

W. H. KNAPP.
 DEVICE FOR CLOSING SWINGING DOORS.
 APPLICATION FILED MAY 10, 1909.

942,568.

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Fig. 1.

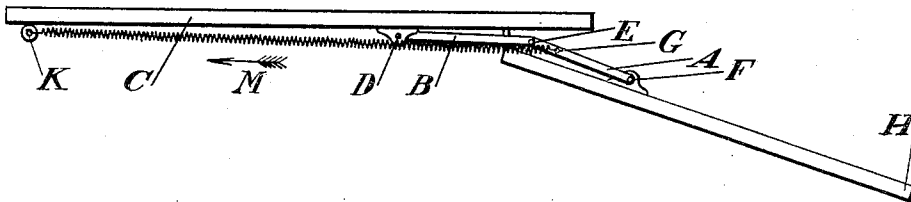


Fig. 2.

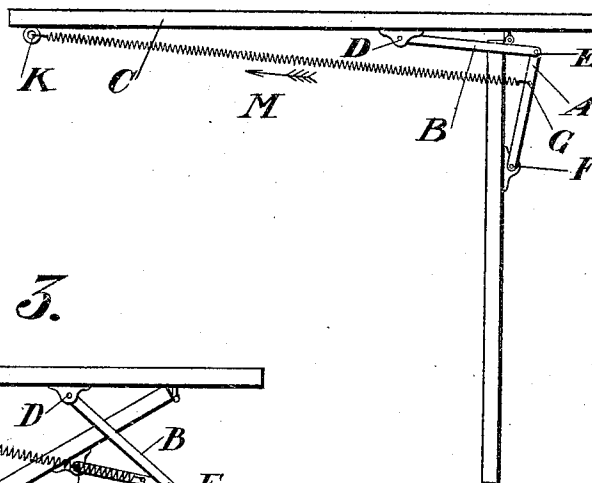


Fig. 3.

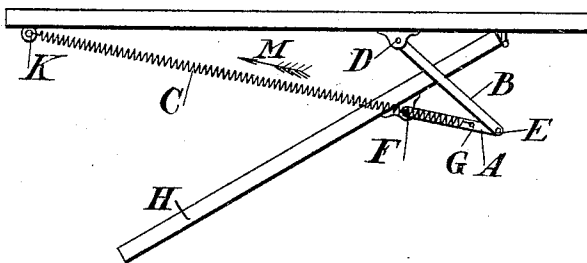
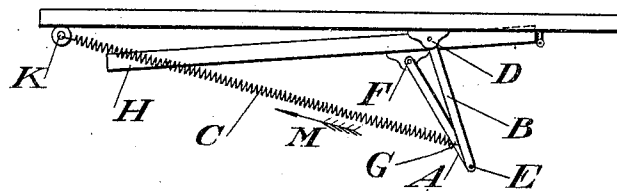


Fig. 4.



Witnesses:

Charles Earl Widney, William Henry Knapp,
 Oscar Arthur Ross,

Inventor:

UNITED STATES PATENT OFFICE.

WILLIAM HENRY KNAPP, OF EVANSTON, ILLINOIS.

DEVICE FOR CLOSING SWINGING DOORS.

942,568.

Specification of Letters Patent.

Patented Dec. 7, 1909.

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To all whom it may concern:

Be it known that I, WILLIAM HENRY KNAPP, a citizen of the United States, residing at 828 Simpson street, in the city of Evanston, county of Cook, and State of Illinois, have invented a new and useful Device for Closing Swinging Doors, of which the following is a specification.

My invention consists in the combination of two levers of approximately equal length, attached to each other and to the door and door cap, with power applied to one of the levers which closes the door with constantly increasing power.

The objects of my invention are: first—to provide a simple device, of inexpensive construction, which in closing a door, applies but little power while the door is open, but applies constantly increasing power until door is closed. Second—to provide a device which, because of closing the door slowly, causes less slam than other door closers not provided with check, and which still closes the door strongly enough to latch it. Third—to provide an effective door closer which can use as power a simple coiled wire spring. Fourth—to provide a door closer which is easy to attach and which is not likely to get out of order.

This device is illustrated by the accompanying drawing in each figure of which lever A, lever B, and coil spring C, represent the device. In each figure is shown a plan view of a door and door cap with the device attached at top of door.

Figure 1, represents a door swung wide open with device attached. Fig. 2, represents the same door approximately one half closed. Fig. 3, represents the same door approximately three quarters closed. Fig. 4, represents the same door very nearly closed.

In these figures similar letters refer to similar parts.

A is the door lever one end of which is hinged to the door at point F.

B is the cap lever and is hinged to the door cap at D, and to the door lever at E.

Spring C, is attached to door lever A, at point G, and to door cap at K, and pulls in the direction indicated by arrow M. The point of attachment of spring C, to door lever A, is very important. This point of attachment G, is nearer point E, than point F.

In Figs. 1 and 2, cap lever B, merely acts as a fulcrum for door lever A, changing its position slightly as door closes from Fig. 1, to Fig. 2. Power is applied at point G. As distance G—F, is greater than distance G—E, door lever A, presses on door H, at point F, with less power than is applied at point G. Note that the nearer point G, is to point E, the less the power at F, therefore the slower the door will move, yet if points G and E, be made to coincide, the door will not move when wide open. I find in practice the making of G—E one fifth the length of G—F to be effective.

In Fig. 3, the door is shown farther closed, the power applied at G, being in the same direction as door lever A, is all applied through door lever A, to the door at point F. From this time until the door is closed, cap lever B, becomes the active factor as is seen in Fig. 4. D becomes the fulcrum, power is applied at G, and the leverage of the two levers A and B, is approximately represented by the relation of distance G—D, to distance F—D. As the door continues closing, distance F—D, constantly lessens, increasing the leverage at which the power acts, until, when door is closed, pressure at point F, is many times greater than when door is open wide.

I do not claim broadly the action of two levers in closing a door, as door closers using this feature have been in use for years, but

I claim:

1. In a device of the kind described, the combination of a cap lever, a door lever hinged thereto, said levers of substantially equal length with tractive means including a spring applied to said door lever approximate to said hinge, substantially as described.

2. In a device of the kind described, the combination of a cap lever, one end of which is hinged to the door cap, a door lever substantially of the same length, one end of which is hinged to the door, the other ends of said levers being hinged together, with resilient means attached to said door lever approximate to the hinge of both levers, substantially as described and illustrated.

WILLIAM HENRY KNAPP.

Witnesses:

CHARLES EARL WIDNEY,
JAMES WILLIAM FONDA.