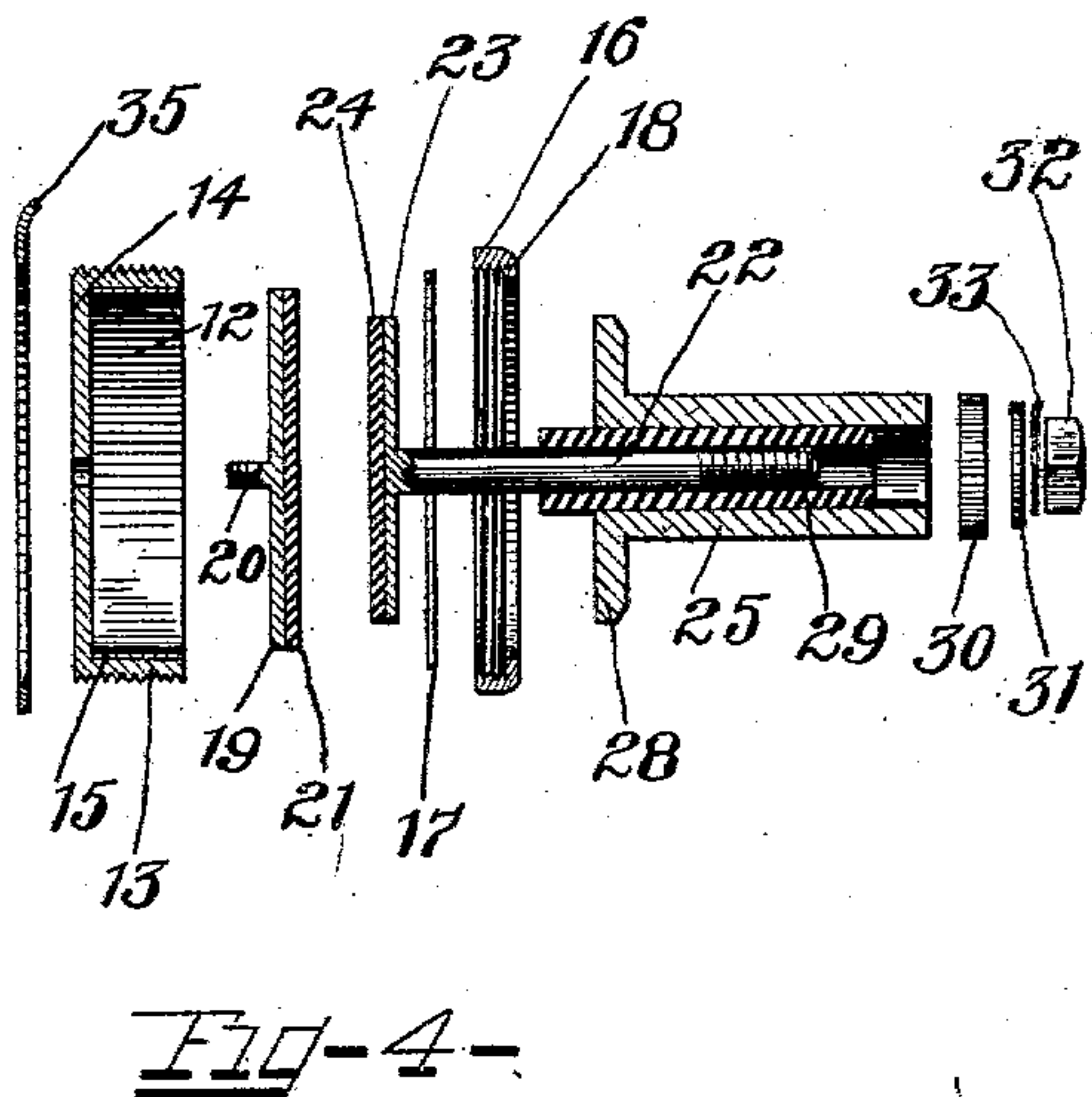
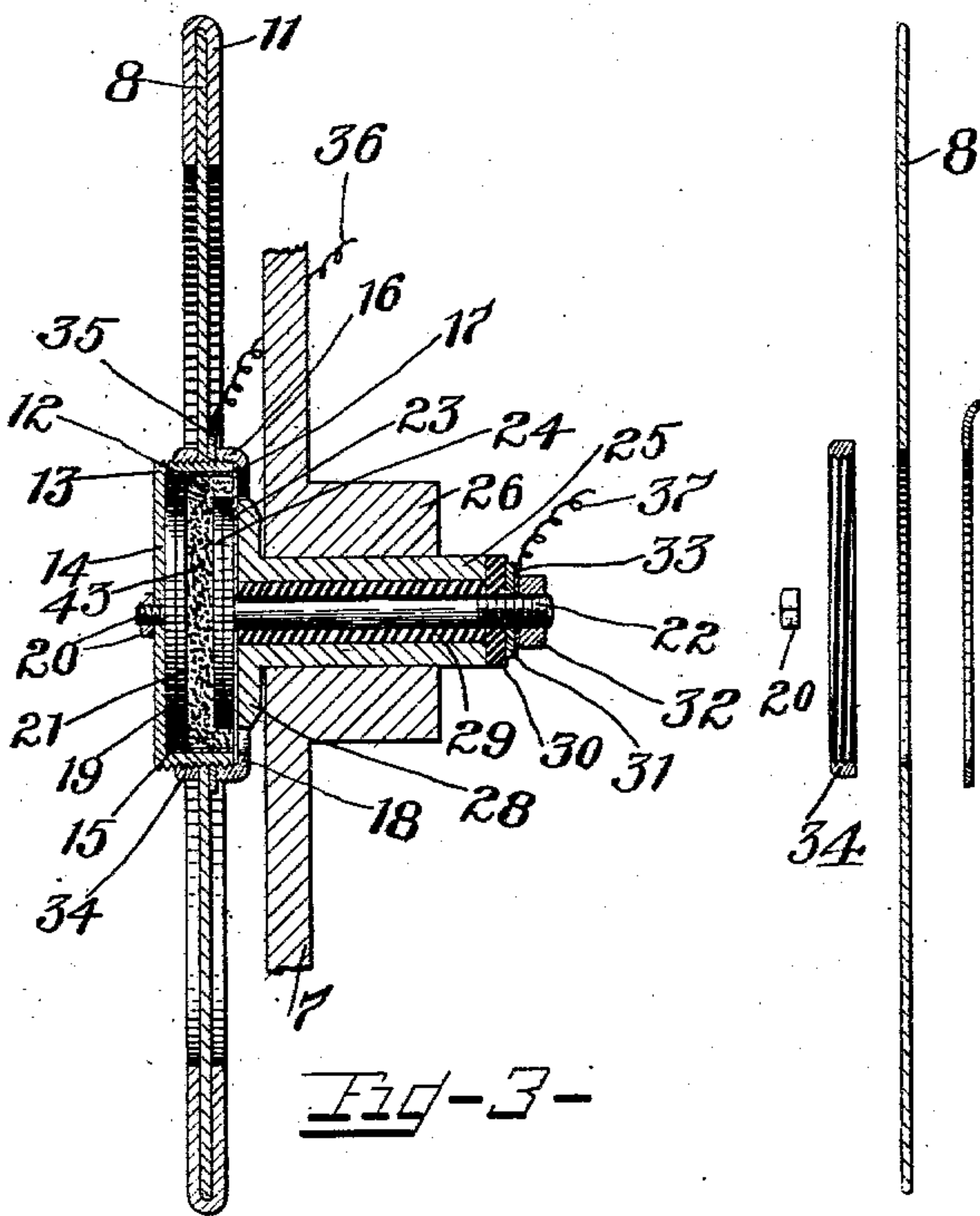
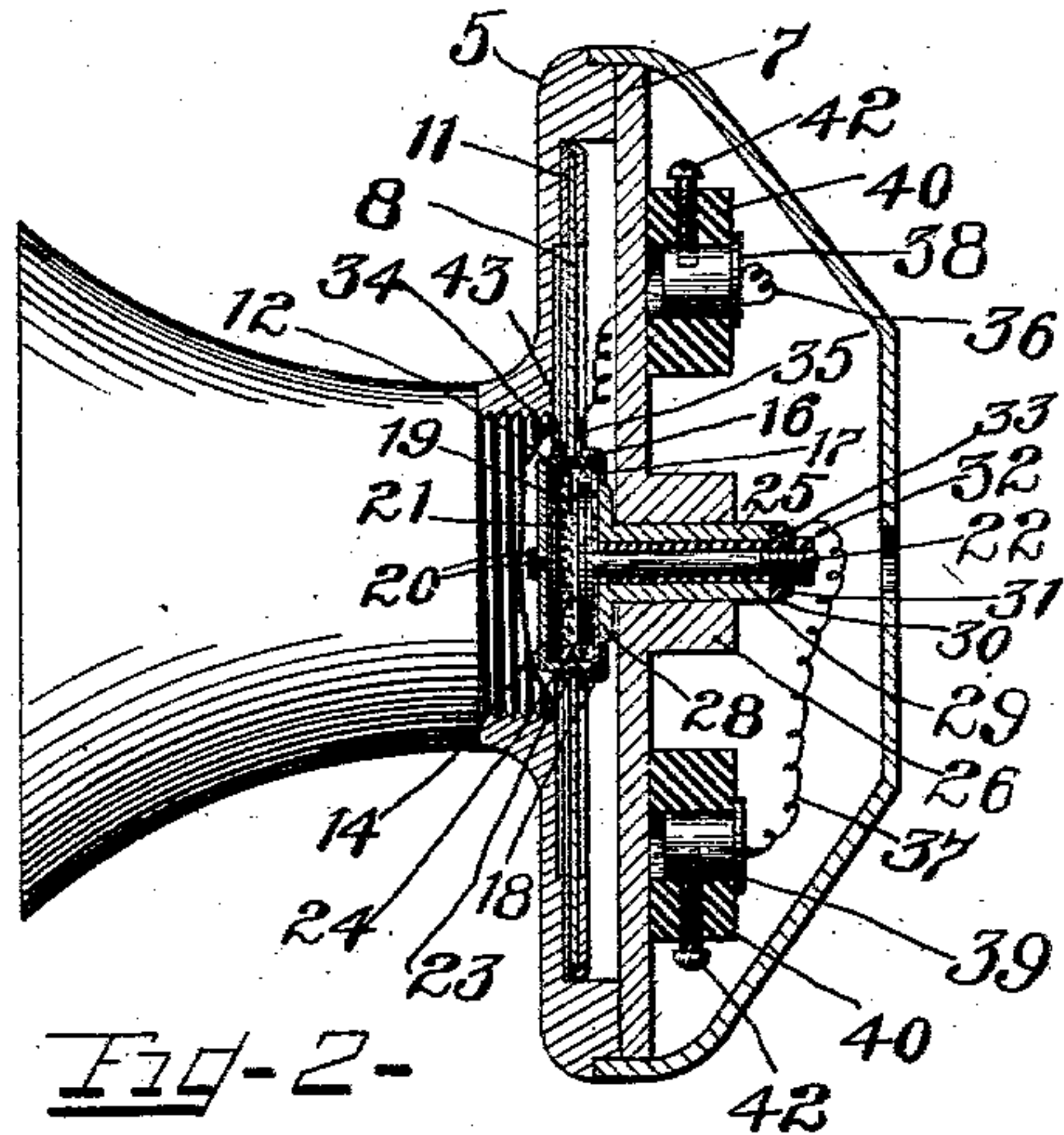
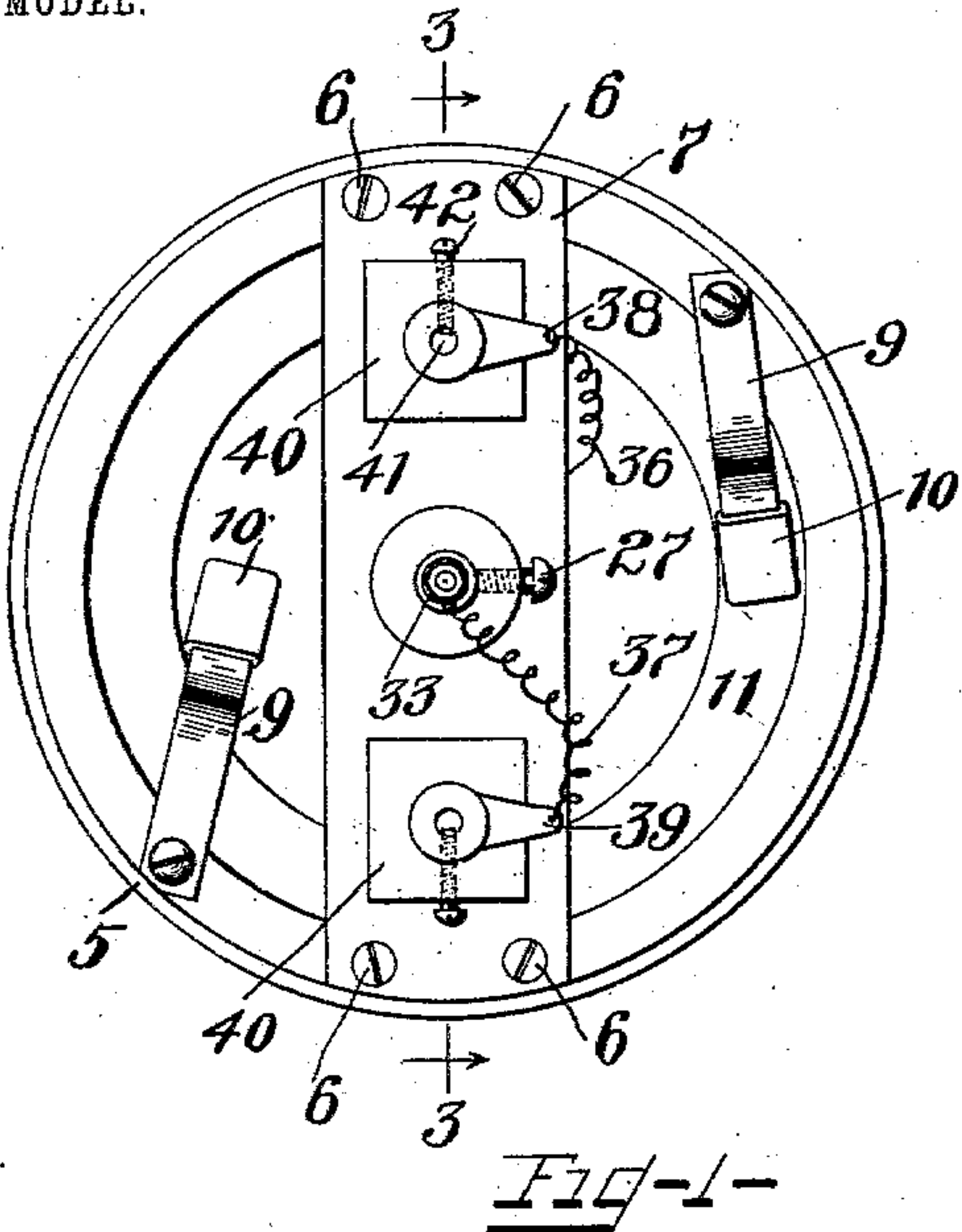


No. 743,951.

PATENTED NOV. 10, 1903.

A. STROMBERG.
TELEPHONE TRANSMITTER.
APPLICATION FILED NOV. 17, 1902.

NO MODEL.



Witnesses,
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TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 743,951, dated November 10, 1903.

Application filed November 17, 1902. Serial No. 131,700. (No model.)

To all whom it may concern:

Be it known that I, ALFRED STROMBERG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Telephone-Transmitters, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to telephone-transmitters, and more particularly to telephone-transmitters of the class known as "granular-carbon" transmitters.

Generally speaking, my invention provides a transmitter of cheap construction, simplicity of adjustment, and improved mechanical design. On account of the rigid mounting of one of the electrodes on the solid back casing of the transmitter and the mounting of the other electrode directly on the diaphragm I am enabled to produce a transmitter of superior transmitting qualities.

Another improvement in my present invention consists in the provision of means whereby the casing or frame of the transmitter provides no part of the electrical circuit therein.

Many transmitters heretofore proposed have provided an electrode-chamber mounted upon and carried by the diaphragm; but as heretofore constructed such chambers have braced the diaphragm or otherwise prevented its free vibration due to the impact of sound-waves.

It is one of the features of my present invention that while I mount the electrode-chamber upon the diaphragm to vibrate therewith still the means of attachment is such as not to interfere with the perfectly free and unaffected vibration of the diaphragm.

My invention will be well understood by reference to the accompanying drawings, in which—

Figure 1 is a back view of my improved transmitter. Fig. 2 is a side elevation of the same, parts being broken away and shown in section. Fig. 3 is an enlarged central longitudinal sectional view taken on line 3 3 of Fig. 1, and Fig. 4 is a view in cross-section

showing the parts of the transmitter before assembly.

In accordance with my invention I provide a comparatively heavy casing 5, to which is secured, by screws 6 6, the solid back frame-plate 7. The diaphragm 8 is held firmly against the casing 5 by means of the springs 9 9, which may be provided with rubber or felt soles 10 10, as shown, the diaphragm being cushioned by a rubber ring 11, as is familiar to those skilled in the art. Within a suitable opening in the diaphragm 8 I mount an electrode-chamber 12, which consists, essentially, of a cylindrical screw-threaded ring 13, having a wall 14, forming an end of the chamber. This ring is desirably lined with a layer of paper 15 for insulating purposes. A cap-nut 16, forming a flange on the end of the electrode-chamber, is provided with internal threads and screws over the open end of this cylindrical ring, a thin layer of mica 17 or other flexible insulating material being clamped between the end of the ring 13 and the inturned rim 18 of the cap-nut, as shown. An electrode-plate 19 is secured by means of the bolt and nut 20 to the front end of the chamber 12, the electrode-plate carrying on its inner surface a disk of carbon 21. A hole is provided in the center of the mica disk 17 through which the bolt 22 may pass to the interior of the chamber, where it supports the fixed electrode-plate 23, carrying its carbon electrode 24. A sleeve 25 passes through a boss 26 on the back of the plate 7 and may be secured in adjustment by means of the set-screw 27. This sleeve is provided at its front end with a flange 28, adapted for engagement with the mica disk 17. A sleeve 29, of hard rubber or other insulating material, effectively insulates the bolt 22 and the fixed electrode from the back plate of the transmitter, a washer of insulating material being provided at 30. The bolt 22 is screw-threaded at its rear end and there provided with a washer 31 and nut 32, whereby the connecting-washer 33 may be clamped in place. By tightening the nut 32 the fixed electrode is drawn back to clamp the mica disk snugly between the electrode-plate 23 and the flange 28. In order that the electrode-chamber may be rigidly connected

with the diaphragm in order to vibrate therewith, I provide a clamping-nut 34, adapted to be screwed up against the diaphragm, as shown. Thus the diaphragm is clamped between the flange formed by the cap-nut 16 and the adjustable clamping-nut 34, a thin ring of metal 35 being interposed, to which I find it desirable to make electrical connection with the movable electrode 21. It will be seen that I thus provide a cheap and mechanically efficient means for rigidly securing the electrode-chamber to the diaphragm in order that the two may vibrate together, and at the same time the chamber does not in any way brace or buckle the diaphragm, and thereby restrict or influence its vibration in accordance with the sound-waves directed thereat.

In accordance with my invention I provide conducting-wires 36 and 37, leading, respectively, from the ring 35 to the terminal 38 and from the washer 33 to the terminal 39. These terminals 38 and 39 are both insulated from the transmitter-frame by the blocks of insulating material 40 40. A socket and set-screw 41 and 42 are provided in each of the said terminals for the purpose of attaching wires or conductors which lead to the other parts of the telephone instruments. The electrode-chamber 12 is filled or partially filled with comminuted material, such as the granular carbon 43. The electrodes are desirably of a less diameter than the internal diameter of the chamber, whereby the vibration of the diaphragm causes a stirring action among the carbon granules, thereby preventing packing, which is a very common fault among transmitters of the prior art. The thin disk of mica or other flexible material serves to permit a movement of the diaphragm and electrode-chamber relatively to the fixed electrode 24. At the same time this disk of mica insulates the fixed electrode from the diaphragm and its associated parts, and, furthermore, it prevents the entrance of moisture into the electrode-chamber and prevents the escape of granular carbon therefrom.

It will be apparent to those skilled in the art that many modifications and changes might be made without departing from the spirit of my invention, and while I have particularly described one embodiment thereof I do not wish to be limited to the precise disclosure herein set forth; but,

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

1. In a telephone-transmitter, the combination with a diaphragm having an opening therein, of a threaded cylindrical electrode-chamber located within said opening, a cap-nut forming a flange on said cylindrical electrode-chamber, a clamping-nut engaging the threads of said chamber and adapted to clamp said diaphragm between said nut and said flange, an electrode in said chamber mounted to vibrate with said diaphragm and said

chamber, a stationary electrode within said chamber rigidly mounted on the frame of the transmitter, there being some space between the periphery of said electrode and the rim of said chamber, a flexible mica disk attached to said stationary electrode and extending between the periphery of the electrode and the rim of the chamber to form an end wall of said chamber, the edge of said disk being clamped between said cap-nut and the rear end of said chamber, comminuted material within said chamber interposed between said electrodes, and a contact-ring encircling said chamber and clamped against the diaphragm by said cap-nut, substantially as described.

2. In a telephone-transmitter, the combination with a diaphragm having an opening therein, of a threaded cylindrical electrode-chamber located within said opening, a front wall for said chamber integral therewith, a cap-nut forming a flange at the rear of said cylindrical electrode-chamber, a clamping-nut engaging the threads of said chamber from the front thereof and adapted to clamp said diaphragm between said nut and said flange, an electrode in said chamber rigidly secured to the front wall thereof and adapted to vibrate with said diaphragm and said chamber, a stationary electrode extending into said chamber and rigidly mounted on the frame of the transmitter, there being some space between the periphery of said electrode and the rim of said chamber, a flexible mica disk attached to said stationary electrode and extending between the periphery of the electrode and the rim of the chamber to form an end wall of said chamber, the edge of said disk being clamped between said cap-nut and the rear end of said chamber, comminuted material in said chamber interposed between said electrodes, and a contact-ring encircling said chamber and clamped against the diaphragm by said cap-nut, substantially as described.

3. In a telephone-transmitter, the combination with a diaphragm having a central opening therethrough, of a threaded cylindrical electrode-chamber 12 located within said opening and having a front wall 14 integral therewith, a cap-nut 16 forming a flange at the rear of said electrode-chamber, a clamping-nut 34 for engaging the threads of said chamber from the front thereof and adapted to clamp said diaphragm between said nut and said flange, a front electrode 21 in said chamber adapted to be rigidly secured to the front wall 14 thereof, a rear electrode 24 stationarily mounted upon the frame of the transmitter, there being some space between the periphery of said electrode and the rim of said chamber, a support 20 for said rear electrode carried upon a bolt 22, a sleeve 25 having a front flange 28 and passing through a boss 26 on the back of a plate 7, a flexible mica disk 17 adapted to be clamped between the support 23 and the flange 28, the edge of said disk being clamped between the rear end

of said chamber and an intumed rim 18 on
the cap-nut 16, comminuted material within
said chamber between said electrodes, and a
contact-ring 35 encircling said chamber and
5 adapted to be clamped against the diaphragm
in electrical contact therewith by said cap-
nut 16, substantially as described.

In witness whereof I hereunto subscribe my
name this 15th day of November, A. D. 1902.

ALFRED STROMBERG.

Witnesses:

CHARLES A. BROWN,
HARVEY L. HANSON.