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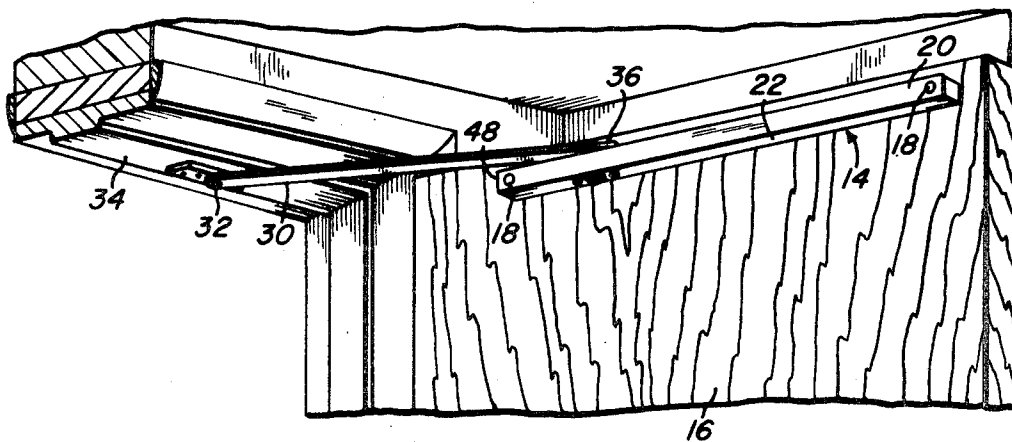
[54] **SURFACE-MOUNTED NONHANDED DOOR
 HOLDER**
 29 Claims, 10 Drawing Figs.

[52] U.S. Cl..... 292/270,
 16/49, 292/278, 292/DIG. 19

[51] Int. Cl..... E05c 17/04

[50] Field of Search..... 292/293,
 270, 268, 269, 262, 272, 274, 275, 278, DIG. 19;
 16/49, 82, 85 R, 85 A, 85 C, 85

ABSTRACT: The door holder is applicable, without alteration, to right- or left-hinged doors, and includes an improved, manually operable hold-open device which is selectively movable between operative and inoperative positions by means of an easily accessible, actuator which projects from the bottom of the door holder housing, said actuator being rendered inoperative whenever the door is closed thereby discouraging manipulation and misuse of the hold open device by unauthorized personnel, pranksters, and the like.



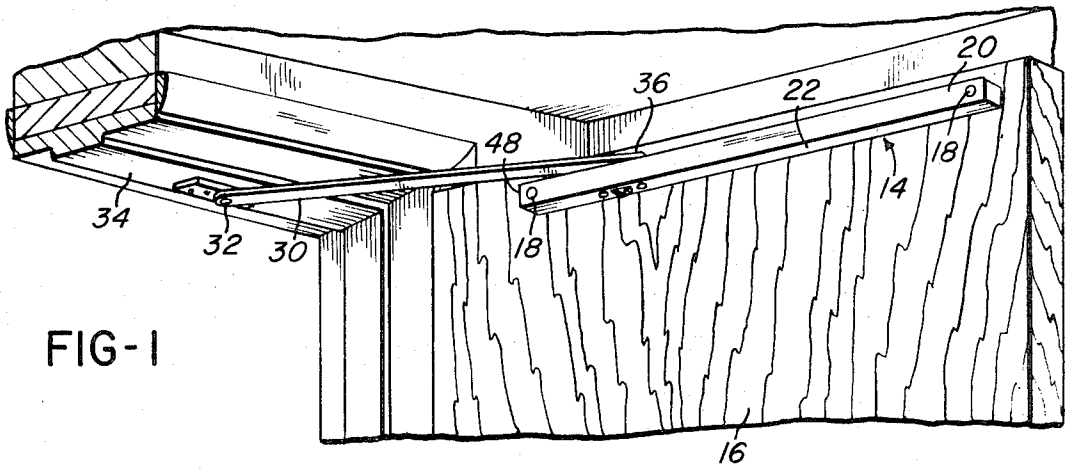


FIG-1

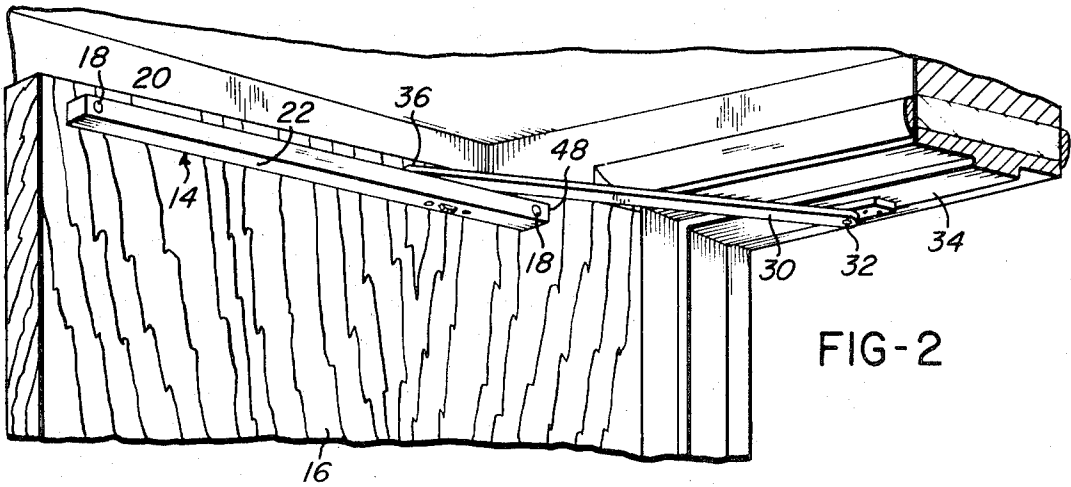


FIG-2

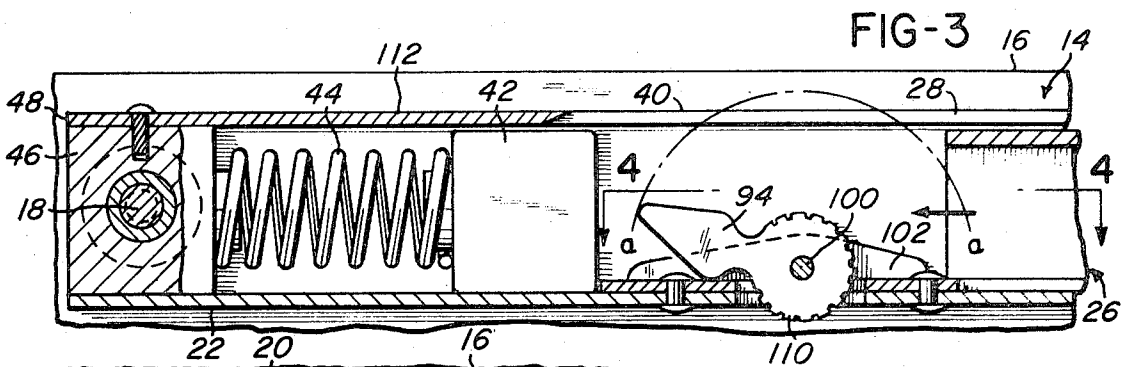


FIG-3

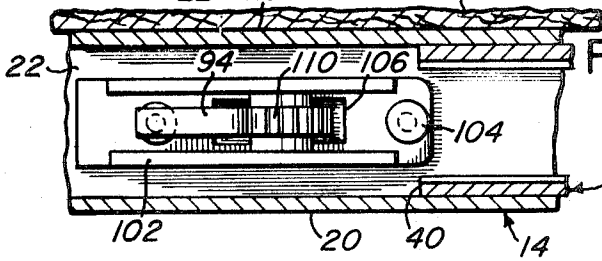


FIG-4

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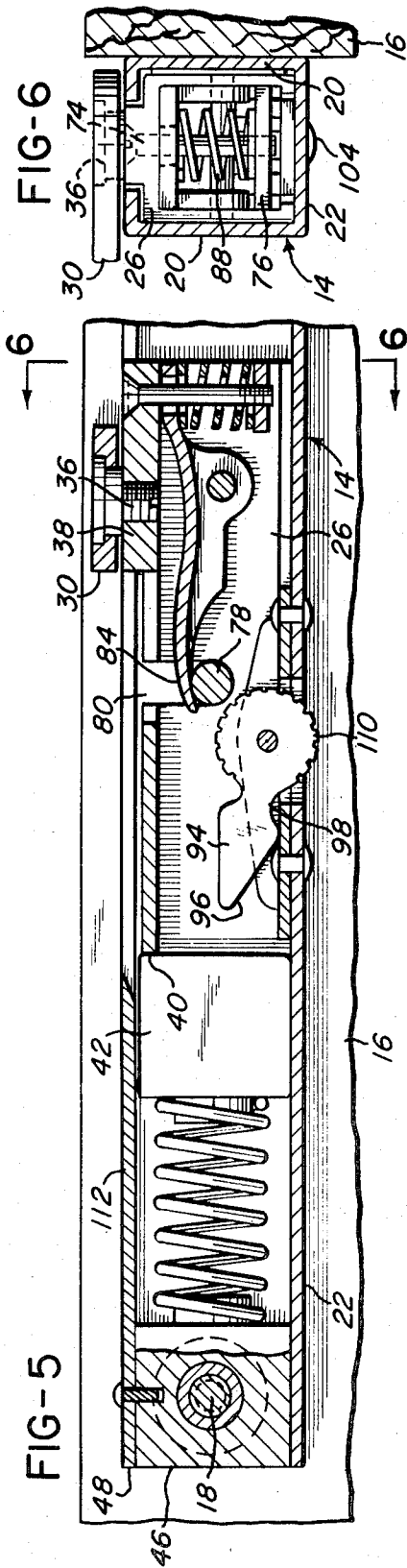


FIG-6

FIG-5

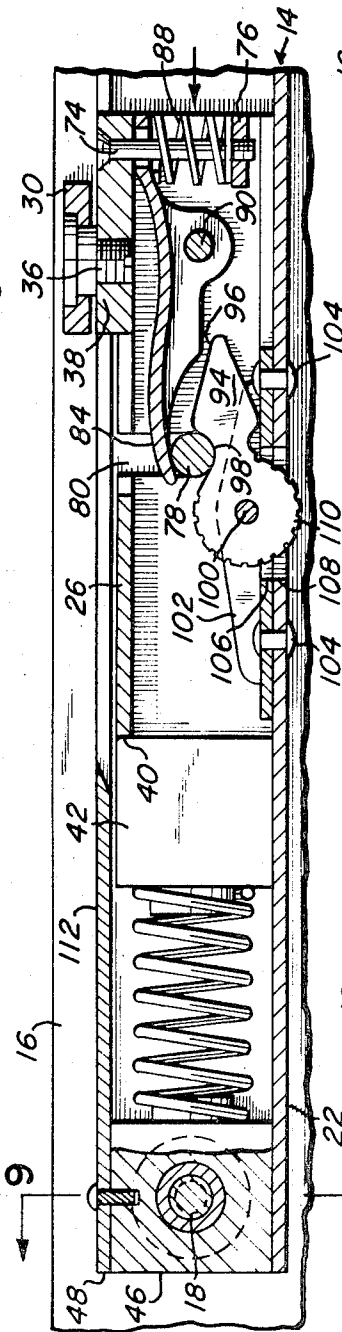


FIG-7

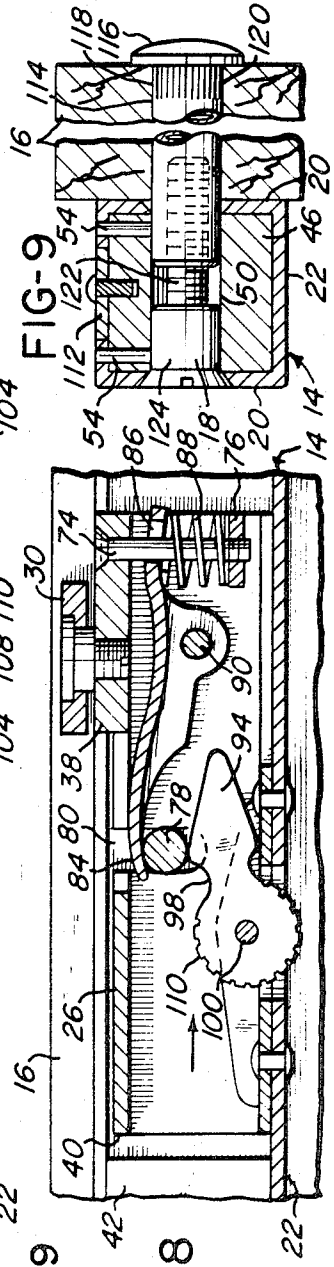


FIG-8

FIG-9

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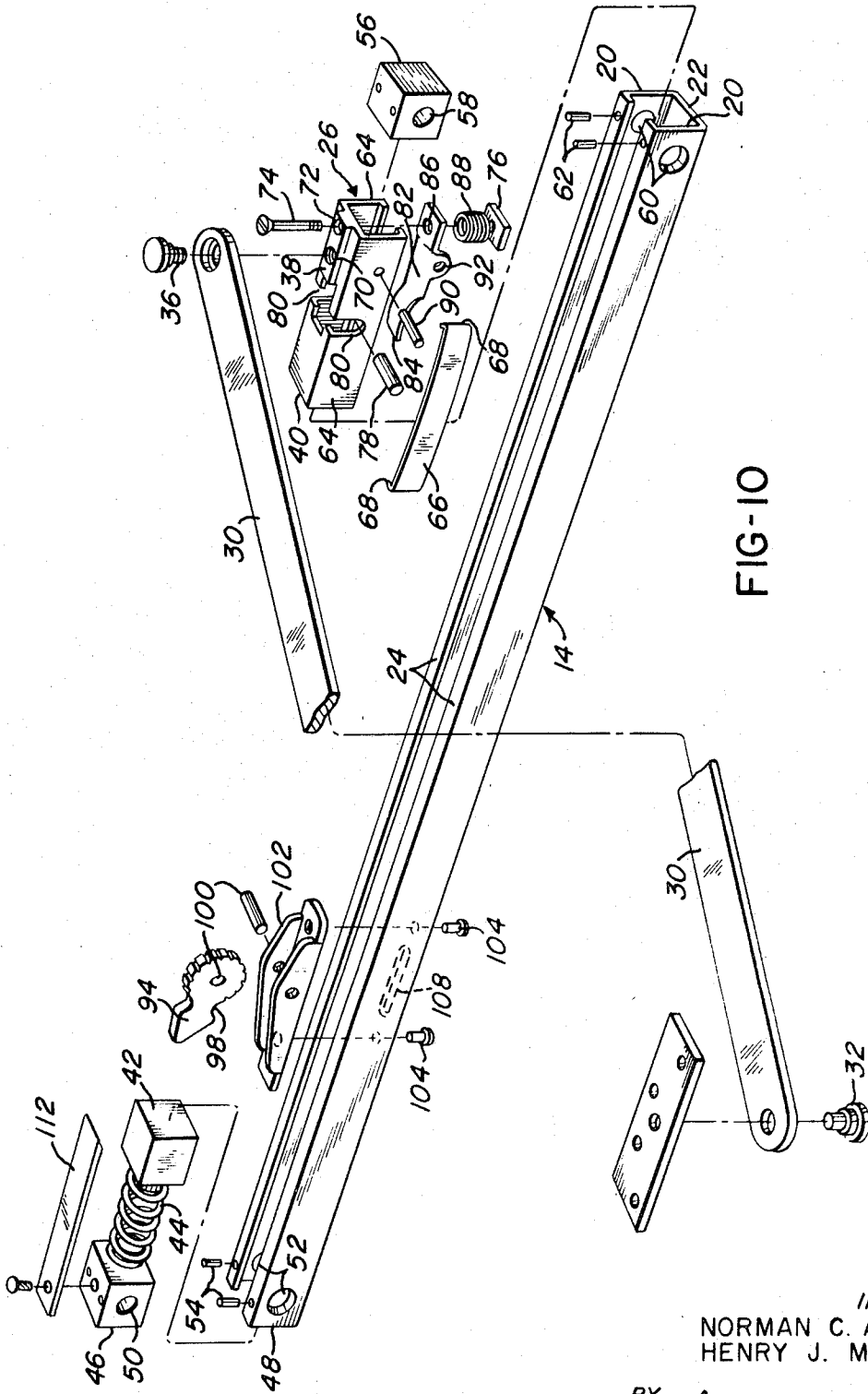


FIG-10

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SURFACE-MOUNTED NONHANDED DOOR HOLDER

BACKGROUND OF THE INVENTION

Door holders for vertically hinged doors are in common usage, and comprise usually an elongate channel or tubular member containing a slider, and an arm pivoted at one end to the slider and at its opposite end to the door frame, whereas the channel member is fixed to the door, substantially as disclosed in the patents of Johnson 2,108,891, Roehm, et al. 2,958,089, Ellis 2,744,779, and Bernhard 2,497,830, for example. Sometimes the channel member is fixed to the door frame, as disclosed by the patents of Johnson 1,986,677 and Schmid 3,144,267, with the arm pivot located upon the door.

In many instances, the installation of a door holder requires mortising of the door or the frame, which entails added expense and labor including removal of the door. Surface mounting of the hardware therefore is desirable, as herein suggested. While surface mounting of the channel member is not broadly novel, as evidenced by the disclosure in Ellis U.S. Pat. No. 2,945,255, it presents problems pertaining to adjustments, controls, and acceptable appearance.

In the past, door holders designed for application to a left-hinged door, for example, were not applicable to right-hinged doors. Such door holders were referred to as "handed" door holders, and were manufactured as rights and lefts, quite undesirably. Other door holders were "nonhanded," and applicable to right- or left-hinged doors, but such prior art "nonhanded" door holders necessitated partial disassembly and reassembly or rearrangement of linkages to effect the necessary alteration. This entailed time-consuming extra labor, with the risk of improper reassembly or loss of parts.

SUMMARY OF THE INVENTION

The present invention provides a highly effective, simplified nonhanded door holder which is quickly and easily surface installed to control swinging doors whether hinged right or left, and which requires no alteration or partial disassembly of the device preparatory to installation. Means is provided also for very simply and instantly rendering the device selectively operative or inoperative to hold a door in open position, such means being inoperable under certain conditions to discourage unauthorized tampering therewith.

Another object of this invention is to minimize defacement of the door or its frame incident to installation of the improved door holder, and to reduce to a minimum the time, labor, and expense involved in installing the device.

Another object of the invention is to provide a device of the character stated which is highly durable, noiseless in operation, and resistive to destruction or inoperability when subjected to public use or abuse.

The foregoing and other objects are attained by the means described herein and illustrated upon the accompanying drawings.

DESCRIPTION OF THE INVENTION

In the Drawings

FIG. 1 is a fragmentary perspective view showing the device of the present invention applied to a right-hinged door.

FIG. 2 is a view similar to FIG. 1, showing the device applied to a left-hinged door and its frame.

FIG. 3 is an enlarged fragmental cross section of the door holder housing as viewed horizontally on FIG. 1, with a portion of the housing broken away, the door being partly open but unrestrained against movement toward closing position.

FIG. 4 is a cross section taken on line 4—4 of FIG. 3.

FIG. 5 is a view similar to FIG. 3, showing the position of the door holder elements occurring when the door is fully open, with the restraining cam displaced to an inoperative position.

FIG. 6 is a cross section taken, on line 6—6 of FIG. 5.

FIG. 7 is a view similar to FIG. 5, but showing the restraining cam operative to hold the door in an open position.

FIG. 8 is a view similar to FIG. 7, but showing the position of the door holder elements resulting as the door is inten-

tionally and forcibly moved from an open position of restraint toward the closed position.

FIG. 9 is a cross section taken on line 9—9 of FIG. 7.

FIG. 10 is an exploded perspective view of the door holder and its constituent parts, shown on a reduced scale.

The door holder herein disclosed comprises an elongate tubular or channel-shaped housing 14 to be secured horizontally upon one face of a door 16, by means of bolts, screws, or equivalent fasteners 18, 18. The opposite side faces or legs 20, 20 of the channel-shaped housing are identical, and flat, so that either one may flatly abut the door. In this connection observe FIGS. 1 and 2, wherein it is evident that mounting of the housing on a right-hinged door, FIG. 1, places one side face or leg of the housing against the door, whereas in the case of the left-hinged door of FIG. 2 the opposite side face or leg of the housing rests against the door. Thus, with equal facility the housing may be fixed upon corresponding faces of right and left-hinged doors by means of the fasteners 18 which extend into or through the material of the door for anchorage purposes.

The spaced parallel side legs 20, 20 of the channel-shaped housing are connected by a lower or bottom wall or web 22 which is coextensive with the length of the housing. The upper portion of the housing is provided with inwardly turned flanges 24, 24 (FIG. 10), which are spaced apart uniformly along the length of the housing to provide a slot or way 28 accommodating a pin for propelling a slider or carriage 26 within the housing. The slider or carriage 26 is shiftable lengthwise of housing 14.

Shifting of the slider is performed by an actuator arm 30 having one end suitably pivoted as at 32 upon the door frame 34, whereas the opposite end is pivoted at 36 upon the upper wall 38 of slider 26. As is obvious, opening and closing movements of the hinged door results in shifting of the slider lengthwise of housing 14, with arm 30 closely overlying the upper surface of the housing when the door is closed. Upon swinging of the door manually or otherwise to open position, the impact end 40 of slider 26 is free to advance against a shock absorber block 42 to limit and cushion the opening movement of the door.

The shock absorber includes a compression spring 44 (FIG. 10), located between the slidable block 42 and a stationary block 46, block 46 being normally fixed within housing 14 at the inner end 48 of the housing. Block 46 has a transverse bore at 50 for alignment with bores 52, 52 of housing end 48, and through the bores 50 and 52 may extend one of the fasteners 18 which secure housing 14 upon the face of door 16. In the preferred construction, block 46 may be additionally anchored as by means of pins 54 driven into the block through housing flanges 24, 24, FIG. 10. The shock absorber assembly resiliently limits the extent to which door 16 may be swung open.

A second stationary block 56 similar to block 46 is employed to close the outer end of housing 14 (FIG. 10), and a bore 58 therein is adapted to register with transverse bores 60, 60 of the housing so as to accommodate a fastener 18 which anchors the outer end of housing 14 to the door face. Block 56 may be secured as by means of pins 62, 62 driven through the housing flanges 24, 24 and into block 56. Slider 26 does not necessarily abut the block 56 when door 16 is closed.

Slider 26 comprises a short length of channel stock having spaced parallel sidewalls 64, 64, the channel being inverted so that its legs may rest and slide upon the web 22 of housing channel 14. To effect a snug and noiseless frictional mount of the slider within housing channel 14, a bowed leaf spring 66 may be interposed between the slider wall 64 and a wall 20 of channel 14, the spring being adapted to embrace and travel with the slider, as by turning its ends 68, 68 onto the ends of the slider channel.

The pivot screw 36 for arm 30 threads into a tapped hole 70 in slider wall 38. A second hole therein, denoted 72, is loosely receptive of an adjusting screw 74 which depends into the slider channel and threadedly engages a nonrotatable nut 76,

the nut being adapted to travel lengthwise of screw 74 when the latter is rotatably adjusted.

Within the slider is supported a spring-pressed keeper or cam follower, which may be in the form of a transverse bar or pin 78 having its ends cradled in a pair of upright slots or ways 80, 80 formed in the sidewalls of the slider channel. Means is provided for constantly yieldingly urging the keeper toward the bases of slots 80, 80, and such means comprises an elongate pressure plate or arm 82 rockingly mounted within the slider. Arm 82 has one substantially flat end 84 which overlies keeper 78 and imposes a downward force thereon. The opposite end of arm 82 is apertured at 86 to receive loosely the adjusting screw 74, said screw passing through a compression spring 88 which is interposed between the apertured end of arm 82 and the upper face of nut 76. A pivot pin 90 having ends supported by the sidewalls of slider 26 passes through openings 92, 92 intermediate the ends of arm 82, for rockingly supporting said arm within the slider.

As will be understood, the rocker arm end 84 will constantly depress the keeper or follower 78 with a force determinable by manually adjusted positions of screw 74. The screw is accessible through the housing slot between flanges 24, 24.

Means is provided in the form of a cam latch element 94, for selectively engaging and releasably retaining the keeper or follower 78, as in FIG. 7, once the door 16 has been swung to open position. In FIG. 7, slider 26 has been advanced to the left by arm 30 incident to opening the door, causing keeper 78 to strike and ascend the inclined nose 96 of cam 94 and then drop into a well, seat or depression 98 adjacent to the cam nose. By this time, the slider has been stopped at 40 against the shock block 42, and the door will be securely, though releasably held in open position.

In order to retract the slider, or move it to the right in FIG. 7 by swinging the door in closing direction, a deliberate force must be applied to the door sufficient to cause keeper 78 to climb out of cam well 98, as in FIG. 8. The keeper will therefore have to overcome the adjusted force of spring 88 in order to leave well 98. Once the keeper is released, however, the door very easily may be swung to closed position either manually or by means of a conventional door closer.

It should be noted that cam latch element 94 is pivoted at 100 upon a stationary bracket 102, for manual disposition thereof from an inoperative position, FIG. 5, to the operative position of FIG. 7. In the inoperative FIG. 5 position of cam element 94, the keeper 78 when advanced to the left with slider 26 during a door opening movement, will be unable to ascend the inclined cam nose 96 and enter the well 98, and for that reason no latching of the door in the open position will occur. Such latching or retention of the door will occur only when cam element 94 is rotated to the operative position of FIG. 7.

Bracket 102 may be fastened at 104 upon the web of housing 14, and the base thereof is provided with a slot or opening 106 to coincide with a slot 108 formed in the housing web, whereby a knurled actuator portion 110 of the cam element is rendered accessible at a location beneath housing 14. The knurled actuator portion or finger piece of the cam element is utilized in manually rotating the cam element to the operative and inoperative positions aforesaid, FIGS. 7 and 5, respectively. Finger piece or actuator portion 110 may be in the nature of a circular head or base, and the portion carrying cam incline 96 preferably is of such weight as to ensure that the cam element will rest in either of the selected positions, preferably without the aid of any springs acting thereon.

It is important to note that the swing of cam element 94, or the distance from the axis of rotation at 100 to the tip of the cam nose, is prolonged to the extent that the nose tip will describe an arc indicated by the broken line *a-a* of FIG. 3, the apex of which projects upwardly beyond the upper surface of housing 14 and into or beyond the plane of the under surface of actuator arm 30. The purpose of this is to preclude manual swinging of the cam element from one of its extremes to the other, while the door 16 is either substantially closed or

substantially open. Thus, when the door is open or substantially open, an overlying portion of the slider upper wall 38 will block any attempt to swing the cam element from the FIG. 7 position to the position of FIG. 5. Similarly, when the door is closed or substantially closed, the arm 30 by closely overlying housing 14, will intercept the cam element nose and block any attempt to swing the cam element between the positions stated so long as the door is closed or substantially closed.

In view of the foregoing explanation, it is evident that the cam element 94 may be manipulated only while the door is ajar, and not at other times. The aforesaid construction effectively discourages unauthorized changes in the controlling of the door, thereby reducing to a great extent any unauthorized tampering therewith.

As is best illustrated upon FIGS. 3, 4 and 5, disposition of cam element 94 to the inoperative position places it out of reach of keeper 78 when slider 26 is butted against shock block 42 at 40, this being the position of the slider and keeper 78 when door 16 is fully open. Since the cam element in the inoperative position cannot be engaged by keeper 78 for holding the door open, the door movements are unrestrained so long as the cam element remains in that position.

The specific nature of the shock absorber means is a matter of immateriality to the present invention. As herein disclosed, said means may be enclosed by a protective cover 112 fixed to block 46.

This means 18 utilized for securing the door holder housing 14 to one face of a door, may take various forms. In the embodiment shown, such securing means is a sex bolt which comprises a tubular female part 114, (FIG. 9), having a head 116 and an adjacent fluted shank portion 118 to preclude rotation thereof in the drill hole 120. Part 114 includes an axial bore which is internally screw threaded.

The male part of the sex bolt is a screw having a threaded shank 122 received in the threaded bore of part 114, and having a head and an adjacent neck 124, the neck being rotatable in bore 50 of stationary block 46 for clamping the housing 14 against door 16 and between the heads of the sex bolt. The sex bolt as shown will secure either of the housing walls 20, 20 against the door with equal facility, as is desirable in applying the door holder to right- or left-hinged doors according to FIGS. 1 and 2, respectively. No alterations of any kind are involved in applying the door holder to either hand of door, wherefore the door holder of the present invention is seen to be genuinely and completely nonhanded.

As previously mentioned herein, housing 14 is referred to as channel-shaped or tubular of form, the intention being to suggest a housing which is in the form of a hollow cylinder. In such event, the slider and the shock-absorbing means and also the end closure blocks for the housing, are to be of substantially cylindrical shape. Such a departure from the structure exemplified herein need not alter the mounting means or any of the features of the device alluded to as being improvements, or objectives of the invention.

The tension adjusting means for keeper or follower 78 can be used for adapting the door holder performance to various conditions, such as different weights or sizes of doors, the presence of air currents, and other factors encountered incident to differing installations. Noteworthy also is the simple and effective cam means previously mentioned, whereby is discouraged the tendency of some persons to tamper with the door holder and alter its function contrary to authoritative intent.

What is claimed is:

1. A nonhanded door holder for a door hinged for movement between two extreme positions upon a door frame, comprising in combination: an elongate hollow housing having opposite sidewall portions, a bottom wall, a longitudinally slotted top wall portion, and opposite end portions; a slider reciprocable lengthwise within said housing; an elongate actuator arm having pivot means mounted upon the slider and movable therewith lengthwise of said wall slot; means for pivoting an end of said arm upon the door frame, whereby hinged move-

ments of the door are translated to reciprocative movements of the slider within said housing; means for mounting the housing upon the door with either sidewall portion of the housing disposed substantially against a face of the door, means within said housing including a single cam latch element manually rotatable between an operative position at which the slider is securely through releasably restrained against return movement when the door is swung open, and an inoperative position at which the slider is free of restraint against return movement when the door is swung open; said cam element including an actuator portion which extends through, and projects beyond the bottom wall of said housing.

2. The combination as defined by claim 1, which includes means operative to preclude the aforesaid manual shifting of said cam latch element when the door is standing at one of its two extremes of hinged movement.

3. The combination as defined by claim 2, wherein said one extreme of hinged movement is the substantially fully closed position of the door relative to the door frame.

4. The combination as defined by claim 2, wherein said one extreme of hinged movement is the substantially fully open position of the door relative to the door frame.

5. The combination as defined by claim 1, wherein the length of said cam latch element is such that when rotated between operative and inoperative positions the outer end thereof projects outwardly through said wall slot beyond the top wall of the housing.

6. The combination as defined by claim 3, wherein the means last-mentioned includes said actuator arm.

7. The combination as defined by claim 4, wherein the means last-mentioned includes said slider.

8. The combination as defined by claim 5, wherein said cam latch element is proportioned to extend through the housing slot to strike and stop against said actuator arm when the door is substantially fully closed.

9. The combination as defined by claim 7, wherein said cam latch element is proportioned to strike and stop against said slider when the door is substantially fully open.

10. The combination as defined by claim 2, wherein said means last-mentioned is rendered inoperative by disposition of the door to said one extreme of its movement.

11. The combination as defined by claim 1, wherein said housing unaltered is mountable with its remaining sidewall portion disposed substantially flatly against a face of the door.

12. The combination as defined by claim 11, wherein the housing sidewall portions near the end portions thereof are provided with identical apertures receptive of said mounting means.

13. A nonhanded door holder for a door hingedly mounted upon a frame for movement between a fully open and a fully closed position, said door holder comprising in combination: an elongate hollow tubular housing having opposite sidewall portions, a longitudinally slotted wall portion, and opposite end portions; a slider reciprocable lengthwise within said housing; an elongate actuator arm having pivot means mounted upon the slider and movable therewith lengthwise of said housing slot; and means for pivoting an end of said arm upon a door frame, whereby hinged movements of the door are translated to reciprocative movements of the slider to opposite limits of travel within said housing; means for mounting the housing upon the door with one sidewall portion of the housing disposed substantially against a face of the door, and with the actuator arm overlying the housing slot; a keeper carried by and movable with the slider; a cam element carried by the housing; a keeper-engaging means on the cam element; and means supporting said cam element for manual shiftability selectively toward either end portion of the housing, to operative and inoperative positions; said cam element in the operative position being located to engage and restrain the keeper

of the slider when the door is swung to approximate full open position, whereas in the inoperative position of the cam element said keeper-engaging means is located beyond the reach of the keeper when the door is swung to full open position.

14. The combination as defined by claim 13, wherein an aperture is provided in the housing, through which aperture a portion of the cam element is accessible for manual shiftability thereof to the operative and inoperative positions aforesaid.

15. The combination as defined by claim 13, wherein is included means for varying the force with which the keeper is restrained by said engaging means.

16. The combination as defined by claim 13, wherein the supporting means for the cam element is a pivot fixed relative to the housing and about which pivot said cam element is rockable; said cam element having a nose end including an incline onto which the keeper may climb in approaching the keeper-engaging means; and means maintaining a yielding contact between the keeper and said engaging means during engagement thereof.

17. The combination as defined by claim 13, wherein the housing sidewall portions near the end portions thereof are provided with identical apertures receptive of said mounting means.

18. The combination as defined by claim 13, which is included shock-absorbing means to cushion movement of the slider in one direction as the door approaches a full open position.

19. The combination as defined by claim 16, wherein the nose end of the cam element is prolonged to extend through and beyond the housing slot for interception by the actuator arm when the cam element is swung about its supporting pivot while the door is substantially in closed position.

20. The combination as defined by claim 16, wherein said slider includes a wall to intercept the nose end of the cam element and limit pivotal movement of the cam element while the door is substantially in open position.

21. The combination as defined by claim 19, wherein is included shock-absorbing means to cushion movement of the slider in one direction as the door approaches a full open position.

22. The combination as defined by claim 20, wherein is included shock-absorbing means to cushion movement of the slider in one direction as the door approaches a full open position.

23. The combination as defined by claim 14, wherein the housing sidewall portions are provided with identical apertures receptive of said mounting means.

24. The combination as defined by claim 23, wherein is included shock-absorbing means to cushion movement of the slider in one direction as the door moves to approach a full open position.

25. The combination as defined by claim 24, wherein an aperture is provided in the housing, through which aperture a portion of the cam element is accessible for manual shiftability thereof to the operative and inoperative positions aforesaid.

26. The combination as defined by claim 25, wherein is included means for inducing frictional drag between a housing wall portion and said slider.

27. The combination as defined by claim 13, wherein the door holder is nonhanded.

28. The combination as defined by claim 23, wherein said identical apertures are receptive of said mounting means from either sidewall portion of the housing, to render the door holder nonhanded.

29. The combination as defined by claim 27, wherein is included means to preclude manual shifting of the cam element when the door is standing at either of its fully open or fully closed positions.

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