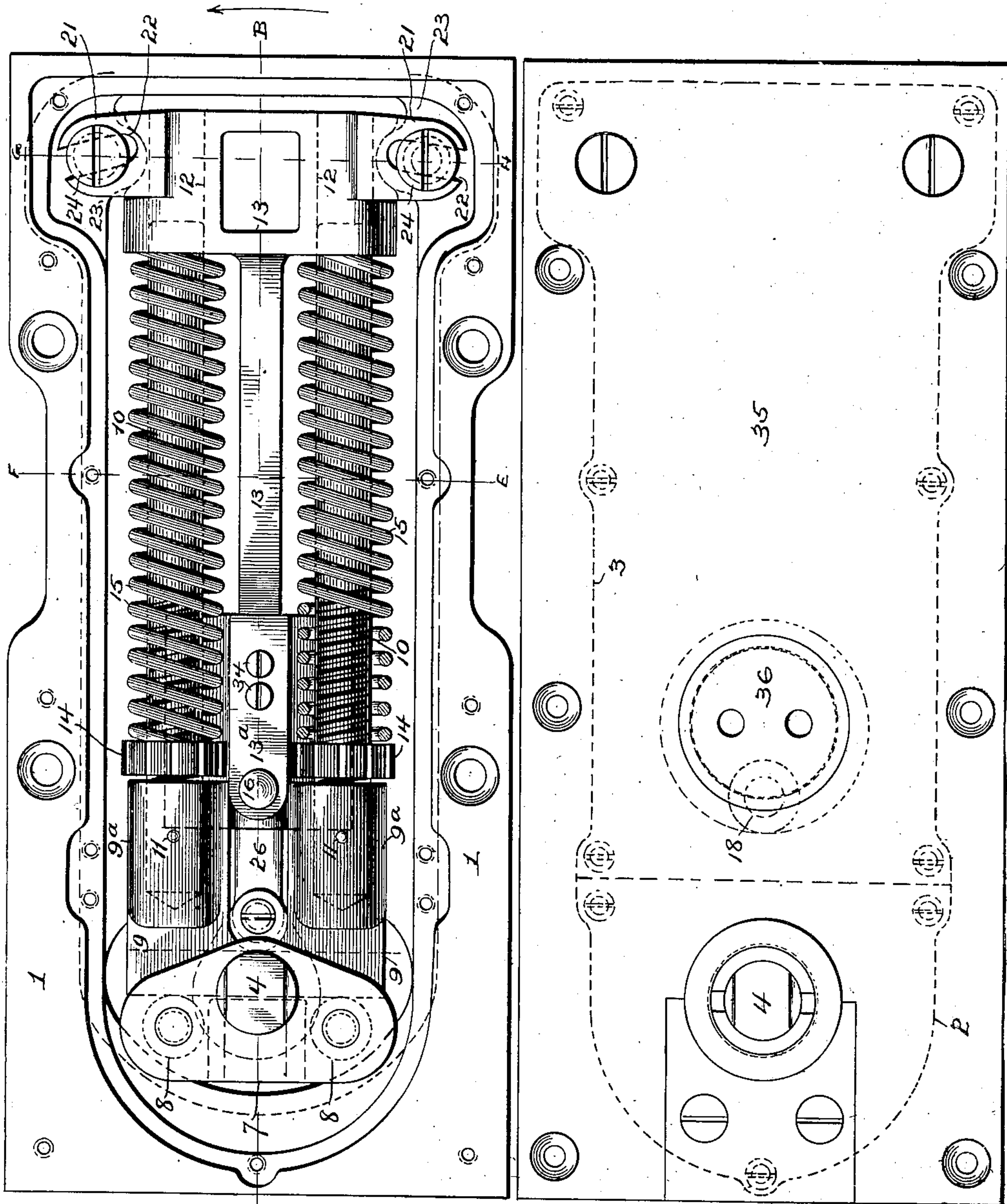


J. C. REGAN.
DOOR CHECK AND CLOSER.
APPLICATION FILED DEC. 14, 1909.

962,916.

Patented June 28, 1910.

3 SHEETS—SHEET 1.



WITNESSES
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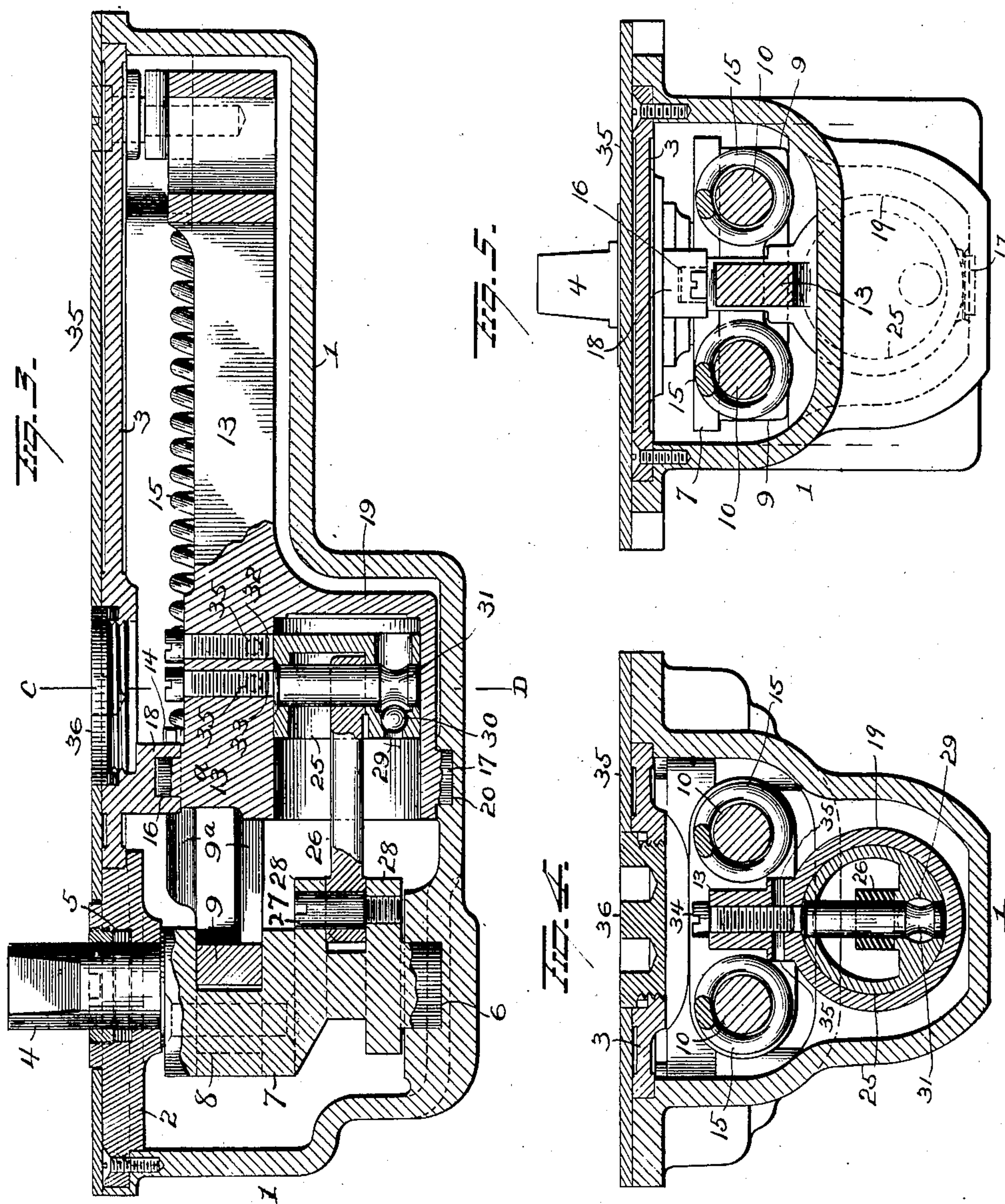
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 6.

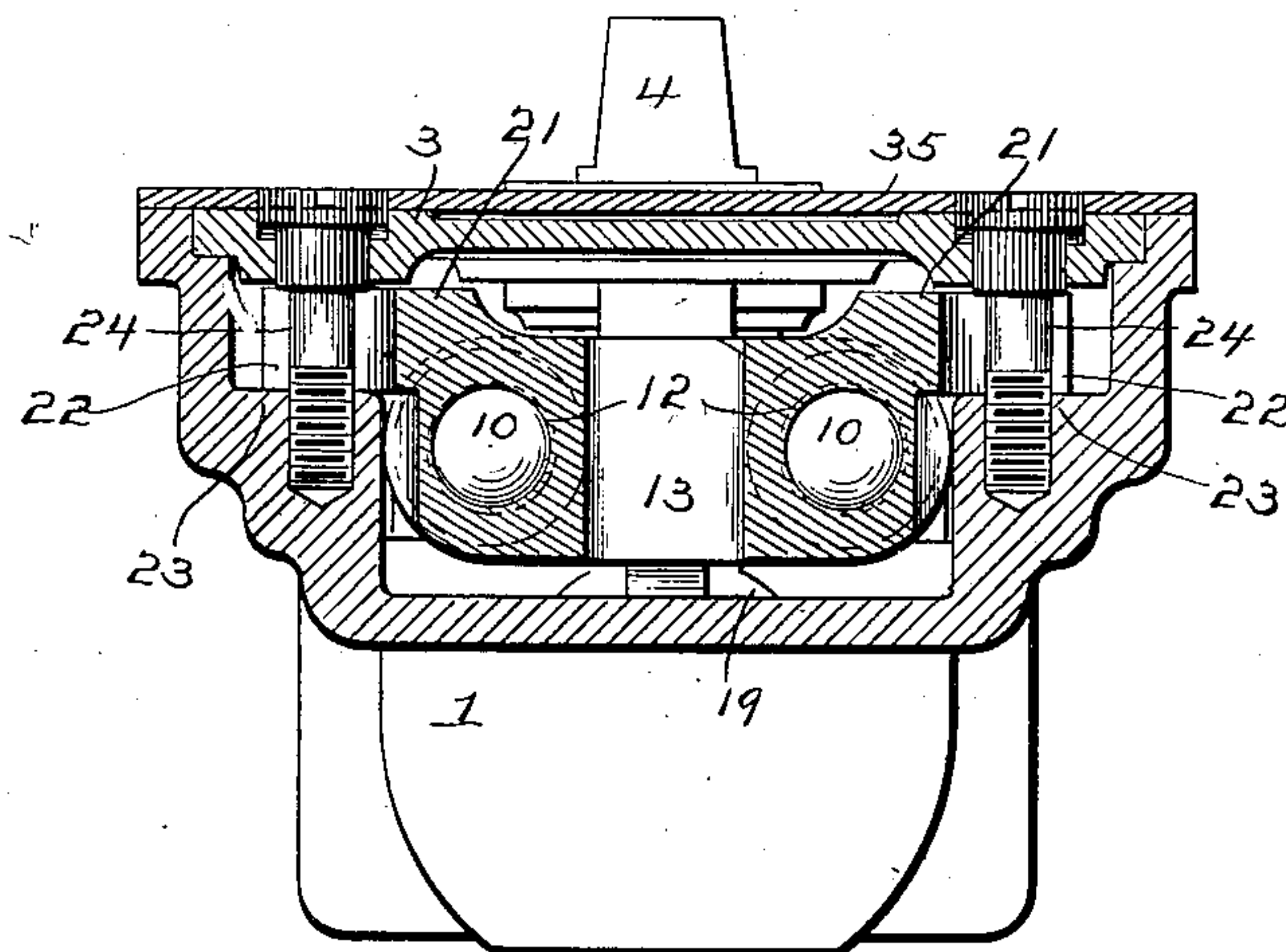
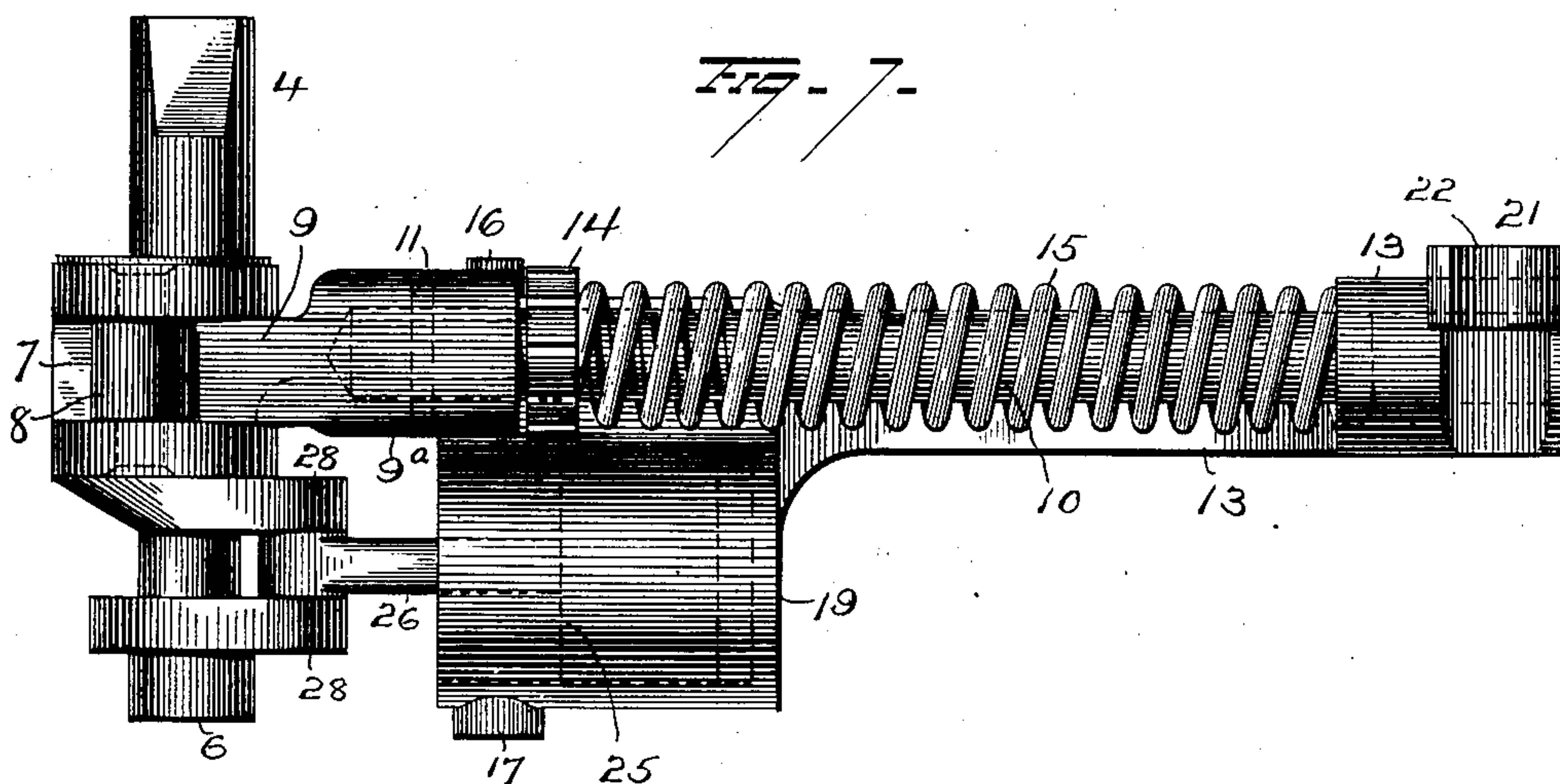


Fig. 7.



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UNITED STATES PATENT OFFICE.

JOSEPH CHARLES REGAN, OF STAMFORD, CONNECTICUT, ASSIGNOR TO THE YALE & TOWNE MANUFACTURING COMPANY, OF STAMFORD, CONNECTICUT.

DOOR CHECK AND CLOSER.

962,916.

Specification of Letters Patent. Patented June 28, 1910.

Application filed December 14, 1909. Serial No. 533,111.

To all whom it may concern:

Be it known that I, JOSEPH CHARLES REGAN, of Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Door Checks and Closers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in door checks and closers and particularly to that type which are set in the sill of the door and form the lower hinge for the latter, the upper end of the door being supported at its upper end by a pin or stud projecting downwardly into a socket carried by the upper edge of the door, and it consists in the parts and combinations of parts as will be more fully explained and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in plan of my improved check and closer the cover plate being removed. Fig. 2 is a top plan view of the finish cover plate. Fig. 3 is a view in longitudinal section on the line A—B of Fig. 1. Fig. 4 is a view in transverse section on the line C—D of Fig. 3. Fig. 5 is a view in transverse section on the line E and F of Fig. 1. Fig. 6 is a similar view on the line G—H of Fig. 1 and Fig. 7 is a view of the operative parts removed from the casing.

1 represents a casing made of a single casting, closed at the bottom, sides and ends and open at the top. This casing is deeper at its rear end or the end carrying the spindle, than at its other end, and is closed by a two part cover 2 and 3 the former of which is provided with an opening or bearing for the passage of the spindle 4, suitable packing 5 being provided for preventing the liquid contained within the casing from escaping up around the spindle. This spindle 4 forms the lower hinge of the door and is mounted at its lower end in the recessed seat 6 formed in the enlarged part of casing 1, and is provided with a double crank 7 carrying two anti-friction rollers 8, which latter are located on opposite sides of the spindle 4, as shown in Fig. 1, and bear against the end of the yoke 9. The head of the yoke extends transversely of the casing and beyond both anti-friction rollers 8, so as to be

engaged by either roller as the spindle is turned by the door, and the forwardly extending members 9^a thereof, carry the rods 10 which are in effect guides for the yoke. These rods 10 are secured to the members 9^a of the yoke 9 by the pins or screws 11, extend lengthwise the casing and terminate at their front ends in pockets 12 formed in the frame 13.

Mounted on the rods 10 intermediate the frame 13 and the nuts 14, are the springs 15, the rear ends of which bear against the frame 13 and their opposite ends against the nuts 14. These nuts are threaded internally and are mounted on threaded sections of the rods 10, so that by moving the nuts toward or away from the springs, the tension of the latter may be increased or diminished and thus regulated to a nicety. With the yoke 9 carrying two guide rods, the latter having sliding connection with the frame 13, it will be seen that the yoke will always have a straight to and fro movement, and be held with a yielding pressure against both rollers 8 when the door is at rest, and against the one roller when the door is wholly or partly opened. The yoke is also guided in its movement by the rear end 13^a of frame 13, which rests between the two forwardly extending members 9^a of the yoke, and prevents any lateral or swinging movement of the latter. This frame 13 is pivotally mounted at its rear end in front of the spindle on the pintles 16 and 17, the former of which is integral with and projects upwardly from the frame and is mounted in a seat 18 integral with and projecting downwardly from section 3 of the cover, while the pintle 17 is integral with the liquid cylinder 19 and rests in a recessed seat 20 formed in the floor or bottom of the casing. The two pintles 16 and 17 are in the same vertical plane, and constitute the axis or center on which frame 13 turns, and as the cylinder 19 is integral with the frame, it necessarily follows that when the frame 13 is adjusted as will be hereinafter described, the cylinder will be correspondingly moved. The cylinder, is of greater width than the frame 13, and is in a plane below the frame and within the enlarged or deeper part of the casing 1 as clearly shown in Fig. 3. The front end of the frame 13 is provided at its side edges with the laterally

projecting ears 21 the latter having slots 22 curved in the arcs of a circle coincident with the centers 17 and 18 on which the frame turns. These ears 21 rest on the shoulders 5 23 integral with the casing 1, and are secured thereto by the clamping screws 24, which as shown in Fig. 6 pass through section 3 of the cover.

With checks of this type it is a difficult 10 matter to set them to hold the door in its proper position. With my improvement, if the check is set in its floor mortise out of line, it can be adjusted within a reasonable range, which should be sufficient in all cases 15 where ordinary care is exercised in setting the check, by simply loosening the screws 24 and moving frame 13 to the right or left as the case may be. This moves the cylinder and also the spindle and necessarily the door 20 carried by the spindle. When properly adjusted it is then secured by tightening up the screws 24.

Mounted in the cylinder 19 is the piston 25 connected by rod 26 with the crank pin 27 carried by the crank arms 28 integral with the spindle 4. These crank arms are in a plane below the cranks 7, and as the spindle is turned by opening or closing the door, the cranks 28 operate to move the piston away from or toward the closed end of the cylinder. This piston is provided adjacent to its lower edge with a fluid escape port 29 in which is mounted a ball valve 30, the latter being limited in its movement 35 away from its seat by the pin 31, which is also the attaching means for the rod 26. As the piston 25 moves toward the open end of the cylinder 19, as in opening the door, the valve 30 moves away from its seat and permits the fluid within the casing to 40 freely pass through the piston to the front thereof. As the door closes, the valve will be forced by the pressure of the liquid against its seat and thus prevent the escape of any liquid through the piston. The 45 checking liquid in front of the piston, escapes through the two ports 32 and 33, located one in front of the other, the port 33 being in front of port 32. Each port 32 and 33 has lateral ports 35 communicating with the interior of the casing, and each is also controlled by a screw valve 34 which 50 extends above the top of frame 13, and are accessible from the top when cover section 3 is removed. By means of these two valves the flow of liquid from the piston chamber or cylinder may be regulated as desired. At the commencement of the closing action, 55 both valves can be adjusted to permit a large volume of liquid to escape, but after the piston reaches the port 33 and covers same, the escape of liquid will then be restricted to the one port 32 which necessarily checks the closing movement, and which 60 can be regulated by its valve 31 for com-

parative fast or slow closing. Port 32 is so located with relation to the other ports and particularly the piston, that by the time the piston passes the port 32 the momentum of the door will be practically gone, so that 70 there will be no oscillation, which is so apt to happen on a door that is not so closely checked.

With my improvement, I employ two independent springs 15, either one of which 75 will do the work in case of breakage, but normally acting together, and the cylinder is in the same chamber with the springs but below them, so that the checking fluid whatever it may be, is free to circulate in 80 the spring chamber, but by locating the port in the piston, as near as possible to the bottom of the latter, the check will operate with comparatively a small charge of liquid. 85

The general operation of this check and closer is as follows: In the drawing the parts are shown in their normal position as when the door is closed. If now, the door be opened in a direction indicated by the 90 arrow in Fig. 1, the revolution of the spindle 4 causes one friction roller 8 to bear against the yoke 9 and move same forwardly thus compressing both springs 15. The turning of the spindle 4 also withdraws piston 25, 95 until rod 26 brings up against the spindle 4 which will occur when the door is open about 90 degrees, thus limiting the turning movement of the spindle, and acting as a natural stop. This withdrawal of the piston 100 permits the liquid to flow through port 29 to the front of the piston head, and acts in the usual manner, against the piston, to check the closing movement of the door. When the door is released, the action of the 105 springs 15 tends to close it, and the liquid confined between the head of the piston and the closed end of the cylinder, will at first flow readily through both ports 32 and 33, and then as previously described, more 110 slowly through the port 32 as the first is covered by the piston. If the door be opened in the opposite direction the same action will occur, through the other roller 8 engaging yoke 9. In order to provide for 115 the change in adjustment of the screw valves 34, I have provided the cover plate 3, and also the finish plate 35 with a hole for the screw cap 36 which is screwed into cover 3 and when removed, exposes the heads of the 120 two screw valves. If after the device has been set in its floor mortise, it is found to be out of line, the proper adjustment within limits, can be secured by loosening up the two screws 24, thus releasing the frame 13 12 and permitting it, the springs carried thereby, and the cylinder 19, to move or turn on the bearings 16 and 17. This movement of the parts causes the spindle 4 to turn and thus bring the edge of the door into its 130

proper closed position with relation to the door jamb. After the parts have been properly adjusted the screws 24 are again tightened and the device ready for use.

5 By removing the cover plate, and swinging the door to one side, the crank pin 27 which is screwed into the lower arm of the piston crank, will be exposed and can be removed, thus permitting of the removal of
10 the entire operative mechanism except the spindle for examination.

It is evident that many slight changes might be resorted to in the relative arrangement of parts shown and described without
15 departing from the spirit and scope of my invention hence I would have it understood that I do not wish to confine myself to the exact construction and arrangement of parts shown and described, but,

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

1. In a door closer, the combination with a casing and a spindle mounted to turn
25 thereon and provided with two cranks on opposite sides of said spindle, of a yoke bearing against said cranks, two springs yieldingly holding the yoke in contact with the cranks and separate means for adjusting the tension of each spring independently
30 of the other.

2. In a door closer, the combination with a casing and a rotatable spindle mounted therein and having two cranks located on
35 opposite sides of the center of the spindle, of a yoke bearing against said cranks, a spring for holding the yoke in contact with the crank, and a frame carrying the spring, the said frame being pivoted to the casing
40 in front of the spindle whereby the frame may be moved laterally, and means for locking said frame against movement.

3. In a door closer, the combination with a casing and a rotatable spindle mounted
45 therein and having two cranks, of a yoke resting against both of said cranks, yoke guides/secured to said yoke and projecting forwardly therefrom, a pivoted frame in which said yoke guides are slidingly mount-
50 ed and springs mounted on the guides and bearing against the pivoted frame for yieldingly holding the yoke in contact with the cranks.

4. In a door closer and check the combina-
55 tion with a casing and a rotatable spindle mounted therein and having double cranks for engagement with the closing mechanism and a crank for connection with the check-
60 ing mechanism, of a removable and adjustable frame carrying the closing mechanism and also carrying the checking cylinder and its piston, and a screw accessible through the top of the casing for detachably connect-
65 ing the checking piston to its crank, whereby the removal of the screw disconnects and

permits of the removal of the operative mechanism of the check and closer.

5. The combination with a casing, and a rotatable spindle mounted therein and hav-
70 ing double cranks for the closing mechanism and a crank for the checking mechanism, the latter being located below the closing cranks, of a frame having a pivotal connection with the casing in front of the spindle,
75 a yoke carried by said frame and bearing against the double cranks, a spring for yieldingly holding the yoke in contact with the double crank, a cylinder carried by said
80 pivoted frame, and movable therewith, and a piston in said cylinder and connected to the checking crank on the spindle.

6. The combination with a casing having a downward enlargement at one end, of a
85 frame pivoted to said casing, means for locking the pivoted frame in position, a checking cylinder fixed to and movable with said mov-
90 able frame and a spring actuated closing yoke also carried by said frame, of a rotatable spindle mounted in said casing and having cranks engaged by the closing yoke
95 and also provided with a checking crank and a piston within the checking cylinder and connected to the checking crank.

7. The combination with a casing open
95 at its top only and provided with a two part cover, of a frame pivoted to turn there-
100 in, closing devices and checking devices carried by said frame, and a spindle journaled in the floor of the casing and a part of the cover in rear of the pivotal point of the
105 frame and having cranks engaged respectively by the checking and closing mechanism.

8. The combination with a casing, a spin-
105 dle, closing mechanism and a checking mechanism, the spindle having double cranks for engagement with the closing mechanism and a crank for engagement with the checking
110 mechanism of a removable and adjustable frame carrying the closing mechanism and also carrying the checking cylinder and its
115 piston.

9. The combination with a casing, a re-
115 movable frame therein, closing mechanism including a spring carried by said frame and a checking cylinder also carried by said
120 frame, of a spindle located in rear of the frame and engaged by the closing mechanism, a piston connected with said spindle and moving in the cylinder, and two valved
125 ports leading from the cylinder, the said ports being so disposed that the movement of the piston causes the flow of liquid to stop through one port while the other is left
130 free.

10. The combination with a casing, a re-
130 movable and adjustable frame therein, a spindle, closing mechanism carried by said frame and connected with the spindle and a checking cylinder also carried by said

frame and having ports in its upper wall, of a valved piston mounted in the cylinder and connected with the spindle, and two valves mounted in the frame for regulating
5 ports in the cylinder the said ports being so disposed that the movement of the piston causes the flow of liquid to stop through one port while the other is left free.

11. The combination with a casing, a re-
10 movable cover therefor, a removable and adjustable frame within the casing, a spindle, closing mechanism carried by said frame and a checking cylinder also carried by said
15 frame and having ports located at intervals in its upper wall, of a valved piston mounted in the cylinder and connected with the spindle, two valves mounted in the frame for regulating the ports in the cylinder, the said
20 ports being so disposed that the movement of the piston causes the flow of liquid to stop through one port while the other is left

free, and a removable plug located within the cover of the casing over said valves.

12. In a check and closer, a frame carrying the operative closing and checking
25 mechanism said frame being so connected to the casing that it may be removed without removing the casing from its position.

13. In a check and closer, a removable frame carrying the operative mechanism,
30 and pivoted adjustably in the casing, whereby the operative mechanism may be so adjusted as to bring the closing line of the door to the correct position without altering
35 the position of the casing.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

JOSEPH CHARLES REGAN.

Witnesses:

SCHUYLER MERRITT,
WM. P. MOSELY.