Feb. 15, 1927. 1,617,771

T. O. SCHRADER

DOOR CLOSER

Filed May 5, 1926

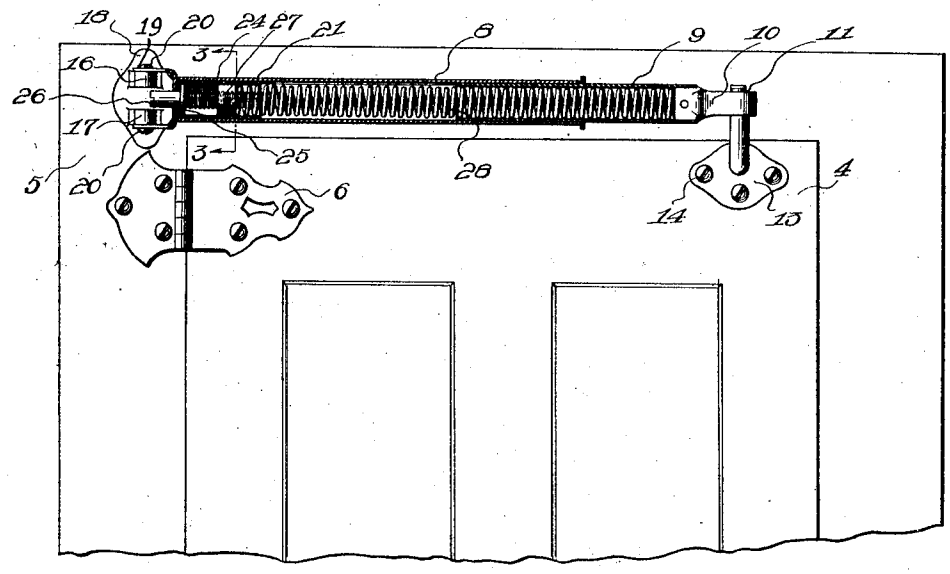


Fig. 1

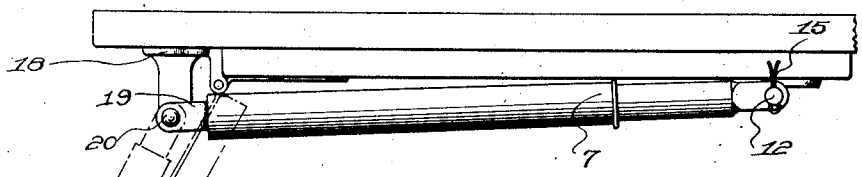


Fig 2

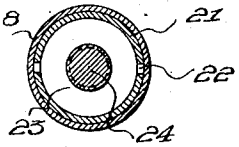


Fig 3

Inventor

Thomas O. Schrader

By James A. Hoffman

Attorney

Patented Feb. 15, 1927. 1,617,771

UNITED STATES PATENT OFFICE.

THOMAS O. SCHRADER, OF ALLENTOWN, PENNSYLVANIA, ASSIGNOR TO THE DENT HARDWARE COMPANY, OF FULLERTON, PENNSYLVANIA.

DOOR CLOSER.

Application filed May 5, 1926. Serial No. 106,848.

This invention relates to a door closer intended, primarily, for use in connection with doors leading to the cooling or refrigerating rooms of stores dealing in food products, though it should be understood that this invention is not restricted to such use but that it may be used wherever a door closer, of the type about to be described, is found to be desirable.

In removing food products from or in moving such products into the cooling rooms in stores it frequently happens that both hands of the person are engaged in carrying such products. Difficulty is then experienced in easily opening and promptly closing the doors of the cooling rooms with the type of fixtures now ordinarily used. The principal object of this invention is to provide a simple and practical door closer that will be easily operable, that will have a neutral position in which there is no tendency to close or fully open the door, and in which forces are exerted to close or fully open the door when it is in any other than said neutral position. By this arrangement persons having both hands occupied may control the door by other parts of their body, such as their arms or lower limbs, a slight movement of the door beyond neutral position serving to cause the door to positively seek the desired position.

Further objects of the invention will appear as the description proceeds with reference to the accompanying drawings in which:

Figure 1 is an elevation of my improved door closer, in relation to the door and door frame, the closer being shown in longitudinal section to expose the construction thereof.

Figure 2 is a plan view, the position of the door and closer, when the door is open, being shown in broken lines.

Figure 3 is a section on the line 3—3 of Figure 1 on an enlarged scale.

Like reference characters indicate like parts throughout the several figures.

My improved door closer is shown applied to a door 4 hinged to a frame 5 by hinges 6. The invention is applicable to a hinged door of any type and size, as will be readily understood.

The closer consists of an extensible arm 7 including two tubular members 8 and 9, the latter of which is preferably telescoped within the former. Member 9 has a head 10 rigidly secured thereto. Said head is provided with an opening 11 to receive a stud 12 projecting upwardly from a bracket 13 attached to door 4 by screws 14, or any equivalent fastening means. The parts are held in assembled relation by cotter pin 15 on in any other way. The arrangement just described serves as a means for pivotally attaching one of the elements of the extensible arm 7 to the door. Any other suitable means may be employed for this purpose.

Tubular member 8 of arm 7 is pivotally attached to lugs 16 and 17 preferably, though not necessarily, formed as a part of a bracket 18 that is attached to the door frame above the door. As a convenient manner of attaching said member to said lugs, a U shaped bracket 19 is secured to the member in any suitable way. The arms of the U shaped bracket 19 engage lugs 16 and 17 and the arms of said bracket and the lugs are provided with alined apertures to receive pivot pins 20.

Telescoped within one end of tubular member 8 is a sleeve 21 provided with longitudinal slots 22 at diametrically opposite points (see Figure 3). Slidable in said sleeve is a collar 23 threaded upon a screw 24 that is shouldered at 25 and provided with a cylindrical extension 26 passing through alined apertures in sleeve 21 and bracket 19. In order to prevent the collar 23 from turning, it is provided with projections 27 engaging slots 22. Extension 26 is provided with a screw driver slot in its end to permit ready rotation of screw 24.

Arranged between head 10 and collar 23, and housed in tubular members 8 and 9 is a coil spring 28, that tends to extend arm 7 by sliding member 9 endwise of member 8. The tension of spring 28 may be readily adjusted by rotating screw 24 as above indicated, thereby sliding collar 23 in the direction necessary to effect the proper adjustment.

It should be noted that the axis about which arm 7 swings with respect to the frame is eccentric with respect to the pivotal axis of the door, and that accordingly the arm 7 that is attached to the door is caused to shorten as the door swings from closed to open position. In shortening, section 8 of arm 7 is telescoped within section 9 as shown in broken lines in Fig. 2. This results in compressing spring 28 thus storing up energy that, when the door is released,

serves to urge the door to fully open or fully closed position, depending upon which side of the neutral position the door happens to be when it is released. It will be understood that the door tends to remain in the neutral position, which is reached when the axes of pins 12 and 20 and the axis of hinge 6 lie in the same plane. At this point, there is no component tending to either open or close the door and it remains in this position from which it may be very readily moved by a person whose hands are occupied.

It will be readily understood that bracket 18 may be shifted so that the axis of pins 20 is in the plane normal to the door frame that contains the door hinge axis. In this event, the neutral position of the door will be reached when the door is moved through 90 degrees. The neutral position of the door may accordingly be shifted by shifting bracket 18 to the position that will result in the desired angular movement of the door before it reaches the position where it will remain until disturbed.

While I have above described my invention in considerable detail it should be understood that my invention is not limited to such details, but that the scope thereof is to be determined from the following claims.

What I claim as my invention is:

1. A door closer for a hinged door comprising two members arranged to slide endwise telescopically, each of said members being provided with an internal abutment, a spring housed and guided in its movement by said members and engaging said abutments, a bracket secured to the door adjacent its free edge and pivoted to one of said members, said bracket projecting upwardly beyond the upper end of the door so that the door can swing freely beneath said members to full open position, a bracket on the frame adjacent the hinged edge of the door and pivotally secured to the other member and means operable externally of one of said members for adjusting one of said abutments.

2. A door closer for a hinged door comprising a member pivoted to the door adjacent its free edge, said member including an abutment, a second member pivoted to the frame adjacent to but offset from the hinged edge of the door, said second member including an abutment and means to adjust it bodily toward and away from the axis of the pivotal connection of the second member, and a spring arranged between said abutments and guided and housed by said members.

3. A door closer comprising two members movable endwise relative to each other, abutments carried by said members, a spring arranged between said abutments, one of said abutments comprising a collar arranged within a slotted sleeve, secured to one of said members, said collar carrying projections slidable in said slots, and a screw threaded in said collar and provided with means to manipulate it externally of said sleeve for adjusting said collar.

THOS. O. SCHRADER.