

No. 654.305.

Patented July 24, 1900.

E. CLIFF.  
DOOR CLOSER AND CHECK.

(Application filed May 4, 1900.)

(No Model.)

2 Sheets—Sheet 1.

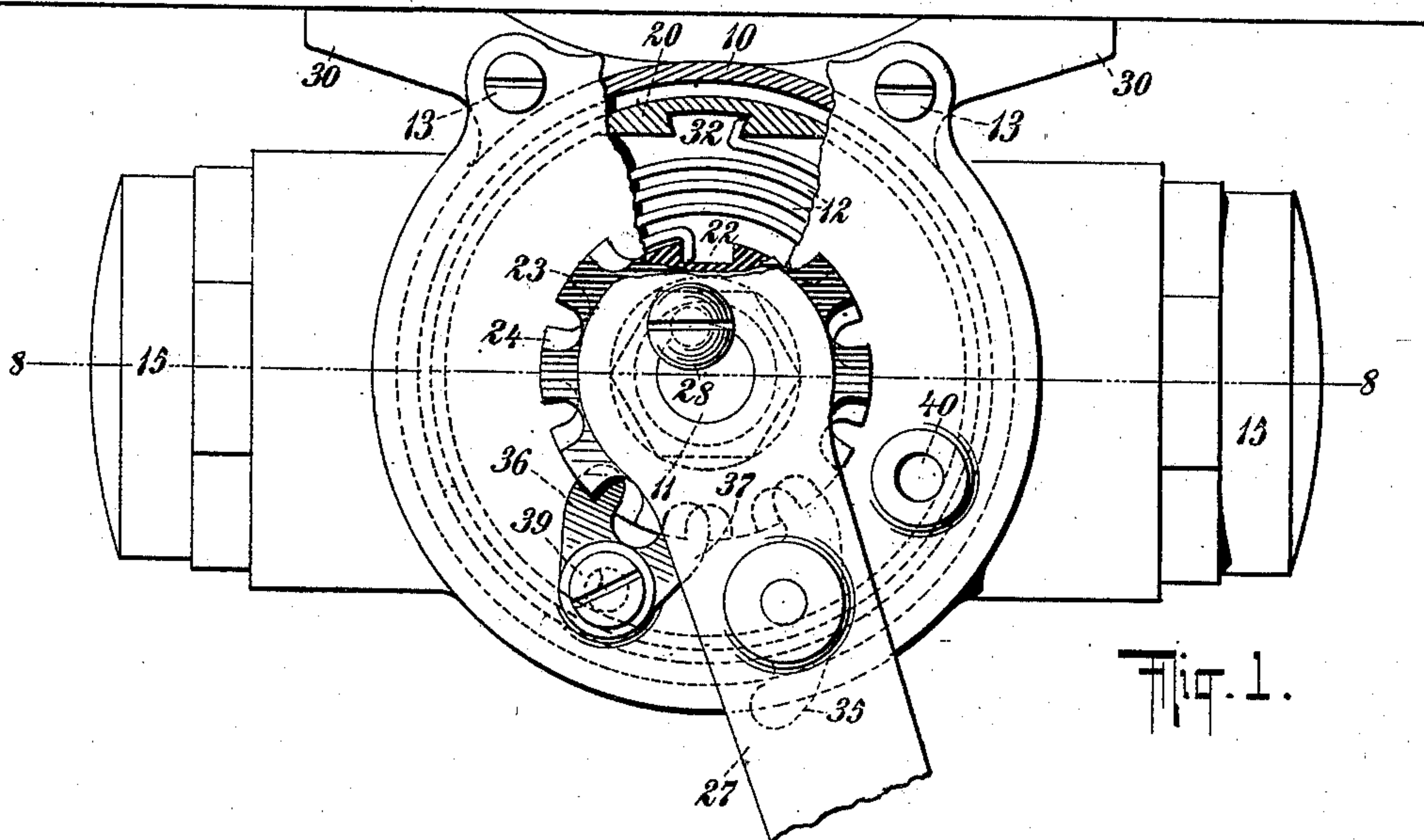


Fig. 1.

Fig. 3.

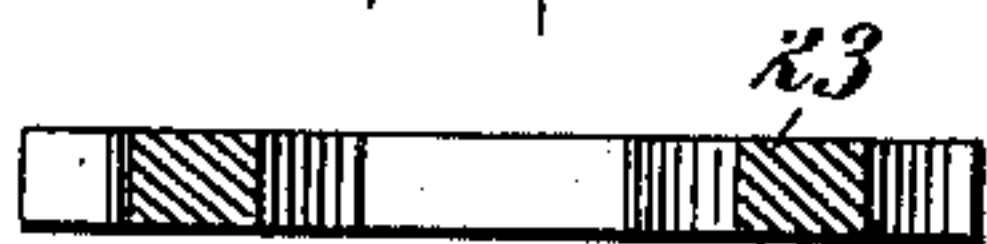


Fig. 2.

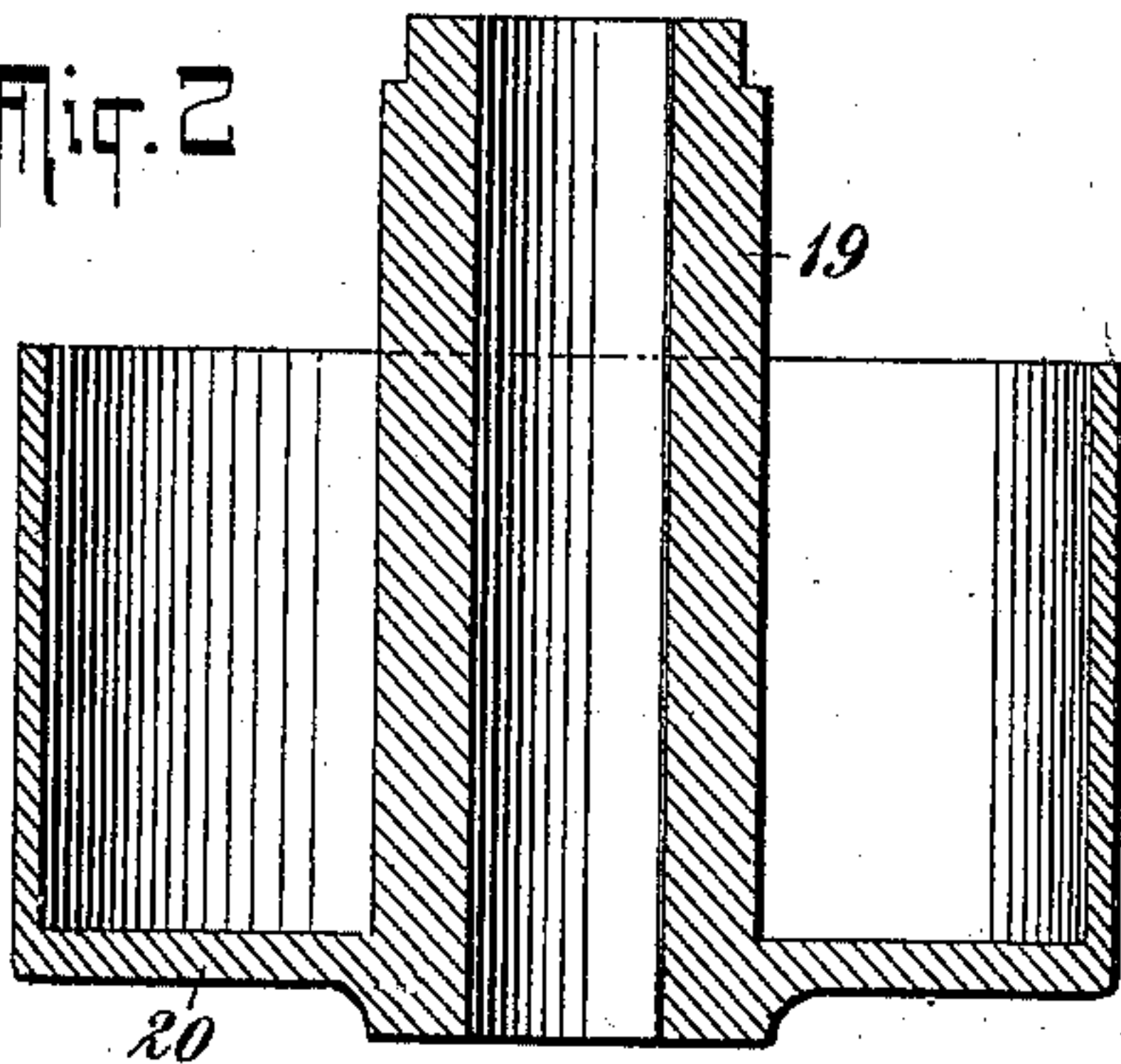


Fig. 6.

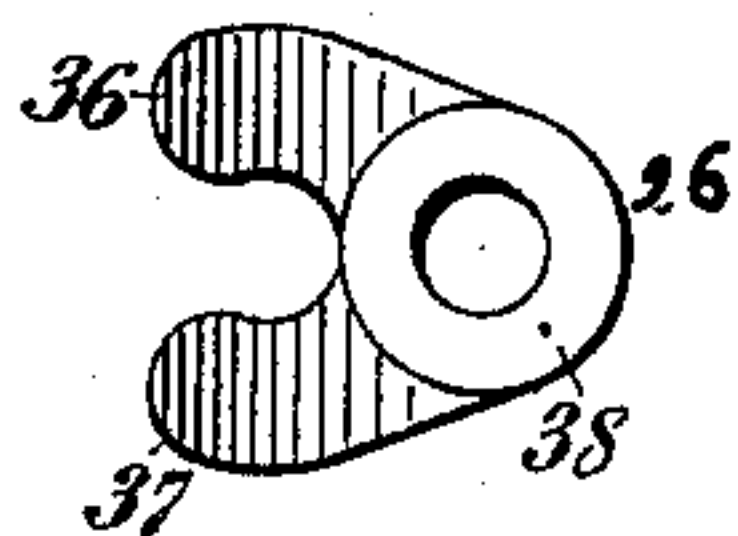


Fig. 4.

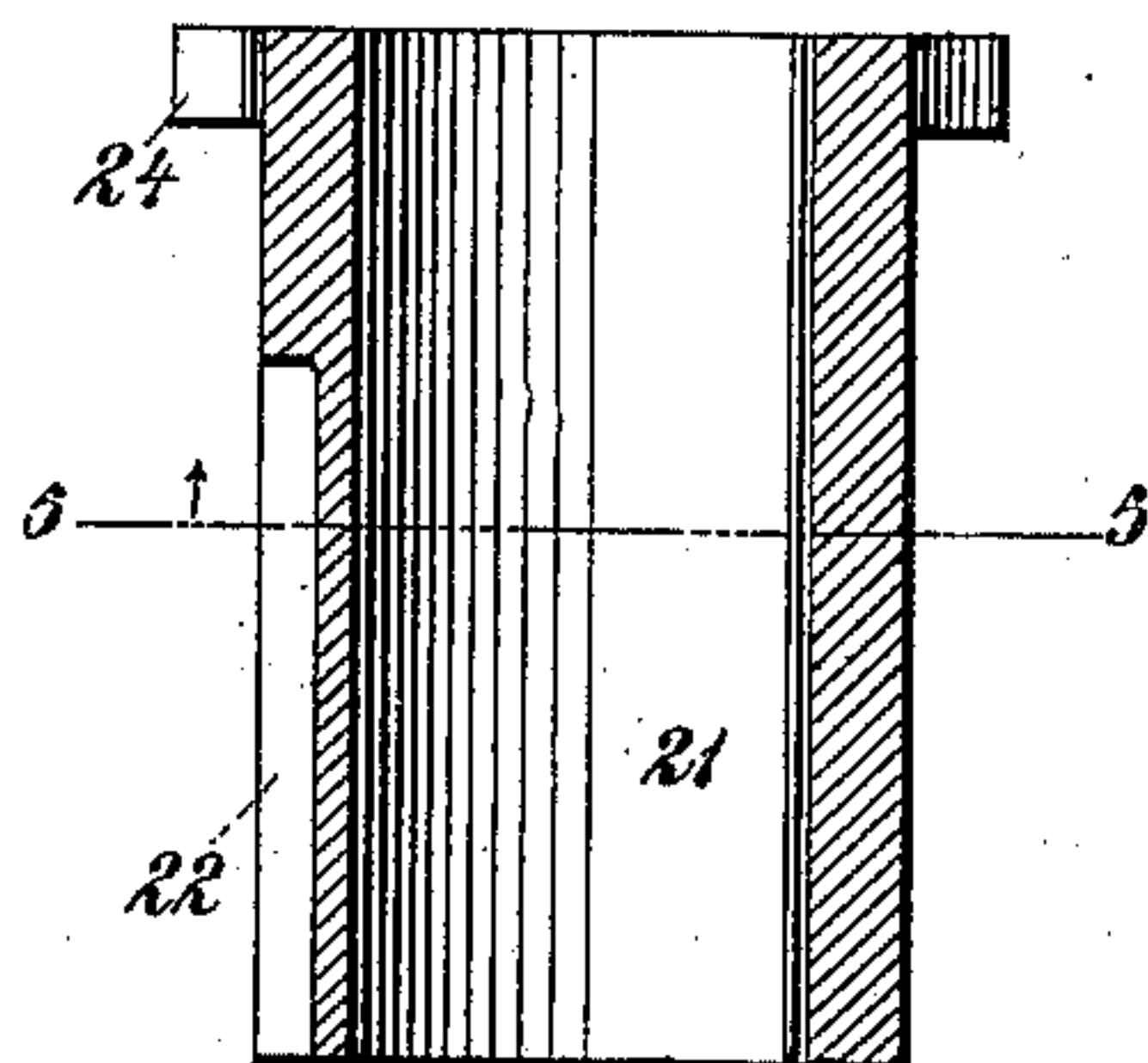


Fig. 7.

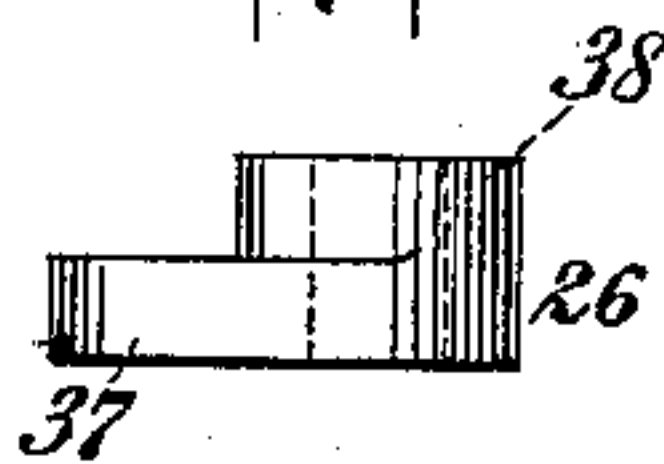
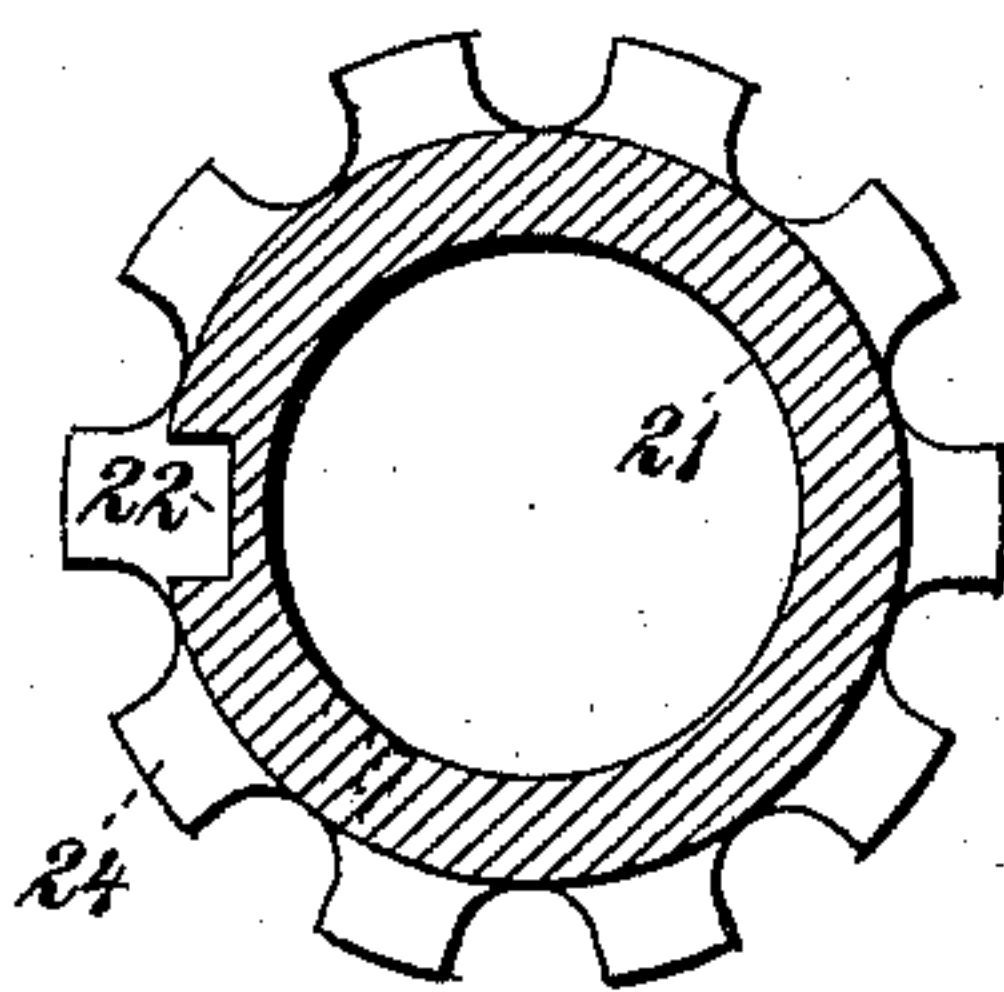


Fig. 5.



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No. 654,305.

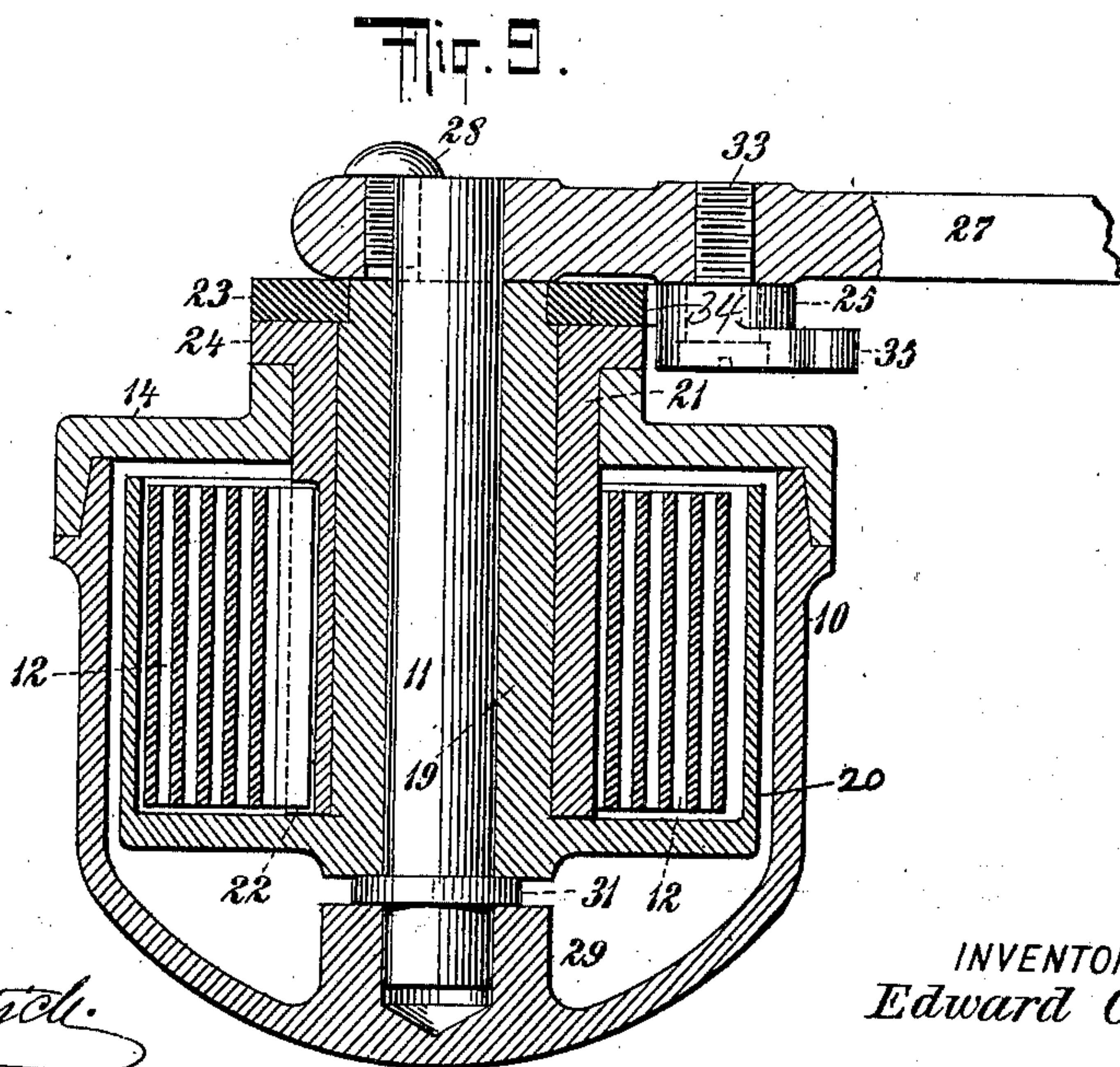
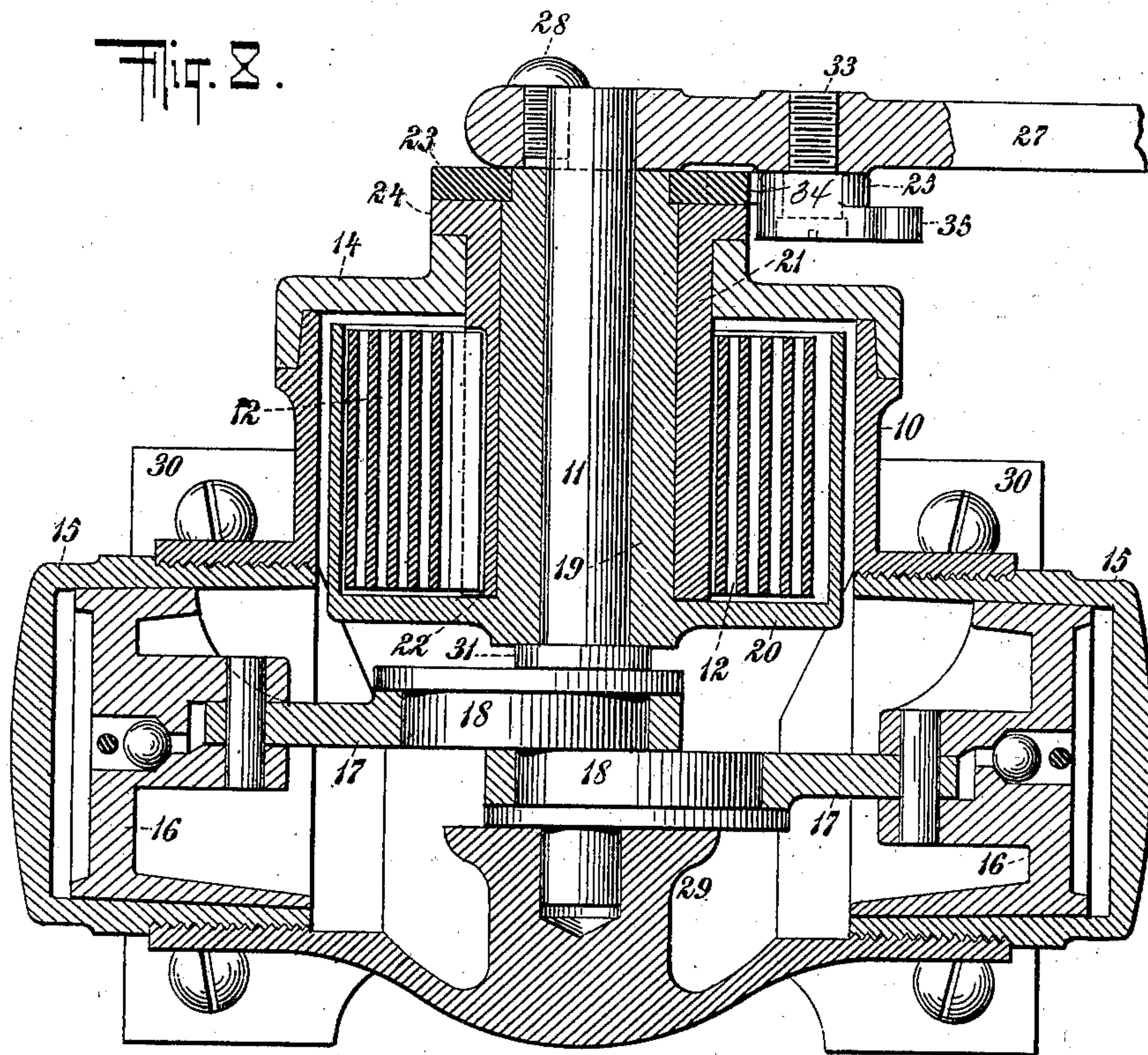
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WITNESSES:

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# UNITED STATES PATENT OFFICE.

EDWARD CLIFF, OF NEWARK, NEW JERSEY.

## DOOR CLOSER AND CHECK.

SPECIFICATION forming part of Letters Patent No. 654,305, dated July 24, 1900.

Application filed May 4, 1900. Serial No. 15,480. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD CLIFF, a citizen of the United States, and a resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Door Closers and Checks, of which the following is a specification.

The invention relates to improvements in door closers and checks; and it consists in the novel features, arrangement, and combinations hereinafter described, and more particularly pointed out in the claims.

My invention relates more particularly to the class of door closers and checks containing within a casing a coiled spring, a checking medium, and a central spindle, the upper end of the latter being connected by lever-arms with the lintel over the door and the said spring being reversible, so as to adapt the device for right and left hand doors.

My invention has for its object to simplify and render more useful and convenient this class of door closers and checks, as well as to avoid the difficulties incident to their adjustment and the necessity of reversing the position of their springs when adapting them from a right to a left hand condition.

In carrying my invention into effect I employ within the outer casing a coiled spring and suitable means intermediate the ends of said spring and the operating lever-arm connected with the central spindle, whereby the said spring may without reversal within the exterior casing be utilized to close either a right-hand door or a left-hand door, the one spring without reversal being thus adapted for both right and left hand doors.

The invention is not limited to the employment of a checking medium for preventing the slamming of the door during its closing movement; but I prefer to employ in connection with the aforesaid spring and its co-operating parts a liquid or air checking medium to resist the force of the spring during the closing of the door, and hence in the accompanying drawings I illustrate a combined door check and closer, the checking means being liquid-cylinders containing pistons operatively connected with the aforesaid central spindle.

One of the main purposes of my invention is to provide a door-closing means capable of

use with or without the liquid checking medium and which shall not require the reversal of the spring within the outer casing in adapting the device for right and left hand doors.

The invention will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a top view, partly broken away and partly in section, of a combined door check and closer constructed in accordance with and embodying my invention. Fig. 2 is a detached central vertical longitudinal section of a cup and sleeve to fit upon the central spindle and receive the coiled spring. Fig. 3 is a central vertical section of a notched or toothed wheel which fits upon the upper end of the sleeve shown in Fig. 2. Fig. 4 is a detached central vertical section through a sleeve which receives the inner end of the coiled spring and fits upon the sleeve shown in Fig. 2. Fig. 5 is a transverse section of same on the dotted line 5 5 of Fig. 4. Fig. 6 is a detached top view of the two-armed locking dog or pawl to be secured upon the upper end of the exterior casing. Fig. 7 is a detached side elevation of same. Fig. 8 is a central vertical longitudinal section through the combined door closer and check, the section being on the dotted line 8 8 of Fig. 1; and Fig. 9 is a like section of a door-closer embodying the invention and corresponding with the construction shown in Figs. 1 to 8, inclusive, with the exception that in Fig. 9 the means for checking the closing action of the spring are omitted.

In the drawings, 10 designates the main exterior casing; 11, the central actuating-spindle; 12, the coiled spring for effecting the closing of the door; 14, a cap for closing the upper end of the casing 10 and which is secured in place by means of the screws 13 13; 15, the liquid checking-cylinders, whose pistons 16 are connected by piston-rods 17 with the eccentrics 18, carried by said spindle 11; 19, a sleeve mounted upon the spindle 11 and carrying the cup 20, which receives the spring 12; 21, an auxiliary sleeve mounted upon the sleeve 19 and having the recess 22 to receive the inner hooked end of the spring 12; 23, a toothed wheel secured upon the upper end of the sleeve 19, and 24 a similar wheel formed



upon the upper end of the sleeve 21, said toothed wheels 23 and 24 being respectively engaged by the pawls or dogs 25 and 26, the pawl 25 being pivotally secured to the actuating lever-arm 27 and the pawl 26 being secured upon the cap 14, closing the top of the exterior casing 10. The lever-arm 27 is of usual construction in this art and is fastened upon the upper end of the actuating-spindle 11 by means of a screw 28.

The casing 10 contains an elevated seat 29 to receive the lower end of the spindle 11, and said casing 10 is formed with the flanges 30 to receive the screws by which the casing may be fastened to the door in the usual manner.

The sleeve 19 passes freely upon the spindle 11 and finds a seat upon the annular flange 31, formed on the said spindle, and the said sleeve 19 carries the cup or cylindrical casing 20, which is open at its upper end and at its outer vertical walls fits freely within the upper cylindrical portion of the casing 10, as more clearly illustrated in Figs. 8 and 9. The cup 20 at one edge is formed with the vertical notch or recess 32 to receive the outer hooked end of the spring 12. The upper end of the sleeve 19 is polygonal in outline to receive the toothed wheel 23, the latter when in position being rigid with said sleeve 19.

The sleeve 21 passes freely upon the aforesaid sleeve 19 and at one side is formed with the recess 22 to receive the inner hooked end of the spring 12, and upon its upper end said sleeve 21 is formed with the toothed wheel 24, substantially corresponding with the toothed wheel 23, fastened upon the upper end of the sleeve 19. The toothed wheels 23 and 24 are exposed above the closing-cap 14 and are adjacent to the upper end of the spindle 11 in convenient position to be respectively engaged by the pawls 25 and 26. The pawl 25 is pivotally secured to the lever-arm 27 by means of the screw 33 and is formed with the engaging ends 34 and 35, the end 34 being adapted to engage the toothed wheel 23 when the device is to be applied to a right-hand door, as illustrated in Figs. 1 and 8, and the end 35 being adapted to be moved into engagement with the lower wheel 24 when the device is to be applied to a left-hand door. The pawl 25 has its engaging ends 34 and 35 on different levels, as shown in Fig. 8, and hence by turning said pawl 25 upon the screw 33 one of said ends may be moved into engagement with the wheel 23 or the other of said ends into engagement with the wheel 24. The pawl 25 is thus intended for engagement with one or the other of said wheels 23 and 24 in accordance with whether the closer is to be applied to a right-hand door or to a left-hand door.

The pawl 26 is preferably formed with the two arms 36 and 37, said arms being both in the same horizontal plane and being carried by the hub 38, which is detachably fastened upon the cap 14 by means of a screw 39. The

arms 36 and 37 of the pawl 26 either both engage the lower toothed wheel 24 or the upper toothed wheel 23. When the closer is adapted for a right-hand door, as shown in Fig. 1, the arms 36 and 37 of the pawl 26 are both in engagement with the lower wheel 24, and at this time the end 34 of the pawl 25 is in engagement with the upper wheel 23. The pawl 26 will be caused to engage the upper wheel 23 when the end 35 of the pawl 25 is turned to engage with the wheel 24, and said pawl 26 is caused to engage the upper wheel 23 by detaching and turning said pawl 26 upside down and by means of the screw 39 securing it at the point 40 on said cap 14, where a hole is provided to receive said screw. When the pawl 26 is turned upside down and secured at the point 40 on the cap 14, the hub 38 serves to maintain the arms 36 and 37 of said pawl at a proper elevation to enable them to engage the upper wheel 23. The pawl 25 is carried by the arm 27 and during the movement of said arm effects the turning of the toothed wheel with which it may be in engagement, while the pawl 26 is rigidly held upon the cap 14 and prevents the wheel with which it may be in engagement from having any rotation. The pawl 26 will thus lock the lower wheel 24 and sleeve 21 against rotation when the closer is applied to a right-hand door, and said pawl 26 will upon its reversal lock the wheel 23, sleeve 19, and cup 20 against rotation when the closer is to be applied to a left-hand door. When the closer is to be applied to a right-hand door and the pawl 25 is in engagement with the wheel 23, the sleeve 19 will during the opening and closing of the door have a rotary motion, with the result that the cup 20 will rotate and effect the winding and unwinding of the spring 12, and when the closer is to be applied to a left-hand door and the end 35 of the pawl 25 is in engagement with the lower wheel 24 the sleeve 21 will rotate upon the sleeve 19 and effect the winding and unwinding of the spring 12. It will thus be obvious that the one spring 12 without being removed from the casing and reversed may be readily adapted for closing either right-hand doors or left-hand doors, the only changes in the device necessary in adapting the closer from a right-hand condition, as shown, into a left-hand condition being the engagement of the end 35 of the pawl 25 with the lower wheel 24 and the engagement of the pawl 26 with the upper wheel 23.

In the absence of means for checking the closing action of the spring 12 the device would serve as a door-closer, and I do not limit the invention to the employment of the checking means, since in many instances the latter will be unnecessary. In many other instances, however, it is of great advantage to employ the checking means, and hence in Figs. 1 and 8 I illustrate proper means for checking the closing action of the spring, such means comprising the liquid-holding cylinders 15, the valved pistons 16 therein, and



the oppositely-extending eccentrics 18, carried by the spindle 11 and serving to impart proper motion through the piston-rods 17 to said pistons 16. During the opening of the door the pistons 16 will be drawn toward one another, and the liquid will freely pass around and through the pistons to the outer ends of the cylinders 15, and during the closing of the door the liquid will be more or less imprisoned at the ends of the cylinders 15 and in a well-known manner check the closing action of the spring 12. In the drawings I illustrate two cylinders 15 and two pistons 16; but it is obvious that one of the pistons may be omitted, if desired, and the checking be effected by the other or remaining piston. The present invention is not limited to any special construction of the cylinders 15, pistons 16, and operative devices for moving said pistons 16.

The invention and its mode of operation will be sufficiently understood from the description hereinbefore presented. One of the main purposes accomplished by the invention is the adaptation of the one spring 12 without its reversal or being turned upside down within its casing for both right and left hand doors, the one sleeve 19 being locked into engagement with the actuating lever-arm 27 when the closer is to be applied to a right-hand door and the other sleeve 21 being locked into engagement with the said lever-arm 27 when the closer is to be applied to a left-hand door, the sleeve not in engagement with said arm 27 being locked against rotation by means of the pawl 26.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a door-closer, the pivotally-mounted lever-arm, the spindle for said arm, the casing, and the coiled spring within said casing, combined with the toothed wheels 23 and 24 disposed upon the top of said casing and loose upon said spindle and respectively connected with the opposite ends of said spring, pawl mechanism carried by the said lever-arm to engage one or the other of said wheels, and means for locking against rotation the one of said wheels not in engagement with said arm; substantially as set forth.

2. In a door check and closer, the lever-arm, the casing, the coiled spring within said casing, and the actuating-spindle within said casing and spring and having fixed upon its upper end the said lever-arm, combined with the toothed wheels 23 and 24 loose upon the upper end of said spindle and respectively connected with the opposite ends of said spring, pawl mechanism carried by said lever-

arm to engage one or the other of said wheels, means for locking against rotation the one of said wheels not in engagement with said arm, the checking-cylinder, the piston therein, and means operatively connecting said piston with the lower portion of said spindle; substantially as set forth.

3. In a door-closer, the lever-arm, the spindle, the cup encircling said spindle, the sleeve passing within said cup, and the coiled spring within said cup and at one end engaging said cup and at its other end said sleeve, combined with the toothed wheels respectively connected with said cup and sleeve and adapted for engagement with said arm, and means for locking against rotation the one of said wheels not in engagement with said arm; substantially as set forth.

4. In a door-closer, the lever-arm, and the coiled spring, combined with the toothed wheels respectively connected with the ends of said spring, the pawl carried by the said lever-arm for engaging either of said wheels, and the pawl secured to the closer-casing for locking against rotation the one of said wheels not in engagement with said arm; substantially as set forth.

5. In a door-closer, the lever-arm, and the coiled spring, combined with the toothed wheels respectively connected with the ends of said spring, the pawl carried by the said lever-arm for engaging either of said wheels, and the pawl secured to the closer-casing for locking against rotation the one of said wheels not in engagement with said arm, said locking-pawl being detachable and having the hub so that when said pawl is reversed it may be freed from engagement with one of said wheels and be brought into engagement with the other of said wheels; substantially as set forth.

6. In a door-closer, the lever-arm, the spindle, the sleeve 19 thereon, the cup carried by said sleeve, the sleeve 21 on said sleeve 19, and the coiled spring within said cup and at one end connected with said cup and at the other end with said sleeve 19, combined with the wheels on the upper ends of said sleeves, means connecting one of said wheels with said lever-arm, and means for locking the other of said wheels against rotation; substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 2d day of May, A. D. 1900.

EDWARD CLIFF.

Witnesses:

CHAS. C. GILL,  
GUNDER GUNDERSON.