W. K. HENRY.

DOOR CONTROLLER.

APPLICATION FILED MAY 29, 1915.

1,155,310.

Patented Sept. 28, 1915.

2 SHEETS—SHEET 1.

Fig 1

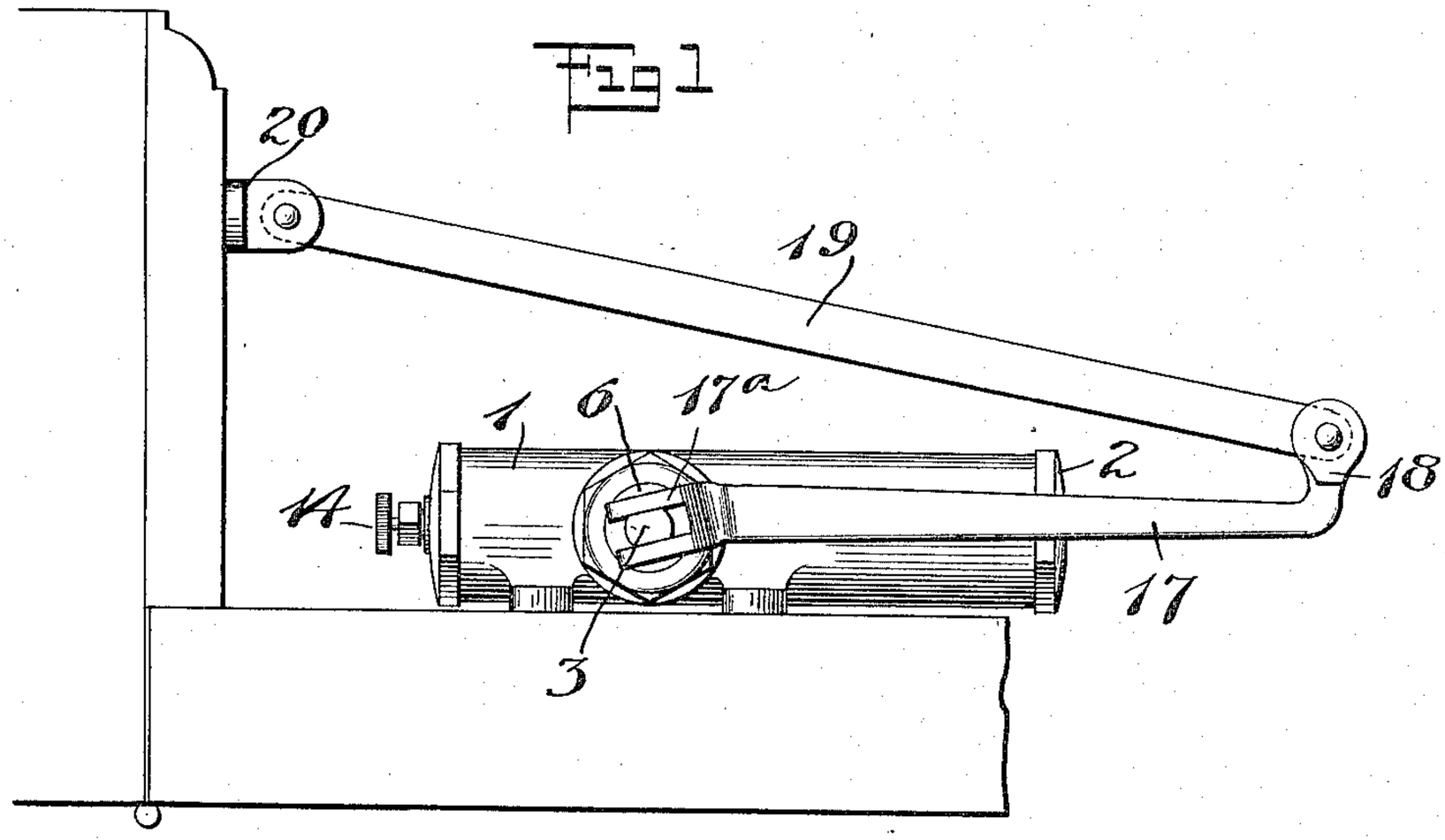

Fig 2

Witness

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Fig 3

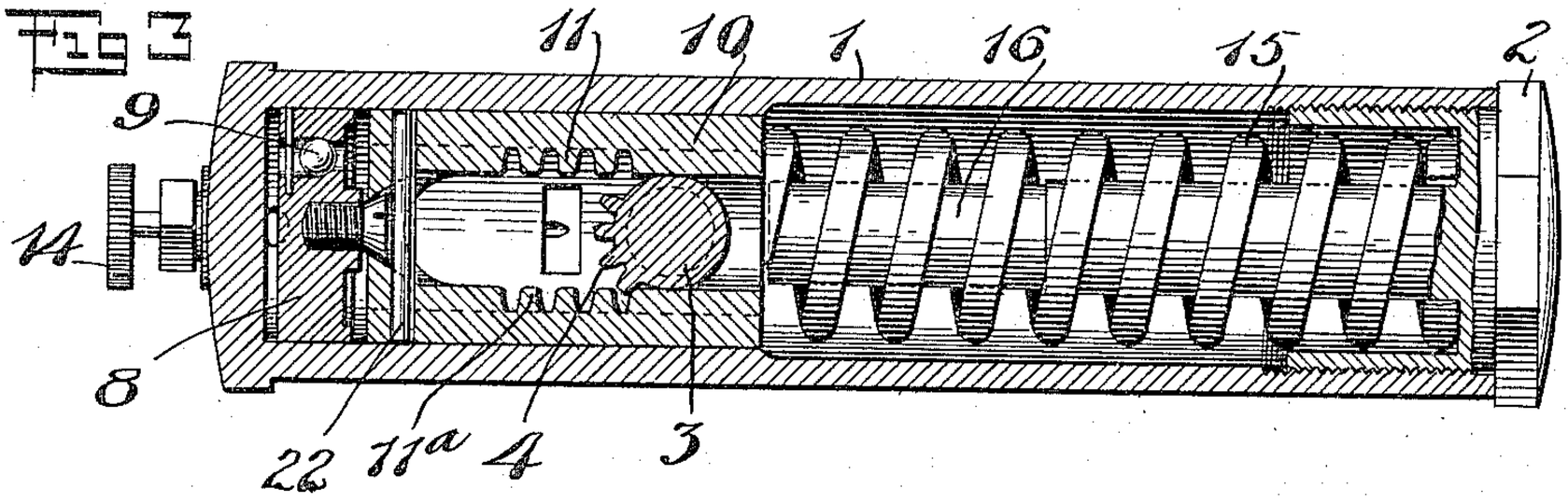


Fig 4

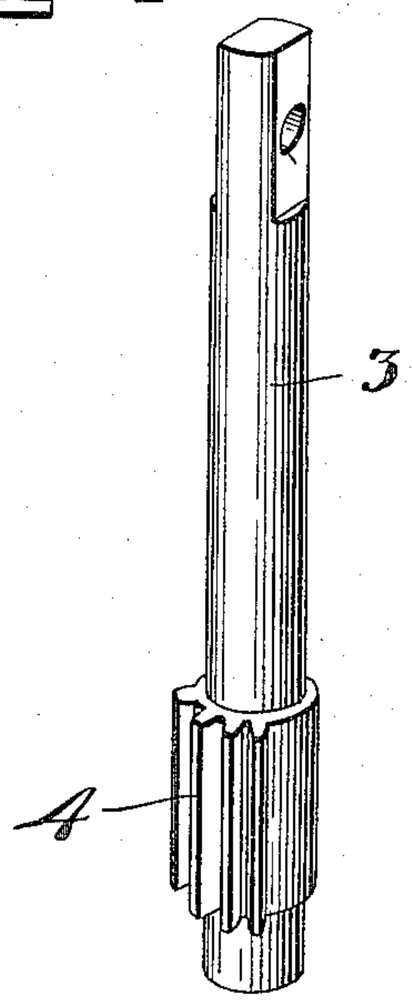


Fig 5

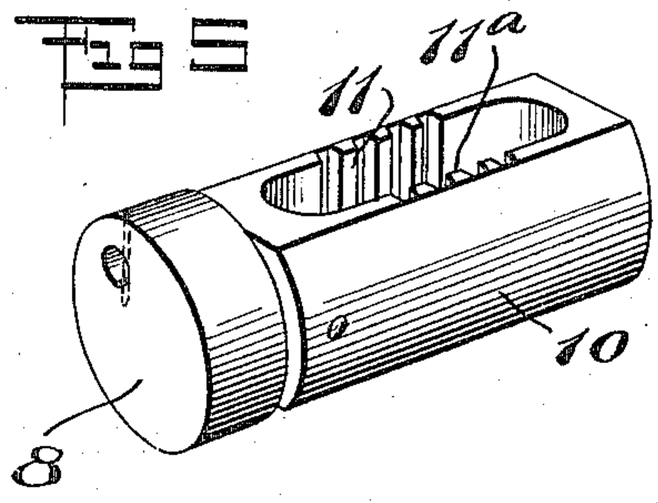
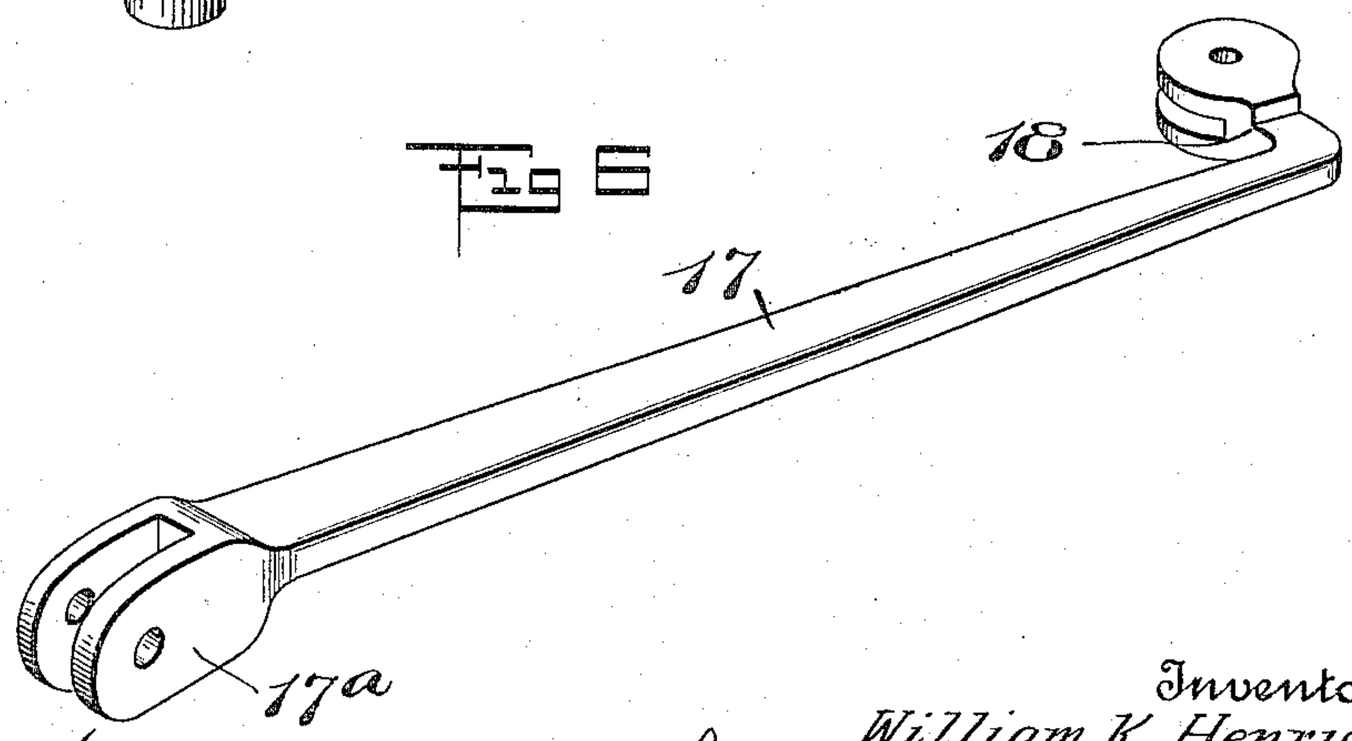


Fig 6



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UNITED STATES PATENT OFFICE.

WILLIAM K. HENRY, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO THE AMERICAN HARDWARE CORPORATION, OF NEW BRITAIN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

DOOR-CONTROLLER.

1,155,310. Specification of Letters Patent. Patented Sept. 28, 1915.

Application filed May 29, 1915. Serial No. 31,091.

To all whom it may concern:

Be it known that I, WILLIAM K. HENRY, a citizen of the United States of America, residing at New Britain, Hartford county, State of Connecticut, have invented a new and useful Door-Controller, of which the following is a specification.

My invention relates to an improved combined door check and closer, the main object of the invention being to provide a very simple and inexpensive form of construction whereby the device may be made comparatively light; may be easily assembled and applied in place, and may be easily reversed so as to be applied quickly and without effort to either a right or a left hand door.

By reason of the lightness and simplicity of the device it is particularly useful in connection with screen doors or other doors of light construction.

In the drawings: Figure 1 is a plan view. Fig. 2 is a relatively enlarged vertical section longitudinally through the cylinder, some parts being in elevation. Fig. 3 is a section on plane of line 3—3 of Fig. 2. Figs. 4, 5 and 6 are perspective views of details.

1 represents the main frame which is preferably of cylindrical form. 2 is a removable cap at one end.

3 is a spindle, the lower end of which passes diametrically through the cylinder and is preferably stepped in the bottom thereof. Near the lower end of the spindle is a segmental gear or interrupted pinion 4.

5 is an upper bearing for the spindle provided with a suitable packing gland 6. Below the packing gland is a relatively large annular space or chamber 7 which serves to prevent the liquid from creeping up the spindle.

8 is a piston head having the usual ball-check valve 9 therein.

10 is a slotted member loosely connected at one end to the piston head 8. On the opposite side walls of the slot are two series of gear teeth 11—11ª designed to be engaged by the teeth of the interrupted pinion 4 after the manner set forth in my former Patent No. 960,641. As the spindle rotates in one direction or the other, the interrupted pinion will engage one or the other sets of gear teeth 11—11ª and reciprocate the slotted member 10 and the piston head 8. The cylinder may be provided with the usual control by-pass having the usual controller valve 14 whereby the checking resistance may be modified. Back of the slotted member 10 and between it and the cap 2 is a spring 15, which serves to press the piston forwardly in the cylinder in the checking direction. The cap is preferably provided with a guide pin 16 which extends into the spring 15 to prevent the latter from buckling to such an extent as to engage the side walls of the cylinder, at the same time leaving the spring free to be compressed. This guide pin may also project into a hole in the rear end of the slotted member 10 so as to act as a guide therefor as the same is reciprocated. The entire cylinder is filled with a suitable fluid which serves not only to keep the parts properly lubricated at all times, but also constitutes the checking medium. On the upper end of the spindle 3 is mounted a lever arm 17, the mounting preferably being in the form of a hinge whereby the said lever arm may be turned over from one end to the other of the check thus making the device at once reversible without the necessity of removing or replacing any parts. The arm 17 is preferably provided at its outer end with an offset 18 to afford proper clearance for a link 19 by which the outer end of the lever arm 17 may be connected to a bracket 20, which latter is secured to the inner face of the jamb or casing.

By the construction herein described the door may swing to the extent of 180° without but practically a one-third rotation of the spindle. The inner end 17ª of the lever arm 17 is offset and so connected to the spindle that the hinge pin or pivot upon which the arm turns is slightly oblique to the line of the lever arm when the lever 17 stands on the center line of the cylinder. Thus the spindle and pinion 4 is given a slight turn at the outset (see Fig. 3) whereby the spring is initially put under slight tension. As the door is opened, the lever arm 17 swings and turns the spindle 3 so as to draw forward the piston 8 through the medium of the interrupted pinion. This puts the spring 15 under added tension whereby when the door is released said spring will return the door to the closed position, the piston offering the desired resistance during the closing movement.

One end of the slot in the slotted member

10 is preferably sufficiently short to stop the spindle so that it cannot turn in that end sufficiently to shift the gear teeth 4 from one rack to the other, the said slot being shortened in any desired way as for example by inserting a stop pin 22.

What I claim is:

1. In a door controlling device, a cylinder, a checking piston mounted wholly in one end thereof, a spring arranged wholly in the opposite end of said cylinder pressing said piston in one direction, a slotted member interposed between said spring and piston, two racks on the opposite sides of the slot in said slotted member, a spindle passing diametrically into said cylinder and into said slotted member, an interrupted pinion on said spindle for engaging said racks alternately, with means for connecting said cylinder to a door, and with means for rotating said spindle, said means being arranged to be connected to a door casing, said means including a lever arm reversibly connected to the spindle, said reversible connection comprising a hinge joint, the pivot of said joint being oblique to the line of the arm.

2. In a door controlling device, a cylinder, a checking piston therein, a spring in said cylinder for pressing said piston in one direction, a slotted member interposed between said spring and piston, two racks on the opposite sides of the slot in said slotted member, a spindle passing diametrically into said cylinder and into said slotted member, an interrupted pinion on said spindle for engaging said racks alternately, with means for connecting said cylinder to a door and with means for rotating said spindle, said means being arranged to be connected to a door casing, said means including a lever arm reversibly connected to the spindle, said lever arm being arranged at such an angle to the spindle that when the lever arm is in line with the center line of the cylinder, the interrupted pinion will be in mesh with one of the racks.

3. In a door check, a cylinder, a piston therein located at one end, a spring for pressing the piston in one direction, said spring being at the other end of said cylinder, a rack member interposed between the piston and the spring and loosely connected at one end to the piston, a guide pin rigidly supported at its rear end by the end of the cylinder and arranged to support the other end of said rack member as it moves to and fro.

4. In a door controller, a cylinder, a checking piston therein, a spring therein, a removable cap at one end of the cylinder, a rack member interposed between the piston and the spring and loosely connected at one end to said piston, and a guide pin rigidly carried by the cap for supporting one end of said rack member.

5. In a door controller, a cylinder, a checking piston mounted wholly in one end thereof, a spring arranged wholly in the opposite end thereof, an intermediate slotted member between said spring and piston and loosely connected at one end to the latter, two racks on the opposite sides of the slot in said slotted member, a spindle passing diametrically into said cylinder and slot, an interrupted pinion on the spindle for alternately engaging said racks, means for supporting said cylinder on a door, means for connecting the spindle to a door casing, said means including a lever hinged at one end to the end of the spindle, the axis of said hinge being transverse to the axis of the spindle whereby said controller may be adapted to either right or left hand use at will.

WILLIAM K. HENRY.

Witnesses:
NEWTON G. CURTIS,
WM. V. COLLINS.