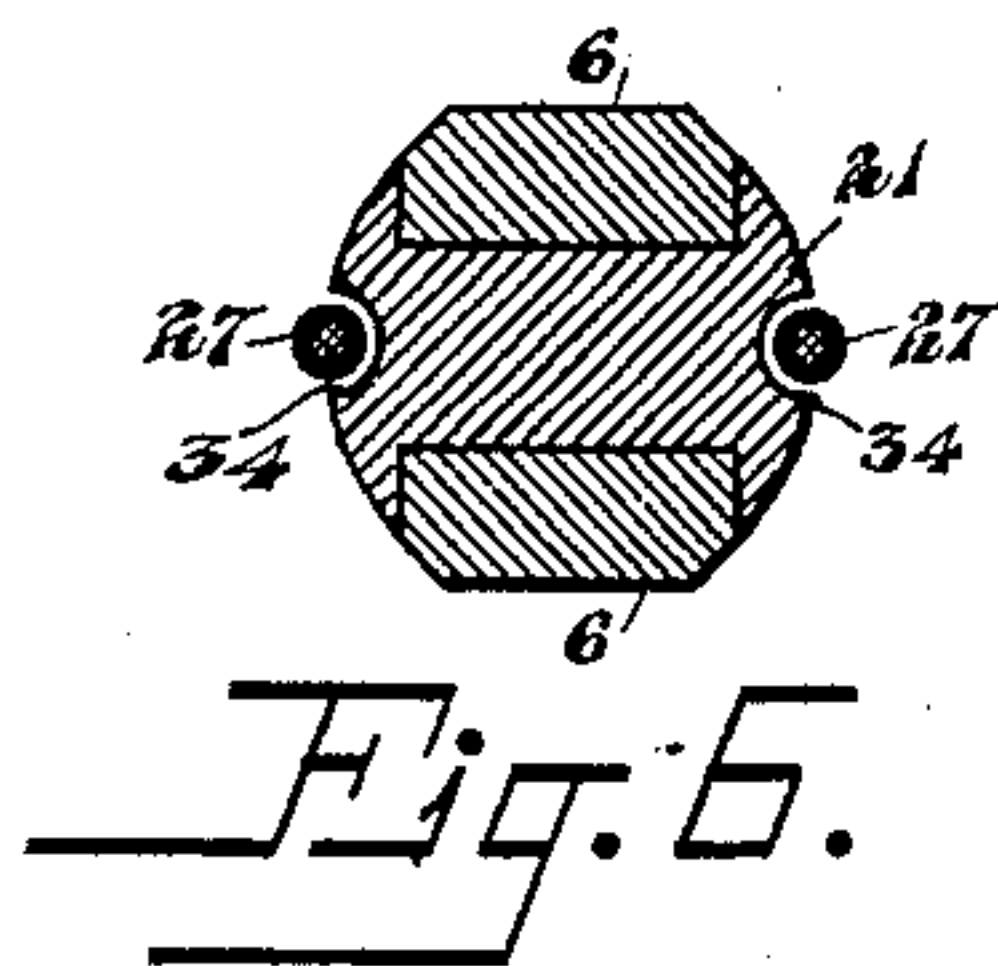
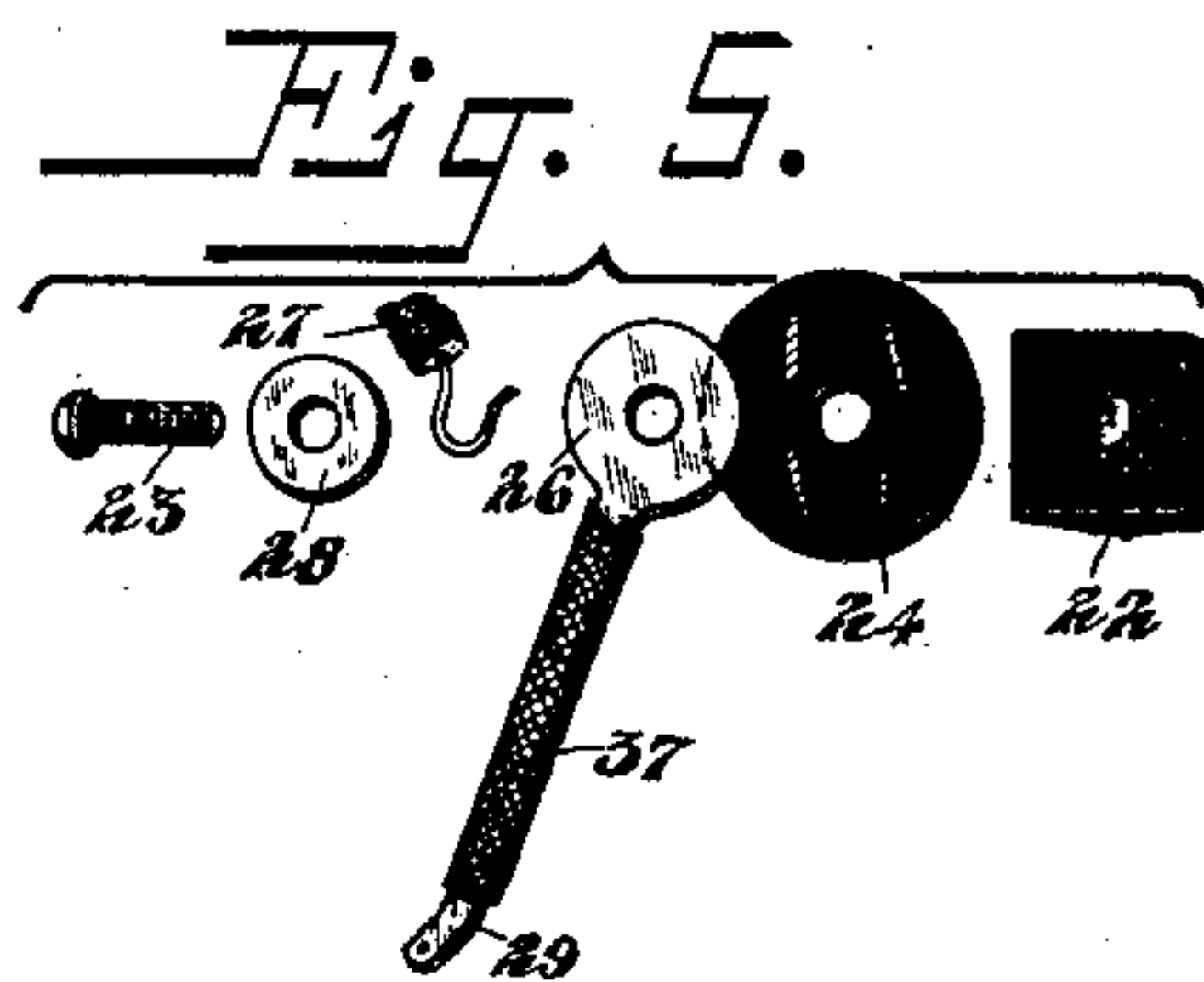
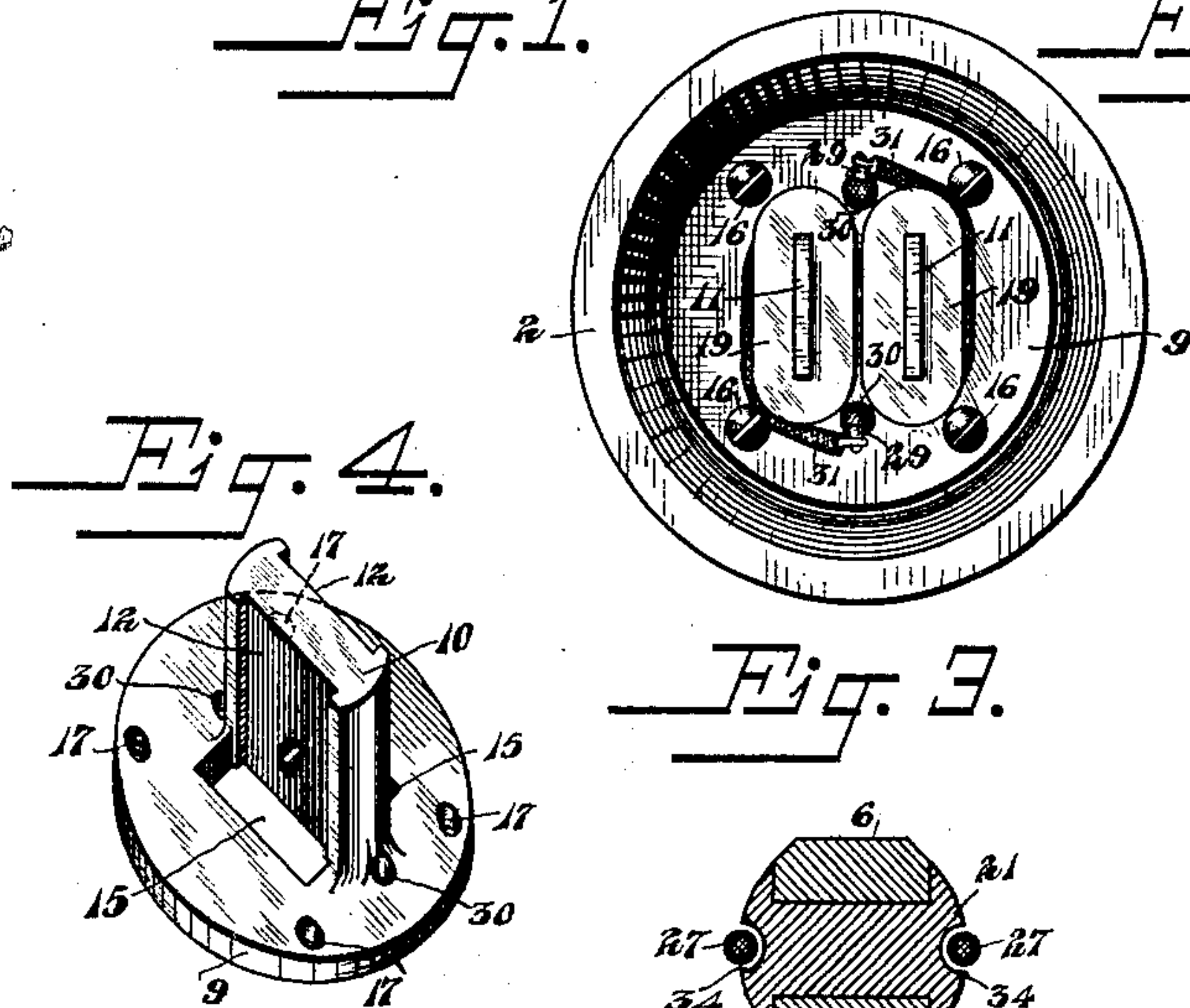
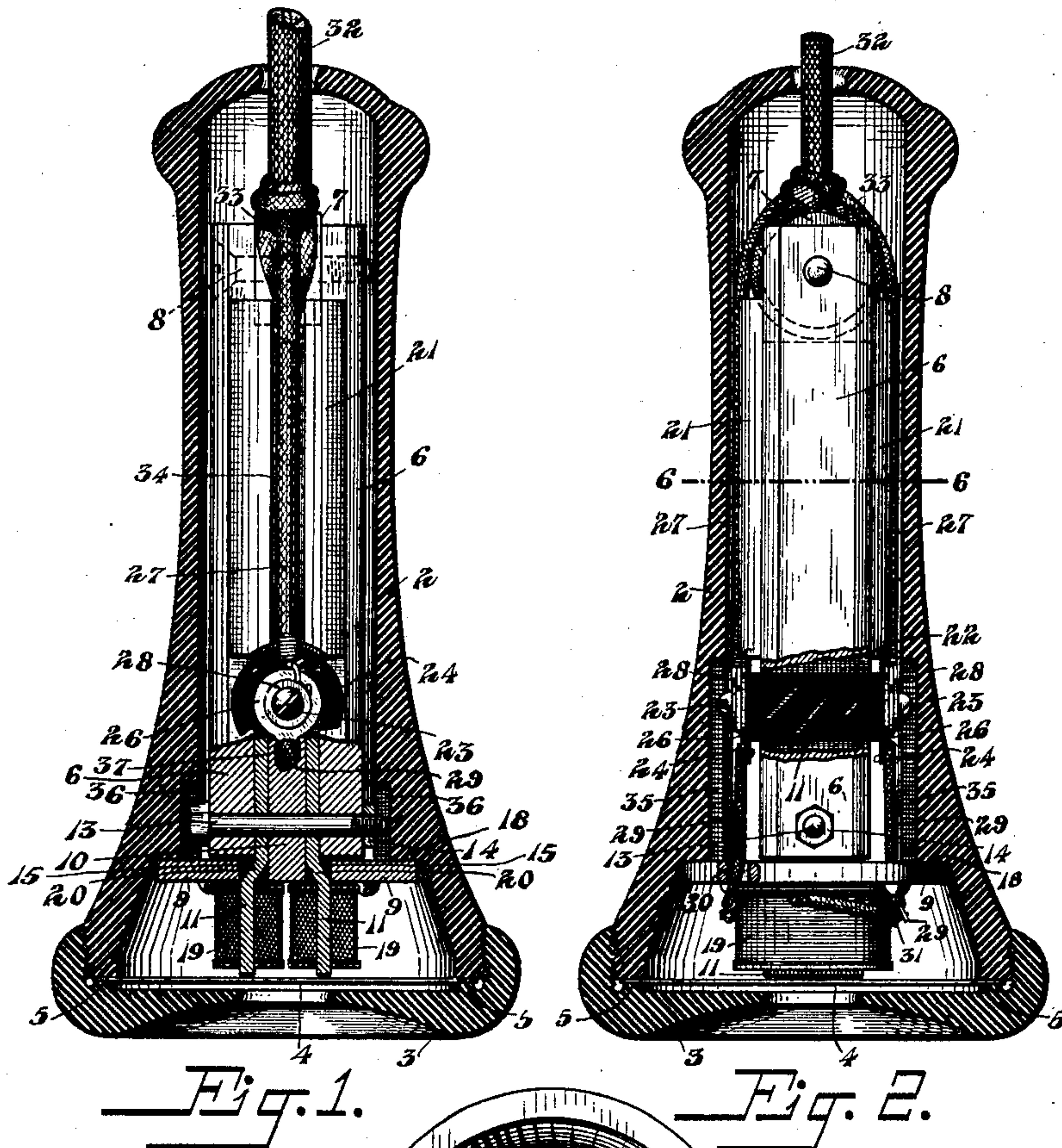


No. 736,076.

PATENTED AUG. 11, 1903.

W. W. DEAN.
TELEPHONE RECEIVER.
APPLICATION FILED FEB. 26, 1903.

NO MODEL.



Witnesses.
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UNITED STATES PATENT OFFICE.

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TELEPHONE-RECEIVER.

SPECIFICATION forming part of Letters Patent No. 736,076, dated August 11, 1903.

Application filed February 26, 1903. Serial No. 145,166. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. DEAN, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Telephone-Receivers, of which the following is a specification.

My invention relates to improvements in telephone-receivers, and more particularly of the type in which the magnet structure, which also carries the electrical connections of the instrument, may be bodily withdrawn from the front end of the casing or shell without disturbing such connections or its other parts.

My invention has for one of its objects the provision in a receiver of the type described of strong and durable electrical connections for the instrument, so that harm cannot come to it with any amount of rough handling either under conditions of actual use or during the process of manufacture.

Another object is to provide a simple and substantial magnet structure which is inexpensive and convenient to manufacture and which permits its ready placing and securely fastening within the magnet shell or casing, as well as its ready removal therefrom.

Still further objects and advantages will appear from the detailed description and appended claims.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view of the invention. Fig. 2 is a longitudinal sectional view at right angles to the plane of the section of Fig. 1. Fig. 3 is a front end view of the receiver with the earpiece and diaphragm removed. Fig. 4 is a perspective view of the magnet-supporting member. Fig. 5 is a similar view of one of the rigid connectors, and Fig. 6 is a cross-section of the magnet structure on the line 6 6 of Fig. 2.

Like reference characters refer to like parts in the several figures.

The insulating shell or casing 2 is provided with a forward flaring end, upon which threads the earpiece or cap 3, a metallic disk-like diaphragm 4 being clamped in position by the cap 3 between the front end of the shell 2 and a ridge 5 upon the inside of the said earpiece or cap 3. The two limbs of the permanent

magnet are made from bars 6 of steel or other suitable material and are joined together at the rear ends by a spacing block or yoke 7, of iron or steel, and a screw 8, which passes through one of the limbs 6 and the block 7 and threads into the opposite limb 6. At the forward end of the permanent magnet a transverse supporting plate or member 9 is provided, which is preferably a composition casting and which has a rearwardly-extending integral projection 10 passing between the forward ends of said magnet-limbs 6. The pole-pieces 11, consisting of narrow soft-iron strips bent, as at 20, intermediate their ends, are placed with their rear ends in suitable grooves or channels 12 upon either side of said rearwardly-extending member 10 of the supporting-plate and at the inner faces of the forward ends of the said limbs 6. A bolt 13 passes through the said forward ends of said limbs and through said pole-pieces 11 and the said rearward extension 10 of the supporting-plate and serves when the nut 14 thereof is tightened to clamp the several parts firmly together. The said pole-pieces 11 extend through suitable apertures 15, formed in the supporting member or plate 9. The magnet structure is secured within the shell or casing 2 of the receiver by means of suitable screws 16, passing through apertures 17, formed near the periphery of the supporting-plate 9, and thence threading into the material of the shell 2, the inner or rear face of said plate 9 resting upon the circular shoulder or ledge 18 upon the interior of the shell. Coils 19 are mounted upon each of the projecting pole-pieces 11, which extend into proximity with the diaphragm and are laterally separated by the curve, bend, or offset 20 in the said pole-pieces sufficient to accommodate said coils.

A lead or other weight 21 is mounted between the limbs 6 of the permanent magnet and extends from the block or yoke 7 toward the forward end of the permanent magnet. Between the two bars 6 of the permanent magnet and between the forward end of said weight 21 and the rear ends of the pole-pieces 11 and of the projection 10 of the supporting-plate is placed an insulating-block 22, into the opposite ends of which suitable binding-screws 23 are threaded. An insulating-

washer 24 is placed upon either end of the said block 22, and a washer 26 is mounted upon the outer face of said insulating-washer. The stripped or bared end of the covered receiver-cord 27 is then placed around the screw 23, and a second metallic washer 28 is then placed outside of the said bared end of said conductor 27. The washers 26 are each provided with an integral rigid connector or strip 29, which extends forwardly through a suitable aperture 30 in the supporting-plate 9 and into the coil-chamber, where it is electrically connected with the conductor 31 of the coils 19. The block 22 affords a secure anchorage for the screws 23, which may be of comparatively large size and which when tightened clamp the said washers and receiver-conductors firmly together and in position, the receiver-cords and the connector-strips being also thus electrically connected. This arrangement of washers 26, with integral strips 29, provides a rigid and strong connection between the binding-posts 23 and the chamber in which the coils are located, thus avoiding all injury or accident to the receiver by the breakage of these connectors. The receiver-cord 32 is provided with a pair of conductors 27 and with a supporting-cord 33, which is tied about the yoke or block 7 to support the receiver and take all strain off the electrical connections. The conductors 27 lie in suitable grooves 34, formed in the opposite sides of the weight 21. The insulating-washer 24 prevents the bared ends of the conductors 27 and the washer 26 from touching the permanent magnet or other metallic parts. Suitable grooves 35 are formed in the receiver-shell to provide room for the heads of screws 23, while other grooves 36 are formed therein to provide room for the head and nut of bolt 13. The strips or connectors 29 are provided with woven insulating-coverings 37. The grooves or channels 12 in the rearward extension 10 of supporting-plate 9 serve to prevent displacement of the pole-pieces both in manufacturing and in use.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a telephone-receiver, the combination with a suitable insulating casing or shell having a flaring forward end, of a diaphragm at the said forward end, a cap or earpiece secured to said forward end and over the diaphragm, a magnet structure contained within the said casing or shell and consisting of a permanent horseshoe-magnet carrying pole-pieces and coils thereon at its forward end and in proximity to the said diaphragm, a support for said magnet structure between the body of the permanent magnet and the said coils and projecting laterally therefrom, means to secure said support by its lateral projecting portions to the inside of the shell or casing to secure the magnet structure within the shell or casing, electrical connections carried by the permanent magnet in the rear of the support to which

the electric conductors of the receiver-cord are secured, and rigid connectors extending forwardly from said connections in the rear through apertures in the said lateral extensions of the said support and into the coil-chamber where they are connected with the said coils, said connectors being insulated from the said permanent magnet and from the said support, substantially as described.

2. In a telephone-receiver, the combination with a suitable insulating casing or shell having a flaring forward end, of a diaphragm at the said forward end, a cap or earpiece secured to said forward end and over the diaphragm, a magnet structure contained within the said casing or shell and consisting of a permanent horseshoe-magnet carrying pole-pieces and coils thereon at its forward end and in proximity to the said diaphragm, a support for said magnet structure between the body of the permanent magnet and the said coils and projecting laterally therefrom, means to secure said support to the shell by the said laterally-projecting portions to firmly secure the magnet structure within the casing or shell, binding-screws carried by and insulated from the permanent magnet in the rear of the said support to which the electric conductors of the receiver-cords are secured, and metallic washer-like parts mechanically secured in position by said screws and electrically connected with the said conductors, said parts having integral rigid connector-strips extending forwardly therefrom through suitable apertures in the said lateral projections of said support and into the spool-chamber where they are secured to the conductors of said coils, said forwardly-extending strips being insulated from the said support, substantially as described.

3. In a telephone-receiver, the combination with a suitable insulating casing or shell having a flaring forward end, of a diaphragm at said forward end, a cap or earpiece carried by said forward end and over the diaphragm, a magnet structure contained within the said casing or shell and consisting of a permanent horseshoe-magnet carrying pole-pieces and coils thereon at its forward end, said coils being in the said flaring portion of the shell and in proximity to the diaphragm, a support for said magnet structure between the body of the permanent magnet and the said coils and extending laterally to provide means for securing said magnet structure to the shell, an insulating-block carried between the limbs of the permanent magnet in the rear of said support a binding-screw in each end of said block to which the electric conductors of the receiver-cord are respectively secured, a metallic washer secured to said insulating-block by each said screw and in electrical contact with the bared end of the receiver-cord conductor, said washers having integral strips extending forwardly therefrom through suitable apertures in said support and to the said coils to the conductors of which they are electrically

connected, said forwardly-extending strips being provided with an insulating-covering, substantially as described and for the purpose set forth.

5 4. In a telephone-receiver, the combination with a suitable shell or casing having an interior shoulder near its forward end, of a permanent horseshoe-magnet within the shell or casing, pole-pieces mounted on the inner faces
10 of the forward ends of the magnet, a transverse supporting-plate at the forward end of the magnet having a single rearwardly-extending projection provided with a groove or channel upon its opposite side in which the
15 inner faces of said pole-pieces fit, said extension forming a support for the said pole-pieces; a bolt passing through the said forward ends of the magnet, the said pole-pieces and the said rearwardly-extending projection to clamp and
20 secure the said several parts firmly together; the outer transverse portion of said plate resting upon said shoulder and secured thereto to hold the magnet in place within the shell or casing, magnet-coils carried upon the forward
25 ends of said pole-pieces in front of said supporting-plate and in proximity to the diaphragm, and electrical connections mounted in the rear of said supporting-plate to connect with the conductors of the receiver-cord and
30 extending forwardly through suitable apertures in said supporting-plate into the coil-chamber where they connect with the said magnet-coils, substantially as described.

5 5. In a telephone-receiver, the combination with an insulating shell or casing having an interior shoulder in its forward end, of a permanent horseshoe-magnet within the shell or casing, pole-pieces mounted on the inner
40 faces of the forward ends of the magnet, a transverse supporting-plate at the forward end of the magnet, having a rearwardly-extending projection fitting between the inner faces of said pole-pieces and affording a support therefor; a bolt passing through the said
45 forward ends of the magnet, the said pole-pieces and said rearwardly-extending projection to clamp said parts together; the outer portion of said transverse plate resting upon said shoulder and secured thereto to hold the
50 magnet in place within the shell or casing, magnet-coils mounted upon the forward ends of the pole-pieces in front of said supporting-plate and in proximity to the diaphragm, an insulating-block mounted between the limbs
55 of said permanent magnet and in the rear of said pole-pieces and rearward extension of the supporting-plate, a binding-screw inserted in each end of said block, a receiver-cord passing through the rear end of the shell or
60 casing and having its electric conductors connected one with each said screw, connecting-washers for said screws adapted to be secured thereby in electrical contact with said

conductors, said washers having integral connector-strips extending forwardly through
65 suitable apertures in the supporting-plate and into the coil-chamber where they are connected with the said magnet-coils, substantially as described.

6. In a telephone-receiver, the combination
70 with an insulating shell or casing having an interior shoulder within its forward end, of a permanent horseshoe-magnet within the shell or casing, pole-pieces mounted on the inner faces of the forward ends of the magnet, a
75 transverse supporting-plate at the forward end of the magnet having a single rearwardly-extending projection fitting between the inner faces of said pole-pieces and forming a support for the same; a bolt passing through the
80 said forward ends of the magnet, the said pole-pieces and said rearwardly-extending projection to clamp said parts together; the outer transverse portion of said plate resting upon said shoulder, screws passing through
85 said transverse portion and into said shoulder to hold the magnet in place within the shell or casing, magnet-coils carried upon the forward ends of the pole-pieces in front of said plate and in proximity to the diaphragm,
90 an insulating-block mounted between the limbs of said permanent magnet and in the rear of said pole-pieces and rearward extension of the supporting-plate, a weight carried between said permanent-magnet limbs in the
95 rear of said insulating-block, said insulating-block projecting at each end to the edge of the permanent magnet, a binding-screw inserted in each end of said block, a receiver-cord passing freely through the rear end of
100 the insulating shell or casing and mechanically secured to the rear end of the permanent magnet, the electric conductors of said cord passing forward upon each side of the permanent magnet and in grooves in said
105 weight to said binding-screws, connecting-washers for said screws adapted to be secured in place thereby and in electrical contact with said receiver-cord conductors; said washers having integral connector-strips extending forwardly through suitable apertures
110 in the supporting-plate, one upon each side of the magnet-coils, and into the coil-chamber; the said connectors having insulating-covering and being electrically joined with
115 the windings of said magnet-coils, substantially as described.

Signed by me at Chicago, county of Cook, State of Illinois, this 23d day of February, 1903.

WILLIAM W. DEAN.

Witnesses:

ROBERT LEWIS AMES,
G. BEDER.