

(No Model.)

C. A. ROOT.  
DOOR CLOSER.

No. 441,899.

Patented Dec. 2, 1890.

Fig. 1.

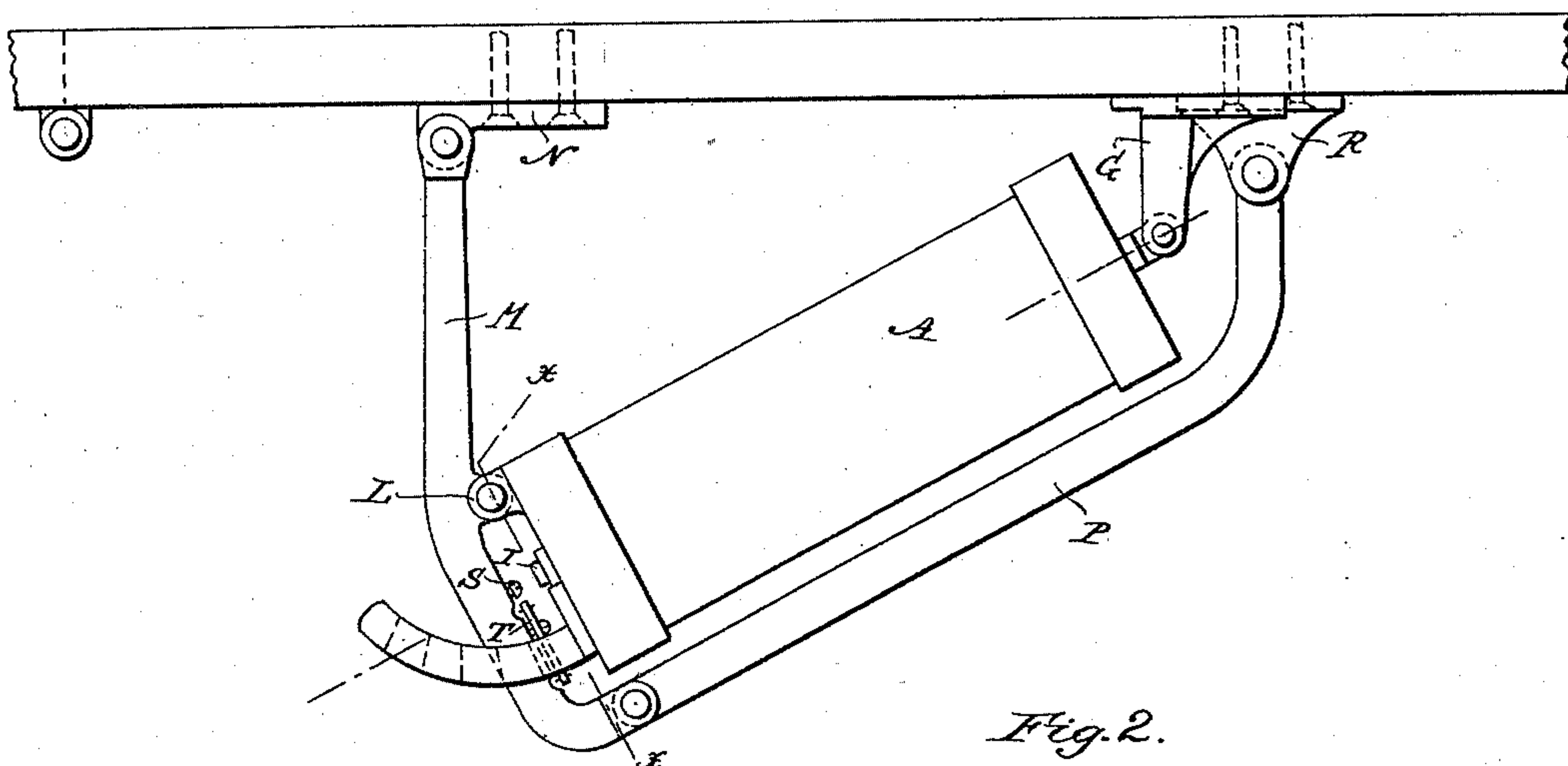


Fig. 2.

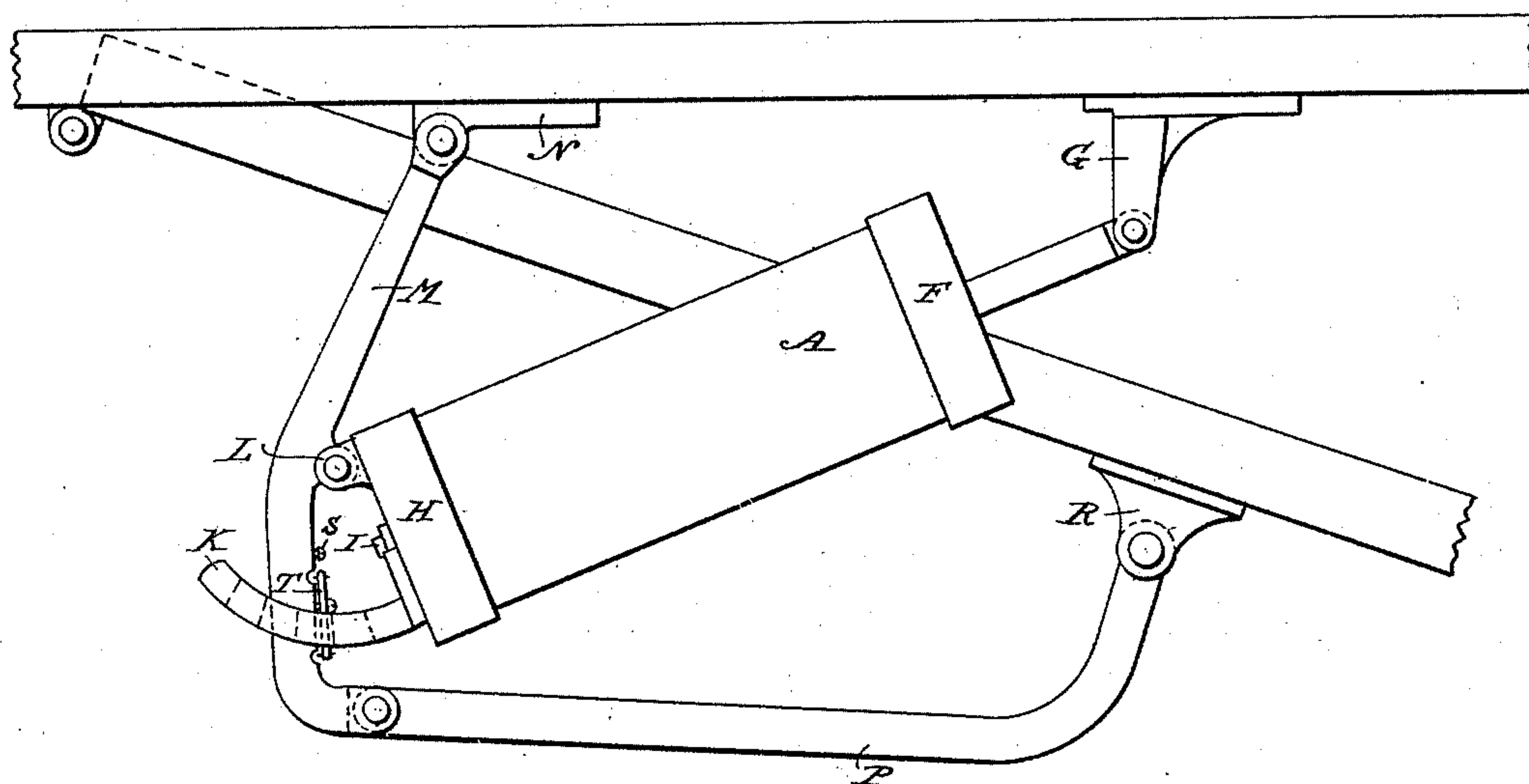


Fig. 3.

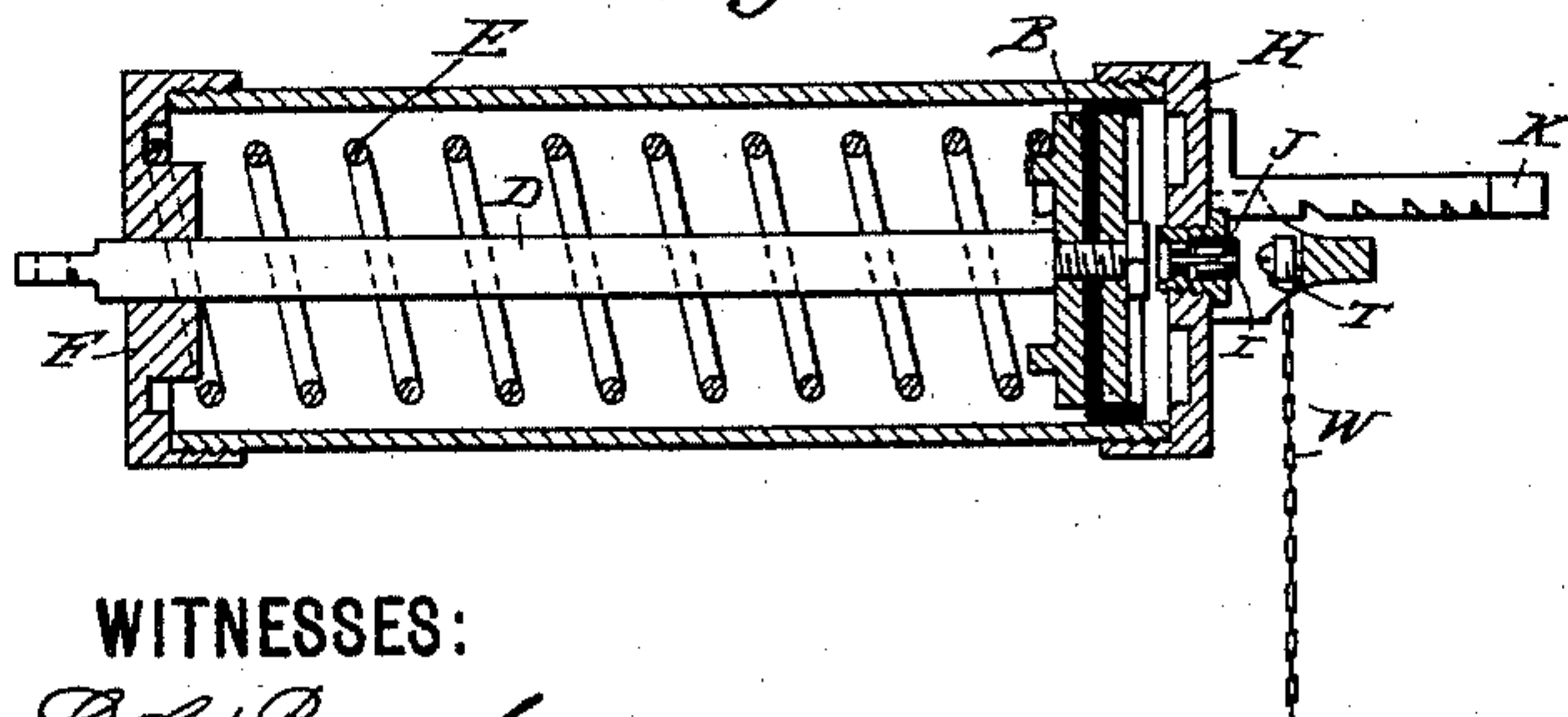
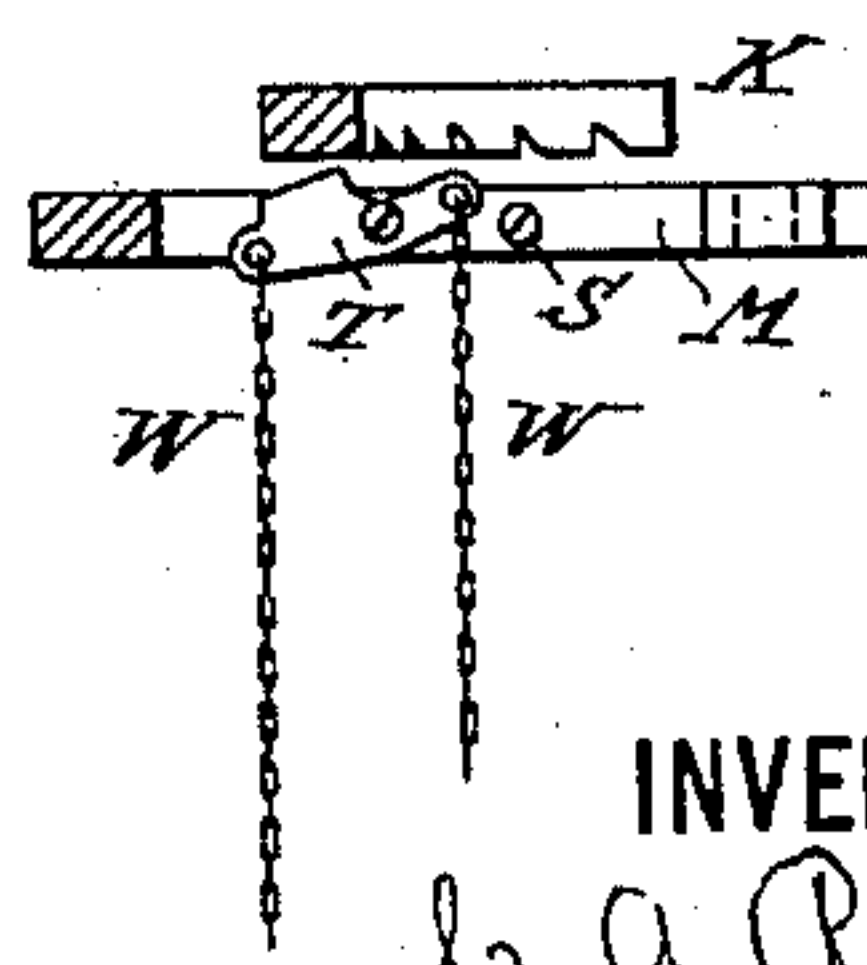


Fig. 4.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## DOOR-CLOSER.

SPECIFICATION forming part of Letters Patent No. 441,899, dated December 2, 1890.

Application filed May 26, 1890. Serial No. 353,144. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES A. ROOT, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Door-Closers, of which the following is a specification.

My invention relates especially to devices employed for closing doors, and has for its object the provision of means and mechanism whereby a door will be automatically closed in such a manner as to make no noise after being opened, and whereby the door may be held open at any desired point, while at the same time it is free to open a greater distance without manipulating the stop.

To attain the desired end my invention consists, essentially, in a cylinder having a piston therein, the rod whereof is pivoted to a bracket fixed to the frame above the door. The piston is packed in the usual manner, and a coiled spring is placed between the piston and the cylinder-head around the piston-rod. The opposite cylinder-head from that from which the piston-rod projects is provided with a central valve, a curved notched arm, and a bearing at one side for engaging with a lever, also pivoted to a bracket secured to the door-frame above the door. To this lever is pivoted a curved arm, which engages with a finger or bracket secured to the door near the top. Above the curved notched arm, upon the cylinder-head and upon the lever pivoted to said head, is placed a trigger or stop arranged to be brought into engagement with or withdrawn from said notched arm by means of chains or equivalent devices secured to its extremities, all of which will be hereinafter first fully described, and then pointed out in the claims.

In the drawings, Figure 1 is a plan view of my device, shown as attached to a door, the door being closed. Fig. 2 is a like view showing the door as partially opened. Fig. 3 is a longitudinal sectional view. Fig. 4 is a cross-sectional view at line  $x x$  of Fig. 1, looking away from the cylinder.

Like letters of reference, wherever they occur, indicate corresponding parts in all the figures.

A is a cylinder made of any approved material.

B is a piston located therein and provided with a rod D, which passes through the head F.

E is a spring encircling the rod D, bearing against the piston and the head F of the cylinder. The outer extremity of the piston-rod is pivoted to a bracket G.

The cylinder-head H is provided with a central valve I, having a projecting stem J.

K is a curved notched arm secured to or formed with the head H.

L is a perforated bearing at the side of the head H.

M is a lever pivoted to a bracket N, fixed to the frame above the door, to the bearing L at the side of the cylinder-head, and to an arm P, passing to a finger or bracket R, secured to the door. Lever M bears a pin or screw S, adapted and arranged to press upon the valve-stem J when the door is nearly closed, opening the valve wide, so as to insure full action of the spring to cause the latch of the door to catch.

T is a trigger or stop pivoted to the lever M and provided with dependent chains W or their equivalent, whereby the trigger may be caused to engage with or be released from the notched arm, holding the door open at any desired point.

When constructed and arranged in accordance with the foregoing description, my improved door-closer will be found to have great power, for the reason that when the door is fully closed the cylinder and piston-rod are at an angle outward from the point of engagement with the door, and as the door is opened and the spring compressed the leverage exerted upon the door decreases until the door is at right angles to the frame; but as the door is forced shut when released the leverage exerted increases as the spring loses its power, and thus the proper closing of the door is insured. The valve in the cylinder-head allows the air to escape slowly from the cylinder while the door is closing until it is nearly shut, when the pin S strikes the valve-stem, opening the valve wide, permitting the spring to close the door instantly the remaining distance.



By the use of the notched bar at the end of the cylinder and the trigger or stop the door may be held open at any desired point; but should it be pushed or drawn open a greater distance the trigger will offer no resistance, but be at once released from engagement with the bar.

Having now fully described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. A door-closer in which is comprised a cylinder containing a piston, piston-rod, and spring, a bracket for securing to a door-frame and to which the piston-rod is pivoted, an arm pivoted to a bearing upon the edge of the cylinder-head opposite to the head through which the piston-rod projects and to a bracket for securing to a door-frame, the outer extremity of said arm extending beyond the cylinder-head and engaging with a rod or arm

located outside of the cylinder and extending to a pivot in a bracket for securing to a door, the whole combined and arranged substantially as shown and described.

2. The combination, with the cylinder-head and the lever pivoted at the side thereof, of the notched arm projecting from said head and the trigger pivoted upon the lever, substantially as shown and described.

3. The combination, with the cylinder and its connections to a door-frame and door, of an arm projecting from the cylinder and a trigger adapted and arranged to engage with said arm, whereby the door may be held open, substantially as shown and described.

CHAS. A. ROOT.

Witnesses:

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