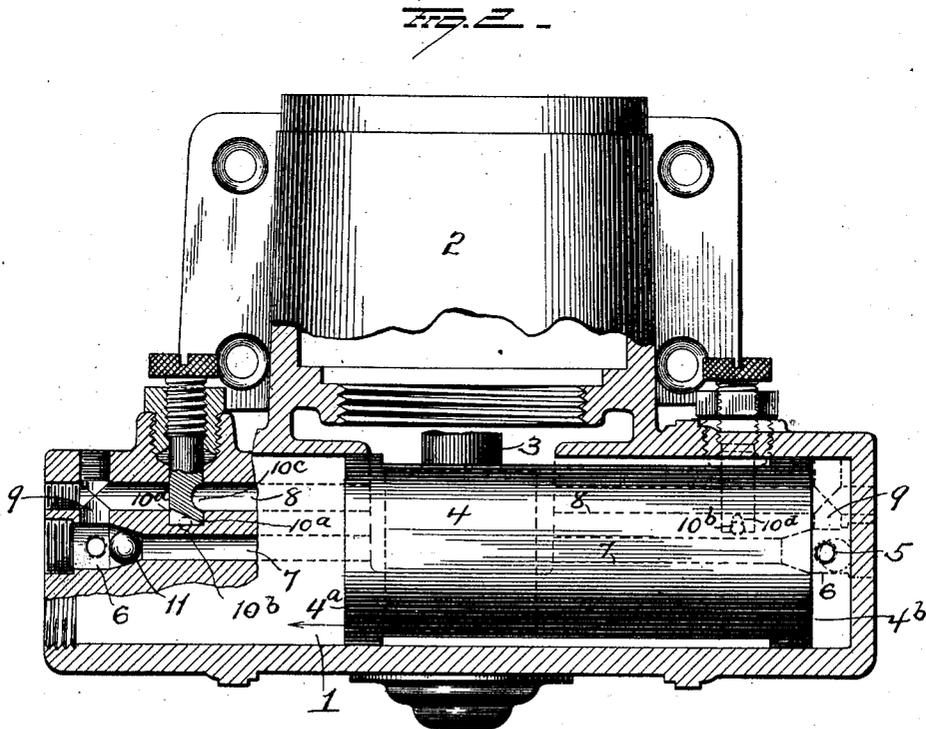
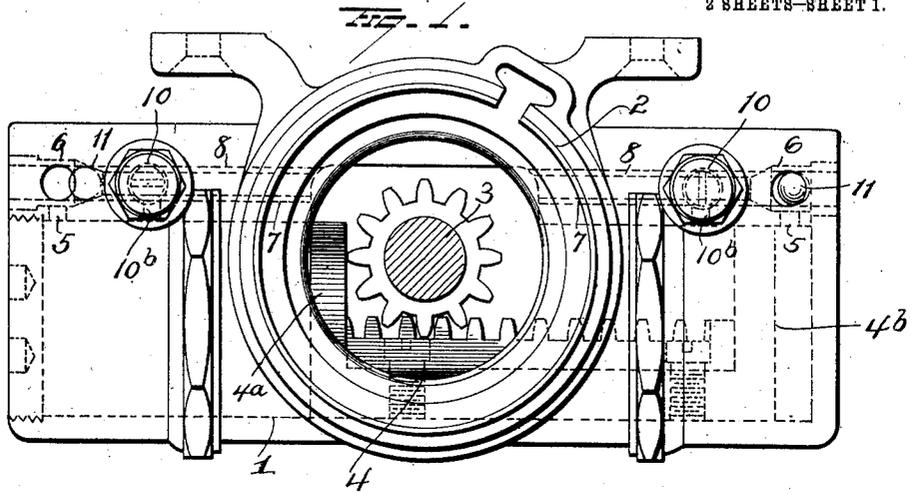


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DOOR CHECK.
APPLICATION FILED JAN. 17, 1911.

1,003,653.

Patented Sept. 19, 1911.

2 SHEETS—SHEET 1.



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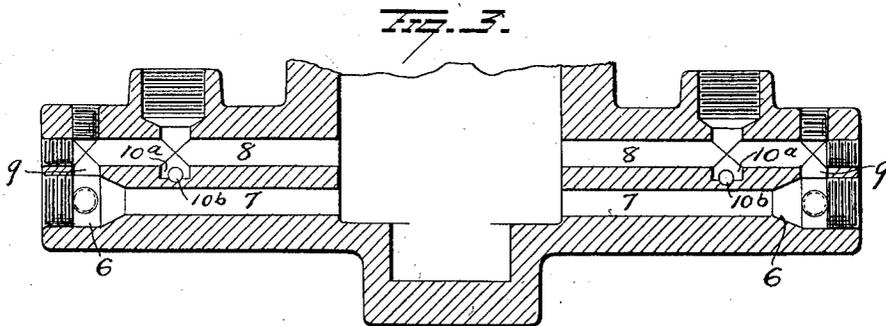
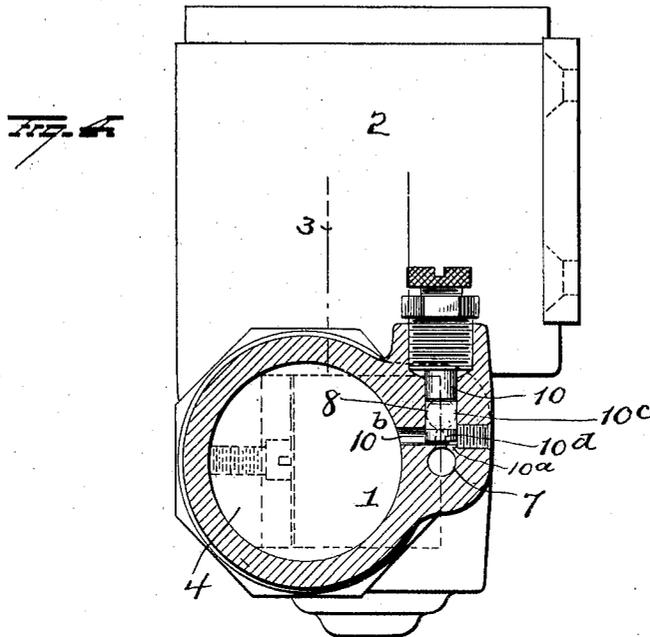
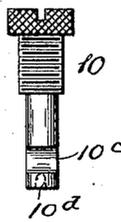
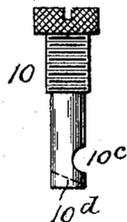


FIG. 5.

FIG. 6.



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DOOR-CHECK.

1,003,653.

Specification of Letters Patent. Patented Sept. 19, 1911.

Application filed January 17, 1911. Serial No. 603,156.

To all whom it may concern:

Be it known that I, JOSEPH C. 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, and is designed particularly as an improvement on the construction disclosed in my pending application No. 592,710, filed November 16th, 1910.

The object of this invention is to provide the construction disclosed in the application above referred to, with a valve and cooperating ports for regulating the closing speed of the door, so that the door may close with a regular even motion from the start to the finish, or may have an easy and rapid movement at the start and be slow and under control at the finish.

With this object in view my invention consists in the parts and combination of parts and in the details of construction 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 closer spring and cap for the spring chamber being omitted. Fig. 2 is a view partly in elevation and partly in vertical section. Fig. 3 is a view in vertical longitudinal section through the outlet and inlet ports. Fig. 4 is a view in transverse vertical section through the liquid chamber showing the valve and Figs. 5 and 6 are views of the valve.

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. In the assembled device the spring and liquid chambers, are separated and cut off from each other by a packing nut (not shown) which serves as a bearing for the spindle 3. 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 cylinder is provided near each end with a port 5 leading from the piston chamber or cylinder to a compression chamber 6 formed in the side or rear wall of said cylinder, and each compression chamber is in direct communication with an inlet port 7 and is also connected with an outlet port 8 by passage 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. 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 in the direction indicated by the arrow in Fig. 2, the liquid in front of the piston head 4^a will be compressed and forced into compression chamber 6 through port 5. 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. 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,

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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.

5 Each screw valve 10 is mounted in the cylinder casing at the rear as shown in Fig. 4, and passes downwardly through the outlet port 8, and into a recess 10^a in the partition intermediate the inlet port 7 and the outlet port 8. The recess 10^a communicates with the cylinder 1 through passage 10^b which latter is so located with relation to the cylinder 1, that it will be closed by the moving piston before the door comes to a close, thus causing all the liquid to pass around the screw valve and out through the open inner end of the outlet port 8 during the latter part of the closing movement of the door. The screw valve 10, as shown in Figs. 2, 5 and 6, is provided with a groove 10^c in the plane of the outlet port 8 and may be caused to register therewith so as to open the outlet port by the proper manipulation of the screw valve.

25 When the screw is turned to carry the groove 10^c crosswise the outlet port 8 as shown in Fig. 2, the port will be completely closed, and by turning the screw more or less, the groove will be turned so as to permit the passage of the liquid around the valve, thereby regulating to a nicety the passage of the liquid through the outlet port.

35 The lower end of screw valve 10 rests within the recess 10^a and is provided with one or more slots 10^d through which liquid may pass from the recess into the outlet 8. This slot is so located with relation to the groove 10^c, that when the groove is in one position to permit the escape of liquid around the screw valve, the slot 10^d will also be in a position for the passage of the liquid through same and out through the passage 10^b.

45 The valves 10 may be screwed down so as to fully close the slot 10^d and consequently the passage 10^b, and by slightly elevating the valve, the upper end of the slot 10^d will be uncovered thus permitting a portion of the liquid to pass through passage 10^b into port 8 and then into the cylinder near its center. This turning movement of the valve also turns the groove 10^c so as to permit of the passage of the liquid through the outlet 55 8, around the valve 10. The volume of liquid thus escaping from in front of the piston is regulated by the position of the valve 10. Assuming that the piston is moving toward the left and the valve 10 is so adjusted as to allow the liquid to escape through the by-pass or passage 10^b into the cylinder 1, and also around the valve through the outlet, the pressure of the liquid against the ball valve 11 will close the 65 inlet port 7, thus preventing the escape of

any liquid through the latter. During the first part of the movement of the piston the liquid will freely escape through the by-pass or passage 10^b and around the valve 10, so that the first movement of the door will be easy and rapid, but when the piston reaches and covers the passage 10^b, the only escape for the liquid from in front of the piston will be through the outlet port 8, around the valve 10. The escape of liquid through the outlet is controlled by the position of the groove 10^c, hence by turning the valve more or less, the escape of liquid around valve 10 can be increased or diminished, thus increasing or diminishing the closing speed of the door. 70 75 80

By turning valve 10 so as to carry the upper end of slot 10^d below the top of recess 10^a, the valve may then be adjusted to permit of the escape through groove 10^c, around the valve, without any passing through passage 10^b and thus secure a regular and even closing movement from the beginning to the end. 85

From the foregoing it will be seen that by the single valve 10, the escape of liquid through the by-pass and also through the regular outlet can be positively regulated and controlled. 90

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. 95 100 105

The compression chamber adjacent one end of the piston chamber and communicating with same, inlet and outlet ports connecting said compression chamber with the piston chamber in rear of the latter, an automatic valve for the inlet port and a screw valve for the outlet port, are shown and claimed in my application Serial Number 592,710, previously referred to. 110 115

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, 120

Having fully described by invention what I claim as new and desire to secure by Letters-Patent, is:— 125

1. In a door check, the combination with a cylinder and a piston therein, of a compression chamber adjacent one end of the cylinder, a port connecting said compression 130

chamber and cylinder near said end, an inlet port and an outlet port connecting said compression chamber with the cylinder in rear of the piston head, an automatic valve for the inlet port, a by-pass leading from the cylinder to the outlet port and adapted to be closed by the piston during the closing movement of the latter, and a single valve in the outlet port for controlling the escape of the liquid through said outlet port and also through its by-pass.

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 controlling one of said ports at each end of the cylinder, a by-pass connecting the other of said ports with the cylinder and adapted to be closed by the piston during the closing movement of the door and a valve in each outlet port for controlling the escape of liquid through the latter and also through its by-pass.

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 through a port located adjacent the end of the cylinder, an inlet port leading from the cylinder near the center thereof to each compression chamber, an outlet port leading from each compression chamber to the cylinder near the center of the latter, a valve in each com-

pression chamber and operated by the pressure therein to close the inlet ports during the closing movement of the door, a by-pass leading from the cylinder to each outlet port and a screw valve in each outlet port for controlling the escape of liquid through the outlet port and its by-pass, the said compression chambers, ports and by-passes being located in the side wall of the cylinder.

4. 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, each outlet port having a recess in its wall, a by-pass leading from the cylinder to each recess, and a valve for each outlet port, each valve having a grooved side for the escape of liquid around the valve and a slotted free end for the passage of the liquid to the by-pass.

5. In a door check, the combination of a casing having two ports, and a single valve controlling both ports, whereby the opening through both ports may be adjusted to regulate the flow therethrough, or either may be opened and the other closed.

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

JOSEPH C. REGAN.

Witnesses:

SCHUYLER MERRITT,
H. J. LAMBORN.