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DOOR OR GATE CLOSER

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Fig. 1.

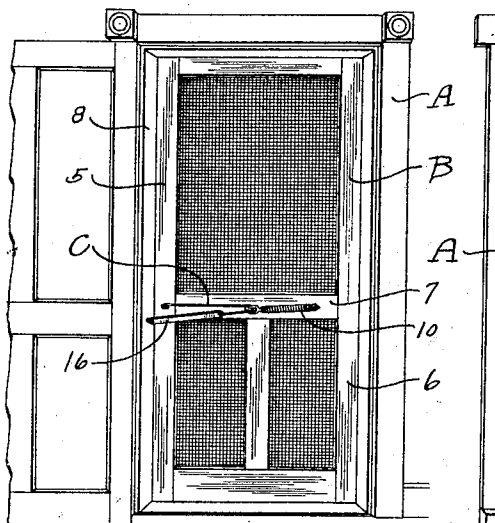


Fig. 2.

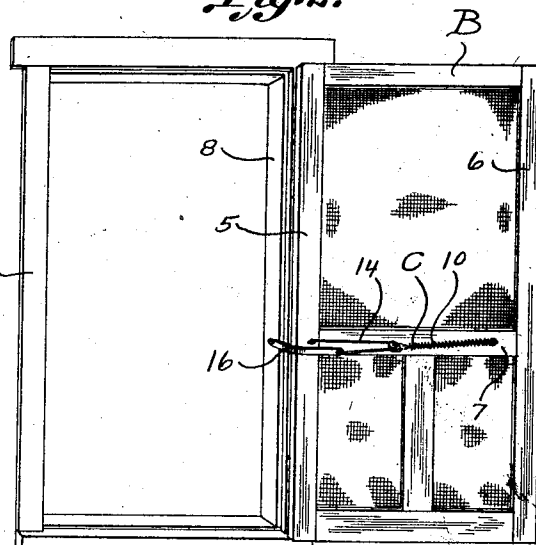
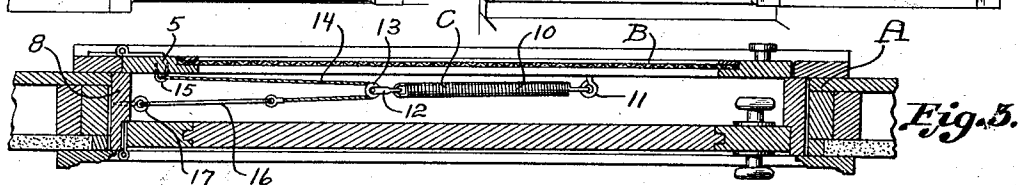
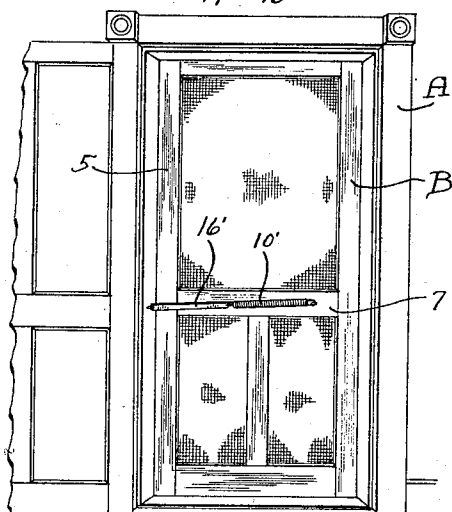
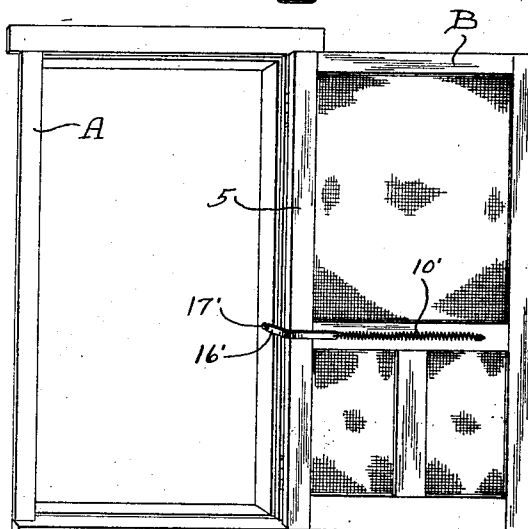
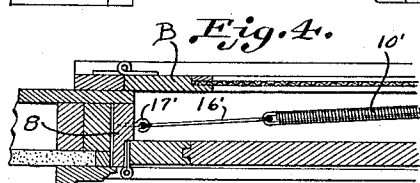


Fig. 5.

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DOOR OR GATE CLOSER

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The present invention relates to door or gate closers and the primary object of the invention is to provide an improved door closer of such construction as to remain operative for an indefinite period of time.

A further object of the invention is to provide a door closer permitting of the door being easily opened against tension of the closer and yet insuring closing of the door.

A further object of this invention is to provide a door closer embodying a construction whereby the spring is only distended for a short distance and thus allowing the spring to retain its tension for an indefinite period of time.

A further object of the invention is to provide a door closer wherein the spring is distended in a straight line thus eliminating possible kinking and weakening of the spring; and a door closer wherein marring of the door is eliminated when the door is swung to a fully open position.

A still further object of the invention is to provide an improved door closer of simple construction, and one which will insure closing of the door when swung to its fully opened position.

Other objects and advantages of the invention will be apparent during the course of the following detailed description, taken in connection with the accompanying drawings, forming a part of this specification and in which drawings,

Figure 1 is a view looking at the inner side of a screen door equipped with the improved closer.

Figure 2 is a view showing the door in the fully open position.

Figure 3 is an enlarged horizontal section taken through the door casing and clearly illustrating the manner in which the closer is applied.

Figure 4 is a view showing a slightly modified form of closer.

Figure 5 is a view showing the door in its fully open position, the door being provided with the form of closer shown in Figure 4.

Figure 6 is a fragmentary horizontal section through the door casing and showing the form of closer illustrated in Figures 4 and 5.

Referring to the drawings in details, and wherein similar reference characters designate corresponding parts throughout the several views, and with particular reference to Figures 1, 2 and 3, the letter A designates a door casing, B a screen door hinged to the casing A and C a closer for the door B.

The door B may be of any construction and in the example shown includes hinge and latch stiles 5 and 6 respectively and a rail 7. The door B may be hinged by the stile 5 to the jamb 8 of the casing A.

Referring now to the specific construction of the closer C, the same comprises a coil spring 10 having a hook provided at each end thereof, the hook at one end of the spring being connected in the eye of a screw eye 11 threaded into the rail 7, adjacent the latch stile 6. Connected in the eye at the opposite end of the coil spring 10 is a pulley including a yoke 12 in which is mounted a sheave 13. Trained about the sheave 13 is a flexible member 14 which may consist of a cord, chain or cable, one end of which is attached as by means of a staple 15 to the hinge stile 5. Attached to the opposite end of the flexible member 14 is a leaf spring or flat spring strip 16 having apertured ends, one end of which is intended to carry a screw eye 17 for attachment to the jamb 8 at an elevation slightly above or below the staple 15.

The flat spring strip is of a length greater than the width of the hinge stile 5 and extends with one flat face confronting the inner surface of the hinge stile. The strip 16 is secured by the eye 17 in spaced relation from the stile 5 and at an elevation on the jamb 8 below the staple 15 so that when the door is swung open the strip 16 will engage the hinge stile below the staple 15. By observing Figure 3 it will be seen that the tension of the coil spring 10 will normally hold the door closed.

When the door B is swung to the full open position as shown in Figure 2, the coil spring 10 is distended and the flat spring strip 16 is sprung about the corner edge of the hinge stile 5. The tendency of the spring strip to return to a straight position will exert a lateral pull on the cord 14 away from the rail

7 and impart initial movement to the door, after which the coil spring 10 will act to fully close the door. It will be observed that the spring 10 is not bent around the edge of the hinge stile when the door is open, but is distended in a straight line along the rail 7. The flat strip 16 engaging the hinge stile will have no tendency to mar the stile as in the case where the coil springs are connected between the door and door casing jamb. Owing to the pulley being connected to one end of the coil spring, the spring will only be stretched for a very short distance and thus the spring will retain its tension for an indefinite period of time.

The tension of the coil spring 10 may be varied through lengthening the flexible cord or cable 14, and this simple means will permit of the closer being readily applied to doors of various widths. While the coil spring has been shown attached to the rail 7, it will readily be apparent the eye 11 may be connected at any location along the latch stile 6. The closer may also be connected diagonally across the door if so desired, so that the closer will also act as means for preventing sagging of the door.

In Figures 4, 5 and 6 a closer has been shown where a quicker closing of the door is desired, and with this form of closer the flexible cord or cable 14 and the pulley are removed and one end of the flat spring strip connected directly to one end of the coil spring. In Figures 4, 5 and 6, 10' designates the coil spring connected at one end to the rail 7 and having the hook at its opposite end connected with one end of the leaf spring or flat spring strip 16', the opposite end of the strip being connected by the screw eye 17' to the jamb 8. With this form of closer the coil spring 10' will be distended for a greater length than that of the spring shown in Figures 1, 2 and 3, but will be distended in a straight line along the rail 7. The strip 16' will be sprung around the edge of the stile 5 and the normal tendency of the strip to straighten out will impart initial closing to the door.

In both illustrations of the invention it will be seen that the springs are distended in a straight line and that the spring strips are sprung about the hinge stile of the door for initial closing movement of the door.

From the foregoing it will be apparent that a novel and improved construction for closers of this kind has been provided which will be efficient in operation and remain in an operative condition for a long period of time. It will also be apparent that a novel construction has been disclosed permitting attachment to various sizes of doors, and a construction which will not mar the door to which the closer is applied.

Changes in detail may be made to the forms of invention herein shown and described,

without departing from the spirit of the invention or the scope of the claims.

I claim:

1. The combination with a door and its casing, of a coil spring having one end attached to the door adjacent the free edge of the door, a sheave carried by the free end of the spring, and a flexible pull cord trained over the sheave with one end attached to the door and having its opposite end connected with a jamb piece of said casing.

2. In a door closer the combination with a door including a hinge stile, and a casing for the door including a jamb piece, of a coil spring attached at one end to the door adjacent the free edge of the door, a pulley carried by the free end of the spring, a pull cord trained over the pulley and having one end attached to the hinge stile, a flat spring strip connected at one end to the free end of the pull cord and extending across the hinge stile, and means connecting the opposite end of the strip to said jamb at a location below the point of attachment of the pull cord to the hinge stile.

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