

No. 665,603

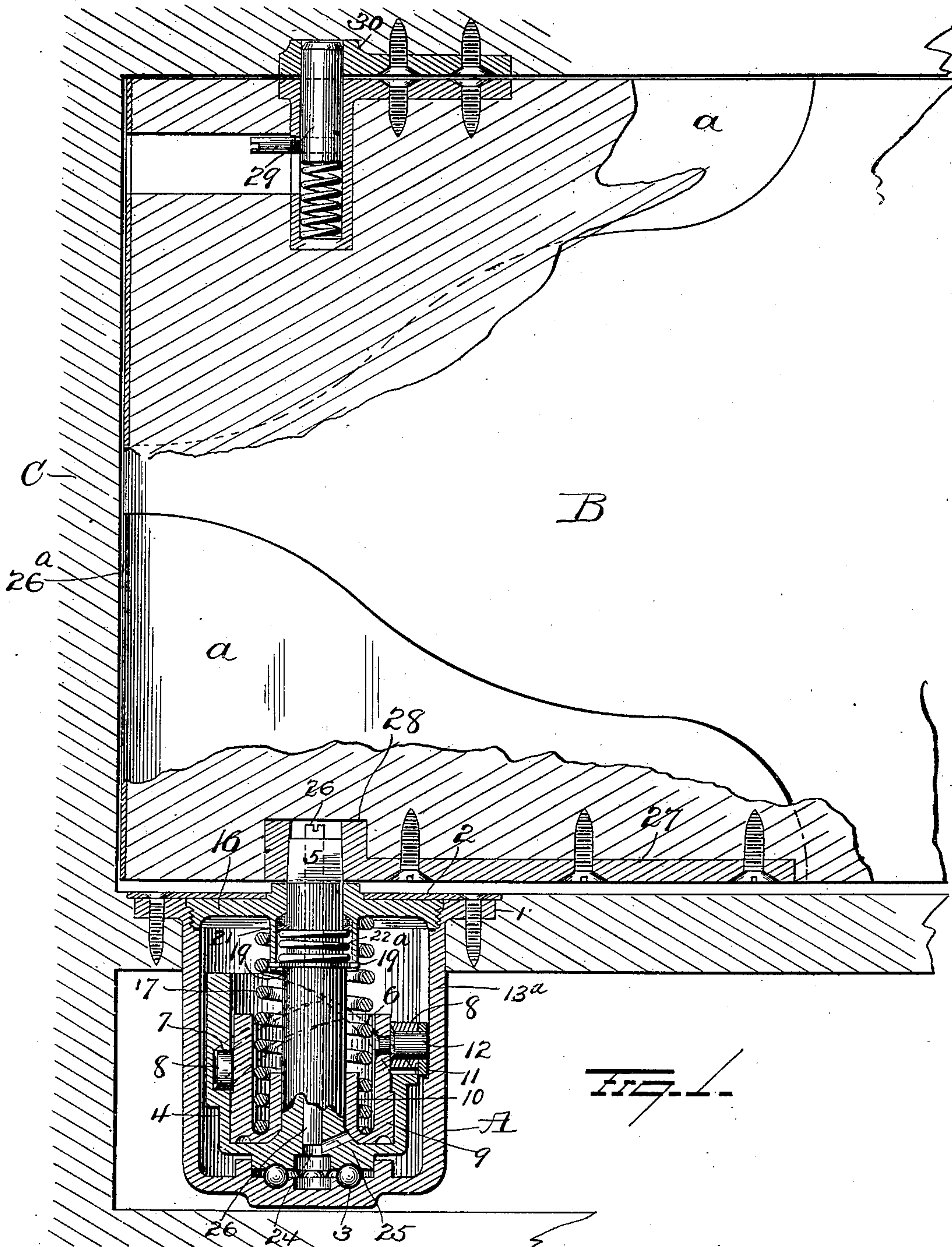
Patented Jan. 8, 1901.

W. K. HENRY.
DOOR CHECK AND CLOSER.

(Application filed July 18, 1900.)

(No Model.)

3 Sheets—Sheet 1.



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Fig. 2.

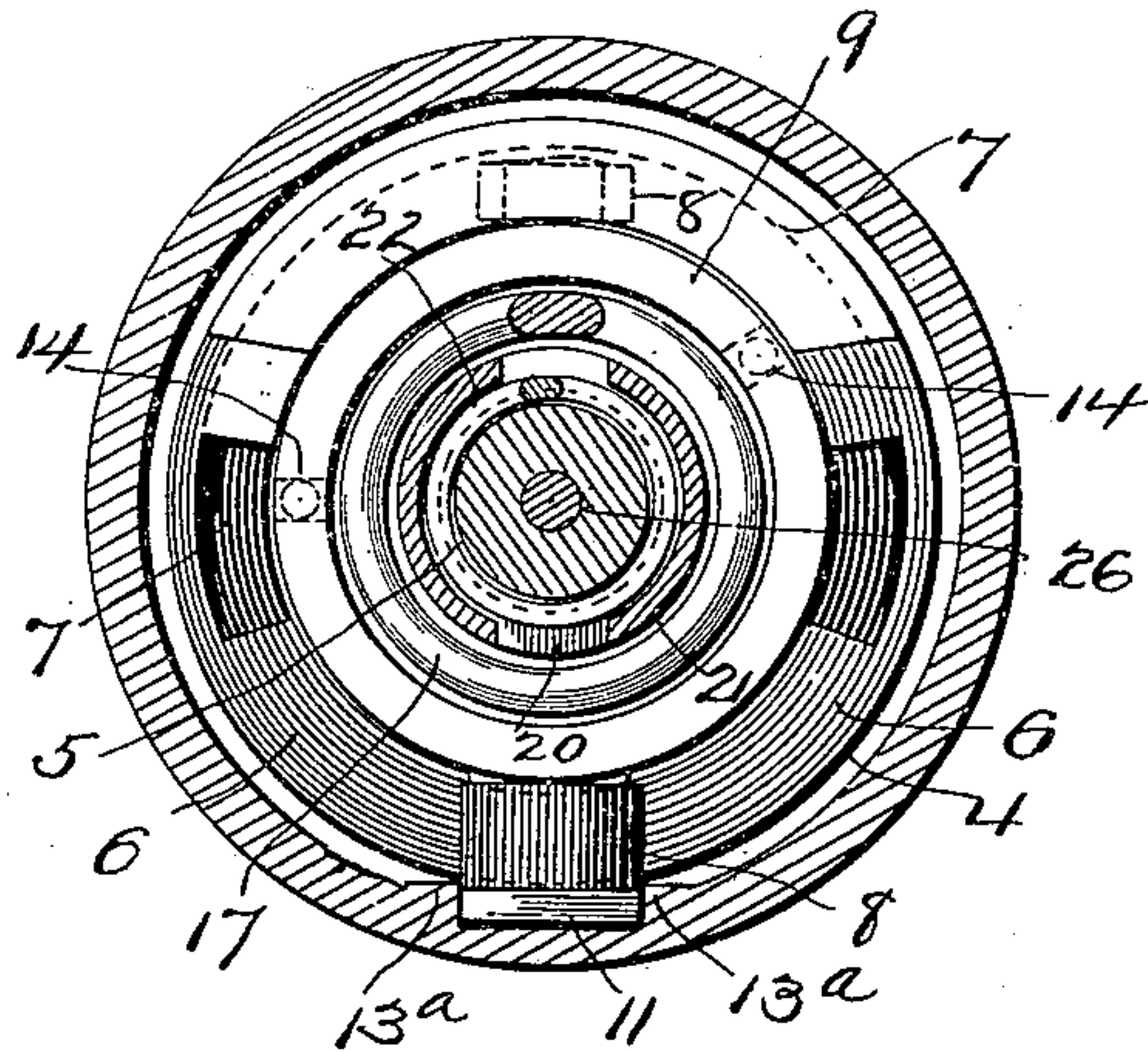
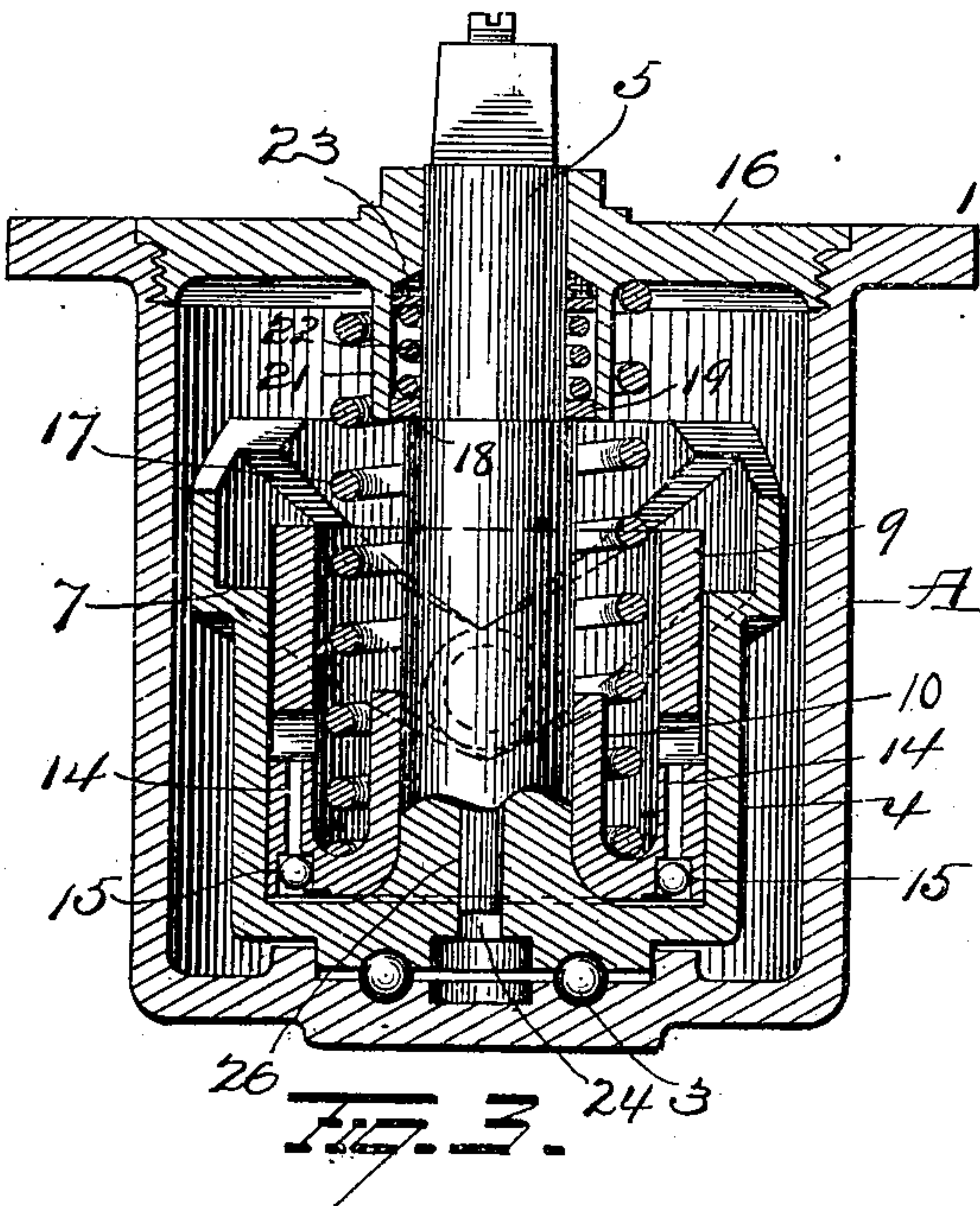
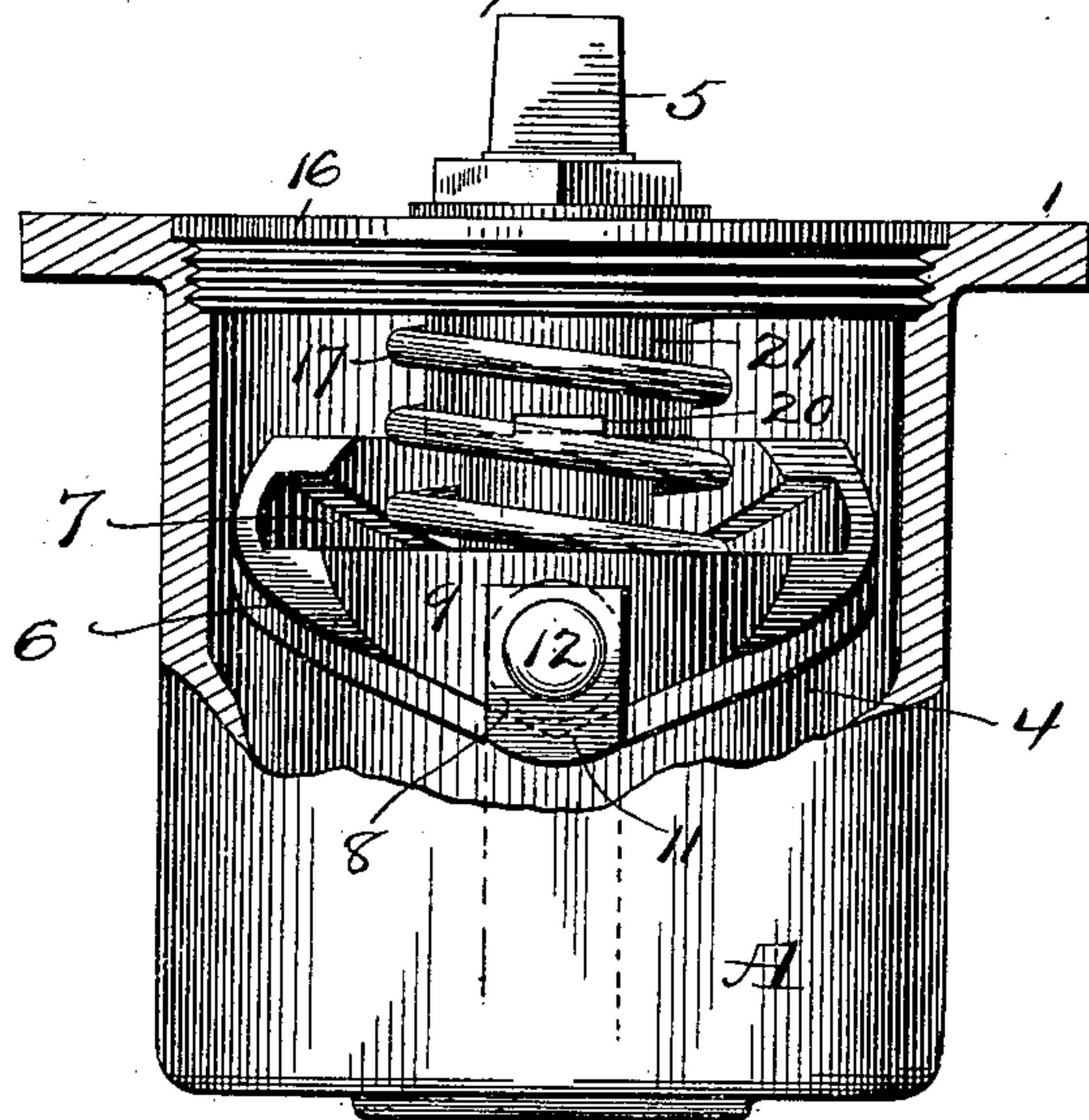


Fig. 4.

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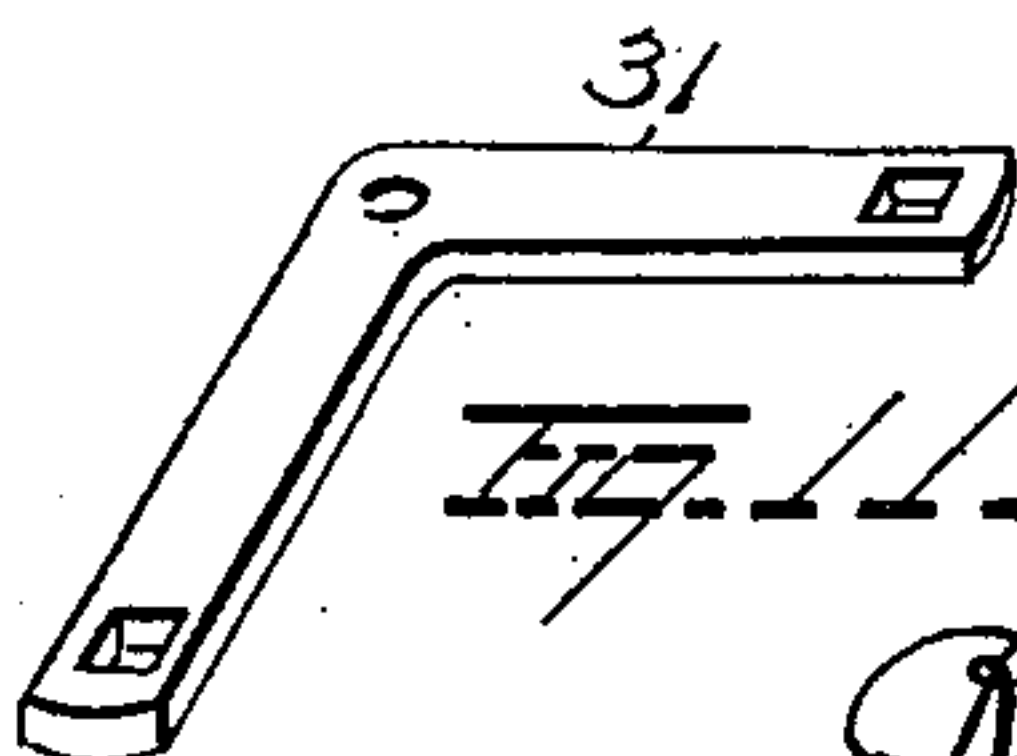
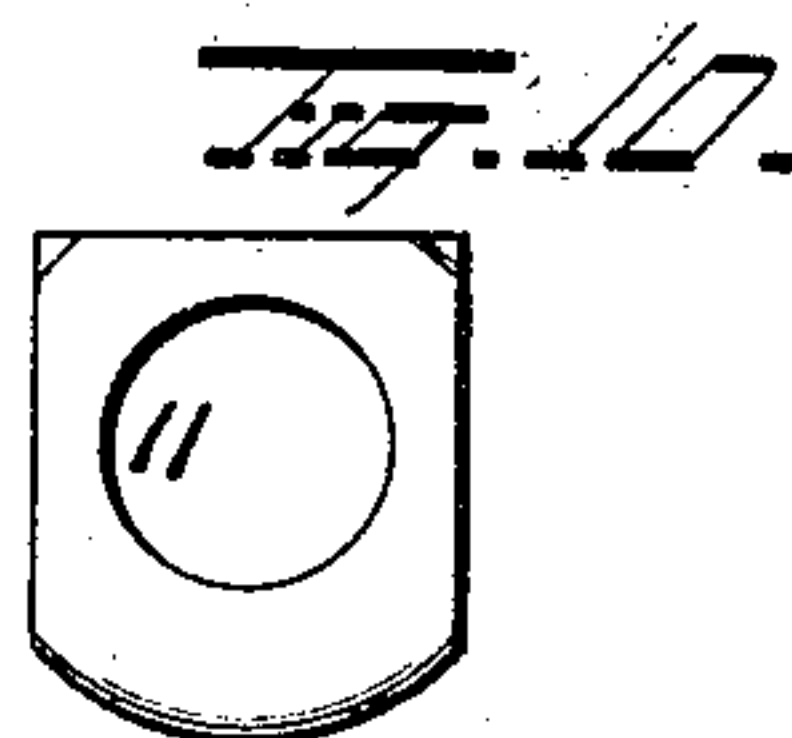
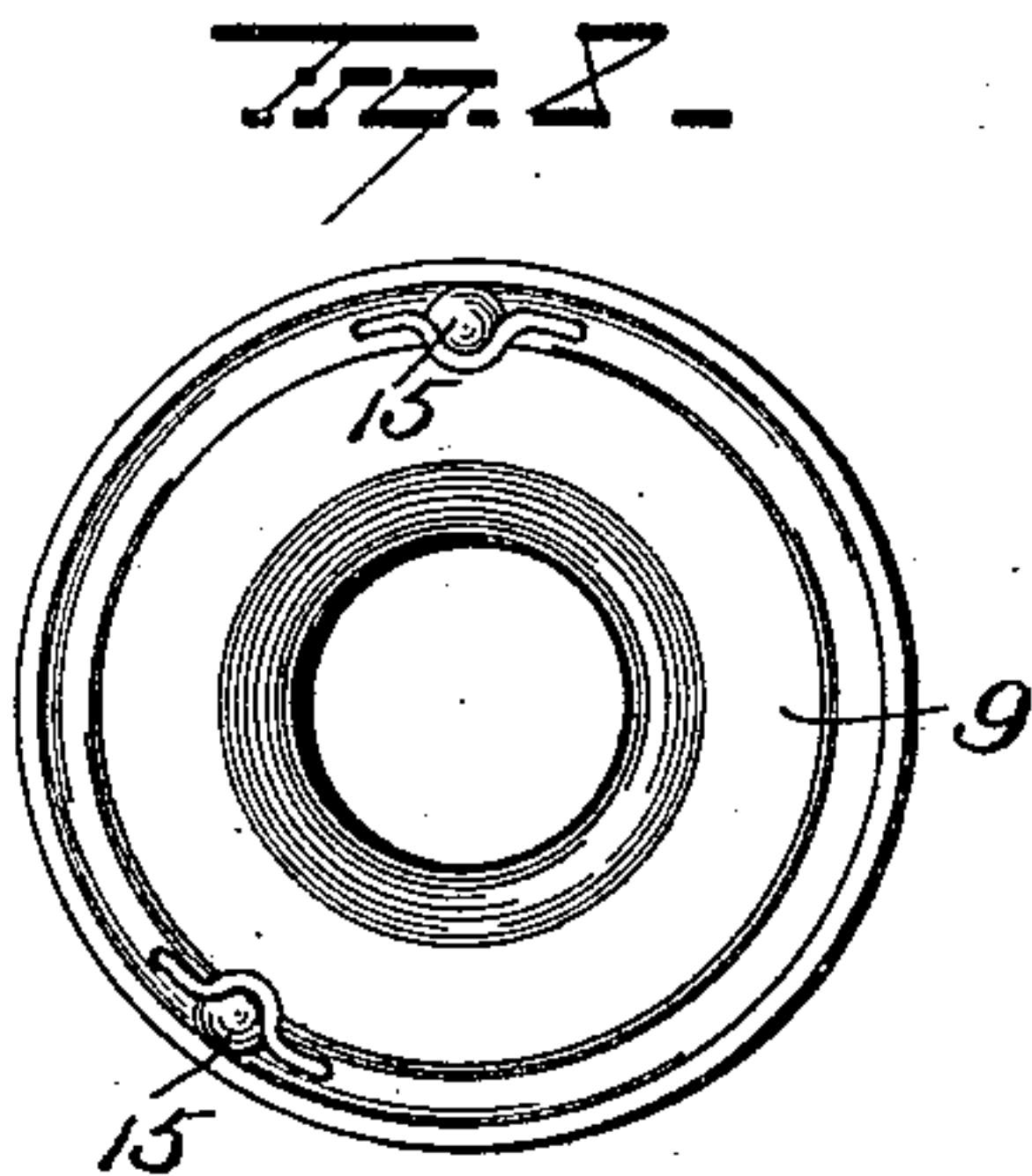
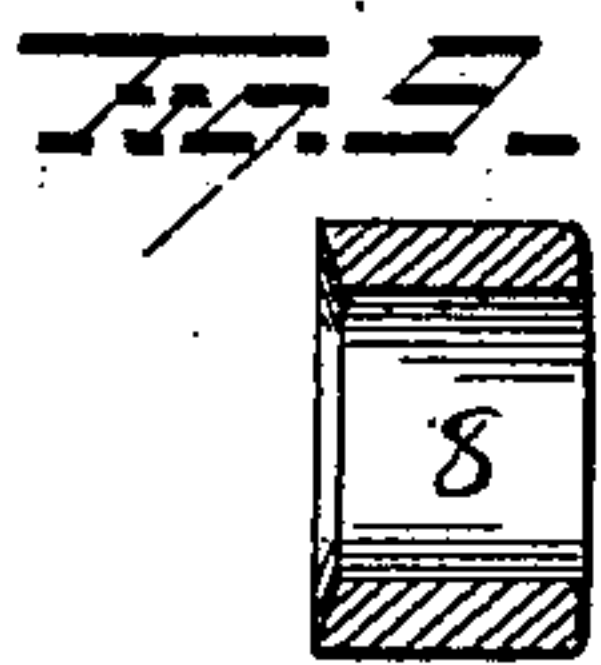
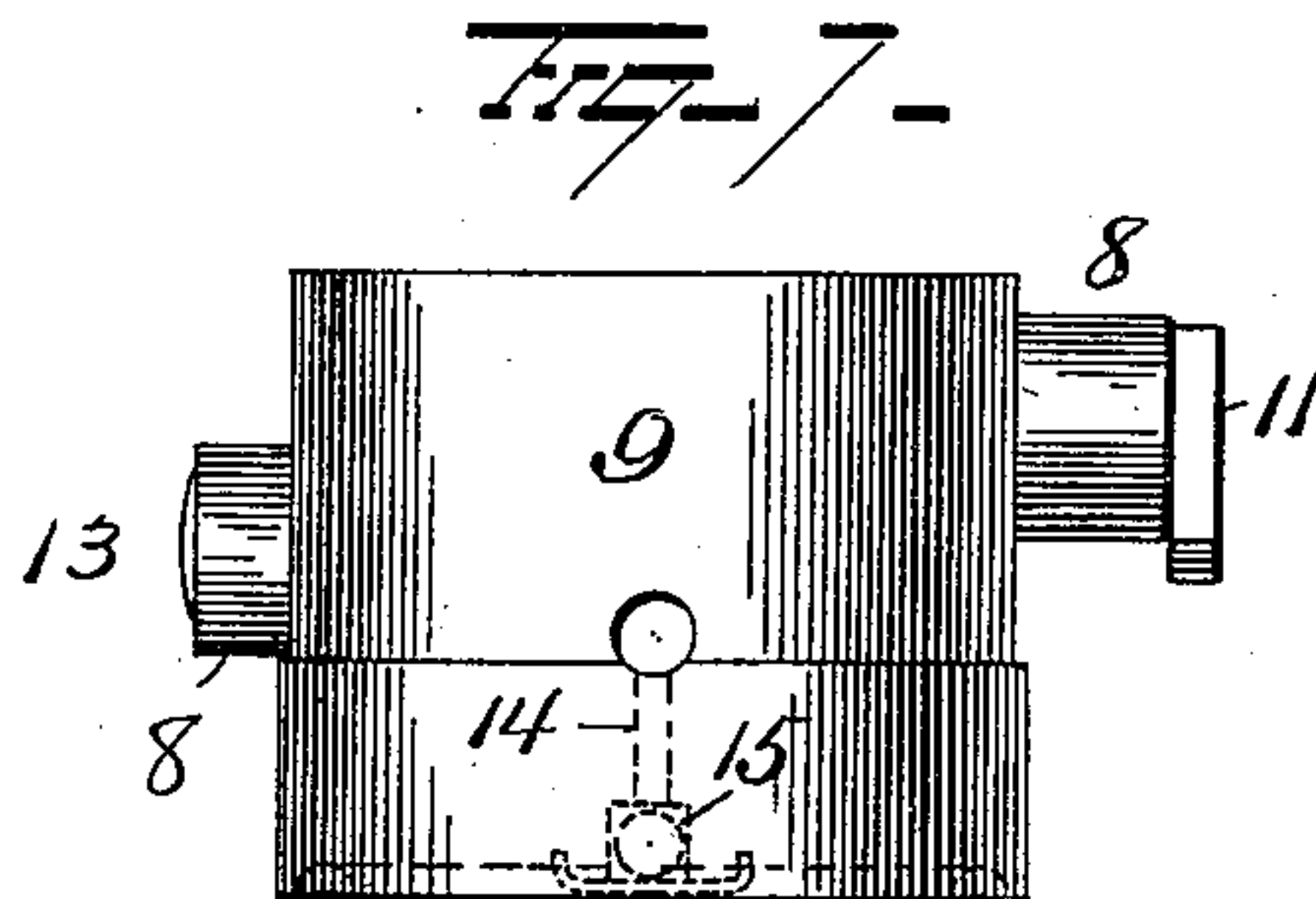
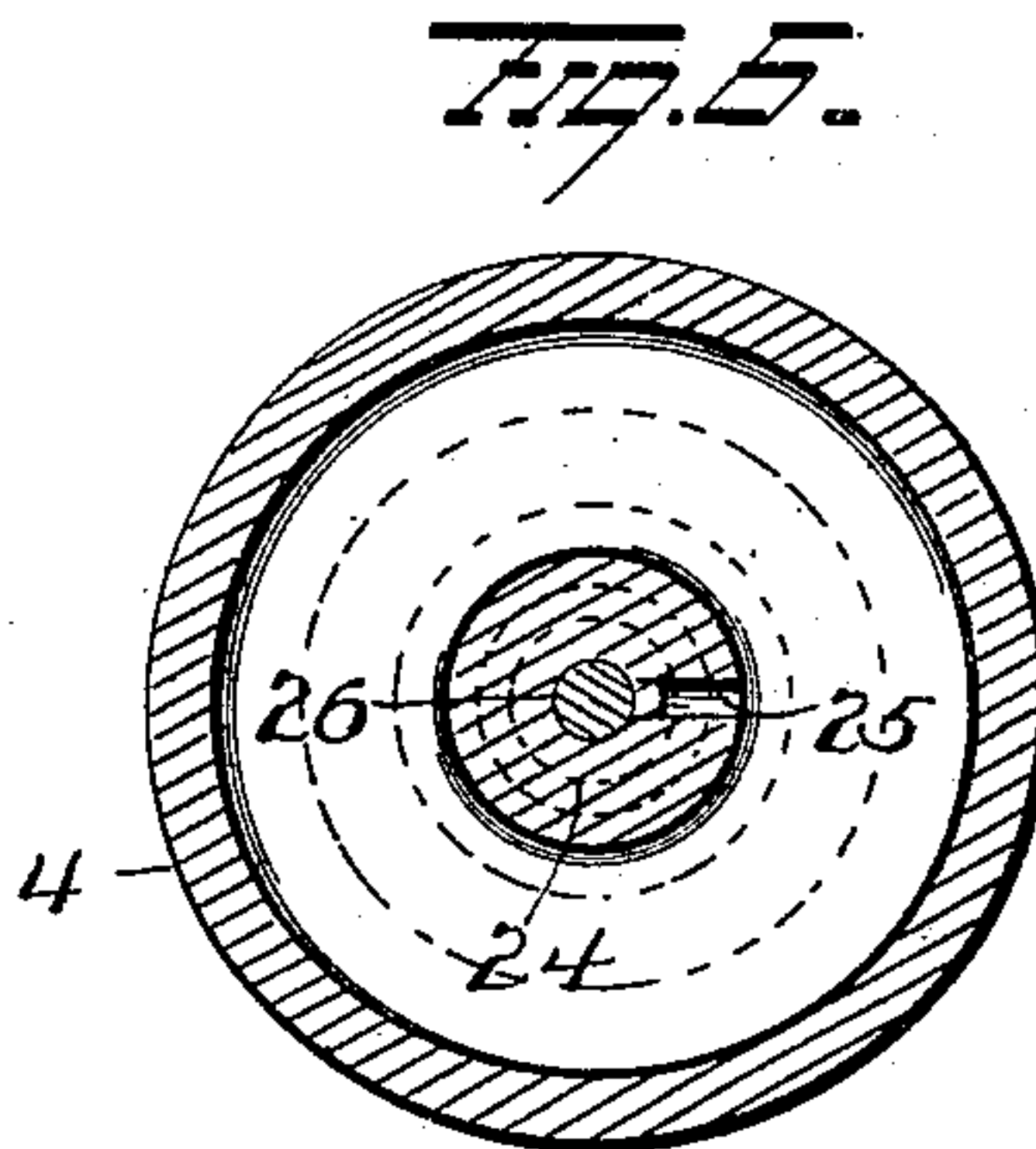
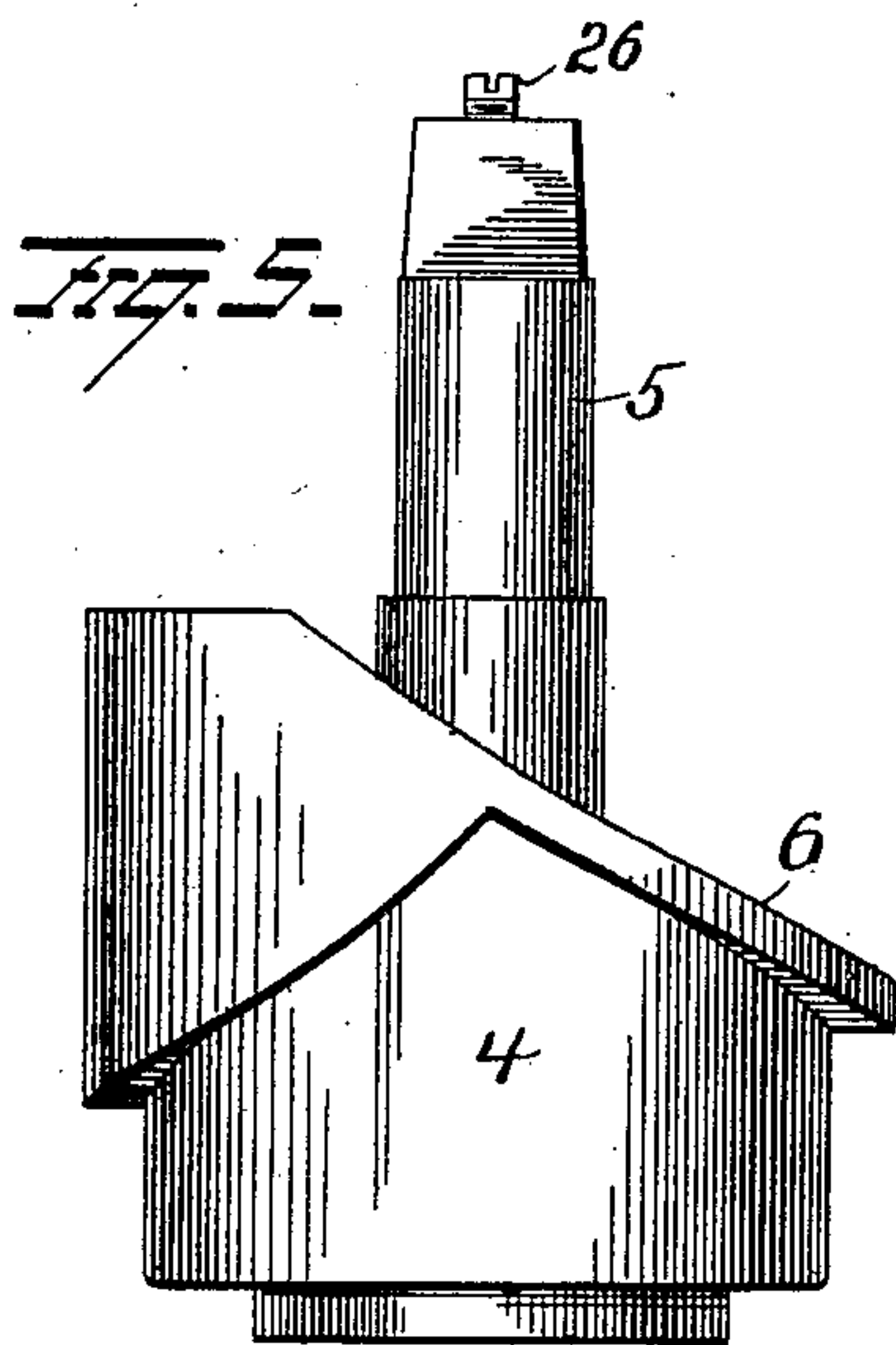
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UNITED STATES PATENT OFFICE.

WILLIAM K. HENRY, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO THE
P. & F. CORBIN, OF SAME PLACE.

DOOR CHECK AND CLOSER.

SPECIFICATION forming part of Letters Patent No. 665,603, dated January 8, 1901.

Application filed July 18, 1900. Serial No. 24,091. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM K. HENRY, a resident of New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Door Checks and Closers; 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 door checks and closers, one object of the invention being to provide an apparatus of the above-mentioned character which can be secured in the floor and connected with a swinging or double-acting door, so as to automatically close and check the same during the closing movement of the door.

A further object is to provide improved means for hanging a double-acting door which will insure the entire closing of the opening when the door is in its closed position.

A further object is to provide a door which can be readily hung and removed when desired.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view illustrating my improvements in operative position. Fig. 2 is a view of the door-check and closer. Fig. 3 is a view in longitudinal section of the same. Fig. 4 is a view in transverse section of the same. Fig. 5 is a view of the checking-cylinder. Fig. 6 is a view in section of the same. Fig. 7 is a view of the piston; and Figs. 8, 9, 10, and 11 are views of various details of construction.

A represents a cylindrical casing closed at its lower end and open at its upper end, where it is made with internal screw-threads, and provided with an angular peripheral flange 1, having screw-holes therein for the passage of screws securing a plate 2 on the top of the casing and the latter in position in the sill. The bottom of the casing A is provided with a runway, concentric with the center of the bottom, for ball-bearings 3, on which is supported a checking-cylinder 4, provided in its

bottom with a corresponding runway for the ball-bearings, and said checking-cylinder has mounted centrally therein and preferably integral therewith a vertical spindle 5, projecting up out of the casing. One side of the checking-cylinder is made to form a double cam 6, and the other side is grooved internally to form a corresponding double cam 7, on which cams are disposed rollers 8, mounted on trunnions 12 and 13 on opposite sides of a cylindrical piston 9, having a central sleeve 10, which embraces the spindle 5. An angular collar 11 is supported on the outer end of trunnion 12 and is held between parallel flanges 13^a on the inner face of the wall of casing A to prevent rotary movement of the piston, which latter is provided in its bottom with ducts 14, having ball-valves 15 therein to permit the ready flow of liquid therethrough when the piston is raised or, in other words, when the door is opened, but which will seat when the piston is lowered, or the door closed, to retard the flow of liquid, and hence check the closing of the door.

A cover 16 is screwed into the threaded upper end of casing A and is provided with a central opening in alinement with an opening in plate 2 to accommodate the spindle 5, and a large coiled spring 17 surrounds the spindle and bears at its respective ends against the cover 16 and piston 9 to force the piston to its lowest position. The spindle 5 is made between its ends with a shoulder 18, on which is supported a ring 19, having oppositely-disposed lugs 19^a, alining with notches 20 in the lower end of a sleeve 21, integral with the cover 16, and a small coiled spring 22 is supported on the spindle and bears at its respective ends against ring 19 and washers 23 in the sleeve 21 to hold the washers firmly about the spindle and prevent leakage.

The spindle 5 is made with a centrally-threaded bore 24, which communicates by a by-pass 25 with the interior of checking-cylinder 4, and a screw 26 is mounted in the bore 24 and projects above the upper end of the spindle, where it is made with a groove to permit the use of a screw-driver for turning it to open or close the by-pass 25, and thereby regulate the passage of liquid through the same and down and around the checking-cyl-

inder. It will thus be seen that when the by-pass 25 is entirely unobstructed by the screw the downward movement of piston 9 will force the liquid freely through the by-pass, and hence the checking will be but slight. However, as the screw is moved down to partially or entirely close the by-pass the passage of liquid will be obstructed and hence the checking increased.

10 In hanging the door B the latter is mounted in a frame C, having a concave jamb 26^a to receive the adjacent convex edge of the door, and a plate 27 is mortised in the lower edge of the door and enlarged at one end, 15 where it is made with an angular socket 28 to receive the angular end of spindle 5, and said socket is disposed eccentric with the convex edge of the door, and a spring-pin 29 is mounted in the upper edge of the door in 20 alinement with the angular socket 28 and adapted to be sprung into the socketed plate 30, mortised in the top of the frame, and the door B is preferably provided at its corners with strengthening-plates *a*, as shown.

25 It will be seen that my improved door can be readily hung, as it is simply necessary to insert the upper end of spindle 5 in the socket 28 in plate 27 and depress the spring-pin 29 and adjust the door until the pin is in aline- 30 ment with the socket in plate 30, when it can be released and will spring into the socket and the door will be in position for use. Owing to the fact that the spindle is supported in the socket in the plate, which socket is ec- 35 centric with the convex edge of the door, the latter will entirely close the opening when it is closed, and when the door is opened the rear edge thereof will entirely leave the jamb and prevent any possibility of sticking.

40 My improvements can be applied to a single-acting door by simply employing an extension angle-arm 31, as shown in Fig. —, on the spindle. One member of this arm 31 is designed to be secured to the under edge of 45 the door, while the other member, which projects at right angles thereto, is mounted on the upper end of the spindle of the check and closer. With this modification the spindle of the check and closer instead of coming di- 50 rectly under the door is in a line with the pintles of the ordinary door-hinges, on which the door is hung.

The operation of my improvements is as follows: When the door is forced open, the 55 spindle 5 and checking-cylinder 4 will be revolved, and the cams 6 and 7 on the latter will raise the piston 9 and contract spring 17, and the liquid above the piston will pass freely through the ducts 14 therein. When 60 the door is released, the spring 17 will force the piston downward to return the checking-cylinder to its former position and close the door, and the liquid below the piston 9 will serve as a check, as valves 15 will close the ducts 14, 65 and but a very small stream of the liquid can pass through the by-pass 25, the size of which can be regulated by the screw 26, as hereto-

fore explained, and therefore the door will be positively brought to a closed position and held therein until again opened. The cylin- 70 der 4 is considerably smaller than the casing A, thus providing ample space for the liquid, and the piston 9 is held against rotary movement by the angular collar 11, mounted on the side trunnion 12 of the piston and rest- 75 ing between parallel flanges 13^a on the inner face of the casing. As the piston has trunnions resting on cam-faces 6 and 7 on the cylinder and as the piston is held against rotary movement, it will be seen that a rotary move- 80 ment of the cylinder necessarily imparts a vertical movement to the piston in opening the door. After the door is opened and released the spring bearing against the piston forces the latter downwardly, and this down- 85 ward movement of the piston imparts rotary movement to the cylinder.

Various slight changes might be resorted to in the general form and arrangement of the several parts described without depart- 90 ing from the spirit and scope of my invention, and hence I would have it understood that I do not wish to limit myself to the precise details set forth, but consider myself at liberty to make such slight changes and alterations 95 as fairly fall within the spirit and scope of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is— 100

1. In a door check and closer, the combination with a casing, of a checking-cylinder in the casing having a cam thereon and a spring-pressed piston in engagement with the cam and adapted to be operated by the cam to 105 contract the spring when the checking-cylinder is revolved in one direction.

2. In a door check and closer, the combination with a casing, of a checking-cylinder mounted in said casing and having a cam, a 110 spring-pressed piston in said checking-cylinder, a trunnion on the piston supported on the cam so that when the checking-cylinder is revolved the piston will be raised by the cam and the cylinder returned to its former 115 position by the spring-pressed piston.

3. In a door check and closer, the combination with a casing, of a checking-cylinder therein, a spindle fixed to the cylinder and adapted to be turned by the door to which it 120 is connected to revolve the cylinder, a cam on the cylinder, a spring-pressed piston bearing against the cam and adapted to be raised thereby when the cylinder is revolved and valves in said piston adapted to open and per- 125 mit the free passage of liquid therethrough when the piston is raised but which will close when the piston is lowered.

4. In a door check and closer, the combination with a casing and cover therefor, of a 130 checking-cylinder in said casing, a spindle fixed to said cylinder and projecting through the cover and adapted to be connected to and turned by a door, oppositely-disposed double-

inclined cams on the cylinder, a piston supported on said cams, a spring between the cover and piston tending to normally hold the piston in its lowest position, valves in the piston to permit the flow of liquid through the same when it is raised by the rotation of the cylinder and said cylinder provided with a by-pass to permit the liquid to be forced around the same when the piston is lowered.

5 5. In a door check and closer the combination with a casing, of a checking-cylinder within the casing and provided with a cam, means connecting the cylinder and door whereby they swing or turn in unison, a spring-pressed piston in engagement with the cam and adapted to be operated by the cam to contract the spring when the checking-cylinder is revolved in one direction and means for holding the piston against rotary movement.

10 6. In a door check and closer the combination with a casing, of a checking-cylinder mounted to turn therein and provided centrally with a hollow spindle, the latter having a lateral port or by-pass, a cam-surface on the cylinder, a spring-pressed piston having a bearing on the cam-surface of the cylinder and held against rotary movement, the

said piston having valved openings therein which permit of the free passage of the liquid in the cylinder when the piston is being raised but which check or stop the passage when the piston is descending and a screw in said hollow spindle adapted to regulate the passage of the liquid through the lateral port or by-pass, substantially as set forth. 30 35

7. The combination with a casing and a rotary checking-cylinder therein, the said cylinder having an integral central hollow stem, and a lateral port or by-pass leading to said hollow stem, and also provided with a cam-surface, a screw in the hollow stem for regulating the passage of the liquid through the by-pass, a piston within the cylinder, the said piston having a bearing on the cam and provided with means for preventing its rotation, and a spring normally tending to hold said piston in its depressed position. 40 45

In testimony whereof I have signed this specification in the presence of two subscribing witnesses. 50

WILLIAM K. HENRY.

Witnesses:

G. ERNEST ROOT,
CHAS. A. BLAIR.