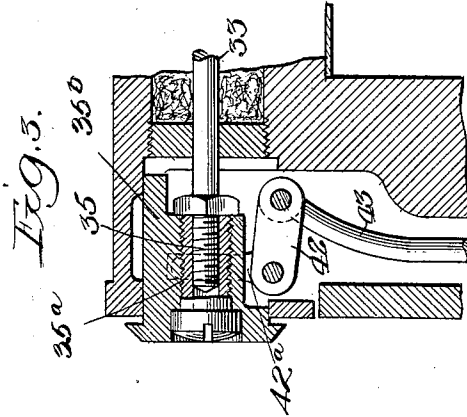
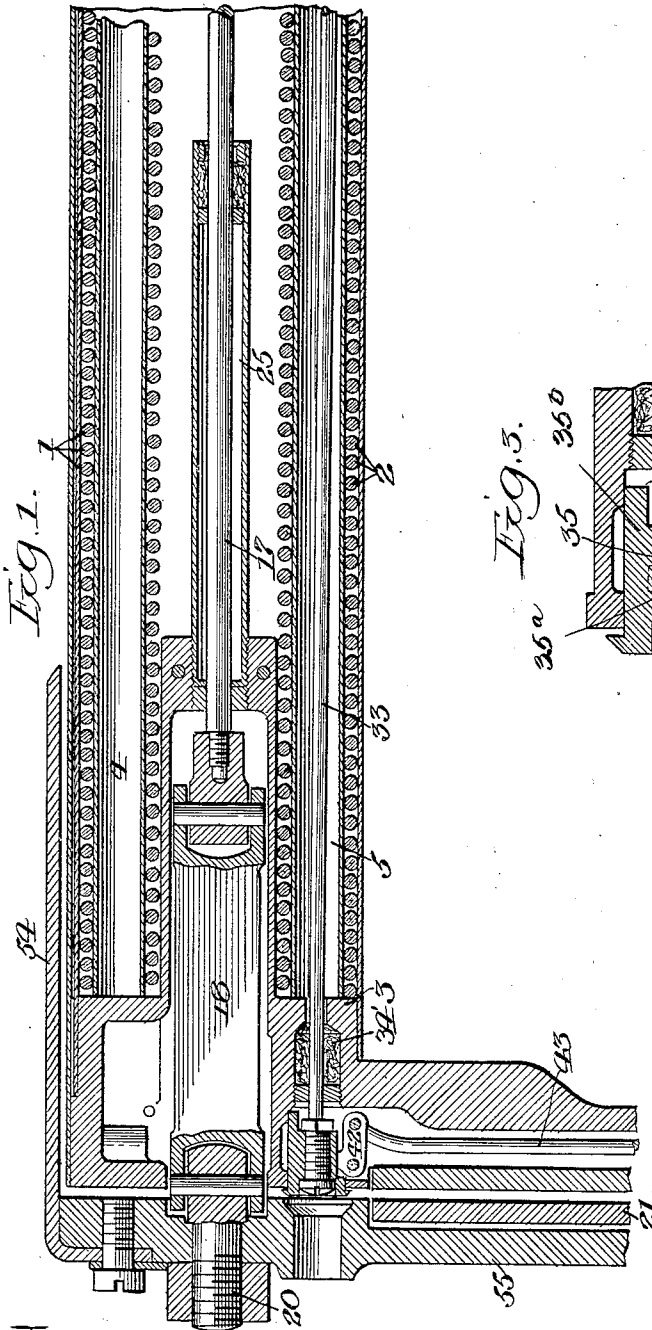


P. E. NORDQVIST.
DOOR CHECK AND CLOSER.
APPLICATION FILED MAY 3, 1910.

1,041,854.

Patented Oct. 22, 1912.

2 SHEETS—SHEET 1.



Witnesses
O. W. Kernick
Hazel Jones.

Inventor
Per Erik Nordqvist
by May W. Zabel
Atty

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2 SHEETS—SHEET 2.

Fig. 2.

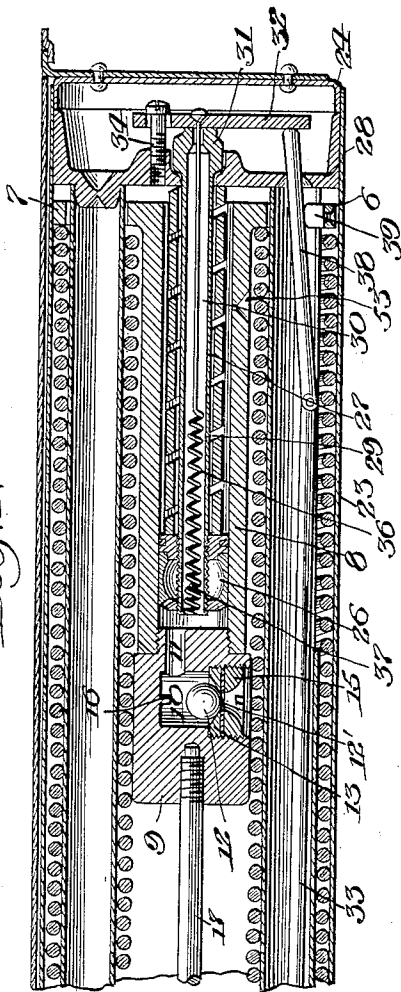
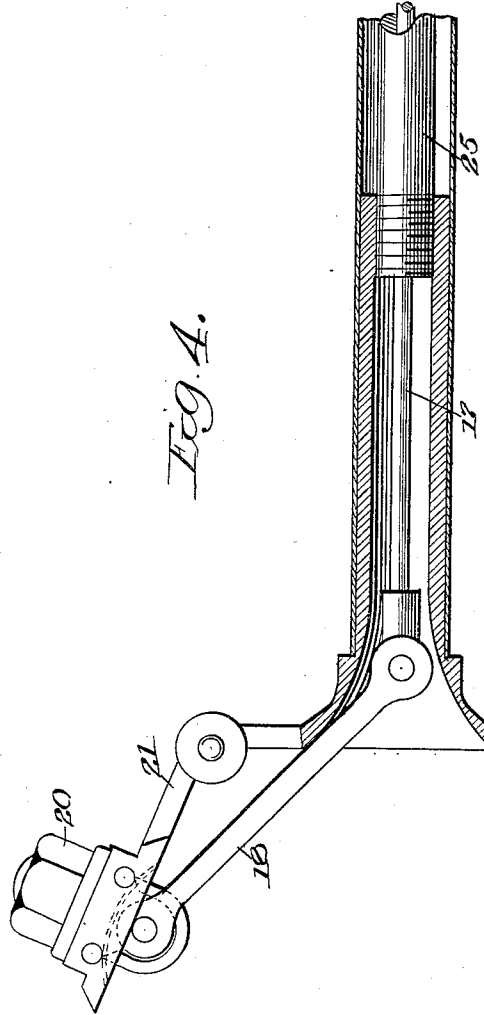


Fig. 4.



Witnesses
O. W. Hennich
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.

DOOR CHECK AND CLOSER.

1,041,854.

Specification of Letters Patent.

Patented Oct. 22, 1912.

Application filed May 3, 1910. Serial No. 559,210.

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 Door Checks and Closers, 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 door checks and closers, and has for its object the provision of improved means for adjusting the movement of the door under the control of the door-check, the door-check of preferred form shown here having a piston and cylinder, and a valve which controls the fluid from said cylinder to regulate the movement of the door.

My improved devices contemplate the provision of adjusting means for this valve operable from the exterior of the door check, which adjacent means can give permanent adjustment to the valve to regulate the speed with which the door closes, and at the same time said means provide an automatic adjustment during each operation, by virtue of which the valve mechanism is controlled in such manner as to allow the door to close more gradually as it approaches its position of rest.

Cross reference is made to copending applications Serial Nos. 559207, 559208, 559209, 559211, 559213 and 559214 filed by applicant May 3, 1910, which show general features of construction, shown but not claimed in this application, which is drawn to an improved construction, in which the throttling valve is actuated by a hinged member operated by means on the moving cylinder.

I will describe my invention more in detail by reference to the accompanying drawing illustrating the preferred embodiment thereof, in which—

Figure 1 shows the left hand extremity of my improved door check; Fig. 2, the right hand extremity thereof; Fig. 3, a detail of adjusting devices for locking the door in any given position; and Fig. 4 is a top view showing various operative parts.

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 is connected 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 that same opening. A projection 16 prevents the ball from closing the aperture of the duct 11. The cylinder is connected, by means of the rod 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 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 fluids, which fill the door check up to about the lower edge of the tube 25, to enter the cylinder through the valve 12¹. 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 an open head, or bridge, 28 secured in the outer end of the shell 23. A spring 29 acting against the piston and the head serves to hold the piston in its left-hand position. The piston rod has a longitudinal bore 30, through which the liquid in the cylinder can pass through a nozzle 31 supported on a head 28 in the casing 23, the opening of which nozzle is closed by a valve 32 secured to said head 28, through the agency of an adjustable valve actuating rod 33, which

holds the valve 32 slightly away from its seat. The action of the draw springs tending to push the cylinder toward the right forces the liquid of the cylinder 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. The rod 33 extends through a suitable packing 34 in the abutment 3, and has a threaded end 35^a, which latter is screwed in a sleeve 35^b; thereby providing conveniently accessible means for adjusting said rod 33. The sleeve 35^b is locked in position by the vertical arm 42^a of a bell crank lever 42, 42^a. A spring 36 holds the valve 32 against its seat, which spring is held in place by a pin 37. The rod 33 has a hinged extremity 38, which serves the purpose of permitting the door to close more slowly as it approaches 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 of the jointed rod 33, so as to press the valve 32 farther away from its seat. As the door approaches its normal or closed 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.

It will of course be understood that all of the parts herein described, excepting the hinge 21, the plate 54, and the casting 55, are mounted upon the door, said parts which are not mounted upon the door being mounted upon the door casing.

Having thus described my invention, 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, a shiftable throttle valve for said cylinder, a hinged member for shifting said valve, and means carried by said cylinder for actuatingly engaging said hinged member to progressively increase the throttle action of said valve throughout the stroke of said piston.

2. In a door check and closer, the combination of a cylinder and piston, a valve device for throttling the escape of fluid from said cylinder, a hinged rod for actuatingly engaging said valve device to vary the throttling action of the latter, and means carried by said cylinder in sliding engagement with said hinged rod for operating the latter.

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.