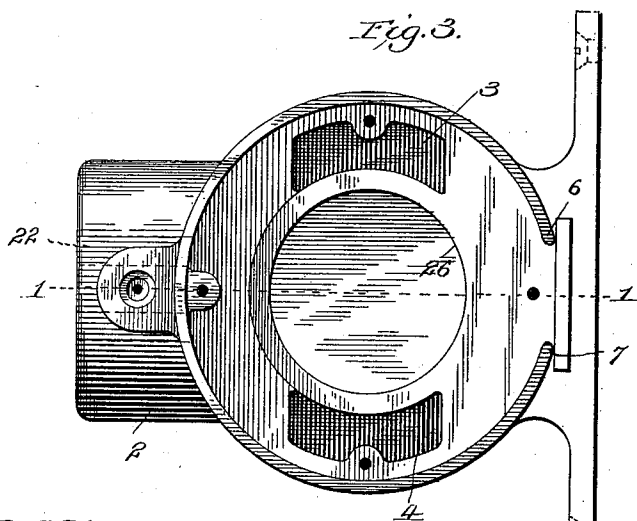
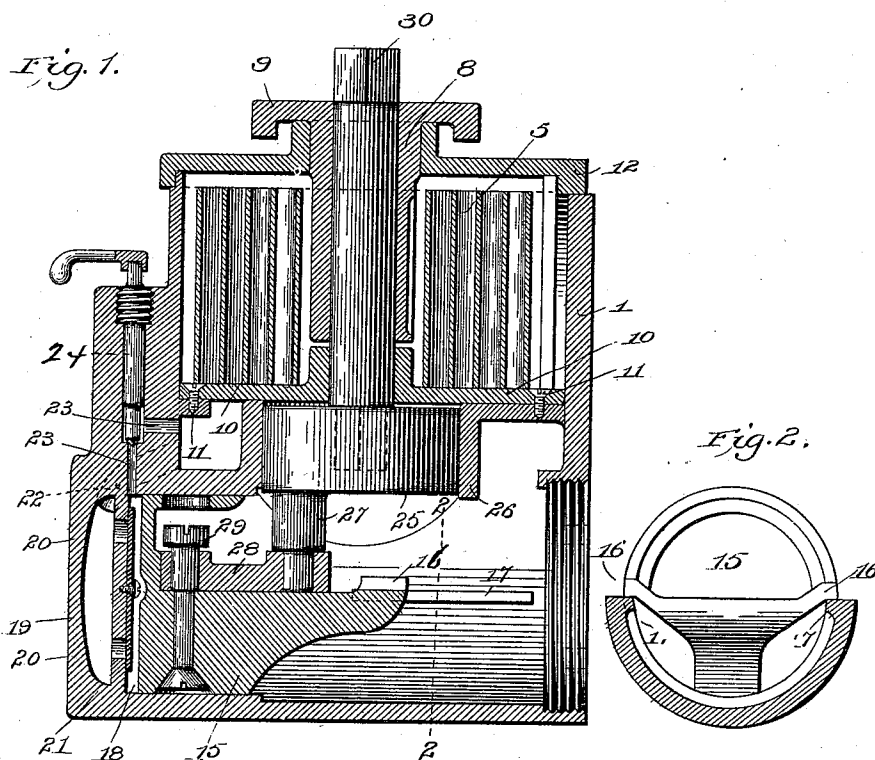


(No Model.)

W. H. TAYLOR.
DOOR CHECK AND CLOSER.

No. 552,453.

Patented Dec. 31, 1895.



Witnesses:

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UNITED STATES PATENT OFFICE.

WARREN H. TAYLOR, OF STAMFORD, CONNECTICUT, ASSIGNOR TO THE
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DOOR CHECK AND CLOSER.

SPECIFICATION forming part of Letters Patent No. 552,453, dated December 31, 1895.

Application filed April 20, 1895. Serial No. 546,551. (No model.)

To all whom it may concern:

Be it known that I, WARREN H. TAYLOR, a citizen of the United States, residing at Stamford, 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 specification to be a full, clear, and exact description of my invention, such as will enable those skilled in the art to make and use the same.

My invention relates to the form of door checks and closers which employs a closing spring and a piston, the piston operating in a suitable cylinder supplied with oil, glycerine or other liquid, and suitably connected to the spring-shaft so as to check or regulate the action of the spring in closing the door. In this form of door checks and closers the piston is commonly formed with check-valves in addition to the valves in the casing, so that when the door is closed the movement of the piston in the cylinder forces the liquid from in front of it around through the valve in the casing to the rear of the piston, and when the piston is withdrawn by the opening of the door the liquid is allowed to pass freely through the check-valves in the piston-head, the flow of the liquid being always in one direction around and around through the piston.

In my improved door check and closer I provide a piston with a solid head which operates in a liquid chamber or pocket having open communication with the spring-chamber and having at its inner end a valved diaphragm. A free communication is provided between the liquid-chamber and the space on one side of the diaphragm, while the passage communicating with the liquid-chamber and the space at the other side of the diaphragm is controlled by an adjustable valve for regulating the closing action of the device. In my improved check the liquid moves first in one direction and then in the other, being always forced from and allowed to return to the same end of the piston.

In order that my invention may be fully understood I will now proceed to describe the same with reference to the accompanying drawings, and afterward particularly point out the novelty in the annexed claims.

In said drawings, Figure 1 is a vertical sectional view of my improved door check and closer, taken on line 1 1 of Fig. 3. Fig. 2 is a detail sectional view taken on line 2 2 of Fig. 1, showing the location of the piston in the liquid-chamber, the means for connecting the piston with the spring-shaft being omitted. Fig. 3 is a plan view of the casing with the cover and working parts removed.

The spring-casing 1 and the liquid-cylinder 2 are formed integral with open communication between them through the openings 3 4.

5 is the customary spiral door-closing spring having its outer end engaging one of the shoulders 6 7 and its inner end engaging the vertical groove in the sleeve 8, which is formed with the customary ratchet-rim 9.

10 is a circular plate formed with a central shaft opening and secured in place by screws 11 to form the bottom of the spring-chamber.

12 is the cover to the spring-casing, having a central flanged opening in which the sleeve 8 is supported and journaled.

15 is the piston working in the liquid-cylinder 2 and formed with a solid head.

16 are rearwardly and outwardly projecting arms working upon the guideways 17, formed integral with the inner surface of the cylinder-casing 2, and forming a continuation of the bottom part of the pocket 18 of the liquid-chamber in which the piston operates.

19 is a diaphragm or partition formed in the pocket 18, so as to leave a pocket between it and the casing, and having one or more valve-passages 20, which are covered by a flexible disk 21 secured to the diaphragm at the center and forming check-valves, which permit the liquid to flow through the openings 20 toward the piston, but not in the other direction.

22 are free liquid-passages, (indicated by dotted lines,) leading from the main liquid-chamber to the pocket on the other side of the diaphragm from the piston.

23 is another liquid-passage leading from the pocket on the side of the partition next to the piston into the main chamber, and 24 is an adjusting-screw for regulating the flow of liquid through said passage 23.

25 is a crank-wheel supported in the circular bearing 26 beneath the spring-chamber 1, and formed with the crank 27, which is con-

nected to the piston 15 through the pitman 28 and pin 29. The piston is formed with a flat surface in rear of the solid head for the reception and operation of the pitman 28.

5 30 is the shaft passing loosely through the sleeve 8 and plate 10 and having a squared lower end which fits in a squared socket in the crank-wheel 25, and a squared upper end to which the crank-arm (not shown) is secured. The crank-arm which engages the upper end of the spring-shaft should, of course, be provided with the customary dog for engaging the ratchet-rim 9 of the sleeve 8.

10 The casing and spring-shaft are connected to the door and lintel in any preferred manner, so that the opening of the door will rotate the shaft and wind the spring in readiness to act in closing the door when released.

The operation will now be described. The casing is supplied with the proper amount of oil or other liquid. The piston is shown in the position it assumes when the door is in closed position. The opening of the door will rotate the shaft 30, winding the spring 5, and withdraw the piston from its pocket, causing the liquid to flow from the main casing through the passages 22 and check-valves in the diaphragm into the pocket in front of the retreating piston. Now, when the spring acts to close the door, the liquid cannot return through the check-valves and is therefore forced by the piston through the obstructed passages 23 to the main casing. The rapidity of closing the door can be controlled in this way.

35 The principal advantages of my improved check are the simplicity of its arrangement

as a whole and the simplicity of the working parts. The piston, having a solid head and no movable parts, is not liable to be deranged in use, nor is there any necessity of providing against leakage from the liquid-chamber, because there is no objection to the liquid flowing freely into any part of the spring-chamber or liquid-chamber.

45 Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a door check, the combination of a liquid chamber, a piston pocket formed in said chamber, a single solid headed piston working in said pocket, a diaphragm provided with one or more check valves opening in the same direction and located in front of the piston across the end of the piston pocket and forming a pocket between it and the wall of the liquid chamber, and passages leading from said pocket and the space between the diaphragm and the piston head, whereby the liquid will be forced away from and returned to the front of the piston, substantially as set forth.

2. In a door check and closer, the combination of a suitable casing, a spring supported therein, a liquid chamber having a piston receiving pocket, a piston therein and suitably connected to the spring, guide-ways 17 formed in the casing, and arms 16 on the piston working on said guide-ways, substantially as set forth.

WARREN H. TAYLOR.

Witnesses:

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