No. 686,167. Patented Nov. 5, 1901.

W. H. TAYLOR.

COMBINED DOOR CHECK AND CLOSER.

(Application filed May 4, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

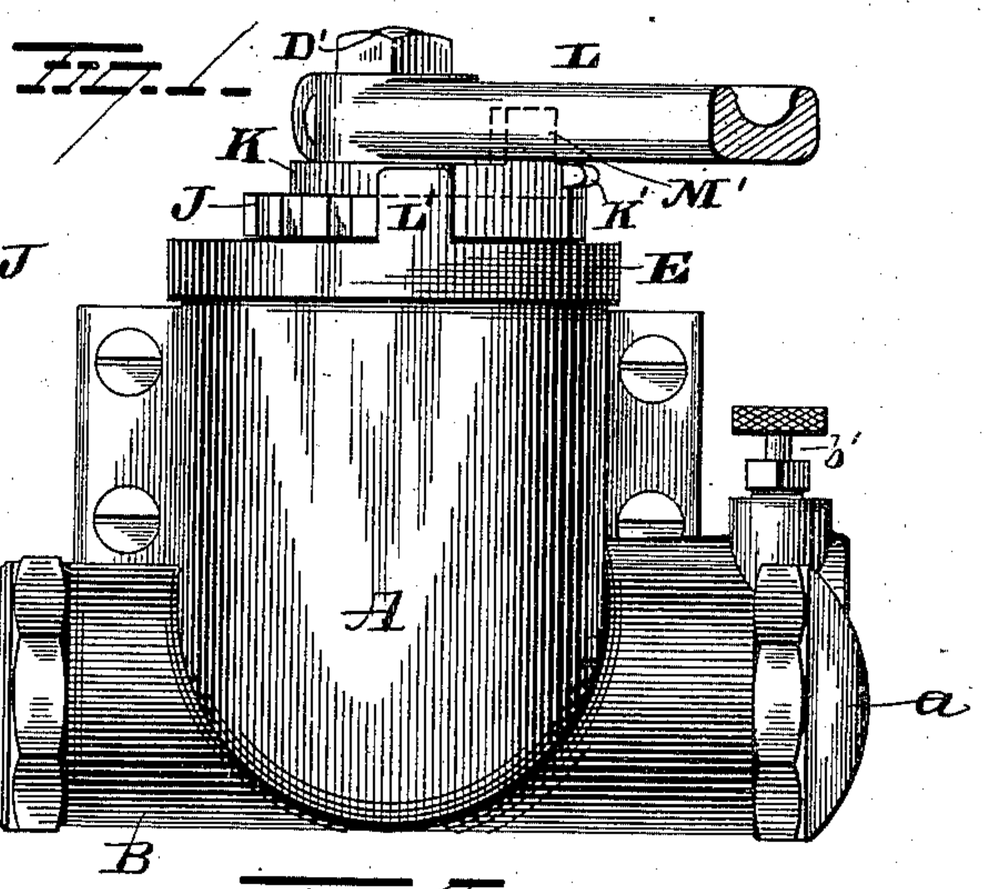


Fig. 4a.

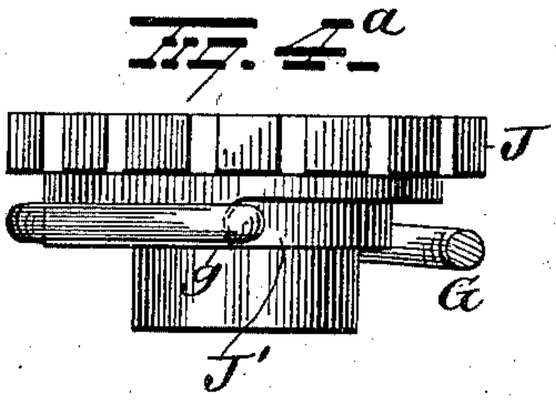


Fig. 4.

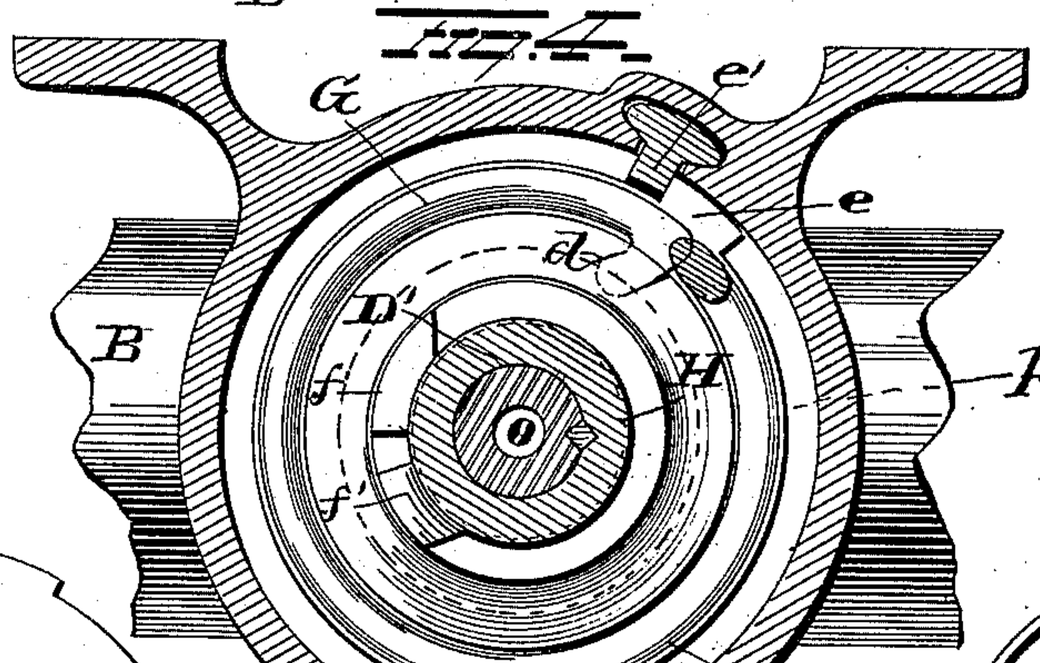


Fig. 6.

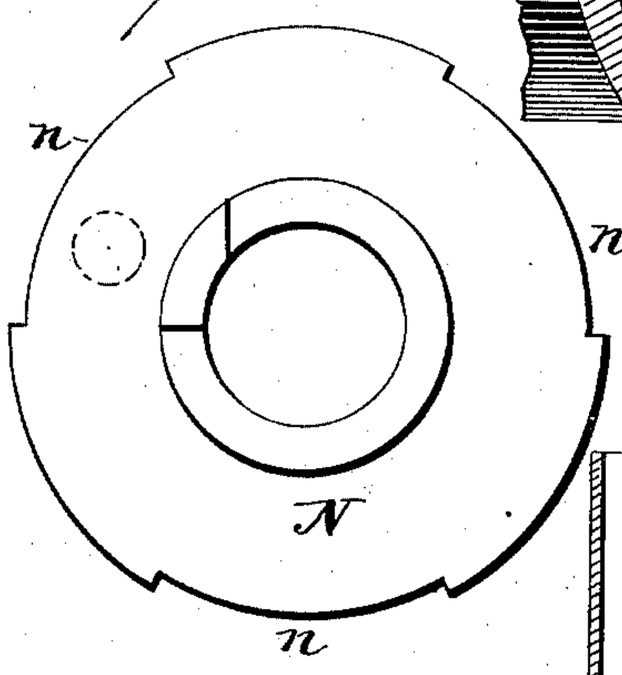


Fig. 7.

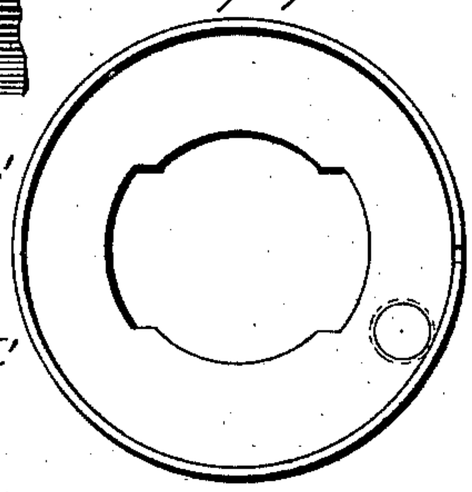


Fig. 8.

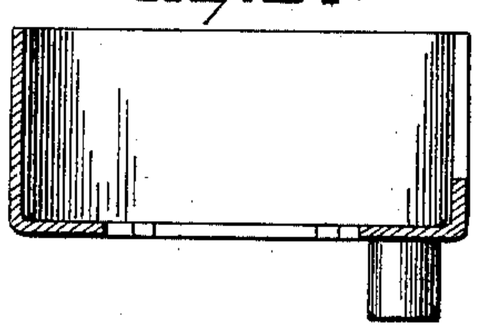
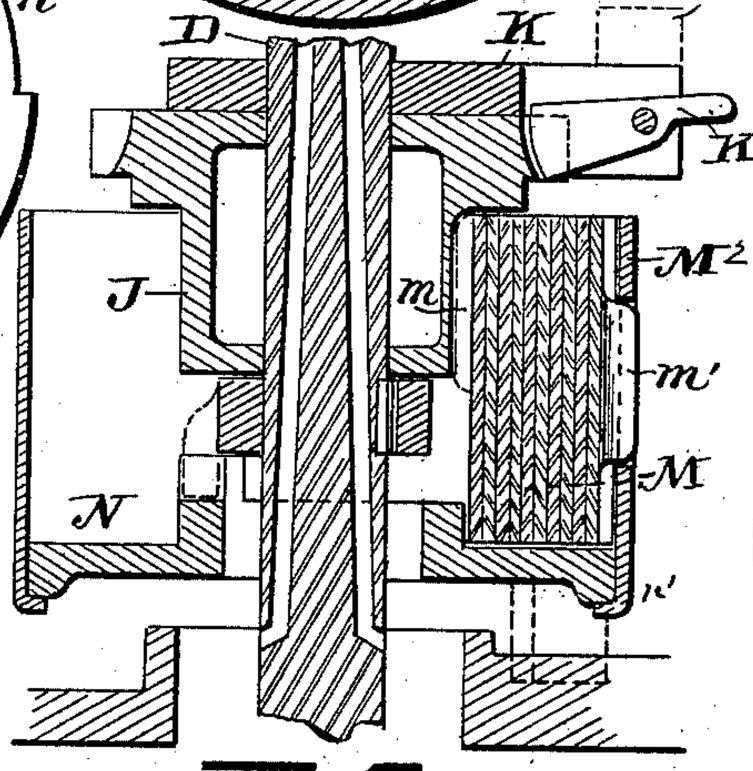


Fig. 5.



WITNESSES
E. D. Nottingham
G. F. Doming

INVENTOR
W. H. Taylor
By H. A. Seymour
Attorney

No. 686,167. Patented Nov. 5, 1901.

W. H. TAYLOR.

COMBINED DOOR CHECK AND CLOSER.

(Application filed May 4, 1901.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 1.

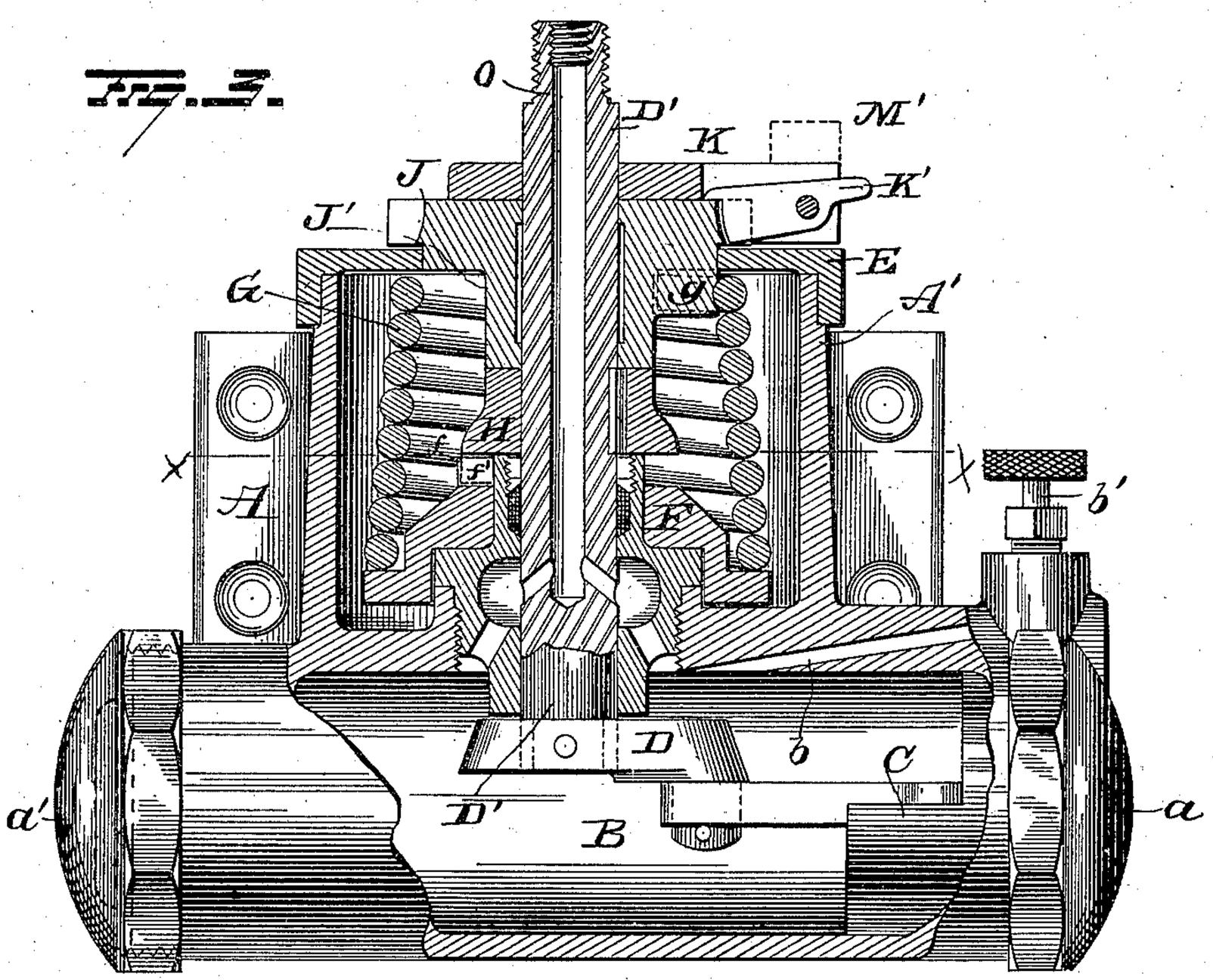
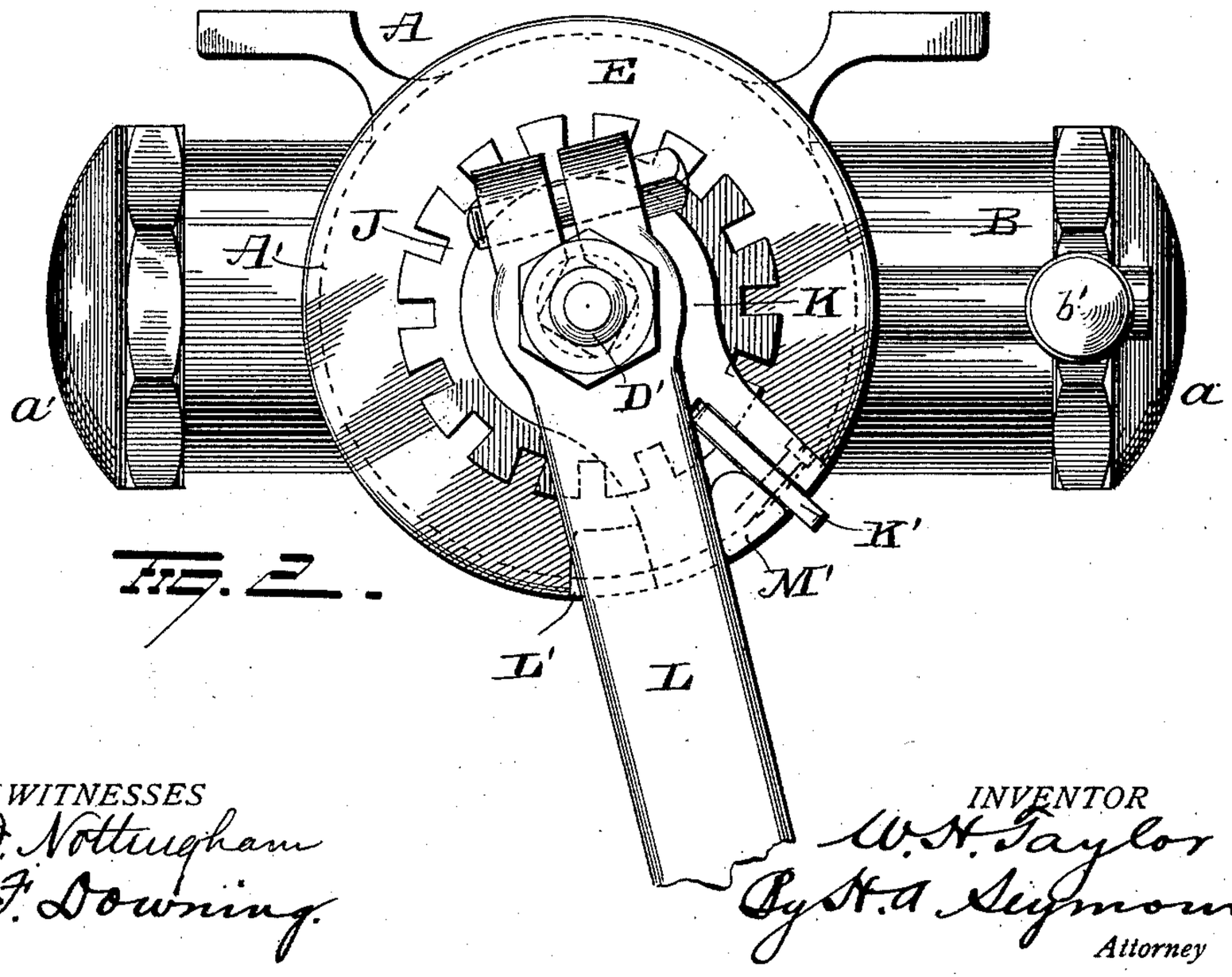


Fig. 2.



WITNESSES
E. J. Nottingham
G. F. Downing.

INVENTOR
W. H. Taylor
By H. A. Seymour
Attorney

UNITED STATES PATENT OFFICE.

WARREN H. TAYLOR, OF STAMFORD, CONNECTICUT, ASSIGNOR TO THE YALE & TOWNE MANUFACTURING COMPANY, OF STAMFORD, CONNECTICUT.

COMBINED DOOR CHECK AND CLOSER.

SPECIFICATION forming part of Letters Patent No. 686,167, dated November 5, 1901.

Application filed May 4, 1901. Serial No. 58,755. (No model.)

To all whom it may concern:

Be it known that I, WARREN H. TAYLOR, of Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in a Combined Door Check and Closer; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in combined door checks and closers, the object being to provide a device of this character designed for use on either right or left hand doors without any change, alteration, or adjustment whatsoever of any of the parts of the combined check and closer or its attachment, so that the device as it comes from the shop is ready to be applied to either a right or left hand door.

With this end in view my invention consists in the parts and combinations of parts, as will be more fully explained, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in elevation of my improved device. Fig. 2 is a plan view of same. Fig. 3 is a view in vertical section. Fig. 4 is a view in transverse section and on the line *x x* of Fig. 3. Fig. 4ª is a view in side elevation of the ratchet-wheel. Fig. 5 is a view in vertical section of a modification. Fig. 6 is a view of the disk or ring employed in connection with Fig. 5, and Figs. 7 and 8 are views of a modification of the latter.

A represents a casing comprising a spring-chamber A and a liquid-chamber B, the two chambers being integral and preferably located at right angles to each other, as shown. The liquid-chamber is preferably provided with an integral head *a* at one end and a removable head *a'* at the other end, the said chamber being provided adjacent to its closed end with a by-pass port *b* and valve *b'* of the usual or any desired form for permitting the liquid to escape from in front of the piston, as is common in this class of devices.

The piston C is located and moves within the liquid-chamber B and is connected by its rod *c* with the crank D on the lower end of the spindle D'. This crank D rests normally in a line with the long axis of the center of the liquid-chamber, so that when the spindle is turned in either direction from its position of rest the piston will be drawn toward the spindle, thus permitting the liquid to pass through the valved opening therein to a position in front of the piston, and thus check the movement of the latter during the closing movement of the door.

The spindle D' passes upwardly through a suitable packing or stuffing box located in the dividing-wall of the two chambers A' and B, through the spring-chamber, and out through the cap E of the latter and carries on its upper end, outside of the cap, the parts which will be hereinafter referred to.

Located within the spring-chamber, at the bottom thereof, is the disk or ring F. This disk or ring is countersunk on its lower face to receive the upper end of the stuffing-box, which, as before stated, packs the spindle at the point where the latter passes into the liquid chamber or cylinder and is preferably made conical or tapering on its upper face, so as to form a support for the lower end of the round-wire spiral spring G. The upwardly-projecting body of the disk or ring F is provided near its base with a hole *d* for the attachment of the lower end of the spiral spring, while the base of the disk is provided with a laterally-projecting tongue *e*, which latter engages a rib *e'* on the inner face of the side wall of the spring-casing and prevents the disk or ring from turning in one direction. The disk or ring normally rests with its tongue against one side of the rib. Hence it will be seen that the disk can be turned in one direction and is held against movement in the other direction.

The disk or ring F is provided centrally with an opening for the passage of the spindle D' and is provided at its upper end or apex with an upwardly-projecting lug *f*, which latter is engaged by a depending lug *f'* on the collar H, which latter is keyed to the spindle D'. The lug on the disk and the depending lug on the collar are so located with re-

lation to the tongue *e* and rib *e'* that when the lug on the collar is moved to engage the lug on the disk the tongue on the disk is moved away from the rib on the casing, and when the lug on the collar moves in a direction away from the lug on the disk the tongue remains in contact with the rib. Hence when power is applied through the spring in one direction the tongue *e*, bearing against the rib *e'*, prevents the disk from turning; but when the spindle is turned in the opposite direction, so as to carry the depending lug *f'* on the collar against the lug *f* on the disk or ring, the latter turns away from the rib and compresses the spring.

Resting on the cap E, which covers the spring-chamber, is the ratchet-wheel J. This wheel has a hub J', depending through a central opening in the cap, and is provided with a shoulder *g*, which engages the bent upper end of the spring G.

With the construction thus far described it will be seen that by turning the spindle in one direction the lower end of the spring will be wound up or compressed, whereas by rotating or turning the ratchet-wheel in the opposite direction the upper end of the spring will be compressed. In order, however, to effect a compression of the spring from either end, it is of course essential that while one end is being compressed the other end be held against movement. As previously explained, the disk or ring to which the lower end of the spring is secured is held by a rib on the casing against movement in one direction and is moved in the direction in which it is free to turn by a depending lug on the collar (which, as before stated, is keyed to the spindle) engaging an upwardly-projecting tongue on the block or ring. When, however, the spindle turns in the opposite direction, the block is held by the rib before described. When the spring is being compressed at its lower end, the upper end is held in place by the arm K, carrying the pawl K', which latter engages a tooth of the ratchet. This arm is loosely mounted on the upper end of the spindle below the lever L and adapted to move in the path of the lug L', projecting from the cap E. This lug L' prevents the rotation of the arm K and the ratchet-wheel to which it is locked in one direction, but leaves it free to turn in the opposite direction, and is turned in said latter direction by the lever L, secured to the spindle and engaging the upwardly-projecting lug M' on the arm K. When the lever turns the spindle to the left, the arm engaging the lug on the cap prevents the ratchet-wheel from following the arm, and hence holds the upper end of the spring against movement. This movement of the lever last described turns the disk or ring F at the lower end of the spring-chamber and compresses the spring at its lower end. When the lever is turned to the right, the disk or ring engages the rib on the casing and is held against movement, while the lever engages the lug on the arm and turns the latter and the ratchet-wheel, thus compressing the spring at its upper end. Thus when the lever is turned in one direction the spring is compressed at one end and held against movement at its other end, and by reversing the direction of movement of the lever the end of the spring which was formerly restrained will turn to compress the spring, while the opposite end will be held against movement.

Instead of employing a wire spring, as shown and above described, I can employ a flat band or ribbon spring, as shown in Fig. 4. In this construction the hub J of the ratchet-wheel is made somewhat larger and is provided with a shoulder to engage the bent lip *m* on the inner end of the spring M, while the outer end of the spring is provided with a lip *m'*, engaging a slot in the band M^2, encircling the spring, this band being provided with a series of depending tongues *n'*, which latter rest within the notches *n*, formed in the periphery of the disk or ring N. This disk or ring N differs from the disk or ring F of Fig. 3 in that its upper surface is flat to form a seat for the coiled spring, whereas in the latter the top is made conical and is further provided with a depending shoulder to engage a stop on the bottom of the casing, whereas in the other form the shoulder is on the periphery of the disk and engages a shoulder on the side of the spring-casing. Instead, however, of making the disk or ring and spring-retaining band of two parts locked together, as explained, they may be constructed of one piece, as clearly shown in Figs. 7 and 8.

With either construction shown it will be readily seen that the spring can be put under any desired tension by the ratchet and pawl, and as this tension is distributed throughout the spring and against both the disk or ring and the ratchet-wheel no greater pressure is required to turn the arm in one direction than the other.

In Fig. 4 I have shown the spindle having a central bore O, leading to the liquid-chamber, and in Fig. 5 this bore is shown divided, so as to readily permit of the escape of the air as the cylinder fills with liquid. This bore or bores lead to a point within the stuffing-box and communicate with a chamber in the latter by a lateral bore or bores, through which the liquid passes, the chamber in the stuffing-box having an escape-opening for the liquid. With a spindle so bored one is able at any time to refill the check through the top of the spindle by removing the screw at the top and forcing the liquid into the bore, the air replaced by the liquid being forced out through the same bore, and when there are two, as shown in Fig. 5, they may be so arranged that the liquid will pass down one and the air up through the other.

It is evident that many slight changes might be made in the relative arrangement of parts herein shown and described without departing from the spirit and scope of my invention.

Hence I would have it understood that I do not wish to limit myself to the exact construction of parts shown and described; but,

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

1. The combination with a spindle and a main lever-arm, of a double-acting spring indirectly connected at one end to the spindle, a ratchet-wheel mounted to rotate on the spindle and connected to the other end of the spring, an arm carrying a pawl for engaging the ratchet and means for connecting the arm and lever when the latter is moved in one direction.

2. In a combined door check and closer, the combination with a casing divided into two compartments, a piston in one compartment and a double-acting spring in the other, of a spindle connected to the piston and indirectly connected to one end of the spring, a ratchet-wheel mounted to rotate on the other end of the spindle and connected to the opposite end of the spring, an arm loosely mounted on the spindle and carrying a pawl engaging the ratchet-wheel, a stop on the casing for limiting the movement of said arm in one direction, a lever secured to the spindle and a stop on the arm adapted to be engaged by the lever when the latter is moved in one direction.

3. In a combined door check and closer, the combination with a casing divided into two compartments, a piston in one compartment, a spring in the other and a chambered box or gland in the wall between the two compartments, and having passages leading therefrom to the piston-compartment, of a spindle connected to the piston and also to the spring and provided with a bore leading from its upper end and discharging into the chamber in the gland, and a removable closure for the upper end of the bore.

4. In a door-closer, the combination with a casing a spindle and a main lever-arm, of a double-acting spring indirectly connected at one end with the spindle and at its other end with a tension-adjusting block, a movable piece carrying a pawl engaging said block, and provided with a projection adapted to be engaged by the main lever-arm when the latter is moved in one direction.

5. In a door-closer, the combination with a casing having a stop thereon, a spindle and a main lever-arm, of a double-acting spring indirectly connected at one end to the spindle and at its other end with a tension-adjusting block, a movable piece carrying a pawl for engaging said block and also adapted to engage the stop on the casing, and be engaged by the main lever-arm when the latter is moved in one direction.

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

WARREN H. TAYLOR.

Witnesses:

SCHUYLER MERRITT,

WALTER C. ALLEN.