

No. 815,579.

PATENTED MAR. 20, 1906.

N. W. CRANDALL.

DOOR CHECK.

APPLICATION FILED OCT. 5, 1904.

3 SHEETS—SHEET 1.

Fig. 1.

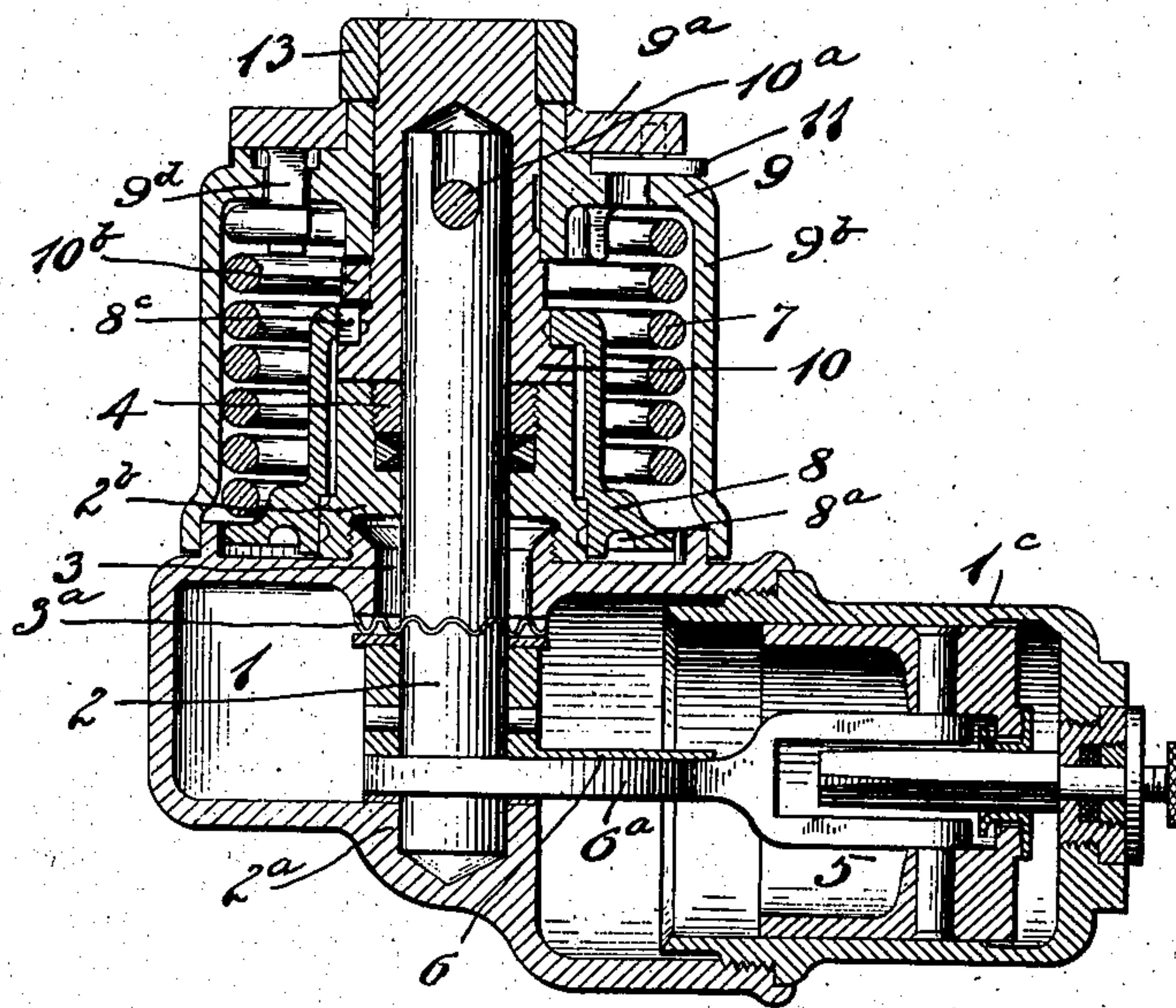
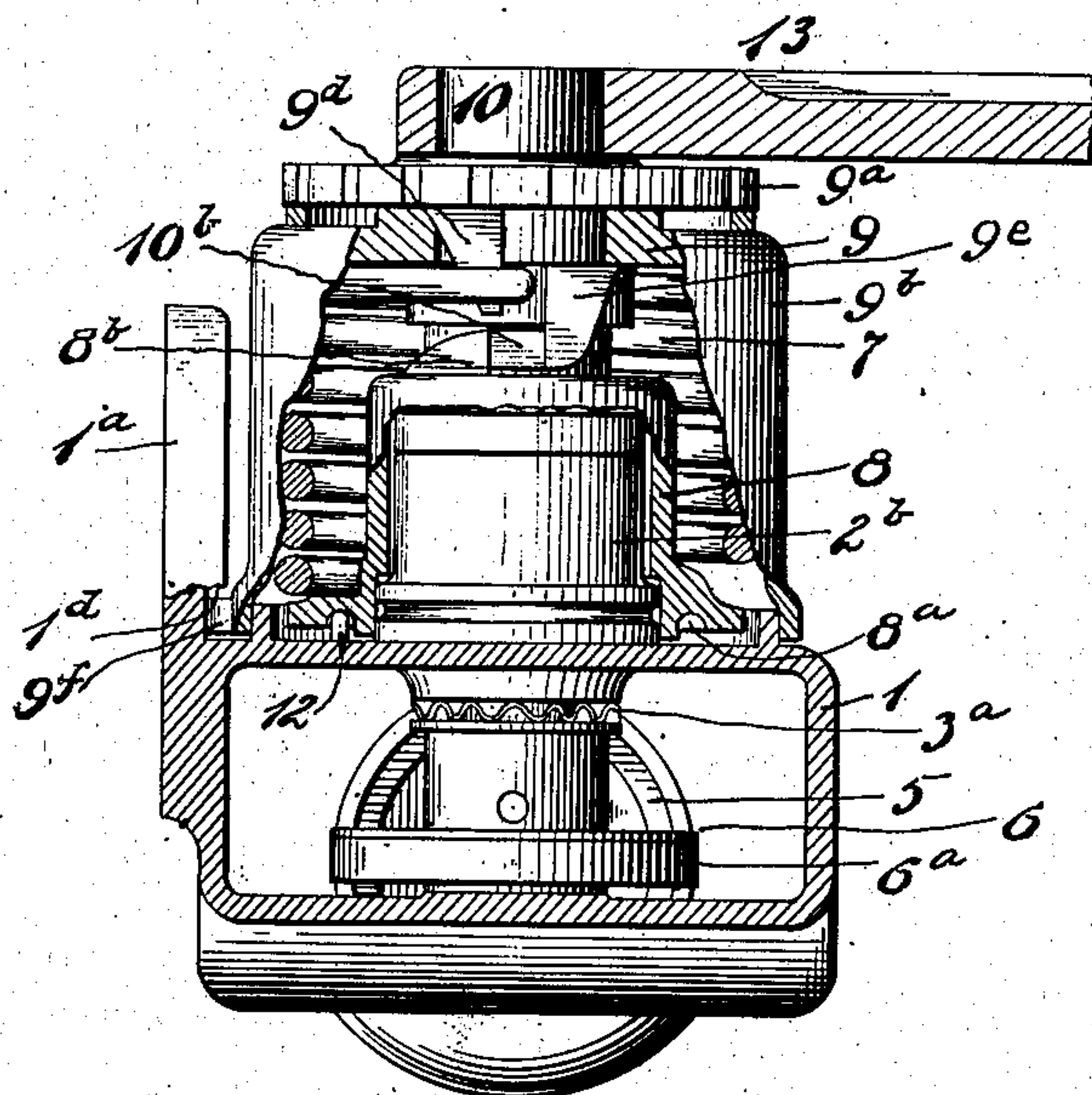


Fig. 2.



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3 SHEETS—SHEET 2.

Fig. 3

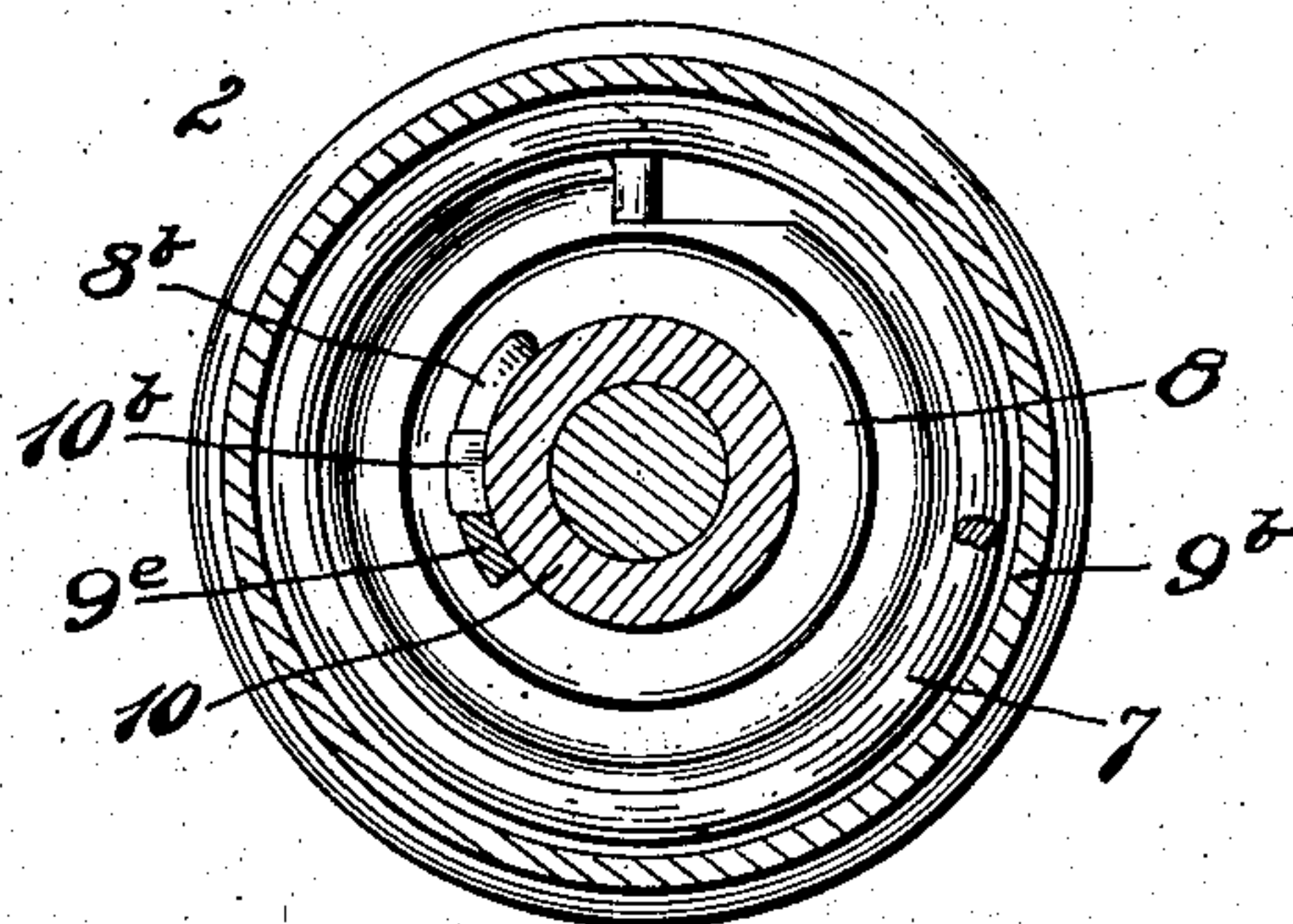


Fig. 4

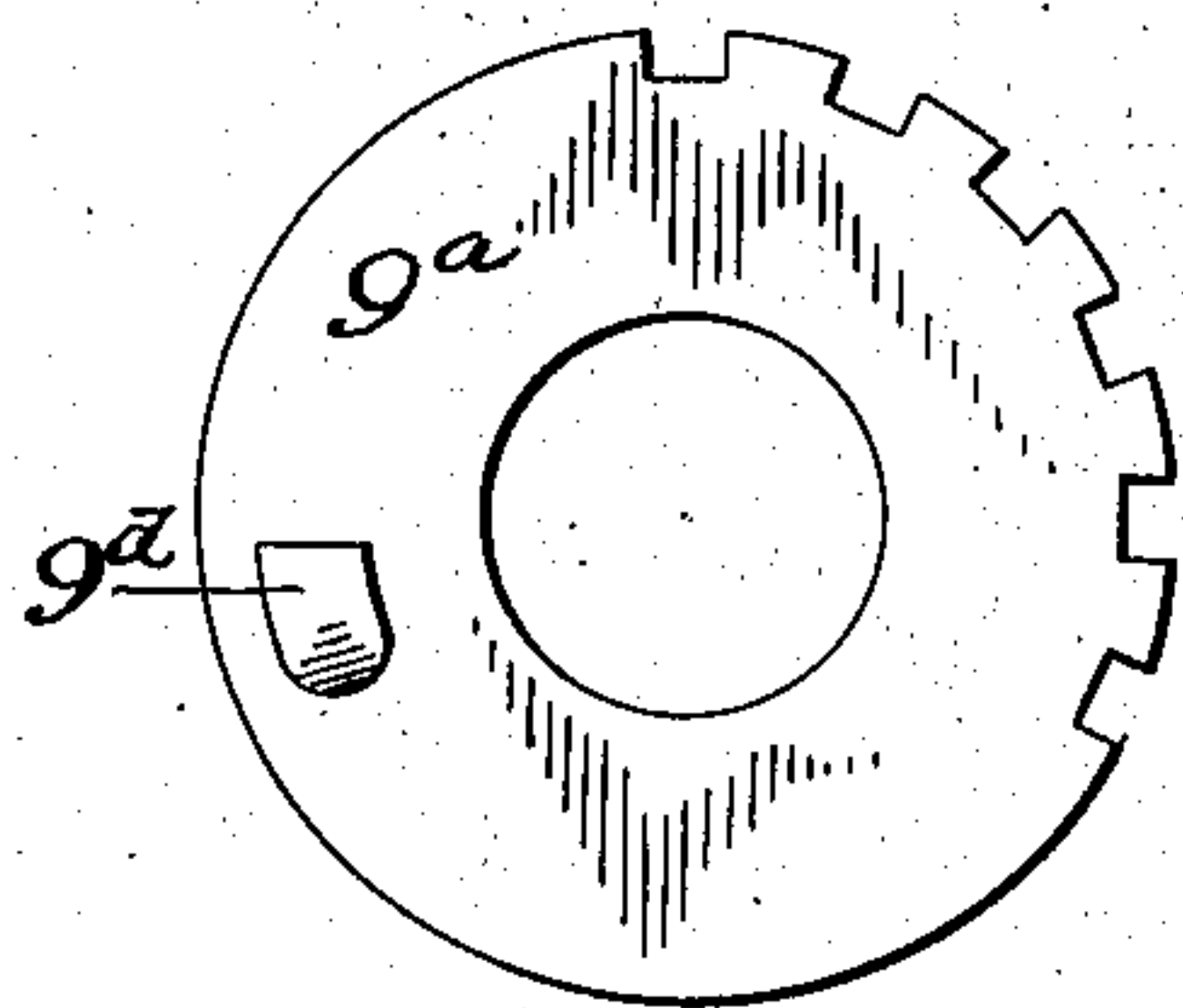
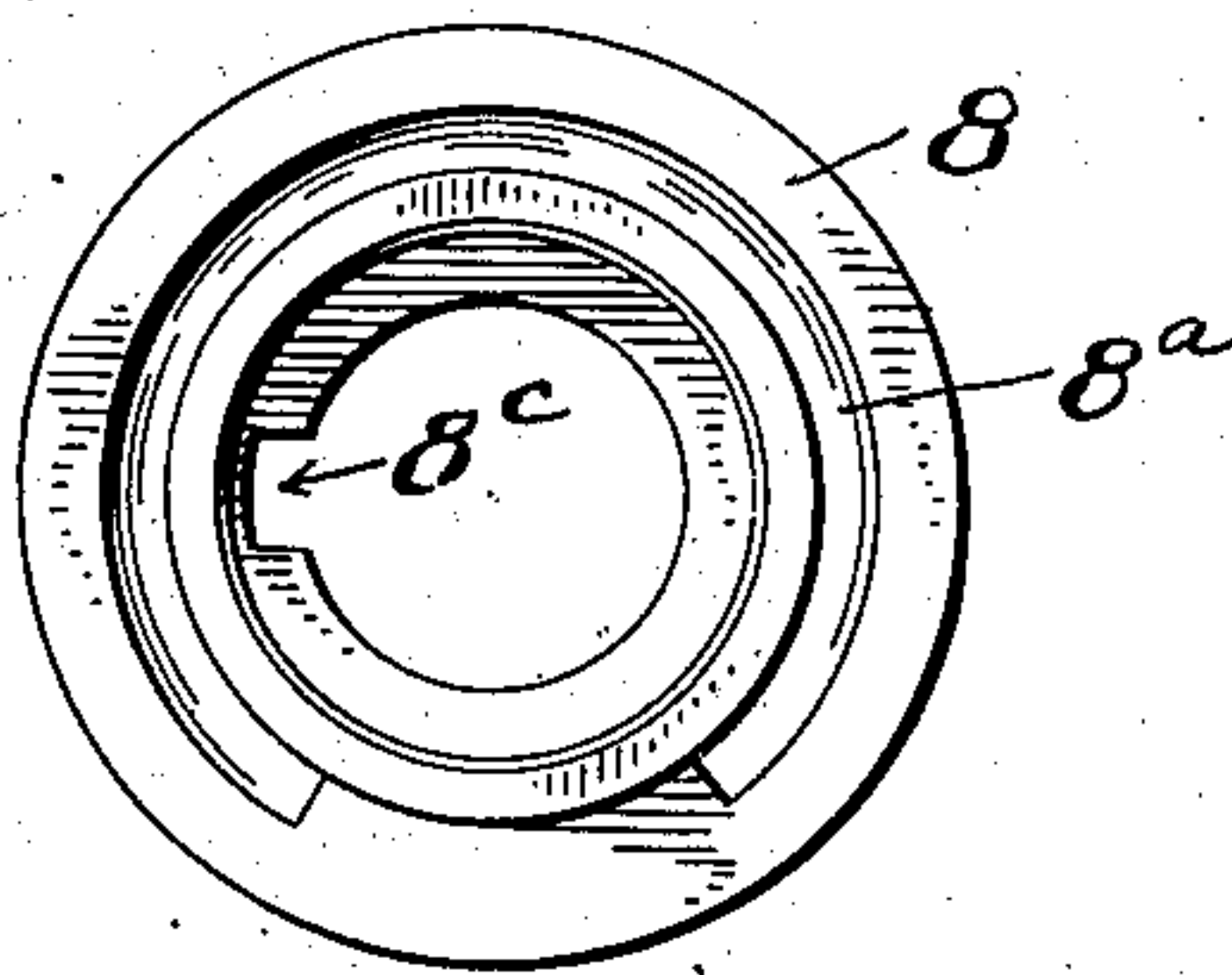


Fig. 5



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3 SHEETS—SHEET 3.

Fig. 6.

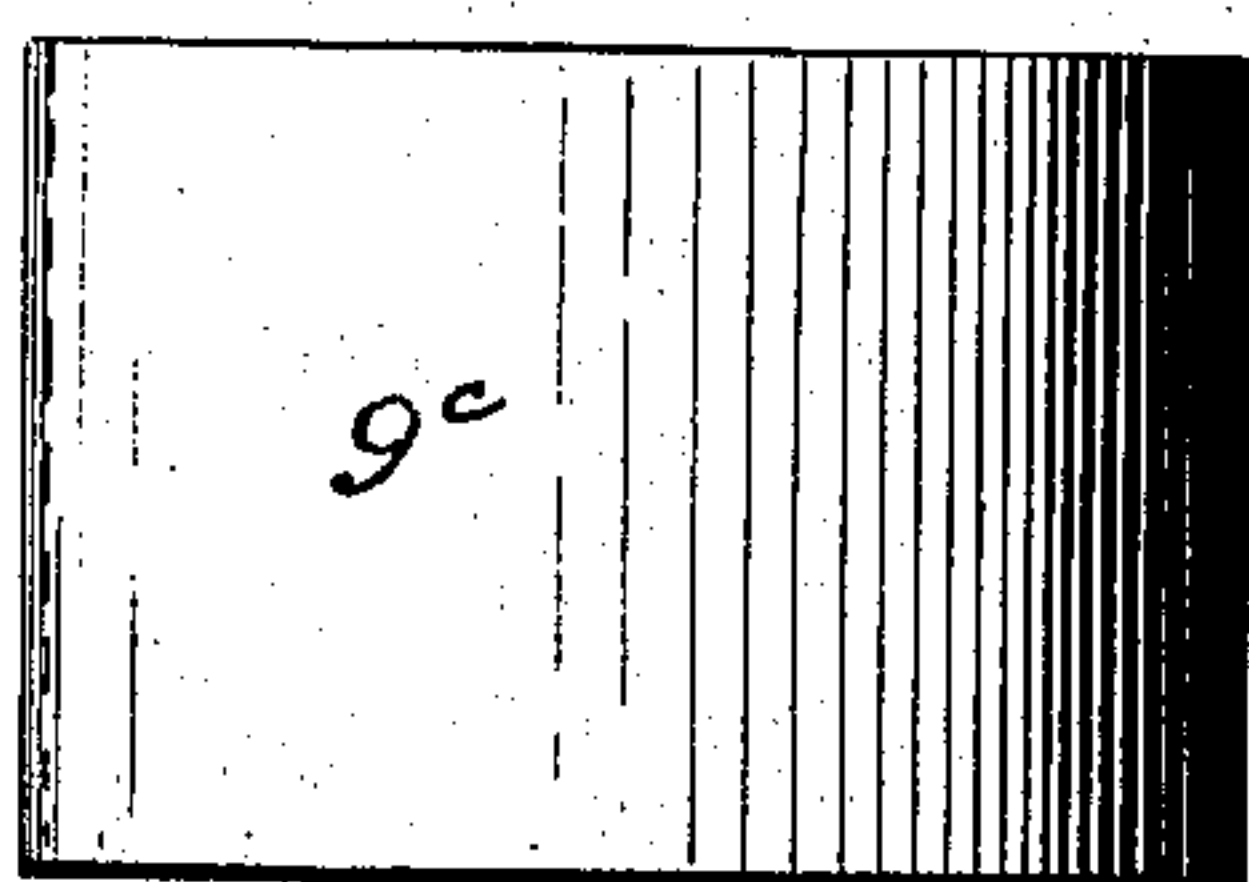


Fig. 7.

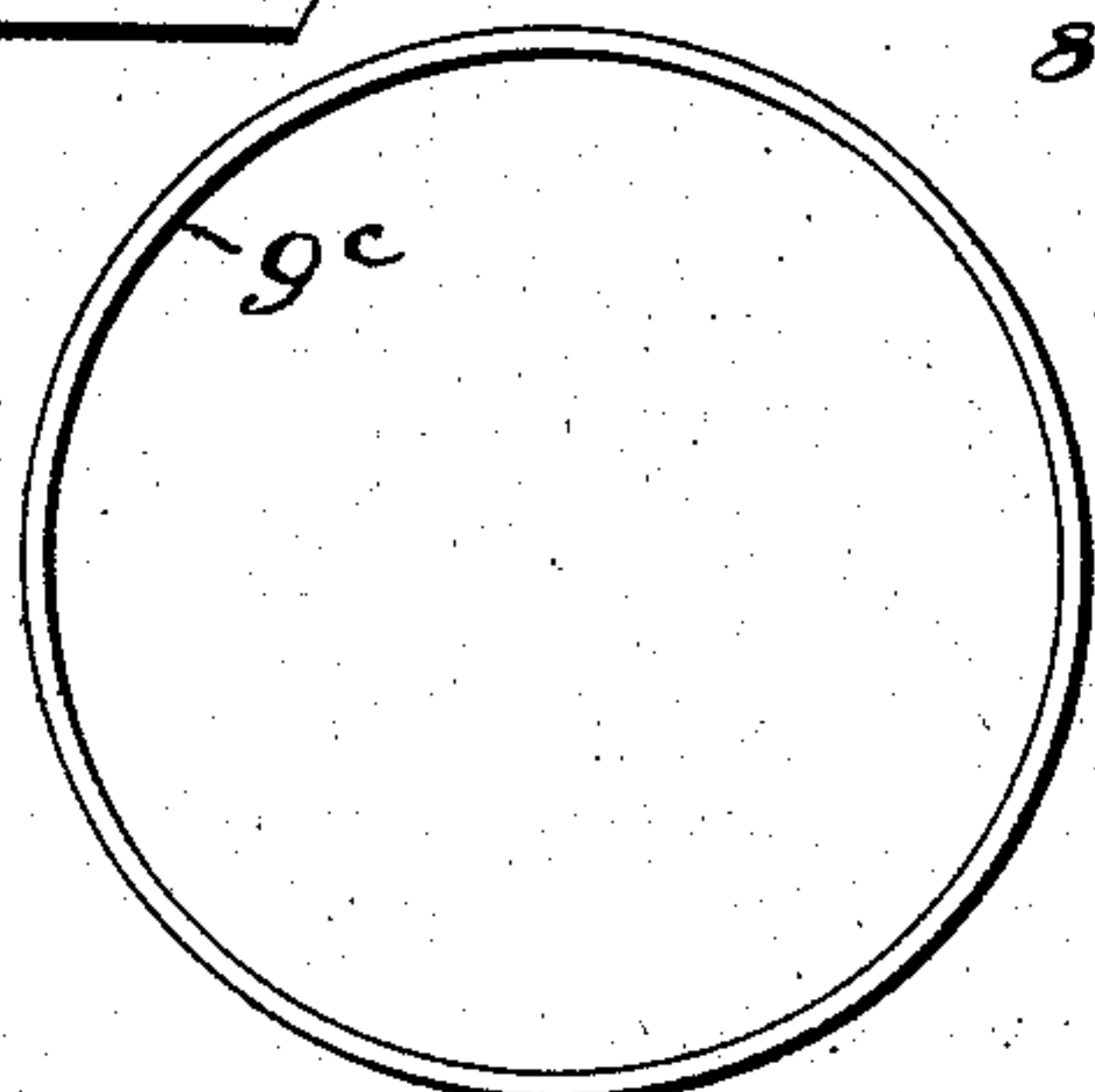


Fig. 8.

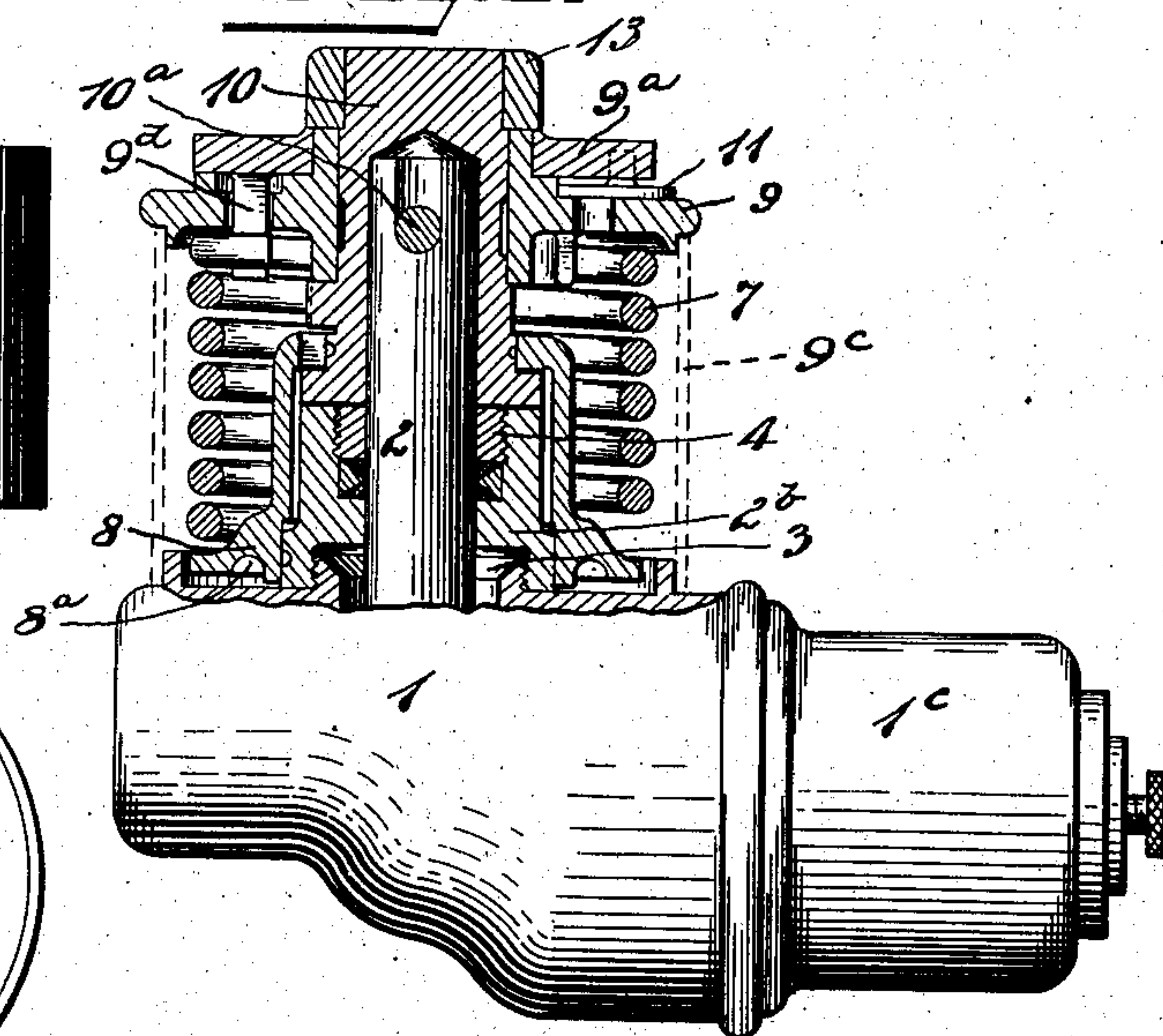


Fig. 9.

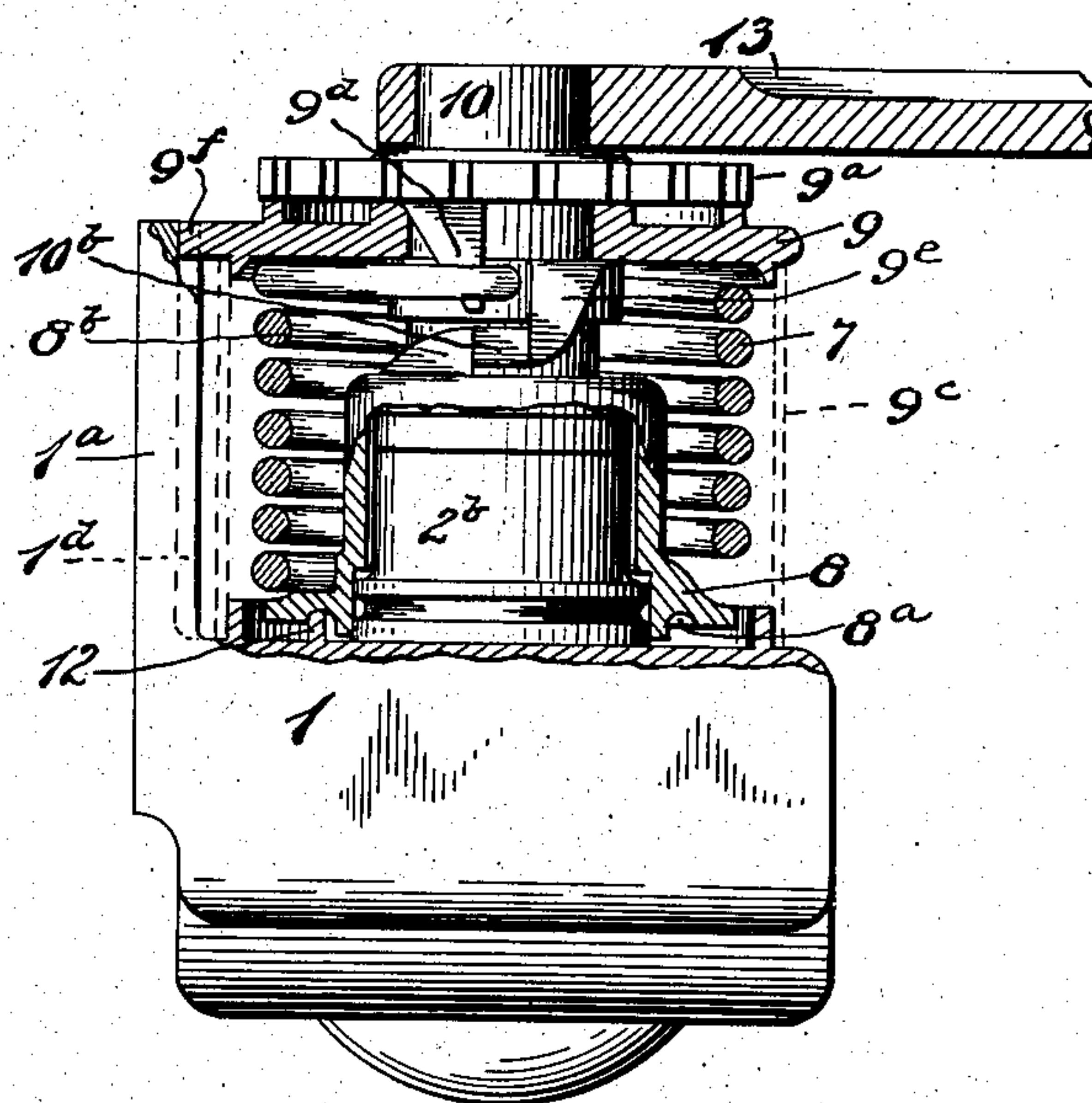
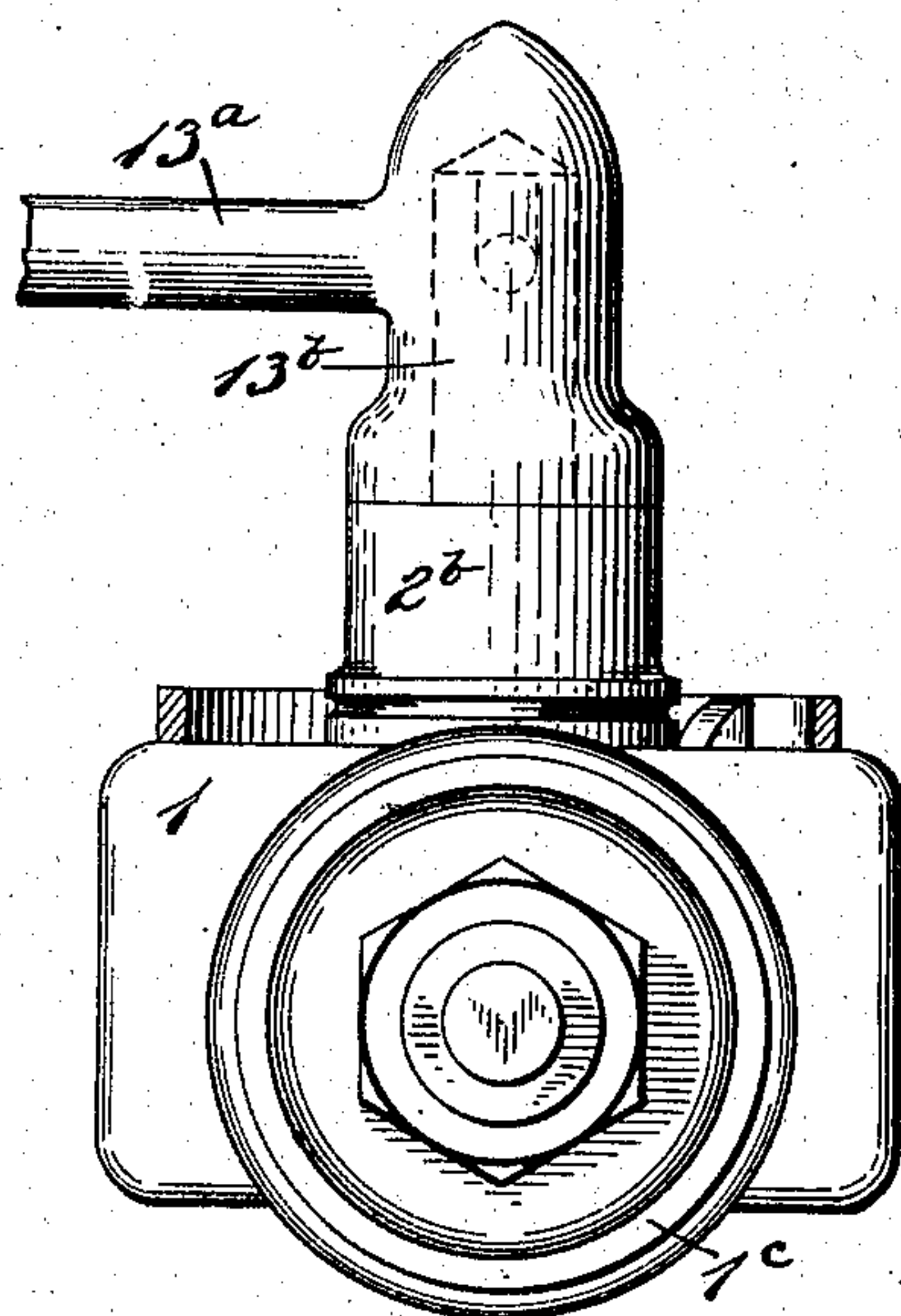


Fig. 10.



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# UNITED STATES PATENT OFFICE.

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RUSSELL & ERWIN MANUFACTURING COMPANY, OF NEW BRITAIN,  
CONNECTICUT, A CORPORATION OF CONNECTICUT.

## DOOR-CHECK.

No. 815,579.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed October 5, 1904. Serial No. 227,197.

*To all whom it may concern:*

Be it known that I, NATHAN W. CRANDALL, a citizen of the United States, residing at New Britain, in the county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Door-Checks, of which the following is a full, clear, and exact description.

My invention relates to door checks and closers, and particularly to the means for connecting the spring mechanism to the checking mechanism, means for varying the tension thereof, and means for facilitating the assembling of the parts.

Figure 1 is a vertical sectional view. Fig. 2 is an end elevation, partly in section. Fig. 3 is a plan view, partly in section, of certain parts shown in Fig. 1. Figs. 4, 5, 6, and 7 are views of details. Fig. 8 is a side elevation, partly in section, of a modification. Fig. 9 is an end elevation, partly in section, of said modification. Fig. 10 is an end elevation of another modification.

The main casing 1 is provided with a bracket or back 1<sup>a</sup>, by which the check may be secured in place on a door. The sleeve 1<sup>c</sup> is removable, and within the same is contained the check-piston 5.

2 is a spindle which has a lower bearing in the bottom of case 1.

2<sup>b</sup> is a sleeve which is preferably attached by means of screw-threads to the case 1 and forms the upper bearing for spindle 2.

3 is an annular air-chamber around the spindle just below the upper bearing. (See Figs. 1 and 8.) The lower part of said air-chamber communicates with the interior of the said case 1 by means of back flow-ports formed by grooves in a corrugated washer 3<sup>a</sup>. These ports permit any liquid that may be splashed or pumped into said annular air-chamber to flow back to said case.

4 is the gland of a stuffing-box, arranged to prevent any leakage of liquid around the piston.

6 is an eccentric, and 6<sup>a</sup> is an eccentric-strap connecting the piston 5 with said eccentric 6.

Suitable liquid is contained within the case 1 and cylinder 1<sup>c</sup> for the usual purpose. The cylinder 1<sup>c</sup> preferably screws into the case 1, so as to make a liquid-tight joint. By this

arrangement I am enabled to readily machine all of the internal parts of the case or gain access to the interior thereof for any purpose.

The spring mechanism may be assembled as a unit and independently of the checking mechanism and is constructed and applied to the checking mechanism as follows: 7 is a spring suitably hooked to a lower dog 8 at one end and to an upper dog at its other end. The upper dog is formed of two separate and relatively adjustable members, (indicated by 9 and 9<sup>a</sup>), and the same are constructed and operated in the manner hereinafter described. 10 is a middle dog in the form of a sleeve adapted to fit over and be supported upon the upper end of the spindle 2. This dog 10 in turn constitutes the support for the balance of the parts of the spring mechanism. The upper end of the spindle 2 is slotted. In the middle dog 10 there is preferably located a key or pin 10<sup>a</sup>, adapted to fit into said slot when the middle dog is in its operative position, whereby said parts 2 and 10 are locked together. 11 is a latch carried by part 9 of the upper dog and engaging with the part 9<sup>a</sup> thereof, whereby the angular position of said two parts may be changed relatively to each other and adjusted in any desired position. In the particular form shown I have provided in the lower part of the lower dog 8 a groove 8<sup>a</sup>. This groove is nearly that of a complete circle. Upon the main case 1 is a stop 12, which projects into this groove 8<sup>a</sup> and which limits the rotative movement of the lower dog 8 in one direction. In the particular form shown in Fig. 1 the upper dog is provided with a depending integral shield 9<sup>b</sup>. The shield (as such) might be formed by a loose sleeve, such as 9<sup>c</sup>, Figs. 6 and 7, located between the case 1 and the dog 9, or it might be dispensed with entirely. In the upper part of the upper dog 9 is a slot which nearly completes a circle and through which a lug 9<sup>d</sup> projects. The lug 9<sup>d</sup> is carried by the upper-dog gear 9<sup>a</sup> and affords the means to which the upper end of the spring 7 is attached. Upon the middle dog 10 is a laterally-projecting lug 10<sup>b</sup>. Upon the upper part of the lower dog is an upwardly-projecting lug or stop-shoulder 8<sup>b</sup>. Upon the lower side of the upper dog is a depending



stop-shoulder 9<sup>e</sup>. These two stop-shoulders 8<sup>b</sup> and 9<sup>e</sup> rest on opposite sides of the laterally-projecting lug 10<sup>b</sup> when the parts are in a position of rest. The upper dog also carries a  
 5 lug 9<sup>f</sup>, (see Fig. 2,) which engages against a stop 1<sup>d</sup> on the back 1<sup>a</sup>. The upper part of the lower dog is shouldered, so as to rest upon the flanged lower end of the middle dog 10, as best  
 10 seen in Fig. 1. To permit of assembling, this shoulder is slightly cut away, as at 8<sup>c</sup>, said cut-away portion affording clearance for the laterally-projecting lug 10<sup>b</sup> on the middle dog.

When the apparatus is to be used as a com-  
 15 bined door check and closer, the parts are assembled as follows: The piston 5 is connected to the spindle 2, and the cylinder 1<sup>b</sup> is screwed into place. The lower dog 8 is slipped over the middle dog 10, passing the  
 20 lateral projection 10<sup>b</sup> by causing the clearance-recess 8<sup>c</sup> to register therewith. The spring is then applied, the upper dog is put in place, and finally all these parts are attached to a check by slipping the middle dog down over  
 25 the spindle 2. The part 9<sup>a</sup> of the upper dog is then turned until the proper tension is given to the spring, whereupon the latch 11 is thrown into action, securely holding the two parts of the upper dog against independ-  
 30 ent movement. When the parts are in this position, the stop-shoulder 9<sup>f</sup> will bear against the stop 1<sup>d</sup>, while the stop 12 will bear in one end of the groove 8<sup>a</sup>. The lug 9<sup>e</sup> will bear against one side of the lateral projection  
 35 10<sup>b</sup>, while the lug 8<sup>b</sup> will bear against the opposite side thereof.

13 is a lever-arm by which the apparatus is connected to the door-casing, said arm being fixed upon the head of the middle dog 10.  
 40 When the lever-arm 13 is given a right-hand movement, it rotates the middle dog 10, which in turn rotates the lower dog 8 and winds up the spring, the opposite end of the spring being held securely by the then stationary upper dog 9. When the lever 13 is  
 45 released, the spring will restore the parts to the original position. When the lever is swung in an opposite direction, the projection 10<sup>b</sup> will engage and rotate the upper dog  
 50 9 through the medium of the stop-shoulder 9<sup>e</sup>. The rotation of the upper dog will wind the spring, which is anchored at its other end, through the medium of the then stationary lower dog 8. When the lever is released, the  
 55 parts are returned to their original position.

In Fig. 8 the construction is substantially the same as that previously described, referring to Figs. 1 and 2, save that the shield 9<sup>b</sup> is dispensed with, while the separate loose  
 60 shield 9<sup>c</sup> (see Figs. 6 and 7) is shown in place in dotted outline.

Fig. 9 is an end elevation of the apparatus shown in Fig. 8, and in this figure the outer  
 65 lug 9<sup>f</sup> of the upper dog is seen as engaging with the upper part of the stop 1<sup>d</sup> instead of

the lower part, as in Fig. 2. One great advantage of this construction resides in the fact that the spring mechanism may be entirely dispensed with, thus enabling the apparatus to be used solely as a check for a  
 70 door, which, for example, may be provided with spring-hinges. When so used, the apparatus would assume substantially the appearance indicated in Fig. 10, in which the lever-arm is indicated at 13<sup>a</sup> and is provided  
 75 with a cap-sleeve 13<sup>b</sup>, arranged to fit over the upper end of the spindle and be connected thereto in the same manner as the middle dog previously described.

What I claim is—

80 1. In an apparatus of the character described, a spindle, a checking-piston eccentrically connected thereto a checking-cylinder, spring-actuated mechanism for said spindle, comprising an intermediate dog detach-  
 85 ably secured to said spindle, a lower dog supported by said intermediate dog and coacting therewith, an upper dog supported by said intermediate dog and coacting therewith, a  
 90 spring connecting said upper and lower dogs, stop mechanism to engage said upper and lower dogs and check the simultaneous rotation of said dogs in the same direction and a lever-arm connected to said intermediate  
 95 dog.

2. In an apparatus of the character described, a case having a closed liquid-chamber, a cylinder communicating therewith, a piston therein, a spindle having bearings in  
 100 said case, an eccentric connection between said piston and spindle, a double-acting spring, indirect means of connection between said spring and said spindle, a lever-arm indirectly connected with said spindle and a removable shield for said spring said shield be-  
 105 ing independent of said case.

3. In an apparatus of the character described, a case having a closed liquid-chamber, a piston therein, a spindle having bearings in said case, a connection between said  
 110 piston and spindle, a spring, means of connection between said spring and said spindle, a lever-arm indirectly connected with said spindle and with said spring, and a shield for said spring independent of said case and connected  
 115 directly to and carried by one of the movable parts of the spring-controlled mechanism.

4. In a device of the character described, a main case, a spindle, bearings therefor, a piston  
 120 connected to said spindle, an intermediate dog carried by said spindle, a lever-arm connected thereto, an upper and a lower dog rotatably mounted upon said intermediate dog, a spring connecting said upper and lower  
 125 dogs, stop mechanism for said upper and lower dogs, and a shoulder on said intermediate dog engaged on opposite sides by said upper and lower dogs respectively.

5. In a device of the character described, a 130



main case, a spindle, a piston connected to said spindle, an intermediate dog carried by said spindle, a lever-arm connected thereto, an upper and a lower dog rotatably mounted  
5 upon said intermediate dog, a spring connecting said upper and lower dogs, stop mechanism for said upper and lower dogs, a shoulder on said intermediate dog engaged on opposite sides by the upper and lower dogs and  
10 means of adjustment between said spring and one of said last-mentioned dogs.

6. In a device of the character described, a main case, a spindle, bearings therefor, a piston connected to said spindle, an intermediate  
15 dog carried by said spindle, a lever-arm connected thereto, an upper and a lower dog rotatably mounted upon said intermediate dog, a spring connecting said upper and lower dogs, stop mechanism for said last-mentioned  
20 dogs, a shoulder on said intermediate dog engaged on opposite sides by the upper and lower dogs, means of adjustment for said

spring, said means comprising an adjustable sleeve carried by one of the dogs.

7. In a device of the character described, a  
25 main case, a spindle supported therein, a piston, means of connection between said piston and said spindle, bearings for said spindle above and below said piston connection, an  
30 annular air-chamber around said spindle below the upper bearing, a radially-corrugated antifriction-washer between said spindle and said annular air-chamber said corrugations  
forming backflow-ports, a lever-arm and  
35 means for detachably securing said lever-arm to said spindle above the uppermost of said bearings.

Signed at New Britain, Connecticut, this  
28th day of September, 1904.

NATHAN W. CRANDALL

Witnesses:

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