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DOOR CLOSING DOOR CHECKS

Filed March 21, 1961

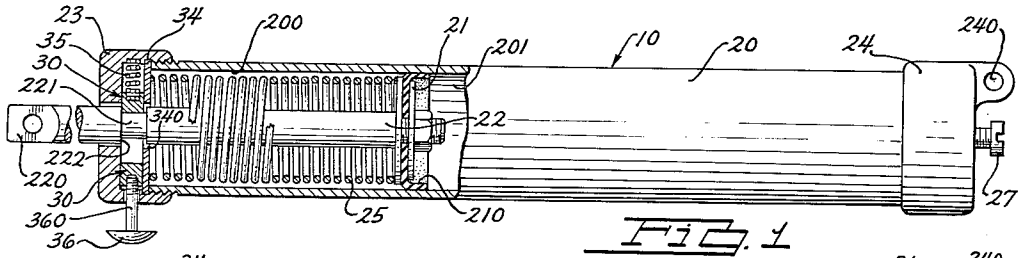



Fig. 1

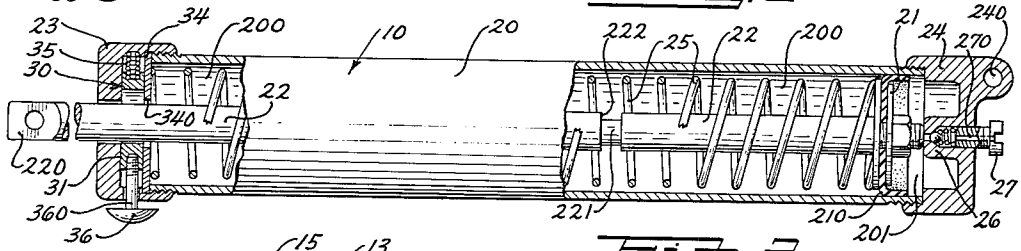



Fig. 2

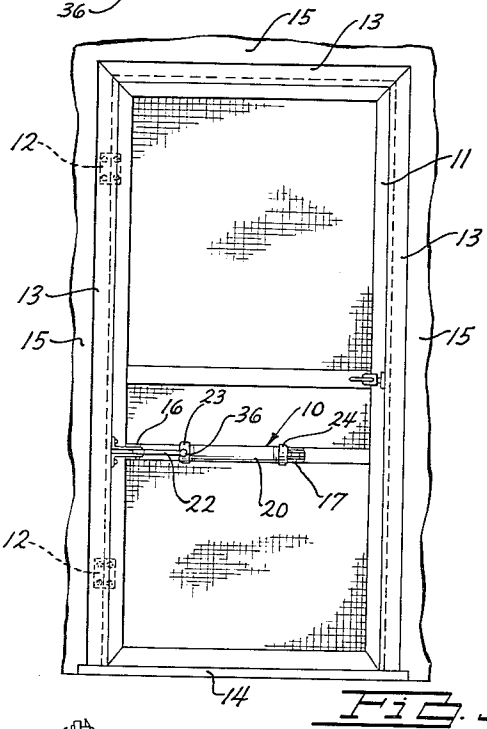



Fig. 5

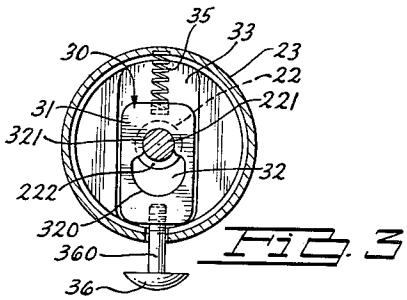



Fig. 3

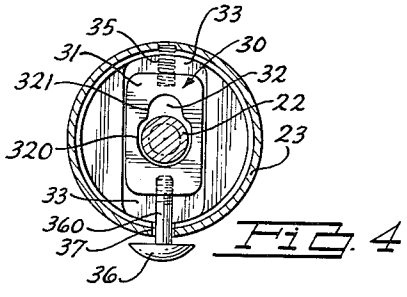



Fig. 4

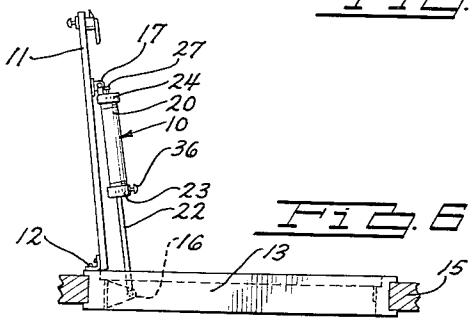



Fig. 6

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# DOOR CLOSING DOOR CHECKS

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This invention relates to door closing door checks for doors, and in particular to improvements in door closing door checks for screen doors and storm doors, and for other spring closed doors.

In the prior art, several screen door and storm door closing door checks embody means for holding side pivoted doors open against the closing action of the door check, which closing action of the door check is stored therein in a compression spring which is compressed responsive to manually opening the door. Such door closing door checks usually consist of a cylinder connected at one end to either the door frame and a spring loaded piston having a piston rod extending from the other end of the said cylinder pivotally connected to other of the door frame or the door. Air enters the cylinder freely as the door is opened, and escapes through a suitable orifice as the door is spring closed, thus checking the rate of speed at which the door is spring closed with an air cushion action. The prior art hold-open means employed in spring loaded door closing door checks of the class hereinabove described are generally unsatisfactory because of the inconvenience in making them operative to hold the door open, particularly when a householder has parcels or the like in his or her arms. Likewise, prior art door check hold-open devices are generally quite inconvenient to release.

With the foregoing in view, it is the primary object of the instant invention to provide, in a spring loaded cylinder type air cushioned door closing door check, automatic means for holding the door open upon manually swinging it fully open, which hold-open means is easily and readily released by the simple expedient of pressing a conveniently located "Close" button.

A further object of the invention is to accomplish the foregoing in a simple, inexpensive and facile manner which includes incorporating a novel and effective manually releasable automatic hold-open device in otherwise conventional air cushion type door closing door checks for storm doors, screen doors, and the like.

Other objects of the invention will become apparent by reference to the following detailed description taken in connection with the accompanying drawing, in which:

FIG. 1 is a top plan view of a door closing door check embodying the automatic hold-open quick manual release device of the invention, the said door check and automatic hold-open device being shown in their hold-open position as when a door equipped therewith has been swung fully open.

FIG. 2 is a top plan view similar to FIG. 1, but with the hold-open device released and the door closing door check shown in its door-closed position.

FIG. 3 is an enlarged cross sectional view taken on the line 3—3 of FIG. 1 showing the automatic hold-open quick manual release device of the invention in its hold-open position.

FIG. 4 is an enlarged cross sectional view taken on the line 4—4 of FIG. 2 showing the automatic hold-open quick manual release device of the invention in its released position after having manually pressed upon the release button thereof.

FIG. 5 is an inside elevational view of a storm door or screen door side hinged to a door frame and equipped with a door closing door check embodying the invention, the said door being shown in its closed position.

FIG. 6 is a top plan view of the storm door or screen door, door frame and door check shown in FIG. 5 with the door swung fully open, the door check of the invention having functioned automatically to releasably hold the said screen door open.



Referring now to the drawings wherein like reference numerals refer to like and corresponding parts throughout the several views, a door closing door check 10 embodying automatic engaging quick manual release means 30 illustrating the invention is shown in its door-open position in FIGS. 1, 3 and 6, and in its door-closed position in FIGS. 2, 4 and 5.

A typical installation of a door closing door check 10 of the invention is best shown in FIGS. 5 and 6 on a storm or screen door 11 side hinged at 12 to a door frame 13 setting on a sill 14 and in a wall 15. Suitable bifurcated brackets 16 and 17 each with vertical hinge pins are employed to pivotally connect the cylinder 20 and the piston rod 22 of the piston 21 of the door closing door check 10 to the door 11 and door frame 13 respectively. FIG. 5 shows the door 11 in its closed position and FIG. 6 shows the door 11 in its open position where it is releasably held by the automatic engageable quick manual release means 30.

The door closing door check 10 is preferably constructed of a cylinder 20 and has a piston 21 reciprocatingly mounted thereon, the said piston 21 having a piston rod 22 fixed at one end to the said piston 21 with its free end reciprocatingly mounted through a cylinder head 23 on one end of the cylinder 20 in which the automatic engaging quick manual release means 30 is enclosed. The free end of the said piston rod 22 is preferably flattened and bored at 220 to accommodate the hinge pin of the bifurcated bracket 16. The opposite end of the cylinder 20 is capped with a cylinder head 24 incorporating an ear bored at 240 to accommodate the hinge pin of the bifurcated bracket 17.

The piston 21 may be of any suitable construction, it being indicated in FIGS. 1 and 2 to be of a well-known flexible neoprene or rubber cup sealed type. Between the piston 21 and the cylinder head 23 and freely disposed around the piston rod 22 is a compression spring 25 shown compressed in FIG. 1 as when the door 11 is fully opened, and substantially extended in FIG. 2 as when the said door 11 is fully closed.

The cylinder head 24 is provided with a spring loaded ball check valve 26 adjustable by an adjusting screw 27 having a longitudinal air passage 270 therethrough. Obviously, any type of ball check valve 26 may be employed which will regulate the amount of air passing out of the cylinder 20 when the piston 21 is urged to the right hand end of the cylinder 20 as viewed in FIG. 2 during the spring closing of the door 11, thus regulating the rate of door closing and checking its motion as it approaches its fully closed position. When the door 11 is manually opened and the compression spring 25 is being compressed, the flexible cup 210 of the piston 21 permits air in the spring chamber 200 of the cylinder 20 to move freely to the air chamber 201 thereof.

As best shown in FIGS. 1–4 inclusive, the quick manual release hold open means 30 comprises a sliding latch element 31 having a keyhole type aperture 32 therein slidably mounted in a way 33 formed in the inner face of the cylinder head 23, and is retained therein by a retaining washer 34 having a central aperture 340 therethrough to telescopingly accommodate the piston rod 22. The said keyhole type aperture 32 is more or less elongated having a large end 320 and a small end 321. The large end 320 of the keyhole type aperture 32 is of a dimension to receive the piston rod 22 in free telescopic relationship when the hold open means 30 is manually urged to its "Release" position as shown in FIGS. 2 and

4. The small end 321 of the keyhole type aperture 32 is of a smaller dimension to telescope into a circumferential groove 221 suitably located in the piston rod 22 under spring pressure of a compression spring 35 disposed longitudinally in the way 33 of the cylinder head 23 when the hold open means 30 is in its "Lock" position as shown in FIGS. 1 and 3 whereupon the shoulder 222 of the piston rod 22 abuts against the latch element 31 and holds the door check 10 inoperative to close the door 11 from its open position as shown in FIG. 6.

Fixed in the end of the latch element 31 opposite the compression spring 35 is a headed release button 36 having its stem 360 freely telescoped through a suitable aperture 37 in the cylinder head 23. The manual pressing of the release button 36 when the quick manual release means 30 is in its "Lock" position shown in FIGS. 1 and 3 will move the sliding latch element 31 to its "Release" position shown in FIGS. 2 and 4 where the large end 320 of the key type aperture 32 becomes aligned with outer circumference of the piston rod 22 permitting the piston 21 to travel under the influence of the compression spring 25 from its position shown in FIG. 1 to its position shown in FIG. 2 closing the door 11 from its "Open" position shown in FIG. 6 to its "Closed" position shown in FIG. 5.

With a door closing door check 10 of the instant invention, the opening of the door 11 to its full open position compresses the compression spring 25 and permits the sliding latch element 31 to spring into the circumferential groove 221 in the piston rod 22, and thereby hold the door 11 "Open." If the door 11 is not fully opened, the latch element 31 does not function, and the door 11 swings "Closed" under the influence of the compression spring 25. If the door 11 has been held "Open" by the latch element 31 when the said door 11 has been swung to its full open position, the manual pressing of the release button 36 releases the latch element 31, and the door 11 swings closed in its normal operating manner under the influence of the said compression spring 25.

Although but a single embodiment of the invention has been disclosed and described in detail, it is obvious that many changes may be made in the size, shape, arrangement and detail of the various elements of the invention, all without departing from the spirit and scope thereof as defined by the appended claims.

I claim:

1. In a door check including a cylinder having a head at each end thereof, a piston reciprocable in said cylinder having a piston rod extending through one cylinder head, spring means in said cylinder constantly urging said piston toward the other cylinder head, the said cylinder and piston rod being connectable to a door frame and door in a manner to cause said piston to move in one direction and compress said spring responsive to manually opening said door, said spring causing said piston to move in the opposite direction after said door has been opened to close the same, said cylinder having a bleed in the other of said heads adapted to regulate the rate of the said spring closing of said door, an automatic hold-open and manual release means comprising a spring loaded sliding latch element carried by said one cylinder head biased toward said piston rod, said piston rod having a groove therein suitably located to receive said latch element when said door is swung fully open whereby to make said door check inoperative to close the same, and a single release button connected to said latch element extending from one side of said one cylinder head manually pushable to release said latch and permit said door check to function normally to close the door.



2. In a door check including a cylinder having a head at each end thereof, a piston reciprocable in said cylinder having a piston rod connected thereto extending through one cylinder head, the said piston rod and the other cylinder head being connectable to a swinging door and a door frame, and spring means in said cylinder adapted to urge said piston in a direction to close said door compressible responsive to manually opening said door, automatic hold-open manually releasable keyhole type latch means disposed around said cylinder rod and slidable transversely in said one cylinder head, said latch means having a keyhole shaped aperture therethrough having its round end slightly larger than the diameter of said piston rod and concentric therewith and its contiguous narrow end somewhat less in width than the diameter of said piston rod, spring means urging the said latch means to engage said piston rod, said piston rod having a groove therein located to receive the said latch means at the narrow end of the keyhole aperture therein when said piston is moved toward said one cylinder head responsive to manually swinging said door to its fully open position whereby said latch means engages said piston rod and locks said piston against its spring urged door closing movement, and a single release button extending from said one cylinder head connected to said latch means manually pushable to align the round end of the keyhole aperture in said latch means centrally in respect to the said piston rod to release the said latch means from said piston rod and permit said door to close.

**References Cited** in the file of this patent

UNITED STATES PATENTS

| | | |
|---|---|---|
| 2,188,763 | Swan | Jan. 30, 1940 |
| 2,940,111 | Patriquin | June 14, 1960 |