No. 821,714. PATENTED MAY 29, 1906.

W. K. HENRY.

DOOR CLOSER AND CHECK.

APPLICATION FILED MAY 6, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

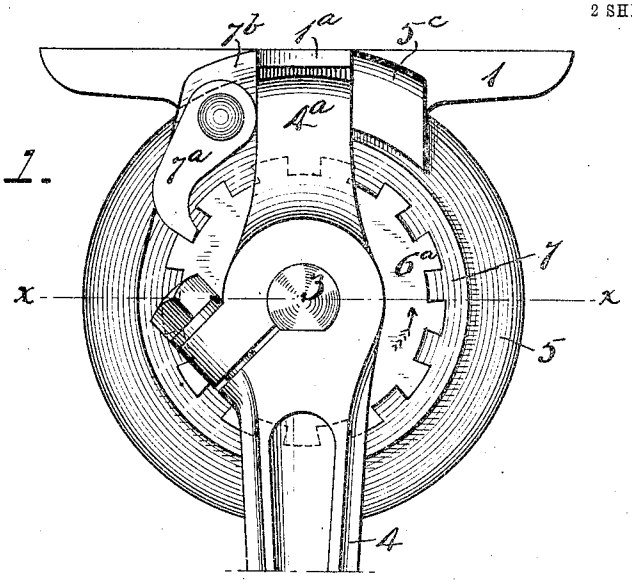
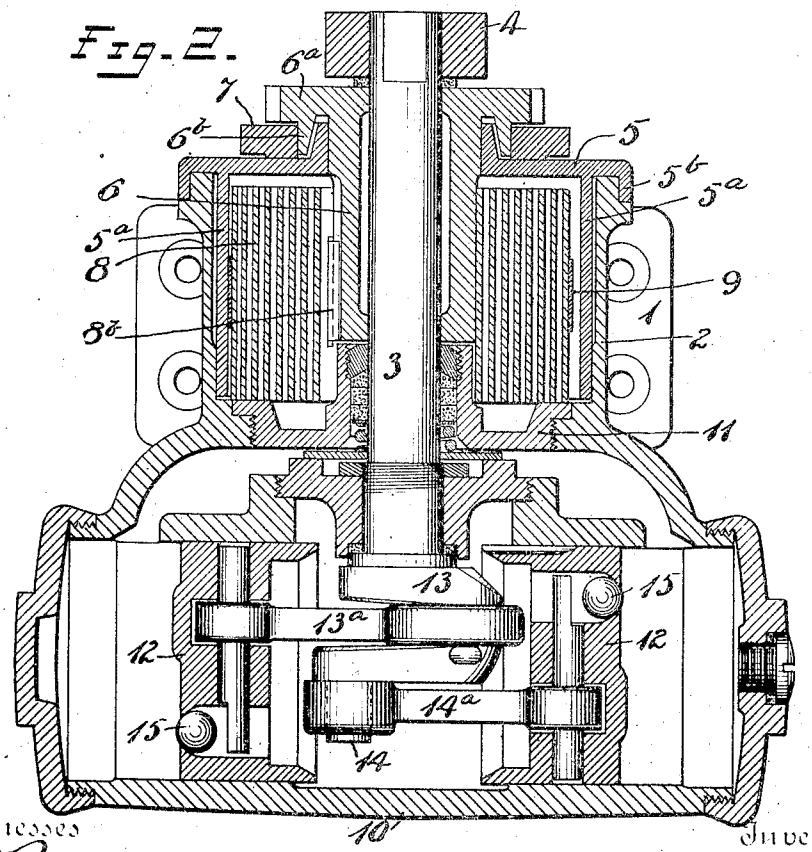


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

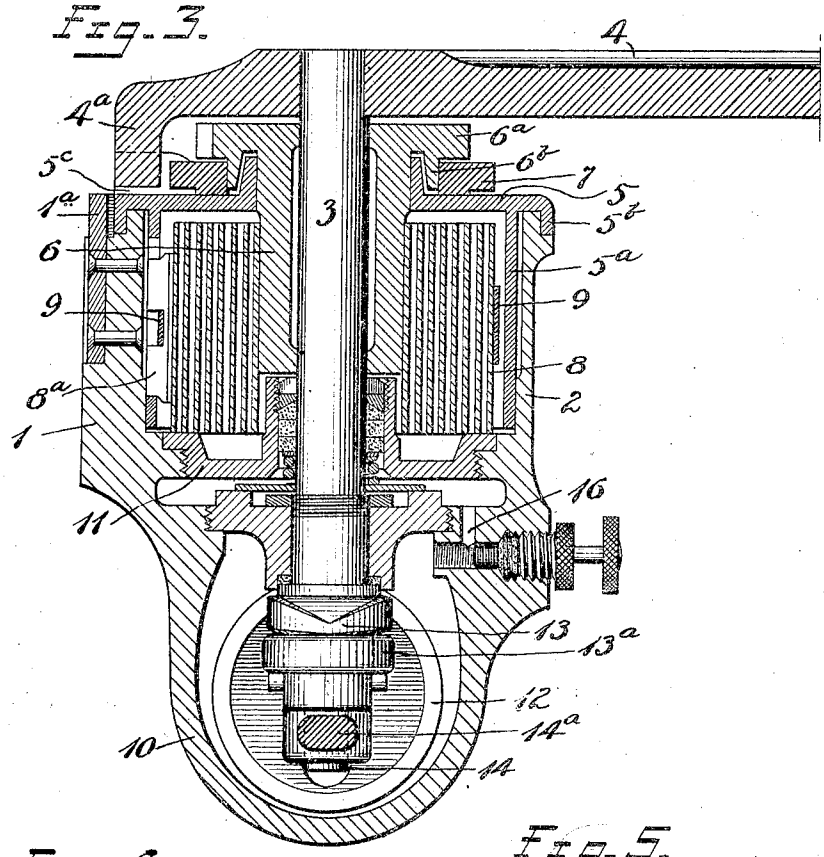


Fig. 4.

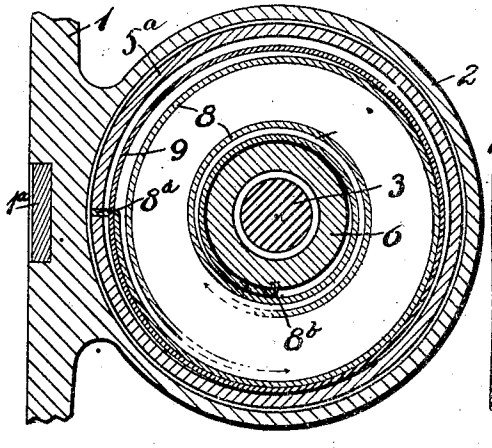
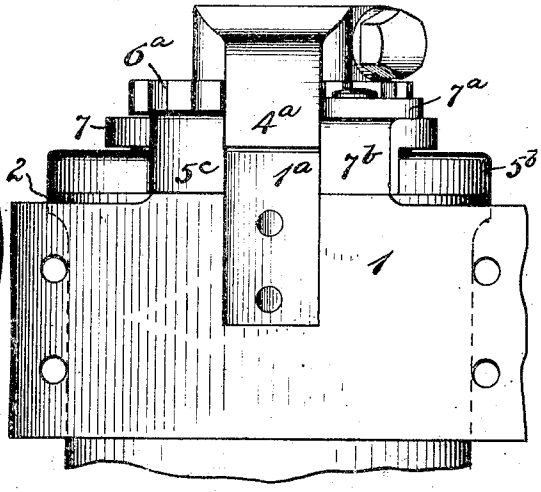


Fig. 5.



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DOOR CLOSER AND CHECK.

No. 821,714. Specification of Letters Patent. Patented May 29, 1906.

Application filed May 6, 1905. Serial No. 259,082.

To all whom it may concern:

Be it known that I, WILLIAM K. HENRY, a citizen of the United States, residing at New Britain, Hartford county, Connecticut, have invented certain new and useful Improvements in Door Closers and Checks, of which the following is a full, clear, and exact description.

My invention relates to improvements in door closers and checks.

The object of the invention is to provide a door-closer which can be easily manufactured, quickly assembled, adjusted, and applied to either a right-hand or a left-hand door at will, the same operating with equal effectiveness irrespective of the swing of said door.

Broadly, the invention relates to improvements in the closer mechanism irrespective of the checking mechanism employed and whether said checking mechanism be part of or independent of the closer. Nevertheless in combination with certain checking mechanism hereinafter more fully described it has many advantages.

In the drawings, Figure 1 is a plan view of the door-closer with check absent. Fig. 2 is a vertical sectional view on the plane of the line X X, Fig. 1, and showing the check attached. Fig. 3 is a vertical sectional view of the closer and check taken on a plane at right angles to the section of Fig. 2. Fig. 4 is a horizontal cross-section of the door-closer. Fig. 5 is a view of the rear side of the closer, the check being broken away.

In the drawings I have shown the closer in combination with the check, since some of the claims of my invention are predicated on this combination. The broad claims, however, are based upon the door-closer, and the same will therefore be described in detail. The checking apparatus need not be described as fully as would otherwise be necessary, because in a separate application, Serial No. 259,081, filed May 6, 1905, I claim the same as an independent invention.

1 designates the backing-plate, such as ordinarily used, and by which the closer may be secured to a door in the well-known manner.

2 designates the closer-case, within which is the spring-chamber.

3 designates a spindle.

4 designates a lever detachably secured on the spindle 3.

The means for connecting this door-closer with the door-casing is that which is customary and well known and need not, therefore, be described herein.

4^a designates an extension from the lever-arm 4, the same performing the valuable function hereinafter set forth.

The spindle 3 is provided with a suitable bearing or bearings within or on the case 2.

5 designates a cap or cover-plate adapted to the case 2, said cap having a depending portion 5^a arranged to project downwardly into the case 2 and preferably of cylindrical form.

5^b designates an outer flange on the cap 5, which overstands the upper edge of the case 2 and preferably neatly fits the same.

6 designates a sleeve surrounding the spindle 3 and taking a suitable bearing thereon. The upper end of this sleeve is extended laterally to form the ratchet 6^a. Below this ratchet 6^a is a depending flange or bearing 6^b for a member 7, which cooperates with the ratchet 6^a when it is desired to vary the spring tension. This member 7 carries a suitable locking device 7^a, whereby the same may be interlocked with the ratchet 6^a. In the form shown this locking device 7^a is a pawl carried by member 7.

7^b designates an extending lug upon the member 7.

1^a designates a stop on the back 1. The lug 7^b is so arranged as to normally bear against one side of this stop 1^a. The cap 5 carries a lug 5^c, which is so arranged as to normally bear against the opposite side of the stop 1^a This is seen in Figs. 1 and 5.

The projection 4^a upon the lever 4 is substantially that of a hook in the particular form shown and projects downwardly, so as to stand between the upper part of the lug 7^b on member 7 and the upper part of lug 5^c on the cap 5. The part 4^a swings clear of the stop 1^a and will when swung move either the member 7 or cap 5 through its engagement with the aforesaid respective lugs.

8 designates a spring arranged around the spindle 3 and within the spring-chamber. One end 8^a of this spring engages in a slot or recess in the wall 5^a of the cap. This is best

seen in Figs. 3 and 4. The other end 8^b of the spring engages with a slot or recess in the sleeve 6. This is best seen in Figs. 2 and 4. To put the spring under tension, the ratchet 6^a will be rotated in the direction of the arrow, thereby rotating the sleeve 6. When the spring has been put under the desired tension, the locking device 7^a is thrown in, holding the part 6 against free backward rotation. The tendency of the spring then will be to press the lug 7^b against one side of the stop 1^a and the lug 5^c against the opposite side of said stop.

The operation will now be apparent. When the lever 4 is rotated in either direction, it will encounter the opposition of the spring. For example, when said lever is moved in one direction the lever extension 4^a will engage the lug 7^b and rotate the sleeve 6, (the lug 5^c being held by stop 1^a,) increasing the tension in the spring. When the lever 4 is released, the spring will return it to its normal position. (Shown in the drawings.) If the lever 4 is moved in an opposite direction, the extension 4^a will engage the lug 5^c and will rotate the cap 5 and depending wall 5^a, which in turn will carry around with it the outer end of the spring, increasing the tension therein. During this movement the lug 7^b will be held by the stop 1^a. When pressure is released, the lever 4 will, as before, be returned to its normal position.

9 designates a band which surrounds the spring 8, so as to keep it from unwinding when removed. This band performs no function when the parts are all assembled ready for use. It does, however, facilitate the insertion and removal of the spring when the check is being assembled or taken down. These band-like spring-retainers are well known, and I lay no claim thereto herein.

When the closer is used in combination with a check in which the checking-cylinder is formed with or connected directly to the spring-case 2, the construction is preferably as follows: 10 designates a cylinder within which is located one or more pistons. If this cylinder is arranged to contain liquid, a suitable partition 11 is arranged to close off the liquid-chamber from the spring-chamber. In the particular form shown in the drawings two pistons 12 12 are provided, and said pistons work diametrically opposite. At the lower end of the spindle 3 there is a double crank, (indicated at 13 14.) The crank 13 is connected with one of the pistons 12 through the medium of a connecting-rod 13^a, while the crank 14 is connected to the other piston through the medium of the connecting-rod 14^a. These cranks are arranged out of line, so that the connecting-rods will not interfere in crossing the center. This is very advantageous in combination with my improved door-closer, because, as is clear from the foregoing description, both the closer and the check may be used without change on either a right or a left hand door. In the drawings the pistons are shown in approximately the position in which they stand when the door is closed. When the door is opened, no matter which way the lever-arm 4 turns the pistons will be moved apart and toward the ends of the cylinder 10, the liquid flowing freely past the check-valves 15 15 in said pistons and into the space between said pistons. When the door closes, the direction of rotation of the spindle 3 is reversed, and the pistons 12 are drawn toward each other, the check-valves 15 15 closing, whereupon the liquid to reach the other side of the pistons must pass through the valve-controlled passage (indicated at 16, Fig. 3.)

To take down the door-closer, it is merely necessary to release the locking device 7^a, whereupon the sleeve 6 will turn until the tension of the spring is relieved therefrom. When this occurs, the spring will be embraced tightly by the band 9. Upon removing the lever 4 from the upper end of the spindle the sleeve 6, the cap 5, and spring 8 may be quickly and easily withdrawn with very little effort. To assemble, these steps are reversed.

The simplicity of operation, the facility with which the various parts may be removed or assembled or adjusted, and the fact that the closer can be applied to either a right-hand or a left-hand door without change in the arrangement of any of the parts all furnish substantial benefits and advantages.

What I claim is—

1. In a door-closer, a spindle, a lever-arm rigidly secured thereon and having a rearward extension, a spring surrounding the spindle, a stop at the rear of the closer-case and externally thereof, and adjustable connecting means engaged by the ends of the spring and arranged to engage said lever-arm extension and said stop, whereby the former is normally held under spring restraint in a definite position relatively to said stop.

2. In a door-closer, a spindle, a lever-arm rigidly mounted thereon and having a rearward extension, a spring surrounding said spindle, a stop at the rear of the closer-case and externally thereof, a rotatable member engaging one end of said spring and in turn engaging one side of said lever extension and said stop, a second rotatable member engaged by the other end of the spring and in turn engaging the other side of said lever extension and said stop, said rotatable members being independently movable upon the rotation of said spindle by said lever-arm.

3. In a door-closer, a casing, a spindle, a lever-arm rigidly secured thereon and having a rearward extension, a flat coiled spring surrounding the spindle, a stop at the rear of the said casing and externally thereof, a sleeve rotatably mounted on said spindle and engaging the inner end of said spring, a second

rotatable member surrounding said sleeve and engaging the outer end of said spring, said rotatable members engaging respectively on opposite sides of the aforesaid lever extension and stop, but being independently rotatable by the movement of said lever-arm.

4. In a door-closer, a casing, a spindle, a flat coiled spring a sleeve rotatably mounted on the spindle and engaging the inner end of the spring, a second rotatable member surrounding said sleeve and engaging the outer end of the spring, lugs on said rotatable members above the spring, a lever having a rearward hooked extension adapted to stand between said lugs, and a stop on the rear of the casing adjacent said lever extension but out of the path of movement of the same, said lugs being arranged to engage against said stop.

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