April 7, 1959 C. L. BECK ET AL 2,880,451

DOOR CLOSER

Filed April 4, 1956

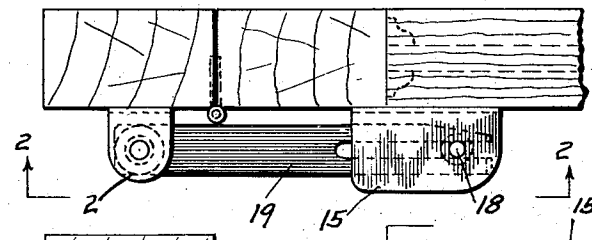


Fig. 1.

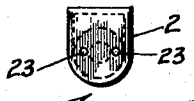


Fig. 5.

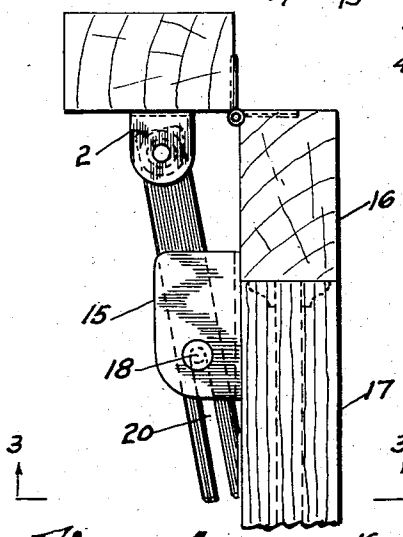


Fig. 4.

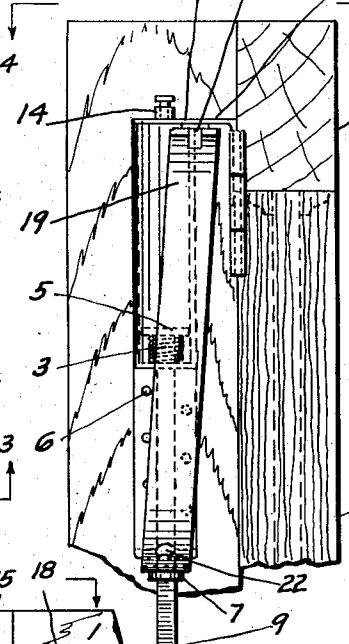


Fig. 3.

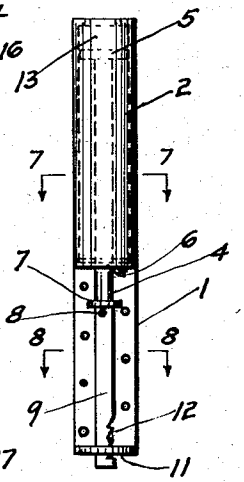


Fig. 6.

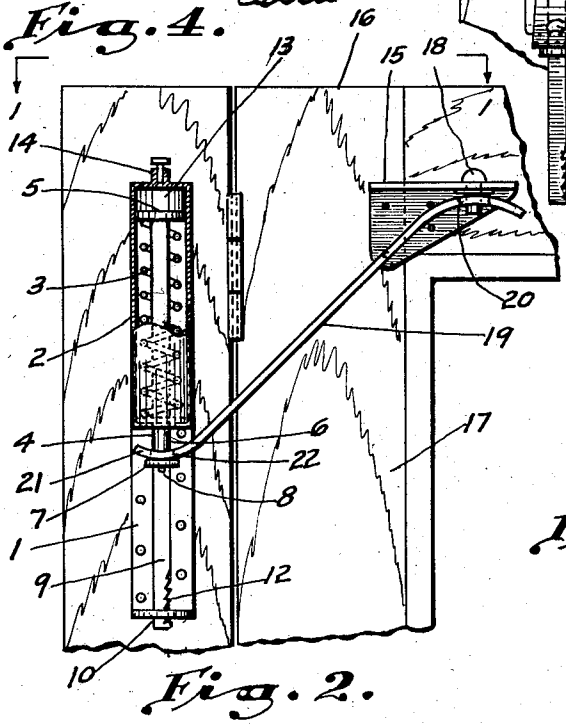


Fig. 2.

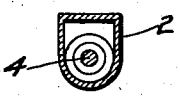


Fig. 7.

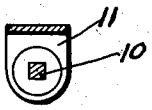


Fig. 8.

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United States Patent Office 2,880,451 Patented Apr. 7, 1959

2,880,451

DOOR CLOSER

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Application April 4, 1956, Serial No. 576,176

2 Claims. (Cl. 16—70)

This invention relates to a door closer. It has for its main objects to provide a door closer that will be highly satisfactory for the purpose intended, simple in structure, comparatively cheap to manufacture, easy to install for use and keep in good working condition, and extremely durable.

A further object is to provide a door closer that will allow the door on which it is connected to open approximately 180 degrees compared with the door frame, an unusual feature.

Further objects and advantages will appear from the drawing and description.

By referring generally to the drawing it will be observed that Fig. 1 is a top plan view on line 1—1 of Fig. 2 of part of a door and frame with a closer according to the present invention mounted thereon; Fig. 2 is an elevational view on line 2—2 of Fig. 1; Fig. 3 is a view on line 3—3 of Fig. 4; Fig. 4 is a view on line 4—4 of Fig. 3; Fig. 5 is a top plan view of Fig. 6; Fig. 6 is an elevational view of the closer parts that are attached to the door frame; Fig. 7 is a sectional view on line 7—7 of Fig. 6; and Fig. 8 is a sectional view on line 8—8 of Fig. 7.

Similar reference numerals refer to similar parts throughout the several views.

Referring to the drawing in detail it will be seen that the closer comprises a bracket or metal plate 1 on which is mounted a cylinder 2 with an expanded coil spring 3 within the cylinder. A piston rod 4 with a head 5 has its upper portion, which is round, mounted slidably through the lower end 6 of the cylinder. A collar 7 is attached on the lower end of the round portion of the rod. A pin 8 keeps the collar in place for use. The lower portion 9 of the rod is square in cross section and is slidable in a square hole 10 in a flange or flat member 11 integral with the lower end of the plate 1. Notches 12 are provided in the lower part of the square portion of the rod to hold the door partly open if desired by moving the rod so as to have a notch catch in one edge of the hole in the flat member. The piston head fits slidably tight in the cylinder with space 13 between it and the inner face of the top of the cylinder which is provided with a screw 14 serving as an air valve for controlling the pressure of air in the cylinder by screwing the thumb screw inward or outward. A bracket 15 is attached to the top portion 16 of the door 17. A round stud bolt 18 is attached in the bracket. A curved flat bar 19 is provided with a slot at 20 that fits upon the stud bolt. Its lower end 21 is provided with a round hole 22 that fits around the lower end of the round portion of the piston rod and adjacent the collar on the rod. Fig. 7 shows a modified type of cylinder having a piston head with holes 23 therein for passage of oil (not shown) placed in the entire cylinder for control of the spring action instead of using the screw 14.

From the foregoing it will appear that when the door is pulled open manually the piston rod will be pushed

downward by the lower end of the flat bar thereby compressing the expanded spring. When the door is released the spring will expand and restore the door to its closed position.

The various parts of the door closer may be made of any material suitable for the purpose, but we prefer to use good grades of metal; also the parts may be made in different sizes and capacities depending on the sizes of doors on which to be used.

While we have shown and described the preferred embodiment of our invention, we do not wish to limit same to the exact and precise details of structure, and reserve the right to make all modifications and changes so long as they remain within the scope of the invention and the following claims.

Having described our invention we claim:

1. A door closer of the character described comprising, a vertical metal strip removably attached to a door frame, an upright cylinder having its top end attached to the upper end of said strip, a piston rod with a head thereon mounted in the cylinder and extending through the lower end of the cylinder, said rod being round in cross-section along the portion thereof in the cylinder and for a small portion of the rod out of the cylinder when the rod is in its extreme inward position in the cylinder, a collar mounted around the lower end of the round portion of the rod where the round portion ends, the other part of the rod being square in cross section and having a plurality of notches formed in its lower end portion, a coil type spring in expanded condition in the cylinder and around the rod portion in the cylinder, an air chamber, an air control screw-type valve positioned in the top end of the cylinder, a metal bracket adapted to be secured to a door hinged on said door frame, a round stud bolt attached in the bracket, a flat metal bar having both of its ends slightly curved, one curved portion of the bar being slotted and the other curved portion of the bar having a round hole therethrough, said slot of the bar having the round bolt of the bracket inserted through the slot with the hole in the other end of the bar being around the lower round portion of the piston rod and adjacent the collar mounted on the piston rod, and a plate member with a square hole therein attached to the lower end of the metal strip whereby a selected notch of the notched end of the piston rod may be engaged with an edge of said square hole to maintain the door in open position.

2. A door closer of the character described comprising, a metal strip adapted for removable attachment to a door frame, a cylinder attached to said strip, a piston rod with a head thereon mounted in the cylinder and extending through one end of the cylinder, said rod being round in its part in the cylinder and for a small portion out of the cylinder when the rod is in its full inward position, a collar mounted around the round portion of the rod where its round portion ends, the other part of the rod being square and having a plurality of notches formed in its outer end portion, a coil type spring mounted in expanded condition in the cylinder and around the rod portion in the cylinder, a space between the piston head and the other end of the cylinder, a screw type air valve mounted in the other end of the cylinder; a metal bracket adapted for attachment to a hinged door, a strip of flat metal bar having both of its ends slightly curved, a round stud bolt attached in said bracket, each curved portion of the bar having a hole therethrough, one hole of the bar having the said round bolt inserted therein, the other hole in the other end of the bar having the round portion of the piston rod inserted therethrough with the surrounding edge of the hole adjacent the said collar mounted on the piston rod; a flat metal member at-

tached to the end of the said supporting metal strip near the outer end of the square portion of the piston rod, said member having a square hole therein for the square portion of the rod to pass slidably therethrough when the door on which it is mounted is pulled open whereby a selected notch of the notched end portion of the piston rod may be engaged with an edge of said square hole to maintain the door in opened position.

References Cited in the file of this patent

UNITED STATES PATENTS

340,143	Merredith	Apr. 20, 1886
753,997	Moore	Mar. 8, 1904