

No. 679,905.

Patented Aug. 6, 1901.

C. H. OCUMPAUGH.  
DOOR CHECK.

(Application filed Aug. 18, 1900.)

(No Model.)

Fig. 1.

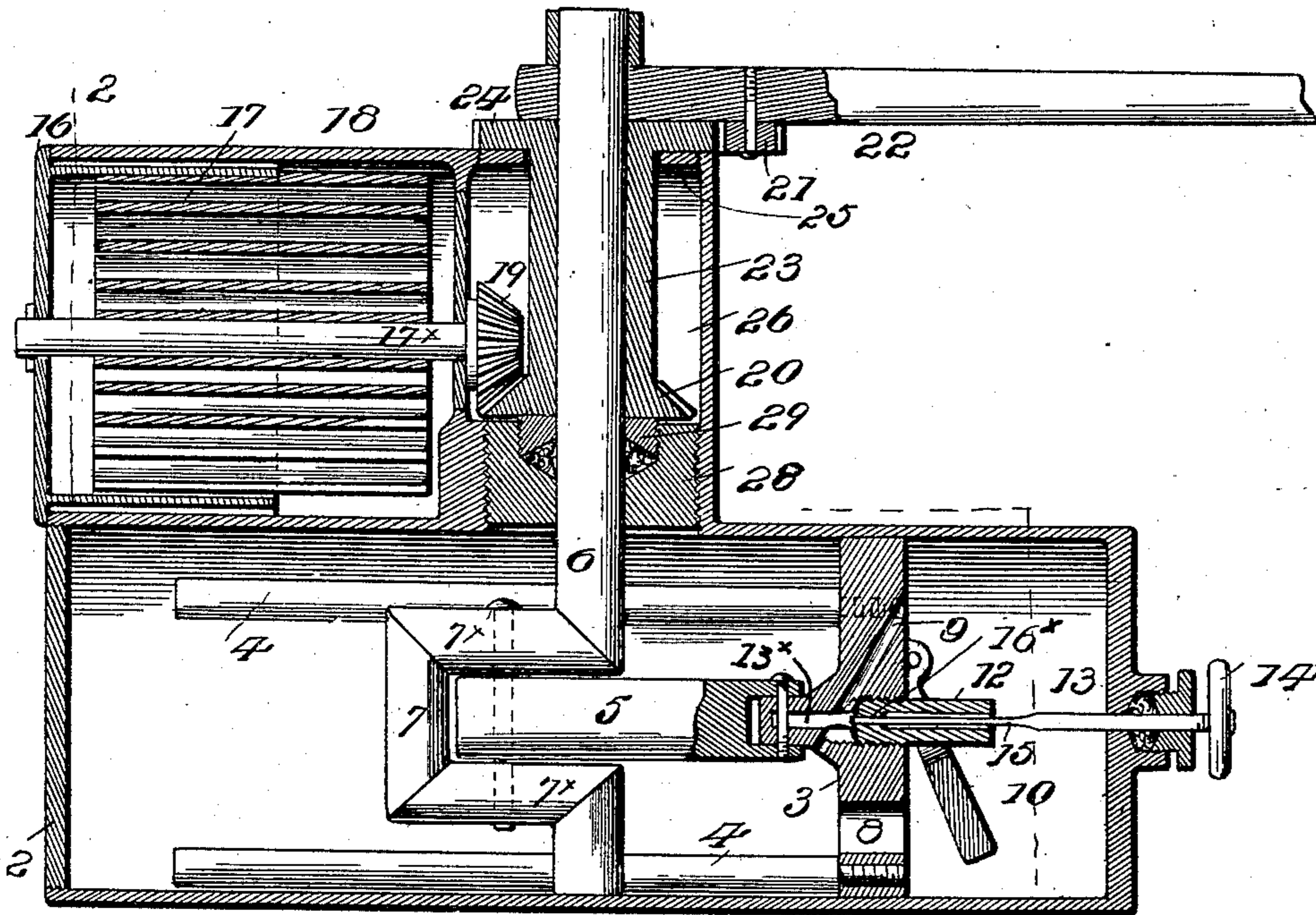
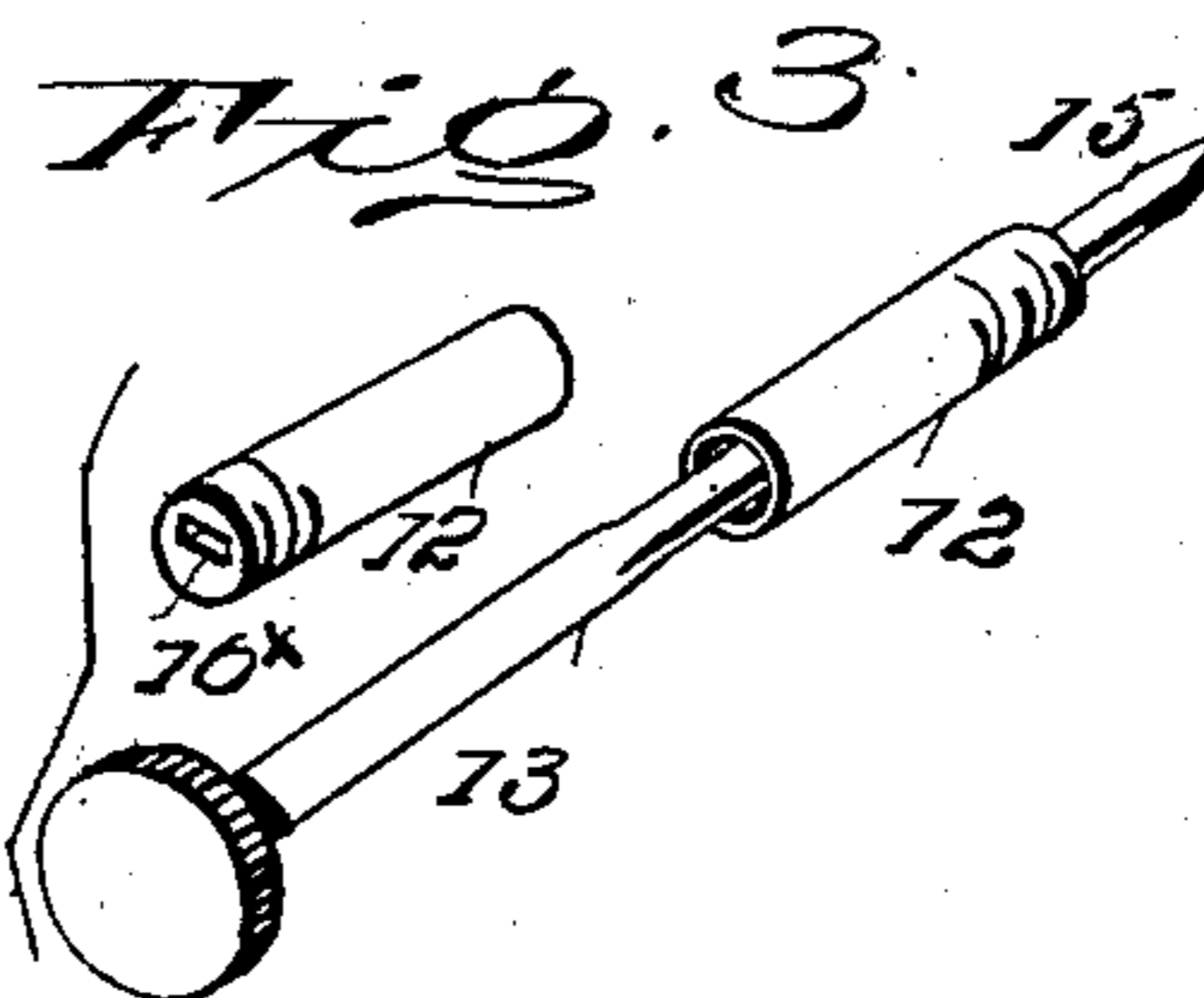
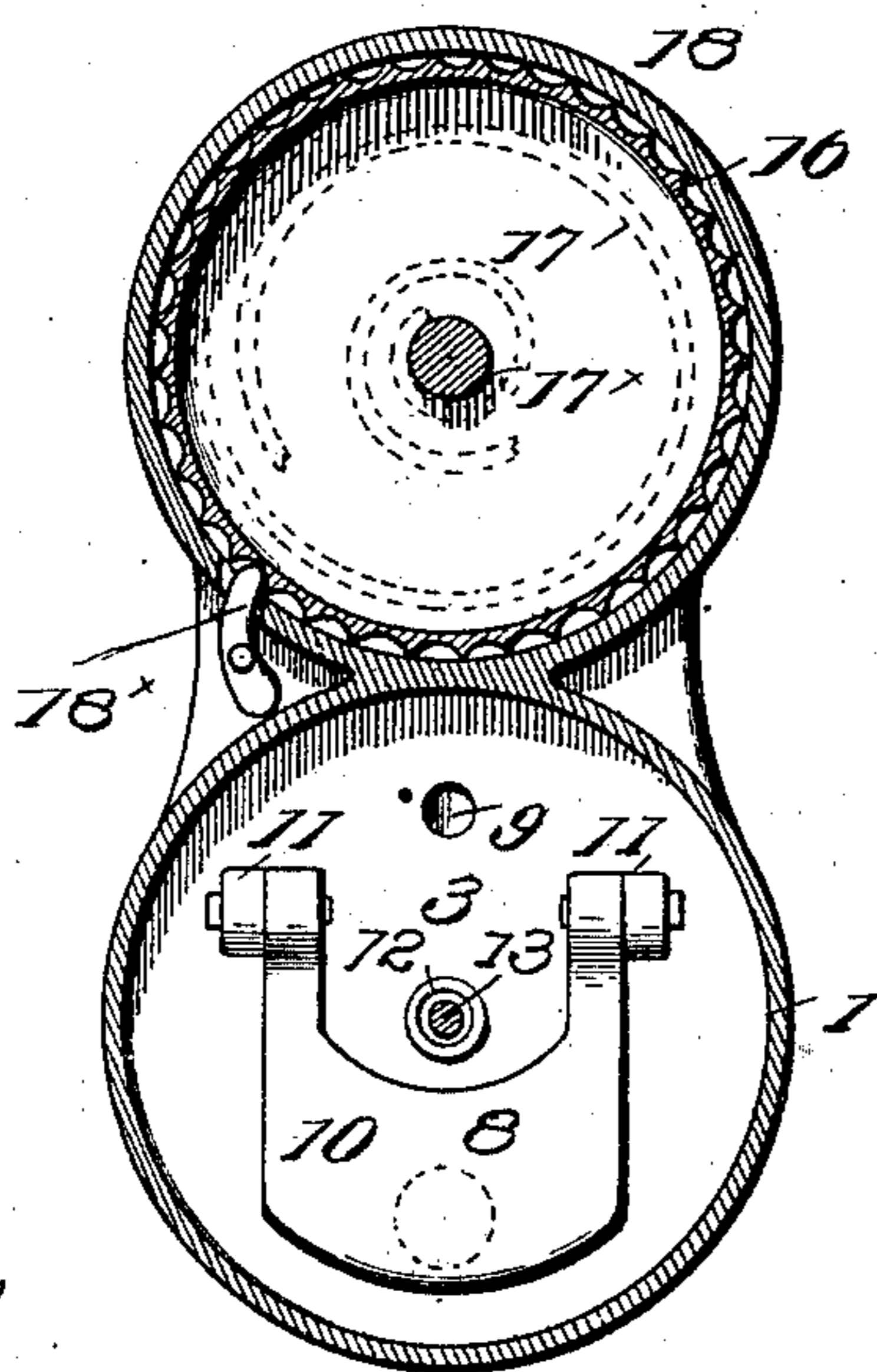


Fig. 2.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## DOOR-CHECK.

SPECIFICATION forming part of Letters Patent No. 679,905, dated August 6, 1901.

Application filed August 18, 1900. Serial No. 27,326. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES HERBERT OCUMPAUGH, a resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Door-Checks; 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 pertains to make and use the same.

The invention relates to door checks and closers of that class which has a piston movable in a liquid-holding chamber and pivotally connected to a crank of a shaft or spindle medially rotated by a door and combined with a spring which is put under tension by the opening of the door, and thereby adapted to close it.

The objects of the invention are to simplify the piston and valve constructions and improve the bearings of the former, to render the spring more accessible in the particular class of door-checks for reversal or for adjustment of tension, and to reduce the cost of manufacture.

Heretofore in this particular kind of door-checks a spring-chamber has been mounted on the piston-chamber and the chamber and its spring have been arranged concentric with the piston-moving door-connected crank shaft or spindle, which arrangement renders the spring inaccessible for adjustment or reversal when the check is operatively connected to the door and its casing. Pistons of the kind contemplated by the present improvement have been provided with two heads and an intermediate head-connecting portion, having a recess to reduce the friction-surface, said recess constituting a pocket for liquid. By the present improvement such liquid-holding recesses and a double piston-head are avoided, the single head hereinafter described having fixed thereto guides or fingers bearing on the inner surface of the cylinder in separate lines.

The present invention specifically relates, among other things, to the features just referred to; and it consists in the constructions hereinafter particularly pointed out.

In the accompanying drawings, Figure 1 is a central longitudinal section of a door-check, showing part of an arm by which it may be

connected to a door. Fig. 2 is a section on line 2 2 of Fig. 1. Fig. 3 is a perspective of a valve.

Numeral 1 denotes a liquid-holding cylindrical chamber closed by a screw-threaded plate 2, as indicated. 3 denotes a piston fitted to move in said cylinder and provided with one or more guiding-fingers 4, with free ends bearing on the interior of the cylinder 1. The particular number, size, and form of these guides or fingers are not essential; but they are made long to provide a bearing on the cylinder sufficiently remote from the piston-head to guide it accurately, and preferably they have each a comparatively small transverse dimension to reduce weight and friction. Three are illustrated, and either two or three are deemed preferable. As shown in the present instance, their free ends extend to near the cylinder end opposite that near which the piston-head moves, the head and the finger ends being on opposite sides of a piston-actuating shaft-crank, and the fingers or guides playing back and forth outside the crank and at the sides of the crank-shaft. The construction gives great steadiness and accuracy to the movements of the piston.

The piston is operatively connected by a rod 5 with a crank 7, having two arms 7<sup>x</sup> fixed to a spindle or shaft 6, rigidly connected to an arm 22, to be actuated by the opening of a door, to which said arm may be connected in usual manner. The construction is such that in the arrangement illustrated the opening of the door moves the piston toward the left of the cylinder, which causes its liquid contents to pass to the right through the large opening 8. The closing of the door returns the piston to the right; but this operation closes the passage 8 by means of a flap-valve 10, and a small conduit 9 is provided for the return of the liquid to the left of the piston, as necessary for the last-mentioned movement of the latter. The flap-valve in the present instance has two arms, each pivoted to a boss 11 on the piston.

12 denotes a tube screwed into the piston and adapted to be adjusted back and forth by means of the stem 13, having a milled head 14 and a flattened part 15, fitting a corresponding hole 16<sup>x</sup> in the tube, whereby

said tube can be screwed in or out to vary the flow through the relief-port 9. The tube held in the piston and the piston are freely movable on the flattened stem. A hole 13<sup>x</sup>,  
5 formed in the piston, is adapted to receive the end of the stem.

The door is closed by a spring 17, fixed to a shaft 17<sup>x</sup>, operatively connected by gears to the arm 22, bearing on the door, the piston-  
10 cylinder and the spring-cylinder being fixed to the door-casing in any customary manner. The outer end of the spring is fixed to a cup 16, closing the spring chamber or cylinder 18, made preferably integral with the cylinder 1.  
15 Said cup is adjustably held in cylinder 18 by a pawl 18<sup>x</sup> and a screw nut or shaft 17<sup>x</sup>. The inner end of cylinder 18 is closed by a screw-threaded plate, in which the shaft 17<sup>x</sup> has a bearing. Said shaft has a bevel-gear 19  
20 meshing with a gear 20, fixed on a sleeve 23, which has a rack 24 engaged by a pawl 21, operatively carried by the door-connected arm 22. The swinging of the arm by opening the door turns sleeve 23 and gears 20 and  
25 19 and winds the spring. The same operation rotates the crank shaft or spindle 6 and moves the piston, as above described.

25 is a screw-threaded annulus forming a bearing for the sleeve 23 and closing the upper end of the gear-containing chamber 26,  
30 which by preference is formed integral with the piston and spring-holding chambers. The chamber 26 is closed below by a packed head 28, and 29 denotes a stuffing-box to close the joint at the shaft-bearing.  
35

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

1. In a door check and closer, the combination of a liquid-holding piston-chamber, a  
40 distinct removable cover therefor, a piston in said chamber, a separate chamber containing a door-closing spring, and a third chamber inclosing mechanism operatively connecting the spring and piston, the two latter chambers being arranged at right angles to each  
45 other and provided each with an independent removable cover.

2. In a door check and closer, the combination of an arm, a spindle at right angles to the arm, a piston-chamber, a piston driven by the spindle, a spring-containing chamber, a  
50 spring, and a spring-winding shaft in a plane parallel to the piston-rod.

3. In a door check and closer, a casing comprising in its construction three separate chambers, a liquid or piston chamber, a shaft-chamber at right angles thereto and a spring-chamber lying above the piston-chamber in a  
55 plane parallel thereto and on one side of the shaft-chamber, substantially as shown and described.

4. In a door check and closer, the combina-

tion of a door-closing arm, a door-closing spring, a spring-containing chamber whose  
65 axis is in a plane parallel to the arm, and intermediate devices whereby the arm may put the spring under tension by the movement of said arm, said devices subsequently moving in reverse direction under the action of the  
70 spring.

5. In a door check and closer, the combination of a door-closing and spring-compressing arm, a spindle operatively connected to the arm, and an independent spring-winding  
75 shaft medially connected with the spindle whereby the spring may be put under tension and then subsequently close the door.

6. In a door check and closer, an arm, a spindle connected to the arm, a spring, a rotatable  
80 spring-winding shaft situated at an angle to the spindle, and gears to operatively connect the said shaft and spindle.

7. In a door check and closer, an arm, a spindle connected to the arm, a shaft at right angles  
85 to the spindle, gears operatively connecting the spindle and shaft, and a spring connected at one end to the shaft and at the other end to a spring-adjusting device, and said device.  
90

8. In a door check and closer, a liquid-holding chamber, a gear-containing chamber, and a spring-containing chamber, each having an independent removable cover whereby access  
95 may be had to each without disturbing another.

9. In a door check and closer, an arm with an attached spindle, a piston operatively connected to the spindle, and a spring-winding  
100 shaft connected to the spindle at a point between the arm and the piston.

10. In a door check and closer, a liquid-holding chamber, a gear-containing chamber, an arm, a spring whose axis is in a plane parallel to the arm, and means independent of  
105 the liquid-holding and gear-containing chambers for adjusting the tension of the spring.

11. In a door check and closer, a liquid-holding chamber, a gear-containing chamber, a door-closing and spring-compressing arm, a  
110 spring whose axis is parallel to the arm, a spring-containing chamber, and means for adjusting the tension of the spring from the exterior of the check and closer.

12. In a door-check, the combination of a  
115 cylinder, and a piston-head having fixed to its periphery guides with free ends bearing on the inner surface of the cylinder in separate lines.

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

CHARLES HERBERT OCUMPAUGH.

Witnesses:

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A. M. ZIMMER.