

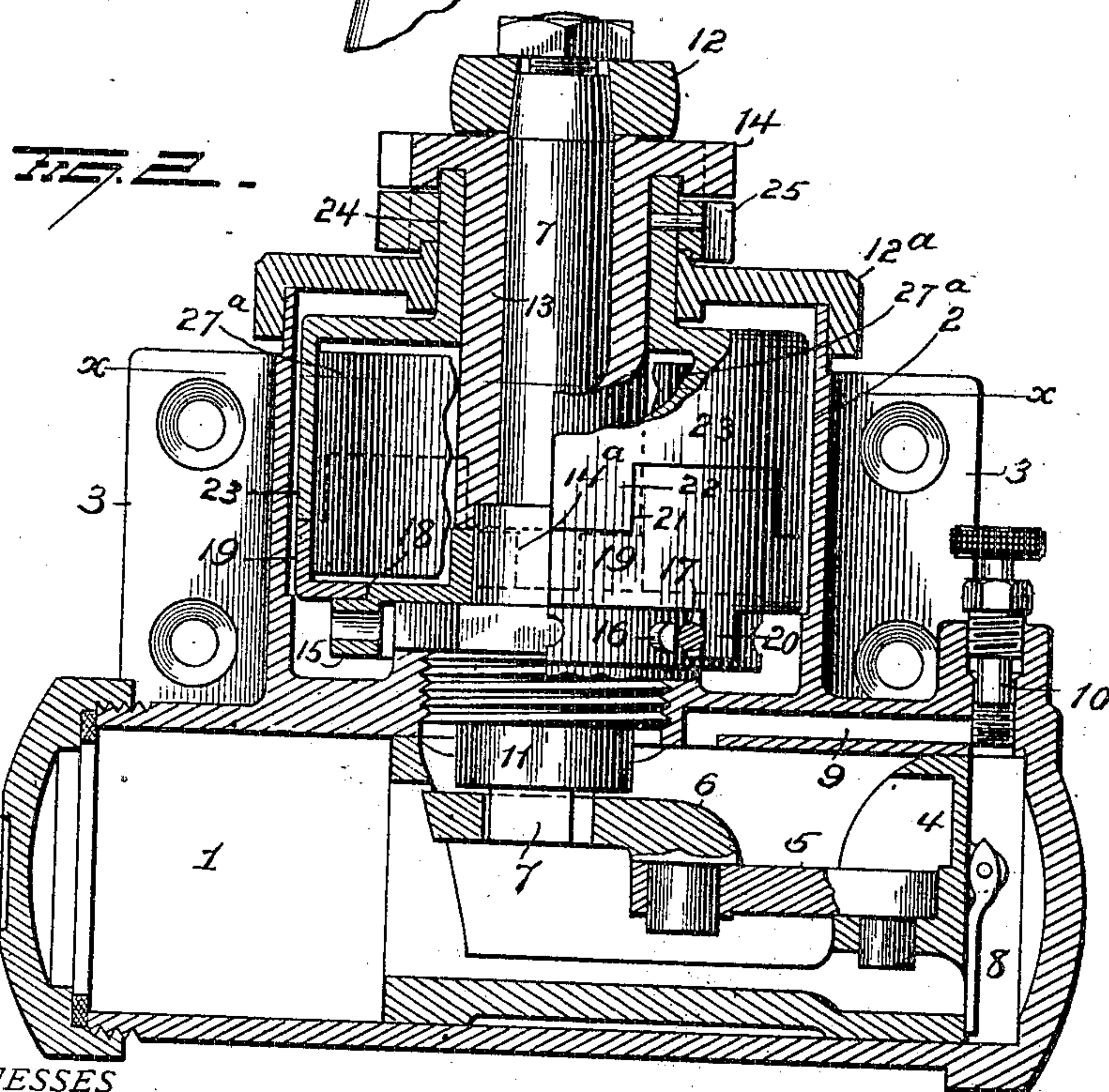
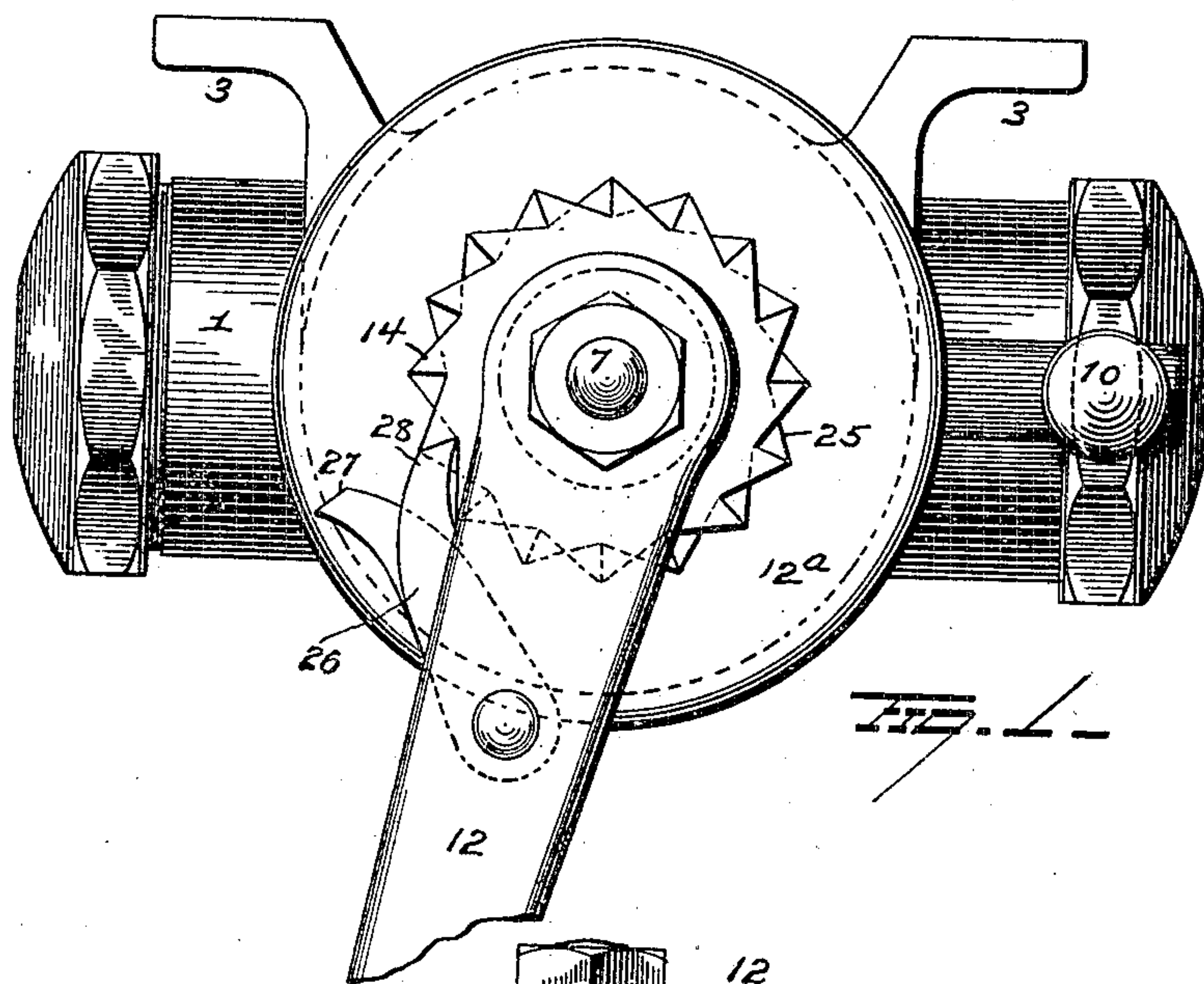
No. 837,162.

PATENTED NOV. 27, 1906.

F. A. WALDRON.  
COMBINED DOOR CHECK AND CLOSER.

APPLICATION FILED JAN. 9, 1906.

3 SHEETS—SHEET 1.



WITNESSES  
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G. J. Downing

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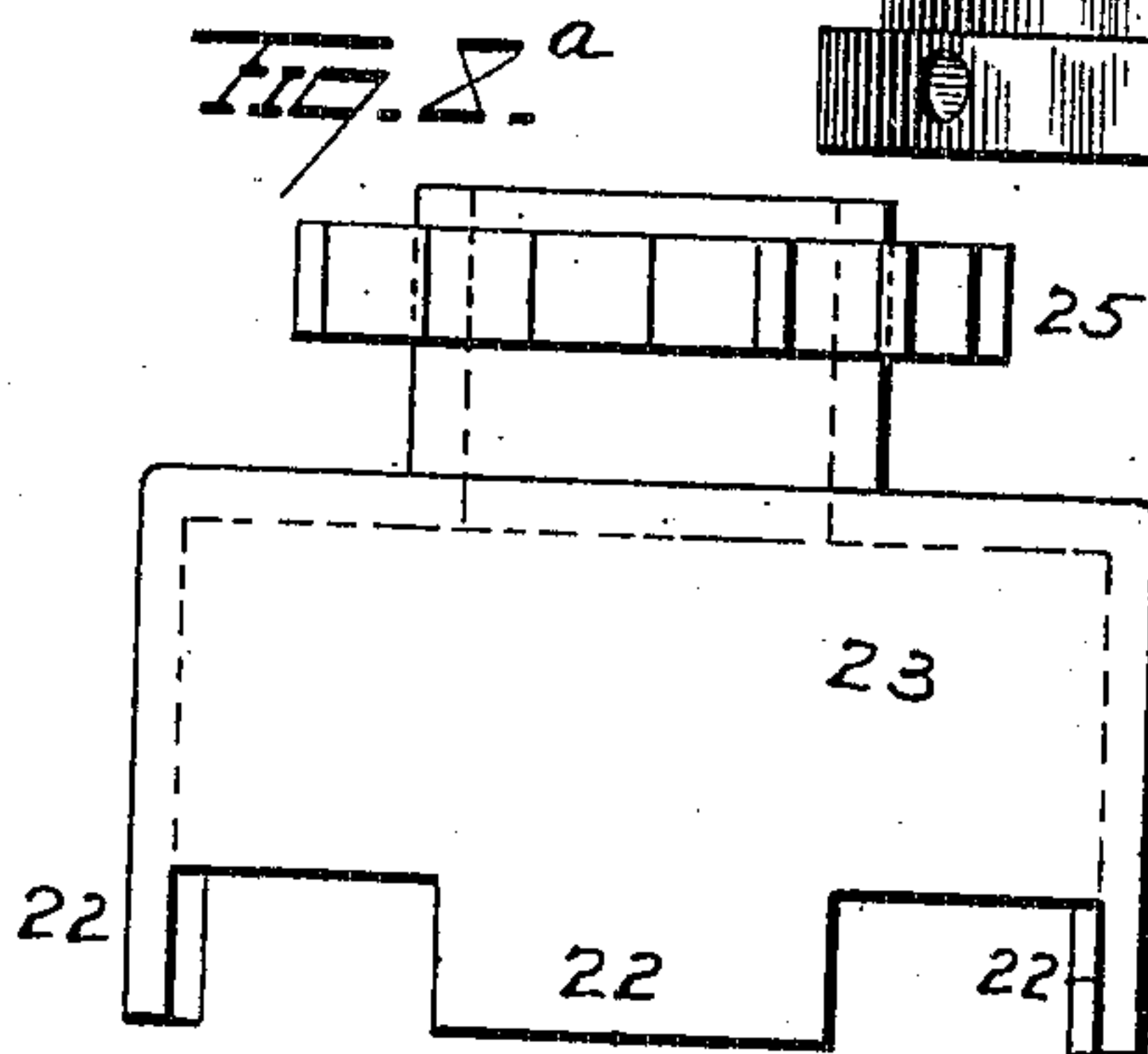
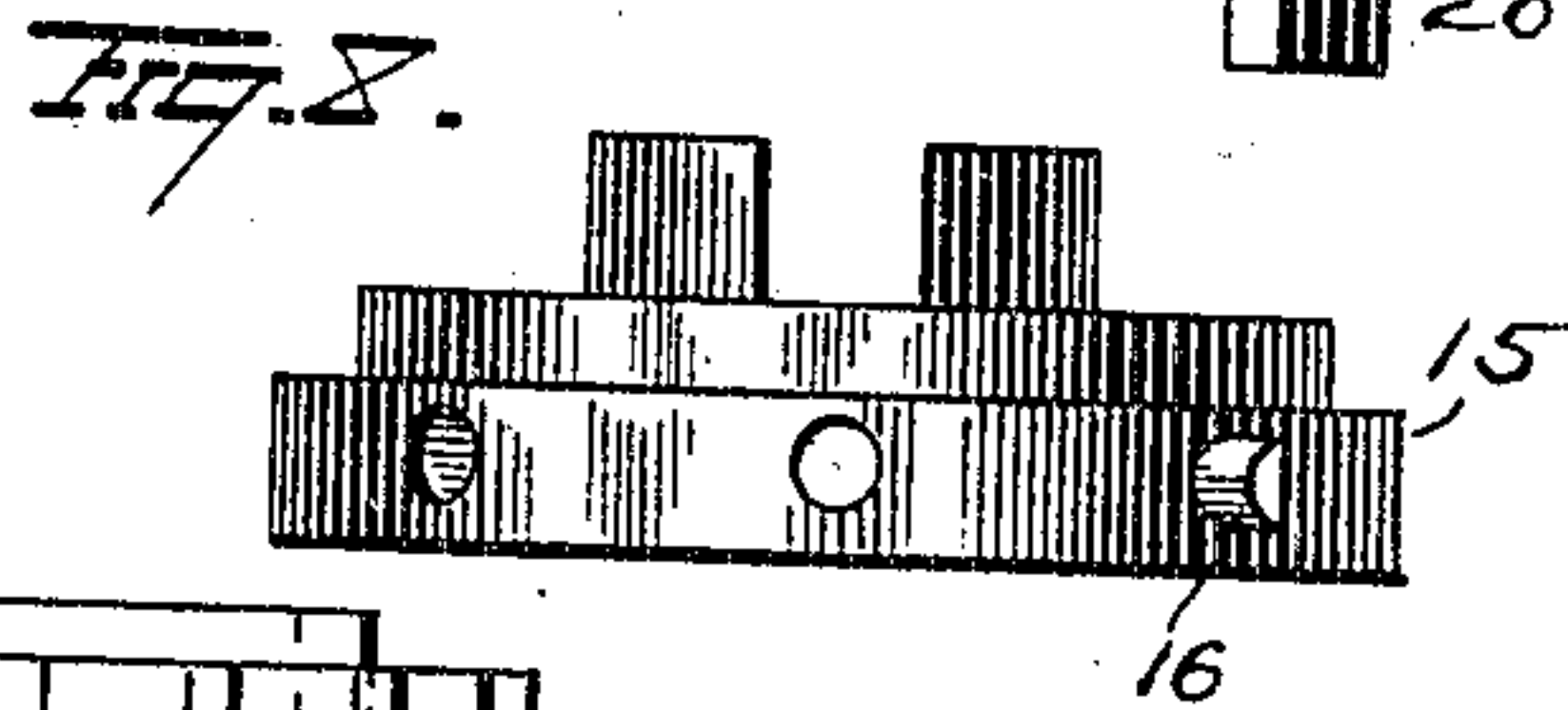
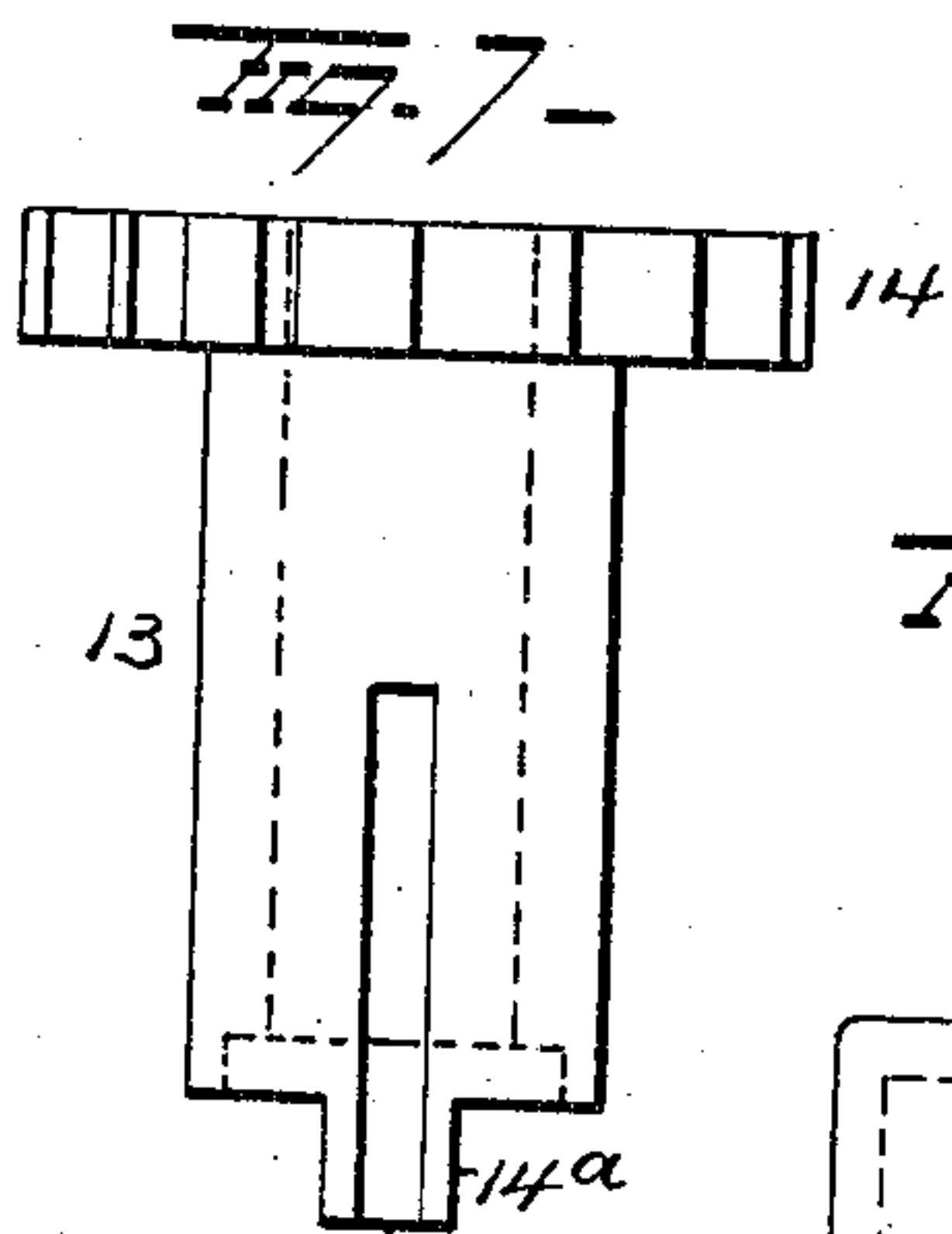
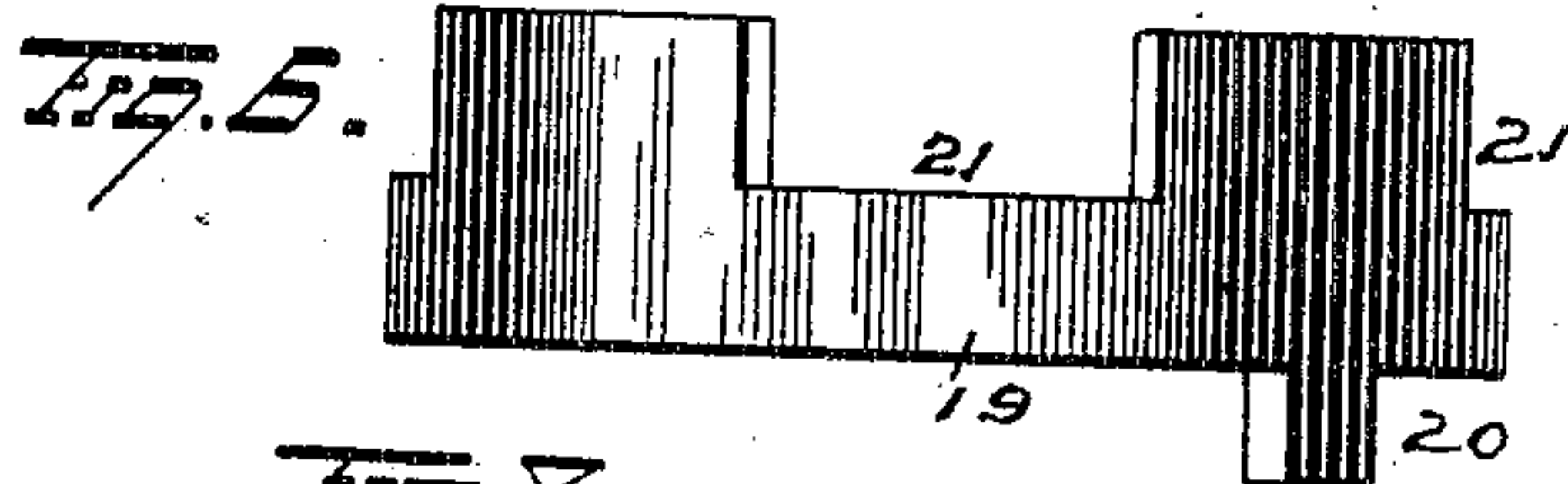
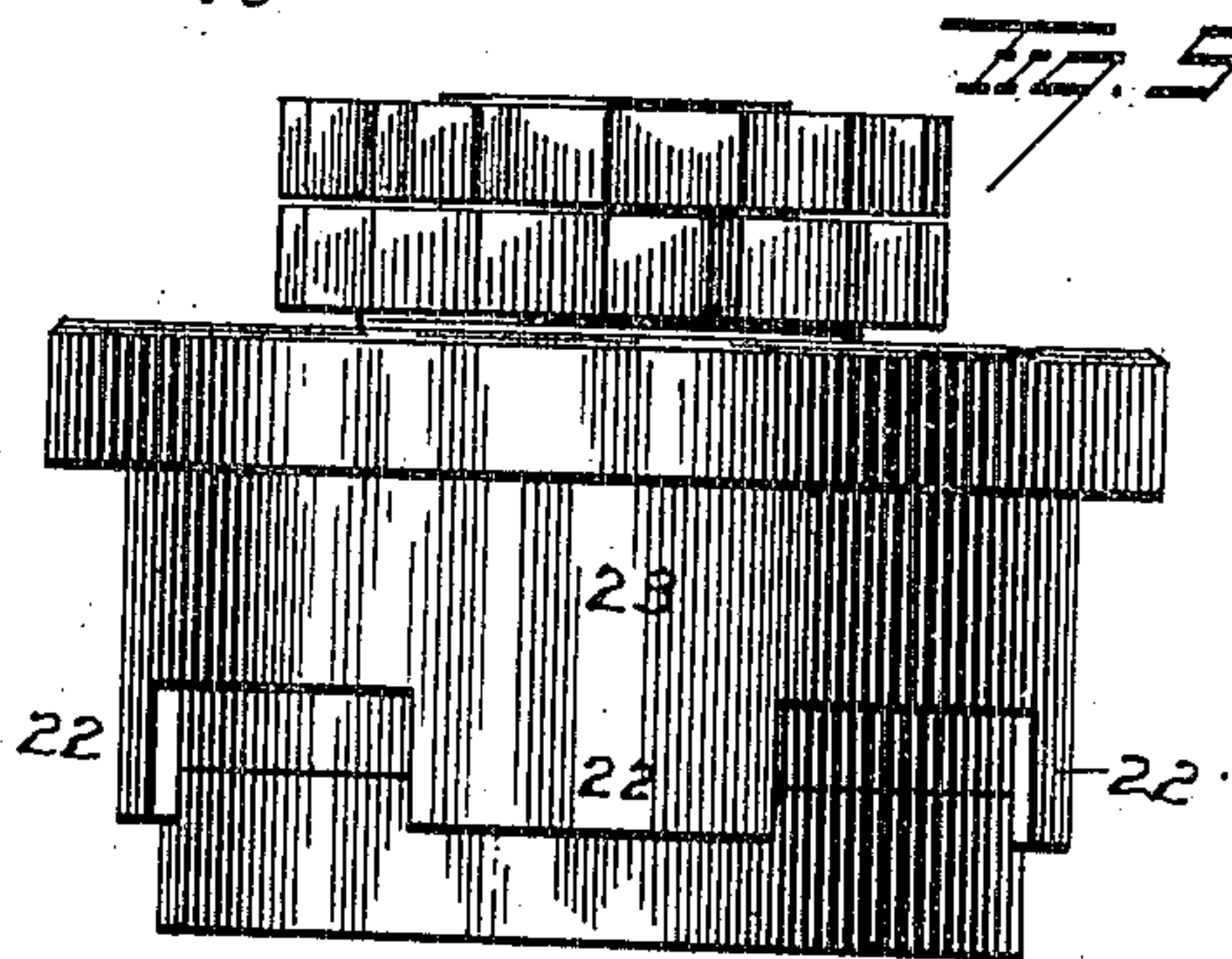
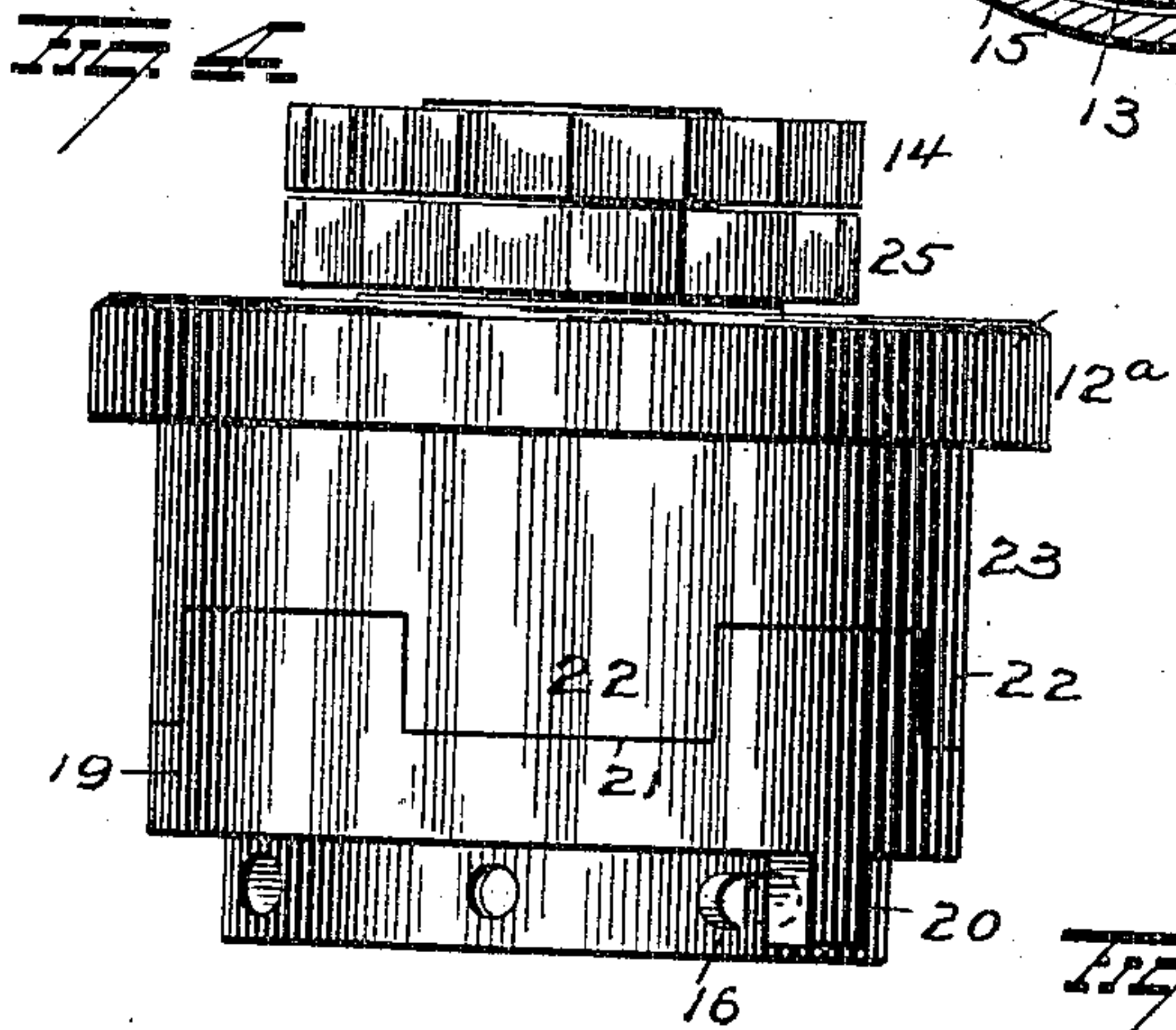
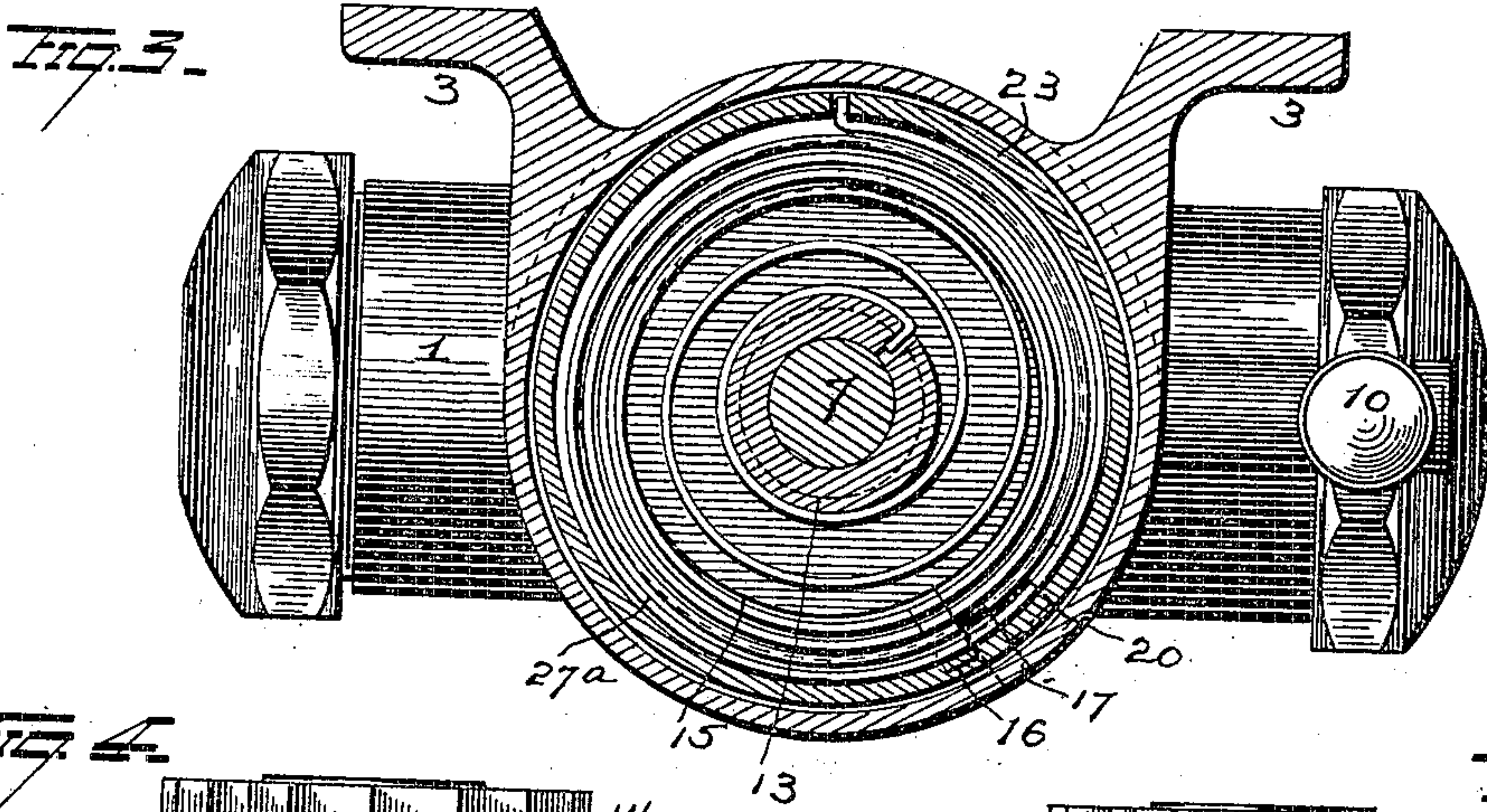
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3 SHEETS—SHEET 2.



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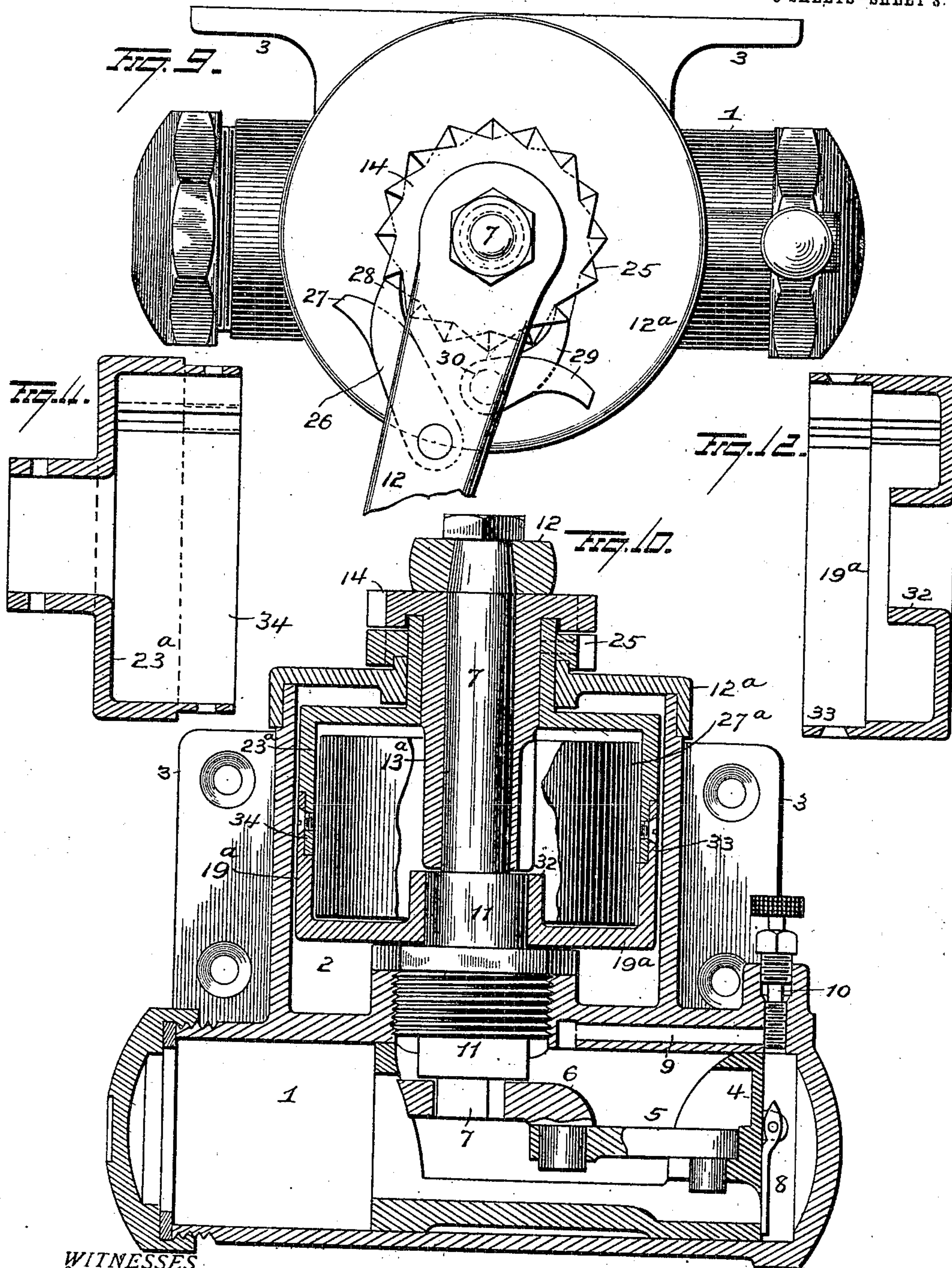


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3 SHEETS—SHEET 3.



**WITNESSES**

WITNESSES:  
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G. F. Downing.

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# UNITED STATES PATENT OFFICE.

FREDERICK A. WALDRON, OF STAMFORD, CONNECTICUT, ASSIGNOR TO  
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CONNECTICUT.

## COMBINED DOOR CHECK AND CLOSER.

No. 837,162.

Specification of Letters Patent.

Patented Nov. 27, 1906.

Application filed January 9, 1906. Serial No. 295,293.

*To all whom it may concern:*

Be it known that I, FREDERICK A. WALDRON, of Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in a Combined Door Check and Closer; 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 combined door checks and closers, the object being to provide a device of the character described that can without any rearrangement of its internal mechanism be used on either a right or left hand door.

With this end in view the invention consists in a leaf-spring connected at its outer end to a rotative casing and the other end to a rotating sleeve, means for connecting the lever-arm to either the casing or the sleeve, means for holding the casing from rotating in one direction, and means for holding the sleeve against rotation in one direction.

The invention further consists in the parts and combinations of parts, as will be more fully explained, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in plan of my improved device. Fig. 2 is a view in vertical longitudinal section of same. Fig. 3 is a view on the line *xx* of Fig. 2. Fig. 4 is a view of the spring-casing and coöperating parts detached. Figs. 5 and 6 are detached views of the spring-casing. Figs. 7 and 8 are detached views of the two parts of the sleeve. Fig. 8<sup>a</sup> is a detached view of the upper section of the casing. Fig. 9 is a view in plan of a modified form. Fig. 10 is a view in vertical section of same, and Figs. 11 and 12 are views in section of the two parts of the spring-casing.

The casing which carries the closing and checking mechanism comprises a cylinder 1, a spring-chamber 2, and side wings 3, the latter having screw-holes for the attachment of the device to the door.

Located within the cylinder 1 is a piston 4, connected by pitman 5 with crank 6, the latter being secured to the lower end of spindle 7. The piston has a valve 8, which opens to permit the fluid to pass through the head

as the latter is moved by the act of opening the door and closes as the piston returns to its normal position, a by-pass 9, regulated by valve 10, being provided for the return of the fluid to the rear of the piston-head as the door closes. The spindle 7 passes upwardly through bearing 11, which is screwed into the partition separating the cylinder from the spring-chamber and through the spring-chamber and carries at its upper end the lever-arm 12, which is keyed to said shaft or spindle.

Surrounding the shaft or spindle 7 is the sleeve 13. This sleeve is provided at its end with a ratchet-wheel 14, which, as shown, is located above the cover 12<sup>a</sup> of the spring-chamber, while the sleeve 13 projects down into the chamber and is provided near its lower end with a projecting lug 14<sup>a</sup>, which enters a recess in the disk 15, resting on the upper face of bearing 11. The disk 15 is provided with a horizontally-projecting lug 16, which is in the path of the lug 17, secured to the inner face of the spring-chamber, and normally rests against said lug. Hence it will be seen that this disk and its connected sleeve 13 are free to make approximately a complete rotation in one direction.

The disk 15 is provided, near its outer edge, on its upper face with a depressed circular seat 18, on which the lower section 19 of the spring-casing rests. This section 19 is provided with an opening to receive the upwardly-projecting central portion of the disk 15 and is also provided on its lower face with a depending lug 20, which normally rests against lug 17, projecting inwardly from the spring-chamber. The lug 16, connected by disk 15 with the sleeve 13, rests normally against one side of the lug 17, while lug 20, carried by the lower section of the spring-casing, rests against the opposite side of said lug 17. Consequently the spring-sleeve when in its normal position is free to make approximately a complete rotation in one direction and is prevented from movement in the other, while the spring-casing is free to make approximately one rotation in the opposite direction.

The upper edge of the lower section 19 of the spring-casing is cut away at intervals, as at 21, to receive corresponding projections 22 on the upper section 23 of the spring-casing,



so that when the two sections are assembled they rotate together. The upper section 23 is provided with a central opening of a size to snugly embrace the upper portion of the sleeve 13 and is also provided with an upwardly-projecting cylindrical flange 24, embracing the sleeve and carrying a ratchet-wheel 25, which rests under ratchet-wheel 14. The teeth of the two ratchet-wheels 14 and 25 are oppositely disposed, as shown in Fig. 1, so that either may be engaged by the double pawl 26, pivotally secured to the lever-arm 12.

The spring-casing, as shown in Fig. 2, is simply a cylindrical box mounted to rotate on sleeve 13 and houses the leaf-spring 27<sup>a</sup>. The inner end of this spring is bent to engage a slot or recess in the sleeve 13, while the outer end is bent to engage a slot in the spring-casing. Hence it will be seen that when either the sleeve or the spring-casing is caused to turn, as in opening the door, the spring will be compressed and be held under tension while the door is open and until the door has been closed. The pawl 26 is pivotally secured to the lever-arm 12 and is provided with two oppositely-disposed toes 27 and 28, one of which is in the plane of one ratchet-wheel and the other in the plane of the other ratchet-wheel, so that when turned to one side of the lever-arm it will engage one ratchet-wheel, and when turned to the other side will engage the other wheel. As before explained, the lugs on the disk 15 and the spring-casing normally rest on opposite sides of the lug secured to the inner face of the spring-chamber and are so held by the expansive action of the spring. In applying the check and closer to the door the pawl 26 would be adjusted for that particular door. If it be a right-hand door, one toe of the pawl would engage its ratchet-wheel, or if it be a left-hand door the pawl would be turned so that its other toe would engage its wheel. If, therefore, the parts be adjusted for, say, a right-hand door and the pawl caused to engage the upper ratchet-wheel, it will be seen that in opening the door the spring will be compressed by the movement of the sleeve, the spring-casing always remaining inert. If, on the other hand, the device is to be applied to a left-hand door and the pawl be adjusted to engage the lower ratchet-wheel, the spring will be compressed by the rotary movement imparted to the spring-casing, the sleeve remaining inert. When the door is opened, the movement of the same moves lever-arm 12 and rotates the spindle 7 in the ordinary and well-known manner. This movement of the spindle pulls the piston 4 inwardly, thus permitting the liquid therein to pass in front of the piston-head, and winds up the spring through the rotary movement of either the sleeve or the spring-casing. When the door is released, the spring oper-

ating through the lever-arm and connecting parts closes the door, the closing movement being regulated by escape of fluid from in front of the piston.

In the construction shown in the modified form illustrated in Figs. 9 to 12, inclusive, I have dispensed altogether with the internal lug 17 on the spring-chamber and the contacting lugs 16 and 20 on the disk 15 and spring-casing and with the disk itself and provided a second pawl 29, pivoted to stud 30 on top of the spring-chamber. This pawl 29, like pawl 26, is provided with two oppositely-disposed toes located in different horizontal planes, one toe adapted to engage the teeth of the upper ratchet-wheel and the other toe the teeth of the lower ratchet-wheel. Hence when the pawl 26 of the lever-arm is in engagement with the upper ratchet-wheel 14, connected to the sleeve 13<sup>a</sup>, the pawl 29 will be in engagement with the lower ratchet-wheel and lock the spring-casing against rotation. If, however, the pawl 26 be turned so as to bring its lower toe into engagement with the lower ratchet-wheel 25 and the pawl 29 be turned to engage upper ratchet 14, the spring-sleeve will be retained against movement. In this modification the lower section 19<sup>a</sup> of the spring-casing is provided centrally with an upwardly-projecting cylindrical flange 32, which embraces the upper end of the bearing 11, and the two sections 19<sup>a</sup> and 23<sup>a</sup> of the spring-casing instead of having intermeshing projection on their meeting edges are provided with overlapping flanges 33 and 34, secured together by screws.

The door-closing features of the device above described may be used without the check, and when so used the sleeve may be dispensed with and the inner end of the spring and the upper ratchet-wheel secured directly to the spindle. Hence I would have it understood that in the claims to the closing features the term "sleeve" is intended to cover the spindle or other part to which the inner end of the spring is connected. It will also be observed that I have shown the spring-casing in the form of a box inclosing the spring and connected to the outer end of same. While an inclosing casing is desirable, it is not essential, as a single arm connected by pawl and ratchet-wheel or other means to the lever-arm and also connected to the outer end of the spring will answer all purposes. Hence in such claims as refer to a casing broadly I would have it understood that such term is intended to include any means for connecting the outer end of the spring to the lever-arm.

It is evident that many slight changes might be made in the relative arrangement of parts herein shown and described without departing from the spirit and scope of my invention. Hence I would have it understood



that I do not wish to confine myself to the exact construction of parts shown and described; but,

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

1. In a double-acting door-closer the combination with a chamber, a casing therein a sleeve within the casing, and a spindle passing through the chamber, casing and sleeve, the said casing, sleeve and spindle being rotatively mounted in said chamber, of a spring located within the casing and connected thereto at one end, and to the sleeve at its other end, fixed means within the spring-chamber engaging projections from the casing and sleeve for holding either against movement while the other is turning, a lever-arm fast to the spindle, and means exterior of the chamber for connecting the lever-arm to either the casing or sleeve.

2. In a double-acting door-closer, the combination with a chamber, a casing therein, a sleeve within the casing, and a spindle passing through the chamber, casing and sleeve, the said casing, sleeve and spindle being rotatively mounted in said chamber, of a spring located within the casing and connected thereto at one end and to the sleeve at its other end, fixed means within the spring-chamber located between projections from the casing and sleeve for holding either against movement while the other is turning, a lever-arm fast to the spindle, a double pawl pivoted to the lever-arm and means carried by said sleeve and casing outside the chamber to be engaged by the pawl, whereby either the sleeve or casing can be connected to the lever-arm so as to be rotated thereby.

3. In a double-acting door-closer, the combination with a chamber, a casing therein, a sleeve within the casing and a spindle passing through the chamber, casing and sleeve, the said casing, sleeve and spindle being rotatively mounted in said chamber, of a spring located within the casing and connected thereto at one end and to the sleeve at its other end, fixed means within the spring-chamber and intermediate projections from the casing and sleeve for holding either against movement while the other is turning, a lever-arm fast to the spindle, a ratchet-wheel secured to the sleeve, a ratchet-wheel secured to the casing, both ratchet-wheels being outside the chamber, and a double pawl pivoted to the lever-arm and adapted to engage either of said ratchet-wheels.

4. In a double-acting door-closer the combination with a chamber, a two-part casing therein, a sleeve within the casing and a spindle passing through the chamber, casing and sleeve, the said casing sleeve and spindle being rotatively mounted in said chamber, of a spring within the two-part casing and connected thereto at one end and to the sleeve at

its other end, fixed means within the spring-chamber engaging projections on the casing and sleeve for holding either of the latter against movement while the other is turning, a lever-arm fast to the spindle and means connecting the lever-arm with either the casing or sleeve.

5. In a double-acting door check and closer, the combination with a checking-cylinder, a piston therein and a spring-chamber, of a spindle passing through the spring-chamber and connected with the piston, a sleeve rotatively mounted on the spindle, a spring-casing rotatively mounted on the sleeve, a sleeve connected at one end to the spring-casing and at its other end to the sleeve, permanently-fixed means located within the spring-chamber and engaging projection on the sleeve and spring-casing for holding one of said parts against rotation while the other is turning, a lever-arm secured to the spindle and means for connecting the lever-arm with either the sleeve or spring-casing.

6. In a combined door check and closer, the combination with a spring-chamber, a cylinder, a piston therein, a spindle connected with the piston and passing up through the spring-chamber, and a lever-arm secured to the spindle, of a sleeve rotatively mounted on the spindle, a spring-casing rotatively mounted on the sleeve, a spring connected at one end to the sleeve and at its other end to the casing, means permanently fixed within the spring-chamber and engaging projections on the sleeve and spring-casing for holding one of said parts against rotation while the other is turning, a ratchet-wheel on the upper end of the spring-casing, a ratchet-wheel on the sleeve and a double pawl carried by the lever-arm and constructed to engage either of said ratchet-wheels.

7. In a combined door check and closer, the combination with a cylinder, a piston therein, a spring-chamber provided with an inwardly-projecting lug, and a spindle connected with the piston and passing upwardly through the spring-chamber, of a disk mounted on the spindle and provided with a lug to engage the lug in the spring-chamber, a sleeve detachably connected to said disk, a ratchet-wheel on the upper end of the sleeve, a spring-casing rotatively mounted within the spring-chamber, a lug on said casing adapted to engage the lug in the spring-chamber, a spring connected to the casing and to the sleeve, a ratchet-wheel on the upper end of said spring-casing, a lever-arm secured to the upper end of the spindle and a double pawl pivoted to said lever-arm and adapted to engage either ratchet-wheel.

8. In a combined door check and closer, the combination with a cylinder, a piston therein, a spring-chamber and a spindle connected with the piston and passing upwardly through the spring-chamber, of a disk mount-



ed on the spindle within the spring-chamber and provided with a projecting lug, a sleeve rotatively mounted on the spindle and detachably connected to said disk, a sectional  
5 casing rotatively mounted on the sleeve, a lug projecting from said casing, a lug projecting from the spring-chamber, and normally engaged on its opposite sides by the lug on the disk and the lug on the casing, a  
10 spring connected at one end to the casing and at its other end to the sleeve, a ratchet-wheel carried by the upper end of the spring-casing, a ratchet-wheel secured to the upper end of the sleeve, a lever-arm secured to the upper  
15 end of the spindle and a double pawl pivoted to said lever-arm and adapted to engage either ratchet-wheel.

9. The combination with a spring-chamber, a casing rotatively mounted therein, and  
20 a sleeve mounted to rotate within said casing, of a leaf-spring connected at one end to said casing and at its other end to the sleeve, a lever-arm, means for connecting the lever-arm to either the casing or the sleeve, and  
25 means permanently fixed within the spring-

chamber and engaging projections on the spring-casing and sleeve for holding one of said parts against rotation while the other is turning.

10. In a door-closer, the combination with 30  
a spring-chamber and a spring therein, of a sleeve or carrier mounted to rotate and connected to the inner end of said spring, an outer carrier mounted to rotate and connect- 35  
ed to the outer end of said spring means permanently fixed within the spring-chamber and engaging a projection on the sleeve or carrier and also a projection on the outer carrier, for holding one of said parts against ro- 40  
tation while the other is turning, a lever-arm pivotally carried by said door-closer and means for connecting the lever-arm to either of said rotating parts.

In testimony whereof I have signed this specification in the presence of two subscrib- 45  
ing witnesses.

FREDERICK A. WALDRON.

Witnesses:

SCHUYLER MERRITT,  
F. T. TOWNE.