force sufficient to hold the door against a closing force materially greater than that of the closing spring for the door, but materially less than the hinges will stand without injury.

The heads 16 and 18 are recessed as at 78 and 80. When the bolt is not in its retracted position, the tapered end 54 will project into the recess 80 when it has moved beyond the ledge 82 (see Figure 5). The ledges slope gently at 84 and 86. In cutting the recess 80 it is desirable to leave enough material at 90 to permit the bore 62 to be threaded for receiving the threaded sleeve 68. The sleeve is securely fastened by boring a small hole 92 in a portion of the threads on the sleeve and the head 18 for receiving a pin 94. The pin holds the sleeve against rotation. The exposed end of the sleeve may be slotted as at 96 to receive the end of a suitable tool for turning the sleeve.

Cushioning means is provided for damping the shock occurring when the lug 28 strikes the lug 30 when the arms 10 and 12 are moved abruptly to the open position shown in Figure 1. The arm 12 comprises a portion 98 and a sleeve 100. The portion 98 is provided with a reduced extension 102 which extends into the sleeve. A spring 104 is mounted under relatively heavy initial tension upon the extension 102 between an abutment 106 upon the extension and a retaining nut 108 having threaded relation with the sleeve 100. One end of the sleeve is pivotally connected with the attaching member 26 by means of a pintle 110.

Any force in excess of that which is necessary to swing the door to its open position is absorbed by the spring 104. When the toe 28 strikes the toe 30, any remaining force in excess of that which is necessary to swing the door to its open position is absorbed in the compression of the spring 104. A leather washer 112 is positioned upon the extension 102 between the retaining nut 108 and the shoulder 114. The washer eliminates the click which would otherwise occur by the sudden contact between the shoulder and the retaining nut.

Referring to Figure 7, the turning tool 116, with which the end of the bolt 52 is machined, is shaped with one smooth straight edge 118 which forms the entire conical surface 54 at a single cut. The edge at 120 may or may not simultaneously face off the end of the bolt.

In this way no tiny grooves are formed in the face of the conical portion 52 during the machining, and after the bolt is case hardened, the surface is geometrically correct and at the same time smooth and of constant angle from the base of the cone to the top.

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

I claim:

1. A door holder comprising rigid arms pivoted together, means carried by one arm for controlling relative movement of the arms comprising a bolt parallel to and offset from the pivotal connection for the arms, resilient means urging said bolt into engagement with the other arm, an abutment sleeve having a cam-shaped edge encircling said bolt, and a projection on the bolt arranged to engage said cam-shaped edge, whereby rotation of the bolt upon its axis, in either direction, renders the bolt inoperative with respect to its engagement with said other arm, continued or reverse rotation of said bolt in its retracted position rendering the same operative with respect to said other arm.

2. A door holder comprising rigid arms pivoted together, means carried by one arm for controlling relative movement of the arms comprising a bolt parallel to and offset from the pivotal connection for the arms, the other arm having a bore of uniform diameter, said bolt having a tapered end arranged to enter said bore when the arms have been moved to a predetermined position with respect to each other, a housing carried by the arm supporting said bolt and enclosing the latter, resilient means positioned within said housing urging said bolt into engagement with said other arm, and an abutment sleeve threaded into said housing having a cam-shaped edge encircling said bolt, and a projection on the bolt arranged to engage said cam-shaped edge, whereby rotation of the bolt upon its axis in either direction renders the bolt inoperative with respect to its engagement with said other arm, continued or reverse rotation of said bolt in its retracted position rendering the same operative with respect to said other arm, the tapered end of said bolt being yieldingly held in said bore with sufficient force to resist normal forces on the door, but yieldable to permit the door to close upon application of abnormal forces.

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