

O. C. RIXSON.
DOOR CLOSER.
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1,064,256.

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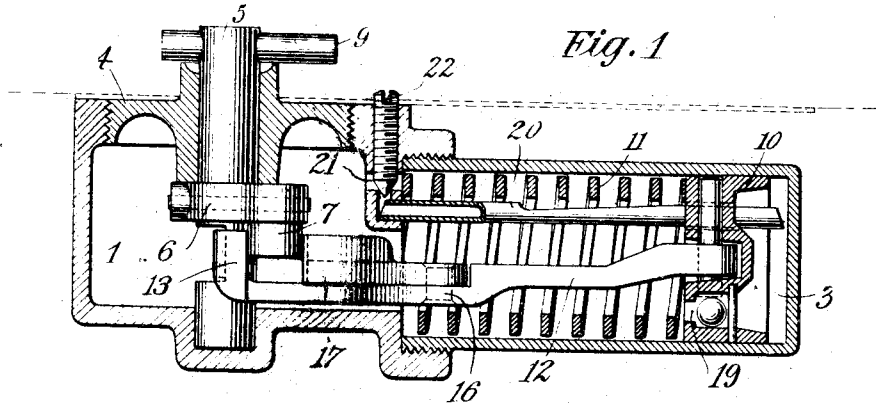


Fig. 2

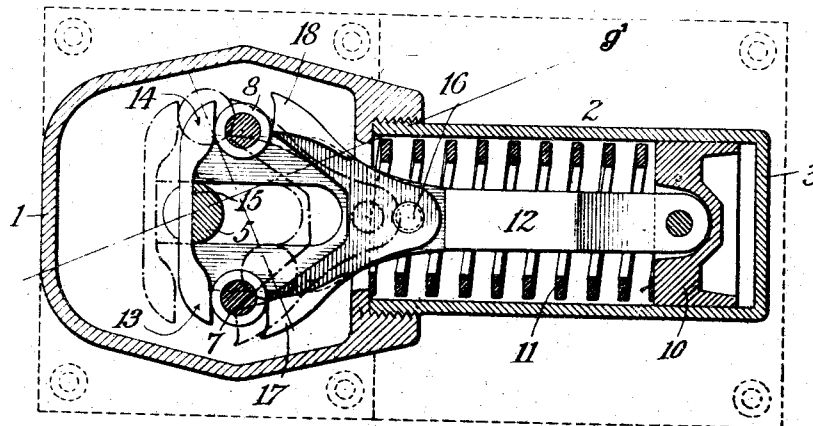
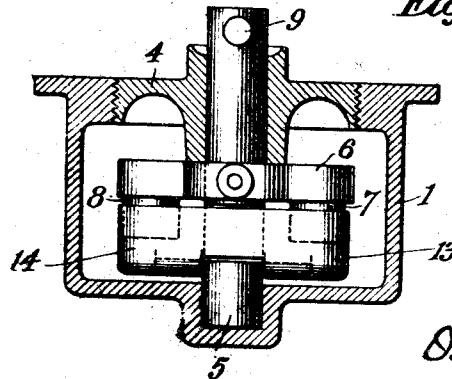


Fig. 3



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UNITED STATES PATENT OFFICE.

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DOOR-CLOSER.

1,064,256.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, OSCAR C. RIXSON, a citizen of the United States, and a resident of the city, county, and State of New York, (whose post-office address is 5 East Forty-second street, New York city, New York,) have invented a new and useful Improvement in Door-Closers, which invention is fully set forth in the following specification.

The object of the present invention is to provide for interior double-acting doors a simple and compact mechanism for closing the door and preventing slamming.

One of the features of the invention comprises the novel manner of utilizing, for service with a double-acting door, a single spring (or closing-mechanism) and a single cylinder and piston (or checking-mechanism).

Another object is to provide means whereby, when the door has been opened beyond a given distance (say ninety degrees), it will remain open.

Other features of the invention will be more specifically pointed out and claimed.

My invention will be best understood by reference to the annexed specification and the accompanying drawings, that illustrate a preferred embodiment thereof.

In these drawings,—Figure 1 is a vertical section through the casing and mechanism constituting one form of my invention, being taken longitudinally through Fig. 2; Fig. 2 is a horizontal section of the same, taken longitudinally through Fig. 1; Fig. 3 is a transverse section, taken through the left-hand end of Figs. 1 and 2.

1 represents a hollow casting having a screw-threaded opening at the top and a similar opening at one end; and 2 is a steel cylinder, screwed into the latter opening and inclosed at its outer end 3. The parts 1 and 2 constitute the casing for the mechanism.

4 is a screw-threaded disk having a central journal-bearing, and adapted to close the opening in the top of the casting 1. 5 is the spindle or shaft, journaled in a bearing in the floor of the casting and in the bearing in the disk 4, and carrying rigidly the transverse arms 6, each of which carries a depending roller, 7 and 8 respectively. The shaft protrudes above the journal-bearing in the disk, and a key 9 is seated transversely in the top thereof, to be engaged by

a slot in the arm or plate on the under edge of the door. In the cylinder 2 is located a piston-head 10; and an interposed coiled spring 11 abuts against the rear of this head and against the opposing face of casting 1 respectively. A longitudinally-extended bar 12 is secured at one end to the head 10, and is slotted at the other end (to straddle the shaft), and at its rear is provided with a cross-head carrying rigid wings 13 and 14 respectively, adapted to be engaged by the rollers 7 and 8 respectively. To economize space, the rear side of the shaft may be cut out, as at 15 (adjacent the cross-head), to permit longer play to the bar 12. When the door is opened (say, counter-clockwise, with respect to Fig. 2, as indicated by dotted line 9'), one of the rollers, as 8, engages the adjacent wing 14, forcing the latter rearwardly, thus drawing the cross-head rearwardly, against the tension of the spring 11; and when the door is released, the tension of the spring forces the head and the bar forward, thus forcing the roller 8 back against the opposition of the piston, and closing the door.

The cross-head of the bar is cut away centrally, in such position and to such extent as not only to receive the cut-away portion of the shaft, but also to receive the adjacent roller when the door is opened (say) ninety degrees or more. In that case, the spring retracts the bar slightly, and the roller is held in the dead center with respect to its pivot (shaft 5) and the spring 11; consequently the door will remain open, until closed by hand past the ninety-degree position, whereupon the spring will close it, as before.

The piston 10 checks the return of the bar 12, but would not prevent the door itself from swinging shut, inasmuch as the latter is not positively secured to the checking-mechanism. To prevent the door swinging to ahead of the bar 12, a double pawl is pivoted on the latter, at 16, with one arm 17 adjacent the roller 7 and the other arm 18 adjacent the roller 8. When the door is opened (for instance, as indicated by dotted line 9' in Fig. 2), and while one roller, as 8, is forcing the bar 12 rearwardly, the other roller 7 deflects the adjacent arm 17 of the double pawl, thereby bringing the other pawl-arm 18 into line with the first-named roller 8; so that when the door is released, this latter arm 18 opposes the return of the roller 8, thus checking the return of the door.

That is to say, during the return of the door to its closed position, the first-named roller 8 tends to force the adjacent arm 18 not only rearwardly but also outwardly, but this outward movement is opposed by the other roller 7 bearing against the inner face of the opposite pawl-arm 17, the roller 7 itself gradually moving out of the way; so that during said return-movement, the double pawl (17-18) is gradually restored to its normal position with its two arms 17 and 18 symmetrically disposed in the position indicated by full lines in Fig. 2. The piston 10 is provided with the usual one-way valve 19, and the entire casing is filled with oil, as is well understood. 20 is a tube passing freely through the piston 10 and abutting against the end 3 of the cylinder, where it is beveled to give entrance to its bore; the piston 10 rides freely along this tube, which is secured to the casting 1, and beveled at that end, to give access to a passageway 21 leading to the interior of the casting 1. A screw 22 is turned down through the casting to regulate the size of this passageway. Along the side of the tube 20 is a sloping cut-away, preferably so located as to provide ample room for the passage of the oil during the first part of the closing of the door (until the door reaches, say, within a foot or so of its closed position), whereupon the amount of cut-away will have so diminished or disappeared as to produce the maximum retardation.

In Fig. 1, the transverse key 9 is represented as protruding farther on one side of the spindle 5 than on the other side; preferably the shorter arm is on the side next to the adjacent door-facing. By having the door-plate correspondingly slotted, even an ordinary carpenter will make no mistake in putting the door in proper position. Without this precaution, one unfamiliar with such devices might assemble the parts with the door one hundred and eighty degrees out of the way.

I have thus described my invention with considerable particularity of detail, but only for the sake of clearness. Modifications of construction and of arrangement may be resorted to, parts may be transposed or inverted, and some of the features used to the exclusion of others, without in any case departing from the spirit of my invention.

Having thus described my invention, I claim:

1. A door-closer and check, comprising a spindle rotatably mounted in the floor beneath the door and adapted to be rotated in either direction by the door, transverse arms carried by said spindle, a cylinder with a piston constituting a door-check, a bar connected to said piston and having transverse wings engaging the transverse arms aforesaid, and a double-pawl mounted upon said bar and co-acting with the arms aforesaid.

2. A door-closer and check, comprising a spindle adapted to be rotated by the door, transverse arms carried by said spindle and each provided with a roller, a slotted bar straddling said spindle and having a cross-head provided with wings extending adjacent said rollers, a double-pawl pivoted on said bar and having its arms extending adjacent said rollers, a cylinder provided with a piston connected to said bar, and a spring tending to force said piston home.

3. A door-closer and check, consisting of a spindle rotatable by the door and carrying transverse arms with bearing-surfaces, a cylinder and piston, a spring normally forcing said piston to the closed end of said cylinder, a bar connected at one end to said piston and slotted at the other end to straddle said spindle, a cross-head carried by said bar at the rear of said spindle and having a countersunk seat to receive either of said bearing-surfaces when the door is opened to a predetermined extent, and a double-pawl pivoted on said bar to be deflected by one of said bearing-surfaces when the door is opened so that one arm of said pawl will oppose the other bearing-surface while the door is closing.

4. In a door-closer, the combination of a casing seated beneath the floor, operating-mechanism located therein, a spindle connected with said mechanism and protruding from said casing, and a transverse-key through the upper end of said spindle, one of the arms of said key being longer than the other.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

OSCAR C. RIXSON.

Witnesses:

C. A. L. MASSIE,
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