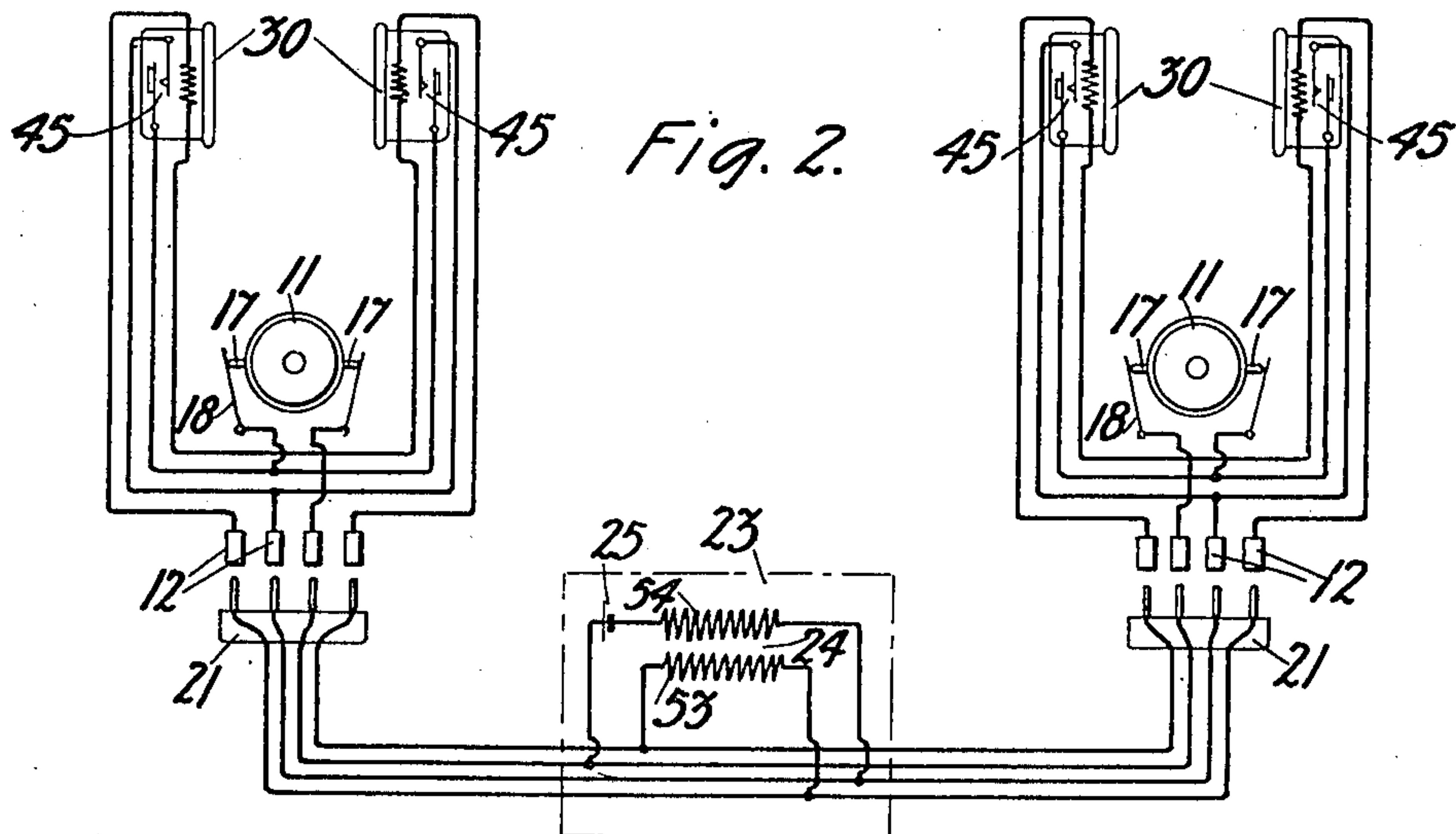
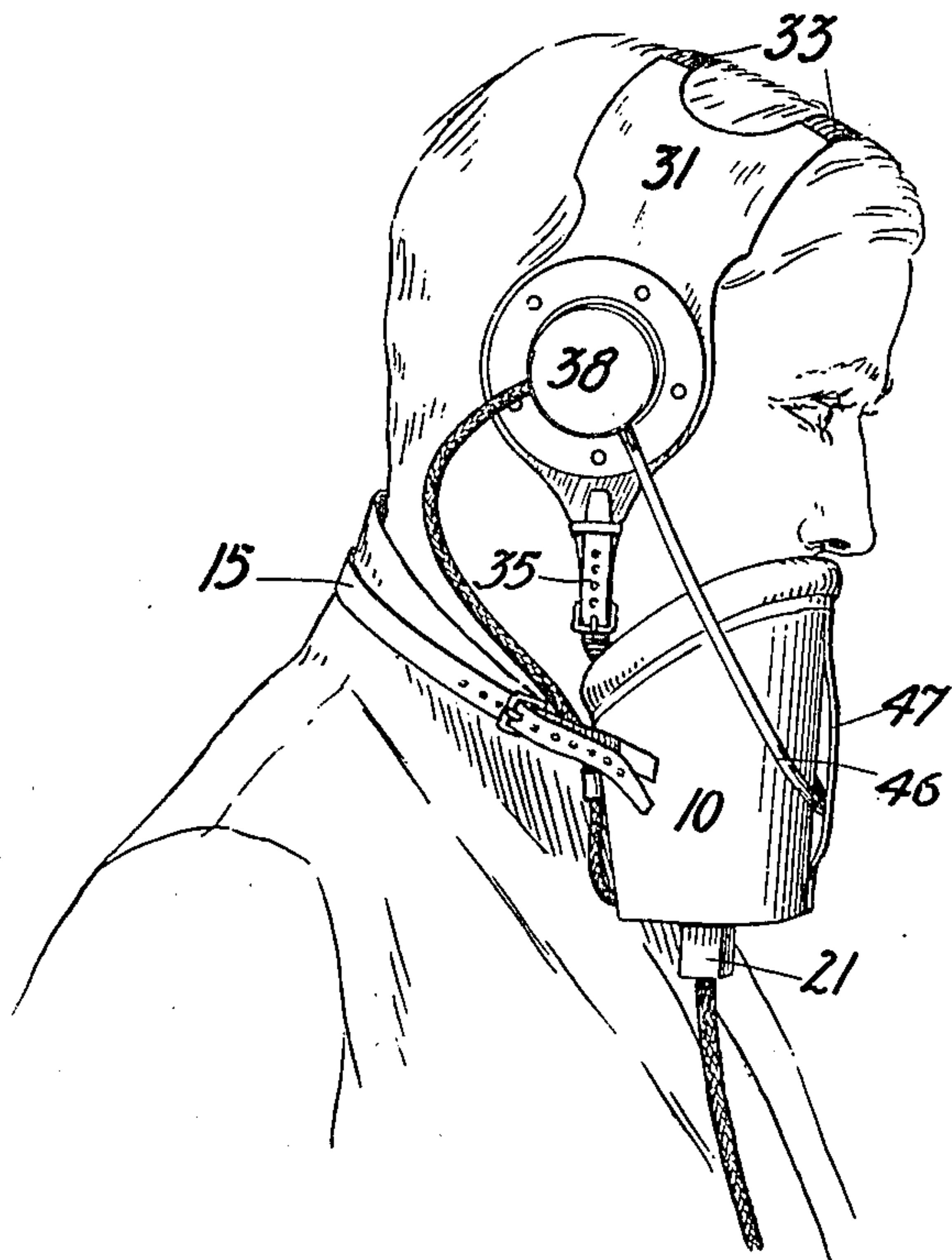


G. M. O. JENKINS.
INTERCOMMUNICATING SET.
APPLICATION FILED NOV. 3, 1917.

1,298,217.

Patented Mar. 25, 1919.
3 SHEETS—SHEET 1.

Fig. 1.



Inventor
George M. O. Jenkins
by J. B. Roberts Att'y.

G. M. O. JENKINS.
INTERCOMMUNICATING SET.
APPLICATION FILED NOV. 3, 1917.

1,298,217.

Patented Mar. 25, 1919.

3 SHEETS—SHEET 2.

Fig. 4

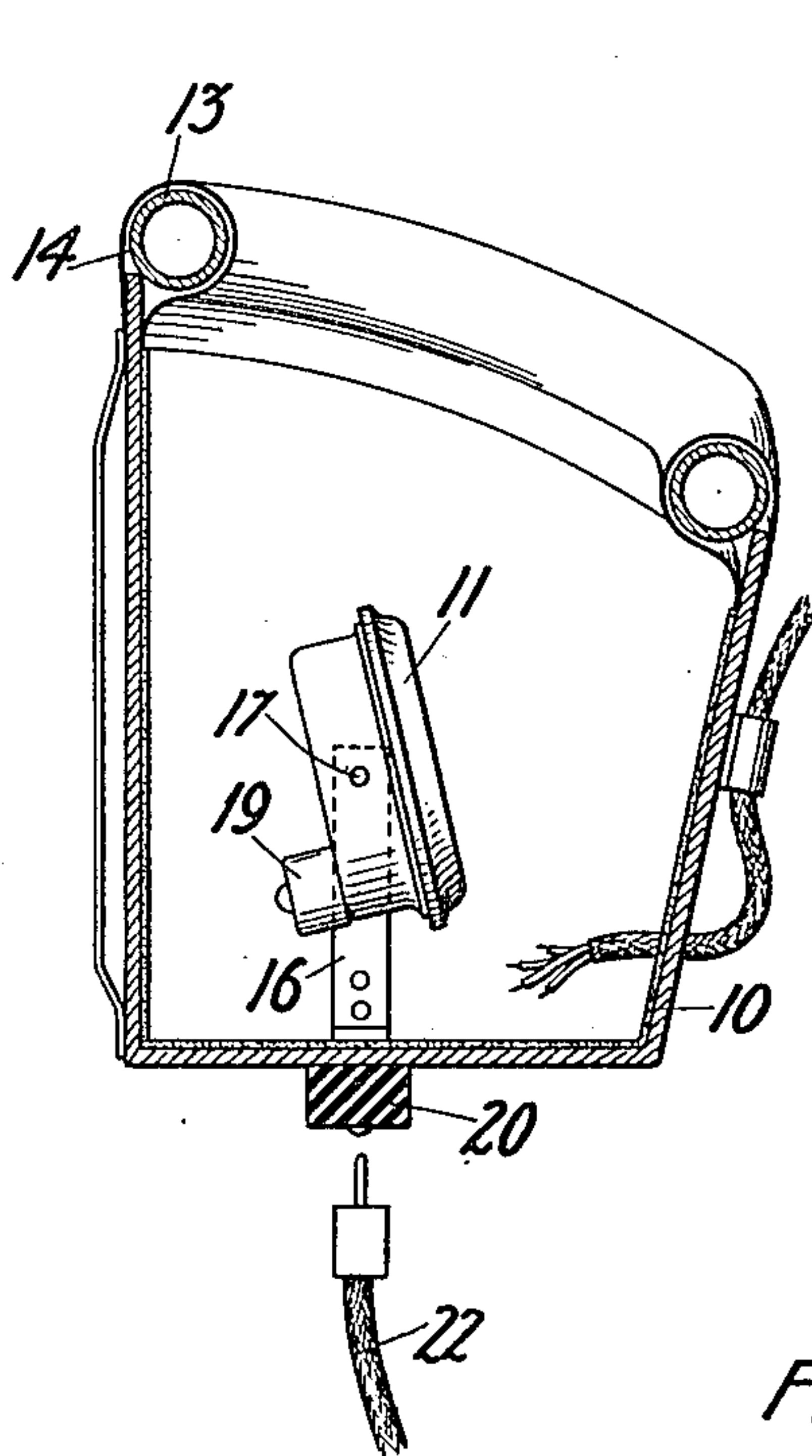


Fig. 3.

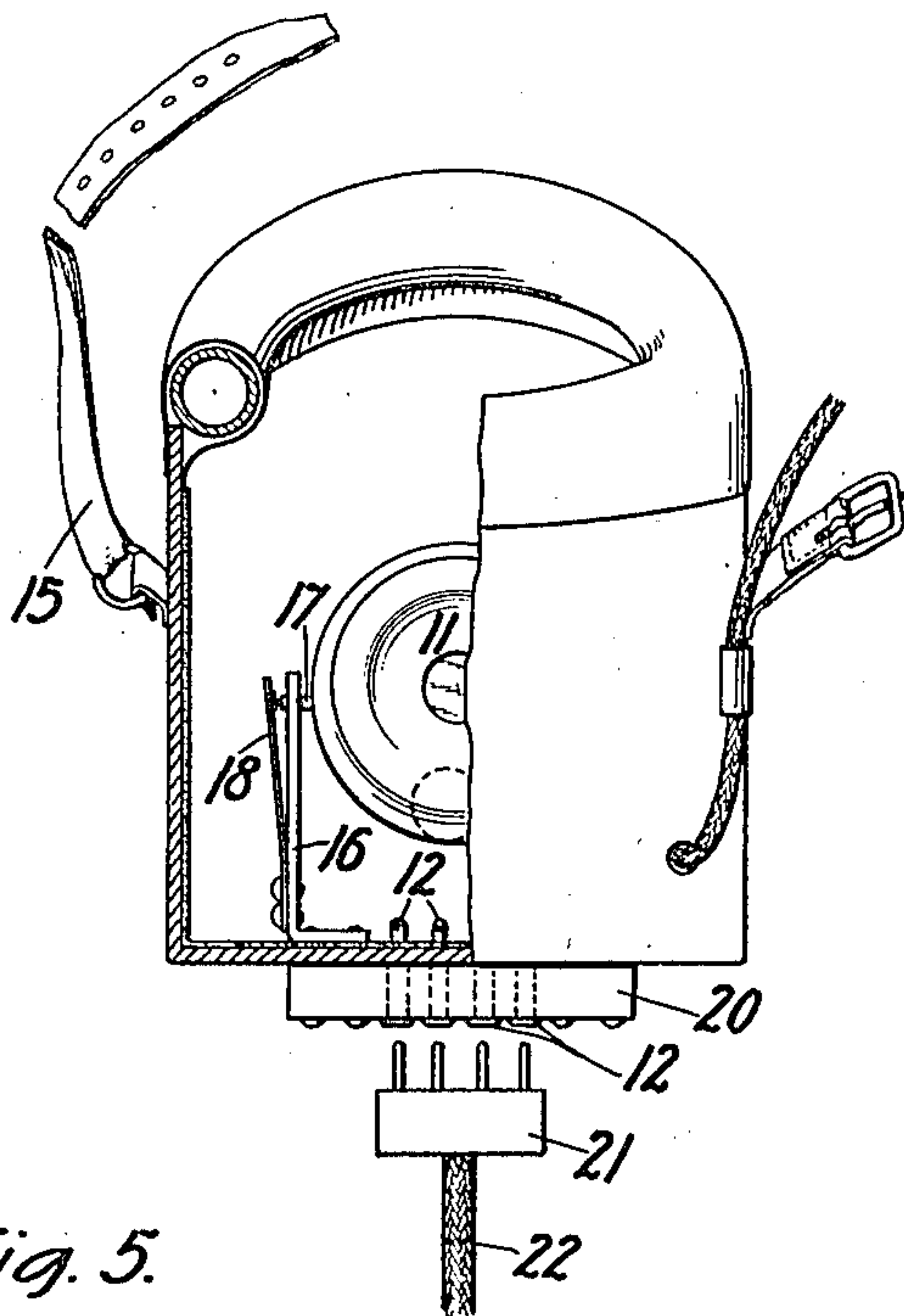
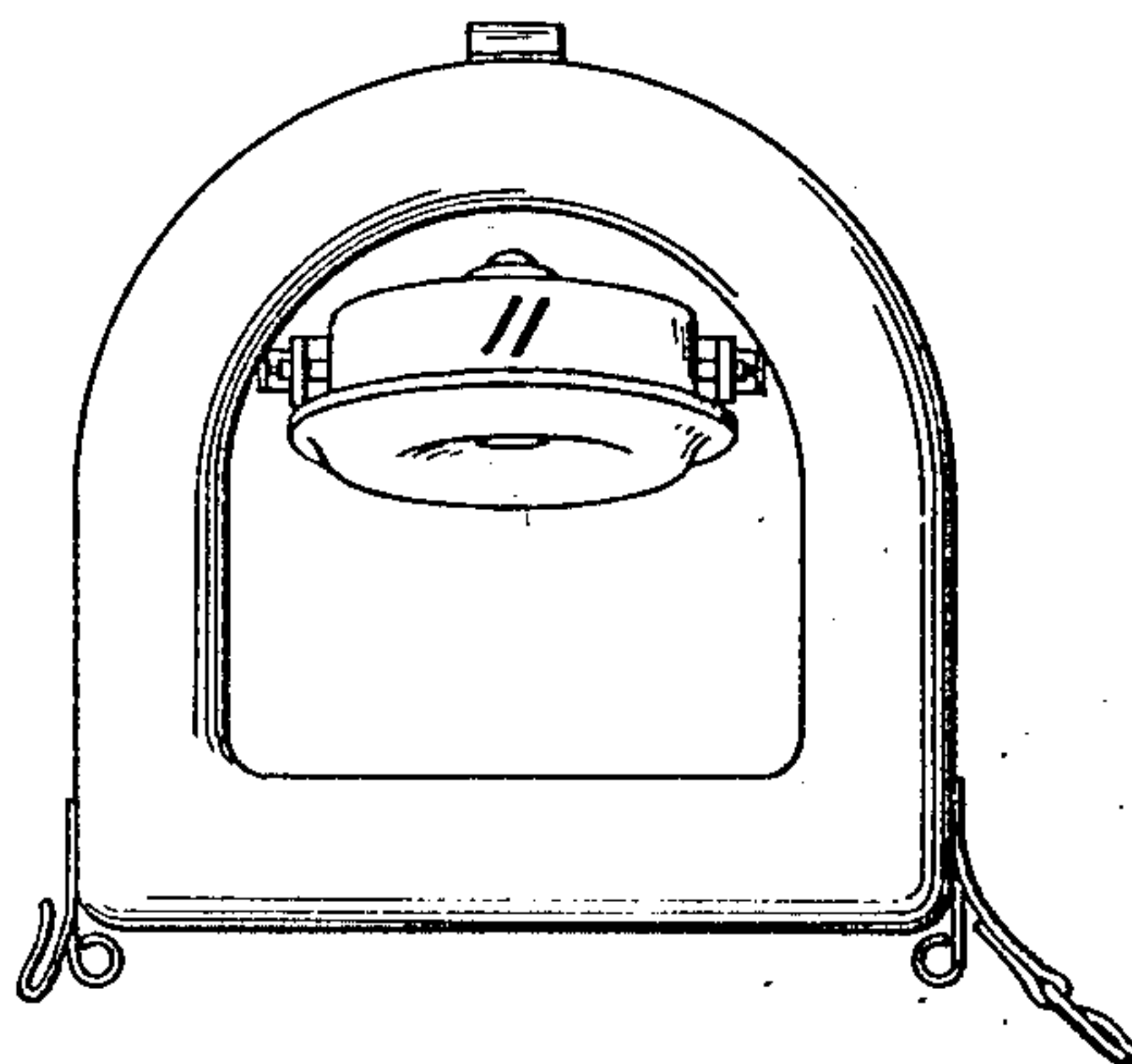


Fig. 5.



Inventor
George M. O. Jenkins
by J. E. Roberts ATT'Y

G. M. O. JENKINS.
INTERCOMMUNICATING SET.
APPLICATION FILED NOV. 3, 1917.

1,298,217.

Patented Mar. 25, 1919.

3 SHEETS—SHEET 3.

Fig. 6.

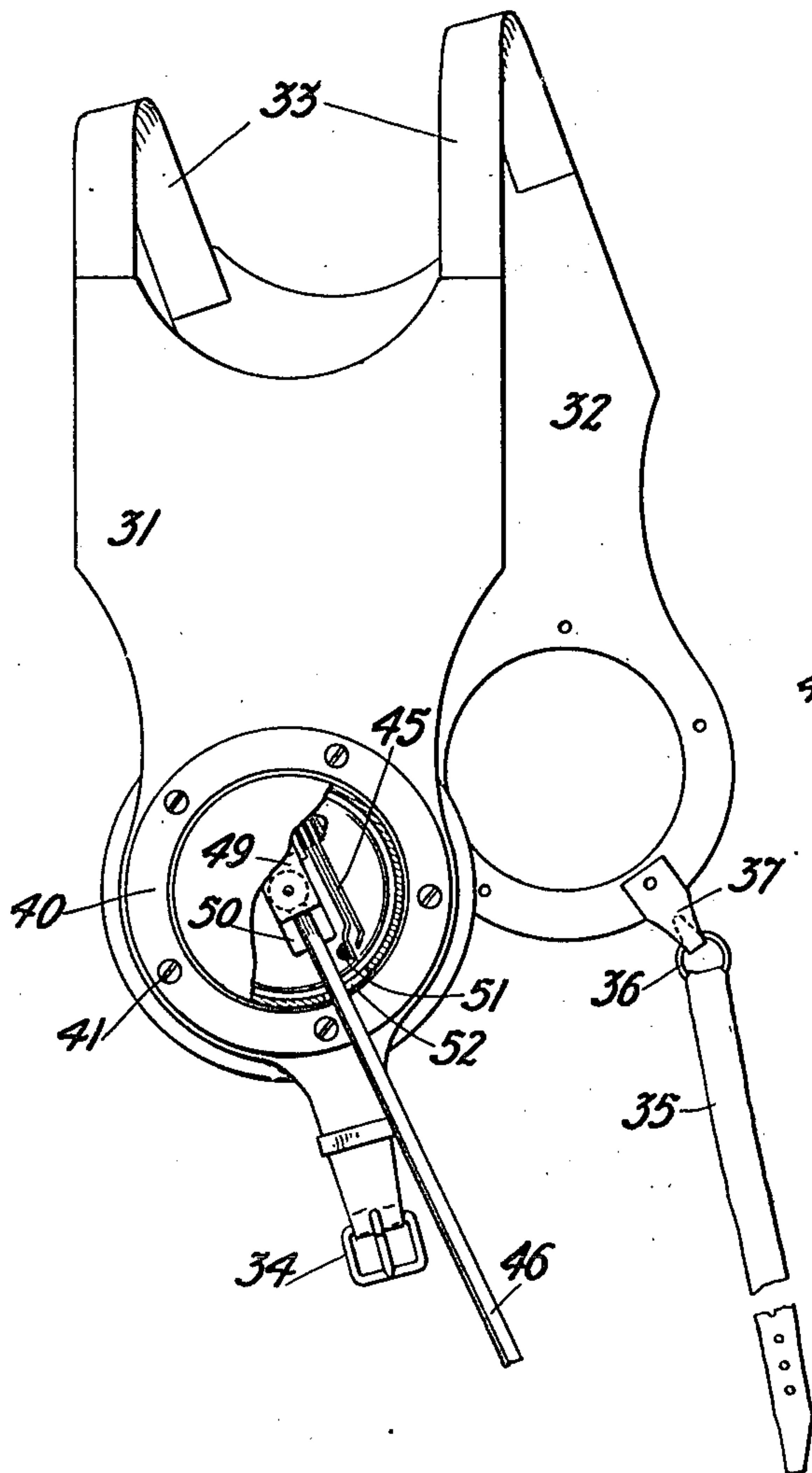
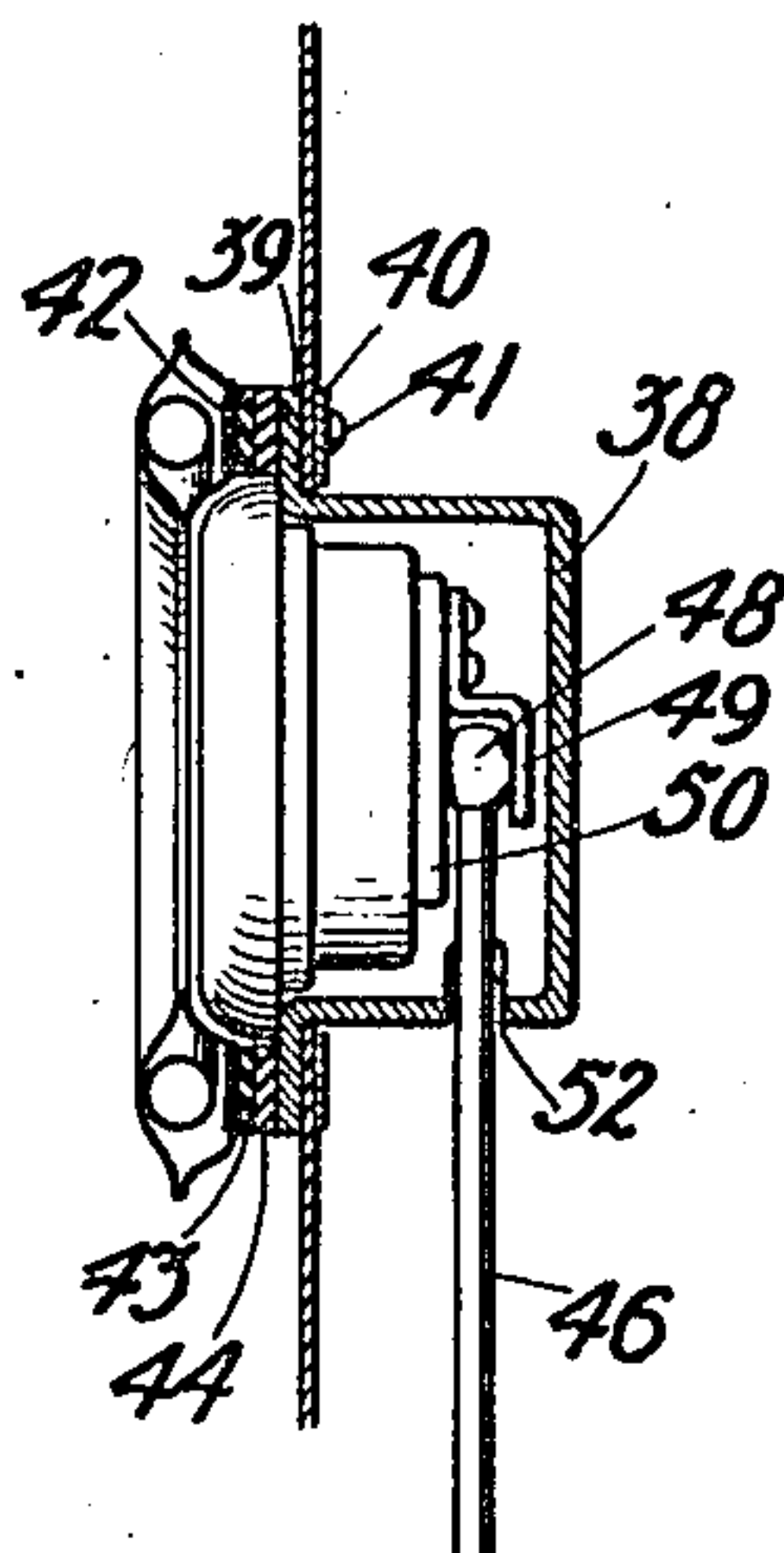


Fig. 7.



Inventor
George M. O. Jenkins
by *J. E. Roberts* Att'y

UNITED STATES PATENT OFFICE.

GEORGE MARK OMEGA JENKINS, OF PARIS, FRANCE, ASSIGNOR TO WESTERN ELECTRIC COMPANY, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

INTERCOMMUNICATING SET.

1,298,217.

Specification of Letters Patent.

Patented Mar. 25, 1919.

Application filed November 3, 1917. Serial No. 200,121.

To all whom it may concern:

Be it known that I, GEORGE MARK OMEGA JENKINS, a subject of the King of Great Britain, residing at Paris, France, have invented certain new and useful Improvements in Intercommunicating Sets, of which the following is a full, clear, concise, and exact description.

This invention relates to intercommunicating sets and in particular to intercommunicating sets suitable for use on aeroplanes for communication between the pilot and the observer, or between various observers.

For the different types of service in which aeroplanes are now used, it is very often of the utmost importance that the pilot and the observer be able to communicate with each other at all times. Even though the parties are located side by side, direct audible conversation is out of the question because of the noise resulting from the whir of the propeller, the rush of air and the exhaust of the motor which in some types of machines is located adjacent to the pilot. It is therefore advisable to furnish the aviators with portable telephone sets which will provide a means of communication wherein all signals and conversation may be clearly and easily understood.

Not only is it necessary that a system of communication be supplied for use between aviators, but it is also important that such a system be operable in such a manner as not to interfere with their other duties or to encumber their movements in any way. The pilot must have his hands free at all times to manipulate the various control levers while the observer must have his hands free to operate his camera and make necessary notes and sketches. Moreover the operation of delicate switching apparatus would often be difficult due to the fact that aviators frequently protect their hands with heavy gloves or mitts which would prohibit the performing of any operation requiring a considerable amount of dexterity of the hands or fingers.

The object of the present invention is to provide a system of communication particularly suitable for the use of aviators or others located where the outside noises make any audible conversation impracticable. A further object is to provide an outfit for use

in connection with such a system, the operation of which will to a certain extent be automatic and therefore will require a minimum amount of mental or physical effort on the part of the user and will not in any way interfere with his other duties or encumber his movements. A still further object is to provide apparatus suitably arranged for efficient operation under the various conditions to be experienced in connection with aeroplane service.

To attain these objects, one feature of this invention resides in the provision of a circuit arrangement whereby conversation may take place between two stations without requiring any further mental or physical effort that would be experienced in a direct face to face conversation. Another feature consists in the provision of a transmitter switch located on each receiver and operable automatically to connect the transmitter into circuit when the user lowers his head to talk into the transmitter box.

The various features of this invention may be more clearly understood by reference to the accompanying drawings in which Figure 1 illustrates the apparatus strapped in place and the user's head lowered in the natural position for talking. Fig. 2 shows the circuit connections. Fig. 3 is a front elevation of the type of transmitter box employed, a portion of this box being cut away to show the method of mounting the transmitter. Fig. 4 is a side elevation and Fig. 5 a plan view of the transmitter box shown in Fig. 3. Fig. 6 shows the head band for holding the receivers, one of the receivers being shown in position and a portion of this receiver cut away to show the operation of the transmitter switch. Fig. 7 is a side view partly in section showing more clearly the operation of the transmitter switch and also showing the type of ear pad provided to allow the receivers being pressed tightly to the ears without causing discomfort.

Referring more in detail to the drawings, each user, pilot or observer, is provided with a transmitter box 10 of leather, adapted for the mounting of a transmitter 11 and a set of four line terminals or jacks 12. The upper portion of box 10 is provided with a cushion consisting of a tube 13 of soft rubber covered with a casing 14 of soft leather or similar material. As a result of this con-

struction the user when talking into the transmitter may press his face against the cushion and in that manner, without causing any discomfort to himself, shut out all
 5 outside disturbances and prevent their transmission over the circuit. A strap 15 is provided for the purpose of holding the transmitter box in position.

The transmitter 11 is pivotally mounted
 10 within the box 10 by means of a pair of brackets 16—16 which act as a support for the contact screws 17—17 passing rigidly through the transmitter casing. The ends of these screws which are preferably platinum-pointed extend through bearing holes
 15 in the brackets 16—16 and engage contact points on the springs 18—18. The transmitter swings freely in its mounting and a counterweight 19 is provided so that irrespective of the position of the transmitter
 20 box the transmitter itself will be in such a position that satisfactory transmission will result. Located at the bottom of and outside of the transmitter box is a block 20 of
 25 hard rubber or other insulating material in which are secured the jacks 12—12. A four-conductor plug 21 adapted to engage the jacks 12—12 is connected to a flexible cord 22 leading to a jack box 23 usually attached
 30 to some convenient part of the frame of the aeroplane. This box contains the induction coil 24 and a single dry cell 25 which provides the source of energy for the circuit.

The apparatus at each station includes a
 35 pair of head receivers 30—30 securely fastened to a head band which consists of the parts 31 and 32 of fabric or some similar material such as soft leather and joined by elastic bands 33—33. An extension of the
 40 part 31 is provided with a buckle 34 adapted to cooperate with a strap 35 which is secured to part 32 by means of a ring 36 and a hook 37. This strap is arranged to fit under the aviator's chin and hold the receivers securely
 45 in place. The hook and ring method of attachment allows the quick removal of the apparatus without changing a particular adjustment for the individual.

The method of securing the receivers to
 50 the head band is shown in detail in Fig. 7. Each receiver is placed in a cup-shaped casing 38 of leather or similar material having a flange 39 adapted to act as a seat for the shoulder portion of the receiver. The
 55 head-band pieces 31 and 32 are shaped to receive this casing and are clamped thereto by means of the metal ring 40 and the screws 41—41 which engage threaded holes in the metal ring 42 sewed within the casing of an
 60 ear cushion similar to that of transmitter box 10. Washers 43 and 44 of cork or other suitable material are supplied to be of aid in preventing the transmission of disturbing noises or vibrations to the receiving case and
 65 thence to the diaphragm.

On each head receiver there is located a transmitter switch 45 arranged for connecting the transmitter in a circuit automatically when the user lowers his head to a convenient position to talk into the transmitter
 70 box. This switch is operated by the switch wire 46 which extends in a loop from the two head receivers and passes under a strap 47 on the front of the transmitter box 10. Each end of the switch wire 46 terminates in
 75 a metal ball 48 which is arranged to rotate between the metal plates 49 and 50 in which are located countersunk holes providing suitable bearing surfaces. Upon the user lowering his head to a convenient posture to
 80 speak into the transmitter box the receivers rotate relative to the switch wire, the latter being prevented from moving because of the loop portion bearing against the transmitter box. The switch wire therefore engages the
 85 insulated button 51 on the switch causing the springs to come in contact and thereby close the talking circuit. The casing 38 is provided with a rectangular opening 52 to
 90 permit a certain amount of movement between the switch wire and the receiver. The switches at each station are connected in parallel to further insure obtaining a satisfactory contact for use in the talking circuit.

The manner in which the sets are connected in circuit is shown diagrammatically
 95 in Fig. 2. The windings of the receivers at each station are connected in series and then bridged across the secondary winding 53 of the induction coil 24. At each station the
 100 transmitter switches 45 located on the head receiver are connected in parallel and are then connected in series with the transmitter of that station and bridged across the primary winding 54 of the induction coil 24
 105 and the battery 25. Such an arrangement makes a very simple means for connecting two stations together so that communication may be held in practically the same manner
 110 as though the parties were conversing together directly. Each station is at all times in a condition for listening and by means of the automatically controlled transmitter switches the drain on the battery is limited
 115 to the time of actual conversation, thereby conserving the battery. Moreover, each party is able to control his transmitter circuit entirely independent of the other party on the line.

What is claimed is:

1. In an arrangement for communication
 120 between aviators or the like, a plurality of stations, a source of energy, an induction coil consisting of a primary winding and a secondary winding, a pair of receivers at each
 125 station, said receivers being connected in series and bridged across said secondary winding, a transmitter at each station, and a switch operable automatically to connect the transmitter at that station in circuit with
 130

said source of energy and said primary winding upon the user lowering his head to talk into the transmitter.

2. In an arrangement for communication
5 between aviators or the like, a plurality of stations, a source of energy, an induction coil consisting of a primary winding and a secondary winding, a pair of receivers at each station, said receivers being connected in series and bridged across said secondary winding,
10 a transmitter at each station, and a switch mounted on each receiver operable automatically to connect the transmitter at that station in circuit with said source of energy and said primary winding when the
15 user lowers his head to talk into the transmitter.

3. In an arrangement for communication between aviators or the like, a source of energy, an induction coil comprising a primary winding and a secondary winding, a plurality of stations and a head set for each station, said head set including a pair of receivers connected in series, a transmitter and
20 a switch operable by the movement of the head set to connect said transmitter into circuit with said source of energy.

4. In an arrangement for communication between aviators or the like, a head set comprising a transmitter box in which a transmitter is pivotally mounted, a pair of head receivers, an elastic head band arranged to hold said receivers in a given position, and a switching means consisting of a plurality
30 of contact members mounted on each of said receivers and an operating member having its ends pivotally mounted at said receivers and its central portion bearing against said transmitter box.

5. In an arrangement for communication
40 between aviators or the like, a head set comprising a transmitter, a pair of head receivers and a switch comprising a plurality of contacts mounted on one of said receivers and means operable by the movement of said

head set to close said contacts to control the circuit of said transmitter.

6. In an arrangement for communication between aviators or the like, a pair of head receivers, a transmitter mounted within a
50 transmitter box, a plurality of contact springs upon each of said receivers and a substantially U-shaped switching member having its ends pivotally mounted at the receivers and its central portion bearing
55 against said transmitter box.

7. In an arrangement for communication between aviators or the like, a head set including a pair of receivers, means for holding said receivers securely in place, a switch
60 located upon one of said receivers, a transmitter, and means for operating said switch upon movement of the head set to control the circuit of said transmitter.

8. In an arrangement for communication
65 between aviators or the like, a head set upon which is mounted a switch comprising a pair of contact springs and an operating member having one end pivotally mounted on one of said head receivers and operable by movement of said head set to close the contacts.
70

9. In an arrangement for communication between aviators or the like, a transmitter, a receiver, a source of energy, and means operable automatically to connect the transmitter in circuit with said source of energy and receiver upon the user lowering his head to talk into the transmitter.
75

10. In an arrangement for communication between aviators and the like, a plurality of
80 stations, a transmitter at each station, a source of energy, and means at each station operable automatically for connecting the transmitter at that station in circuit with the source of energy upon the user lowering
85 his head to talk into the transmitter.

In witness whereof, I hereunto subscribe my name this 10th day of October, A. D., 1917.

GEORGE MARK OMEGA JENKINS. [L. S.]