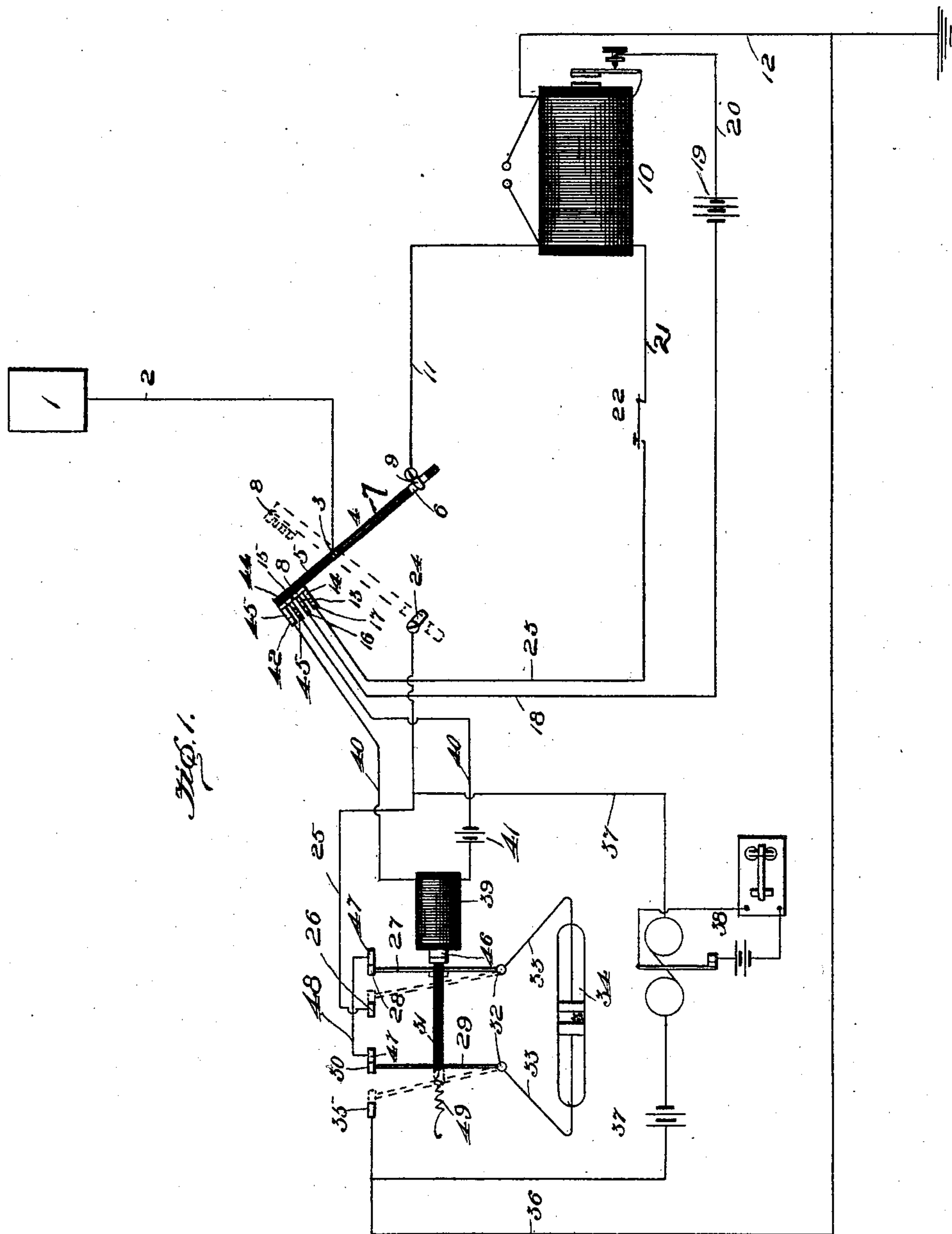


G. W. PICKARD.
WIRELESS TELEGRAPHY.

(Application filed Nov. 4, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
Bernard M. Offutt,
M. W. Johnson.

Inventor
Greenleaf W. Pickard,
by David T. Moore, Attorney

No. 708,072.

Patented Sept. 2, 1902.

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2 Sheets—Sheet 2.

Fig. 2.

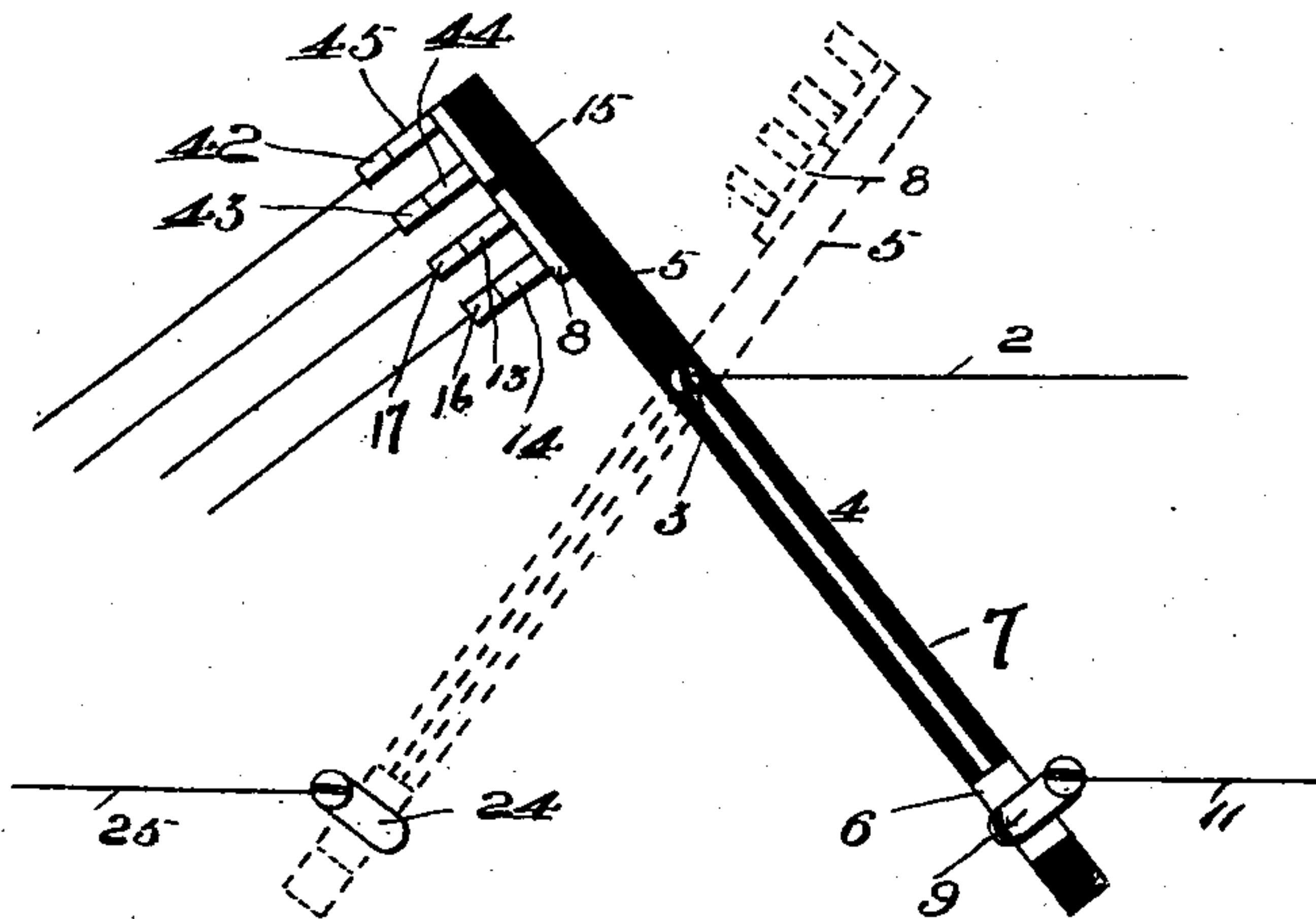
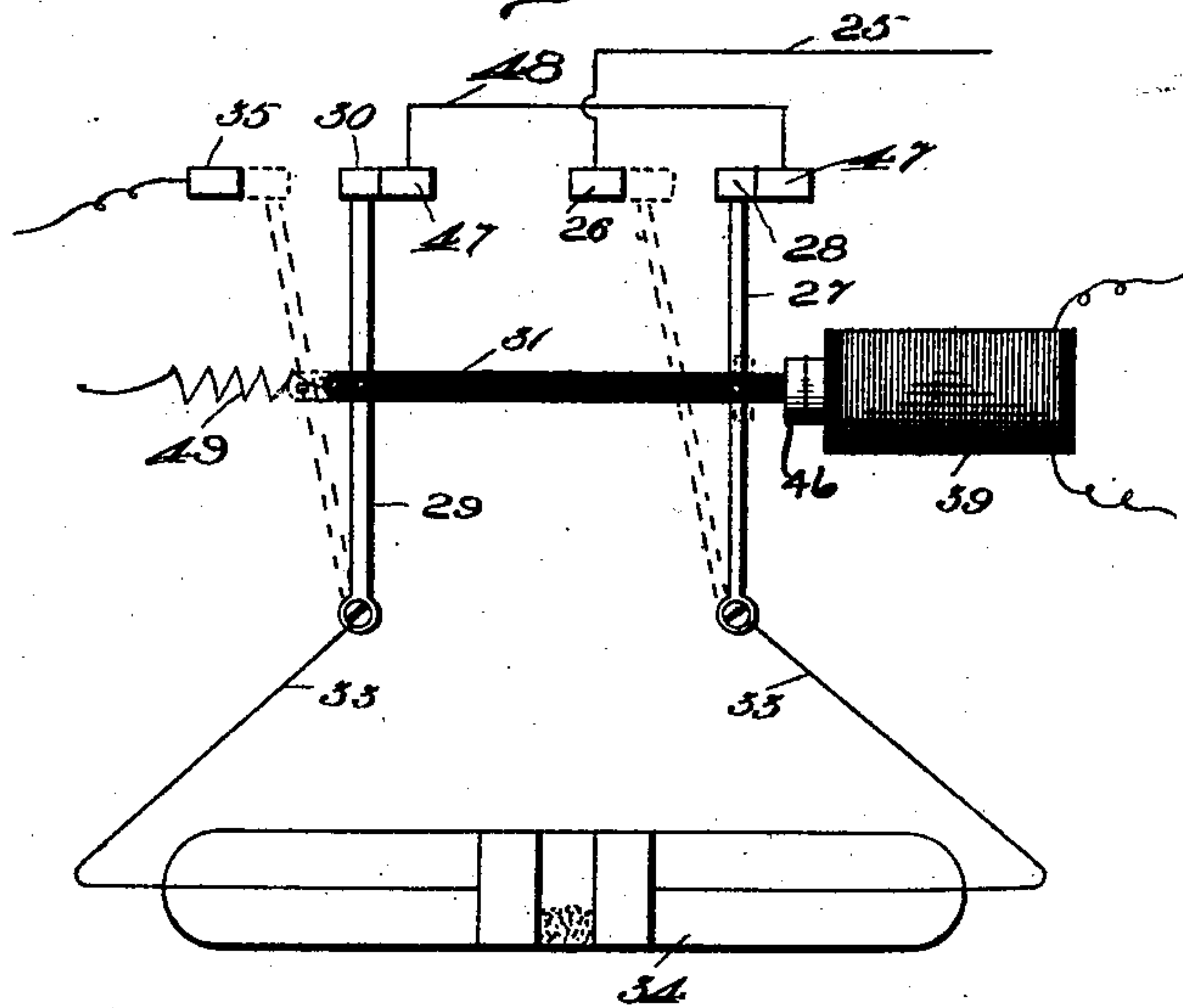


Fig. 3.



Witnesses

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M. W. Johnson

Inventor

Greenleaf W. Pickard,
by David T. Moore, Attorney

UNITED STATES PATENT OFFICE.

GREENLEAF W. PICKARD, OF BOSTON, MASSACHUSETTS, ASSIGNOR, BY
MESNE ASSIGNMENTS, TO CONSOLIDATED WIRELESS TELEGRAPH AND
TELEPHONE COMPANY, A CORPORATION OF ARIZONA TERRITORY.

WIRELESS TELEGRAPHY.

SPECIFICATION forming part of Letters Patent No. 708,072, dated September 2, 1902.

Application filed November 4, 1901. Serial No. 81,079. (No model.)

To all whom it may concern:

Be it known that I, GREENLEAF W. PICKARD, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Wireless Telegraphy, of which the following is a specification.

This invention relates to improvements in wireless telegraphy; and the main object of my invention is the provision of a terminal station in which is provided a means for automatically disconnecting and connecting a wave-responsive device in operative position as the air-wire is disconnected from or connected to the receiver of the terminal station.

Another object of my invention is the provision of a terminal station provided with a means to make it impossible to operate the transmitter, thereby saving the damaging of the coherer.

Another object of my invention is to provide for the terminal station a circuit for aerial and ground connections, with means operating automatically for cutting the coherer out of circuit or shunting while the transmitter is being operated, but allowing the coherer to be placed in circuit as soon as the transmitter has been operated, so that it will be in condition to receive impulses from the transmitter at the other terminal.

To attain these objects, the invention consists of a system of wireless telegraphy embodying novel features of construction and combination of parts, as disclosed herein.

In the drawings, Figure 1 is a diagrammatical view of the entire terminal station. Fig. 2 is an enlarged detailed view of the means for connecting and disconnecting the receiver, and Fig. 3 is a detail view of the coherer and disconnecting mechanism.

Referring by numbers to the drawings, the numeral 1 designates the aerial plate, to which is connected the conducting-wire 2, having its lower end connected at the point 3 to the switch 4. This switch consists of the insulated bar or rail 5, having a brass plate or socket 6, to one end of which is connected a wire 7, this wire also being connected to the pivot or post 3. Upon the outer end of this lever is connected the double brass

strip 8, whose purpose will appear later. In order that this switch will connect the transmitter to the aerial wire, the plate 6 is brought into contact with point or contact 9, to which is connected the secondary of the spark-coil 10 by means of the wire 11, the ground-wire 12 being connected to the other post of the secondary. At this point the contacts 13 and 14, carried by the inner portion of the strip 8, which is separated from the upper portion by means of the strip 15 of the insulator, contact the posts 16 and 17, which form a circuit with the primary of the coil through the wire 18, battery 19, and wire 20, the primary of the coil, the wire 21, the transmitting-key, and the wire 23. In order that the switch will connect the receiver with the aerial wire, the contact-point 24 is contacted by the plate 6 on the switch, the switch assuming the position shown in dotted lines. Connected to this point or contact 24 is a wire 25, connecting the same to a post 26, which at this moment is contacted by the arm 27, provided with a double-headed contact 28. Connected to this arm 27 and adapted to be moved in unison is a contact-arm 29, carrying a double-headed contact 30, a strip 31 of the insulation forming the connecting-link therebetween. These arms are pivoted at points 32, to which are connected the wires 33, these wires being connected to the coherer-tube 34. The contact-point 30 is in contact with the point 35, to which is connected the wire 36, this wire being further connected to the ground-wire 12. Connected to the wires 36 and 25 is a relay-circuit 37, which is adapted to operate the recorder instrument 38.

To automatically disconnect the coherer from the circuit and shunt the same, I employ the electromagnet 39, to which are connected the wires 40 of the battery 41. These wires are connected to the pivots 42 and 43 and are adapted to be contacted by the contact-points 44 and 45, carried by the outer portion of the strip 8. When the switch connects the aerial conductor with the transmitter, the electromagnet 39 is energized and attracts the disk 46, operating the double contacts 28 and 30 and causing them to contact the points 47, to which is connected the

short wire 48. This operation removes the coherer from the circuit and at the same time shunts it through wire 48, this shunting being desirable, as it so places the coherer and its wires that no radiation from the electrical waves can possibly effect the coherer, the wire 48 forming a complete circuit without a break or battery through the coherer, wires 33, rods 27 and 29, and points 47. I employ the tractile spring 49 to return the coherer-switch as soon as the magnet is deenergized—that is, when the plate 6 contacts the post 24.

From the foregoing description it is very evident that by the simple manipulation of the switch the transmitting apparatus is connected with the aerial conductor and the coherer-circuit is broken, whereas the lever or switch may be operated so as to connect the receiving apparatus and the aerial conductor, placing the coherer in its proper circuit and cutting the transmitter from the aerial conductor. This operation will be readily understood by considering the foregoing description in connection with the drawings; but, briefly stated, it is as follows: When the switch is operated, the plate 6 contacts point 9 and the secondary of the coil is connected with the aerial conductor, while at the same time the primary of the coil is connected in circuit, and the electromagnet 39 is energized through the circuit 40, so as to attract the disk 46, thus operating the coherer-switch and cutting the same from the circuit of the receiving apparatus. When the switch 4 is operated so as to have the plate 6 contact the point or contact 24, the electromagnet 39 becomes deenergized by reason of its circuit becoming broken, the transmitting apparatus is entirely disconnected from the aerial conductor, and the contact-points at 26 and 35 are made by reason of the tractile spring 49, thus placing the coherer in its proper circuit and leaving it ready to receive impulses. Thus it will be seen that I provide a means for automatically disconnecting the coherer from circuit when the transmitter is in operation, thus making it impossible to damage the coherer in any manner, or while the transmitter is in circuit with the aerial conductor it would be an impossibility to damage the receiver in any way.

In all wireless systems when a terminal station is employed I have found by experience that in the manipulation of the transmitter the coherer at some terminal station has been more or less damaged, and it has therefore been my aim to produce a system which when the transmitter is being used entirely cuts the coherer from the receiving apparatus, and thus prevents the same from being influenced in any manner by the transmitter.

It is evident that I provide a wireless-telegraph system which is thoroughly practical and efficient in use.

What I claim as new is—

1. In a wireless-telegraph system, the combination of a single aerial and ground connection, a transmitter and receiver, manu-

ally-operated means for connecting the transmitter or receiver with the connections, and means operated by said first-mentioned means for disconnecting the coherer from the receiver.

2. In a wireless-telegraph system, the combination of aerial and ground connections, a transmitter and a receiver, manually-operated means for connecting the aerial connection with the transmitter or receiver, and means operated by said above-mentioned means for cutting the coherer from the receiver when the transmitter is connected with the aerial and ground connections.

3. In a wireless-telegraph system, the combination of an aerial and ground connection, a transmitter, a receiver, an imperfect electrical contact in the receiver, manually-operated means for connecting the transmitter or receiver with the aerial and ground connections and means operated by said last-mentioned means for cutting the imperfect electrical contact from the receiver when the transmitter is connected with the aerial and ground connections.

4. In a wireless-telegraph system, the combination of an aerial and ground connection, a transmitter and a receiver, an imperfect electrical contact in said receiver, manually-operated means for connecting the transmitter or receiver with the aerial and ground connections, and means operated by said means for cutting the imperfect electrical contact from the receiver when the transmitter is connected with the aerial and ground connections.

5. In a wireless-telegraph system, the combination of an aerial and a ground connection, a transmitter, a receiver, a wave-responsive device in said receiver, means for disconnecting said wave-responsive device from the receiver, a switch for connecting the transmitter or receiver to the aerial and ground connections and means operated by said wave-responsive-device-disconnecting means when said switch connects the transmitter with the aerial and ground connections.

6. In a terminal station, the combination of an aerial and ground connection, a transmitter, a receiver having a wave-responsive device therein, a switch for connecting the transmitter or receiver with the aerial and ground connection, and means operated by said switch to prevent the wave-responsive device from being damaged by radiations from the transmitter when the transmitter is connected with the aerial and ground connections.

7. In a terminal station, the combination of an aerial and ground connection, a transmitter, a receiver consisting of an imperfect electrical contact, a pair of arms connected in circuit with said contact, a circuit through said arms and contact, an electromagnet, means for operating the arms to cut the contact from its circuit, means for returning the arms, and a switch for connecting the transmitter or receiver with the aerial and ground connections,

said electromagnetically-operated means being operated when the transmitter is connected with the aerial and ground connections.

8. In a wireless-telegraph system, the combination of a single aerial and ground connection, a transmitter and receiver, means for connecting the transmitter or receiver with the connections, comprising a pivoted lever of insulation material having contacts on each end for making the connections, and means operated by said first-mentioned means for disconnecting the coherer from the receiver.

9. In a wireless-telegraph system, the combination of aerial and ground connections, a transmitter and a receiver, manually-operated means for connecting the aerial connection with the transmitter or receiver, comprising a pivoted lever of insulation material having contacts on each end for making the connections, and means operated by said above-mentioned means for cutting the coherer from the receiver when the transmitter is connected with the aerial and ground connections.

10. In a wireless-telegraph system, the combination of an aerial and ground connection, a transmitter, a receiver, an imperfect electrical contact in the receiver, means for connecting the transmitter or receiver with the aerial and ground connections, comprising a pivoted lever of insulation material having contacts on each end for making the connections, and means operated by said last-mentioned means for cutting the imperfect electrical contact from the receiver when the transmitter is connected with the aerial and ground connections.

11. In a wireless-telegraph system, the combination of an aerial and a ground connection, a transmitter, a receiver, a wave-responsive device in said receiver, means for disconnecting said wave-responsive device from the receiver, a switch for connecting

the transmitter or receiver to the aerial and ground connections, comprising a pivoted lever of insulation material having contacts on each end for making the connections, and means operated by said wave-responsive-device-disconnecting means when said switch connects the transmitter with the aerial and ground connections.

12. In a terminal station, the combination of an aerial and ground connection, a transmitter, a receiver, a switch for connecting the transmitter or receiver with the aerial and ground connections, comprising a pivoted lever of insulation material having contacts on each end for making the connections, and means operated by said switch to prevent the receiver from being damaged, when the transmitter is connected with aerial and ground connections.

13. In a terminal station, the combination of an aerial and ground connection, a transmitter, a receiver, consisting of an imperfect electrical contact, a pair of arms connected in circuit with said contact, a circuit through said arms and contact, an electromagnet, means for operating the arms to cut the contact from its circuit, means for returning the arms, and a switch for connecting the transmitter or receiver with the aerial and ground connections, comprising a pivoted lever of insulation material having contacts on each end for making the connections, said electromagnetically-operated means being operated when the transmitter is connected with the aerial and ground connections.

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

GREENLEAF W. PICKARD.

Witnesses:

D. H. BRIERLEY,
LLOYD D. LUBOLD.