

B. R. DAVENPORT.
ELECTRICAL MEDICAL APPLIANCE.
APPLICATION FILED MAY 15, 1908.

943,918.

Patented Dec. 21, 1909.

2 SHEETS—SHEET 1.

Fig. 3.

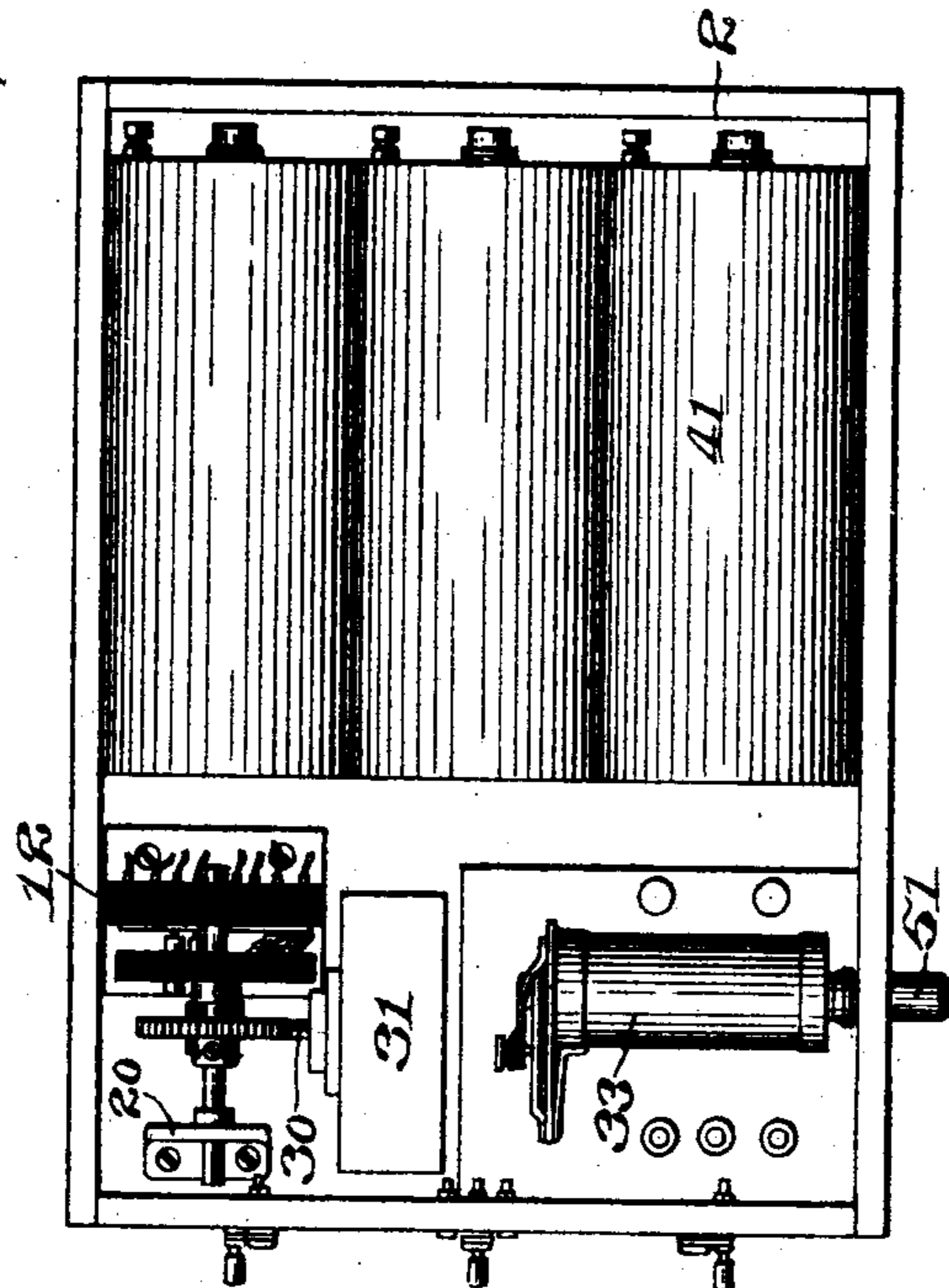


Fig. 4.

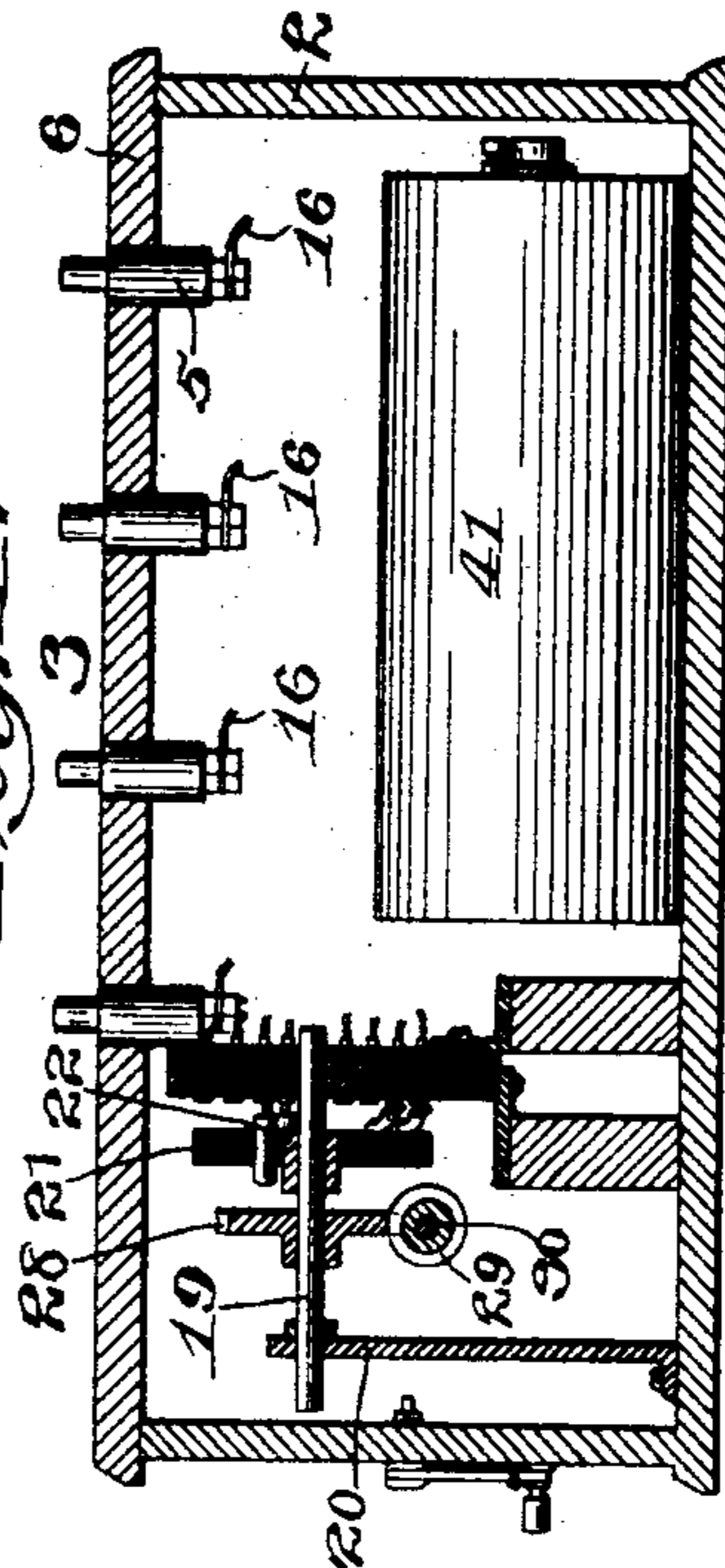


Fig. 1.

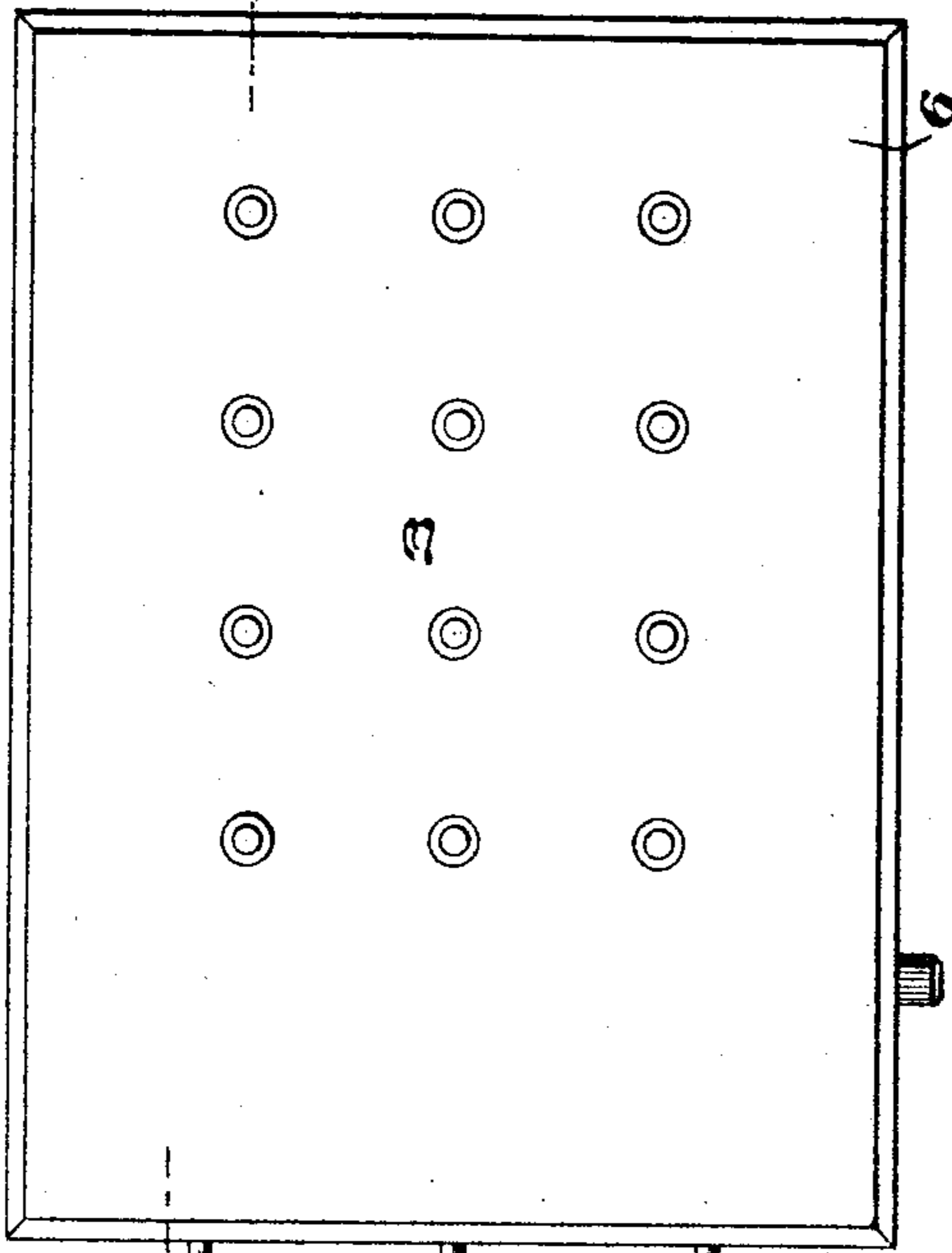
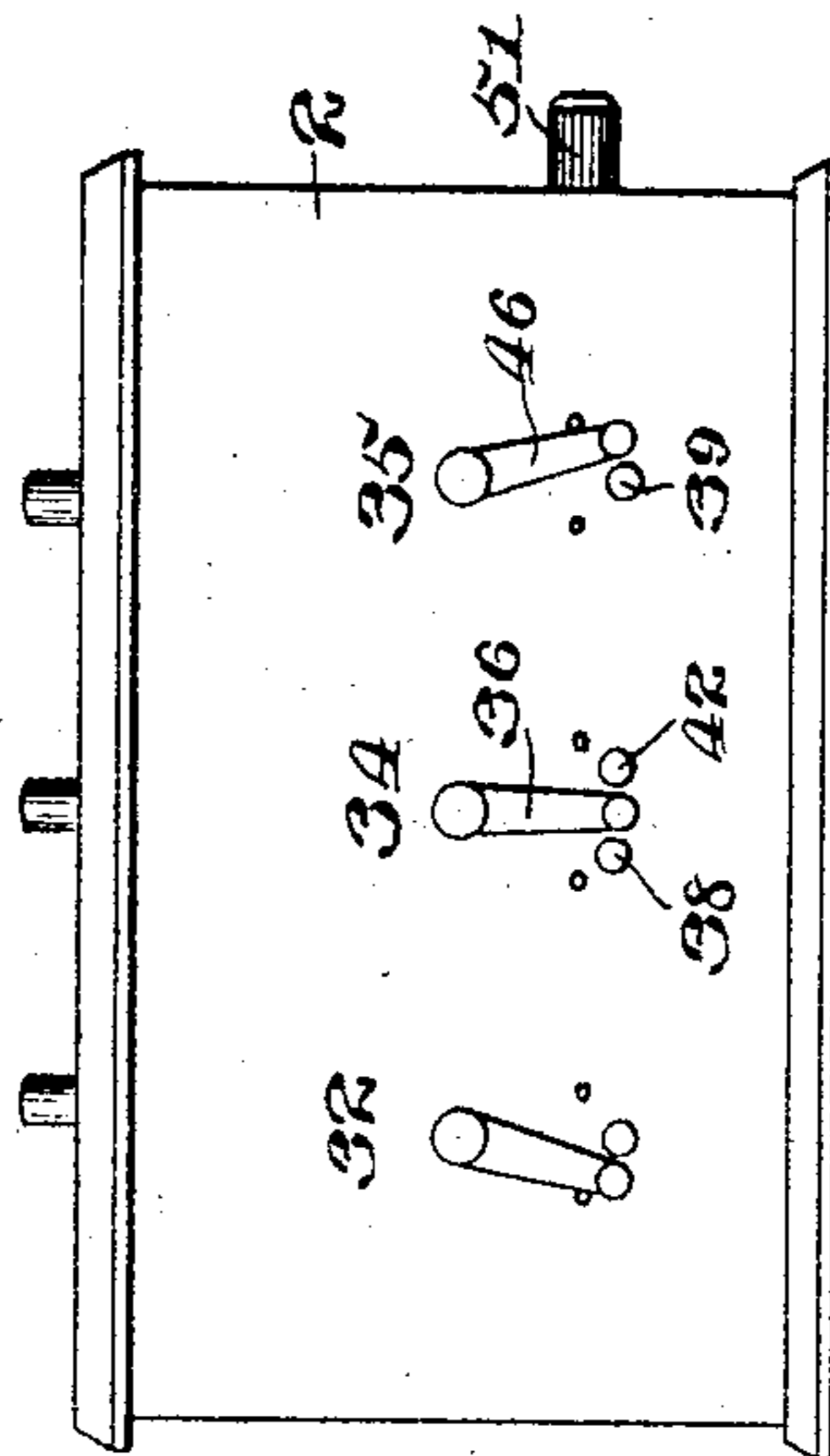


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 5.

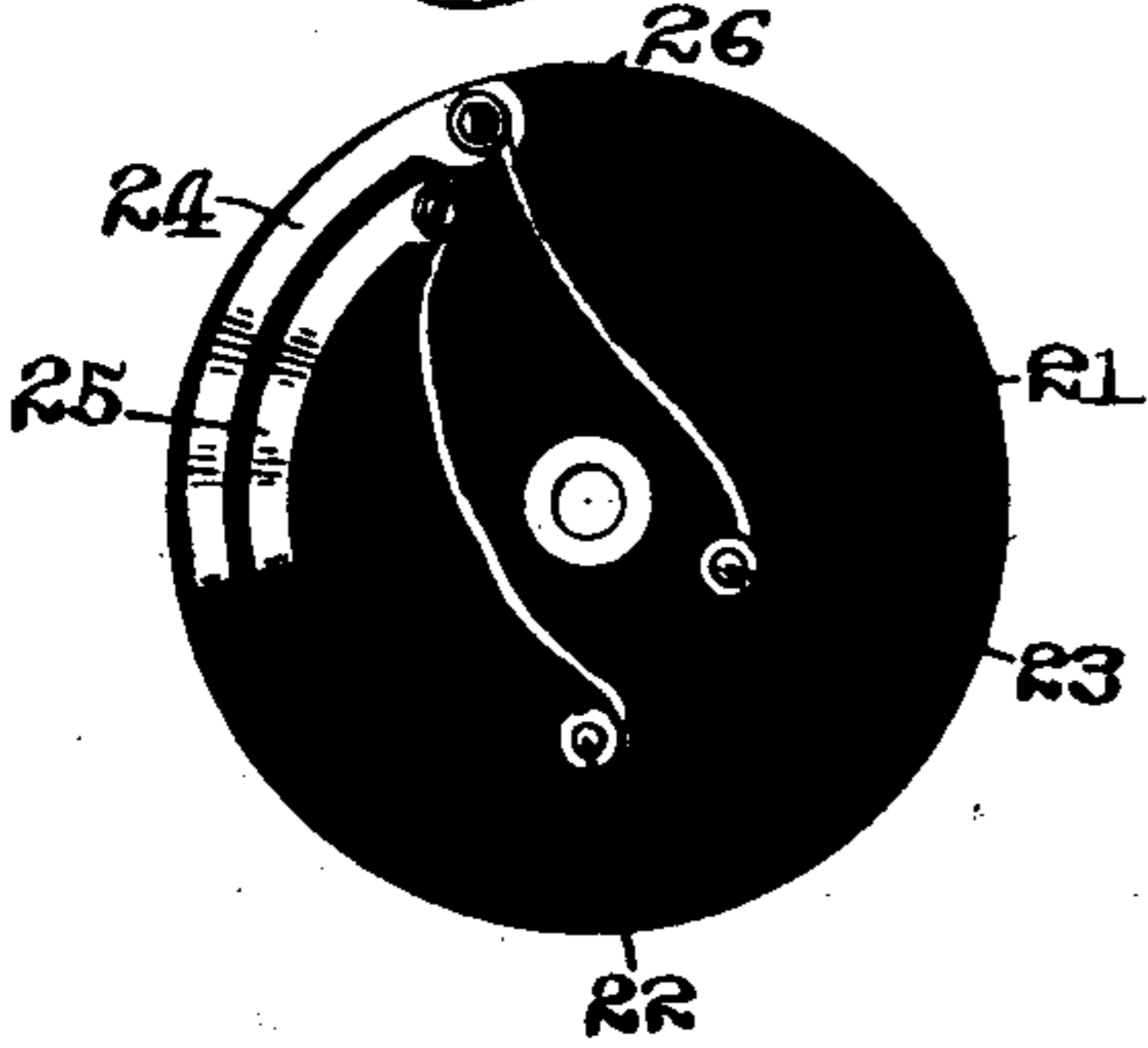


Fig. 7.

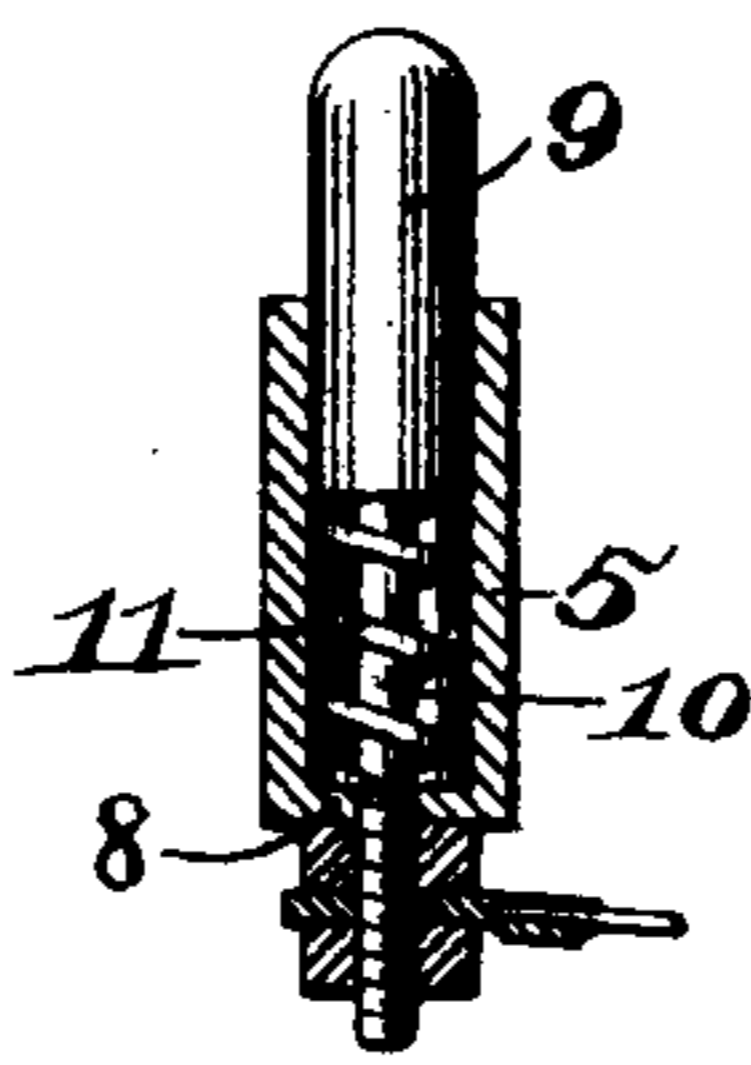


Fig. 6.

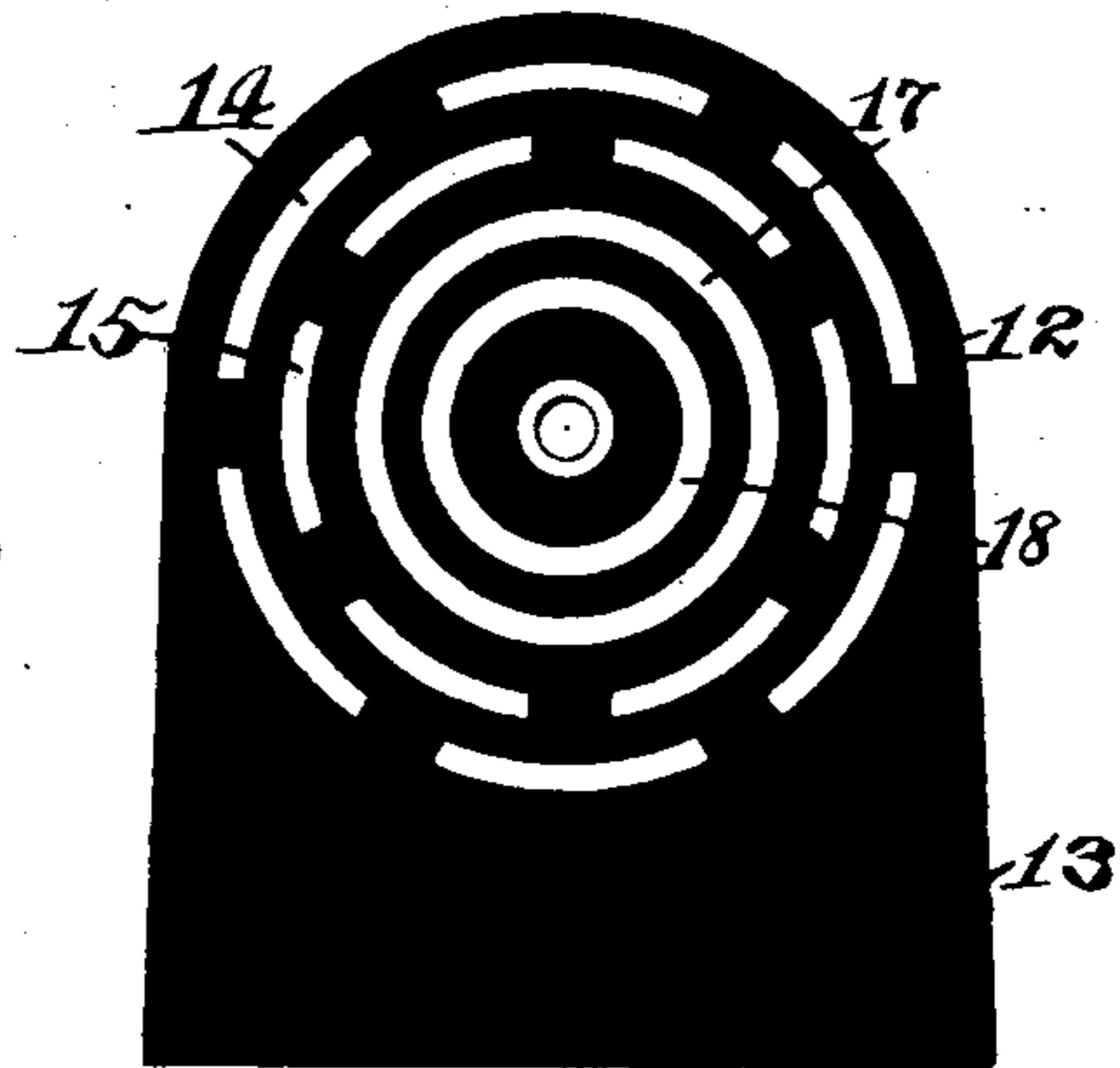


Fig. 9.

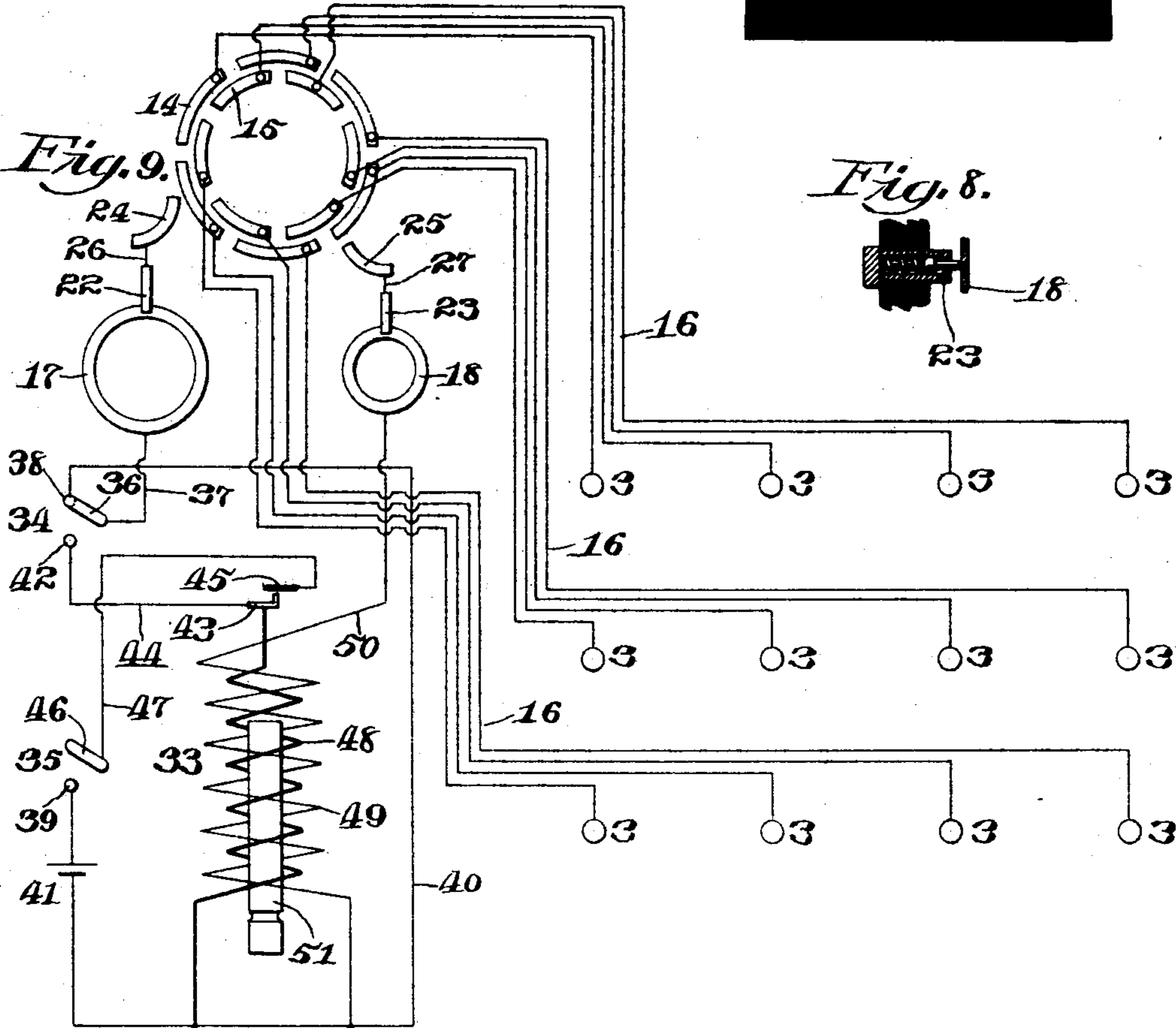
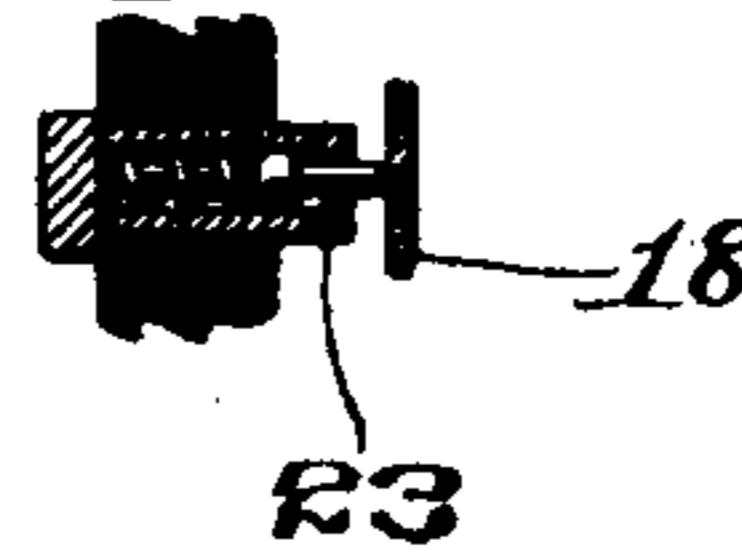


Fig. 8.



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ELECTRICAL MEDICAL APPLIANCE.

943,918.

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To all whom it may concern:

Be it known that I, BENJAMIN RUSH DAVENPORT, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Electrical Medical Appliances, of which the following is a specification.

10 The object of this invention is to provide an electrical medical appliance whereby a portion of the body of a person may be subjected to an electric current intermittently, and whereby different portions of the body
15 of a person may be subjected to an electric current intermittently, and in prescribed order, and whereby the intensity of the electric current may be regulated.

20 To this end the invention consists in the novel construction and combinations of parts which will be hereinafter fully described and claimed.

In the drawings:—Figure 1 is a plan view of my improved electrical medical appliance. Fig. 2 is an end elevation thereof. Fig. 3 is a plan view with the cover removed. Fig. 4 is a vertical section, as on the line 4—4 of Fig. 1. Fig. 5 is an elevation of the rotatable disk carrying the brushes. Fig. 6
30 is an elevation of the commutator. Fig. 7 is a detail, in section, of one of the contact devices. Fig. 8 is a detail in section of one of the brushes. Fig. 9 is a diagram showing the electrical connections.

35 2 designates a support or casing which may be of any shape and size for its intended purpose. In the present embodiment of my invention, this casing or support is made in the form of a rectangular box.

40 Distributed over the top 6 of the casing 2, in any desired manner, is a series of contact devices 3, each of which comprises a tube 5 extending through the cover 6 and having an inwardly extending bottom flange
45 8, a pin extending through the tube and having an enlarged upper portion 9 extending above the top of the tube, and a reduced lower portion 10 extending below the bottom of the tube, and a spring 11 encircling
50 the lower reduced portion 10 and extending between the flange 8 and the bottom of the upper enlarged portion 9 of the pin. The tops of the tubes 5 are flush with the top of the cover 6, and each tube 5 is held in place
55 by frictional engagement with the cover 5

or by any suitable means. The contact devices 3 are electrically insulated from each other by the cover 5 which, in the present instance, is made of wood.

The casing 2 may be made in the form of 60 a couch to receive the body of a person, and the contact devices 3 distributed over the top of the couch so that many parts of the body of a person upon the couch will contact with the devices 3 which yield against 65 the action of the springs to adjust themselves to fit and engage irregularities in the surface of the body.

Within the casing 2 is a commutator 12 which comprises a standard 13 of insulating 70 material upon which are supported an inner circular series of contact plates 15 and an outer circular series of contact plates 14. The contact plates 14 and 15 are arranged in spaced relation to each other and the spaces 75 between the plates of one series are opposite the central portions of the plates of the other series, as shown. The plates 14 and 15 correspond in number with the contact devices 3, and each plate of the commutator is electrically connected with one of the contact 80 devices by a wire 16, one end of which is connected to the commutator plate, and the other end of which is connected to the lower end of the pin 10 of one of the contact de- 85 vices.

Mounted on the standard 13 within the inner series of plates 14 is a contact ring 17, and mounted on the standard 13 within the ring 17 is another contact ring 18. Extend- 90 ing centrally through the rings 17 and 18 and series of contact plates 14 and 15, is one end of a shaft 19, the other end of which is mounted in a suitable bearing 20. Secured to the shaft 19 adjacent the standard 13, is a 95 disk 21 of insulating material, which carries two brushes 22 and 23, which are pressed into engagement with the contact rings 17 and 18 respectively. The disk 21 also carries two brushes 24 and 25 which are pressed 100 into engagement with the two series of plates 14 and 15 respectively. The brush 22 is connected to the brush 24 by a wire 26, and the brush 23 is connected to the brush 25 by a wire 27. 105

Secured to the shaft 19 is a worm wheel 28 which is engaged by a worm 29 on the power shaft 30 of any suitable motor 31, preferably electrical, whereby, when electric current is supplied to the motor, the worm 29 will en- 110

gage the worm wheel 28 and rotate the shaft 19 and therewith the disk 21, and cause the brushes 24 and 25 to successively engage the plates 14 and 15 respectively, while the
 5 brushes 22 and 23 remain in constant engagement with the plates 17 and 18 respectively.

The electric circuit (not shown) for the motor 31 is interrupted by a switch 32 on the
 10 exterior of the casing 2. By closing and opening the switch 32, the motor 31 may be started and stopped as desired.

Connected to the rings 17 and 18 are the terminal wires of an electric circuit in which
 15 is included an adjustable inductive resistance device 33 and two switches 34 and 35 as follows. Leading from the outer contact ring 17 and connected to the arm 36 of the switch 34, is a wire 37. Leading from the
 20 contact piece 38 of the switch 34 to the contact piece 39 of the switch 35, is a wire 40, which is interrupted by an electrical battery 41. Leading from the contact piece 42 of the switch 34 to one element 43 of the circuit
 25 making and breaking device of the induction device 33 is a wire 44. The element 43 of the circuit making and breaking device is connected to one end of the inner primary coil 48, and the other end of the coil 48 is
 30 connected to the wire 40. Surrounding the primary coil 48 is a secondary coil 49, one end of which is connected by a wire 50 to the inner contact ring 18, and the other end of which is connected to the wire 40. Thus it
 35 will be seen that when the switch 35 is closed, current will flow through the circuit to the contact rings 17 and 18, and that when the arm 36 of the switch 34 is in engagement with the contact piece 38 the primary coil 48
 40 will be operative to produce one degree of current, and when the arm 36 of the switch is in engagement with the contact piece 42, both the primary and secondary coils 48 and 49 respectively will be operative to produce
 45 a greater degree of current. The intensity of the current may be still further regulated by adjusting the bar 51 which extends through the primary and secondary coils 48 and 49.

50 The operation is as follows:—The switches 32 and 35 are closed, thus setting the motor 31 in operation, and closing the circuit for the contact devices 3. The operation of the motor causes the brushes 24 and 25 to suc-
 55 cessively engage the plates 14 and 15 respectively, and, as previously explained, current flows from the electric circuit to the contact rings 17 and 18, the brushes 22 and 23, the wires 26 and 27, and the brushes 24
 60 and 25 respectively. As the brushes 24 and 25 are successively engaged with and disengaged from the commutator plates 14 and 15 respectively, electric current is supplied to the contact devices 3 in prescribed order;
 65 that is to say, as the brushes 24 and 25

sweep over the plates 14 and 15 respectively, two separate contact devices 3 are supplied with electric current each time the brushes 24 and 25 are engaged with two adjacent
 70 plates 14 and 15 respectively, during the rotation of the brushes. Therefore, if the two contact devices supplied with current are in contact with the body of a person, the body will receive the current. Thus it
 75 will be seen that as the brushes 24 and 25 are constantly making and breaking connection with the plates 14 and 15, different parts of the body of a person engaged with the contact devices are thus intermittently
 80 subjected to the electric current in prescribed order.

I claim:—

1. The combination of a support provided with a surface adapted to receive the
 85 body of a person, a pair of electrically separated contact parts projecting from said surface, an open electric circuit, and automatic means for connecting said pair with said circuit at predetermined intervals, one
 90 part to one terminal of the open circuit, and the other part to the other terminal of the open circuit.

2. The combination of a support provided with a surface adapted to receive the
 95 body of a person, a pair of electrically separated yielding contact parts projecting from said surface, an open electric circuit, and automatic means for connecting said pair with said circuit at predetermined intervals,
 100 one part to one terminal of the open circuit, and the other part to the other terminal of the open circuit.

3. The combination of a support provided with a surface adapted to receive the
 105 body of a person, a series of pairs of electrically separated contact parts projecting from said surface, an open electric circuit, and automatic means for connecting said pairs with said circuit in prescribed order,
 110 one part of a pair to one terminal of the open circuit, and the other part of a pair to the other terminal of the open circuit.

4. The combination of a support provided with a surface adapted to receive the
 115 body of a person, a series of pairs of electrically separated, yielding contact parts projecting from said surface, an open electric circuit, and automatic means for connecting said pairs with said circuit in pre-
 120 scribed order, one part of a pair to one terminal of the open circuit, and the other part of a pair to the other terminal of the open circuit.

5. The combination of a support provided with a surface adapted to receive the
 125 body of a person, a pair of electrically separated contact parts projecting from said surface, an open electric circuit, automatic means for connecting said pair with said circuit at predetermined intervals, one part
 130

to one terminal of the open circuit and the other part to the other terminal of the open circuit, and means for regulating the intensity of the electric current.

- 5 6. The combination of a support provided with a surface adapted to receive the body of a person, a pair of electrically separated yielding contact parts projecting from said surface, an open electric circuit, automatic means for connecting said pair with
10 said circuit at predetermined intervals, one

part to one terminal of the open circuit and the other part to the other terminal of the open circuit, and means for regulating the intensity of the electric circuit.

15

In testimony whereof I affix my signature in presence of two witnesses.

BENJAMIN RUSH DAVENPORT.

Witnesses:

S. I. HARPER,
E. M. WARE.