No. 768,825. PATENTED AUG. 30, 1904.

R. R. SMITH.

DOOR STOP.

APPLICATION FILED SEPT. 3, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.

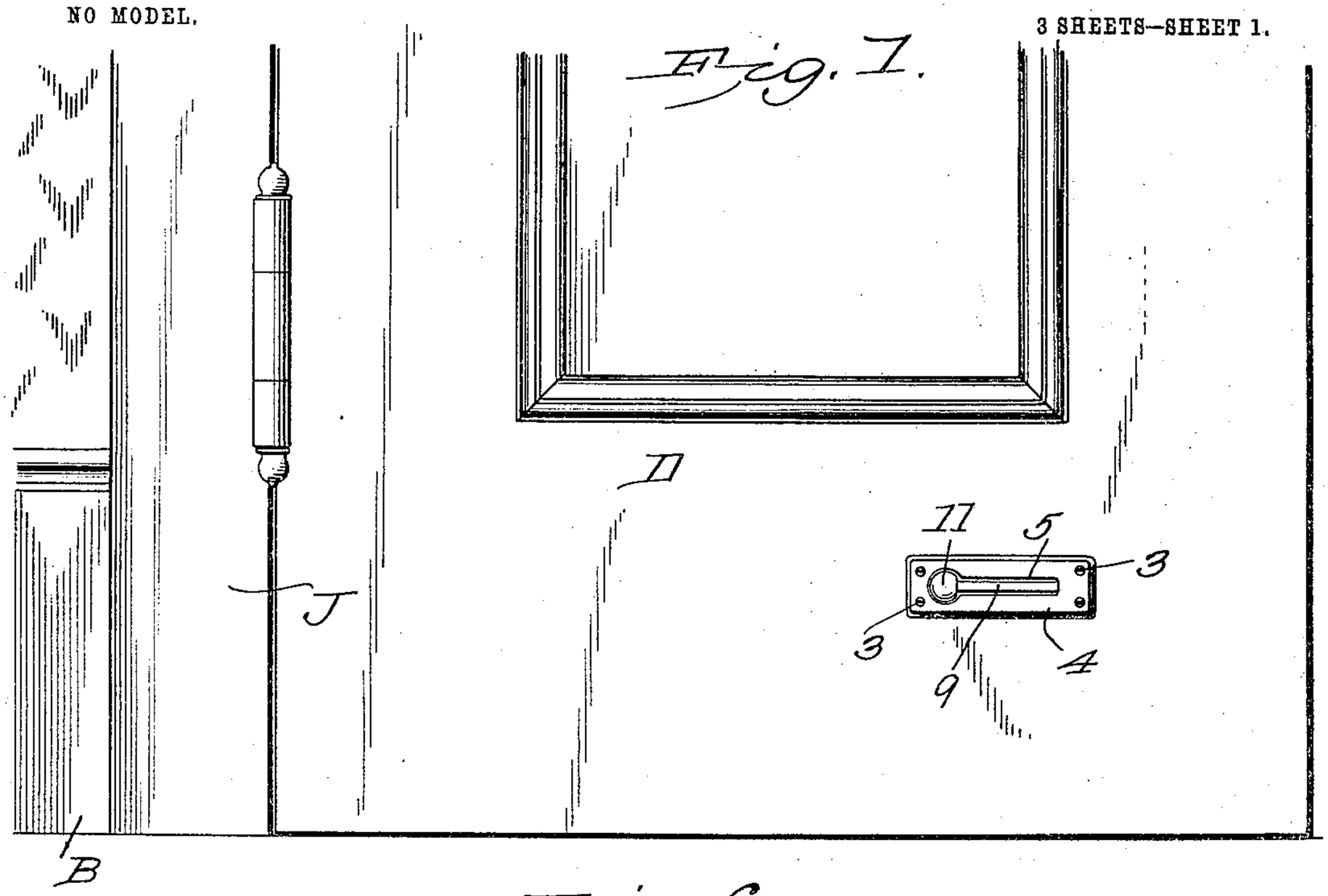


Fig. 6.

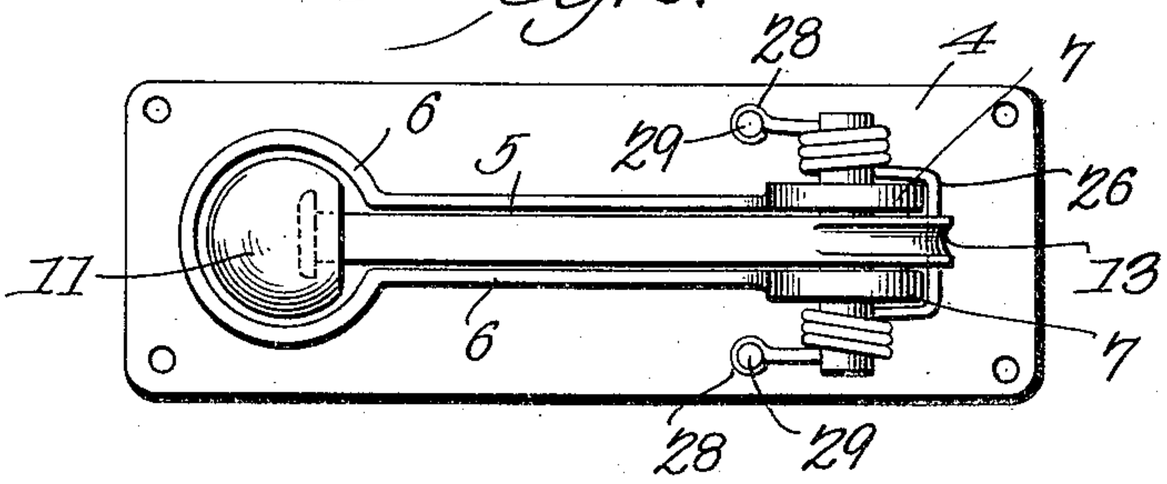


Fig. 7.

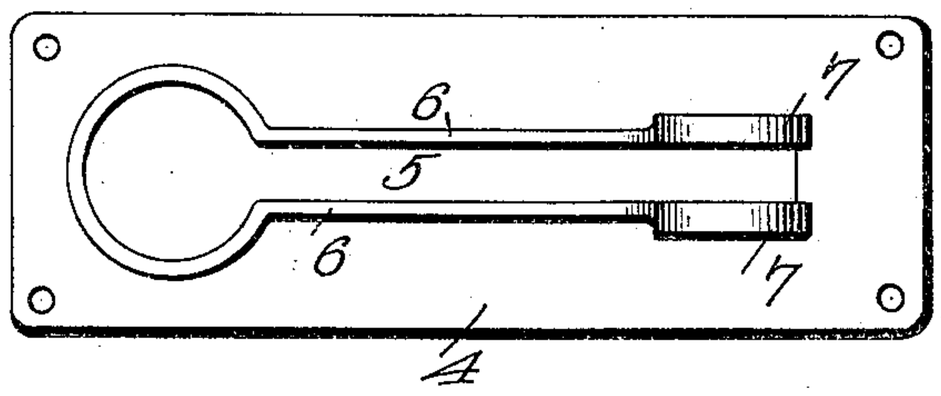
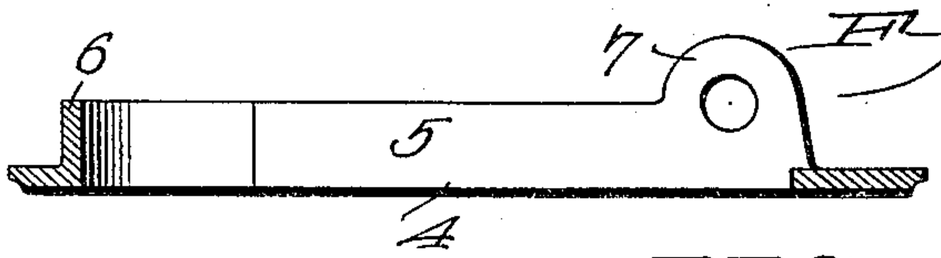


Fig. 8.



Witnesses
E. F. Stewart
Baxter Morton

R. R. Smith, Inventor.
by Church & Co
Attorneys

No. 768,825. PATENTED AUG. 30, 1904.

R. R. SMITH.

DOOR STOP.

APPLICATION FILED SEPT. 3, 1903.

NO MODEL. 3 SHEETS—SHEET 2.

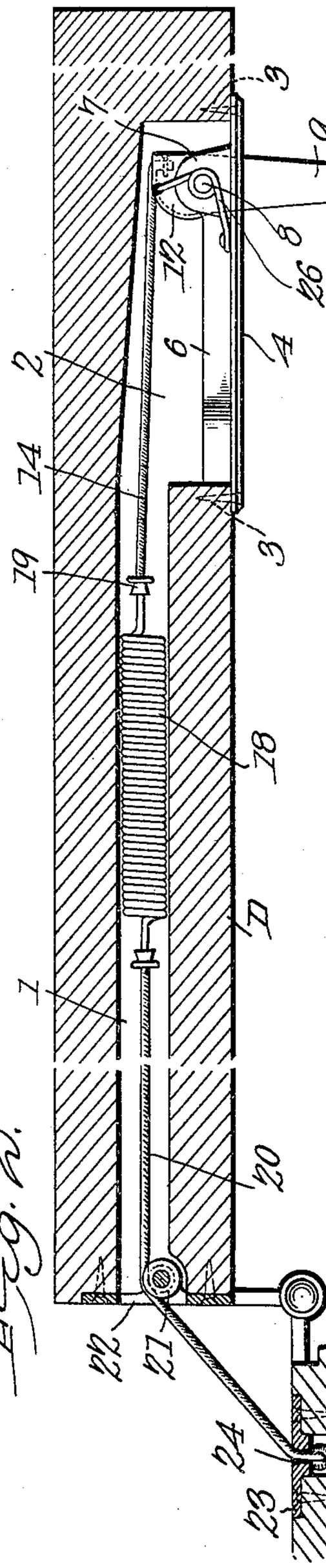


Fig. 2.

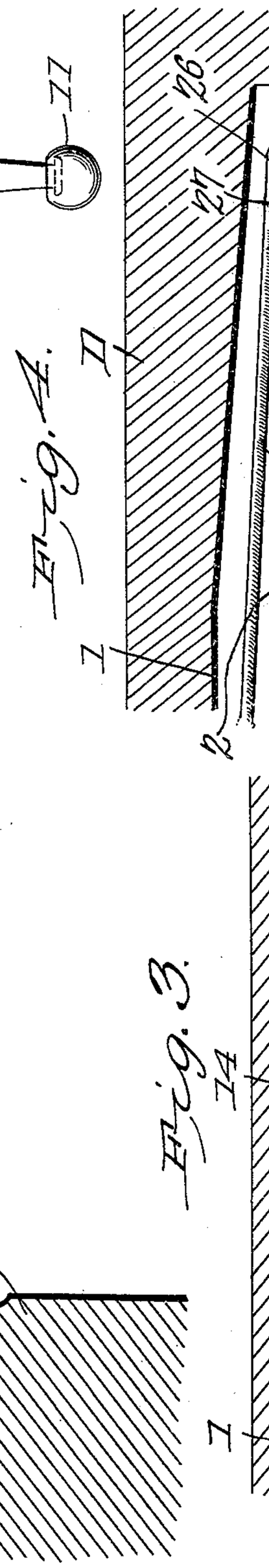


Fig. 4.

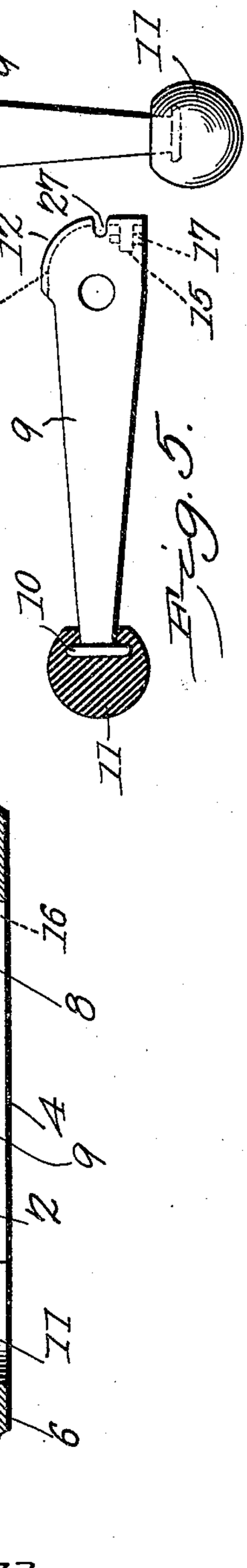


Fig. 5.

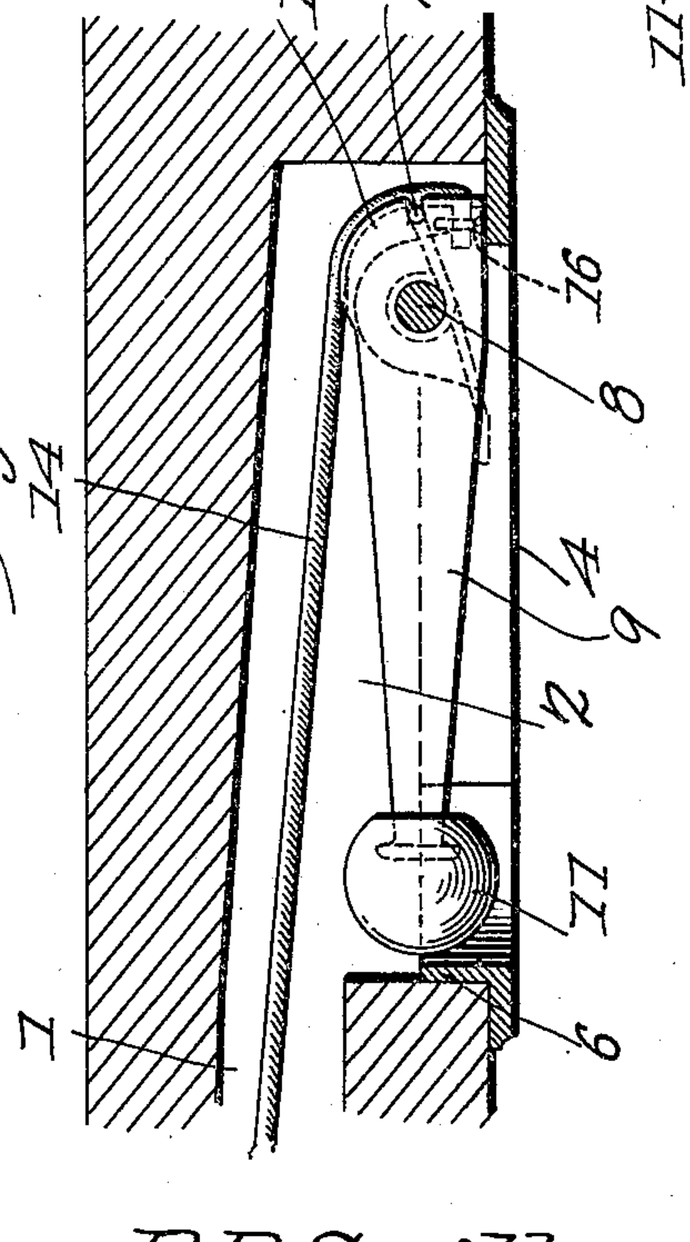


Fig. 3.

Witnesses
E. F. Stewart
Baxter Morton

R. R. Smith, Inventor.
by Church & Co
Attorneys

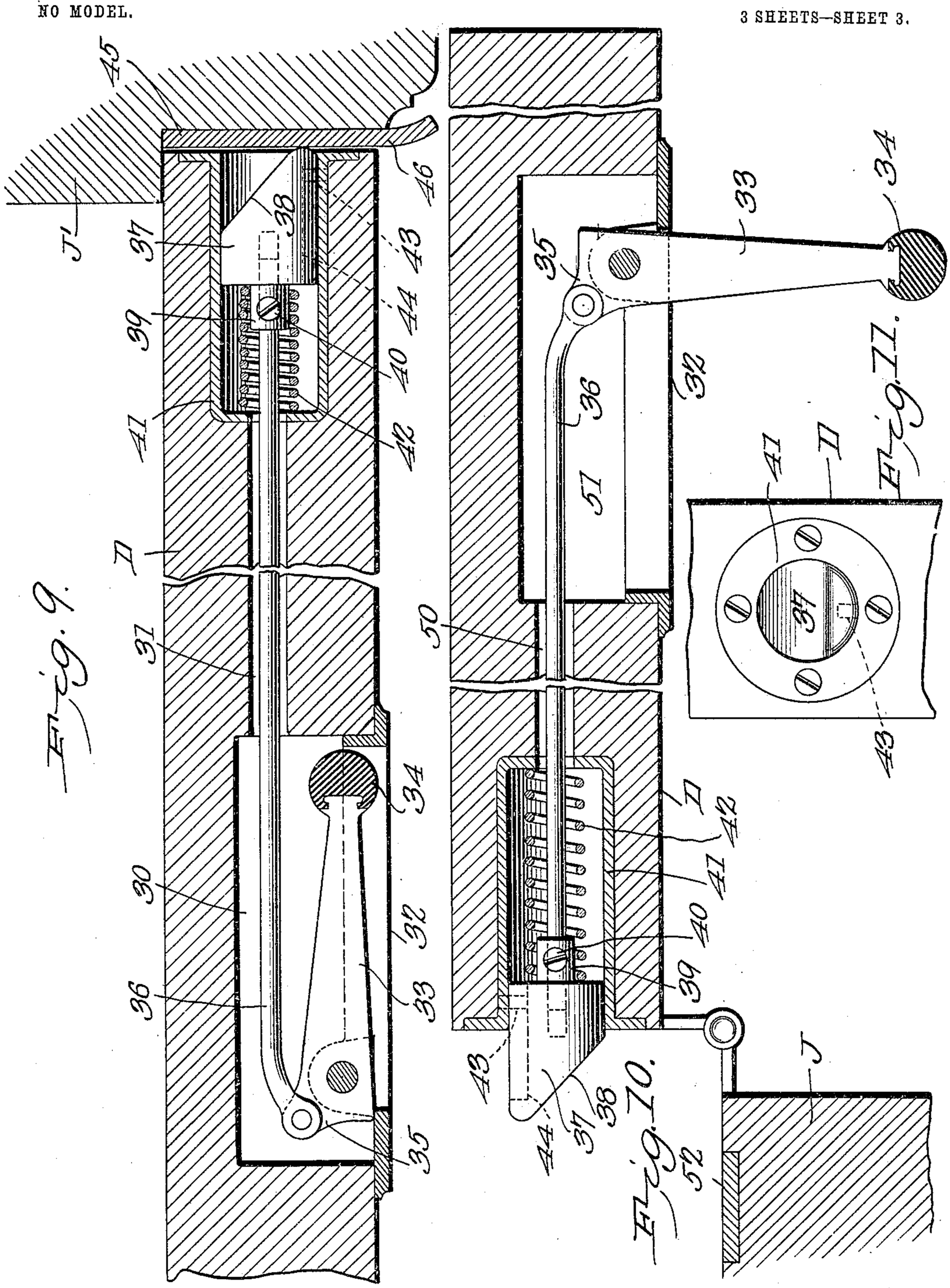
No. 768,825. PATENTED AUG. 30, 1904.

R. R. SMITH.

DOOR STOP.

APPLICATION FILED SEPT. 3, 1903.

NO MODEL. 3 SHEETS—SHEET 3.



Witnesses
E. F. Stewart
Baxter Morton

Inventor
R. R. Smith,
by Church & Co
Attorneys

No. 768,825. Patented August 30, 1904.

UNITED STATES PATENT OFFICE.

ROBERT R. SMITH, OF PHILADELPHIA, PENNSYLVANIA.

DOOR-STOP.

SPECIFICATION forming part of Letters Patent No. 768,825, dated August 30, 1904.

Application filed September 3, 1903. Serial No. 171,807. (No model.)

To all whom it may concern:

Be it known that I, ROBERT R. SMITH, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Door-Stop, of which the following is a specification.

The invention relates to devices for stopping the swinging movement of a door in order to prevent injury to the wall through contact of the door-knob therewith.

It is well known that when no means is provided for stopping the swinging movement of a door when thrown open the door-knob will come into more or less violent contact with the wall, and thereby seriously injure the plastering and any decoration provided thereon. The devices commonly employed for stopping the movement of the door before the knob comes into contact with the wall are all more or less objectionable, because they project outward from the face of the wall or from the door and are both unsightly and in the way. The knobs bearing cushioned tops, which form the most widely-used means for stopping the door, are generally screwed to the base-board which runs along the wall and project outward into the room for a distance of several inches, so that they are plainly noticeable and interfere to a considerable extent with the cleaning of the room.

This invention is designed to supplant the devices commonly in use for stopping the movement of the door and to obviate all of the objectionable features of the devices heretofore employed for that purpose.

To this end the invention consists in the novel construction and combination of parts of a door-stop hereinafter fully described and illustrated in several forms of embodiment in the accompanying drawings, it being understood that various changes in the form, proportions, and manner of assemblage of the elements may be resorted to without departing from the spirit of the invention or sacrificing any of the advantages.

In the drawings, Figure 1 is a view in elevation of the lower portion of the door, a door-jamb, and a part of the adjoining base-board, showing the stop in position on the door. Fig. 2 is a view, on larger scale, in horizontal section through the door in the plane of the stop, the door being shown as open. Fig. 3 is a sectional detail view on still larger scale, showing the stop in closed position. Fig. 4 is a view similar to Fig. 3, showing the stop in open position. Fig. 5 is a detail view of the stop-lever. Fig. 6 is a view of the stop-lever and its support as seen from the rear. Fig. 7 is a view from the rear of the supporting-plate. Fig. 8 is a horizontal section through the supporting-plate. Fig. 9 is a horizontal section through the door, showing a modified form of the device in closed position. Fig. 10 is a view in horizontal section through the door, showing another modified form of the invention. Fig. 11 is an end view of the device shown in Fig. 9.

Referring to the drawings, in which corresponding parts are designated by the same characters of reference, D represents a door hinged to a jamb J and contacting at its free edge with another jamb, J'. In the form of the invention first to be described the door is provided near the bottom with a horizontal channel 1, extending from the edge of the door at which it is hinged to a point near the free edge, where the channel merges into an oblong recess 2, cut in the face of the door. In the recess 2 there is secured, preferably by screws 3, an oblong plate 4, having a longitudinal opening 5 enlarged at one end, as shown, and surrounded by a web 6, which extends into the recess 2. At the narrow end of the slot 5 the web 6 merges into a pair of perforated lugs 7, through which passes a pin 8, bearing a lever 9, which is adapted to swing from the position shown in Fig. 3, in which the lever is shown as disposed within the recess 2, to the position shown in Fig. 4, in which the lever is projected at right angles to the face of the door. The lever 9 tapers from the pivotal point toward the end and terminates in an enlarged extremity 10, over which is fitted a rubber cap, which is held in place by the natural resiliency of the rubber and which is designated 11. The cap 11 is of sufficient thickness to form a cushion which will take up the shock due to the momentum of the door when the cap is brought into contact with the base-

board B. The end of the lever 9, which for convenience will be referred to as the "head," is formed with a quadrantal curve 12 on the back and is grooved at 13 for the reception of a suitable flexible operating member, such as the small wire rope 14. To receive the rope 14, a hole 15 is drilled into the head of the lever 9 at the end of the groove 13, and to secure the rope in position a pin 16 is driven into an opening 17, disposed at right angles to the opening 15. The rope 14 is attached at one end to the head of the lever, as already explained, and at the other end is secured within an eye at one end of the coil-spring disposed in the channel 1 and designated 18. The rope 14 is secured to the spring 18 in any preferred manner, as by forming a mass of solder 19 on the end of the rope. At the end of the spring 18 opposite its attachment to the rope 14 is fastened a similar rope 20, which is secured in similar manner by a mass of solder 19. The rope 20 extends through the channel 1, passing over the grooved roll 21 of a small sheave 22, similar to those employed in suspending sash-weights, and mortised into the edge of the door adjacent to the hinge. The end of the rope 20 which extends through the channel 1 is fastened to the door-jamb J by means of a retention-plate 23, which is provided with an eye 24 large enough to admit the rope 20, but too small for the passage therethrough of the knot 25 on the end of the rope. When the door is closed, the parts of the device will lie in the position indicated in Fig. 3, the lever 9 being held within the recess 2 by means of a spring 26, coiled around the end of the pin 8. The spring 26 has midway between its ends a looped portion engaging a notch 27 in the head of the lever, and at its ends is provided with eyes 28 for engagement with small studs or pins 29, provided on the inner face of the plate 4.

In assembling the parts of the mechanism, the channel 1 and the recess 2 having first been formed in the door, the rope 14 will be secured to the lever 9 and to the spring 18, and the rope 20 will be attached to the other end of the spring. The rope 20 will then be passed from the recess 2 through the channel 1, and the spring 18, with the rope attached thereto, will be drawn into the position shown in Fig. 2. The plate 4 will then be secured in position and the sheave 22 slipped over the rope 20 and fastened upon the edge of the door. The plate 23 will next be slipped over the rope 20, and the proper position for the knot 25 will be determined by drawing the rope taut. The knot will then be formed and the surplus rope cut off. Finally the plate 23 will be attached to the door-jamb, and the device will be ready for use.

From the description and the drawings it will be evident that when the door is closed and the spring 18 is contracted the lever 9 will lie within the recess 2 in the door-face, but when the door is swung open the movement of the door away from the jamb will cause the extension of the spring 18, with a consequent pull upon the rope 14 sufficient to overcome the tension of the spring 26 and swing the lever 9 into position at right angles to the door-face. This position of the lever will be attained before the door is opened to its fullest extent, and the lever will be held in this position by contact with the end of the slot in the plate 4, the spring 18 being sufficiently extensible to permit the door to continue to swing on its hinges until the door is fully open. If the door is so placed that it can swing to an angle of ninety degrees only, the parts will be so arranged that the lever 9 will be swung into the position at right angles to the door when the door has swung through an angle of about forty-five degrees. If, however, the door is adapted to swing through one hundred and eighty degrees, the lever 9 will be arranged to reach the position at right angles to the door when the door has been swung through ninety degrees or more.

In Figs. 9 and 10 are shown two slightly-different modified forms of the invention in which the elements are substantially the same, but in which the mode of arrangement is different. Referring first to Fig. 9, 30 designates a channel extending from the free edge of the door a short distance inward and merging into a recess 31 into the face of the door. In the recess 31 is secured a plate 32 similar to the plate 4, and pivotally mounted at the inner end of the plate 32 is a lever 33 provided at the end with a cap 34 of rubber. The head of the lever is provided with a short arm 35, to which is pivotally connected a rod 36, which extends through the channel 30 and has attached to the end thereof a block 37, provided with a beveled face 38, the block 37 is provided at its inner end with a sleeve 39 for the reception of the rod 36, and a clamping-screw 40 is provided to secure the rod in the sleeve. The block 37 is mounted for sliding movement in a socket 41, which is secured in a counterbored end portion of the channel 30. The block is held normally protruded from the end of the socket by means of a spring 42, its movement being guided by the engagement of a guide-pin 43 with a slot 44 in the side of the block. The block 37 is adapted to engage when the door closes with a plate 45, having a curved lip 46 at its front margin, and by engagement with the plate 45 the block 37 will be forced inward when the door closes and will compress the spring 42. The inward movement of the block 37 will turn the lever 34 to the position shown in Fig. 9, with the lever disposed in the recess 31. When the door is open, however, the spring 42 will act to throw the block 37 outward, drawing the rod 36 with it and swinging the lever 33 to a position at right angles with the door-face, in which it will be

held by contact with the end of the slot in the plate 32.

In Fig. 10 the door is shown as provided with a channel 50, extending from the edge of the door adjacent to the hinge and merging into a recess 51 in the face of the door. In the recess 51 and the channel 50 are secured the parts of the door-stop described as mounted in the channel 30 and recess 31; but owing to the greater length of the channel 51 the rod 36 must be longer when used there than when used in the channel 31, and the inclined face 38 of the block 37 will be disposed in the direction opposite to that taken when the device is fixed at the free edge of the door. To contact with the block 37, I provide on the jamb J a bumper-plate 52, which is flat and is let into the surface of the jamb in proper position to be engaged by the inclined end of the block 37 when the door is closed.

The operation of the device when mounted in channel 50 and recess 51 is substantially the same as when mounted at the opposite edge of the door, the only difference being that the inclined face 38 of the block 37 does not slide over the edge of the bumper-plate 52 as it does over the plate 45. Instead the end of the block 37 is pressed against the face of the plate 52 and has a very limited sliding movement thereover.

In all of the forms of the invention which have been described the stop-lever is held in inoperative position when the door is closed and lies within a recess in the door-face, where it is entirely out of the way and is not exposed to view. When the door is open, however, the lever is automatically swung into operative position at right angles to the face of the door and is so held when the door reaches the limit of its swing.

The rubber cap provided on the end of the stop-lever prevents entirely any injury to the wall by keeping the door-knob out of contact therewith and taking up all the shock due to the impact of the door. The cap is, moreover, detachably associated with the stop-lever, so that when the cap becomes worn or hardens, as rubber will eventually do, it may be readily removed and replaced by another cap.

The whole device is simple, positive in operation, and inexpensive to manufacture. It can be quickly applied to a door without defacing it and when in position is a sightly and very ornamental attachment.

Having thus described the construction and operation of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A door-stop comprising a wall-engaging member carried by the door and held normally in inoperative position and automatically thrown into operative position when the door is opened.

2. A door-stop comprising a wall-engaging member pivotally mounted on a door, and means for holding said member in inoperative position when the door is closed and for swinging said member into operative position when the door is opened.

3. The combination with a door having a recess in the face thereof, of a stop member pivoted in said recess, a spring to hold said member within said recess when the door is closed, and means operative when the door is opened for swinging said member out of said recess.

4. The combination with a door, of a stop member mounted thereon, means for holding said stop member normally in inoperative position, and a flexible connection between said member and the door-jamb by means of which said member will be thrown into operative position when the door is opened.

5. The combination with a door and a door-jamb, of a stop member movably mounted on the door, means for keeping said member normally in inoperative position and an elastic connection between said member and the door-jamb whereby said member will be thrown into operative position when the door is opened.

6. The combination with a door having a channel therein, of a wall-engaging member movably mounted on the face of the door, means for holding the said stop member normally inoperative and a connection between said member and the door-jamb and disposed in said channel for throwing said member into operative position when the door is opened.

7. The combination with a door, of stop member movably mounted thereon, means for holding said stop member normally in inoperative position, and a connection comprising a spring between said member and the door-jamb, whereby said member will be moved into operative position when the door is opened.

8. The combination with a door having a channel and the door-jamb, of a stop member movably mounted on the door, means for holding said member normally in inoperative position, a flexible connection attached to said member extending through said channel and attached to the door-jamb, and a sheave at the end of the channel over which said flexible connection travels.

9. A door-stop comprising a supporting-plate having webs on one face thereof and a slot between said webs, a member pivotally supported in said slot, means on said member for holding it normally within said slot, and means operative when the door is opened to swing the stop member out of the slot.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ROBERT R. SMITH.

Witnesses:

M. Moon Child,

Henry B. Tawresey.