Sept. 8, 1953 G. W. SLOPA ET AL 2,651,074

ADJUSTABLE DOOR CLOSING DEVICE

Filed Dec. 28, 1950

Fig. 1.

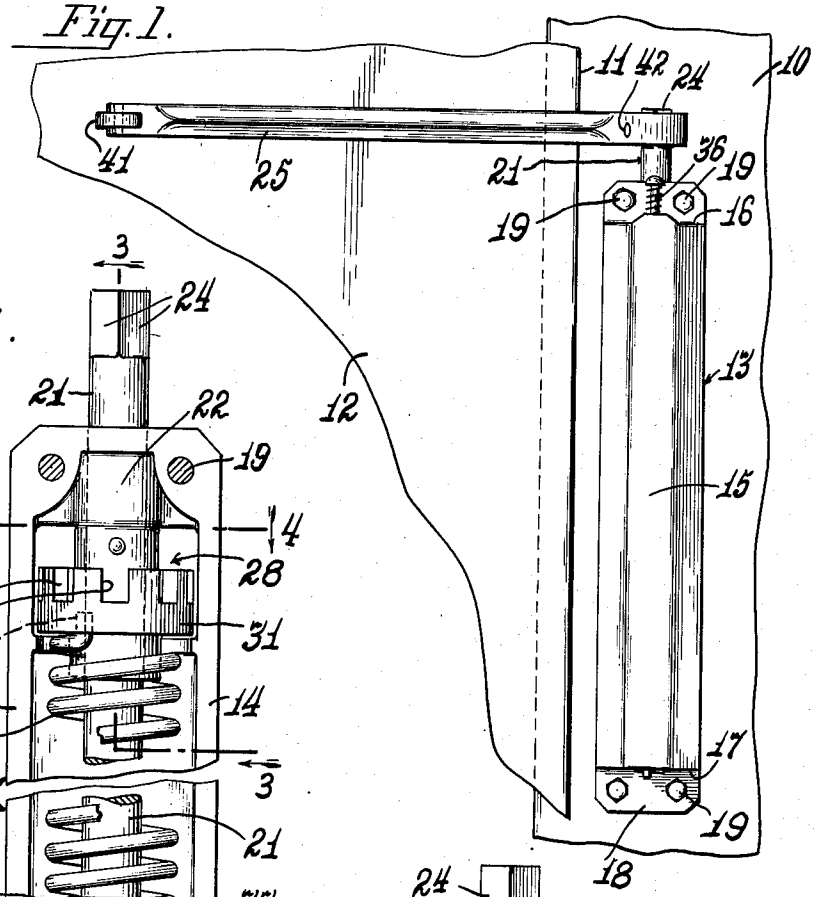


Fig. 2.

Fig. 3.

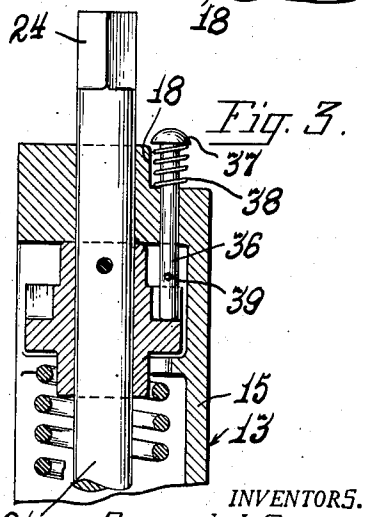
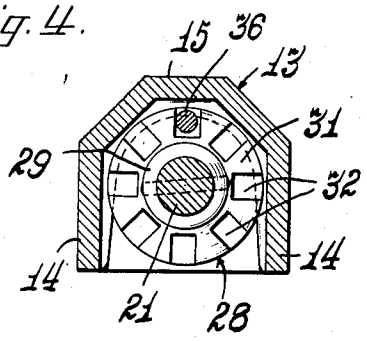


Fig. 4.



INVENTORS.
GEORGE W. SLOPA
and ROBERT E. SLOPA
BY: Maurice S. Cayer
ATTORNEY

Patented Sept. 8, 1953

2,651,074

UNITED STATES PATENT OFFICE

2,651,074

ADJUSTABLE DOOR CLOSING DEVICE

George W. Slopa and Robert E. Slopa,
Chicago, Ill.

Application December 28, 1950, Serial No. 203,108

2 Claims. (Cl. 16—80)

1

The invention relates to improvements in door closing devices and more particularly to a device for assisting a hingedly mounted door to swing into closed position and to hold said door in tight sealing engagement with its related door frame.

Refrigerators or other compartments requiring a tight closing of a hingedly mounted door are provided frequently with means to hold the door in tight sealing engagement with the door frame. Refrigerator doors and the like are heavy and often difficulty is encountered in attempting to swing the door into closed position especially when the sealing edges have become iced. These difficulties have been overcome in the past by the provision of various types of spring hinges or other devices designed to urge the door into its closed position. A spring controlled door closing device is preferably equipped with means to permit the tension of the spring to be adjusted to accommodate the device with different installations and different service conditions.

It is, therefore, an object of the invention to provide a novelly constructed rugged door closing device embodying the necessary characteristics noted hereinabove.

Another object of the invention is to provide a spring controlled door closing device with novelly constructed means to facilitate quick and accurate adjustment of the spring tension.

Another object of the invention is to provide a spring controlled door closing device having adjustable tension means with novel means to hold the spring tensioned prior to and during installation of the device on the door and door frame and one which is automatically released upon initial operation of the device.

Another object is to provide a door closing device of the character described which is not expensive to manufacture, is easy to install, simple to adjust, and positive and very efficient in operation.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel features of construction, arrangement and combination of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportion, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

For the purpose of facilitating an understanding of our invention, we have illustrated in the

2

accompanying drawings a preferred embodiment thereof, from an inspection of which, when considered in connection with the following description, our invention, its mode of construction, assembly and operation, and many of its advantages should be readily understood and appreciated.

Referring to the drawings in which the same characters of reference are employed to indicate corresponding or similar parts throughout the several figures of the drawings:

Fig. 1 is a fragmentary front elevational view of a door and door frame or jamb showing the novel door closing device associated therewith.

Fig. 2 is an elevational view, partially broken away, of the back face of the door closing device.

Fig. 3 is a fragmentary vertical section view taken substantially on 3—3 of the Fig. 2.

Fig. 4 is a horizontal sectional view taken substantially on line 4—4 of Fig. 2.

Referring to the disclosure in the accompanying drawings, the door closing device is to be firmly mounted on the door frame or jamb 10 adjacent to the hinged edge 11 of the door 12. In the present illustration, the hinges have been omitted inasmuch as they do not constitute any part of the present invention. As shown, the door closing device includes a substantially rectangular cast housing 13 including side walls 14 and a front wall 15, top wall 16 and a bottom wall 17. The top and bottom walls are offset rearwardly as at 18, which areas are suitably apertured to receive mounting screws 19 for firmly securing the housing 13 to the door frame or jamb 10.

A shaft 21 extends longitudinally through the housing 13 and it is suitably journalled therein for free rotation in bearing bosses 22 and 23 formed in the top and bottom walls 16 and 17, respectively. One end of the shaft 21 extends a considerable distance outwardly beyond the bearing boss 22 and is formed on its end with flat surfaces 24 for accommodating a lever 25.

Upon referring to Figs. 2 and 3, it will be noted that the entire back face of the housing 13 is open and that the shaft 21 extending therethrough has a collar 26 firmly mounted thereon, as by means of a pin 27. The collar 26 abuts the inside face of the bearing boss 23 to limit downward movement of the shaft 21. The upper extremity of the portion of the shaft 21, within the housing 13, carries a notched element generally indicated at 28. This element includes a hub 29 in abutment with the bottom face of bearing boss 22 and an enlarged circular body

portion 31 of a diameter to substantially occupy the entire cross-sectional area of the interior of housing 13. The circular body portion 31 is provided on its upper face with cut outs or notches 32 for a purpose to be described presently.

A coil spring 33 is arranged around the shaft 21 between the lower bearing boss 23 and the notched body portion 31. One end of the spring 33 is anchored, as at 34, in the notched body portion 31 and the other end of said spring is anchored, at 35, in the bearing boss 23. It should be quite evident at this time that the spring 33 is adapted to be tensioned when the notched body 31 is rotated in a counterclockwise direction as viewed in Fig. 2.

Tensioning of the spring 33 may be accomplished by means of the lever 25, it being apparent that one end of said lever may be mounted on the non-circular shaft end 24 and swung in a counterclockwise direction so as to rotate said shaft. Of course, a wrench or other tool may be used with equal effect. In order to obtain the desired tension on the spring 33, it is, of course, obvious that the shaft 21, and the notched body 31 carried thereby, must be rotated a distance greater than that which can be accomplished by moving the lever or other tool through the limits of rotation defined by the presence of the door and door frame. Accordingly, means is provided to hold the shaft and its notched body 31 in various stages of adjustment while the lever 25 or tool is removed from the shaft and repositioned thereon to continue the tensioning operation.

The means for holding the shaft and its notched body 31 in positions of partial spring tensioning is best illustrated in Figs. 3 and 4. Upon referring to these figures, it will be observed that the top wall 16 of the housing 13 is apertured to receive therethrough a lock-pin 36 having a head 37 on its outwardly extending end. A light compression spring 38 surrounds the portion of the lock-pin extending above the top wall 16 to normally urge said lock-pin into and hold it in an elevated position so as to locate its lower end above the top surface of the notched body 31. A cross-pin 39 or other means may be carried by the lock-pin 36 to prevent its complete withdrawal.

When the lock-pin 36 is in its elevated position the notched body 31 may be rotated, as by manipulation of the lever 25. When the lever 25 has reached the limit of its movement, the lock-pin 36 is manually depressed to engage its lower end in one of the notches 32. The lever 25 may be repositioned on the shaft and again swung counterclockwise to further tension the spring 33. It should be quite evident that when the lock-pin 36 is engaged in one of the notches 32 it is held in such engagement, against the tension of its lifting spring 38, by frictional binding between said pin and one wall of the engaged notch. This function is best illustrated in Fig. 4. The lock-pin 36 is immediately released following initial tensioning movement of the lever 25 so that its lifting spring 38 will carry it out of the engaged notch 32 to permit the notched body 31 to be rotated the predetermined distance whereupon the lock-pin 36 is again depressed to engage in the notch located therebeneath.

The lever 25 has been described hereinabove as the implement used to tension the spring 33 following installation of the door closing device. This lever constitutes an integral part of the assembly and, as is best illustrated in Fig. 1, it carries on its free end a roller 41 adapted to bear against the face of the door 12 at all times. When the installation is completed, the lever 25 is firmly secured on the shaft 21 by means of a set screw 42 and it may be readily removed from and reset on the shaft when additional tensioning from the spring 33 is indicated.

The construction of the door closing device described hereinabove is unique because of the rugged construction of the parts and the small number of parts required in its assembly. The means for readily locking the notched body 31 also constitutes an innovation particularly because said locking member is automatically released when tension is aplied to the spring 33 either during a manual tensioning operation or when the door 12 is being moved into open position. As a consequence of this construction, there is no likelihood of lock-pin 36 remaining in engagement with the notched body member 31 during normal operation of the device as has frequently occurred in prior devices of this character.

It is believed that our invention, its mode of construction and many of its advantages should be readily understood from the foregoing without further description, and it should also be manifest that while a preferred embodiment of the invention has been shown and described for illustrative purposes, the structural details are nevertheless capable of wide variation within the purview of our invention as defined in the appended claims.

What we claim and desire to secure by Letters Patent of the United States is:

1. A door closing device comprising, in combination, an elongated housing having an unbroken front wall, side walls and end walls, said end walls having apertures to receive mounting screws for mounting the housing on a wall surface adjacent to a door opening having a door associated therewith for closing the opening, said end walls having aligned bearing passages, a shaft extending through and journalled near its ends in said bearing passages, a notched element in said housing carried fixedly on said shaft adjacent one end wall, a torsion spring surrounding the shaft portion within the housing having one end anchored to the notched element and its other end anchored to the other end wall, a lever engageable with the shaft to rotate said shaft so as to tension said spring, a lock pin mounted permanently in the housing wall adjacent to said notched element and movable into engagement with the notched element to hold the spring tensioned during manipulation of the lever for the purpose of tensioning the spring, and a lift spring cooperating with the pin to cause it to become disengaged from the notched element when tension is maintained by said lever when the latter is positioned to bear against the door.

2. A door closing device comprising, in combination, an elongated housing having an unbroken front wall, side walls and end walls, said end walls having apertures to receive mounting screws for mounting the housing on a wall surface adjacent to a door opening having a door associated therewith for closing the opening, said end walls having aligned bearing passages, a shaft extending through and journalled near its ends in said bearing passages, a notched element in said housing carried fixedly on said shaft adjacent one end wall, a torsion spring surrounding the shaft portion within the housing having one

end anchored to the notched element and its other end anchored to the other end wall, a lever engageable with the shaft to rotate said shaft so as to tension said spring, a lock pin mounted permanently in the housing wall adjacent to said notched element and movable longitudinally of the housing into engagement with the notched element to hold the spring tensioned during manipulation of the lever for the purpose of tensioning the spring, and a lift spring cooperating with the pin to cause it to become disengaged from the notched element when tension is maintained by said lever when the latter is positioned to bear against the door.

GEORGE W. SLOPA.
ROBERT E. SLOPA.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
589,656	Henton	Sept. 7, 1897
1,112,471	Paulson	Oct. 6, 1914
1,662,395	Norton	Mar. 13, 1928