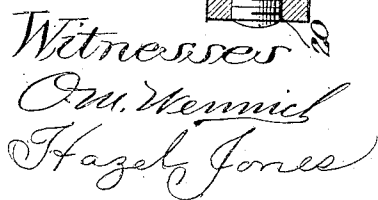


1,041,855.

2 SHEETS—SHEET 1.



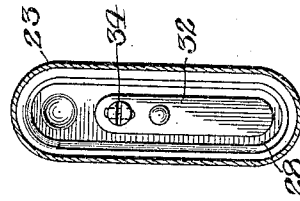
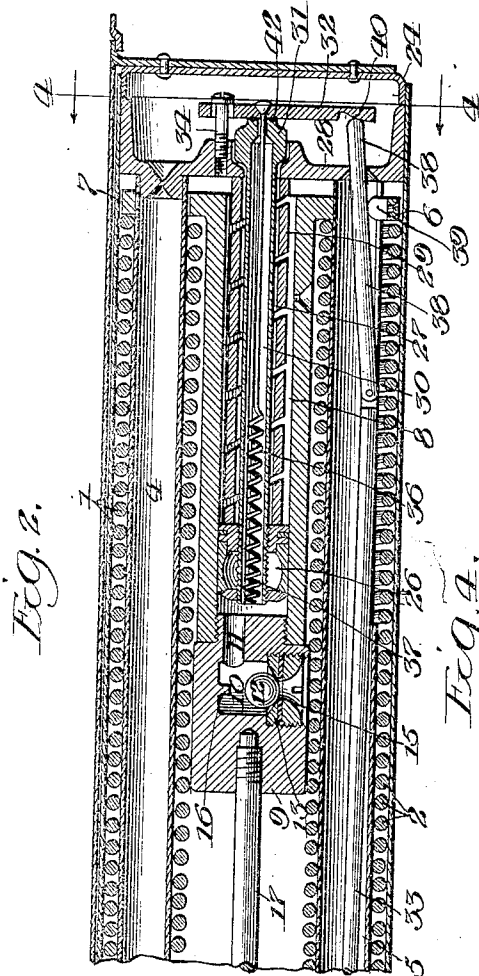
Inventor
Per Erik Nordqvist
by May W. Zabel
Atty

P. E. NORDQVIST.
VALVE MECHANISM FOR DOOR CHECKS.
APPLICATION FILED MAY 3, 1910.

1,041,855.

Patented Oct. 22, 1912.

2 SHEETS—SHEET 2.



Witnesses
O. M. Wernich
Hazel Jones.

Inventor
Per Erik Nordqvist
by May W. Label
Atty.

UNITED STATES PATENT OFFICE.

PER ERIK NORDQVIST, OF CHICAGO, ILLINOIS, ASSIGNOR TO CONCEALED DOOR CHECK COMPANY, OF SANTA BARBARA, CALIFORNIA.

VALVE MECHANISM FOR DOOR-CHECKS.

1,041,855.

Specification of Letters Patent.

Patented Oct. 22, 1912.

Application filed May 3, 1910. Serial No. 559,211.

To all whom it may concern:

Be it known that I, PER ERIK NORDQVIST, a subject of the King of Sweden, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Valve Mechanism for Door-Checks, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to improvements in door check mechanisms, and it consists in the constructions, combinations and arrangements herein described and claimed.

My invention relates particularly to an improved door check mechanism provided with a throttling valve having an irregular surface for engagement by suitable valve-actuating means, whereby very slight movement of the valve will cause a change in the operation of the door check to gradually vary the speed of a door throughout closing of the latter.

Cross reference is made to applicant's co-pending applications Serial Nos. 559207, 559208, 559210, 559209, and 559213, filed May 3, 1910, which show general features of construction shown but not claimed in this application, and application Serial No. 559214, filed May 3, 1910, which shows the irregular valve surface claimed in this application in combination with other features not shown in this case.

I will describe my invention more in detail by reference to the accompanying drawings, in which—

Figure 1 is a sectional view of the left-hand portion of my improved door check; and Fig. 2 is a detail view of the right-hand half of said door check, shown in section. Fig. 3 is a detail view of the link-connecting mechanism between the door and the casing; and Fig. 4 is a sectional view on lines 4—4 of Fig. 2.

My improved door check, of which the two halves are shown respectively in Figs. 1 and 2, consists of sets of draw springs 1, 2, which impinge against an abutment 3, and surround two stationary tubes 4 and 5. The opposite ends of the springs press against ears 6 and 7, provided upon a cylinder 8, which cylinder has a head 9. The head 9 has a chamber 10, which connects by means of a duct 11 with the interior of the cylinder 8.

The head 9 is screwed into the cylinder 8 in such manner that when the head is removed the cylinder can be properly bored from its left-hand extremity, if so desired. The chamber 10 has a ball valve 12, seated preferably upon a lead seat 13, below which I provide a washer of fiber or similar material, all of which parts forming the valve seat are then held in place by means of the screw threaded nut 15. From this, it will be apparent that the ball valve 12 permits fluid to enter the cylinder at its left-hand extremity, but prevents its return through the same opening. A projection 16 prevents the ball from closing the aperture of the duct 11.

The cylinder is connected, by means of the bar 17, with a link 18, which link, by means of a bolt 20, is pivotally fastened to the hinge 21. Suitable packing prevents egress of fluid through the opening, and accommodates the bar 17.

The entire door check is inclosed by a shell 23, which engages a portion of the abutment 3 at one end, and is closed by a cap 24 at the other end, thus to maintain the fluid in said door check proper. When the door is opened, the link 18 and arm 17 draw the cylinder 8 to the left, against the action of the draw springs 1 and 2, at the same time permitting liquid or other suitable fluid, which fills the door check up to the lower edge of the tube 25, to enter the cylinder through the valve 12. The precipitate return of the door, under the actuation of the springs 1 and 2, is then prevented by a piston 26, fastened upon the piston rod 27, which piston rod is loosely mounted in a head 28. A spring 29 acting against the piston and the head serves to hold the piston in its left-hand position. The piston rod which projects through said head has a longitudinal bore 30, through which the liquid in the cylinder can pass through a nozzle 31, the opening of which nozzle is controlled by a valve 32; an adjustable rod 33 engaging said valve to hold the latter slightly away from its seat.

The face of the nozzle 31 has an annular groove 42 whereby I obtain a better seat for the valve 32, and provide a place for the accumulation of foreign particles. The action of the draw springs tending to push the cylinder toward the right over the fixed piston 26 forces the liquid of the cylinder

through the hollow piston rod past the valve 32 in a small quantity, so as to allow the door to close slowly. The valve 32 is held in its place by a screw 34 fastened in the head 28.

5 The rod 33 extends through a suitable packing 34' in the abutment 3, and is adjustably screwed in a sleeve 35 slidably mounted in said abutment; thereby providing an adjustable device for shifting the rod to adjust the position of the valve 32. The sleeve 35 is locked in position by the vertical arm 33^a of a bell-crank lever 33^a, 33^b. A spring 36 holds the valve 32 against its seat, which spring is held in place by a pin 15 37. The rod 33 has a hinged extremity 38 which serves the purpose of permitting the door to close more slowly as it approaches its closed position. This is due to a projection 39 upon the ear 6, which projection, as the cylinder moves toward the left, elevates the extension 38 hinged to said rod 33, so as to press the valve 32 farther away from its seat.

25 As the door approaches normal position, it will be seen that the projection 39 permits the lowering of the hinge portion of the rod 33, thereby reducing its effective length, and gradually bringing the valve 32 against its seat to make the door close more slowly. The rod 33 and its extremity 38 thus serve a dual purpose, making a permanent adjustment of the action of the valve 32, and at the same time a variable adjustment in the course of each operation.

35 The valve 32 has a curved or angularly disposed surface 40, which engages the extremity 38 to more thoroughly permit of

the gradual adjustment of this valve on its seat.

While I have herein shown and particularly described the preferred embodiment of my invention, I do not limit myself to the precise construction and arrangement as herein set forth, but

45 Having thus described its most salient features, what I claim as new and desire to secure by Letters Patent is:

1. In a door check and closer, the combination of a cylinder and piston, means for permitting free entrance of a fluid to said cylinder, a shiftable valve for throttling the escape of fluid from said cylinder and provided with an irregular surface, a hinged member engaging said irregular surface of the valve, and means for swinging said hinged member to shift said valve.

2. In a door check and closer, the combination of a cylinder and piston, means for permitting free entrance of a fluid to said cylinder, a hinged member, means for swinging said hinged member, a shiftable valve for throttling the escape of fluid from said cylinder and provided with an irregular surface, and resilient means for maintaining said irregular valve surface in yielding engagement with said hinged member for causing ununiform shifting of said valve upon swing of said member.

In witness whereof, I hereunto subscribe my name this 9th day of March, A. D. 1910.

PER ERIK NORDQVIST.

Witnesses:

HAZEL JONES,
A. LYDA JONES.