J. C. REGAN.

DOOR CHECK.

APPLICATION FILED NOV. 16, 1910.

**1,003,651.**

Patented Sept. 19, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

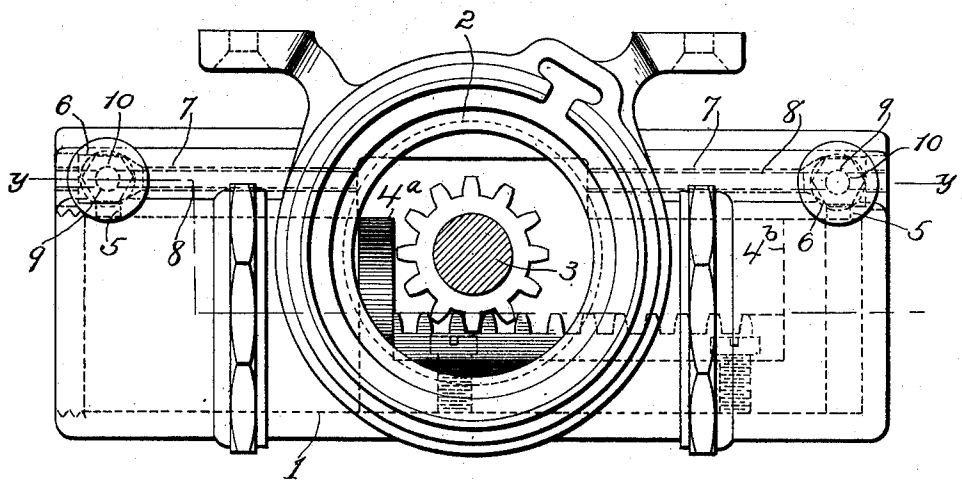
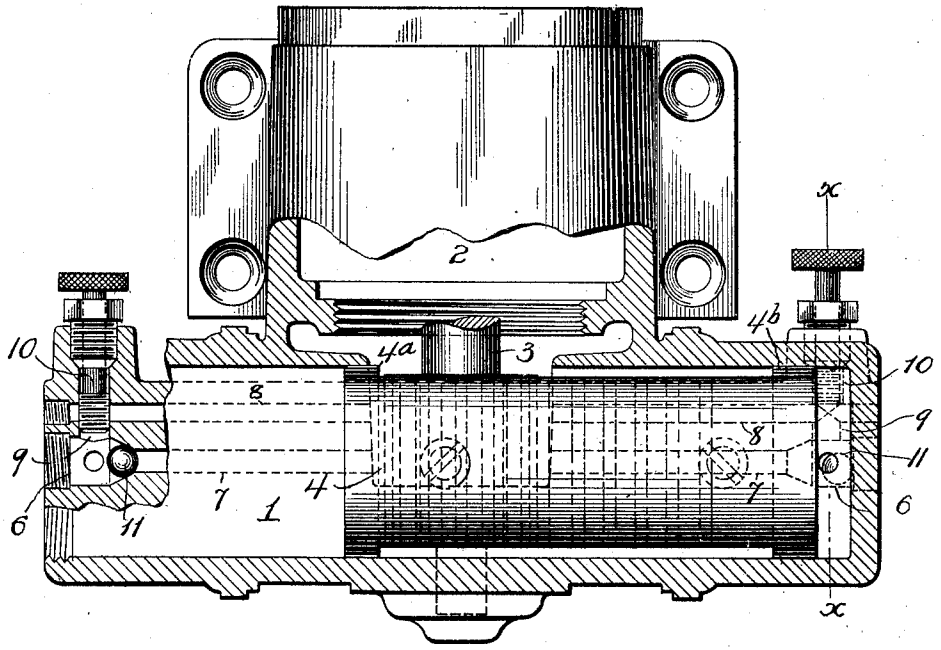



Fig. 2.




WITNESSES

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2 SHEETS—SHEET 2.

Fig. 3.

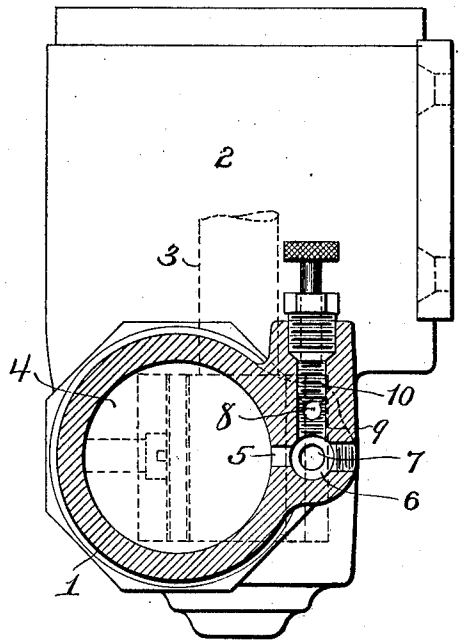
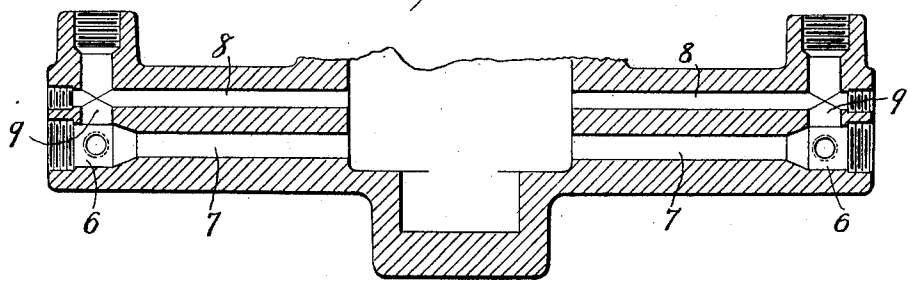



Fig. 4.

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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.

1,003,651. Specification of Letters Patent. **Patented Sept. 19, 1911.**

Application filed November 16, 1910. Serial No. 592,710.

*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 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, the object being to provide improved means for securing a checking action in both directions of movement of the piston, and it consists in the parts and combination of parts as will be more fully described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in plan, the cap, spring and screw plug between the spring and piston chambers being removed. Fig. 2 is a view of same partly in side elevation and partly in vertical section. Fig. 3 is a vertical transverse section on the line *x*—*x* of Fig. 1 and Fig. 4 is a view in vertical longitudinal section on the line *y*—*y* of Fig. 1.

My improvement is designed for use on door closers and checks, but as the improvement resides wholly in the check, and may be used with any of the modern form of closing mechanism, it will not be necessary for an understanding of this invention, to show or describe a closing mechanism.

1 represents the piston chamber or cylinder, and 2 the chamber for the closing mechanism. These chambers are cast integral and in open communication with each other as shown in Fig. 1 for the passage of the spindle 3, which connects the closing mechanism with the piston 4 of the checking mechanism. This piston is provided with two heads $4^a$ and $4^b$ both of which are without valves, and the piston is connected intermediate the heads, with the pinion on the spindle 3; it is reciprocated by the spindle, and operates to compress the liquid in the cylinder or piston chamber, by one head $4^a$, when moved in one direction, and by the other head $4^b$, when moved in the opposite direction. The piston chamber or cylinder is provided near each end with a port 5 leading from the piston chamber to a compression chamber 6 formed in the side or rear wall of the cylinder, and each compression chamber is in direct communication with an inlet port 7 and communicates with an outlet port 8 through passages 9 both of which ports 7 and 8 at each end are formed in the wall of the cylinder 1 one above the other as shown. Each passage 9 is controlled by a screw valve 10. These ports 7 and 8 extend toward the center of the cylinder 1 and open into the latter near the center, the construction being such, that the inner ends of both sets of ports will be open or uncovered throughout the stroke of the piston.

Located within each compression chamber 6, is a ball valve 11, adapted when the liquid is under compression within said chamber 6, to be moved to its seat, thus closing the inlet port 7, and compelling the liquid forced into the compression chamber 6 by the approaching piston head, to pass around to the back of said head and into the liquid chamber intermediate the piston heads through passage 9 and port 8, this escape of the liquid, being controlled by the screw valve 10. When the piston is moving, say to the left in Fig. 2, the liquid in front of the piston head $4^a$ will be compressed and forced into compression chamber 6. This compression of the liquid in chamber 6 will cause ball valve 11 to seat itself and close inlet port 7, thereby compelling the liquid to escape through passage 9 and port 8. As there is no compression of the liquid at the opposite end of the cylinder, adjacent head $4^b$ during the compression movement of head $4^a$, the ball valve 11 adjacent said head $4^b$ falls away from its seat as shown and permits the free and unrestricted passage of liquid, in the liquid chamber intermediate the two heads, to the cylinder in front of head $4^b$ through port 7 into the compression chamber, and from the latter through port 5 to the cylinder or piston chamber. This provision for the free escape of liquid from between the two heads, prevents any compression of the liquid at the rear of head $4^a$ by the head $4^b$. During the return or reverse movement of the piston, the liquid in front of head $4^b$ will be compressed thus closing ball valve 11 at the right hand of Fig. 1 and opening the valve at the opposite end. With this construction it will be seen that the pistons may be checked or controlled in both directions by adjusting the screw valves so as to restrict the passage of the liquid from the compression chambers through the outlet ports, or the screw

valves may be so adjusted as to allow free flow through one outlet port and restrict the flow through the other, thus permitting of comparatively free movement of the piston in one direction, as in opening the door, and a checking movement in the opposite direction.

It is evident that many slight changes might be resorted to in the relative arrangement of parts shown and described without 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,

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

1. In a door check, the combination with a cylinder and a double acting piston, of a compression chamber at each end of the cylinder, a port leading from said cylinder to each compression chamber, an inlet port and an outlet port communicating with each compression chamber, an automatic valve for each inlet port and a screw valve for each outlet port.

2. In a door check the combination with a cylinder and a piston having two heads, of a compression chamber in communication with the cylinder near each end of the latter, two ports connecting each compression chamber with the cylinder intermediate the piston heads, an automatic valve in one of said ports at each end of the cylinder and a screw valve for controlling the passage of liquid through the other port at each end.

3. The combination with a cylinder and a piston having two heads, of a compression chamber at each end of the cylinder and communicating with the latter, inlet ports leading from the cylinder near the center thereof to the compression chambers, outlet ports leading from the compression chamber to near the center of the cylinder, a ball valve in each compression chamber for automatically closing the outer ends of the inlet ports, and a screw valve for controlling the passage of liquid from each compression chamber through the outlet ports.

4. The combination with a cylinder, and a piston having two heads, of a compression chamber at each end of the cylinder and communicating with the latter, inlet ports leading from the cylinder near the center thereof to the compression chambers, outlet ports leading from the compression chambers to cylinder near the center of the latter, a valve in each compression chamber and operated by the pressure therein to close the inlet ports, and a screw valve for controlling the passage of liquid from each compression chamber through the outlet ports, the said compression chambers and ports being located in the side wall of the cylinder.

5. In a door check, the combination with a piston chamber and a piston therein, of a compression chamber adjacent one end of said piston chamber and having direct communication with same near said end, an inlet port and an outlet port connecting said compression chamber with the piston chamber in rear of the piston, an automatic valve for the inlet port, and a screw valve for the outlet port.

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

JOSEPH CHARLES REGAN.

Witnesses:
SCHUYLER MERRITT,
WILLIAM P. MOSELY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."