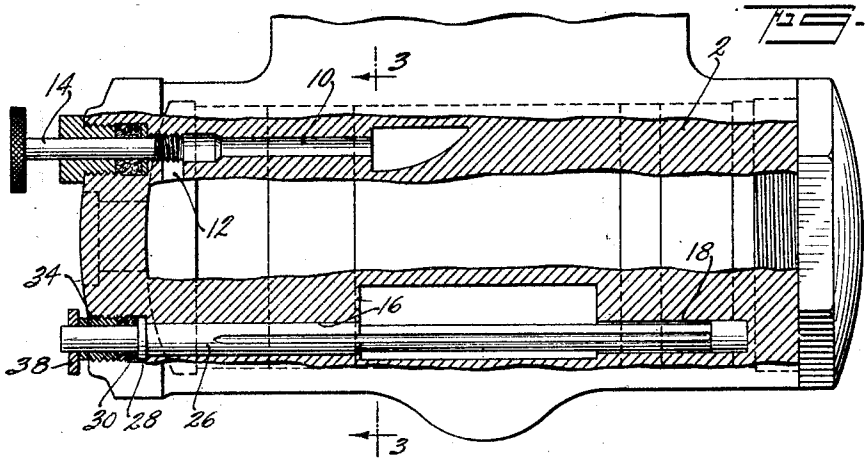
March 8, 1932. W. F. MOORE 1,848,371

DOORCHECK

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FIG. 1.



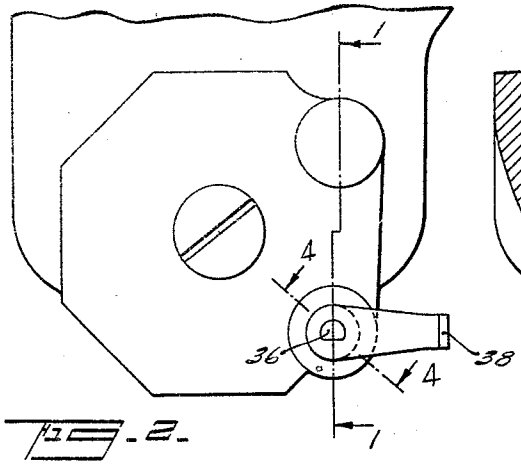


FIG. 2.

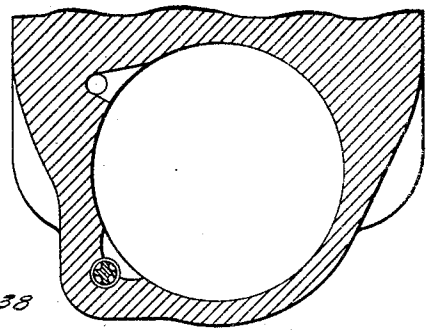


FIG. 3.

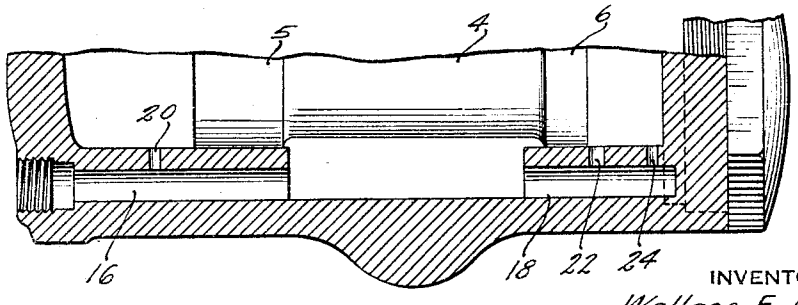


FIG. 4.

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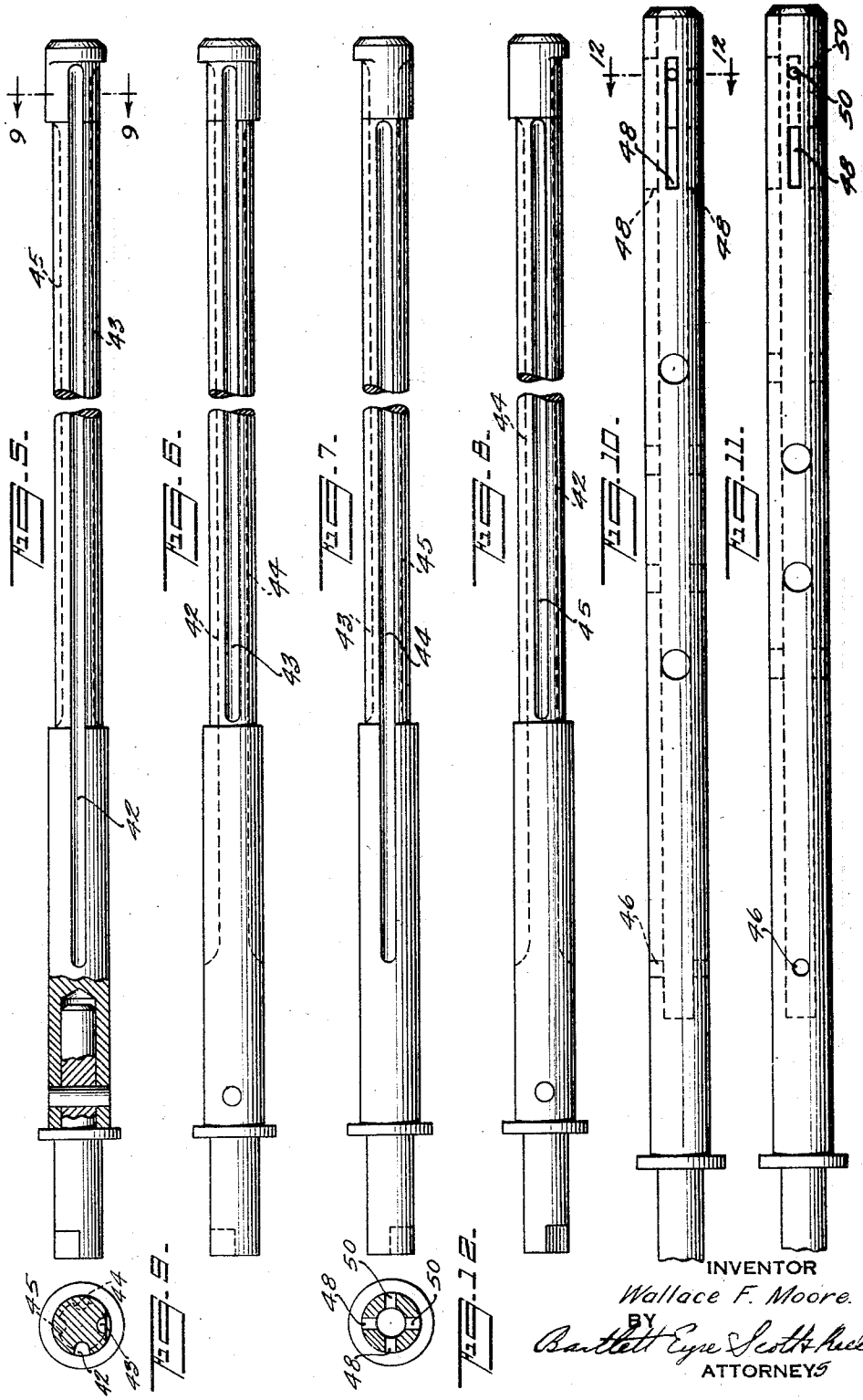


Fig. 5.
Fig. 6.
Fig. 7.
Fig. 8.
Fig. 10.
Fig. 11.
Fig. 9.
Fig. 12.

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UNITED STATES PATENT OFFICE

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DOORCHECK

Application filed February 9, 1931. Serial No. 514,427.

My invention relates to door checks, and has special reference to door checks of the type which have a checking action both during the opening and closing of the door and in which the checking action is accomplished by means of a liquid within the check cylinder.

One of the objects of the invention is to provide a device of this character in which novel and improved means is employed for regulating the checking action thereof during both the closing and opening of the door.

The several features of the invention, whereby this and other objects may be attained, will be readily understood from the following description and accompanying drawings, in which,

Figure 1 is a longitudinal sectional elevation of a portion of a door check embodying the features of my invention in their preferred form, the section being taken on the line 1—1 of Fig. 2;

Fig. 2 is a front end view of the check;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 2;

Fig. 5 is a side elevation, partly in section, of a valve member shown in one angular position;

Figs. 6, 7 and 8 are side elevations of the valve member shown in three other angular positions;

Fig. 9 is a sectional view taken on the line 9—9 of Fig. 5;

Figs. 10 and 11 are, respectively, side elevations of a valve member of a modified construction shown in two different positions;

Fig. 12 is a sectional view taken on the line 12—12 of Fig. 10.

The door check illustrated in the drawings is provided with a casing having a piston chamber or cylinder 2, a chamber for the usual door closing spring (not shown) and a piston 4 having a forward head 5 and a rear head 6. Each of the heads is provided with the usual opening controlled by a ball check valve (not shown). The piston chamber is provided with a bypass 10 extending longitudinally in the forward portion of the wall thereof having its inner end arranged back of the forward head 5 of the piston and its outer or forward end adapted to be in communication with the piston chamber through a port 12 arranged close to the forward end wall of the piston chamber. The port 12 is adapted to be opened and closed varying degrees by means of a valve 14 of common construction extending into the outer end of the bypass 10.

The parts above referred to may be of a well known construction.

In accordance with the present invention, a bypass 16 is provided in the forward portion of the wall of the piston chamber parallel with the bypass 10, and a bypass 18 is provided in the rear portion of the wall of the piston chamber in axial alinement with the bypass 18. The bypass 16 has its rear end opening into the piston chamber back of the forward piston head 5 and its forward end adapted to be in communication with the piston chamber through a small port 20 when the piston is in retracted position. The port 20 is spaced a distance inwardly or rearwardly from the port 12 and is adapted to be closed by the piston as the door approaches closed position. The bypass 18 has its forward or rear end opening in the piston chamber forwardly of the piston head 6 and its rear portion adapted to be in communication with the rear portion of the piston chamber through ports 22 and 24. The port 24 is spaced close to the rear end of the piston chamber while the port 22 is spaced inwardly a distance therefrom so as to be closed by the piston head 6 during the latter part of the retracting movement of the piston during the opening of the door. A cylindrical valve member 26 extends through an opening in the forward end of the piston chamber in axial alinement with the bypasses 16 and 18 and through the bypass 16 with its rear end portion extending into the bypass 18. This valve member is provided with a collar 28 which is held against the shoulder in the bore through which said member extends by a packing washer 30 and a packing-nut 34 screw-threaded into the outer end of said bore. With this construction, the valve member

may be turned but is held axially fixed and a tight joint is provided.

The outer projecting end of the valve member 26 has a flat portion 36. A wrench 38 is made to conform to the shape of the end of the valve member and has an offset handle portion 40 so that it can be only placed on the end of the valve member in one pisition. The valve member is provided with longitudinally extending grooves 42, 43, 44 and 45 arranged ninety degrees apart.

Said grooves in the valve member 26 are so positioned with relation to the flattened end portion 36 that when the wrench 38 is positioned horizontally as shown in Fig. 2, the valve member closes the port 20 in the forward bypass 16 but leaves the ports 22 and 24 open in the rear bypass 18 the groove 43 (Fig. 6) registering with the ports 22 and 24. With the valve 26 in this position, during the closing of the door the flow of liquid will be controlled entirely by the usual valve 14, and during the opening of the door there will be no checking action, the liquid flowing freely through the ports 22 and 24.

With the valve turned ninety degrees in a clockwise direction so as to cause the handle of the wrench to extend downwardly, all three ports 20, 22 and 24 will be open, all of said ports registering with the groove 42 (Fig. 5). With the valve member in this position, there will be a quick closing action of the door until the port 20 is closed by the forward piston head 5 whereupon the closing action will be retarded, the flow of liquid being then controlled by the valve 14. As the two ports 22 and 24 are open as in the preceding described position of the valve member, there will in this position also be no checking action during opening of the door.

Upon turning the valve member a further ninety degrees in the same direction, the port 20 is closed, the port 22 is left open and the port 24 is closed, the groove 44 (Fig. 8) registering only with the port 22. Thus in this position of the valve 26, during the closing of the door, the action will be the same as in the first position of the valve above described, and during the opening of the door there will be checking action after the rear piston head closes the port 22.

Upon turning the valve a further ninety degrees in the same direction which positions the handle of the wrench 40 in upstanding position, the port 20 and the port 22 are opened and the port 24 is closed, the groove 45 (Fig. 7) registering with the ports 20 and 22. With this position of the valve, during the closing of the door there is no substantial checking action until the front of the forward head 5 of the piston closes the port 20, and during the opening of the door there is checking action upon the piston head 6 closing the port 22.

With the check a set of simple instructions may be furnished to show the four different positions the valve 26 may be turned to secure the desired checking actions. By turning the valve 26 to positions intermediate the four positions described, the several ports may be opened and closed varying degrees as desired.

In place of the grooved valve member 26 a tubular valve member 27 may be employed having suitably arranged valve openings 46 adapted to register with the port 20, openings 48 adapted to register with the port 22, and openings 50 adapted to register with the port 24.

As will be evident to those skilled in the art my invention permits various modifications without departing from the spirit thereof or the scope of the appended claims.

What I claim is:

1. In a door check of the class described, the combination of a cylinder, a double headed piston within the cylinder, bypasses in the end portions of the cylinder through which the liquid may pass during the advancing and retracting movements of the piston, respectively, each of said bypasses having a port leading from the interior of the cylinder, and a single valve for controlling said ports with relation to each other.

2. In a door check the combination of a cylinder, a double-headed piston within the cylinder, bypasses through which the liquid may pass during the advancing and retracting movements of the piston respectively, the bypass through which the liquid passes during the advancing movement of the piston having a port adapted to be closed by the piston as the piston approaches the limit of its advancing movement, and the bypass through which the liquid passes during the retracting movement of the piston having a plurality of ports spaced different distances from the rear end of the cylinder and the one furthest from said end of the cylinder being adapted to be closed by the piston during the latter portion of the retracting movement thereof, and a single valve for controlling all of said ports with relation to each other.

3. In a door check of the class described, the combination of a cylinder, a double headed piston within the cylinder, a bypass in the rear end portion of the cylinder, said bypass having a plurality of ports spaced different distances from the rear end of the cylinder and at least one of said ports being adapted to be closed by the piston during the retracting movement of the piston, and a single valve means operable from the front of the cylinder for opening and closing said ports with relation to each other.

4. In a door check of the class described, the combination of a cylinder, a double headed piston within the cylinder, bypasses in the front and rear portions of the cylinder

respectively, arranged in axial alinement, each of said bypasses having at least one port, and a valve member extending through said bypasses for relatively opening and closing said ports.

In testimony whereof, I have signed my name to this specification.

WALLACE F. MOORE.