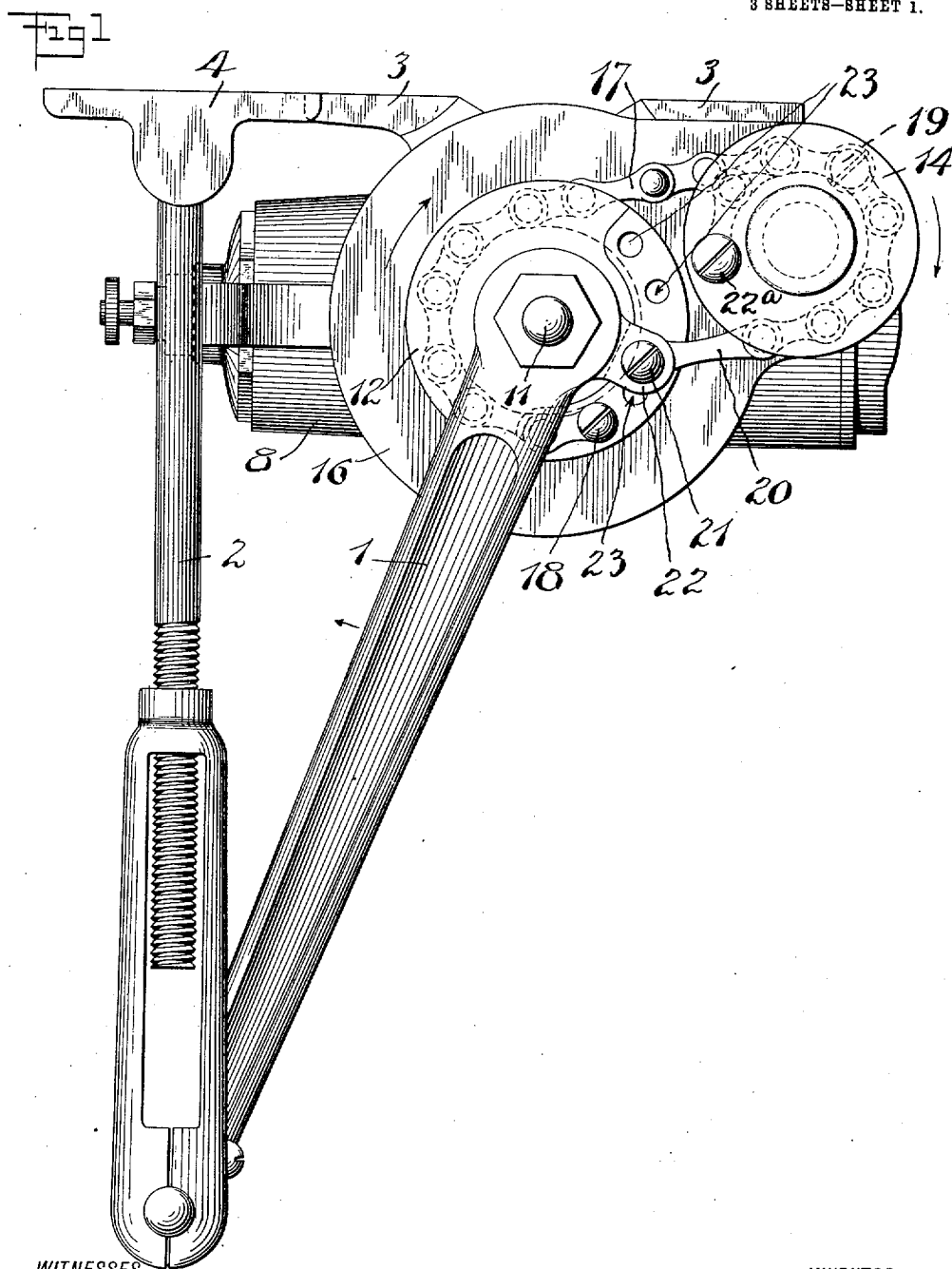


1,017,714.

3 SHEETS—SHEET 1.



WITNESSES

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31

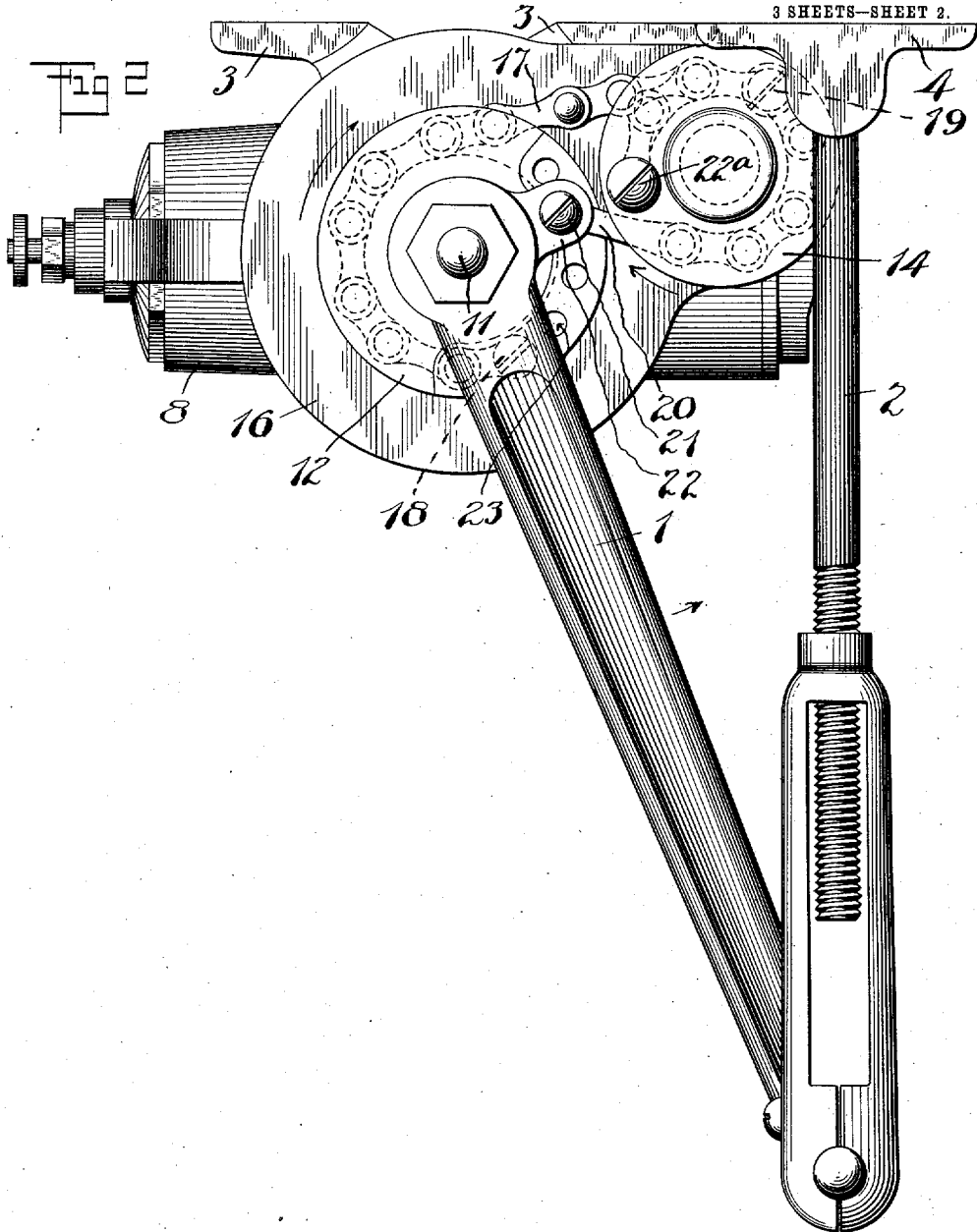
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H. G. VOIGHT.
DOOR CLOSER.
APPLICATION FILED JAN. 4, 1912.

1,017,714.

Patented Feb. 20, 1912.

3 SHEETS—SHEET 2.



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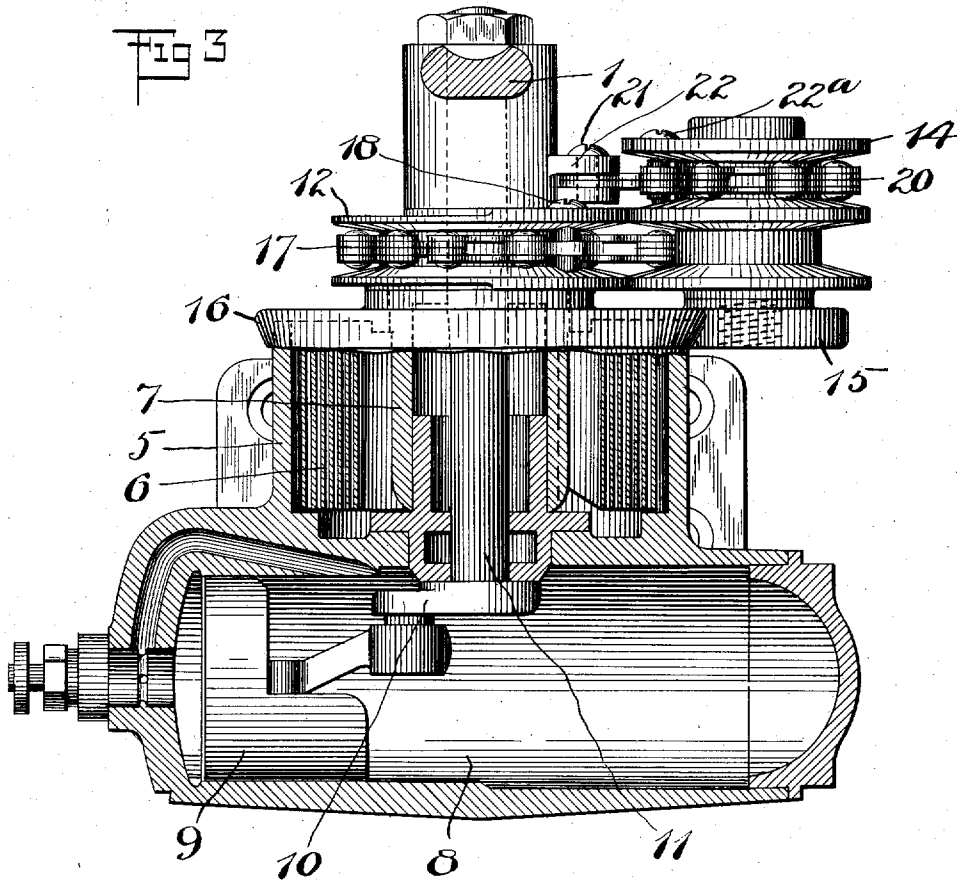
DOOR CLOSER.

APPLICATION FILED JAN. 4, 1912.

1,017,714.

Patented Feb. 20, 1912.

3 SHEETS—SHEET 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

HENRY G. VOIGHT, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO THE AMERICAN HARDWARE CORPORATION, OF NEW BRITAIN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

DOOR-CLOSER.

1,017,714.

Specification of Letters Patent.

Patented Feb. 20, 1912.

Application filed January 4, 1912. Serial No. 669,412.

To all whom it may concern:

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

My invention relates to an improvement in door controlling apparatus, and particularly to door-closer construction which may or may not be associated with a checking mechanism. In the present instance I have illustrated my invention as applied to a combined door-check and closer.

The object of the invention is to provide an improved construction which is particularly useful for heavy service, although its range of usefulness is not by any means limited thereto.

The invention is adapted to either right or left hand doors.

In the drawings Figure 1 is a plan view of the apparatus as applied to a left hand door. Fig. 2 is a similar view, the parts being arranged for application to a right hand door. Fig. 3 is in the main a vertical sectional view, certain parts being shown in section.

1 represents a lever arm, which is connected to the closer mechanism at one end and is connected at its opposite or free end to a link 2. The main body of the door closer device is usually constructed in such a manner as to be applied to the door itself, a suitable bracket 3 being provided for that purpose. The free end of the link 2 is usually arranged to be connected to the door casing above the door, and to that end I provide a suitable bracket 4.

5 represents the closer casing which incloses a flat coiled closer spring 6, suitably anchored at one end to the wall of the casing 5 and at the other end in the well known manner to a sleeve 7.

8 represents the usual conventional liquid check cylinder. 9 is the checking piston therein, connected by a crank 10 to a central shaft 11, upon which the lever arm 1 is fixed.

12 represents a wheel-like head, preferably grooved, and fixed on the outer end of the sleeve 7.

14 is a roller, preferably having two grooves therein, the same being pivotally

mounted to freely rotate upon a bracket or extension 15, which latter may be a part of the cap 16 of the closer casing.

17 is a chain resting in the groove of the wheel 12, and is secured therein at one end by a screw 18. This chain 17 passes partially around the part 12 and is fastened to the wheel or roller 14 by a pin or screw 19. 20 is a second chain connected at 21 to an arm 22 on the hub of the lever arm 1. The other end of this chain passes partially around the roller 14, and is secured thereto by a screw or pin 22^a.

The cap 16 of the closer casing is fixed on the top of the casing against being rotated, so that it will always hold the bracket extension 15, which supports the roller 14 in a certain fixed relation relatively to the balance of the parts. The head 12 is provided, as shown, with a series of screw passages 23—23 to receive the chain fastening 18, whereby said chain 17 may be connected to said head at different points around the same for the purpose of varying the initial tension upon the spring 6, since, by varying the initial position of the head 12, the initial position, or starting position, of the sleeve 7 is likewise varied, and in a direction to either increase or decrease the initial tension of the closer spring 6 as desired. The hub of the lever arm 1 with the spindle 11 turns freely relatively to the head 12 and sleeve 7.

When the parts are as shown in Fig. 1, it is obvious that if the lever arm is moved in the direction of the arrow adjacent thereto, it will pull upon the chain 20 and will rotate the roller 14 in the direction of the arrow adjacent thereto, which rotation will, through the medium of the chain 17, rotate the member 12 and sleeve 7 in a direction to wind up the spring.

If the parts are applied to a door, as in the position indicated in Fig. 2, and the lever is moved in the direction of the arrow adjacent thereto (which is opposite to that shown in Fig. 1), it will, through the medium of the chain 20 and roller 14, revolve the latter in the same direction as before, so that, through the medium of chain 17, the spring 6 will be wound up in the same direction as before.

From the foregoing it will be apparent that by this improved construction I am able to employ, in a door closer, a flat coiled spring anchored at its outer end to a sta-

tionary abutment, and at its inner end to a revoluble abutment, and cause said spring to be wound up when the door is opened, irrespective of whether the door to which the device is applied is a right hand door or a left hand door.

It should be understood that I use the term "chain" in a sufficiently broad sense to include any flexible connection, for example, such as wire rope, and that the mere substitution of any equivalent connecting means for the specific form of connecting means shown is contemplated by me as being within the scope of the invention and the meaning of the word "chain" as employed.

While I have shown my invention and the various parts and connections in a preferred form, it is obvious that the same may be varied in many ways without departing from the spirit or scope thereof.

What I claim is:

1. In a door closer, a flat coiled spring, a fixed abutment for one end thereof, a rotary abutment for the other end thereof, an exposed head for said rotary abutment, a roller adjacent thereto, a chain connected to said head extending partly around the same and connected to said roller, a lever arm adjacent said roller, and a chain connected thereto and extending partly around said roller whereby the rotation of said lever arm in either direction away from the normal will wind up the spring.

2. In a door closer, a flat coiled spring, a stationary abutment for one end, a rotatable abutment for the other end, an exposed head for said rotatable abutment, a roller at one side of said head, a chain connected to said head at one end and extending partly around said head and connected to said roller, means for varying the point of connection of one end of said chain with the part to which it is connected, a lever arm mounted adjacent said roller, a connection between said lever arm and said roller, and a chain connecting said lever arm and said roller and extending partly around the roller whereby when said lever arm is swung in either direction said spring will be wound up.

3. In a door closer, a flat coiled spring, a stationary abutment for one end thereof, a movable abutment for the other end thereof, a rotatable head connected with the movable abutment to wind up the spring, a lever arm pivotally mounted to swing, operative means of connection between said lever arm and said flat spring, said lever arm having a normal position wherein the door to which the apparatus is applied is closed, and operative means of connection between said lever arm and said head whereby said spring will be wound up when the lever arm is swung in either direction away from the normal.

4. In a door closer, a flat coiled spring, a stationary abutment for one end, a rotatable abutment for the other end, a head on said rotatable abutment, a roller adjacent said head, a chain connected to said head and extending partly around the same and connected to said roller whereby said spring will be wound up when said roller is rotated in one direction, a lever arm, and means of connection between said lever arm and roller whereby said roller will be turned in the same direction when said lever arm is moved in either direction away from the normal position.

5. In a door closer, a flat coiled spring, a stationary abutment for one end, a rotatable abutment for the other end, a roller, the axis of the roller being out of line with the axis of said rotatable abutment, a flexible connection between said rotatable abutment and extending partly around the same and connected with said roller, a lever arm, a flexible connection between said lever arm and said roller, said connection extending partially around said roller and being connected with said lever arm at a point between the axis of rotation of the latter and the axis of said roller whereby when said lever arm is swung in either direction it will rotate said roller in the same direction to wind up said spring.

HENRY G. VOIGHT.

Witnesses:

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H. J. BROWNE.