No. 801,829. PATENTED OCT. 10, 1905.

G. N. HALL.

DOOR CLOSER.

APPLICATION FILED FEB. 17, 1904.

Fig. 1.

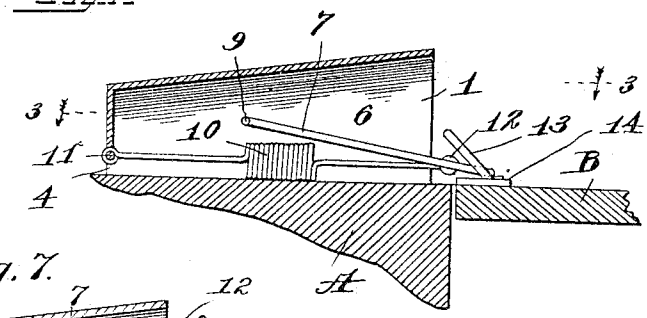



Fig. 7.

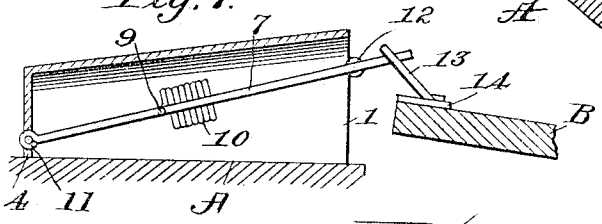



Fig. 2.

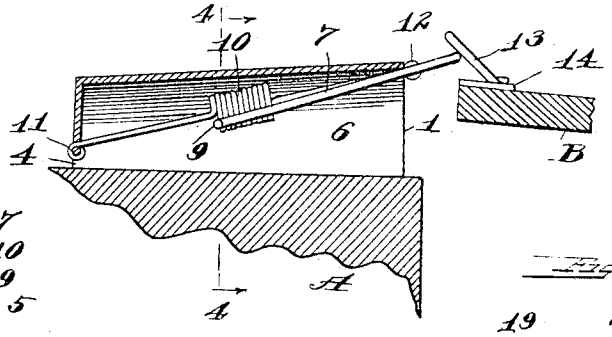



Fig. 4.

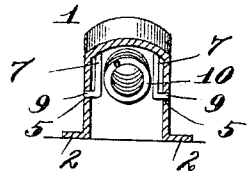



Fig. 5.

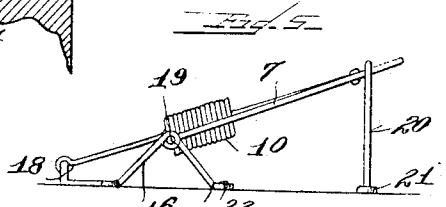



Fig. 3.

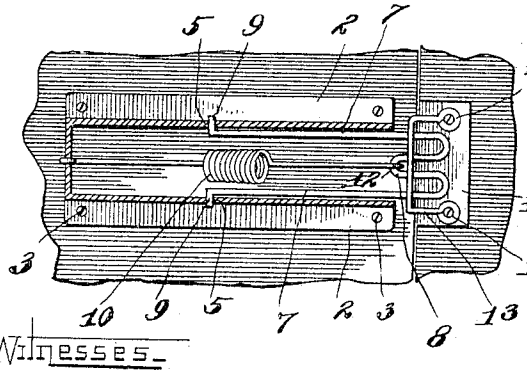
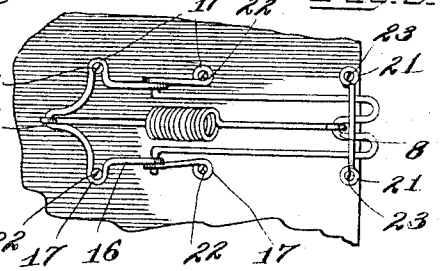



Fig. 6.




Witnesses.

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# UNITED STATES PATENT OFFICE.

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## DOOR-CLOSER.

No. 801,829. Specification of Letters Patent. Patented Oct. 10, 1905.

Application filed February 17, 1904. Serial No. 194,090.

*To all whom it may concern:*

Be it known that I, GEORGE N. HALL, a citizen of the United States, residing at Lincoln, in the county of Lancaster and State of Nebraska, have invented certain new and useful Improvements in Door-Closers, of which the following is a specification.

Door-springs now commonly in use exert their greatest force to close the door when the latter is opened to its widest extent and the least force when the door is closed. As a result spring-doors are easily opened, as by wind-pressure, by children, or animals. After the spring has become weakened by use it fails to close the door completely.

The object of this invention is the production of an automatically-operated device for closing a door when said door is brought within the field of action of said device, also for holding said door firmly closed against slight pressure tending to open it.

The invention further refers to the improvements in detail hereinafter pointed out.

In the accompanying drawings, Figure 1 is a longitudinal central section taken through the casing for this improved door-closer, showing the spring in elevation and the device in position to hold the door closed. Fig. 2 is a similar view showing the closer about to be actuated by the closing door. Fig. 3 is a longitudinal section through the device on dotted line 3 3 of Fig. 1. Fig. 4 is a transverse section through the closer on dotted line 4 4 of Fig. 2. Fig. 5 is a side elevation of the device, showing a supporting-frame formed from wire which may be substituted for the casing illustrated in the preceding figures. Fig. 6 is a top plan view of the device as shown in the last preceding figure. Fig. 7 is a view similar to Figs. 1 and 2, showing the spring and swinging frame upon a dead-center.

In the drawings, A refers to a door-casing, and B to a door.

In the construction of a door-closer embodying the features of my invention I provide a casing 1, the upper or outer face of which is inclined slightly from front to rear. At its sides the casing is provided with the outwardly-extending attaching-flanges 2, having perforations 3 for receiving screws by means of which the casing is secured in position. The forward end of the casing 1 is open, while the rear end is partially closed, the rear wall being provided near its lower edge with an opening 4, by means of which a spring, to be hereinafter described, is secured to said casing. In its opposite side walls near its rear end the casing is further provided with alined bearing-openings 5.

A frame 6, formed in this instance of wire and having two side bars 7, an inwardly-extending loop 8 at its outer end, and two bearing-studs 9, formed by turning the side bars outward at a right angle, is pivotally supported within the casing 1, said bearing-studs lying within the openings 5 in said casing. The frame 6 is of sufficient length to project outward through the forward open end of the casing 1, the forward end of said frame being connected with said casing by means of an extension coiled spring 10, the rear end of which spring is provided with a hook 11, extending through the opening 4 at the rear end of the casing, and the forward end with a hook 12 for engaging the loop 8 of said frame. The side bars 7 of the frame are sufficiently separated to permit the spring 10 to lie between them.

When the frame 6 is moved upon its pivotal supports to such position that the two bearing-points of the spring 10 are in a plane with the bearing-studs 9, the spring is at a dead-point or dead-center. Oscillating the frame in either direction shortens the distance between the ends of the spring. Therefore said spring tends to throw the frame in either direction from said center or dead-point. The forward end of the casing 1 forms the limits to the swinging movement of said frame. When the frame is in its outermost position—to wit, in contact with the top of the casing—it is on one side of said dead-center. When it is at the bottom of the casing, it is on the opposite side of said dead-center.

The casing 1 is secured, by means of screws passing through the perforations 3 in the flanges 2, to the outer face of the door-casing A adjacent to the doorway in such position that the forward end of the frame 6 projects into the doorway, On the outer face of the door and in position to be engaged by the forward end of the frame 6 I secure a wiper-bracket 13, having a base-plate 14 and projecting beyond the forward edge of the door. The wiper-bracket 13 is secured to the door by means of screws 15, passing through suitable openings in said base-plate and extending into the substance of the door.

When the door is in a closed position, the forward end of the swinging frame 6 projects underneath the wiper-bracket 13 and bears upon the base-plate 14. The tendency

of the spring 10 when the frame is in this position is exerted through said frame to hold the door closed. When the door is opened, the frame 6 is swung outward against the tension of the spring 10 until said frame passes the dead-point. Immediately upon passing the dead-center the pull of the spring suddenly throws the frame 6 outward, clearing the door and swinging said frame from the path of the door. This outward movement of the frame is limited by the upper wall of the casing 1. The frame 6 stands in this outer position until by a closing movement of the door the wiper-bracket is swung into engagement with the forward end of the frame 6, moving it inward of its dead-center. At the moment the frame 6 passes said dead-center the spring 10 exerts its pressure upon said frame to swing it to the bottom of the casing. The outer end of the frame is thrown into contact with the base-plate 14, and the pressure of the spring is thus exerted through said frame to close the door B.

In Figs. 5 and 6 a supporting-bracket 16 formed of wire is shown as a substitute for the casing 1. This bracket is provided with the attaching-eyes 17, the raised loop 18 for holding the rear end of the spring 10, and the eyes 19, forming alined bearings for the swinging frame 6. The movement of the forward end of the spring is limited by the yoke 20, formed separate from the bracket 16, which yoke is provided with the attaching-eyes 21. Screws 22 pass through the attaching-eyes 17 for the bracket and screws 23 through the eyes 21 of the yoke 20 and secure both to the door-casing A.

It is clear that various changes may be made in the embodiment herein shown of this invention without departing from the spirit and scope thereof. I therefore desire not to limit myself to the particular construction illustrated and described.

I claim as my invention—

1. In a door-closer, in combination, a supporting structure having side bearings and adapted to be secured to a door-casing; a frame pivotally mounted at one of its ends in said bearings and projecting forwardly beyond the end of said structure; a spring connected at one end with the rear end of said structure and at its other end with the free end of said frame; means for limiting the pivotal movement of said frame; and a wiper-bracket secured to the door in position to engage the forward end of said frame.

2. In a door-closer, in combination, a supporting structure having bearing-openings in its side walls intermediate its ends and an open forward end, said structure being adapted to be secured to a door-casing; a frame comprising two side bars, the ends of said side bars being turned outward to form bearing-studs adapted to lie in said bearing-openings, said frame projecting forwardly through the open forward end of said structure; a spring connected at one end with the rear end of said structure and at its other end with the free end of said frame, one side of said structure forming a stop upon which said frame is arranged to impinge to limit the pivotal movement of said frame; and a wiper-bracket secured to the door in position to engage the forward end of said frame.

GEORGE N. HALL.

Witnesses:
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GEORGE L. CHINDAHL.