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3,105,992

PANIC RELEASE DOOR CENTERING STOP

Filed May 24, 1961

FIG. 1

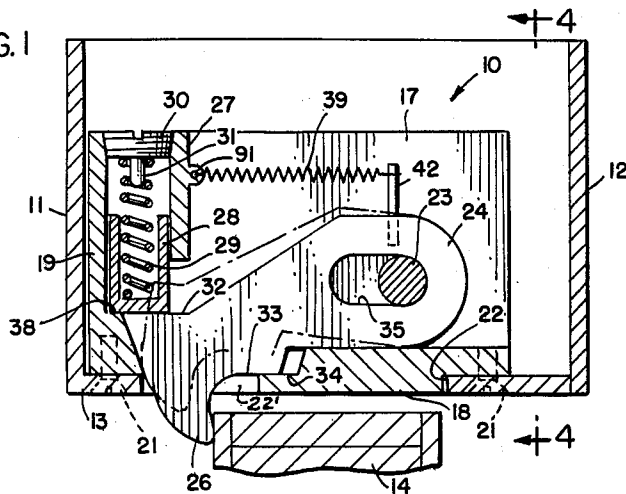


FIG. 2

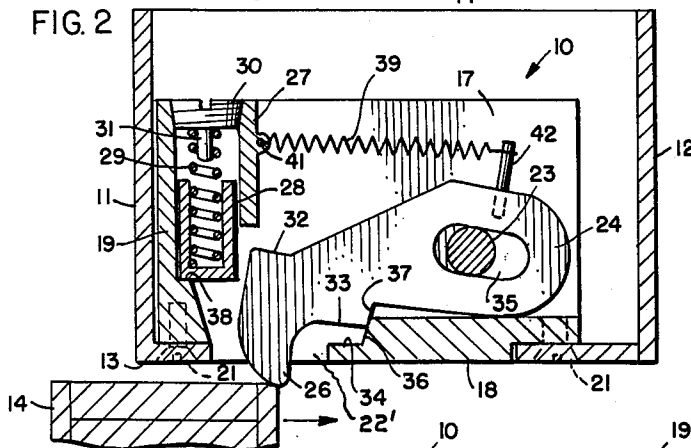


FIG. 3

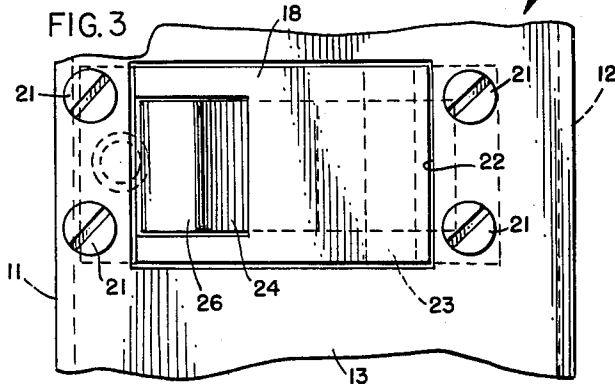
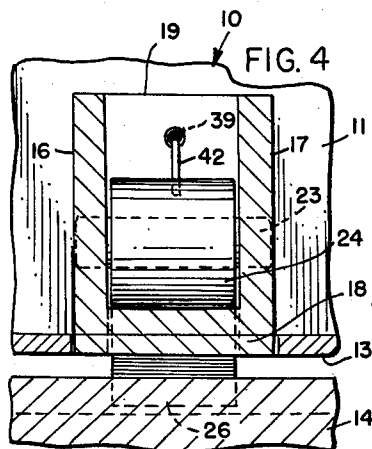


FIG. 4



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PANIC RELEASE DOOR CENTERING STOP

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This invention relates generally to door centering stops, and particularly to such a stop which is capable of yielding to enable a door to swing past its normal closed or rest position when it is subjected to excessive pressures in the normal closing direction as might be occasioned by the panic of people seeking emergency exit through the door.

One of the principal objects of the present invention is to provide an improved panic release door stop which under ordinary conditions limits the closing swinging movement of a door to a centered position in the door frame, but which will yield to enable the door to swing past the stop under conditions of extraordinary pressure against the door as might occur by panic of people within a building.

Another object is to provide a self-resetting releasable stop for use with a center hung door, which in the normal use upon opening swings in one direction only but which can swing to open in an opposite direction under conditions of panic.

Another object is to provide a door stop which is yieldable under conditions of panic to enable the door to swing past its normal center position, which will automatically reset itself, and which will readily yield to pass the door in the opposite direction when the door is returned to its normal centered position after emergency operation.

A further object is to provide a panic release device which can preferably be mounted in the transom portion of a door casing, and comprising a latching member operable to hold a center hung door in a normal rest position, the stop comprising a latching member which is mounted for both pivotal and translative movement in the transom so as to enable the door to be moved past its normal centered position in the closing direction, under panic conditions, and to be returned to its centered position for normal operation without need for resetting the latching member, the latching member being shiftable automatically to a door centering position under the urging of a continuously acting spring means.

A specific embodiment of this invention is shown in the accompanying drawings in which:

FIGURE 1 is a cross sectional view through a transom portion of a door casing showing a panic release stop, according to one embodiment of the present invention, in position to maintain a center hung door in its centered closed position, the yielded position of the latching member being indicated in dot-dash outline;

FIG. 2 is a view similar to FIG. 1, but showing the yielding movement of the latching member as the door returns to its centered position after a panic operation thereof;

FIG. 3 is a bottom view of the mechanism seen in FIG. 1; and

FIG. 4 is an elevational view of the same, certain parts being shown in section, looking in the direction of the arrows 4—4 of FIG. 1.

The principal concept involved in the present invention is to provide an automatic panic release door centering stop which will yield in one direction under extraordinary pressure applied to the door, automatically return to its operative position when the door has swung past, and readily yield to pass the door in the opposite direction for normal operation of the door when the panic or emergency condition has subsided.

Referring now to FIGS. 1 to 4 of the drawings, the

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improved panic release door stop according to one embodiment of the present invention is referred to generally by the reference numeral 10, and is shown as being mounted in the hollow transom portion of a door casing or the like, the transom comprising facia portions 11 and 12 which are connected along the bottom edges thereof by an integral web 13. A door 14 is adapted to swing in an opening which is defined in part by the transom and the door 14 may be center hung by suitable structure, not shown, at one end of the web 13 and at the threshold of the door opening. The precise form of the door 14 forms no part of the present invention but in the usual case it is of heavy construction often entirely of glass, and it may be employed with structure for operating the door automatically, such doors being found at the entrances of banks, supermarkets or the like. In the example described herein, the normal swinging movement of the door 14, upon opening, is to the right as seen in FIG. 1 and it is to accommodate the panic opening movement of the door in the opposite direction, or to the left, that this invention is particularly directed.

The panic release door stop 10 accordingly comprises a frame or housing having a pair of spaced vertical side wall member 16 and 17 which are joined along their bottom by a web 18. The walls 16 and 17 are further joined by an end wall or web 19, and the stop frame or housing thus formed is mounted within the hollow transom by means of counter sunk screws 21. As seen in FIGS. 1 and 2, the web 18 fits into an opening 22 in the transom web 13 so as to be flush with the outer surface thereof, and a pin 23 fixedly secured in the spaced walls 16 and 17 of the stop frame supports a stop member or latching means 24 having a stop finger 26 which extends downwardly into the path of the door 14, through an opening 22' in the bottom of the housing, between the web 18 and the frame end wall 19, and through the opening 22 in the web 13 of the transom. The stop member supporting pin extends parallel with the transom and the stop member is thus positioned normal to the plane of the door opening and the door when the latter is in its normal centered and closed position.

As shown, structure is provided for biasing the stop member 24 to a normal position, as seen in solid outline in FIG. 1, and to this end the end web 19 is formed with a hollow cylindrical boss 27 having a cup shaped piston 28 slidable therein. The piston 28 is biased in a downward direction by means of a spring 29 which has one end bottomed within the cup shaped piston 28 and its other end bottomed against the stop 30 which is threaded into an opening in the top end of the hollow boss 27. As seen in FIGS. 1 and 2, particularly, the spring 29 is guided by a short rod 31 extending into the hollow boss 27 from the stop 30.

The piston 28 is biased by the spring 29 so that the piston head will bear against a flat shoulder 38 formed on the end wall 19 and there be held just clear of the flat shoulder 32 formed on member 24. Under usual conditions the stop 24 is held by a spring 39, the main purpose of which will be hereafter described, in the position shown in FIG. 1, with its stop finger 26 projecting into the path of the door 14. As shown, the bottom side of the stop 24 is formed with a step 33 which normally engages a flange or tongue 34 projecting from the web 18 to limit outward movement of the stop member under the influence of the spring 39. The finger 26 thus projects below the face of the transom only a distance sufficient to engage the adjacent face of the door 14 to stop its closing movement and maintain the door in its normal centered position, movement of the mem-

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ber 24 being limited by engagement of the shoulder 32 against the spring actuated piston 28. However, under the panic condition described above, the door 14 should be enabled to swing to the left and under such condition an extraordinary pressure against the door 14, to swing it to the left, will push against the finger 26 so as to rock the stop member 24 to the dotted line position seen in FIG. 1, the stop member 24 rocking about the pin 23 against the action of the piston 28 and lifting the finger 26 to enable the door 14 to move past.

The urgency of the spring 29 causes the piston 28 to return the member 24 to the normal operative position seen in FIG. 1, when the door 14 has been opened to the left under the panic condition, and when the door 14 is moved back to the right it will thus again engage stop finger 26. In the form shown in FIG. 1, such movement of the door 14 to the right is operable to shift the member 24 to the right so that the flat shoulder 32 will be moved clear of the head of piston 28 and allow lifting of the stop member to give substantially unimpeded return movement to the door 14. For this purpose, the stop member 24 is mounted on the pin 23 in such a fashion as to permit a translative movement of the stop member when the finger 26 is engaged by the door as it is moved back to its normal position, and the member 24 is accordingly provided with a slot 35, through which the pin 23 extends, which permits movement of the member 24 relative to the pin support 23 as shown in FIG. 2. The amount of such translative movement of the member 24 is limited by an inclined shoulder 36 formed on the web 18 at its juncture with the flange 34, the shoulder 36 coacting with a shoulder 37 on the stop member 24. The translative movement of the member 24 causes the flat shoulder 32 thereof to move out from under the piston 28. However, downward movement of the piston 28 is limited by the inwardly projecting shelf or shoulder 38 formed on the end web 19 and the shoulder 38 is located so as to normally hold the piston 28 just clear of contact with the flat shoulder 32 on the stop member so that the stop member is free to move translatively.

The stop member 24, now being free from the influence of the spring 29 and the piston 28, can readily rock angularly about the pin 23 as the finger 26 is engaged by the door during its return movement and to assist such rocking of the member 24 the outer surface 39 of the finger 26 is rounded, as shown, so that the edge of the door 14 can perform a camming action on the stop member to lift the finger 26 and allow the door to freely pass to its normal closed position.

When the door 14 has returned to its centered position, the stop member 24 is returned to the normal position seen in FIG. 1, by a spring 39 having one end secured at 41 to the hollow boss 27 and at the other end secured to a post 42 extending from the member 24 adjacent its pivoted end. The spring 39 is operable, after the door has resumed its centered position, to first rock the member 24, counter-clockwise as seen in FIGS. 1 and 2, until the shoulder 33 engages the flange 34, and then to move the member 24 translatively, with respect to the support 23, to shift the flat portion 32 of the member 24 beneath the head of piston 28 where it can again be subject to the bias of the spring 29.

From the description foregoing it is believed evident that there has been provided a new and useful improvement in panic release door stops. With this invention there is no necessity for manually resetting the door stop after it has been released by a panic operation of the door. It will also be noted that the release of the stop is accomplished against a greater resisting force than the force obtained from the spring system acting to effect the return movement of the door; and that after panic operation the door is returned to its normal opera-

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tive position by a simple closing movement and without the need for manipulation of the stop device.

In the usual case, the door stop can be conveniently mounted in the transom portion of the door casing, or if desired in the vertical jamb adjacent the free edge of the door, out of the way of people who normally use the door.

Although but one specific embodiment of this invention has been herein shown and described it will be understood that details of the construction shown may be altered or omitted without departing from the spirit of the invention as defined in the following claims.

I claim:

1. A centering stop for a center hung swinging door, comprising a stop member adapted to be mounted in a door frame for shifting movement in a plane normal to a closed door hung in the frame, a support for said stop member including means for mounting said stop member for pivotal and translative movement in said plane and with respect to said support, said stop member having finger means thereon for projecting from said frame into the path of said door and engaging said door at its centered closed position, said finger means co-acting with said door to rock said stop member pivotally and retract said finger out of the path of said door when said door is forced to swing outwardly beyond its centered position, plunger means normally opposing the pivotal movement of said stop member and resiliently yieldable under a predetermined force applied to said door, said last named means being operable to return said stop member to its finger projecting position after the movement of said door outwardly beyond its said centered position, said finger means being adapted to co-act with said door during the return movement thereof in the inward direction for rocking said stop member to retract said finger from the path of said door and to shift said stop member translatively beyond the influence of said plunger means, means for limiting the translative movement of said stop member, and means for returning said stop member translatively and pivotally to its normal finger projecting position when said door has swung inwardly past its said centered position.

2. A centering stop for a center hung swinging door, comprising a stop member adapted to be mounted in a door frame, a support for said stop member including means for mounting said stop member for pivotal and translative movement with respect to said support and in a plane normal to a closed door hung in said frame, said stop member having a finger thereon projecting from the frame into the path of said door and engaging a face of the door at its centered closed position, said finger means co-acting with said door to pivot said stop member and retract said finger from the path of said door when said door is forced to swing outwardly beyond its said centered position, spring actuated plunger means resiliently opposing the pivotal movement of said stop member and yieldable only under a predetermined force applied to said door, said last named means being operable to return said stop member to its first mentioned position after the movement of said door outwardly beyond its said centered position, said finger means being adapted to co-act with said door during the return inward movement thereof for shifting said stop member first translatively beyond the influence of said plunger means and then pivotally to retract the finger means from the path of said door, means for limiting said shifting movement of the stop member, and other resilient means for returning said stop member translatively and pivotally to its first mentioned position when said door passes its centered position during its return inward swing.

3. A door centering stop comprising a housing having side walls, an end wall, and bottom web connecting said side walls and having an opening adjacent said end wall, a stop member mounted in said housing between said side walls parallel therewith and having one end disposed ad-

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jacent said end wall, said stop member having means adjacent its other end connecting with each of said side walls for both pivotal and limited translatable movement parallel with the side walls, a stop finger on said one end of the stop member normally projecting outwardly from the housing through said opening in the bottom web, a spring actuated plunger slidably mounted on said end wall within said housing and normally urged toward the said one end of the stop member in the direction to move said member pivotally and hold said finger in projected position, means on said end wall for limiting the movement of said plunger toward said one end of the stop member, means for limiting the finger projecting pivotal movement of said stop member, and resilient means normally urging said stop member translatively toward said end wall, said plunger being resiliently yieldable in response to a predetermined force applied to said finger

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in the direction toward said end wall and parallel with said bottom web to allow pivotal movement of said stop member to withdraw said finger into said housing and to urge said member pivotally in the finger projecting direction when said force is relieved, and said resilient means being yieldable in response to a force applied to said finger in the opposite direction to allow translatable and pivotal movement of said member to withdraw said finger free of the influence of said plunger.

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