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R. K. SMITH

3,258,285

DOOR STOP AND HOLDER

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2 Sheets-Sheet 1

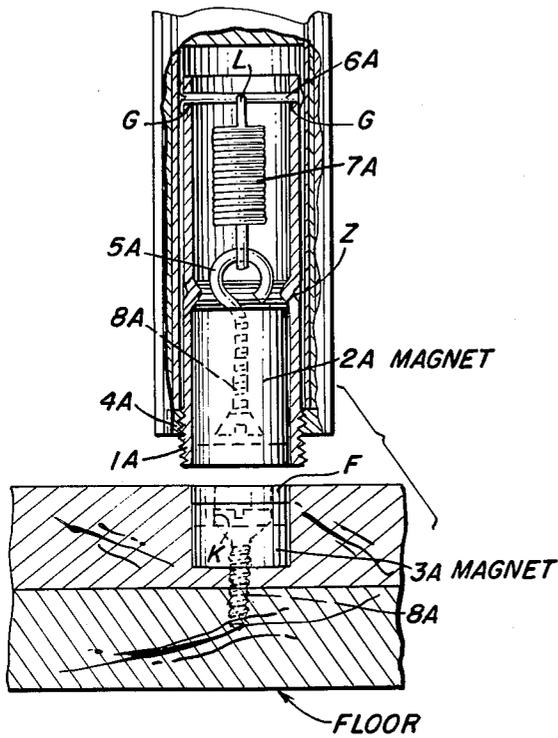


FIG. 1

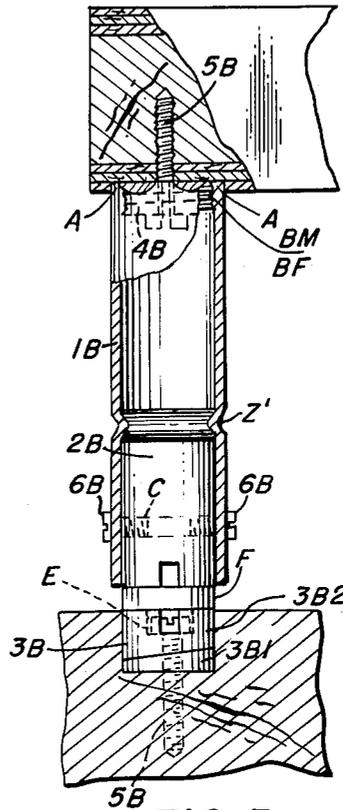


FIG. 3

INVENTOR  
ROY K. SMITH

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R. K. SMITH

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FIG. 4

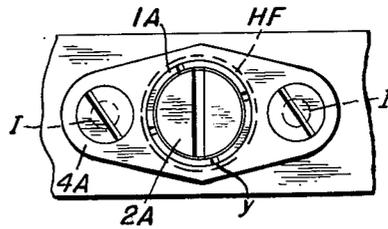
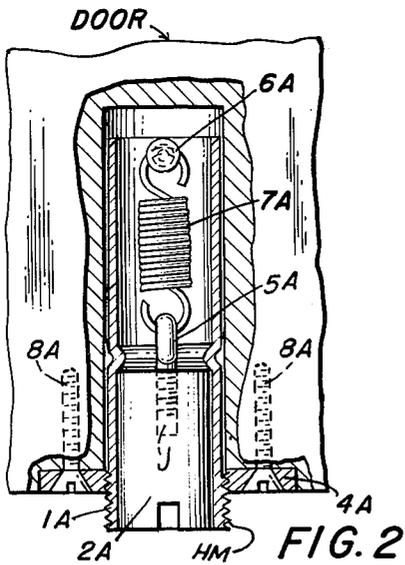
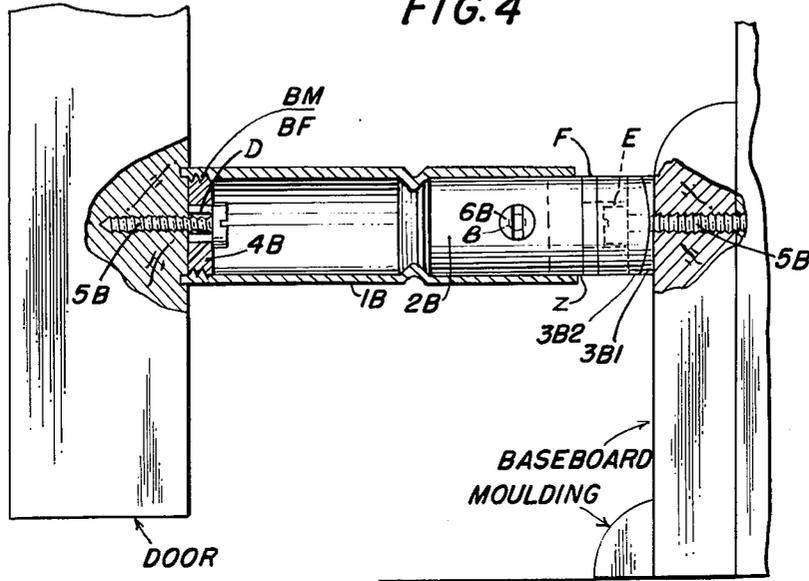


FIG. 2a

INVENTOR  
ROY K. SMITH

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3,258,285

**DOOR STOP AND HOLDER**

Roy K. Smith, Box 111, Viewland Ave., R.D. 3,  
Schenectady, N.Y.

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This invention relates to an apparatus using the magnetic principle for stopping and holding a passageway door in a predetermined open position.

It is the purpose of this invention not only to stop a door but also to hold said door in an open position even when the opened door is in a drafty area without the use of bars, wedges or drop stops.

Another purpose of this invention is that it is adaptable and can be used as a door latch were no lock is necessary.

Another purpose of this invention is by slight modifications of some parts it can be used in different positions and perform the same function.

Another purpose of this invention is to provide a superior, economical functional stop and holder that can be produced, packaged and sold at a cost comparative to and lower than most stops of different principles.

Still another purpose of this invention is that it can be installed and utilized conveniently in already hung doors as well as in new construction.

Still additional objects and benefits and advantages of this invention will become evident from a study of the following detailed descriptions taken in conjunction with the accompanying drawings.

The door holder and stop of the present invention comprises one form in which an upwardly-biased slidable permanent magnet is disposed in the lower edge of a door and engages a second magnet located in the floor when the door is in a desired position; and a second form in which a permanent magnet extends from a surface of a door and is adapted to engage and to be held against a second magnet mounted adjacent a wall.

FIGURE 1 shows one embodiment of the device, in elevation and partial section, with the parts thereof mounted in a door and floor;

FIGURE 2 is a view similar to FIGURE 1 but showing only the movable magnet mounted in the door, as seen from the right of FIGURE 1;

FIGURE 2a is a bottom view of the device of FIGURE 2;

FIGURE 3 is a top view of a second embodiment of the invention, shown in partial section; and

FIGURE 4 is an elevation view of the device of FIGURE 3, in partial section.

Referring specifically to FIGURES 1, 2, and 2a of the drawing: part 1A is a non-magnetic metal tube which forms the housing for the other parts of the slide magnet. At one end of part 1A a standard S.A.E. machine thread is turned toward the middle for at least 5/8 of an inch, this is marked H-M on drawing. At a point from the end of the tube where the threads start toward the center an indenture marked "Z" on the drawing, is rolled so that a magnet part 2A will fit inside part 1A and not extend beyond the rim of part 1A marked H-M. At this threaded end four notches are cut into the rim edge marked "Y" on the drawing to form leverage points for adjustment. From the rim opposite the threaded end in toward the middle 3/16 of one inch two holes G are drilled, diameter of the holes 3/32 of an inch and on a line 180 degrees from each other.

Part 2A is a metal rod of a diameter to fit inside part 1A with a clearance of not more than a 1/64 of one inch; magnetized on one end; opposite the magnetized end a hole 3/32 of one inch is drilled and tapped with a standard

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1/8 of one inch S.A.E. machine thread; this is marked "J" on drawing and is for the purpose of receiving a part 5A.

Part 3A is a rod of the same diameter as part 2A and magnetized on one end; a hole 3/32 of an inch is drilled through the center; from the magnetized end this hole is countersunk to a depth to accommodate the head of a screw part 8A; this is marked "K" on drawing. On the magnetized end a rubber washer 1/8 of an inch thick is cemented onto the flat surface of part 3A. This is marked "F" on drawing.

Part 4A is a flat piece of non-magnetic metal stamped out to the shape as shown in FIG. 2a and has two holes I of 5/32 of one inch and one hole of a diameter so that it can be tapped out with a standard S.A.E. machine thread to match H-M of part 1A. The holes marked "I" are countersunk so the heads of screw parts 8A will be below the surface of part 4A.

Part 5A is a standard threaded eye bolt of a diameter and thread to match threaded hole "J" in part 2A.

Part 6A is a split-end rivet of 1/8 of an inch diameter and of a length to extend through part 1A so that the split end can be folded back against the outer surface of part 1A to keep it in place. At the middle of part 6A a hole of a diameter that will permit one end of a spring part 7A to pass through it is drilled. This is marked "L" on drawing.

Part 7A is a spring of a length and tensional strength that is sufficient when installed with parts 2A and 6A that it will hold part 2A in position in part 1A until it is over or opposite part 3A.

Part 8A is a standard 1/8 of one inch by one inch self-threading screw of which three are needed, one through part 3A and two to mount part 4A on a door.

In the assembly of the device, Part 5A is threaded into section "J" of part 2A, then one end of part 7A is hooked into the eye of part 5A; these three parts are inserted into part 1A with the magnetized end of Part 2A facing out of the threaded end H-M. Part 6A is inserted into holes marked "G" in part 1A and the end parts of 6A are bent as shown in FIG. 1; the loose end of part 7A is threaded through hole marked "L" on part 6A; part 4A is then turned on to part 1A, H-F over H-M so that the H-M section of part 1A extends beyond part 4A so that part 1A can be turned for adjustment, at points "Y."

To install a center line is drawn between the width of a door on the bottom edge close to the latch edge of said door. At a distance of not less than two inches in from the latch edge of said door a hole of a diameter to accommodate the diameter of assembled parts and to the depth of the length of the assembled parts, a hole is bored up into the door bottom. The assembled parts are then inserted into the hole and a line is scribed around part 4A on the bottom of the door; the assembled parts are then removed from the hole and the material inside the scribed line is removed to the depth of the thickness of part 4A; the assembled parts are then replaced into the hole and secured with the screws 8A, through holes "I" in part 4A. Part 1A is now adjusted so that it just clears the finish floor at all points.

At a point where the desired position of the opened door is wanted, the center of part 2A is marked on the finish floor and at this point a hole is bored into the floor of a diameter of part 3A to a depth so that section "F" is flush with the surface of the finish floor. Part 3A is then inserted into said hole and secured with the remaining screw, part 8A, through hole "K." This completes the assembly and installation of this form of the "Door Stop and Holder."

Referring now specifically to this invention's function. When a door in which this invention is installed is opened

so that part 2A is directly over or opposite part 3A the magnetic pull of both magnets pulls part 2A down on top of part 3A and holds the said door in this position until moved manually from said position, and as the door moves and separates part 2A from part 3A, part 7A pulls part 2A back up into part 1A giving free clearance or passage over the floor.

Referring now specifically to FIGS. 3 and 4 the drawing; part 1B is a non-magnetic metal tube which forms the housing for a magnet part 2B and other parts. An indentation is rolled into part 1B at a distance from one end so that part 2B extends approximately  $\frac{1}{16}$  of one inch beyond the rim of part 1B, this is marked on drawing with the letter "Z." In this section of part 1B two holes of  $\frac{5}{32}$  of an inch in diameter are drilled on a line, 180 degrees from each other, whose center is  $\frac{7}{16}$  of one inch from the rim, marked "B" on drawing. On the opposite end four points are ground into the rim at four equally distanced locations around the circumference of this rim. At this end a standard S.A.E. machine thread B-M to match the thread on a part 4B is tapped inside to a depth of at least  $\frac{1}{4}$  of one inch, marked B-F on drawing. The four points are marked "A" on drawing FIG. 3.

Part 2B is a metal rod of a diameter so that it fits snugly into the interior of part 1B; it is magnetized on one end. At a distance of  $\frac{1}{2}$  of one inch from the magnetized end is the center of a hole of a diameter of  $\frac{5}{32}$  of one inch is drilled through part 2B, marked "C" on drawing. This hole may or may not be tapped to receive a  $\frac{3}{16}$  of an inch S.A.E. standard threaded bolt 6B from each side.

Part 3B is a metal rod of the same diameter as part 2B, at least  $\frac{1}{2}$  of an inch in length; and magnetized on one end. This part has a hole of a diameter of  $\frac{5}{32}$  of one inch drilled through from end to end. At the magnetized end this hole is countersunk to a depth to accommodate the head of a screw part 5B; this hole is marked "E" on drawing. On the opposite end from the magnetized end a distance is measured in so that an angle cut of five degrees can be made across dividing part 3B into two parts; marked 3-B-1 and 3-B-2 on drawing. On the magnetized end an  $\frac{1}{8}$  of an inch rubber washer is cemented to this flat surface; marked "F" on drawing. The purpose of this is to keep the sound of contact down to a minimum.

Part 4B is a threaded disc of a diameter to fit into section B-F of part 1B; with a hole of a diameter drilled through its center and this hole is notched to receive a screw driver; this notch is used to turn this part into part 1B. This hole is marked "D" on drawing.

Part 5B is a self-threading screw, securing part 4B against the door, and is similar to the screw mounting part 3B.

Parts 6B are a  $\frac{3}{16}$  of one inch by  $\frac{1}{4}$  of one inch standard S.A.E. machine thread bolt with flat head slotted. Two are needed, for securing parts 1B and 2B together.

In assembling the device, part 4B is threaded into part 1B at section B-F until points "A" extend beyond the flat surface of 4B, part 5B is inserted into hole "D" and these parts are fastened either to the door or baseboard, whichever the installer prefers. Part 2B is then inserted into interior of part 1B against the indentation so that holes "B" line up with holes "C"; parts 6B are then screwed into holes "C" holding part 2B firm in part 1B. (Note part 6A can be used in place of parts 6B to cut cost of manufacture in lieu of neater looking exterior.) Sections "A," the ground points, on part 1B serve to keep part 1B from turning by pressing into the surface on which it is installed. Part 3B center is lined up on the surface opposite assembled parts of 1B and 2B's center; parts

3-B-1 and 3-B-2 being placed on this center are turned so that the angled surface between these two parts changes the angle of the surface of section "F" until it fits flush with the surface of part 2B; holding this position part 3B is secured in place by screwing part 5B through hole marked "E."

Having now assembled and installed all parts of this form of the invention the door is merely opened until parts 2B and 3B contact. The door will stay in this position until moved by manual force.

While this invention has been described with particular reference to the construction shown in the drawing and while various changes may be made in the detail construction, it should be understood that such changes shall be within the spirit and scope of the present invention as defined by the appending claims.

Having thus completely and fully described this invention, what is now claimed as new and desired to be protected by Letters Patent is:

1. A magnetic holder adapted to be secured to a closure for holding the closure in an open position, comprising; a non-magnetic tubular housing member, a mounting member in threaded engagement at one end of said housing, fastening means for securing said mounting member on such closure, a permanent magnet slideably positioned in one end of said housing and spring-biased inwardly against indented stop means in said housing, said magnet being moveable outwardly of said housing for coaction with a keeper, mounted for engagement by said magnet.

2. A holder as defined in claim 1 wherein a tension spring biases said magnet in said housing.

3. A holder as defined in claim 1 wherein said fastening means comprises at least one headed screw.

4. A holder as defined in claim 1 wherein said mounting member is shaped to engage the lower edge of the closure, with said housing vertically oriented in the closure so that said magnet may coact with a keeper mounted in a floor or surface adjacent the closure.

5. A magnetic holder adapted to be secured to a closure for holding the closure in an open position, comprising; a non-magnetic tubular housing member, a mounting member in threaded engagement in one end of said housing, a fastening member extending through said mounting member for securing said mounting member on such closure, a permanent magnet in the other end of said housing and extending therefrom for coaction with a keeper mounted for engagement by said magnet, and releaseable means securing said magnet in said housing.

6. A holder as defined in claim 5 wherein said fastening member comprises a headed screw.

7. A holder as defined in claim 5 wherein said releaseable means comprises at least one headed screw.

8. A holder as defined in claim 5 wherein said housing is indented to provide a stop means for positioning said magnet during assembly.

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BOBBY R. GAY, *Primary Examiner.*

R. E. MOORE, *Assistant Examiner.*