

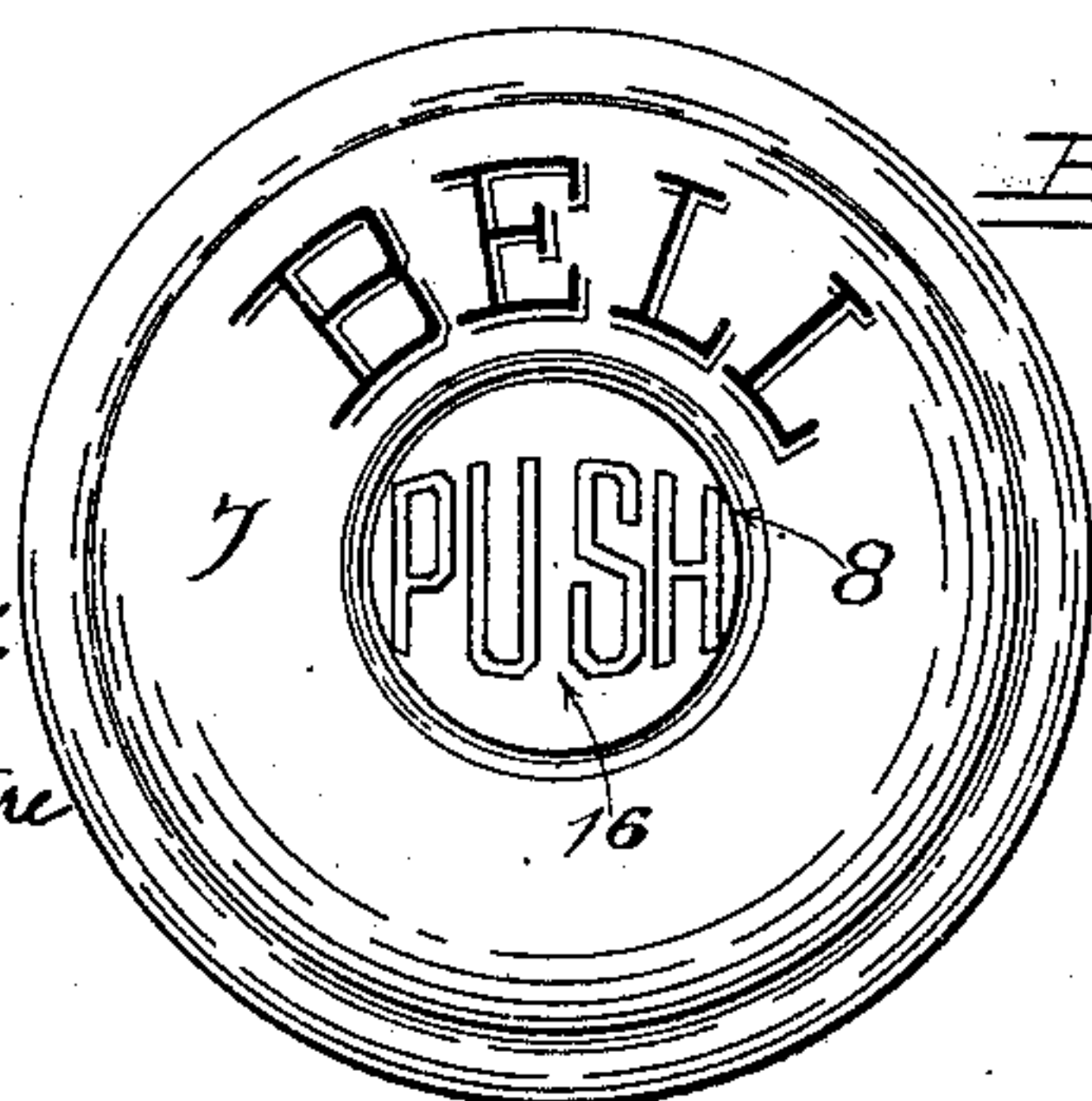
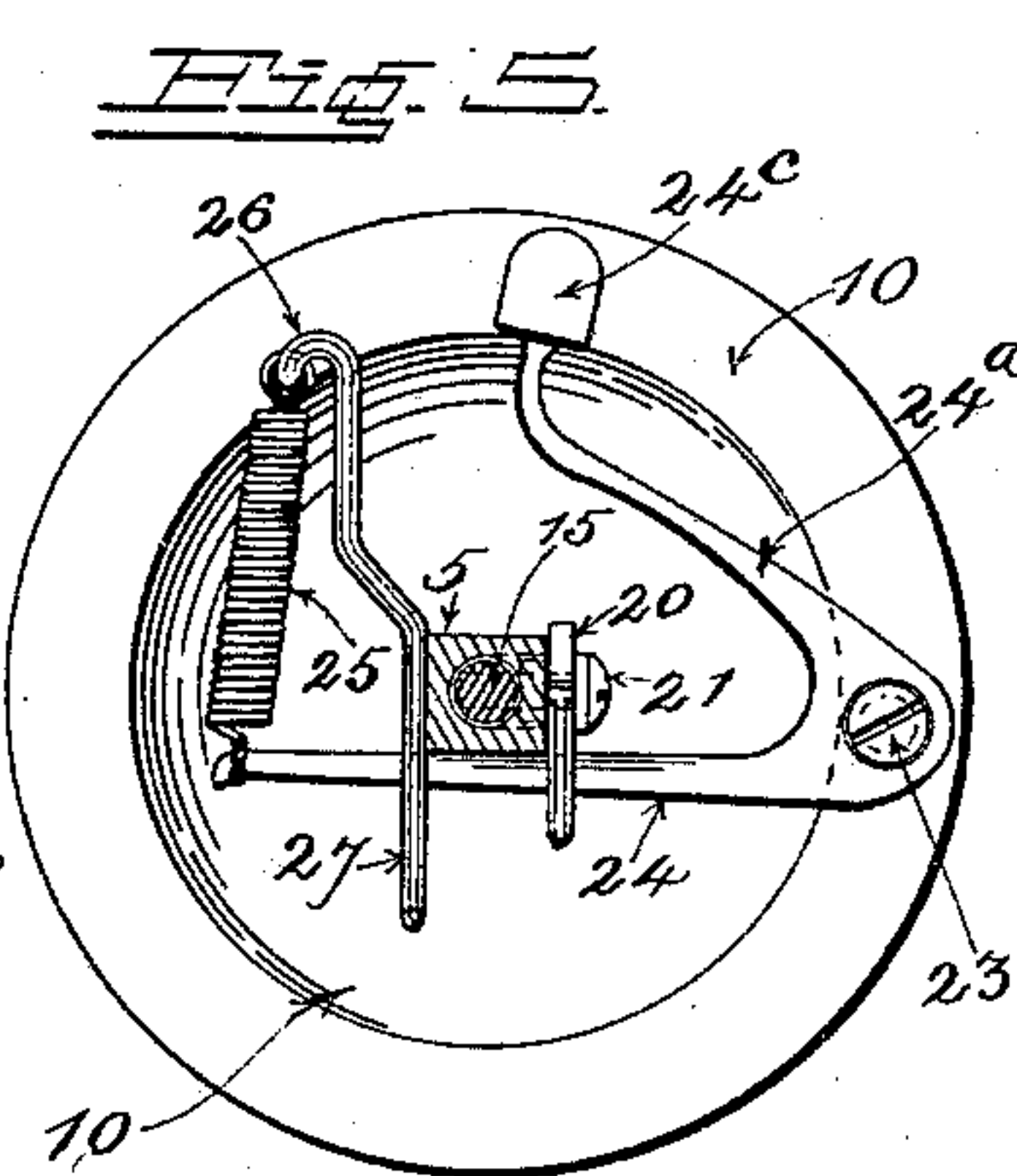
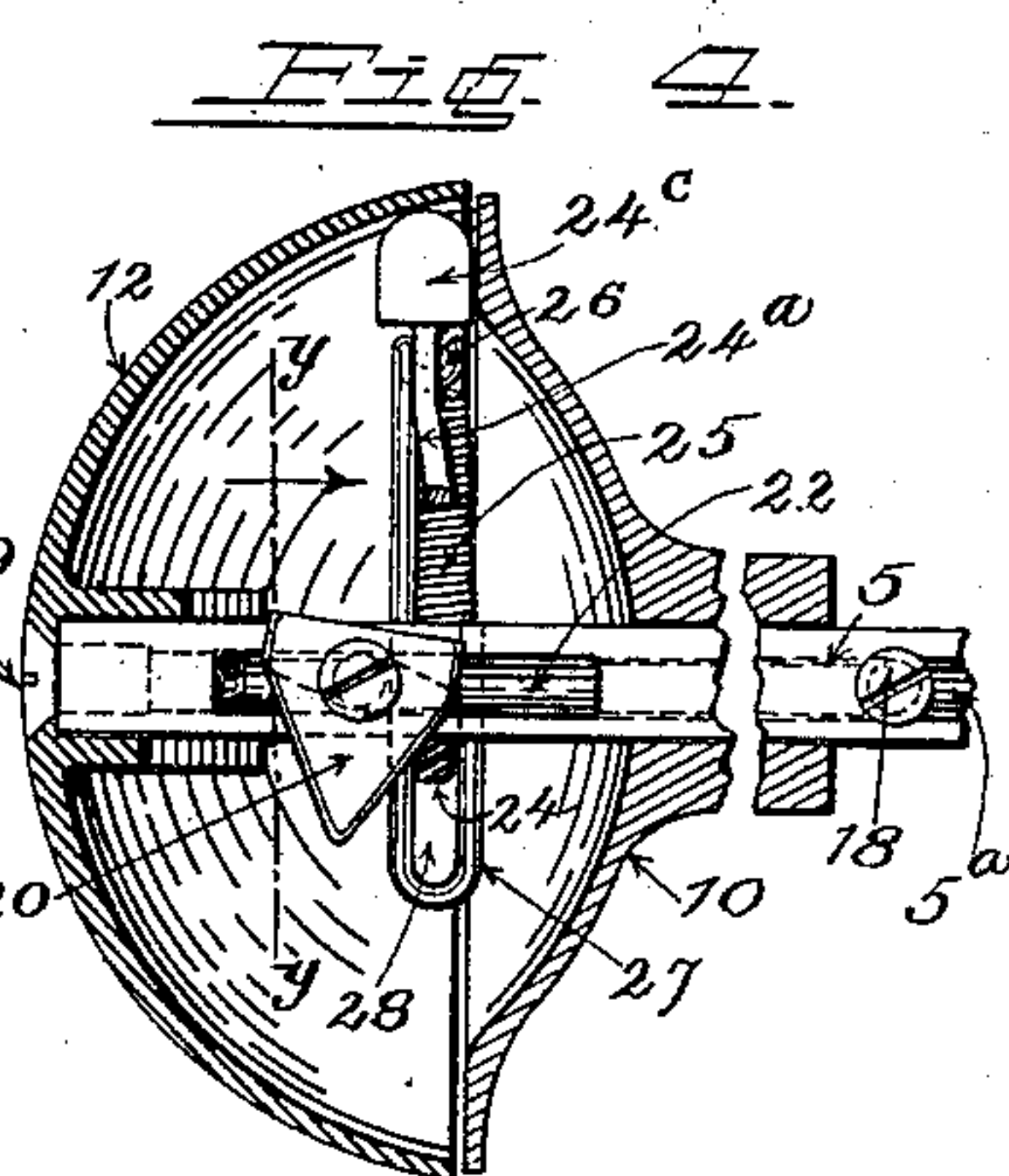
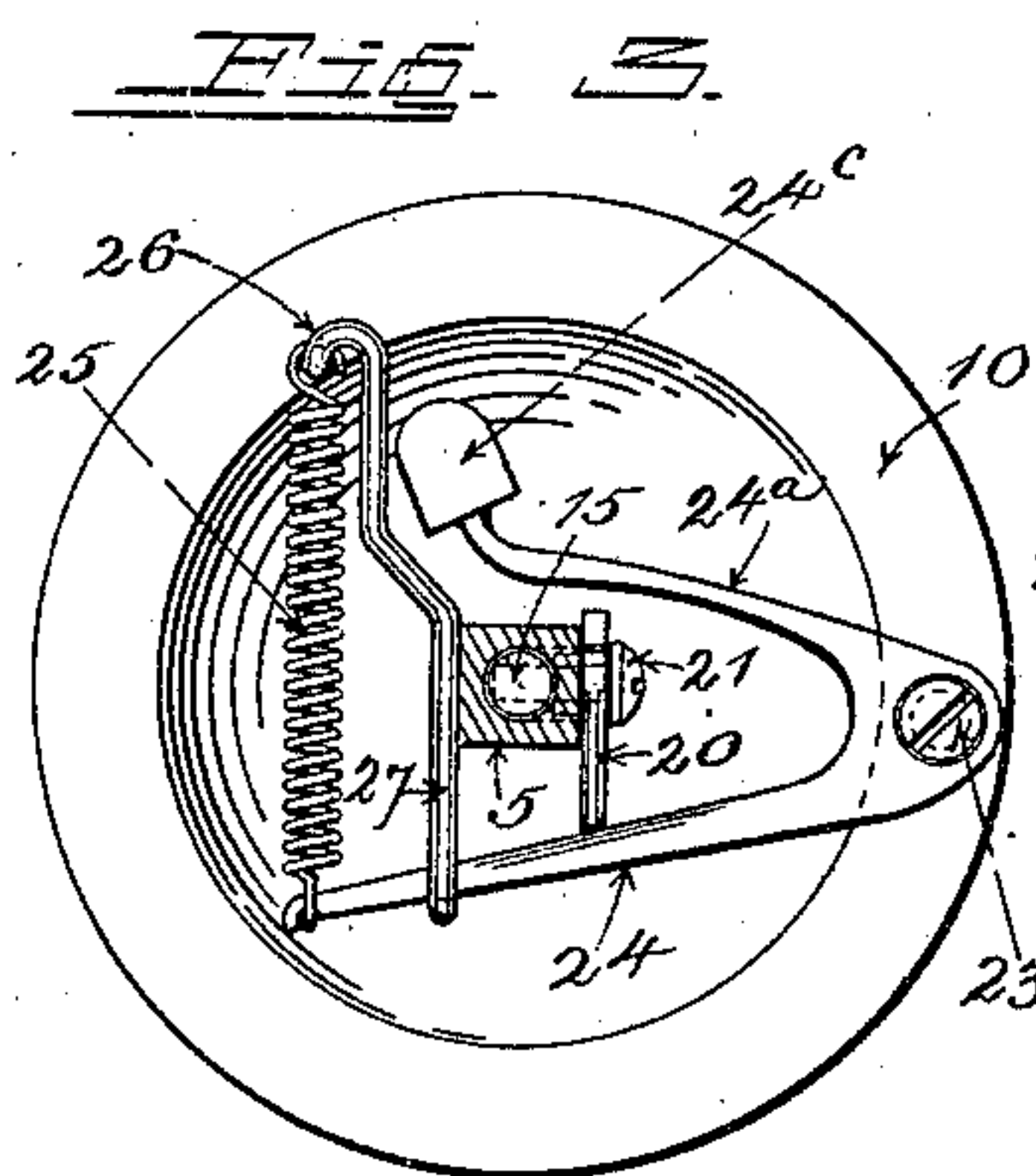
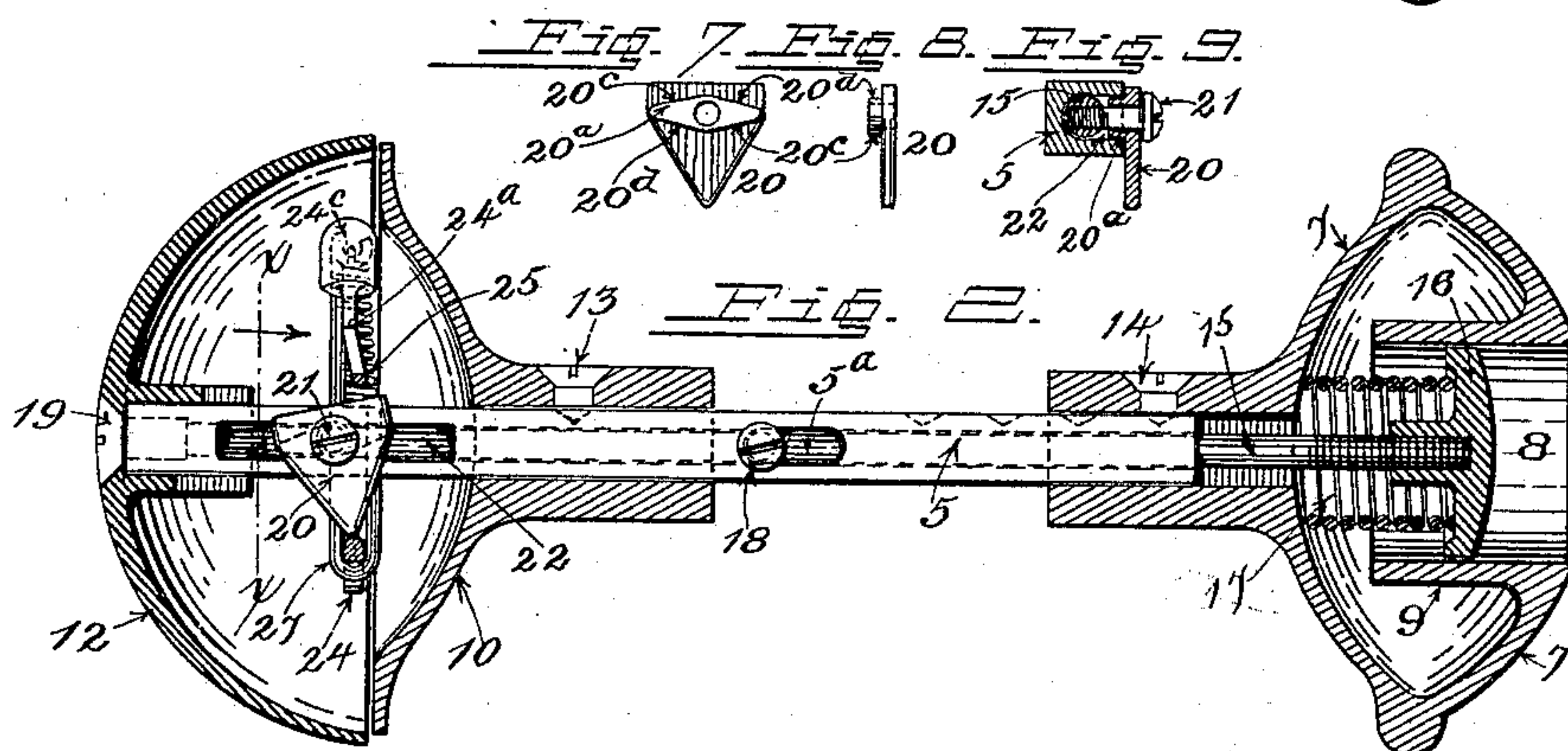
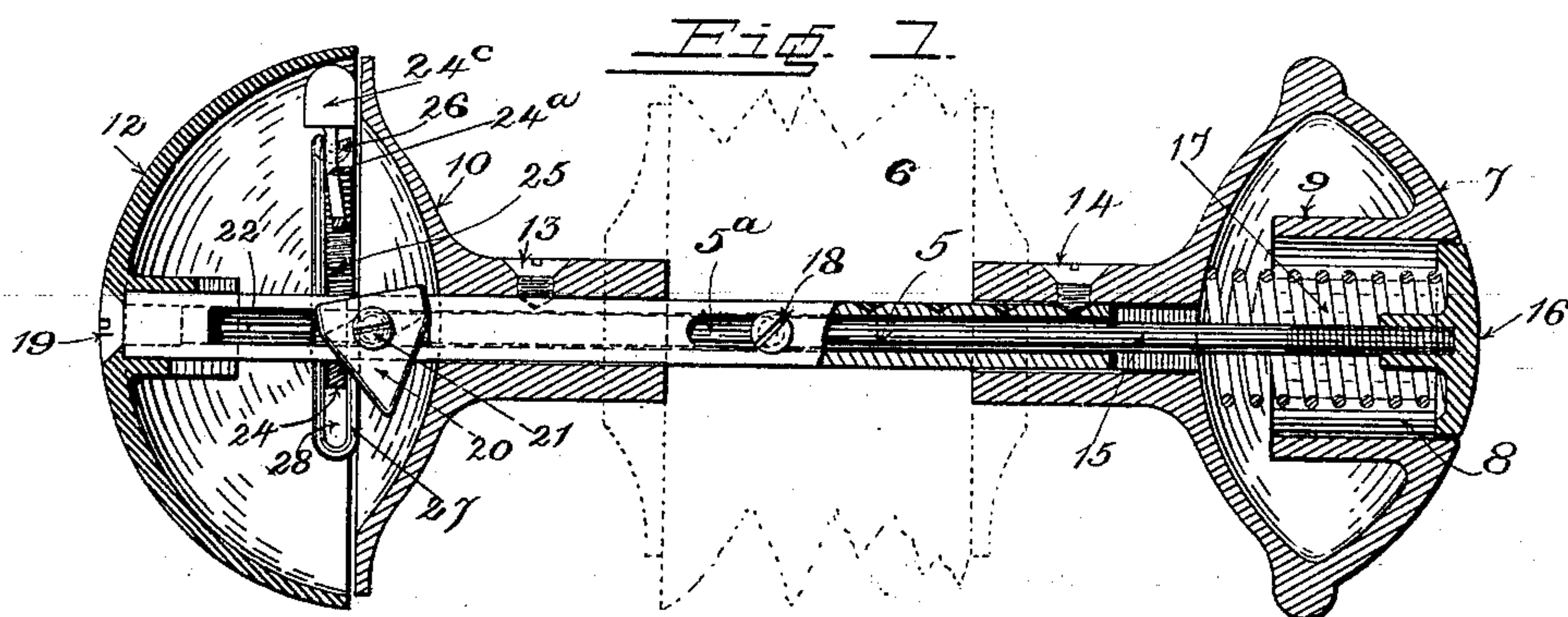
No. 624,436.

Patented May 2, 1899.


**B. F. FLOWERS.
BELL DOOR KNOB.**

(Application filed Nov. 30, 1898.)

(No Model.)



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BELL DOOR-KNOB.

SPECIFICATION forming part of Letters Patent No. 624,436, dated May 2, 1899.

Application filed November 30, 1898. Serial No. 697,820. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. FLOWERS, a citizen of the United States of America, residing at Fort Collins, in the county of Larimer and State of Colorado, have invented certain new and useful Improvements in Bell Door-Knobs; and I do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in bell door-knobs, my object being to provide a device of this class which shall be simple in construction, economical in cost, reliable, durable, and efficient in use; and to these ends the invention consists of the features, arrangements, and combinations hereinafter described and claimed, all of which will be fully understood by reference to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a longitudinal section taken through the device, a portion of the operating parts inclosed by the bell-knob, together with the spindle and push-rod, being shown in elevation. In this view the push-button and its rod are in the normal position. Fig. 2 is a similar view showing the push-rod actuated and the bell-hammer withdrawn ready to strike. Fig. 3 is a section taken on the line $x x$, Fig. 2. Fig. 4 is a detail sectional view of the bell-knob, showing the parts in striking position. Fig. 5 is a section taken on the line $y y$, Fig. 4, looking toward the right. Fig. 6 is a front elevation of the exterior knob, showing the inscriptions. Fig. 7 is a detail view showing the interior face of the operating-cam. Fig. 8 is an edge view of the same. Fig. 9 is a cross-section taken through the cam, the spindle and the push-rod on the line of the screw-stud.

Similar reference characters indicate corresponding parts in the views.

Let the numeral 5 designate the spindle passing through the door 6, which is indicated in dotted lines. To one end of this spindle is attached the outer knob 7, provided with

an opening 8 and an interiorly-extending guide-sleeve 9. This knob is secured to the spindle by a screw 14. Located on the opposite side of the door from the knob 7 is the base or bracket 10 of the bell-knob 12. This base is attached to the spindle by means of a screw 13. The spindle 5 is square exteriorly and formed hollow to receive the reciprocating rod 15. To one extremity is attached a push-button 16, adapted to move in the guide-sleeve 9. Surrounding the rod 15 and located between the base of the knob and the push-button is a coiled spring 17, which normally holds the button and its rod at the outer limit of movement. (Shown in Fig. 1.) A screw 18, inserted in the push-rod and protruding through a slot 5^a, formed in the spindle, may be utilized to connect the device with the circuit of an electric bell which may be operated by the rod. The bell-knob 12 is attached to the interior extremity of the spindle by means of a screw 19.

To the interior extremity of the push-rod or the extremity remote from the button 16 is attached a cam 20 by means of a screw-stud 21. This screw passes through a plain opening in the cam, while its inner threaded extremity enters a threaded opening in the push-rod. The cam turns freely on the unthreaded or plain portion of the screw. Its turning movement, however, is limited by a diamond-shaped tongue 20^a, which travels in a guide slot or way 22, formed in the spindle. The cam is permitted sufficient movement on the screw-stud to allow the parallel faces of the tongue to engage the edges of the slotted way, which form a track therefor, as shown by dotted lines in Figs. 1, 2, and 4. On the outer rim of the bell-knob base 10 is fulcrumed at 23 a lever-arm 24, normally occupying a position in the path of the cam 20 by virtue of a coiled spring 25, one extremity of which is attached to the end of the lever-arm remote from the fulcrum, while the other extremity is attached to a stationary support 26, made fast to the spindle and formed integral with the guide 27, having an elongated opening 28, in which the lever-arm 24 travels.

Formed integral with the arm 24 is an auxiliary arm 24^a, provided with a clapper or hammer 24^c, located at its outer extremity. The arms 24 and 24^a straddle the cam 20, which

works in the opening between them. This cam, as shown in the drawings, is approximately triangular in shape, and two of its sides are adapted to engage the lever-arm 24 and force the latter outwardly or away from the spindle as the reciprocating rod 15 is actuated, the hammer 24^c being simultaneously drawn inwardly toward the spindle preparatory to striking the inner surface of the bell-knob 12, which forms the gong. The lever-arm 24 is held against the spindle, as shown in Figs. 1, 4, and 5, and in contact with one of the sides of a cam by the coiled spring 25. To operate the hammer 24^c or ring the bell, it is only necessary to press on the button 16, causing the rod 15 to move outwardly in the hollow spindle. During this action the cam is forced against the lever-arm 25, which travels outwardly to the point or apex of the cam. As soon as the lever-arm passes over the point of the cam this arm is released and the recoil of the spring 25 throws the hammer outwardly, causing it to strike the gong 12. The parts are then in the position shown in Fig. 4. As soon as the button 16 is released from pressure the recoil of the spring 17 imparts the reverse movement to the rod 15 and the cam, which again forces the lever-arm 24 upwardly until it rides over the point of the cam and is again released, the recoil of the spring 25 again causing the hammer to strike the gong or bell-knob 12, thus returning the parts to the normal position, as shown in Fig. 1. Hence for each reciprocation of the push-rod the bell-hammer strikes twice.

During the operation of the cam, as heretofore described, the guide-tongue 20^a engages the walls of the slot 22 in the spindle. As the push-rod is forced inwardly the parallel sides 20^c of the tongue engage the opposite sides of the slotted way, while when the push-rod makes the reverse movement the parallel sides 20^d of the tongue engage the sides of the said way. Thus it will be seen that this diamond-shaped tongue permits a limited movement of the cam upon the screw-stud 21. This movement of the cam enables it to turn out of the way of the lever-arm during the latter's inward movement, thus permitting the said arm to move inwardly to the stem without obstruction after the arm has passed over the point or apex of the cam. Were it not for this movement of the cam the latter would offer more or less resistance to the inward movement of the arm and to this extent interfere with the striking action of the hammer, whose movement must be quick in order to properly perform the required function.

The push-button 16 is screwed upon the threaded extremity of the push-rod, whose threaded portion is of considerable length to permit the necessary adjustment for doors of different thickness. The screw-socket of the button is made of considerable depth for the same purpose. The spindle is provided with a series of openings adapted to receive the

point of the screw 14, whereby the position of the knob 7 may be regulated to correspond with the thickness of the door.

The longitudinal opening in the hollow stem is closed at its inner extremity to limit the inward movement of the push-rod, while the opposite end of the slot 22 limits the return movement of the rod.

Having thus described my invention, what I claim is—

1. The combination with the hollow spindle, the knobs and the spring-held reciprocating rod operating in the spindle, of a cam mounted on the rod and located outside the spindle which is slotted to permit the required movement, a spring-held lever-arm suitably fulcrumed and located in the path of the cam as the said rod is actuated, and a hammer-arm carried by the said lever-arm.

2. The combination with the hollow spindle, the knobs and a spring-held reciprocating rod working within the spindle, of a cam mounted on the rod and located outside the spindle, which is slotted to permit the required movement, a spring-held lever-arm suitably fulcrumed and located in the path of the cam which is allowed a limited movement to permit the quick action of the lever-arm, and a hammer-arm carried by the lever-arm.

3. The combination with the hollow spindle, the knobs and the reciprocating rod working within the spindle, of a cam, a suitable fastening-screw connecting the cam with the rod and passing through a slot formed in the spindle, the cam being allowed to turn on its fastening device, the cam being provided with a diamond-shaped tongue, engaging the slotted way of the spindle and limiting the movement of the cam, a lever-arm located in the path of the cam and a hammer carried by the lever-arm.

4. The combination with the hollow spindle, the bell-knob and a suitable clapper located therein, of the outer knob having an opening and an interiorly-extending guide-sleeve, a push-button located in said opening and adapted to enter said sleeve, said button being provided with a threaded socket, and a reciprocating rod adapted to operate the clapper, said rod being threaded to enter the socket of the push-button.

5. The combination with the hollow spindle, the bell-knob and a suitable clapper, of the outer knob having an opening and an interiorly-projecting sleeve surrounding said opening, a push-button located in said opening and adapted to enter said sleeve, a reciprocating rod adapted to operate the clapper, said rod being suitably connected with the push-button.

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

BENJAMIN F. FLOWERS.

Witnesses:

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A. J. O'BRIEN.