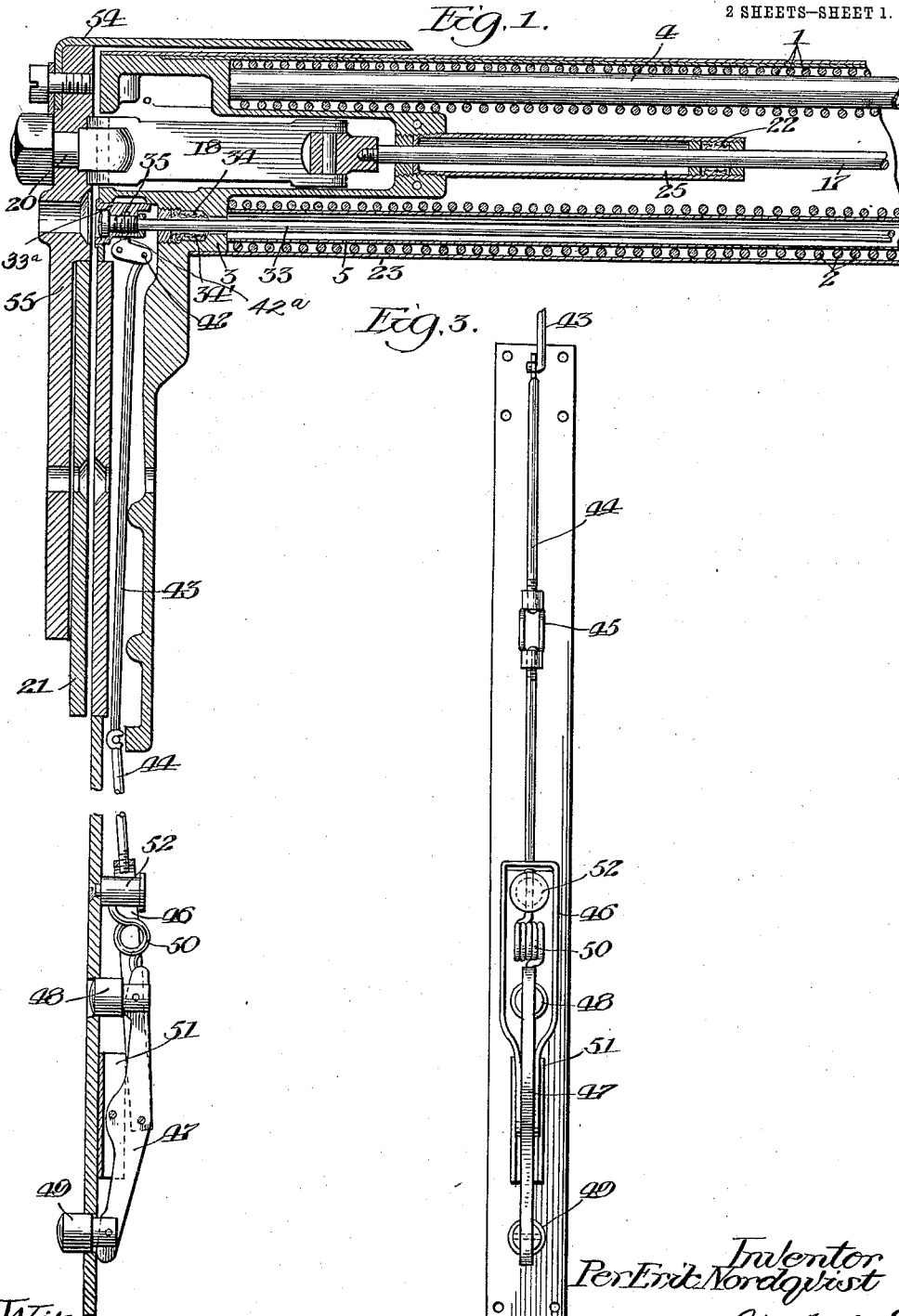


P. E. NORDQVIST.
 REGULATING DEVICE FOR DOOR CHECKS AND CLOSERS.
 APPLICATION FILED MAY 3, 1910.

1,062,297.

Patented May 20, 1913.

2 SHEETS-SHEET 1.



Witnesses
 O. W. Thompson
 Hazel Jones

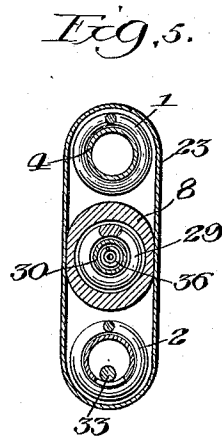
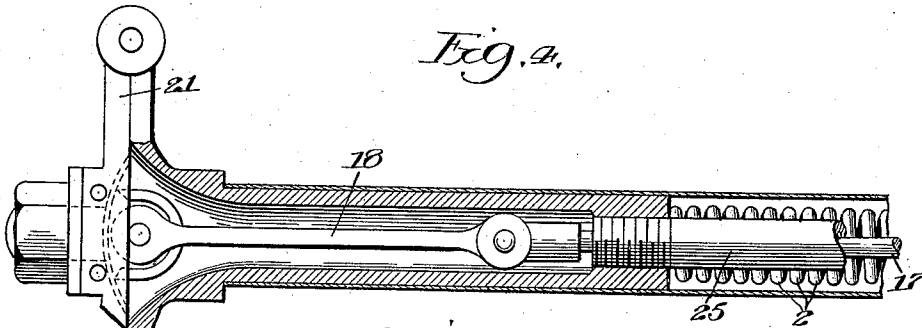
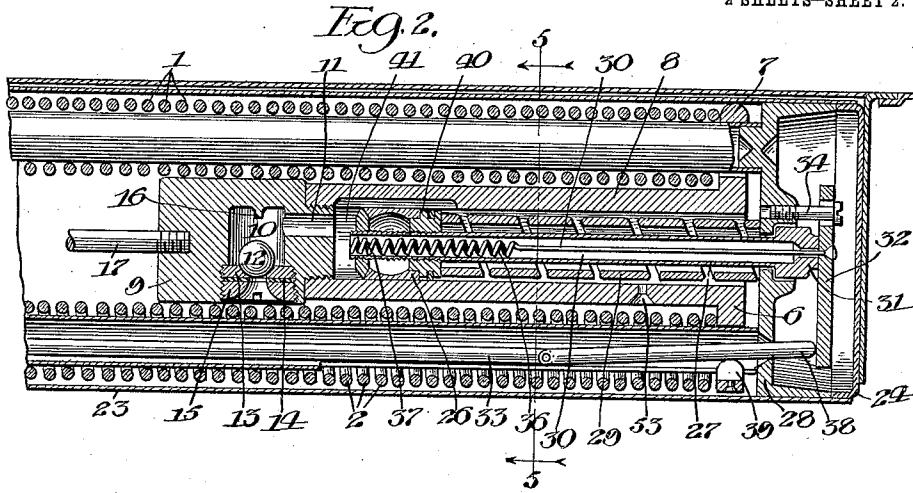
Inventor
 Per Erik Nordqvist
 by May W. Zabel
 Atty

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2 SHEETS-SHEET 2.



Witnesses
 Chas. Vermich
 Hazel Jones

Inventor
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UNITED STATES PATENT OFFICE.

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

REGULATING DEVICE FOR DOOR CHECKS AND CLOSERS.

1,062,297.

Specification of Letters Patent.

Patented May 20, 1913.

Application filed May 3, 1910. Serial No. 559,207.

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 Regulating Devices for 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 has for its object the provision of improved means, whereby the door check is associated with means which permit a door to be locked in any given open position by acting upon the door check mechanism in such manner that the returning mechanism of said door check is prevented from closing the door.

In the preferred form of the invention herein shown, I employ push buttons, which are mounted on the inner edge of the door in such manner that whenever the door is in open position, pressing one of the buttons will hold the door in that position, and pressing the other button will release the door from this position and allow the door check to close it.

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

Figure 1 illustrates the left-hand portion of the door check shown in section; Fig. 2, the right half thereof shown in section; Fig. 3, a detail rear view of the locking mechanism; Fig. 4, a top view of the check and its association with the hinge; and Fig. 5, a sectional view through the door check on line 5—5 of Fig. 2.

My improved door check 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 metal 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 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 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 fills the door check up to about 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 an open head or a bridge 28. A spring 29 acting against the piston and the head serves to hold the piston in its left-hand position. The piston has a longitudinal bore 30, through which the liquid in the cylinder can pass through a nozzle 31, the opening of which nozzle is closed by a valve 32, 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, thereby constituting a fluid cushioning means for permitting 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 terminates in a threaded end screwed in a sleeve 33^a slidably mounted in said abutment; said sleeve being actuatingly engaged by the vertical arm 42^a of a bell-crank lever 42. The threaded end of the rod 33 can be readily

adjusted in the sleeve 33^a to shift the rod 33 for adjusting the position of the valve 32; thus constituting a simple and convenient device which can be adjusted to permit either quick or slow closing of the door. 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 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 jointed rod 33 and extension 38, so as to press the valve 32 farther away from its seat. 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. When the door is nearly closed, it is well to provide means for the rapid escape of the liquid, in order to give a sudden jerk to the door to be sure that it closes effectually, and for this reason, I provide a by-pass 40, which serves the purpose above outlined in permitting the liquid from the operative cylinder chamber 41 to pass to the other side of the piston 26.

In order to set the door, or allow it to remain stationary in any given open position, I provide a valve-controlling lever 42, which is under the control of an arm 43, which valve-controlling arm 43 is adapted to be engaged by a second arm 44, by being hooked thereon, and which arm 44 has a turn buckle, so that its length may be adjusted. Said arm 44 is fastened to a bar 46, which bar 46 is pivotally secured to a rocker arm 47. This rocker arm has two push buttons 48 and 49. The vertical arm 42^a of the bell-crank lever 42 may be pivotally connected to the sleeve 33^a, or actuatingly connected therewith in any well known manner. When it is in the position shown, the rocker arm has pulled the arm 43 in a downwardly direction, in which position it allows the bar 33 to remain in its normal position. When, however, the push button 49 is pushed into the door, the arm 43 is raised, which rotates the lever 42, and pulls the arm 33 outwardly to close the valve 32, and thus prevent the fluid from leaving the cylinder, whereby the draw springs cannot act and the door remains in a given position. When again the actuating plunger 48 restores the bar 33 to its normal valve-actuating position, the door will close. Any suitable

means may be provided for holding the rocker arm 47 in either of its limiting positions, such as a coiled spring 50 having one end secured to said rocker arm and its other end pivoted to a support 52 for permitting swing of the adjacent end of the rocker arm to positions on opposite sides of said pivot point.

When the door is opened 90°, this locking device is operative, but should the door be moved more than 90°, it will be seen that the link 18 occupies a position where, if the door were locked and some unauthorized person attempted to force the door shut, a stress would be exerted against the rod 17, almost at right angles to this rod, which would tend to break it. For this purpose, means are provided to prevent the door from being locked in a position where it would stand open more than 90°, and this means consists of a port 53, which registers under the left hand side of the piston 26 when the door is open 90°. Thus, if the door is opened 180°, the interior of the operative chamber of the cylinder 41 communicates through the port 53 with the exterior, and the draw springs can return the door to its normal 90° position when the valve 32 is open or shut. When the door is locked in a position in which it is open 90° or less, and some unauthorized person forces the door shut, or attempts to do so, none of the operative parts will break because of the spring 29, which will give under compression, and the extra pressure of forcing the door shut will result in forcing some of the liquid past the valve 32, the spring 29 taking up the initial thrust.

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.

Cross reference is made to co-pending applications Serial Nos. 559208, 559209, 559210, 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 limited to my improved locking device.

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

1. A regulating device for door check and closer comprising a fluid cushioning means, a valve for controlling the flow of fluid, and means for adjusting said valve, in combination with a push-button device having means for controlling said adjusting means to arrest the action of said door check to maintain said door in any desired open position.

2. A regulating device for door check and closer comprising a fluid cushioning

means, a valve for controlling the flow of fluid, and means for adjusting said valve, in combination with a double push-button device having means for controlling said

5 adjusting means to arrest the action of said door check to maintain said door in any desired open position, said device including a rocker arm, and a plurality of push buttons for actuating said arm.

- 10 3. A regulating device for door check and closer comprising a fluid cushioning means, a valve for controlling the flow of fluid, and means for adjusting said valve, in combination with a push-button device having
- 15 means for controlling said adjusting means to arrest the action of said door check to maintain said door in any desired open position, said device including a rocker arm, a plurality of push buttons for actuating
- 20 said arm, and a spring adapted to hold said arm in either of its two limiting positions.

4. A regulating device for door check and closer comprising a fluid cushioning means, a valve for controlling the flow of fluid, and means for adjusting said valve, in combination with a push-button device having

25 means for controlling said adjusting means to arrest the action of said door check to maintain said door in any desired open position, said device including a rocker arm, a

30 plurality of push buttons for actuating said arm, and a spring adapted to hold said arm in either of its two limiting positions, a valve controlling arm, and a link connecting said controlling arm and rocker arm.

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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.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."