

J. A. BIRSFIELD,  
TELEPHONE RINGER.  
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924,030.

Patented June 8, 1909.

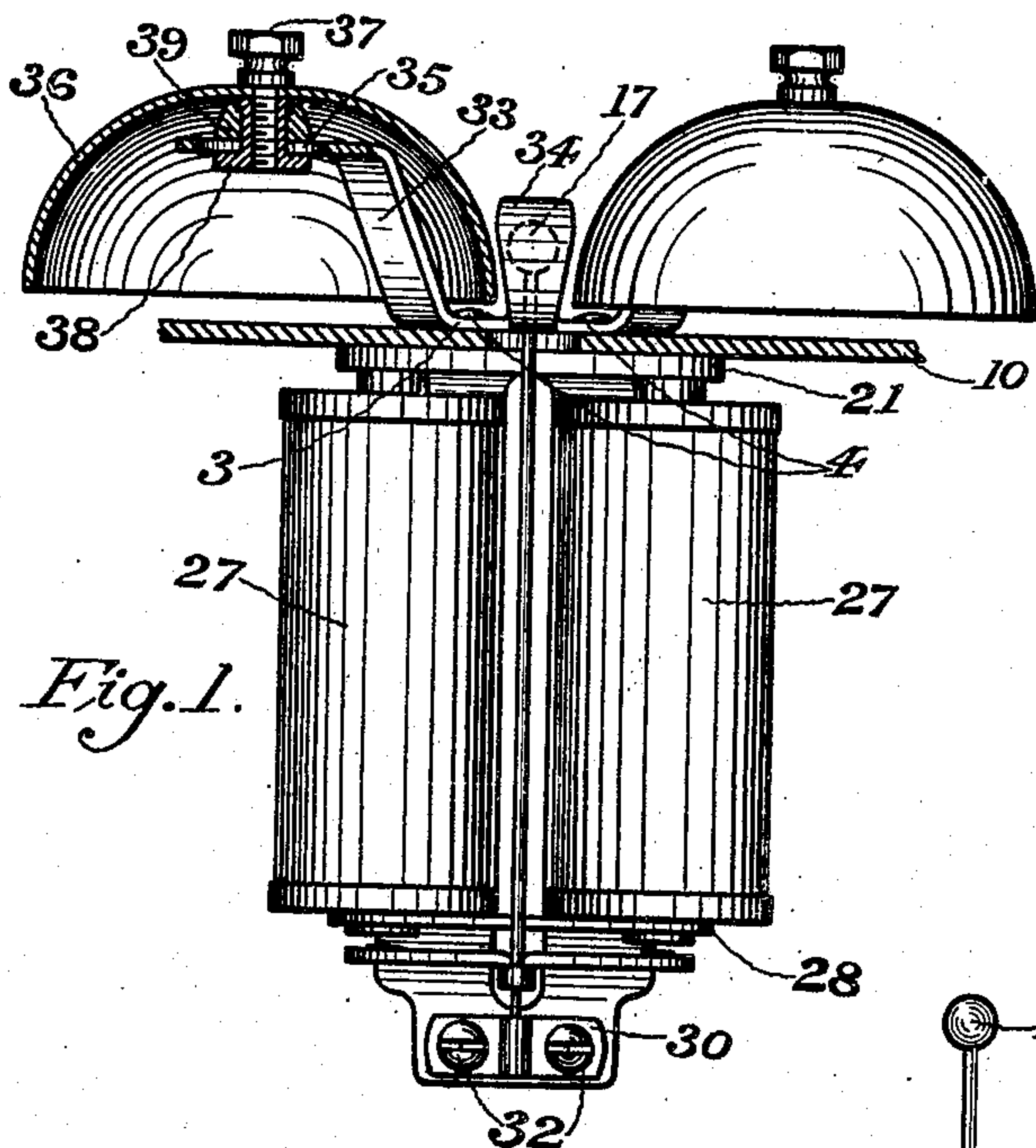


Fig. 1.

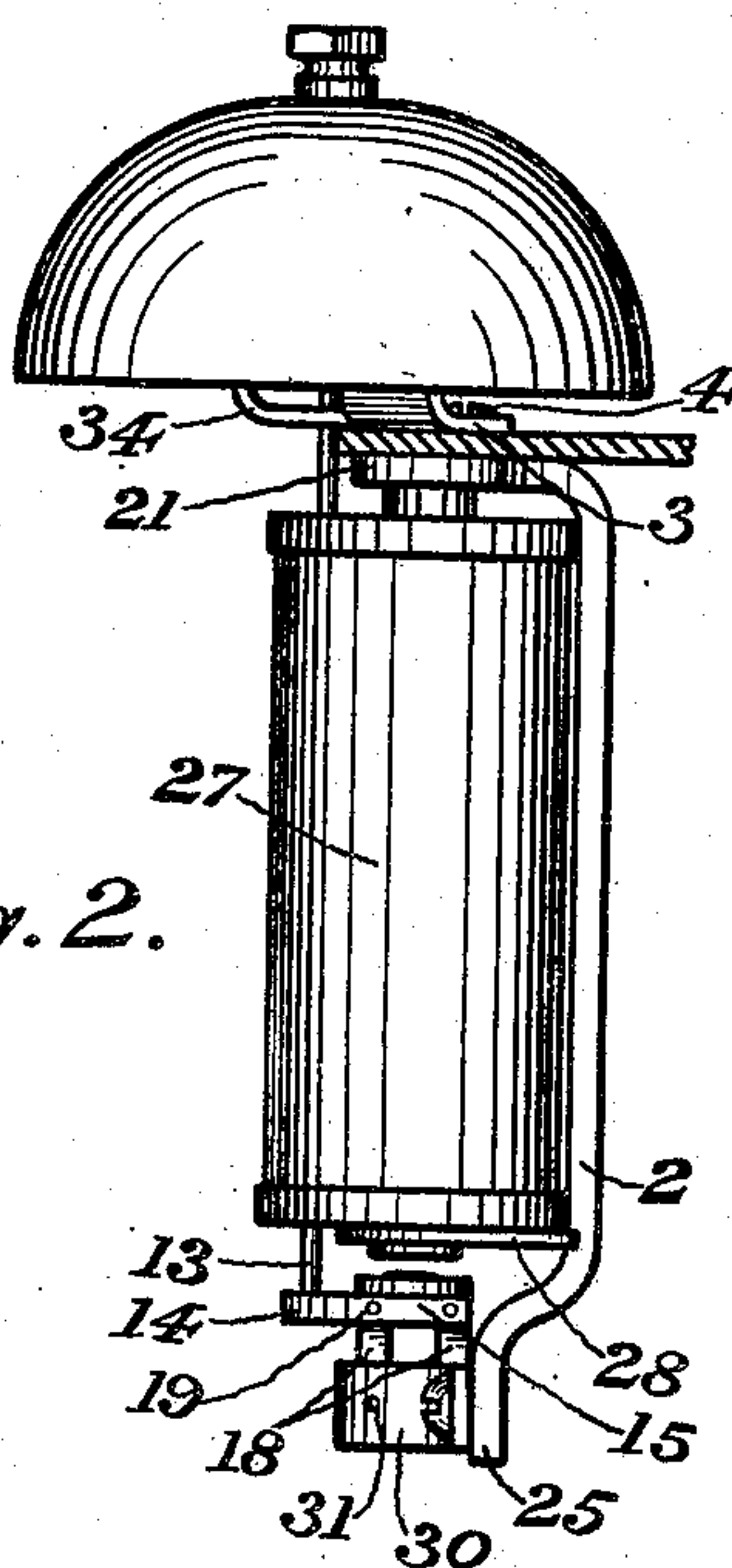


Fig. 2.

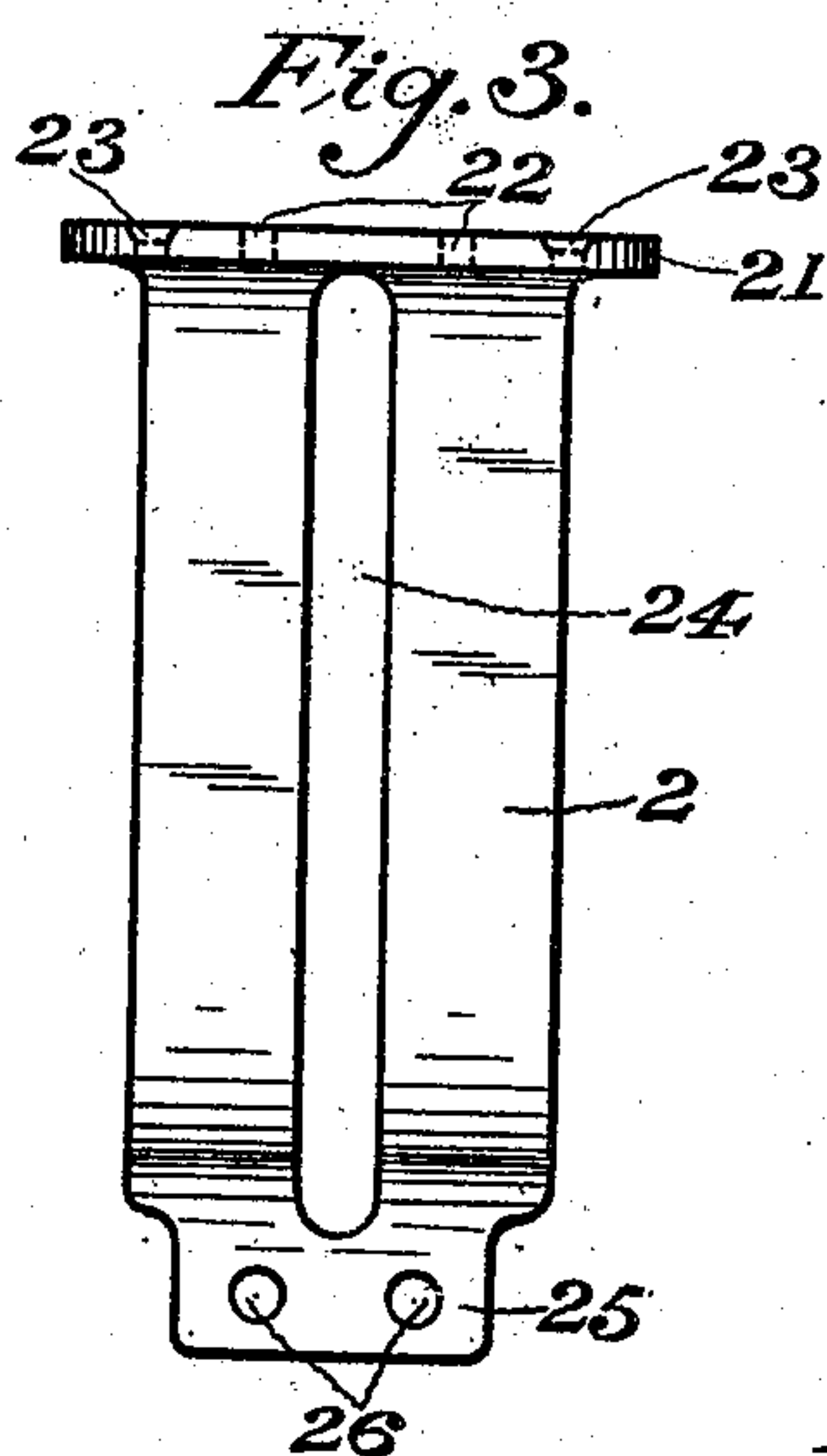


Fig. 3.

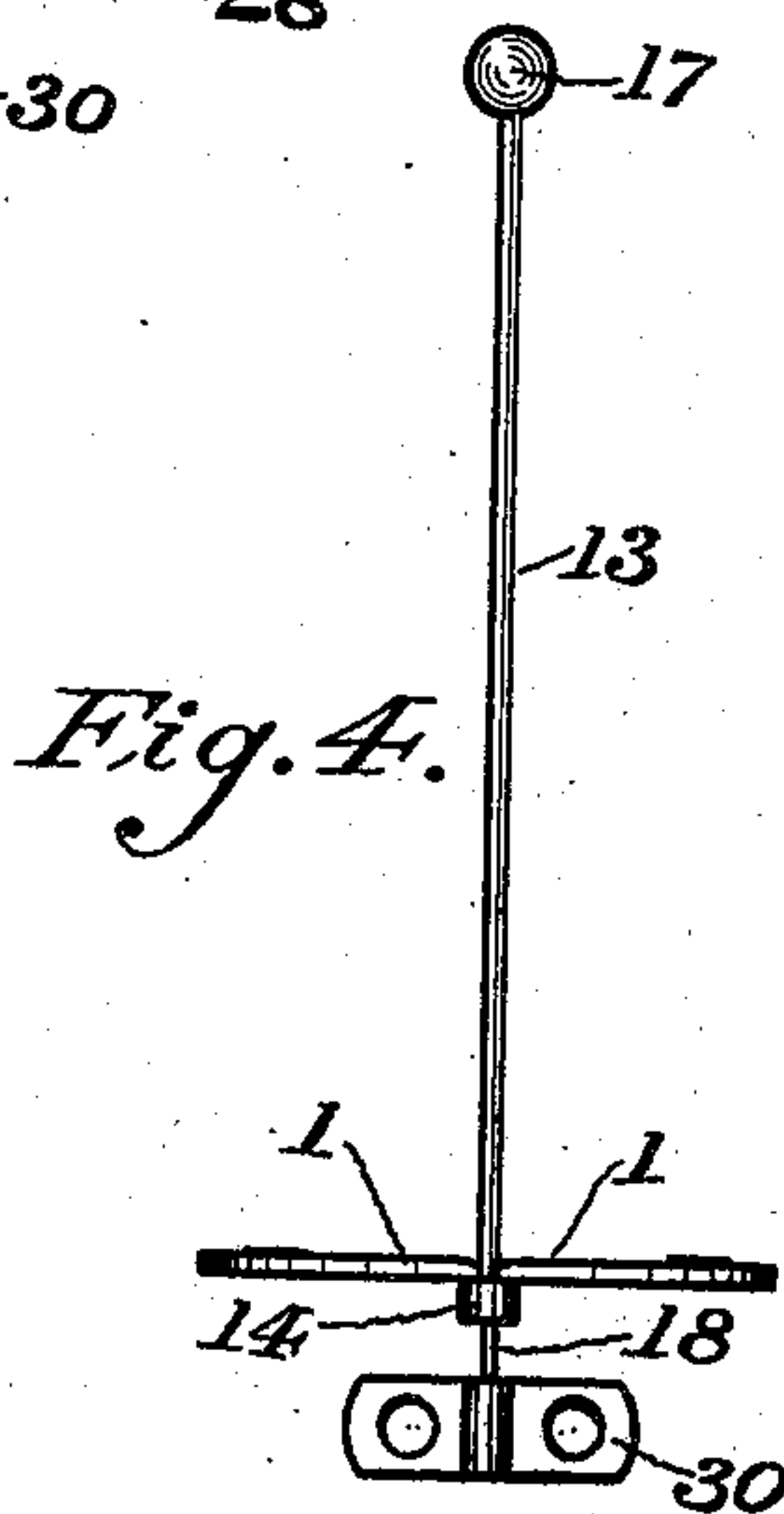


Fig. 4.

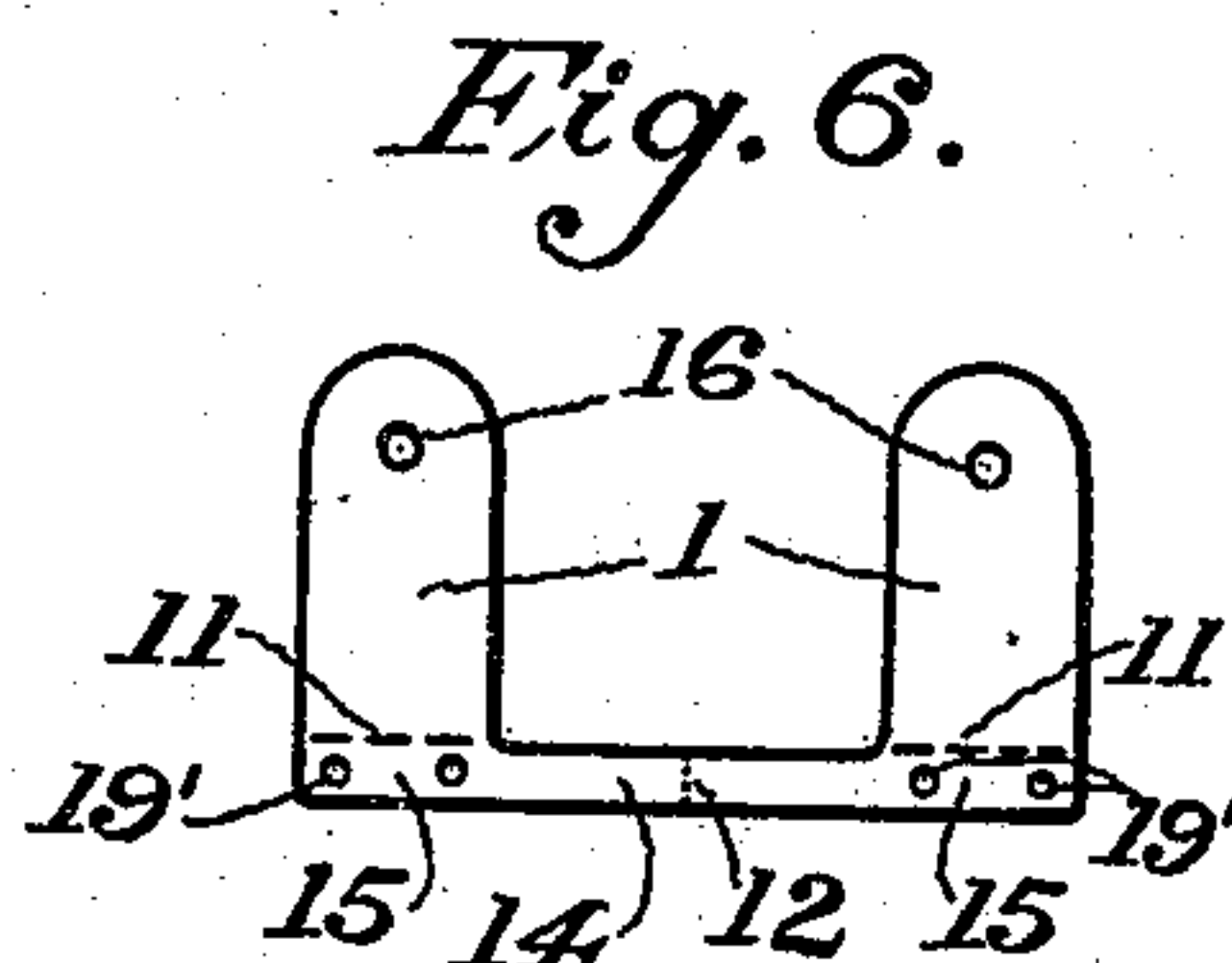


Fig. 6.

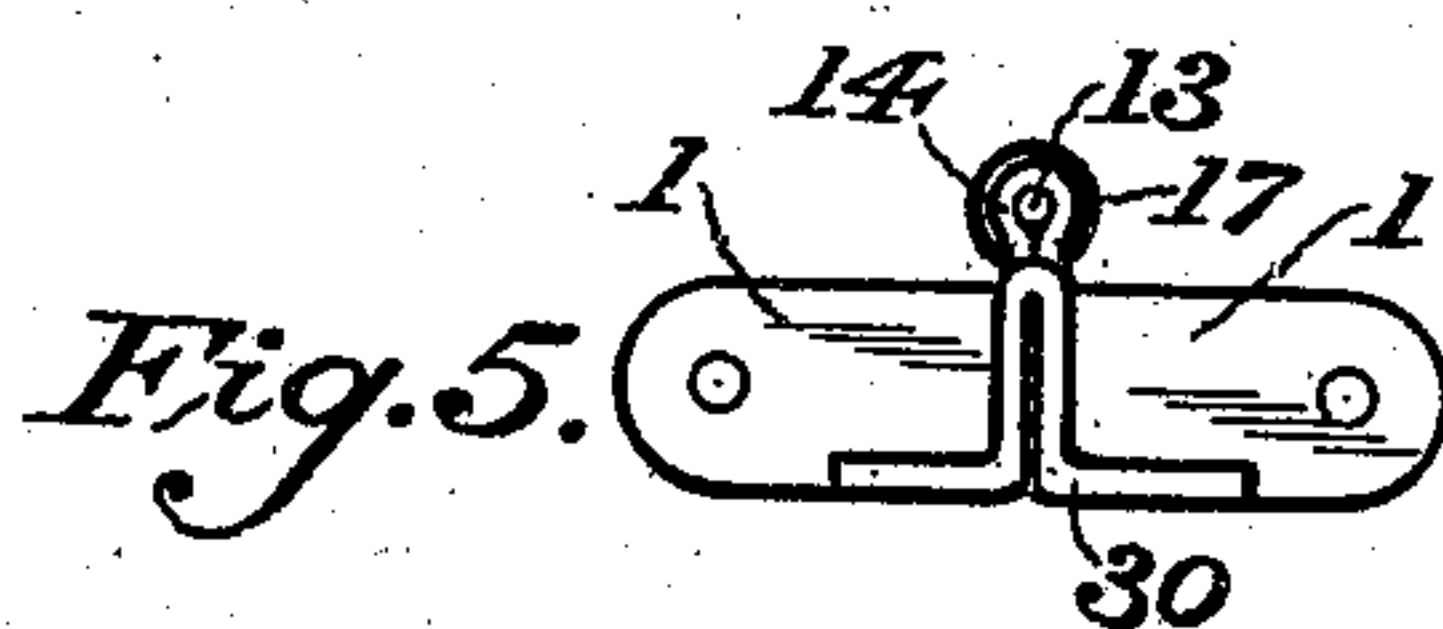


Fig. 5.

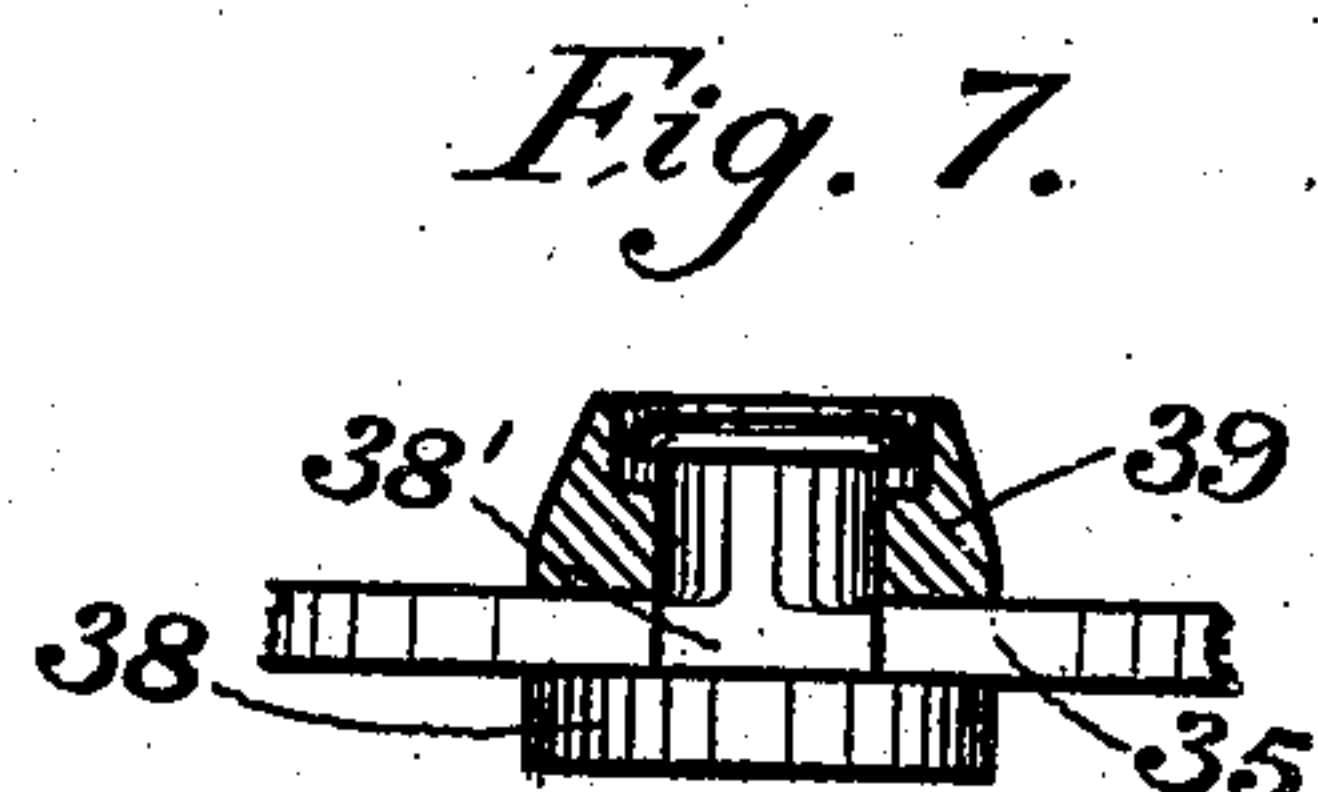


Fig. 7.

Witnesses:  
Heariel C. Prado  
David S. Kurlfish

Jules A. Birsfield,  
Inventor.  
by McMen & Miller  
Attorneys.



# UNITED STATES PATENT OFFICE.

JULES A. BIRSFIELD, OF CHICAGO, ILLINOIS, ASSIGNOR TO ALFRED STROMBERG,  
OF CHICAGO, ILLINOIS.

## TELEPHONE-RINGER.

No. 924,030.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed November 20, 1906. Serial No. 344,227.

*To all whom it may concern:*

Be it known that I, JULES A. BIRSFIELD, a citizen of the United States of America, and a resident of Chicago, county of Cook, and State of Illinois, have invented a new and useful Improvement in Telephone-Ringers, of which the following is a specification.

My invention pertains to details in the construction of polarized telephone ringers, and has as its object the production of a ringer composed of a minimum of parts and with a minimum of adjustments, thus giving a ringer of design least likely to require attention when in service. In the ringer illustrated and described in this application, I have shown also facilities for tuning the ringer to selection by frequency of the actuating current, the simplicity of the tuning device and the interchangeable nature of the tuned part being also of my invention.

In the drawings accompanying this application, Figure 1 shows front view of the assembled ringer, with one gong in section to show gong mounting and adjustment; Fig. 2 shows side view of the assembled ringer; Fig. 3 shows the permanent magnet; Fig. 4 shows the tuned element of the ringer, consisting of the armature, reed, bracket, rod and tapper; Fig. 5 shows end view of the tuned element of Fig. 4; Fig. 6 shows the form of the blank from which the armature of the ringer is formed; Fig. 7 shows detail of the gong lock device.

The ringer as a whole is assembled upon the permanent magnet as a base for mounting the associated parts. The permanent magnet is specially formed for the purpose described and is shown in Fig. 3; 2 is the permanent magnet as a whole, the upper end 21 being formed over at right angles to act as heel piece for the cores of the spools; this heel-piece end 21 of the permanent magnet 2 is drilled at 22 22 for screws for attaching the gong yoke to be described later and is drilled and countersunk at 23 23 for screws for attaching the spools of the ringer. The body of the permanent magnet 2 is slotted at 24 to afford greater ease in forming the ends of the part, and to give that added advantage in magnetizing and in the resulting strength of magnetization which follows upon the use of two permanently magnetic bars installed in parallel in lieu of a single bar of the same total section. The lower end 25 of the permanent magnet 2 is formed into a plane

parallel to the body of the magnet but nearer to the line of the cores of the spools, as shown in Fig. 2. The end 25 is drilled with two holes 26 26 for screws for attaching the armature parts, as described later herein.

The spools 27 27 are mounted upon the permanent magnet 2 by flathead screws passing through the holes 23 23 into the ends of the cores of the spools 27 27, the free ends of the spools being held in position by a non-magnetic yoke 28 which fits closely over the free ends of the cores and rests in contact with the permanent magnet 2; this yoke 28 is held in position by the friction with the free ends of the cores, and serves to hold the free ends of the cores in alinement. The permanent magnet with the spools mounted thereon now is ready for mounting the tuned element of the ringer, consisting of those parts shown in Figs. 4 and 5, of which Fig. 6 is an additional detail.

Fig. 4 shows armature and associated parts. 1 is the armature proper, composed of two halves formed into a plane. The sheet metal blank is formed into the finished armature part by bending at right angles on the dotted lines 11 11 and then by bending upon the dotted line 12, the bend at 12 being of such radius as to include the tapper rod 13. Thus those parts of the blank indicated at 15 15 in Fig. 6 are, by the bending upon the line 12, brought together and form a double rib upon one side of the armature; this is best seen by reference to Fig. 2. The part 14 of the blank of Fig. 6 becomes a projection upon the armature and clamps the end of the tapper rod 13, as shown clearly in Figs. 2 and 5. The holes 16 16 shown in Fig. 6 are for the insertion of non magnetic rivets to prevent the armature from sticking to the cores if accidental contact be made or if such an adjustment is placed upon the armature as would permit such a contact normally. The tapper rod 13 thus mounted carries at its upper end the tapper 17. Between the ribs upon the armature are placed the ends of the hinge reeds 18 18 and the two halves of the armature are then riveted together, at the same time riveting the reeds in place, by means of the rivets 19 19 through the rivet holes 19' 19' 19' 19' of the blank of Fig. 6. The free ends of the hinge reeds are riveted into the anchor 30, shown in three views in Figs. 2, 4 and 5, by rivets 31 of which but one is visible in the several views,



viz., in Fig. 2. The tuned element thus completed is attached to the permanent magnet by the screws 32 32 passing through the anchor 30 into the screw holes 26 26 of the permanent magnet 2.

Referring to Fig. 1—10 represents in section that structural part of a telephone set upon which the complete ringer is mounted, as the side or door of a bell box of wood or metal; 21 is the heel-piece end of the permanent magnet; 3 is the gong yoke; 4 4 are screws passing through the gong yoke 3 and mounting septum 10 and engaging the threads of the holes 22 22 in the permanent magnet 2, thus completing at once the assembly of the gong yoke 3 to the permanent magnet 2 and the mounting of the two parts mentioned upon the septum 10 and thus upon the framework of the telephone set of which the ringer is to form a part. The gong yoke is a combined gong yoke and tapper guard, one piece of sheet metal being cut to shape with three projecting arms, two of which are formed up as shown at 33 to support the two gongs, while the third is formed over as shown at 34, rising between the gongs and inclosing between them a space for the tapper 17, the tapper 17 being thus protected from accident or intentional interference; the central portion of the gong yoke 3 rests against the septum 10 and is perforated for the assembling screws 4 and 4. The gong yoke is perforated at its central part to pass over the tapper 17.

The means for mounting the gong 36 upon the arm 33 consists of the thumbscrew 37, the shouldered nut 38 and the bushing 39. The shouldered nut 38, threaded internally to engage the thumbscrew 37, is passed through the slot 35 in the arm 33; the bushing 39 is placed around the shaft of the nut 38, fitting loosely, and the end of the shaft of the shouldered nut 38 then is upset to a slight degree to prevent the bushing 39 from being withdrawn; thus the two parts become loosely attached to the arm 33, and when the gong 36 is placed in position and the thumb-screw 37 passed through the gong and screwed home in the nut 38 the nut 38 will be drawn against the under surface of the arm 33, the upper surface of the arm 33 will be drawn against the bushing 39 and the bushing 39 in turn against the gong, thus making rigid all parts in that adjustment determined by the position of the nut and bushing in the slot of the arm 33. The advantage of this method of connection between the gong and the supporting arm lies in the adjustment feature combined with the feature of having two of the loose parts attached to the arm in such manner that they may not be lost off, and in such manner that they are held always in readiness to receive the gong. That the nut 38 may not turn when the screw 37 is being turned, that part

38' of the nut 38 which lies within the slot 55 is rectangular, and engages the sides of the slot upon any tendency to turn.

Having thus described my invention in detail what I claim as new and desire to secure by United States Letters Patent is:

1. In a telephone ringer, a gong yoke having a slotted arm, an internally threaded shouldered nut passing through the slot of the arm, and a loose bushing upon said shouldered nut, the smaller end of said bushing loosely upon the shaft of the shouldered nut, substantially as described.

2. In a telephone ringer, a gong yoke having a slotted arm, an internally threaded shouldered nut passing through the slot of the arm, and a loose bushing upon said shouldered nut, the smaller end of said bushing passing nearly through said bushing and being enlarged to hold said bushing loosely upon said shouldered nut, substantially as described.

3. In a telephone ringer, a gong yoke having a slotted arm, an internally threaded shouldered nut passing through the slot of the arm, and a loose bushing upon said shouldered nut, the end of the bushing distant from the shoulder of the shouldered nut being countersunk, and said shouldered nut passing first through the slot of the arm and then through said bushing; the end of the shouldered nut passing through into the countersunk space of the bushing when nut, arm and bushing are in contact and being enlarged in the countersunk space to prevent the withdrawal of the loose bushing, substantially as described.

4. In a telephone ringer, a combined gong yoke and tapper guard consisting of three arms, two of said arms rising and supporting gongs and the third of said arms rising immediately of said two arms and between the supported gongs and forming a covering for the tapper between the gongs, said third arm or guard being an integral piece of metal with said two arms, substantially as described.

5. In a telephone ringer, two structural bars, a heel piece crossing one end of the bars and joining them, and a structural mounting part joining the remaining ends of the bars, the bars, heel piece and structural mounting part being formed from one piece of steel and permanently magnetized, substantially as described.

6. In a telephone ringer, an armature formed of a sheet of metal having a part thereof formed into a rib of the double thickness of the metal, and anchor formed of a sheet of metal having a part thereof formed into a rib of the double thickness of the metal, and a flexible member connecting together the rib of the armature and the rib of the anchor, substantially as described.

7. In a telephone ringer, an armature



formed of a sheet of metal having a part thereof formed into a rib of the double thickness of the metal, an anchor formed of a sheet of metal having a part thereof formed into a rib of the double thickness of the metal and an armature suspension member passing between the two thicknesses of metal in each of the ribs and riveted therein, substantially as described.

10 8. In a telephone ringer, an armature formed of a single sheet of metal and having a part thereof formed into a projecting closed loop adapted to clamp a taper rod, substantially as described.

15 9. In a telephone ringer, an armature

formed of sheet metal having a part thereof formed into a rib of the double thickness of the sheet metal and formed at the end of the rib into a closed loop, an armature suspension member clamped between the thick- 20 nesses of the rib, and a taper rod clamped in the closed loop, substantially as described.

Signed by me at Chicago, county of Cook, and State of Illinois, in the presence of two witnesses.

JULES A. BIRSFIELD.

Witnesses:

HARRIET L. SMITH,  
DAVID S. HULFISH.