

D. R. LOVEJOY.  
PUSH BUTTON.  
APPLICATION FILED JULY 30, 1907.

955,521.

Patented Apr. 19, 1910.

FIG. 1.

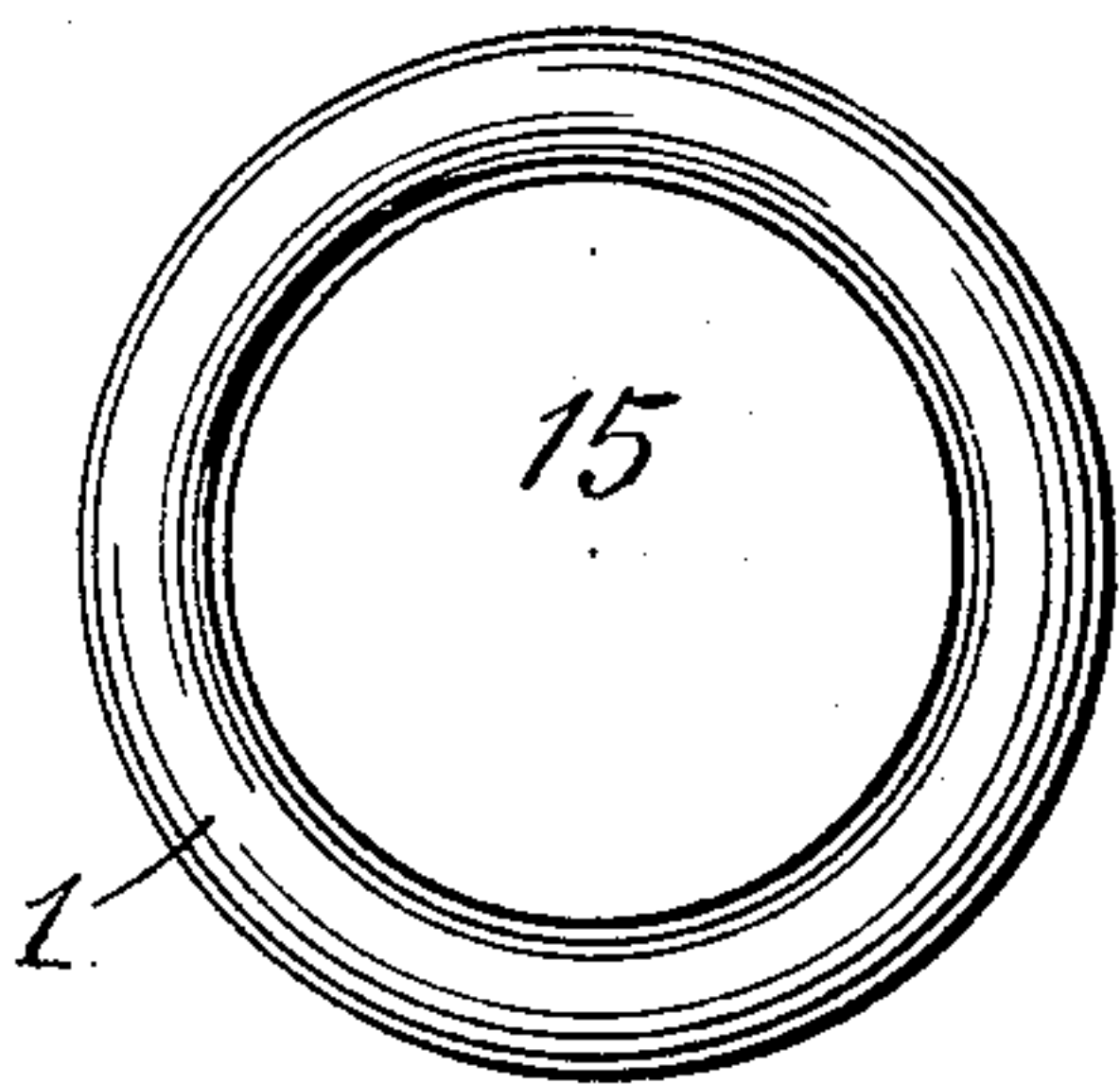


FIG. 2.

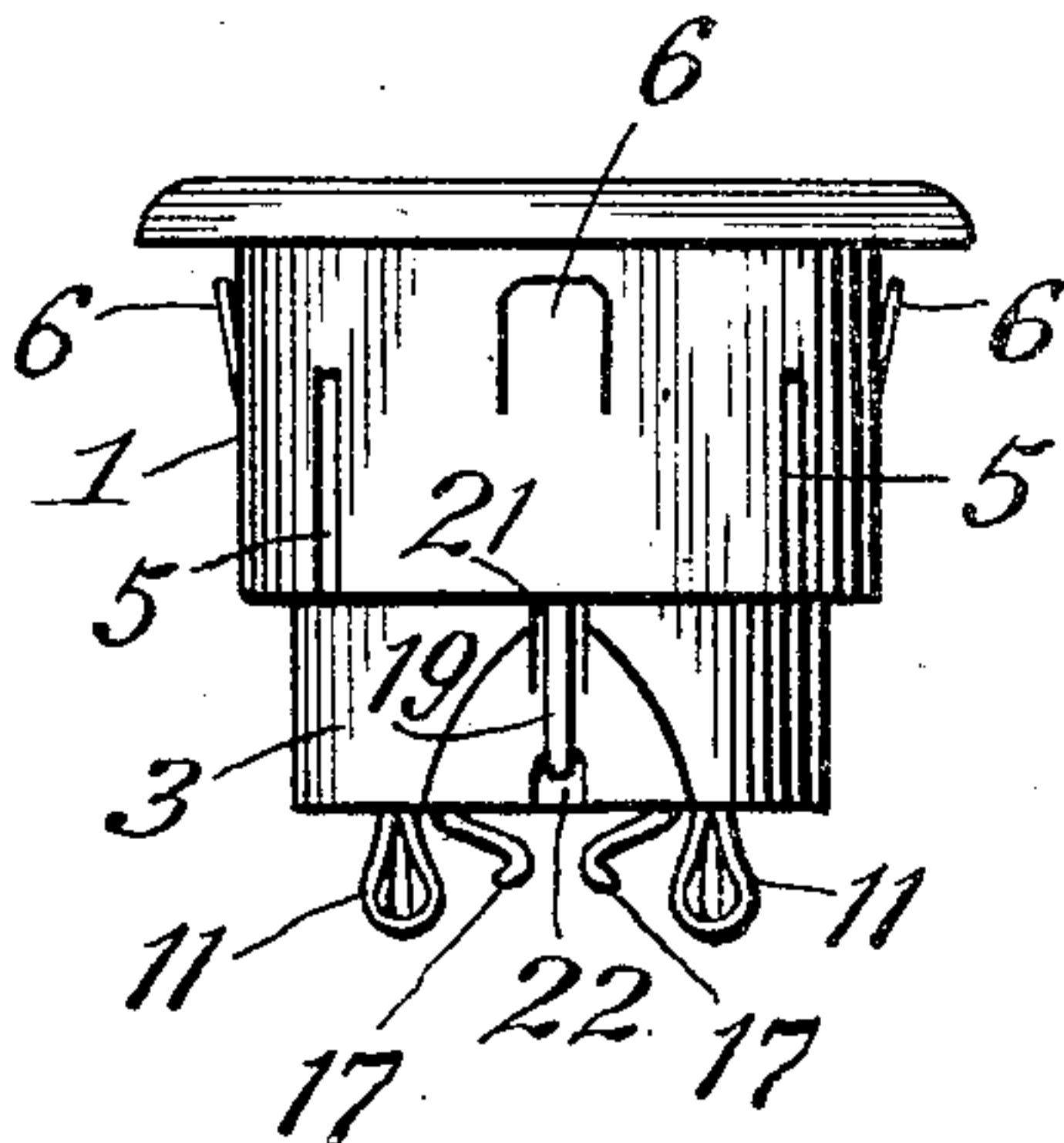


FIG. 3.

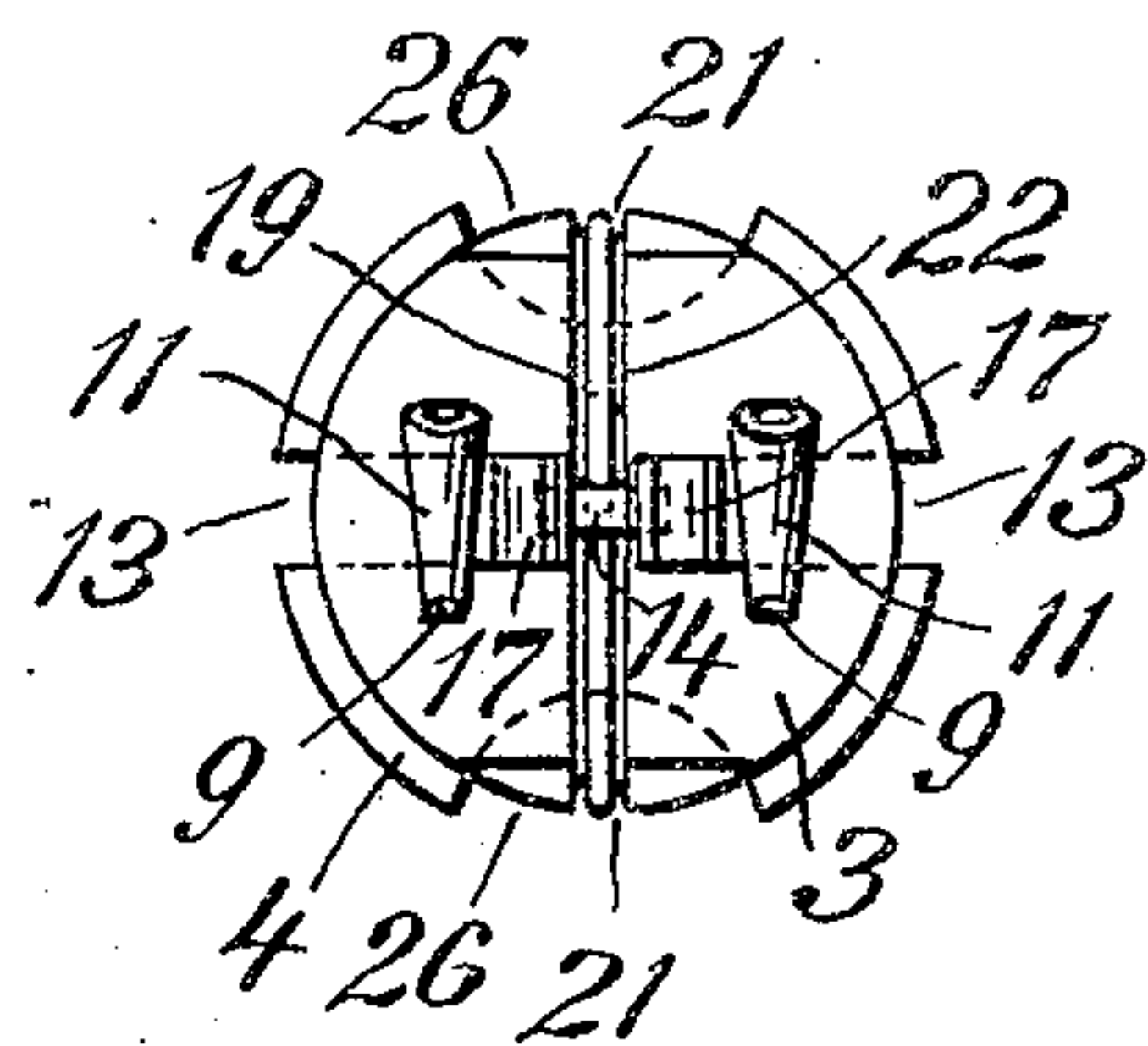


FIG. 4.

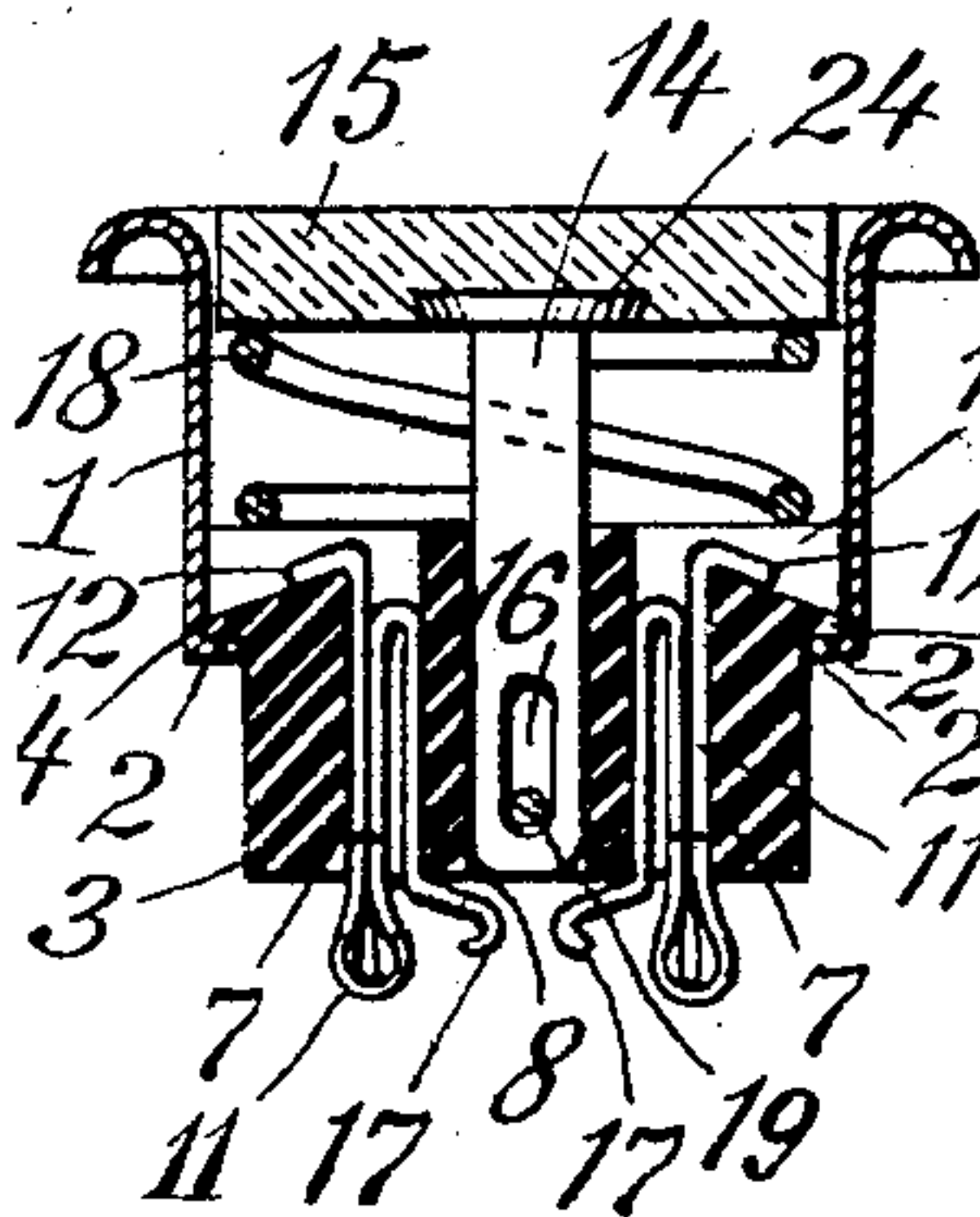


FIG. 5.

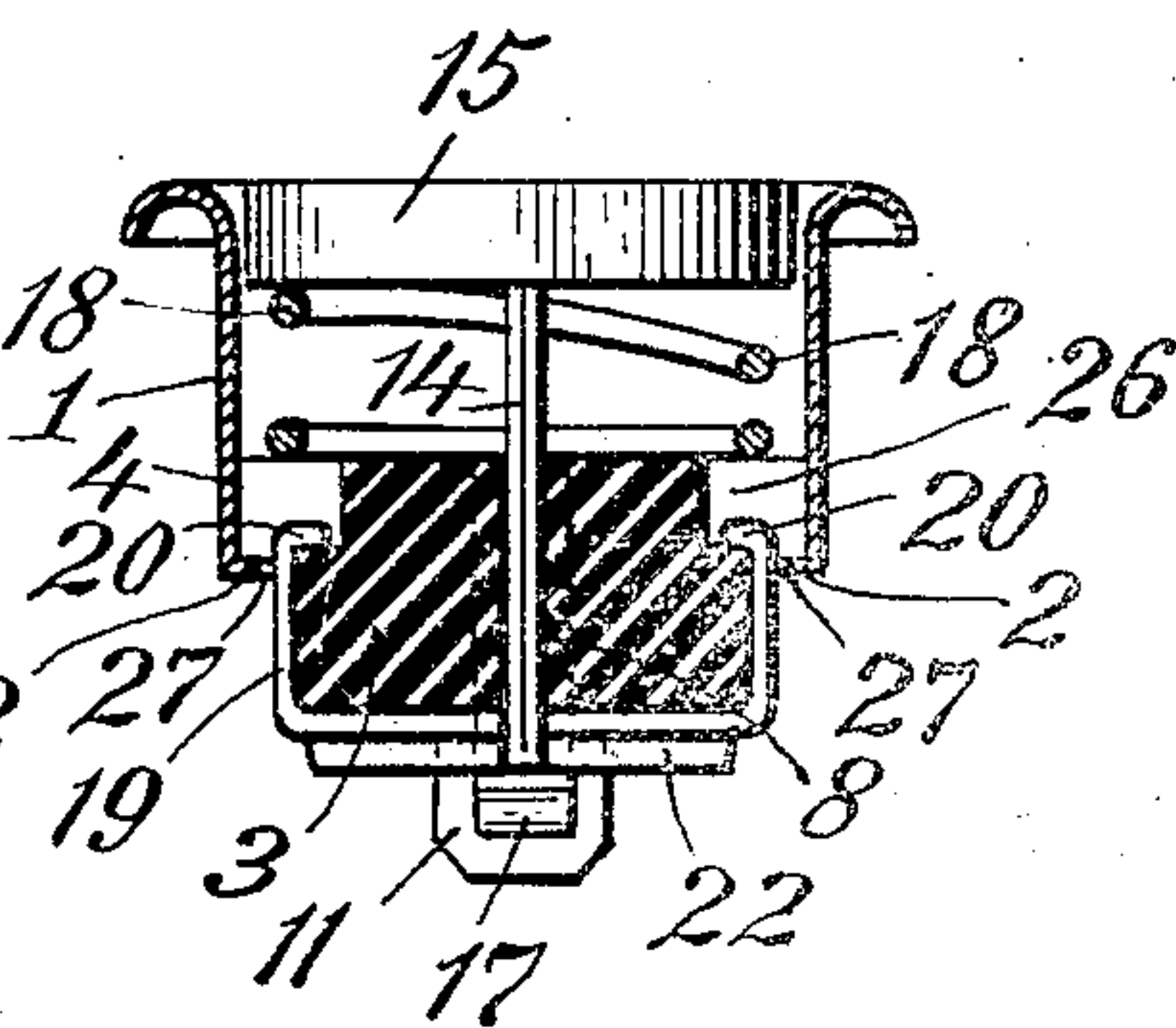


FIG. 6.

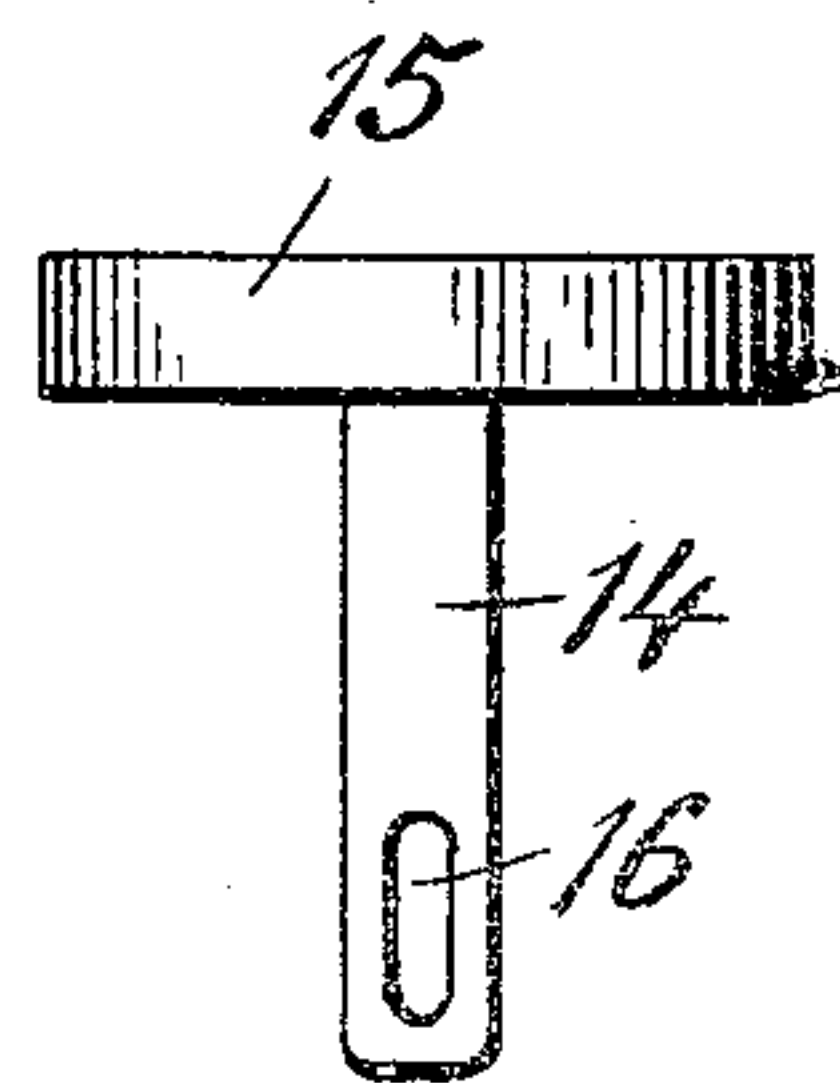


FIG. 7.

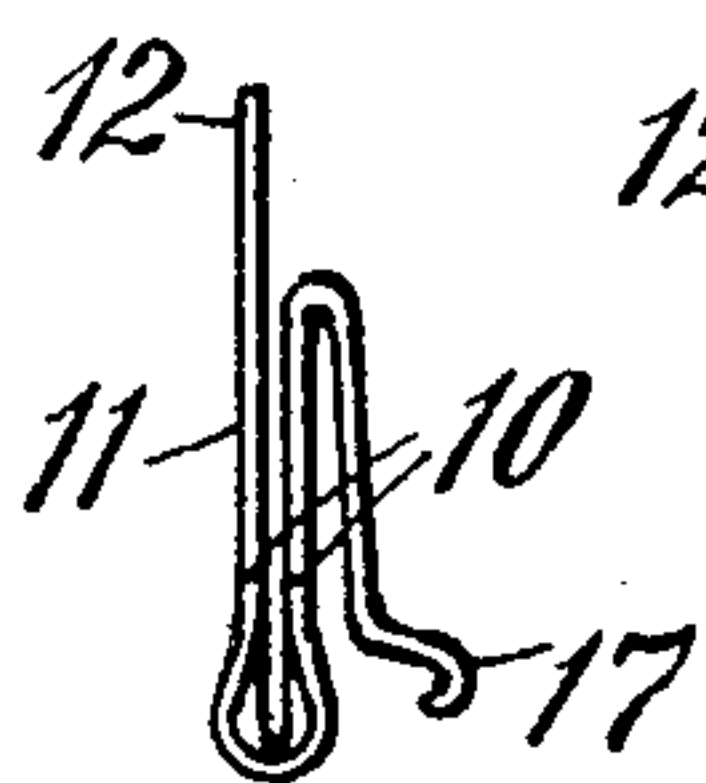


FIG. 8.

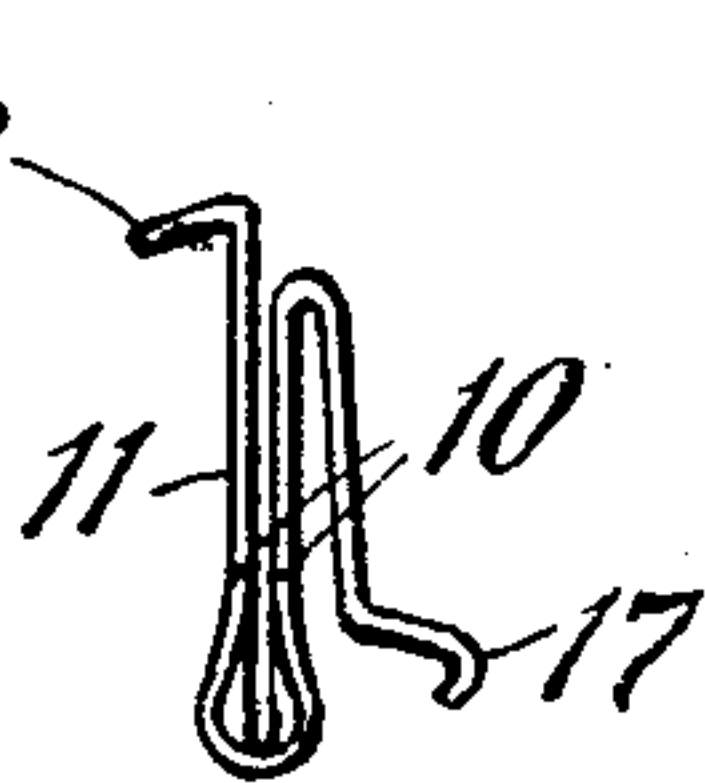


FIG. 9.

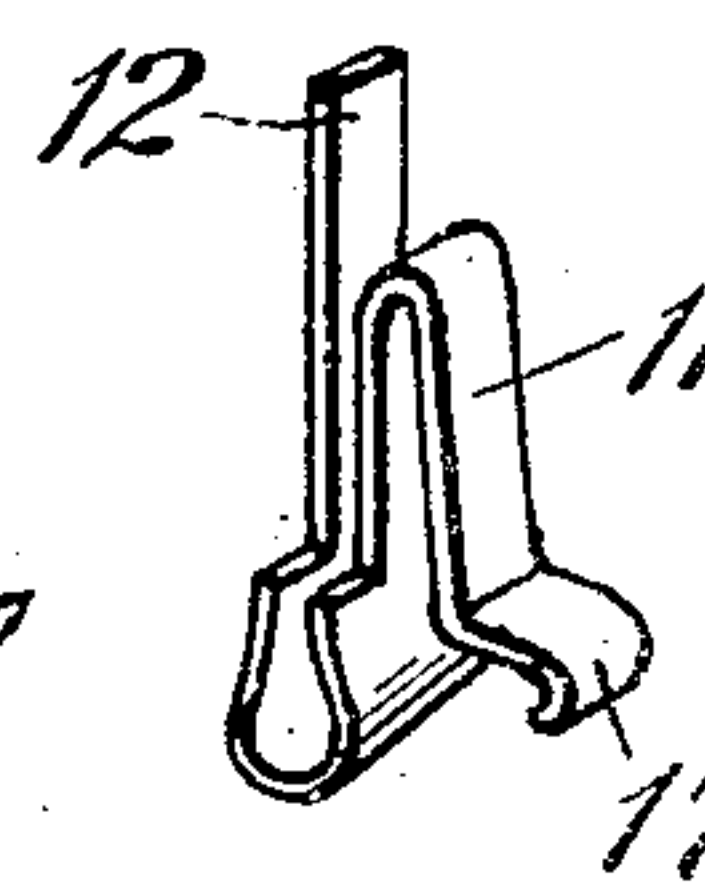


FIG. 10.

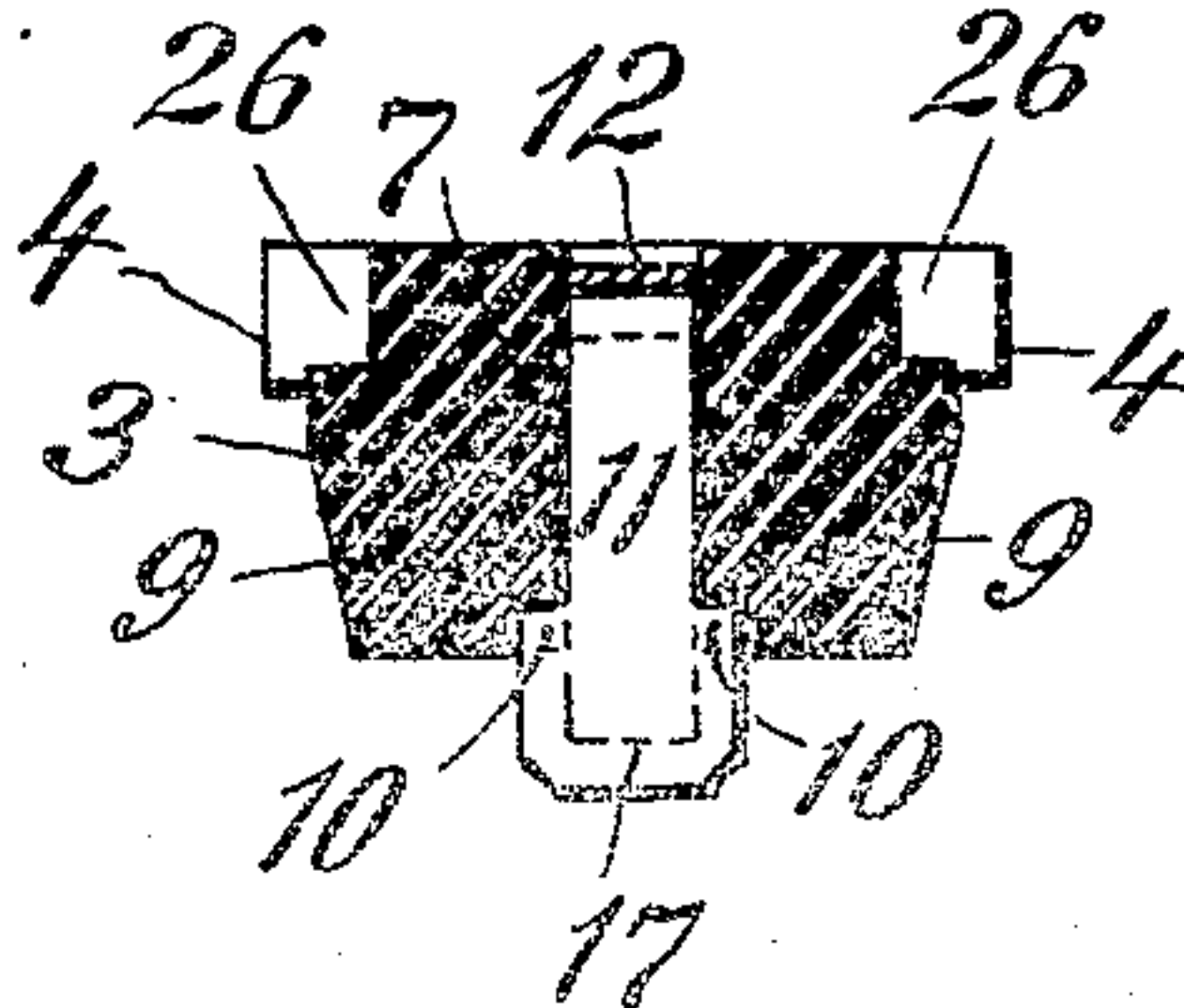


FIG. 11.

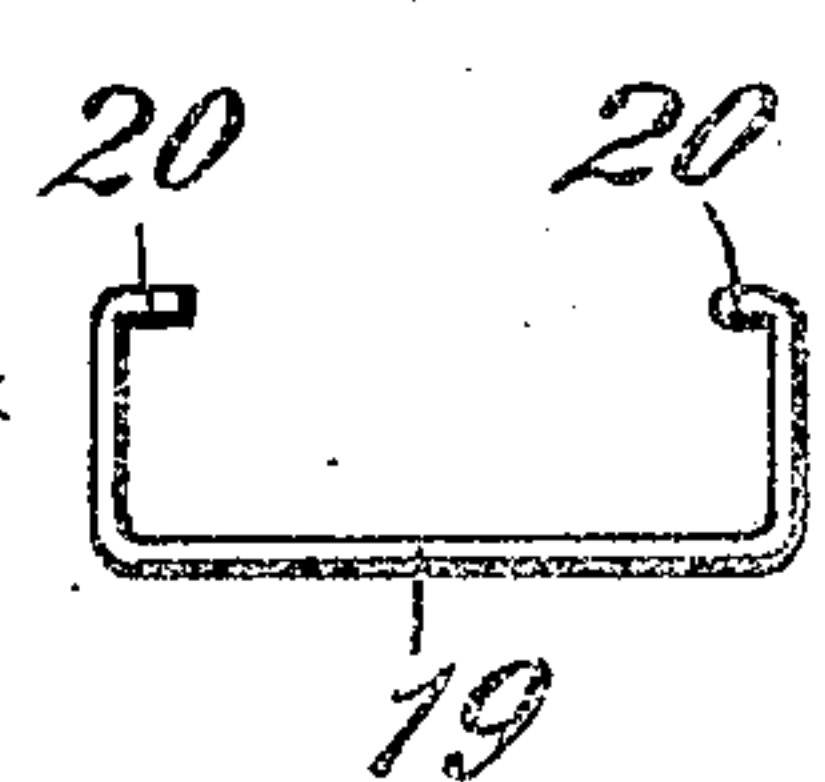


FIG. 12.

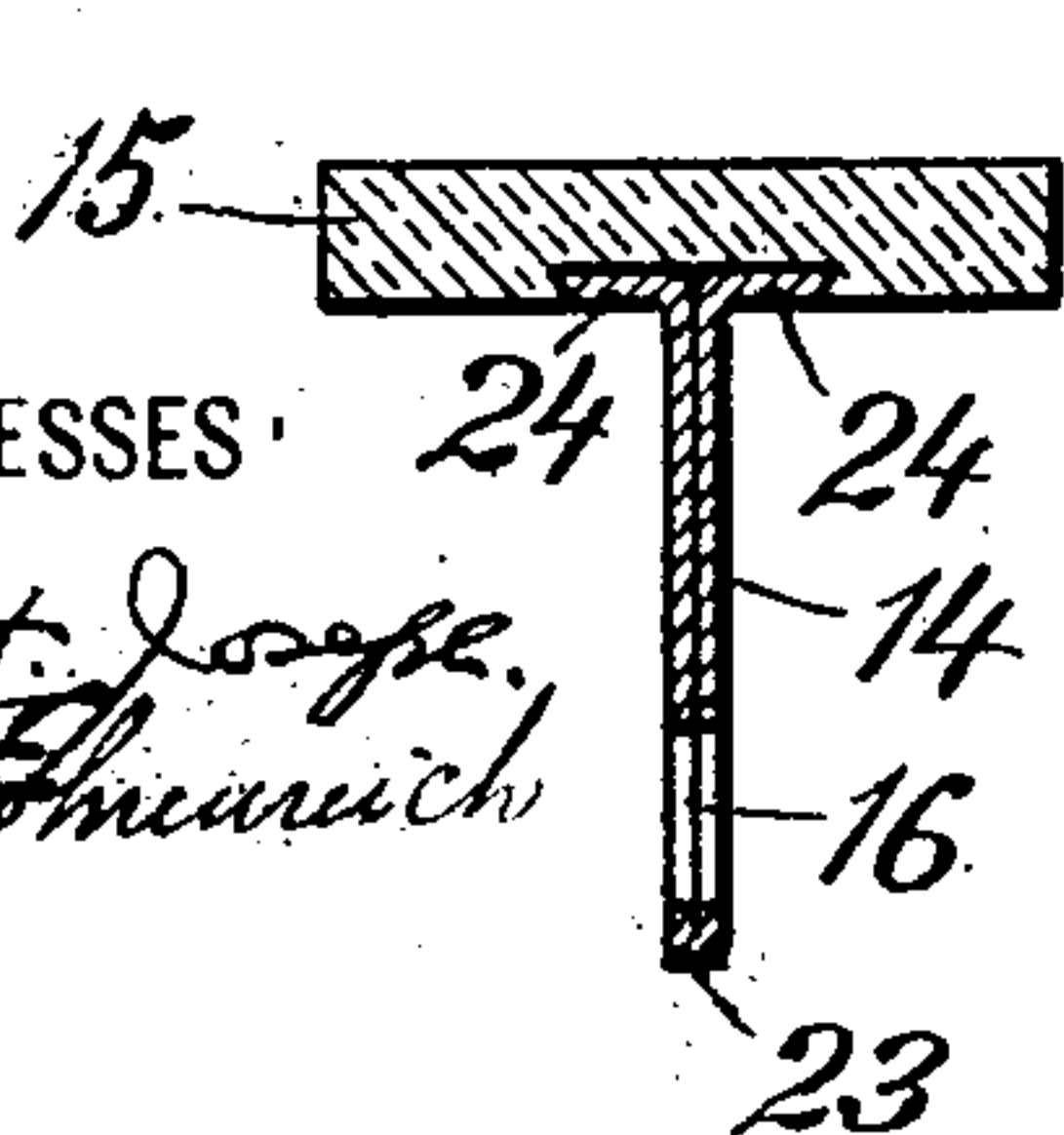


FIG. 13.

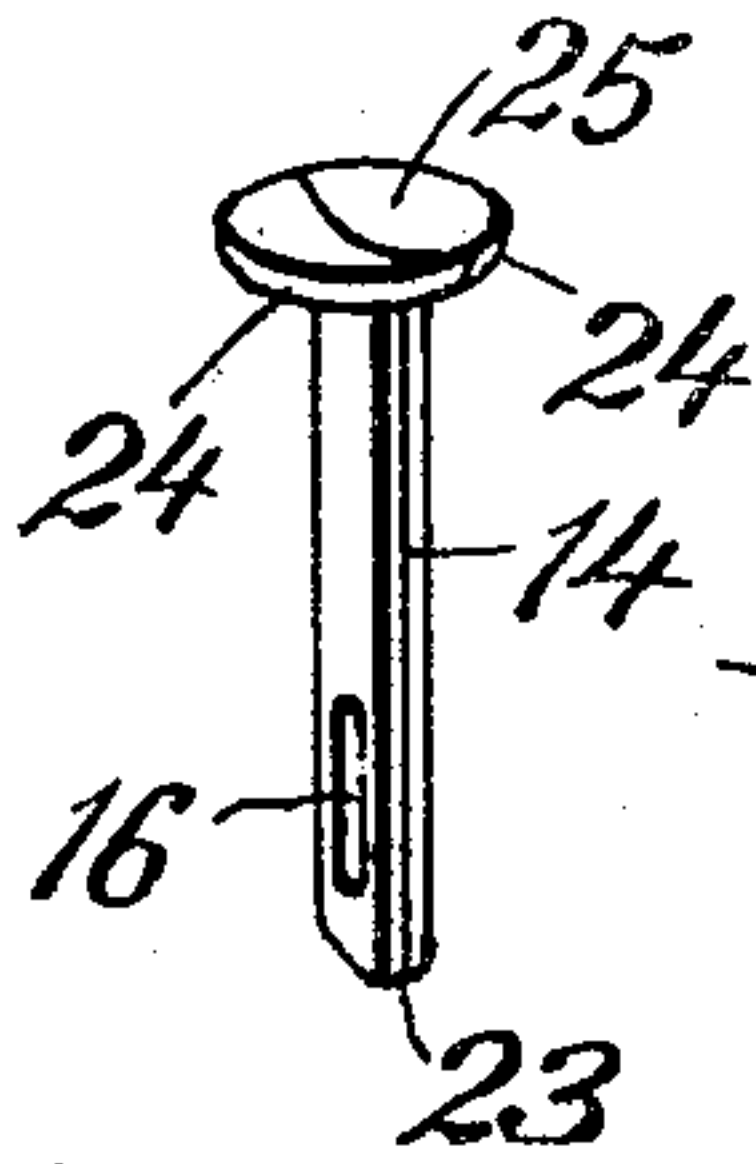


FIG. 14.



WITNESSES

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# UNITED STATES PATENT OFFICE.

DIAMITT ROSS LOVEJOY, OF IRVINGTON, NEW YORK.

PUSH-BUTTON.

955,521.

Specification of Letters Patent. Patented Apr. 19, 1910.

Application filed July 30, 1907. Serial No. 336,291.

To all whom it may concern:

Be it known that I, DIAMITT ROSS LOVEJOY, a citizen of the United States, residing at Irvington, in the county of Westchester and State of New York, have invented a new and useful Improvement in Push-Buttons, of which the following is a specification.

My invention relates to electric push buttons, the object being to provide a device which shall be simple and inexpensive to construct, reliable in operation, and having a minimum number of parts,—also which may be readily assembled and disassembled without the use of tools of any kind, and is held together without the use of screws, pins, or similar devices.

In the accompanying drawings, Figure 1 is a front elevation of the whole device. Fig. 2 is a side elevation. Fig. 3 is a rear elevation with the shell removed. Fig. 4 is a sectional view through the contacts. Fig. 5 is a cross section at right angles to Fig. 4. Fig. 6 is a side elevation of the finger piece and contact tongue. Figs. 7, 8, and 9 are details of the contact springs. Fig. 10 is a cross section of the insulating base, through one of the contact springs. Fig. 11 is a detail. Fig. 12 is a cross section of the finger piece and contact tongue. Figs. 13 and 14 are details of the contact tongue.

The several parts of the button are, a shell 1 provided with an inwardly turned flange 2 adapted to retain in place an insulating base 3 by means of a shoulder 4 formed integrally with said base and bearing upon said flange 2. The shell 1 is slotted longitudinally as at 5 to facilitate its elastically gripping the base 3 with a firm frictional pressure sufficient to retain it with certainty in place, and yet yielding enough to allow its withdrawal when required. Shell 1 is also provided with lugs 6 punched in its walls and springing outwardly to retain the whole button in place when same is inserted in a hole bored in woodwork etc. in the manner usual in this class of button.

The base 3 is preferably molded in porcelain or other suitable insulating material, and in addition to the shoulder 4, is provided with three holes 7, 7 and 8 extending completely through it as shown. These holes are preferably rectangular in cross section, and the holes 7, 7 are provided at their rear extremities with side depressions or recesses 9, 9 adapted to receive the shoul-

ders 10, 10 of the contact springs 11, when same are inserted in the holes 7. These contact springs are preferably formed of resilient sheet metal and are bent or folded as shown in the drawing so as to adapt them to be inserted in the holes 7 from the back side of the base 3 and to be firmly held therein by bending the projecting ends 12 back into channels 13 formed in the front side of base 3, after the manner shown in Figs. 3 and 4. The springs 11 are thus retained in place without screws or other fastenings, being prevented from moving in one direction by their shoulders 10 bearing against the bottoms of recesses 9, and from moving in the other direction by the bent portions 12.

As clearly shown in Fig. 4, the depth of each of the holes 7 is greater than the combined thickness of the folds of metal constituting the contact springs 11, which are contained within said holes, in consequence of which, the folds are permitted to move freely within said holes and in the direction of the depth thereof. By the term depth, is meant the dimension of the hole normal to the motion of the contact tongue.

The central hole 8 is adapted to receive the metallic tongue 14 which is attached to the finger piece 15 in a manner hereinafter to be set forth. This tongue 14 when forced back by means of the pressure of the finger upon the piece 15, is adapted to enter between the ends 17 of the contact springs 11, forcing them apart and making a scraping electrical contact with each, thereby bridging across the insulating gap between them and completing the circuit. The tongue 14 is withdrawn, and the circuit broken by the elasticity of the spring 18 which is interposed between the finger piece 15 and the base 3, and it is limited in its movement in this direction by a bent wire piece 19 lying within a channel 22 formed in the back of base 3 and passing through a slot 16 formed in the tongue 14, as shown in Figs. 2, 3, 4, 5, and 6. The bent wire piece 19 is in turn held in place by means of its inwardly turned ends 20 hooking over suitable recesses 26 formed in the base 3, and is of such shape, and dimensions as to touch neither the shell 1 nor the sides of the slot 16, said slot being considerably wider than the diameter of the wire of which 19 is made, while slots or channels 21 in the sides of base 3 permit the legs of 19 to lie partially embedded therein at the points



where it is gripped by the shell 1, thus leaving insulating spaces 27 between shell 1 and piece 19.

The contact tongue 14 is preferably stamped out of sheet metal as shown in Fig. 14, and bent and formed into the shape shown in Fig. 13, the bend 23 being at the central part of the blank whose free ends 24 are shaped so as to together form the cup 25. This cupped end is then inserted into a circular depression in the back of finger piece 15 and strongly pressed therein by means of a circular flat ended hollow punch which spreads it out into a flat washer shape larger in diameter than the original cup, thus forcing its periphery strongly into the material of 15 and serving to firmly retain it therein.

This push button is in many respects similar to the one invented by me and set forth in my pending application #361372, and I do not therefore claim all of its features as new.

What I do claim as new, and wish to secure by Letters Patent is—

1. In a push button, the combination with an insulating base provided with three longitudinal holes, of contact springs contained within two of said holes, and a contact bar movable within the third hole, said springs having free ends exterior to said holes and adapted to make electrical connection with said contact bar, said springs having shoulders and bent portions and said springs being retained within said holes by said shoulders and bent portions, said base being provided with depressions for receiving said shoulders and bent portions.

2. In a push button, the combination with an insulating base having longitudinal holes, of contacts, a circuit closing bar, and a stop for limiting the movement of said bar, said contacts having bent portions and lateral shoulders and said contacts being retained within said longitudinal holes in said base by said bent portions and lateral shoulders, said base being provided with depressions for receiving said bent portions and shoulders, and said stop being a wire detachably fastened to said base.

3. In a push button, the combination with an insulating base provided with three longitudinal holes, of a movable contact bar adapted to play freely in one hole, and a contact spring contained within each of the remaining two holes, said contact springs having bent portions and lateral shoulders and said contact springs being retained in said holes by said bent portions and lateral shoulders, and said base being provided

with depressions for receiving said bent portions and shoulders, said contact bar having a finger piece attached thereto and having a slot formed therein, and said contact springs having free ends extending rearwardly out of said holes and adapted to make electrical connection with said contact bar, a retractile spring between said finger piece and said base, and a stop bearing on said base and passing through said slot in said contact bar for the purpose of limiting its forward movement due to the pressure of said retractile spring.

4. In a push button, the combination of a cylindrical insulating base having three rectangular, parallel, longitudinal holes, contact springs inserted in two of said holes, and a rigid circuit closing bar passing freely through the third hole and adapted to protrude rearwardly therefrom, said contact springs being formed of sheet metal into limbs and having wider portions, all of said limbs of each spring being contained within the same hole and said springs being retained in said holes by said wider portions forming shoulders and by being bent at one end after having been inserted in said holes, said base being provided with depressions below its end surfaces to receive said shoulders and said bent portions of said springs.

5. In a push button, an insulating base having three holes, contact springs mounted in two of said holes and retained therein solely by their configuration, a circuit closing tongue adapted to play freely in the third hole and to make contact with said springs, and a bent wire piece detachably secured across the back of said base and passing through a slot in said circuit closing tongue for the purpose of limiting the movement of said tongue.

6. In a push button, the combination of an insulating base having a groove across the back thereof, contact springs, a circuit closing bar having a slot through which passes a wire, portions of said wire lying in said groove and portions being bent so as to grip portions of said base.

7. In a push button, the combination of contact springs, an insulating base having recesses therein, and a circuit closing bar having a slot through which a spring wire is inserted, said spring wire having portions bent so as to grip said base and be retained within said recesses.

DIMMITT ROSS LOVEJOY.

Witnesses:

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JAMES J. EHREUREICH.