

F. W. WOOD.
TELEPHONIC APPARATUS.
APPLICATION FILED APR. 5, 1907.

898,620.

Patented Sept. 15, 1908.

4 SHEETS—SHEET 1.

Fig. 1.

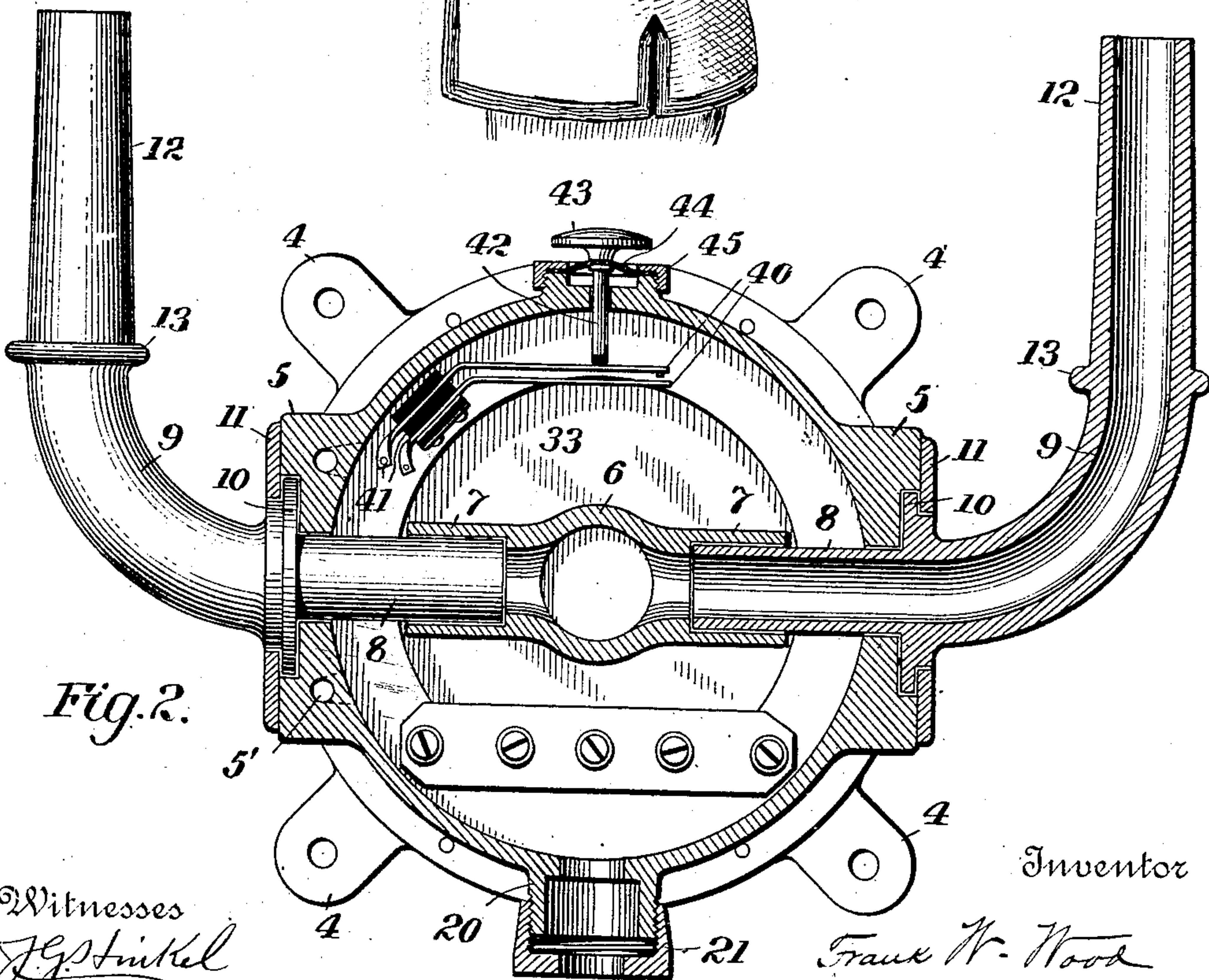
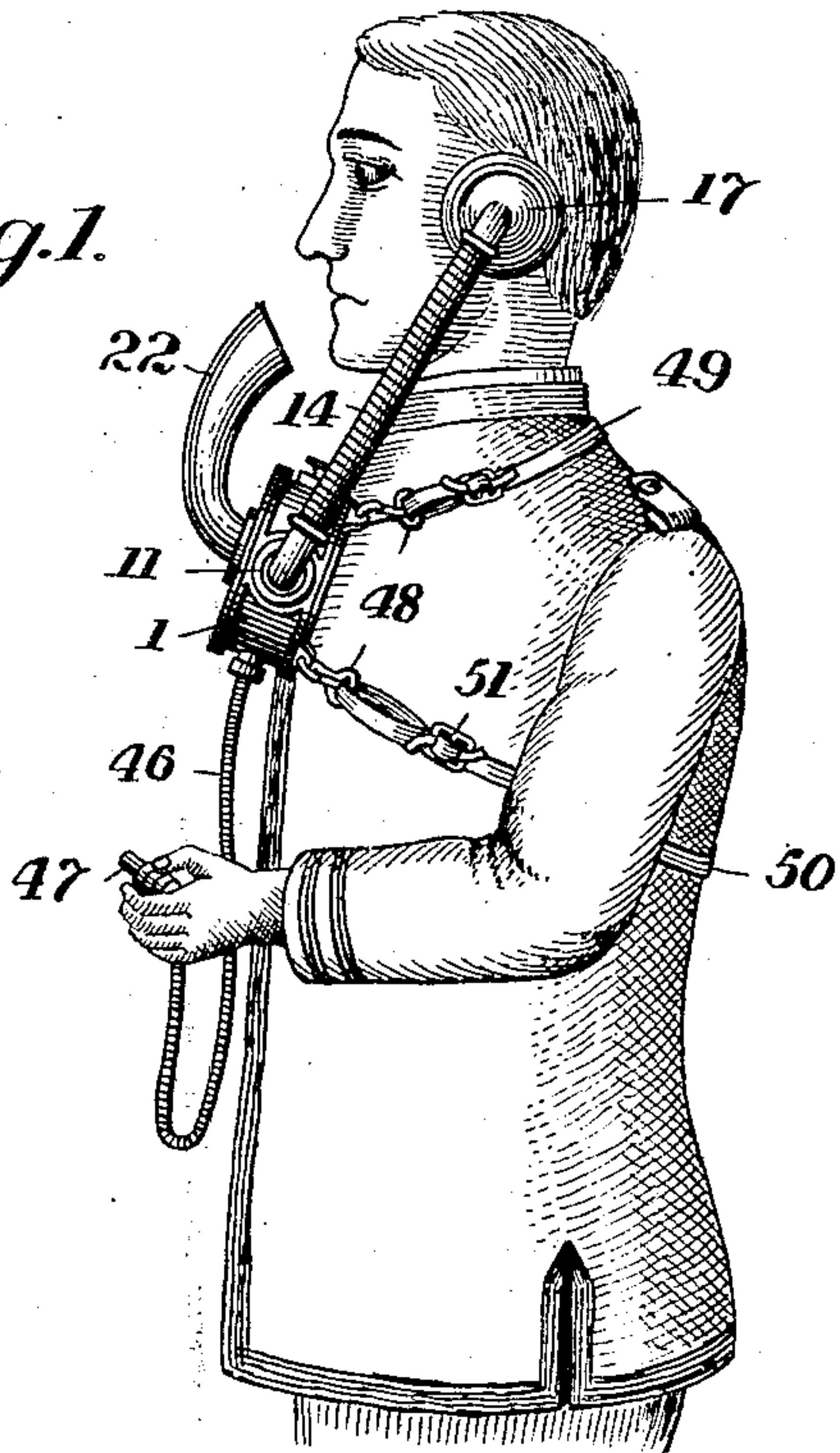


Fig. 2.

Witnesses

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4 SHEETS—SHEET 2.

Fig. 3.

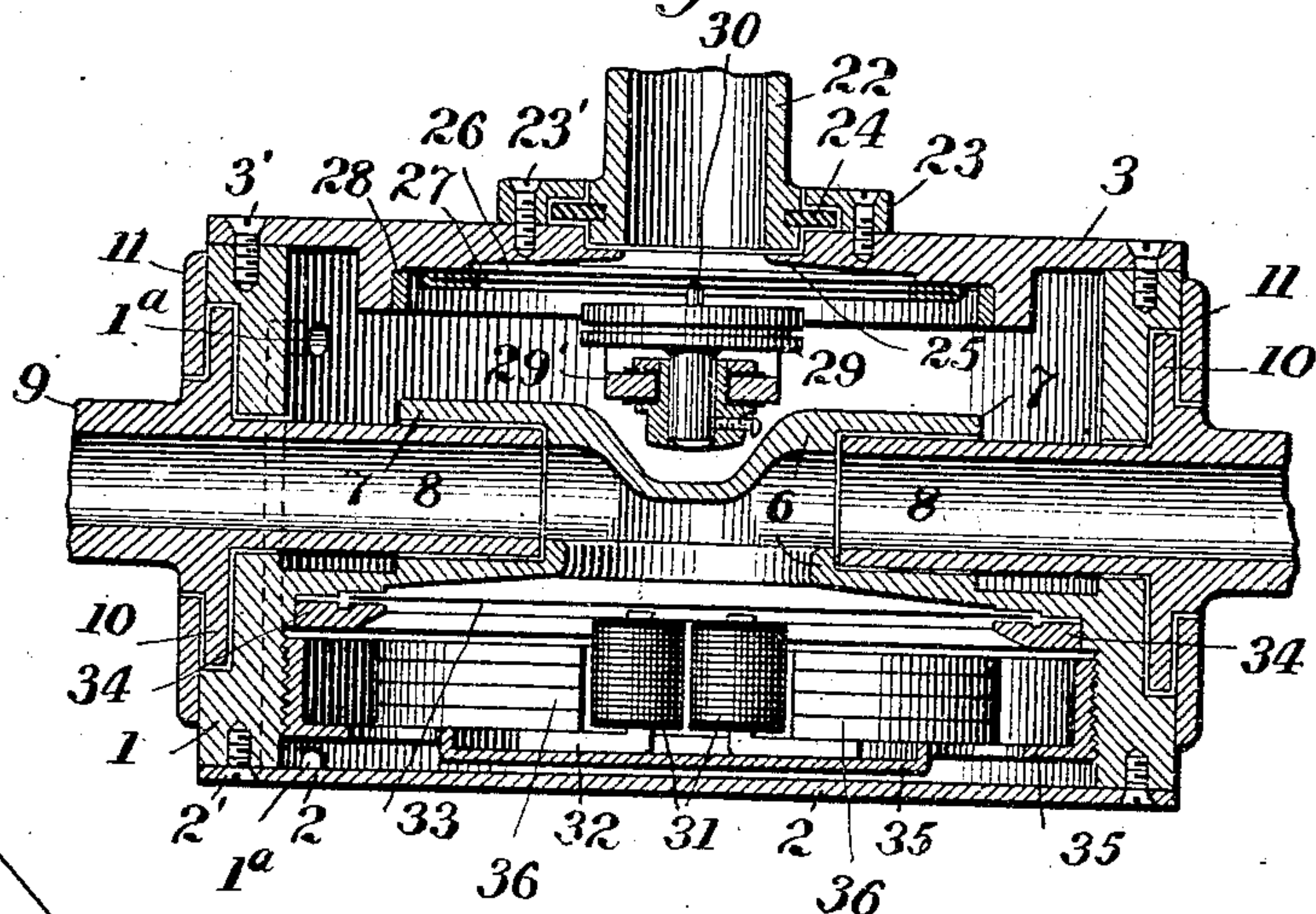


Fig. 4.

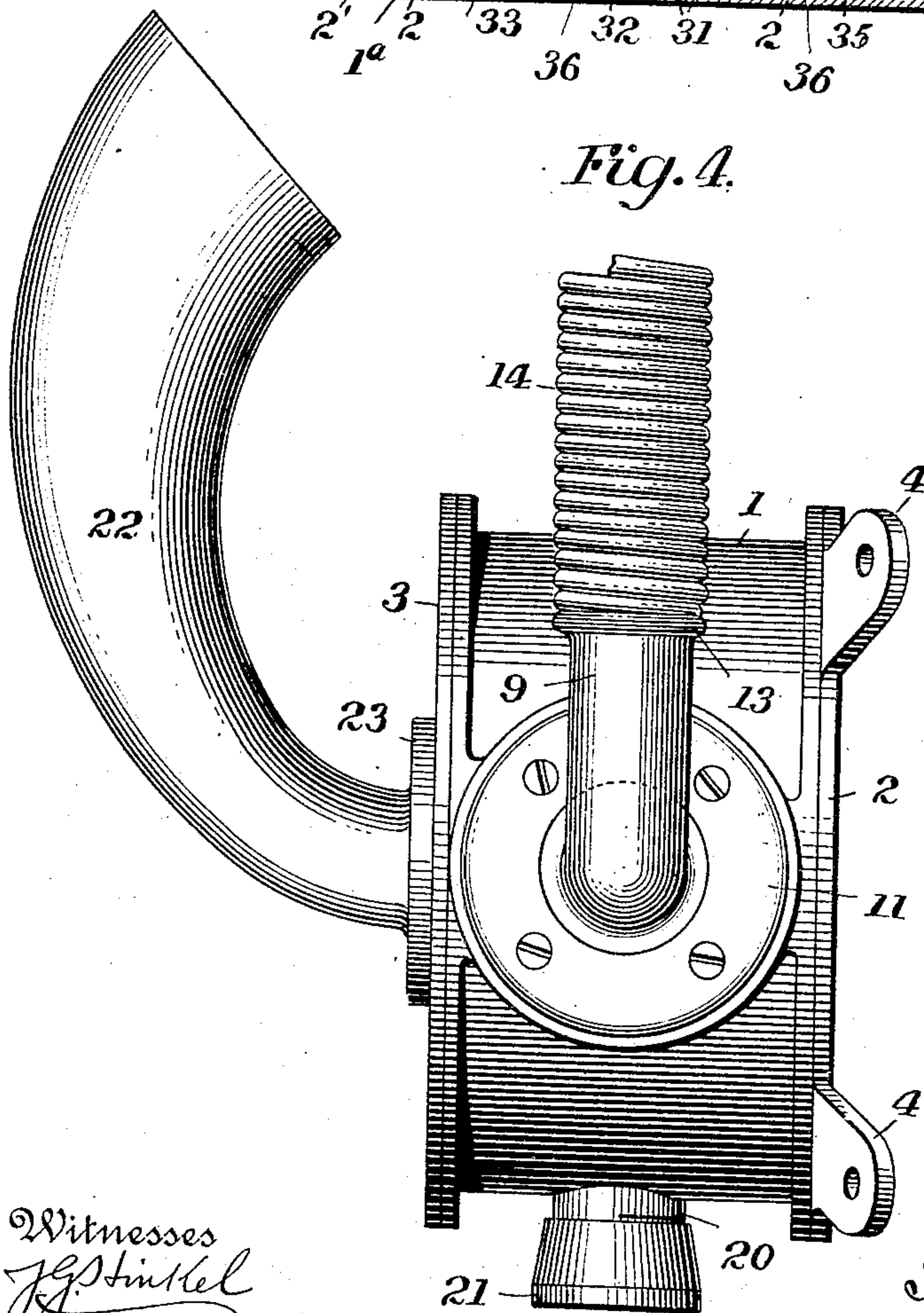
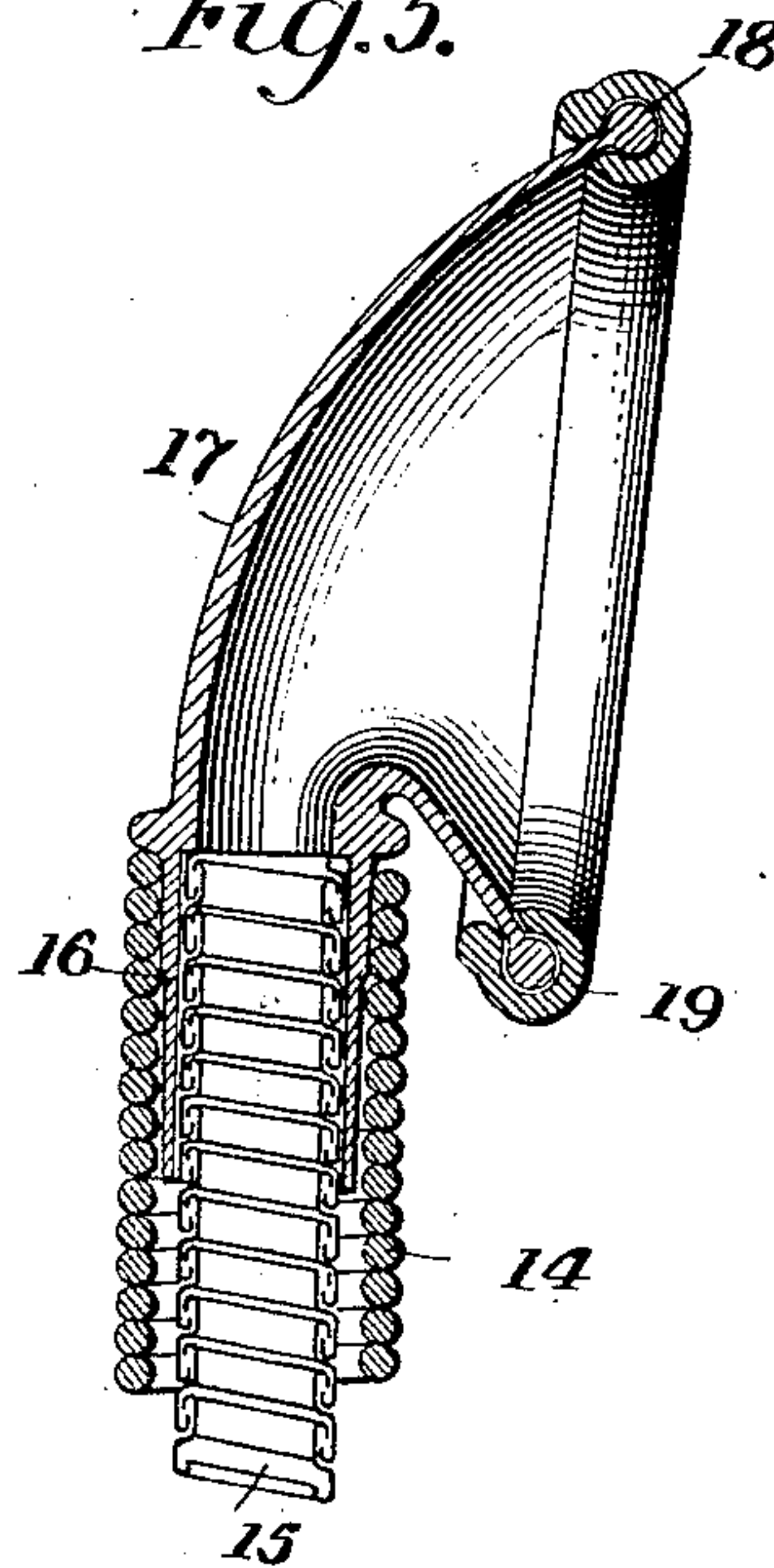


Fig. 5.



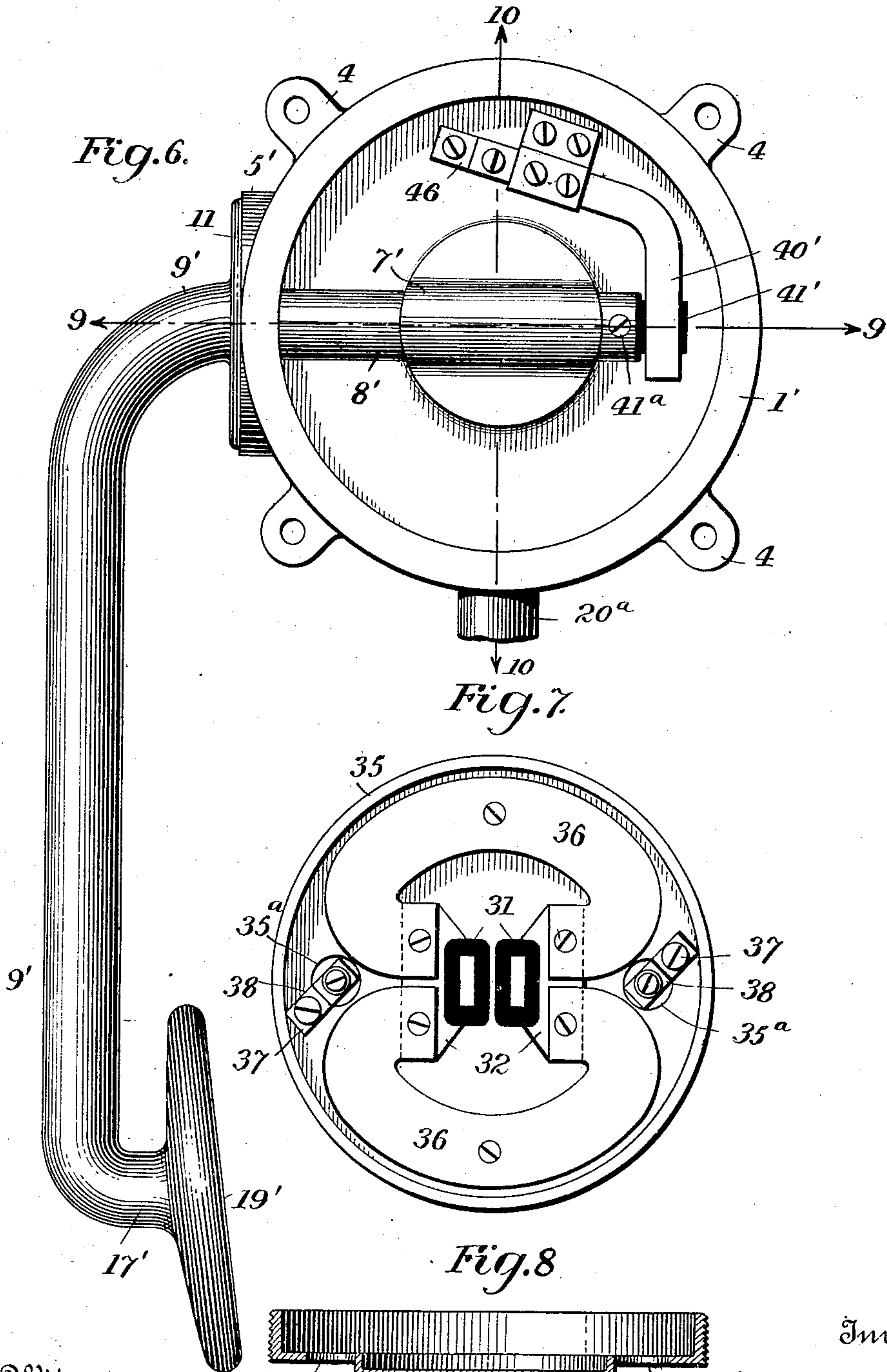
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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

Fig. 9.

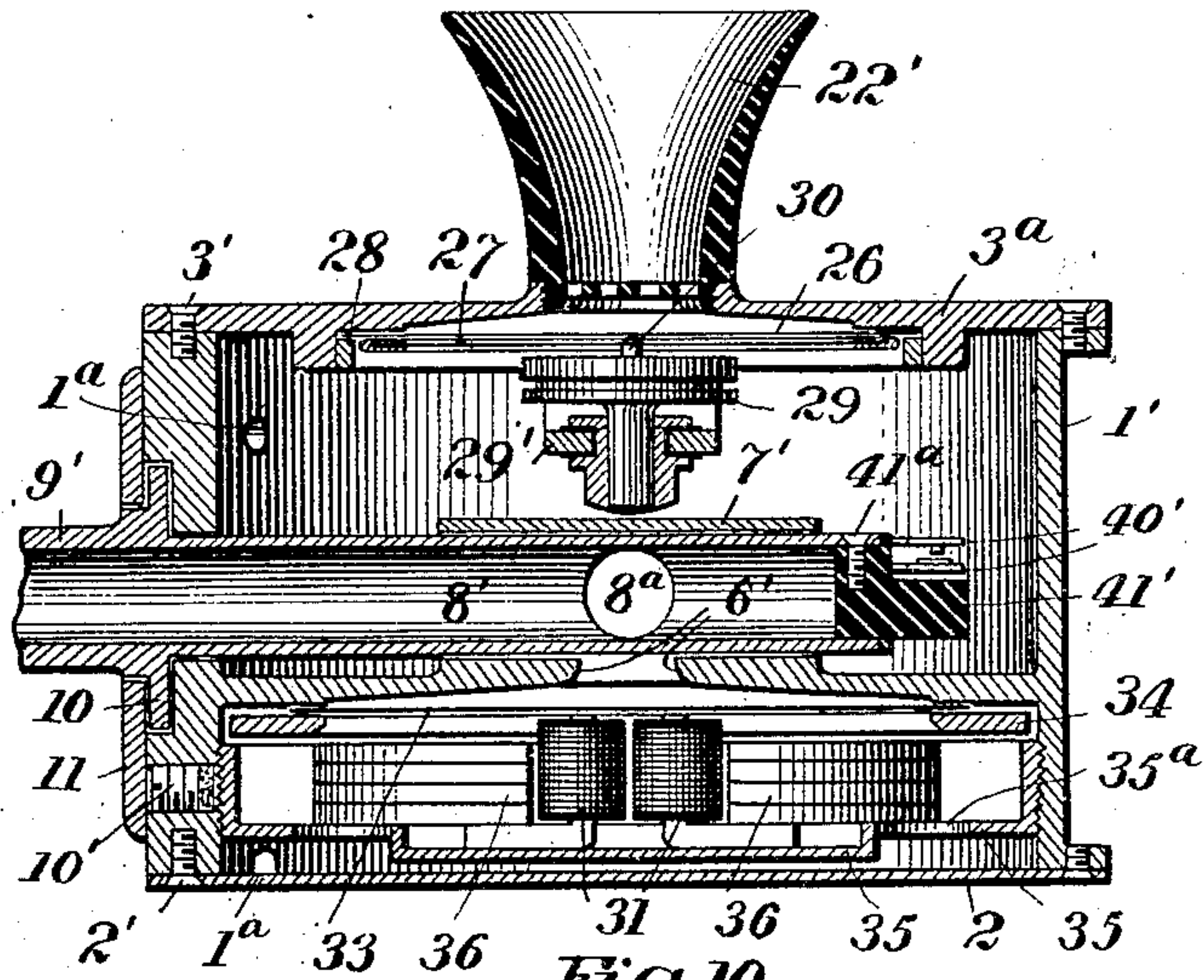
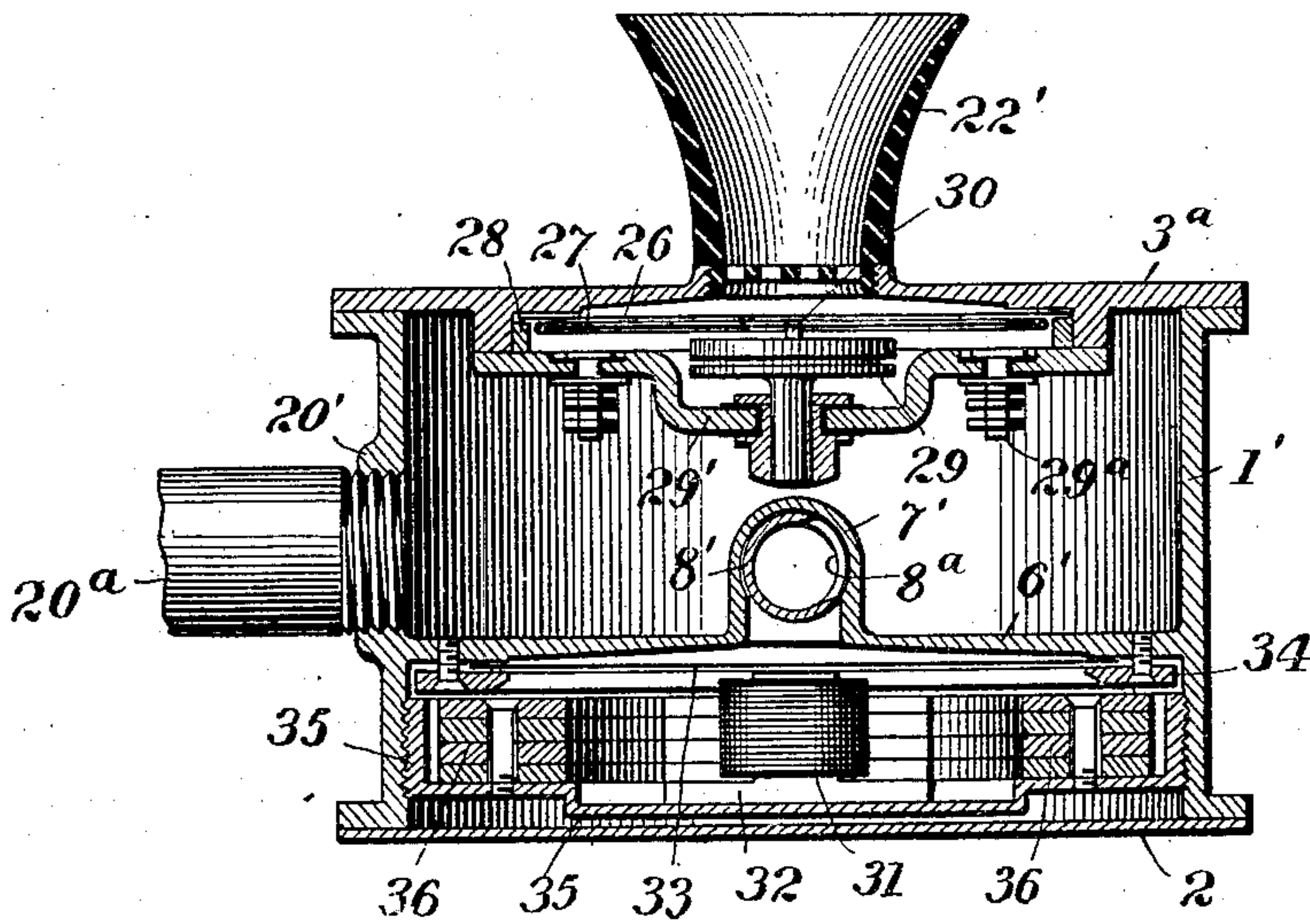


Fig. 10.



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UNITED STATES PATENT OFFICE.

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TELEPHONIC APPARATUS.

No. 898,620.

Specification of Letters Patent.

Patented Sept. 15, 1908.

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To all whom it may concern:

Be it known that I, FRANK W. WOOD, a citizen of the United States, residing at Newport News, in the county of Warwick and State of Virginia, have invented new and useful Improvements in Telephonic Apparatus, of which the following is a specification.

This invention relates to telephonic apparatus, and more particularly to apparatus of this character designed for use on shipboard where certain contingencies arise that have to be met in the successful use of the telephone which do not present themselves in the operation of the instrument on land.

The primary object of the invention is to provide a telephonic apparatus of compact and serviceable construction, which shall be practically proof against injury by water, dust, smoke or other usual agencies.

A further object of the invention is to provide a portable telephone set in which the use of head gear is entirely eliminated and the usual objections to this class of apparatus thereby overcome.

With the above and other objects in view the invention consists of the construction hereinafter described and illustrated in the accompanying drawings, in which:—

Figure 1 is a view showing the complete portable apparatus in position. Fig. 2 is a plan view of the casing thereof with the cover removed. Fig. 3, is a central vertical section through the same. Fig. 4 is a side elevation of the casing and attached parts. Fig. 5 is a sectional view of the ear-piece and connecting tube. Fig. 6 is a plan view, with cover removed, of a complete apparatus designed for stationary use. Fig. 7 is a plan view of the receiver magnet, and case. Fig. 8 is a central section of the cup shaped disk, constituting the case. Fig. 9 is a central section on line 9—9 of Fig. 6. Fig. 10 is a central section on line 10—10 of Fig. 6.

On shipboard it is often the practice to wire the entire ship for a telephone system and to provide at suitable locations sockets into which suitable plugs attached to a telephone instrument, may be inserted and the user thereby enabled to communicate with the central office or different parts of the ship. In this way the officer in charge may communicate, say with the engineer from a number of different points, and thus the ne-

cessity for providing a large number of telephone sets is avoided.

Referring to the drawings in detail, my improved portable apparatus comprises a casing 1 of substantially cylindrical shape provided with ends 2 and 3. The end 2 is attached thereto, and preferably formed integral therewith is a series of lugs 4 having perforations adapted to receive snap hooks 48, attached to straps 49, 50, secured around the body of the user as clearly shown in Fig. 1. The straps 49 and 50, are provided with slide buckles 51, whereby they may be adjusted to the proper length.

The cylinder 1 is provided at diametrically opposite points with bosses 5 and extending across the inside of the cylinder parallel with the ends is a partition 6, having formed integral therewith sleeves 7 extending toward said bosses and arranged in line therewith. The sleeves and partition serve to divide the casing into two compartments, in one of which is located the transmitter, and in the other of which is located the receiver, the arrangement being such that the compartment containing the receiver communicates through an opening in the partition with the sleeves 7, while the compartment containing the transmitter is entirely closed.

Fitting into the sleeves 7 and journaled therein are extensions 8, formed on the end of hollow receiver arms 9. These arms 9 are provided with radial flanges 10 swiveled in the bosses 5, above described, and a plate 11 overlies the flanges 10 and is secured to the bosses. By this arrangement it will be seen that the receiver arms can turn freely, the flanges 10 turning under the plate 11 and the ends 8 turning in the sleeves 7.

Surrounding the outer end 12 of each receiver arm and resting against an annular shoulder 13 formed thereon is a flexible tube 14 formed of a coil of spring steel wire and this tube embraces at its other end a flange 16 formed on the ear-piece 17. The ear-piece 17 is provided around its outer periphery with a cushion 19 of soft rubber or other suitable material which is adapted to fit snugly against the ear of the user and thereby exclude external sounds. Arranged within the tube 14 is a second flexible tube 15, which conducts the sound from the receiver arm to the ear-piece. It will thus be seen

that owing to the resilience of the tubes 14 the ear-pieces will be held firmly against the ears of the user and the necessity for employing head gear or clamps of any kind is entirely avoided.

Also formed integral with the casing 1 is a boss 20 provided with a gland 21 adapted to receive packing, and through which the conductor cord 46 extends to the plug 47. Thus a water-tight joint where the cord enters the casing is secured.

Mounted in the outer end of the casing is the mouth-piece 22 which in this case preferably consists of a long curved trumpet-shaped member, adapted to extend from the casing up to a position immediately in front of the mouth of the user. This member 22 rests against an internally projecting flange 25 formed on the member 3 (see Fig. 3) and is surrounded by an under-cut ring 23 secured to said member 3. A split ring 24 is adapted to enter a groove in the member 22 and to underlie the ring 23, thereby securing the member 22 in place and forming a substantially water-tight joint, while, at the same time, permitting the mouth-piece to swivel freely in the casing.

Immediately under the mouth-piece is disposed a diaphragm 26 formed of copper foil, mica or celluloid and which is designed to protect the working diaphragm 27, from moisture or foreign material. The working diaphragm 27 is preferably formed of aluminum and is disposed immediately beneath the diaphragm 26 and is preferably secured thereto. A ring 28 serves to support the two diaphragms and hold them in position. The working diaphragm 27 cooperates with the pin 30, connected with the transmitter 29 as in the usual construction. This transmitter is supported by a bar 29' carrying binding posts 29^a, as clearly shown in Fig. 10.

31 indicates the receiver magnet coils, which are wound upon cores 32, secured to the two permanent magnets 36, as shown in Fig. 7. These magnets consist of superposed laminæ, and are mounted in a cup shaped disk or case, 35, which is secured into the casing, and thus serves to support the receiver. The case 35, is provided with openings 35^a through which the wires extend. These wires then pass upwardly through a conduit 1^a (shown in Fig. 3) formed in the walls of the casing 1, and pass thence to suitable binding posts 29^a in the transmitter compartment. From this compartment, the wires extend out through the packing gland 21. Adjacent openings 35^a are mounted connecting strips 38, held by binding screws 37.

The receiver diaphragm 33 is disposed immediately above the ends of the receiver magnets and is held in position by means of a ring 34. Above the diaphragm 33 an opening in the partition 6 leads to the hollow receiver arms 9.

Mounted inside of the casing are a pair of contacts 40 carried by a block of insulation 41. And a shank 42 attached to a push button 43 is adapted to abut against one of these contacts 40 and to close the circuit between them when displaced. These contacts control the talking circuit of the instrument. A diaphragm 44 preferably of soft rubber surrounds the push button 43 and is attached thereto at its center, while its outer edge is secured to the casing by means of a gland 45 screwed down over a boss on the casing. By this construction I provide an absolutely water-tight joint where the push button passes through the casing so as to exclude all dampness and foreign matter from the casing.

In practice the user inserts his plug 37 into the most accessible socket and having thus called the party he desires to communicate with, he holds the button 43 and thus establishes and maintains the talking circuit while carrying on the conversation.

In Figs. 6, 9, and 10 I have shown a slightly modified form of apparatus adapted for use as a stationary or bulkhead telephone set. In this form, I provide an ordinary mouth piece 22' screwed into the top 3^a of the casing 1'. The construction of the transmitter and receiver, and their arrangement, is the same as above described. There is, however, in this modification, but one ear piece, 17', and this is carried at the end of a rigid receiver arm 9', swiveled in the casing 1', by means of the flange 10, and overlying plate 11. A set screw 10' underlies this plate 11, and bears against the case 35.

The casing 1', has a partition 6', provided with a sleeve, 7', in which is journaled the hollow extension 8', of the receiver arm 9'. Fitted into the end of this extension 8', and secured by means of a screw 41^a, is a block 41' of insulation, such as hard rubber or fiber, having a semicylindrical cam projection. Disposed adjacent this cam shaped projection are the ends of two contact springs 40' of the form shown in Fig. 6, secured to the casing at their other end by means of screws 46. A pipe conduit, 20^a screws into a boss 20', formed on the casing 1', and protects the outgoing wires.

Formed in the extension 8' is a circular opening 8^a, clearly shown in Figs. 9 and 10. The drawing shows the normal position of the parts, with the receiver arm hanging vertically down (see Fig. 6). In this position the opening 8^a lies within the sleeve 7', as shown in Fig. 10. When, however, it is desired to use the apparatus, the receiver arm is swung upwardly and forwardly, thus rotating the extension 8', and bringing the opening 8^a therein into registry with the opening in the partition 6' immediately over the receiver diaphragm. At the same time, the cam projection on the block 41' engages

the lower contact spring and forces it upward against the upper spring, thus closing the talking circuit.

It will thus be seen that I have provided a telephonic apparatus which presents many points of utility and convenience, and it is thought the numerous advantages thereof will be readily appreciated by those skilled in the art.

It is obvious that, if desired, the construction of circuit controller shown in Figs. 6 and 9 may be employed to equal advantage in the form of apparatus shown in Figs. 2 and 3. In this case, of course, the push button 43, would be omitted, and a cam projection fitted to one of the extensions 8, the sleeve, 7, being cut away, if necessary, to accommodate the contact springs.

What I claim is:—

1. A telephone apparatus comprising a transmitter and a receiver, a casing inclosing the same, and provided with substantially flat, opposing ends, one of which is adapted to rest against the body of the user, a mouthpiece or trumpet mounted in the opposite end of said casing, and curving upwardly and backwardly, and a receiver arm swiveled in the side of the casing, and adapted to extend to the ear of the user.

2. In a telephone apparatus, a transmitter and a receiver, a cylindrical casing therefor, a partition extending across said casing parallel with the ends thereof, sleeves carried thereby, and receiver arms having projecting ends journaled in said sleeves.

3. In a telephone apparatus, a casing, a partition therein, a receiver on one side of said partition, a transmitter on the other side of said partition, and a hollow receiver arm journaled in said partition.

4. In a telephone apparatus, a cylindrical casing a partition dividing the same into two compartments, a transmitter in one compartment, a receiver in the other compartment, and a hollow receiver arm swiveled in bearings in said partition, and communicating with one compartment only.

5. In a telephone apparatus, a casing, a receiver and a transmitter therein, receiver arms mounted in said casing, and a mouthpiece swiveled in said casing adjacent said

transmitter, the swivel joint comprising a groove in said mouthpiece, an undercut ring secured to the casing and a ring lying in said groove and under said first ring.

6. In a telephone apparatus, a casing, a receiver and a transmitter therein, a mouthpiece mounted in the casing, a receiver arm swiveled in said casing and comprising a hollow extension projecting into said casing and journaled therein and provided with an integral radial flange, and a plate surrounding said arm, overlying said flange, and secured to said casing.

7. In a telephone apparatus, a cylindrical casing, a partition, a boss on the casing, a receiver and a transmitter in said casing, disposed on opposite sides of said partition and a receiver arm swiveled in said boss and having an extension journaled in said partition.

8. In a telephone apparatus, a casing, a receiver and transmitter therein, a receiver arm swiveled in said casing, a pair of contact springs forming part of the talking circuit located adjacent said arm, and a cam carried by said arm for forcing said contact springs together when said arm is moved to a certain position.

9. In a telephone apparatus, a cylindrical casing, a transmitter mounted in one end thereof provided with an outwardly projecting mouthpiece, and a receiver case, containing a receiver, screwed into the other end thereof, and carrying a diaphragm at its inner edge.

10. In a telephone apparatus, a cylindrical casing, a partition therein, parallel with the ends, a transmitter mounted in said casing on one side of the partition and provided with the usual mouth piece, a receiver case screwed into the casing, on the other side of said partition, magnets in said receiver case, and a diaphragm secured between the edge of said case and said partition.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FRANK W. WOOD.

Witnesses:

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GERTRUDE M. STUCKER.