

W. W. MOREY.
DOOR CHECK.
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925,821.

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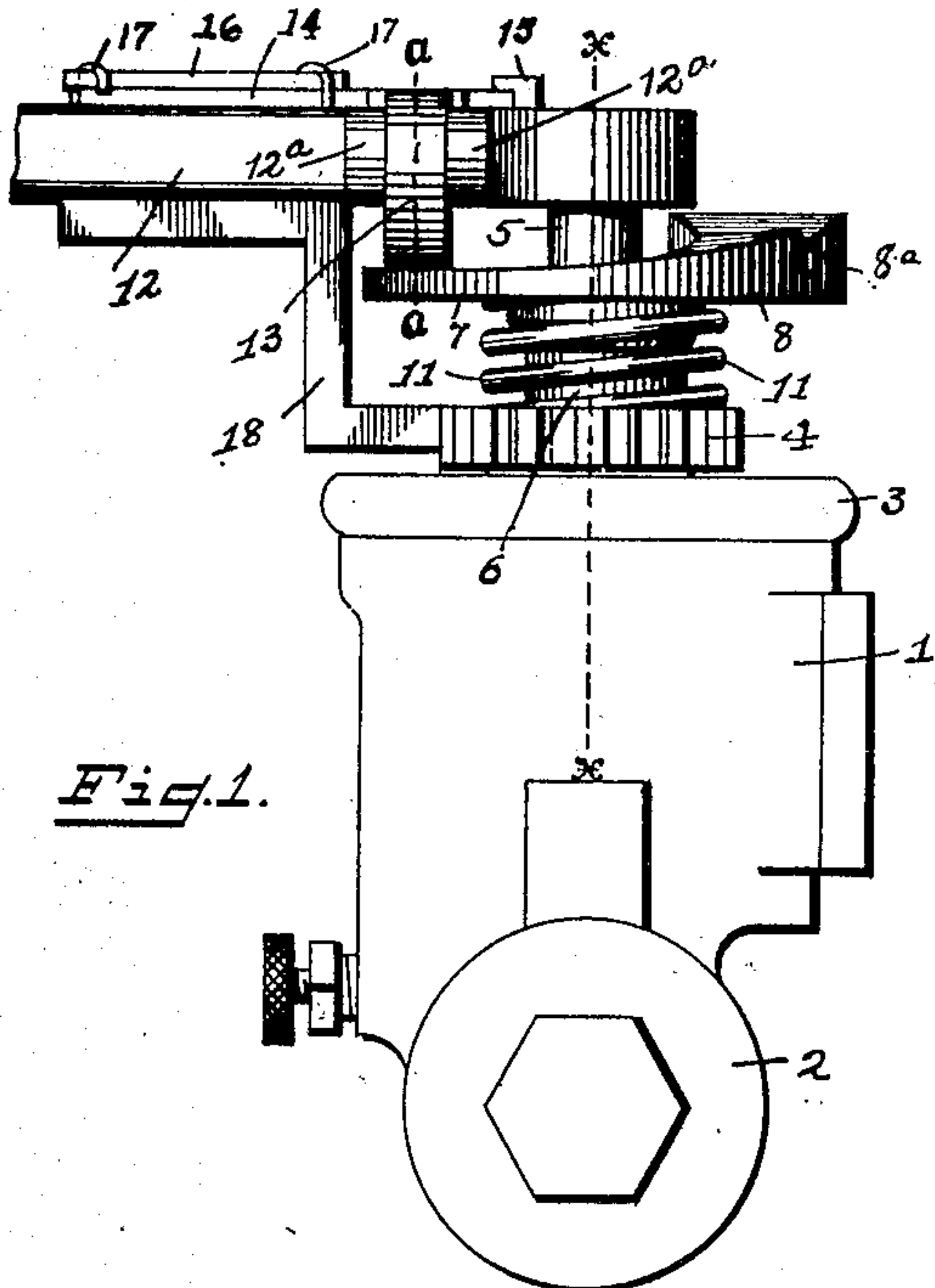


Fig. 1.

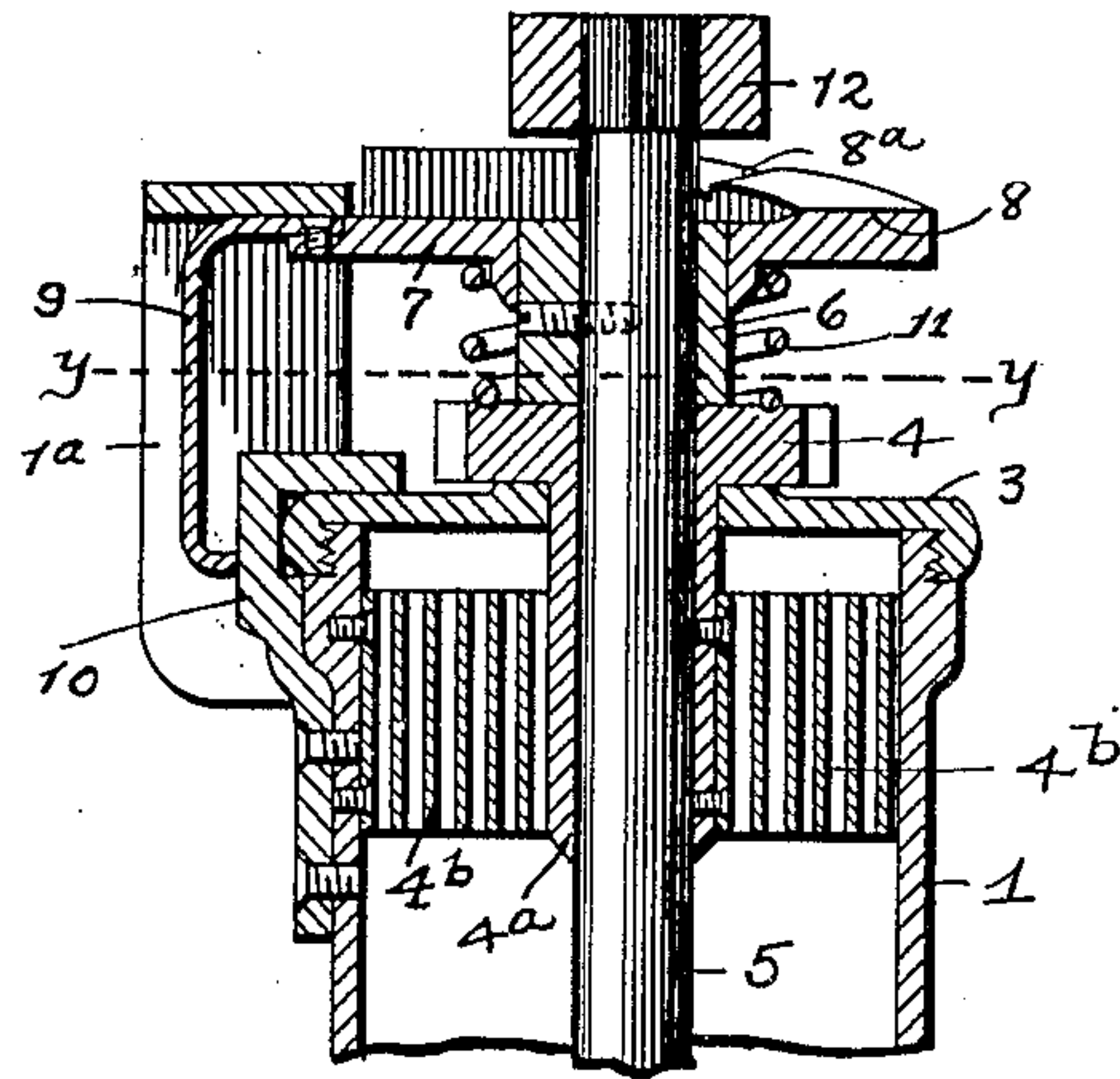


Fig. 2.

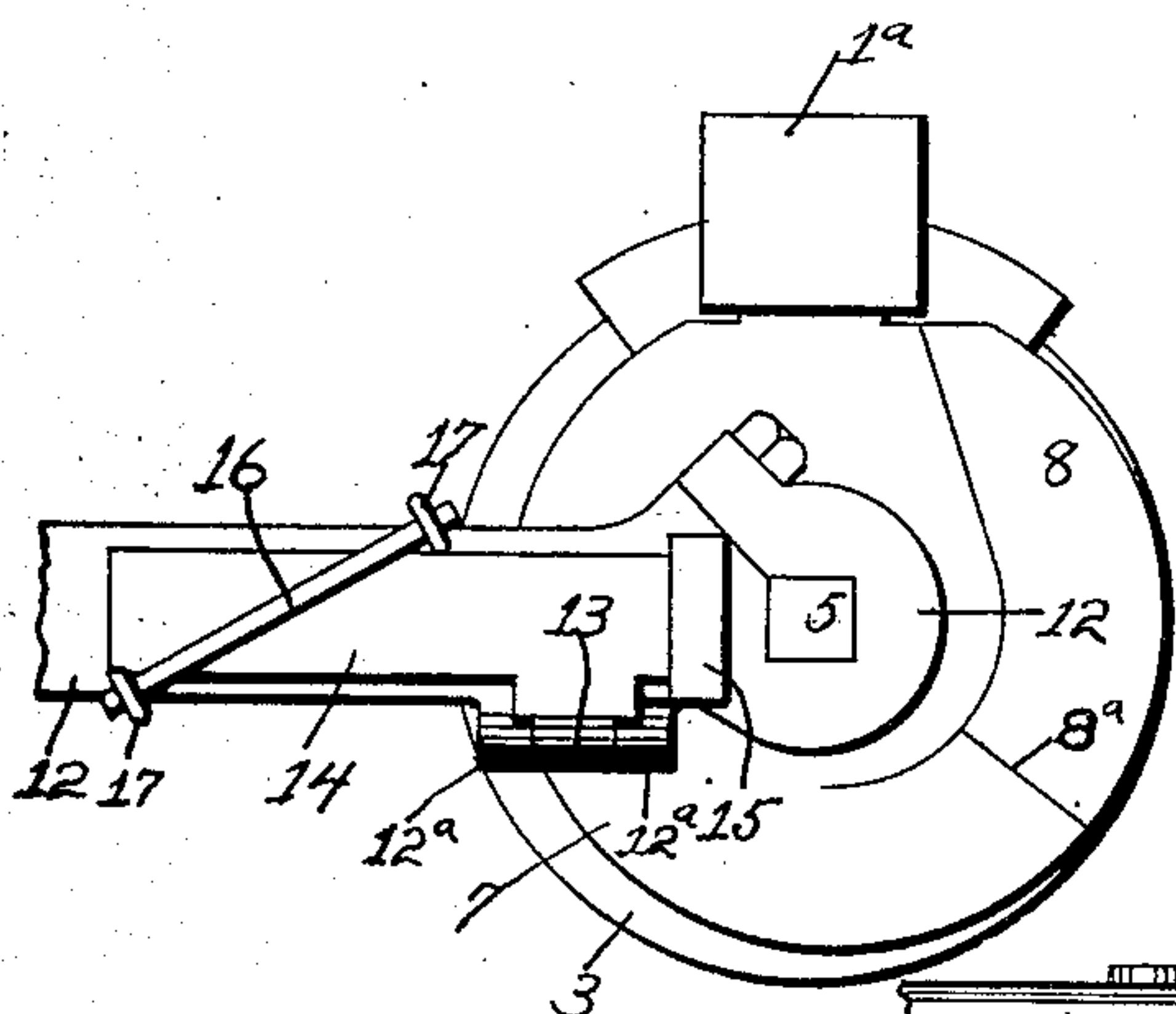


Fig. 3.

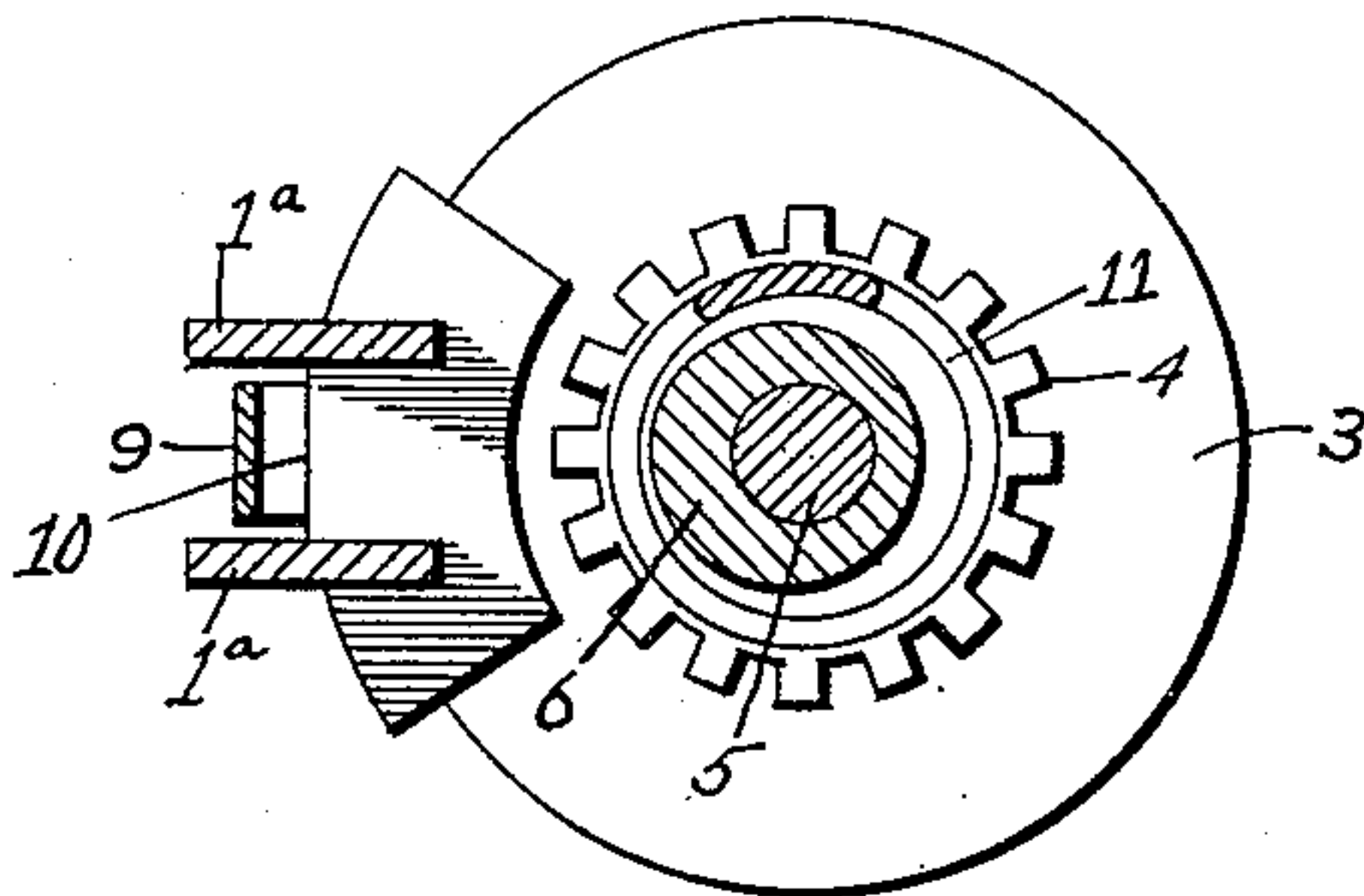


Fig. 4.

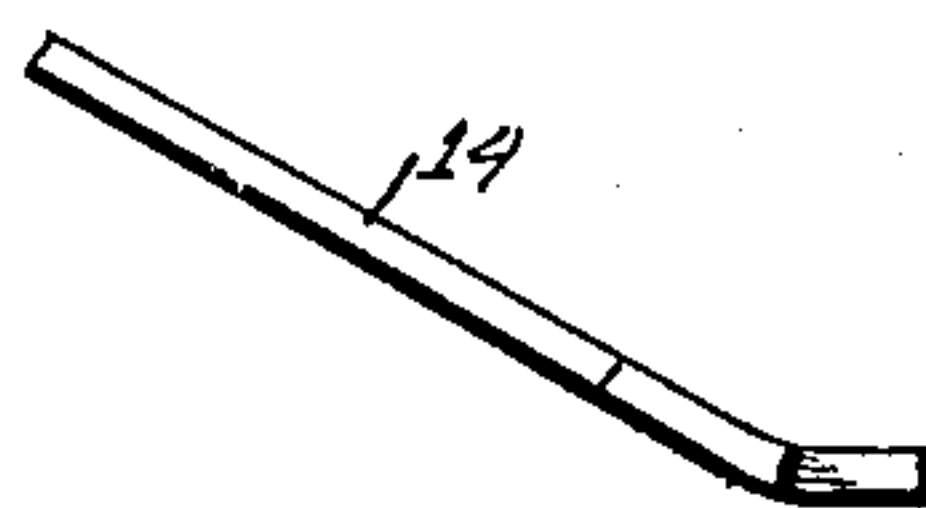


Fig. 7.

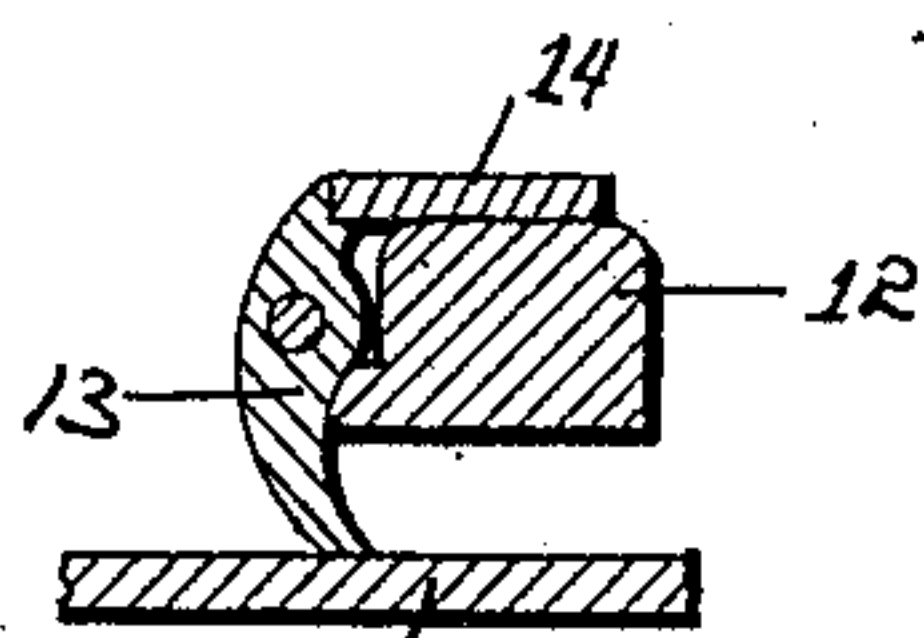


Fig. 5.

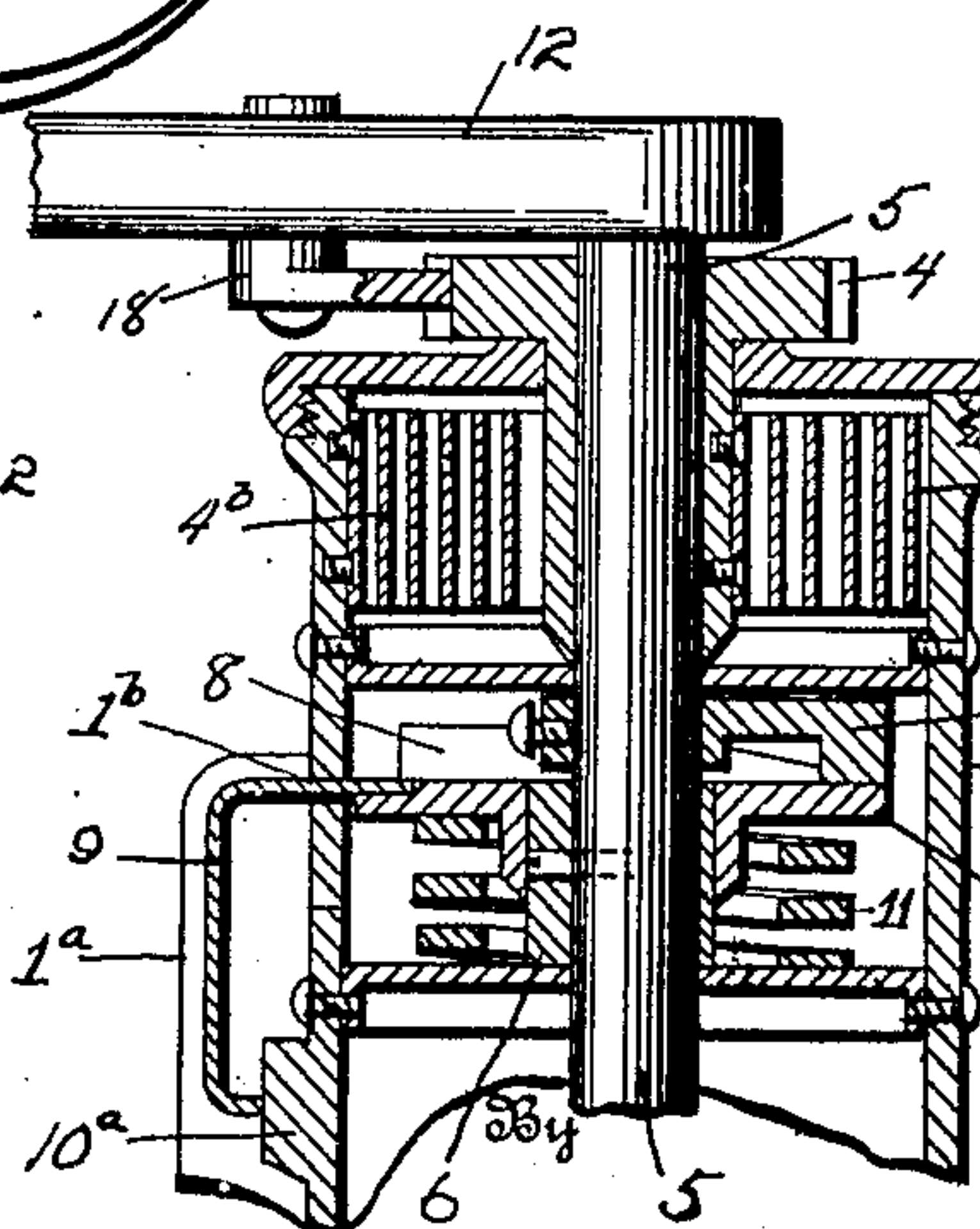


Fig. 6.

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WORTHIE W. MOREY, OF COLUMBUS, OHIO.

DOOR-CHECK.

No. 925,821.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WORTHIE W. MOREY, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Door-Checks, of which the following is a specification.

My invention relates to the improvement of door springs and checks and has particular relation to attachments therefor.

The objects of my invention are to provide a door check and spring construction of that class which embodies mechanism for regulating or retarding movement of the door, with improved means for automatically latching the door in an open position and for releasing said latch when it is desired to close the door; to provide improved means for automatically releasing the door and closing the same in case of fire and to produce other improvements the details of which will be more fully pointed out hereinafter. These objects I accomplish in the manner illustrated in the accompanying drawing, in which:

Figure 1 is a view in elevation of my improved door check, Fig. 2 is a vertical section on line $x-x$ of Fig. 1, Fig. 3 is a plan view, Fig. 4 is transverse section on line $y-y$ of Fig. 2, Fig. 5 is a detail sectional view on line $a-a$ of Fig. 1, Fig. 6 is a central vertical section of my apparatus showing the construction and arrangement of the parts of the same as adapted for application to wooden doors and doors other than fire doors, and, Fig. 7 is a side elevation of a locking spring plate which I employ in the manner hereinafter described.

Similar numerals refer to similar parts throughout the several views.

In carrying out my invention, I employ the usual vertical door check casing 1, which in its lower end may communicate with the usual horizontal casing section or cylinder 2. The upper end of the casing 1 is provided with a cap 3 and above this cap I provide a toothed wheel 4, the latter having a hollow central stem 4^a which extends downward through a central opening in the cap 3. Passing loosely through the center of the wheel 4 and through its stem 4^a, is the usual vertical shaft 5. Above the wheel 4 the shaft passes eccentrically through and is connected with a cam-like collar 6.

Loosely mounted on the collar 6 is the central portion of a plate 7, the latter having formed therewith on its upper side an inclined curved track segment or cam projection 8 which near its higher end portion is formed with an upper side notch or recess 8^a. The plate 7 has connected with one side thereof one end of an outwardly and thence downwardly and again inwardly extending catch member 9, the latter extending between parallel guide projections 1^a which are formed in the body of the cylinder 1 and extend upwardly from one side thereof. When the door is in the closed position and the parts are as illustrated in Fig. 2 of the drawing, the lower end of the catch member 9 is in contact with the outer vertical surface of a plate lug or bracket 10 which is secured to the casing 1.

Between the plate 7 and the toothed wheel 4 is interposed a coiled spring 11 which normally holds the plate 7 in the elevated position shown in Figs. 1 and 2. Below the cap 3 the hollow stem of the wheel 4 has connected therewith one end of a coiled spring 4^b, the remaining end of which is connected with the inner wall of the casing 1.

With the upper squared end of the shaft 5 is connected one end of a horizontal operating arm 12 which when the casing 1 is connected with the door, is jointedly connected in the usual or any desired manner with the door frame. Within a bifurcated lug 12^a on one side of the arm 12, is pivoted a depending pawl 13 the lower end of said pawl when the door is in the closed position, being in contact with the upper side of the plate 7 at the base of its track segment 8. The upper end of the pawl engages an edge lip of a retaining bar 14 which lies lengthwise upon the upper side of the arm 12 and which has its inner end engaging an angular projection or lug 15 on the upper side and inner end portion of said arm 12. The bar 14 is in the nature of a spring bar and as indicated more clearly in Fig. 7 of the drawing, has its outwardly extending portion normally bent upward from its inner end portion. In placing this bar in position on the arm 12, however, said inner end portion is first engaged with the hook projection 15 and its upwardly extending outer portion is then pressed downward on to the arm 12, in

which position it is held by means of a bar 16 formed of readily fusible metal which crosses the bar 14 diagonally and has its ends engaged in hook projections 17 which rise from the arm 12.

18 represents an angular pawl bar which in its upper portion is connected with the underside of the arm 12 and which has its lower horizontal termination in engagement with the teeth of the wheel 4.

The construction which I have thus far described is particularly intended for use in connection with metal or fire doors and the operation thereof is substantially as follows: Assuming that the door to which the casing 1 is attached is in its closed position and the parts are therefore in the positions indicated in Figs. 1 and 2 of the drawing, it will be understood that when the door is moved manually to the open position, the lower end of the pawl 13 will not only travel upward on the inclined track 8, but that through said traveling contact with said inclined track, the plate 7 will be depressed and the spring 8 compressed. It is obvious that when the lower end of the pawl drops into the notch 8^a and which occurs when the door has been opened to a predetermined degree, the contact of said pawl with the shoulder formed by the notch will operate to hold the door in the open position. It will also be understood that when the plate 7 is depressed as described, the lower end of the catch member 9 will assume a lower point of contact with the projection 10 and through the movement of the door and the engagement of the pawl bar 18 with the toothed wheel 4, a rotary movement will be imparted to the hollow stem 4^a of said wheel 4, with the result that the spring 4^b will be wound or placed under tension. In order to close the door manually, it is first necessary to extend the opening movement of the door slightly until the pawl 13 is in contact with the higher terminal portion of the track 8, which through the increased depression imparted to the plate 7, in conjunction with the lateral movement of said plate imparted by the rotation of the cam member 6, not only lowers the catch member 9, but places the same under spring tension and results in the lower end of said catch member springing into engagement with the underside of the projection 10, thereby latching the plate 7 in the depressed position. The door now being released, it is obvious that through the reaction of the spring 4^b, it will return to the closed position, the pawl 13 riding over the notch 8^a. Assuming now that the door has been left in an open position and that a fire occurs in the building adjacent to said door, the heat generated from the fire will serve to fuse the bar 16, resulting in an upward springing movement of the bar 14 and a consequent disengagement of the pawl 13 from the notch

8^a of the track segment 8 and permitting the door to close automatically through action of the spring.

In Fig. 6 of the drawing, I have shown a slightly modified construction of my device, which is adapted for use on ordinary wood doors or doors which are not constructed or adapted to resist fire. In this latter construction, I omit the pivoted pawl 13 and the bars 14 and 16 and locate the cam collar 6 and track plate 7 within the casing 1 and below the spring 4^b. In the construction shown in Fig. 6, the casing 1 is provided with a side lug 10^a corresponding with the projection 10 shown in Fig. 2 of the drawing and the catch member 9 carried by the depressible and laterally movable plate 7 extends outward through an opening 1^b in the wall of the casing 1. In lieu of the pawl 13 heretofore described, I provide a pawl arm 13^a one end of which is affixed to the shaft 5 and the remaining downturned end of which is adapted to contact with the upper side of the plate 7 or its track segment 8. It is obvious that the operation of this slightly modified mechanism, will be substantially the same as that illustrated in the remaining figures of the drawing, with the exception that the depression and latching of the plate 7 would be effected by the pawl arm 13^a instead of by the pivoted pawl 13. It will be understood that the operation of closing the door when the mechanism shown in said modification is employed, would be the same as that heretofore described for closing the door manually.

From the construction and operation herein set forth, it will readily be understood that a comparatively simple and inexpensive although positive mechanism is provided whereby a door may be automatically locked or latched in a predetermined open position and that the construction shown in Figs. 1 and 2 of the drawing, will be of great utility when used in connection with fire doors and buildings, in case such doors are accidentally left open.

What I claim, is:

1. In a door closer and check, the combination with a casing adapted to be fixed to a door, of a shaft in the casing, a door frame connecting arm on the shaft, means for positively holding said door in an open position and means controlled by the movement of said arm for releasing said door.
2. In a door closer and check, the combination with a casing adapted to be affixed to a door, a shaft in the casing, and a door frame connecting arm on the shaft, of means controlled by the movement of said arm for automatically locking a door in an open position, means for automatically releasing the door by imparting an additional opening movement thereto, and a spring for closing said door.
3. In a door closer and check the combi-

nation with a door, a casing, a shaft therein, a door frame connecting arm on the shaft, and means carried by said arm adapted to hold the door in an open position, of a fusible body adapted when fused to release said door holding means, and means normally exerting a closing action on said door.

4. In a door closer and check, the combination with a casing, a shaft therein, a spring for closing the door, a plate about said shaft having a recess therein, a door frame connecting arm and a pawl carried by said arm adapted when in engagement with said plate recess to hold the door in an open position, of a fusible body adapted when fused to release the pawl from the plate recess.

5. In a door closer and check, the combination with a casing, a shaft therein, a spring for closing the door, a spring actuated plate about said shaft having an inclined track segment thereon, and a recess in said track segment near its higher end, a door frame connecting arm on said shaft, and a pawl carried by said arm and adapted when in engagement with said track recess to hold the door in an open position, of a fusible body adapted when fused to release the pawl from said recess.

6. In a door closer and check, the combination with a casing, a shaft therein, a spring for closing the door, a toothed wheel opera-

tively connected with said spring and loose on said shaft, and a pawl arm connecting said toothed wheel with said door frame connecting arm, of a spring supported plate having an inclined track segment thereon, the latter provided with a recess, a catch member projecting from said plate, a locking device adapted to travel up said inclined track and engage said track recess when the door is opened, said catch member adapted to engage a casing projection when said locking device is moved beyond the track recess.

7. In a door closer and check, the combination with a casing having a projection and adapted to be affixed to a door, a shaft in said casing, a door frame connecting arm on the shaft and a spring for closing the door, of a spring actuated depressible plate on the shaft having an inclined track segment provided with a recess, a catch member carried by the plate, a pawl on the door connecting arm adapted to travel on said plate track, and means for imparting a lateral movement to said plate as the same is depressed.

In testimony whereof I affix my signature in presence of two witnesses.

WORTHIE W. MOREY.

Witnesses:

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L. CARL STOUGHTON.