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3,172,168

RETRACTABLE DOOR STOP

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FIG. 1

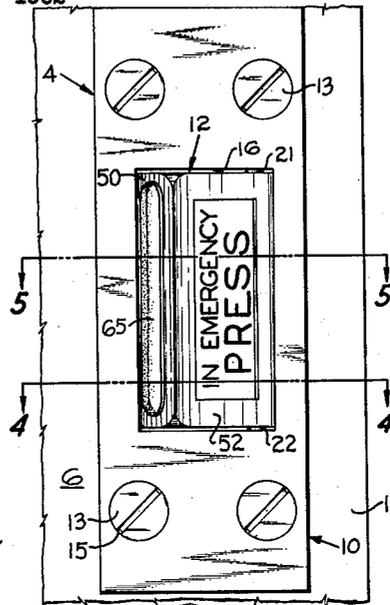
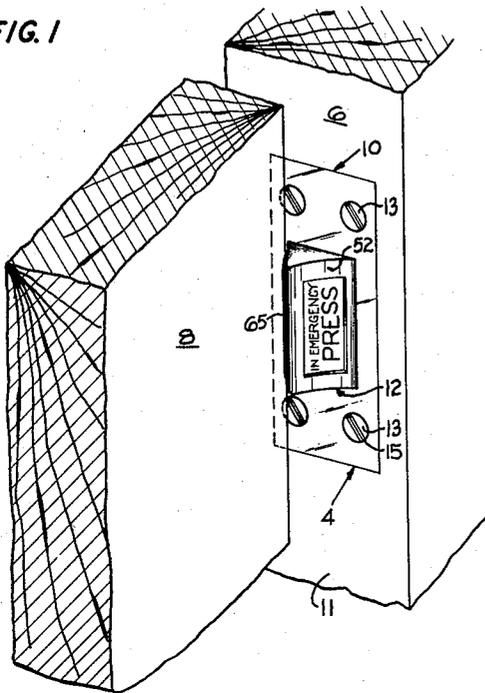


FIG. 3

FIG. 2

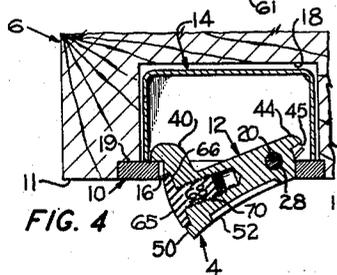
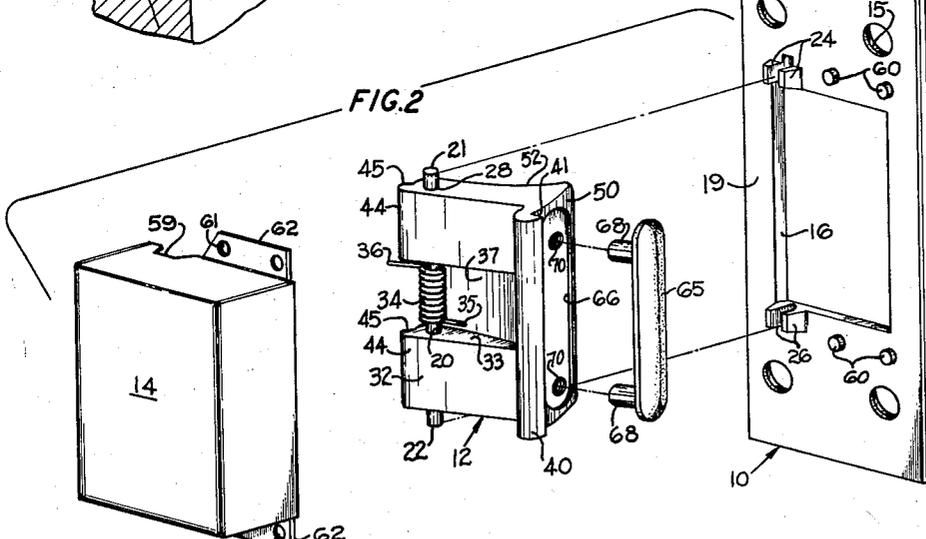


FIG. 4

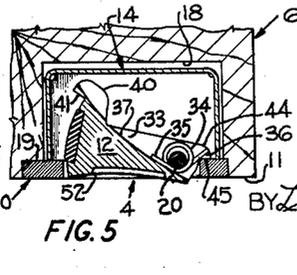


FIG. 5

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RETRACTABLE DOOR STOP

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2 Claims. (Cl. 20—16)

This invention generally relates to door stops and more particularly to an improved stop for bidirectionally swinging doors.

One of the objects of the present invention is the provision of an improved door stop of the aforedescribed type that will locate the door in closed position but will permit the door to be opened in either direction. Included in this object is the provision of such an improved door stop that is easily and quickly retractable out of its door-locating position for permitting the door to be opened outwardly or in a direction opposite to the normal opening direction and for permitting the door to be subsequently closed to a position located by the stop.

A further object of the present invention is the provision of such an improved stop that may be economically manufactured and easily installed in a doorway frame where it will possess an enhanced appearance and will operate effectively over long periods of use.

Other objects will be in part obvious, and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereafter set forth and the scope of the application which will be indicated in the appended claims.

In the drawings:

FIG. 1 is a fragmentary perspective view of an embodiment of the door stop of the present invention shown installed in a doorway jamb and locating a door in closed position;

FIG. 2 is an enlarged exploded perspective view of the door stop taken from a position from the backside of the door stop;

FIG. 3 is an enlarged fragmental, front elevational view of the door stop mounted in a doorway frame;

FIG. 4 is a cross-sectional view of the door stop taken generally along lines 4—4 of FIG. 3 and when the stop is in unretracted position; and

FIG. 5 is a cross-sectional view of the door stop taken generally along lines 5—5 of FIG. 3 and when the stop is in retracted position.

The door stop of the present invention is particularly useful in connection with lavatory doors utilized in hospitals or the like where entrance into the lavatory by swinging the door outwardly therefrom is extremely desirable or necessary, for example, in rescuing patients who are stricken while in the lavatory and are in need of immediate help.

Referring to the drawings in detail, an embodiment of the door stop of the present invention, generally designated 4, is shown in FIG. 1 mounted in a doorway frame 6 and contacting and locating the unhinged or latch side of a door 8 in its closed position, the door and doorway frame being fragmentarily shown. The stop 4 is shown as being mounted on the vertically extending portion or jamb of the doorway frame 6 for illustration purposes, it being understood that the stop may also be mounted on the horizontally extending portions of the doorway frame which include the header and floor.

Referring to FIG. 2, the illustrated embodiment of the present invention basically comprises a mounting member 10, an abutment or detent member 12 and a protective case 14.

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In the illustrated embodiment, the mounting member 10 is a rectangular plate preferably formed of an anti-corrosive material such as brass or plastic and is adapted to be mounted to the face 11 of the doorway frame 6 by screws 13 extending through countersunk holes 15 provided in the plate and into the frame as shown in FIG. 1. The mounting plate 10 is provided with a central rectangular aperture 16 which, when the mounting plate is secured to the frame 6, overlies and is in alignment with a compartment or recess 18 provided in the doorway frame 6 for receiving the protective case 14 of the door stop 4.

The detent member 12 which is preferably formed of an anti-corrosive material such as brass or plastic is pivotally connected at one side of the rear face 19 of the mounting plate 10 by the provision of a pin 20 extending longitudinally through the detent member and having its ends 21, 22 projecting therefrom and journaled in a pair of attachment ears 24, 26 provided on the rear face of the mounting plate 10 at the ends of the central aperture 16. The ears 24, 26 fix the pin 20 against movement while the detent member 12, which is dimensioned to be received in the protective case 14 as shown in FIG. 5, is free to pivot relative to the pin 20 since the diameter of the latter is slightly less than the pin-receiving bore 28 in the detent member.

The protective case 14 which is shown as being provided in the illustrated embodiment has an open box-like structure dimensioned to be received in the frame compartment 18 with its open side underlying the mounting plate aperture 16, as shown in FIGS. 4 and 5. The case is provided with cutouts 59 accommodating the ears 24, 26 on the mounting plate and is attached to the mounting plate 10 by pins 60 projecting from the latter and extending through apertures 61 provided in the flange 62 of the case, which pins 60 are peened at their extremities to complete the attachment.

In order to bias or urge the detent member 12 out of the doorway as shown in FIG. 1, the rear or unexposed face 32 of the detent member 12 is recessed at 33, and a torsion spring 34 is provided around the pin 20 in the recessed portion of the detent member with the ends 35, 36 of the spring bearing against the bottom 37 of the recessed portion 33 and the rear face of the mounting plate 10 adjacent the aperture 16, respectively, (as shown in FIGS. 2 and 5) to urge the detent member 12 out of the frame compartment 18 and into the doorway.

The detent member 12 is provided with means for limiting its pivotal movement into and out of the doorway or frame compartment 18, which in the specific embodiment comprises a longitudinally extending lip 40 projecting laterally from the free or unpinned side of the detent member and forming a shoulder 41 engageable with the rear face 19 of the mounting plate 10, and a pair of lips 44 projecting laterally from the pinned side of the detent member and forming shoulders 45 engageable with the rear face of the mounting plate 10.

As best shown in FIG. 4, movement of the detent member 12 out of the frame compartment 18 and into the doorway, which movement is caused by the biasing force of the spring 34 and is limited by the engagement of the shoulder 41 with the mounting plate 10, is effective to place the side face 50 of the detent member 12 into the doorway for contacting and locating the door 8 in closed position as shown in FIG. 1. In this position of the detent member 12 outward swinging of door 8 away from the lavatory or the like is prevented by the stop; however, inward swinging of the door 8 into the lavatory for normal entering or leaving the same is not affected by the detent member. Should it be necessary

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or desired to enter the lavatory by swinging the door 8 outwardly as, for example, in rescuing a patient, the detent member 12 is manually depressed to permit such outward swinging by engaging the outer face 52 thereof with the fingers or foot and pivoting the detent member 12 inwardly to clear the doorway as shown in FIG. 5.

To close the door 8 for normal operation, after it has been swung outwardly away from the lavatory, the door is merely swung inwardly past the detent member 12. Such action will cause the door 8 to engage the outer face 52 to automatically depress the detent member 12 to move it out of the doorway and into the protective case 14, thus permitting the door to pass the stop. After the door passes the stop, it is automatically returned to its normal position by the spring 34 where it serves to locate the door in closed position and prevent outward swinging thereof.

If it is desired to cushion the shock imparted to the door 8 upon impact with the detent face 50, a cushioning means may be provided. In the illustrated embodiment, the cushioning means comprises a resilient bumper 65 which may be formed of rubber. The bumper 65 is embedded in a recess 66 in the side face 50 of the detent member 12 as shown in FIGS. 4 and 5, and is secured therein by means of a pair of stub posts 68 integrally formed with the bumper and engaging the transverse threaded bores 70 in the detent with an interference fit, whereby the peripheral portions of the posts 68 are deformed between the threads of bores 70 so as to firmly secure the bumper in place. Preferably, the outer face 52 of the detent member may be formed with serrations or an embossment for ornamental purposes as well as for facilitating manipulation thereof during retraction.

As will be apparent to persons skilled in the art, various modifications and adaptations of the structure above described will become readily apparent without departure from the spirit and scope of the invention, the scope of which is defined in the appended claims.

I claim:

1. In the combination comprising a doorway frame having a bidirectional swinging door hinged thereto and a stop-receiving recess in the face thereof, a mounting member secured to said doorway frame and having an aperture overlying said recess, a movable stop pivotally mounted on said mounting member, a biasing spring for said movable stop, said stop extending into the path of movement of the door under the bias of said spring and having an abutment engageable by said door to provide a positive stop for the door when the door is closed in its normal direction of operation, said stop further having a tapered front face extending at an acute angle to said face of said doorway frame, said stop being retractable into said recess to a position with said front face substantially flush with said face of said doorway frame and being exposed for manual engagement to depress the same into said recess to permit the door to swing

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past the stop for the emergency opening of the door in the direction opposite its normal opening movement, said tapered front face being engageable by the door to automatically depress the stop into said recess against the bias of said spring as the door assumes its position on the same side of said stop as the abutment thereof upon closing the door after emergency operation.

2. For use with a doorway frame having a bidirectional swinging door hinged thereto and a top-receiving recess in the face thereof, an escape stop having an apertured mounting plate for securing the stop to the doorway frame with the aperture thereof overlying said recess, a movable detent pivotally mounted on said mounting plate adjacent one edge of said aperture, a biasing spring for said movable detent, said detent having a shoulder engageable with said mounting plate for limiting the movement of said detent out of said recess and into the path of movement of the door under the bias of said spring, said detent further having a side face providing an abutment engageable by said door to provide a positive stop for the door when the door is closed in its normal direction of operation and a tapered front face extending at an acute angle to said face of said doorway frame, said detent being retractable into said recess to a position with said front face substantially flush with said face of said doorway frame and being exposed for manual engagement to depress the same into said recess to permit the door to swing past the detent for the emergency opening of the door in the direction opposite that of its normal opening movement, said tapered front face being engageable by the door to depress the detent into said recess against the bias of said spring as the door assumes its position on the same side of said detent as the abutment thereof upon closing the door after emergency operation.

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