Aug. 18, 1931. H. J. McFERREN 1,819,187

DOOR CLOSER

Filed Dec. 9, 1929

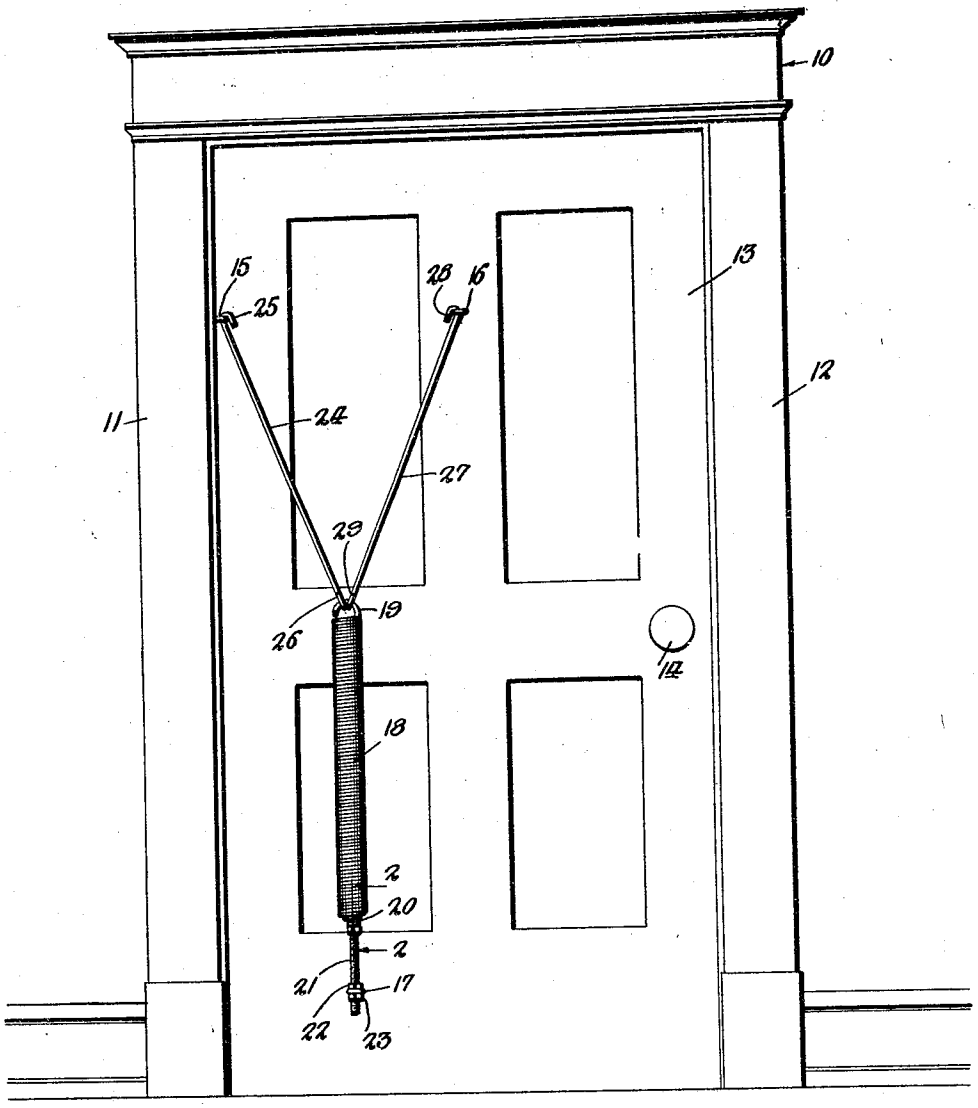


Fig. 1.

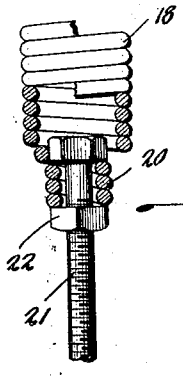


Fig. 2.

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UNITED STATES PATENT OFFICE

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DOOR CLOSER

Application filed December 9, 1929. Serial No. 412,758.

This invention relates to new and useful improvements in closing devices, and particularly to closing devices for doors.

One object of the invention is to provide a device of this character which is simple in construction, and which will effectively operate to close a door.

Another object is to provide a device of this character which serves to relieve the hinges of a great portion of the weight of the door.

Another object is to provide a device of this character which will serve to prevent warping of the door.

Other objects and advantages will be apparent from the following description when taken in connection with the accompanying drawings.

In the drawings:

Figure 1 is an elevation of a door equipped with the present invention.

Figure 2 is an enlarged vertical sectional view on the line 2—2 of Figure 1.

Referring particularly to the accompanying drawings, 10 represents a door frame, including the side stiles 11 and 12, to the former of which is hinged the door 13, while the latter of which serves as a stop for the free edge of the door, said door having the knob 14. Carried by the hinge side of the doorway, of stile 11, is an eye member 15, and carried by the face of the door, in the same horizontal plane therewith, and adjacent the upper end of the door and stile, is a similar eye member 16. Carried by the said face of the door, adjacent the lower end thereof, and at a point approximately midway between the eye members 15 and 16, is an eye member 17. A vertical elongated coil spring 18 is disposed against the said face of the door, and has a loop 19 formed on its upper end, while the lower end has its coils reduced in diameter, as shown at 20. Disposed in the smaller coils 20, of the spring 18, is the upper headed end of the bolt 21, a nut 22 being screwed on the bolt against the lowermost of said smaller coils to hold the bolt in proper position. The other end of the bolt 21 is disposed through the eye member 17, a nut 22 being engaged on the bolt, above the eye, while a second nut 23 is engaged on the bolt, below the eye. By proper manipulation of the nuts 22 and 23, the tension of the spring 18 can be regulated. A link 24, having the terminal hooks 25 and 26, has its hook 25 engaged with the eye member 15, while the hook 26 is engaged with the loop 19, at the upper end of the spring 18. A second link 27 has the terminal hooks 28 and 29, the hook 28 being engaged with the eye member 16, while the hook 29 is engaged with the terminal loop 19, of the spring 18.

It will be readily understood, from an inspection of Figure 1, of the drawings, that the door 13 opens in a direction away from the observer, and that, upon moving the door in such direction, the tendency will be to straighten out the links 24 and 27, that is to draw up their spring attached ends. This is resisted, to a certain extent, by the spring 18, with the result that said spring is stretched, so that it is under tension. Upon release of the door, the spring will tend to return to its normal condition, drawing down on the links 24 and 27, thereby closing the door.

The spring 18, being normally under tension, will exert an upward lifting action upon the door, whereby to relieve the hinges of a portion of the weight of the door, and thus render the swing movement of the door more easy.

By properly adjusting the nuts 22 and 23, the tension of the spring 18 can be regulated, with the result that the door may be made to close at the desired speed.

What is claimed is:

1. The combination with a door frame and door, of a door closer and supporter including a vertical expansible spring, means for connecting the lower end of the spring to the lower portion of the door, means for connecting the upper end of the spring to the upper end of the door, and means for connecting said upper end of the spring to the door frame in the plane of the connection of said upper end of the spring with said door.

2. The combination with a door frame and door, of a door closer and supporter comprising a vertical expansible spring, a link

connected with the upper end of the spring and with the upper portion of the face of the door, a link connecting said upper end of the spring with the adjacent portion of the side of the door frame, and means carried by the lower end of the spring and adjustably connected with the lower portion of the door whereby to maintain the spring under tension for closing the door and for partially supporting the weight of said door.

In testimony whereof, I affix my signature.

HENRY J. McFERREN.