

(No Model.)

M. E. SULLIVAN & J. DOSS.
CIRCUIT SWITCH.

No. 485,337.

Patented Nov. 1, 1892.

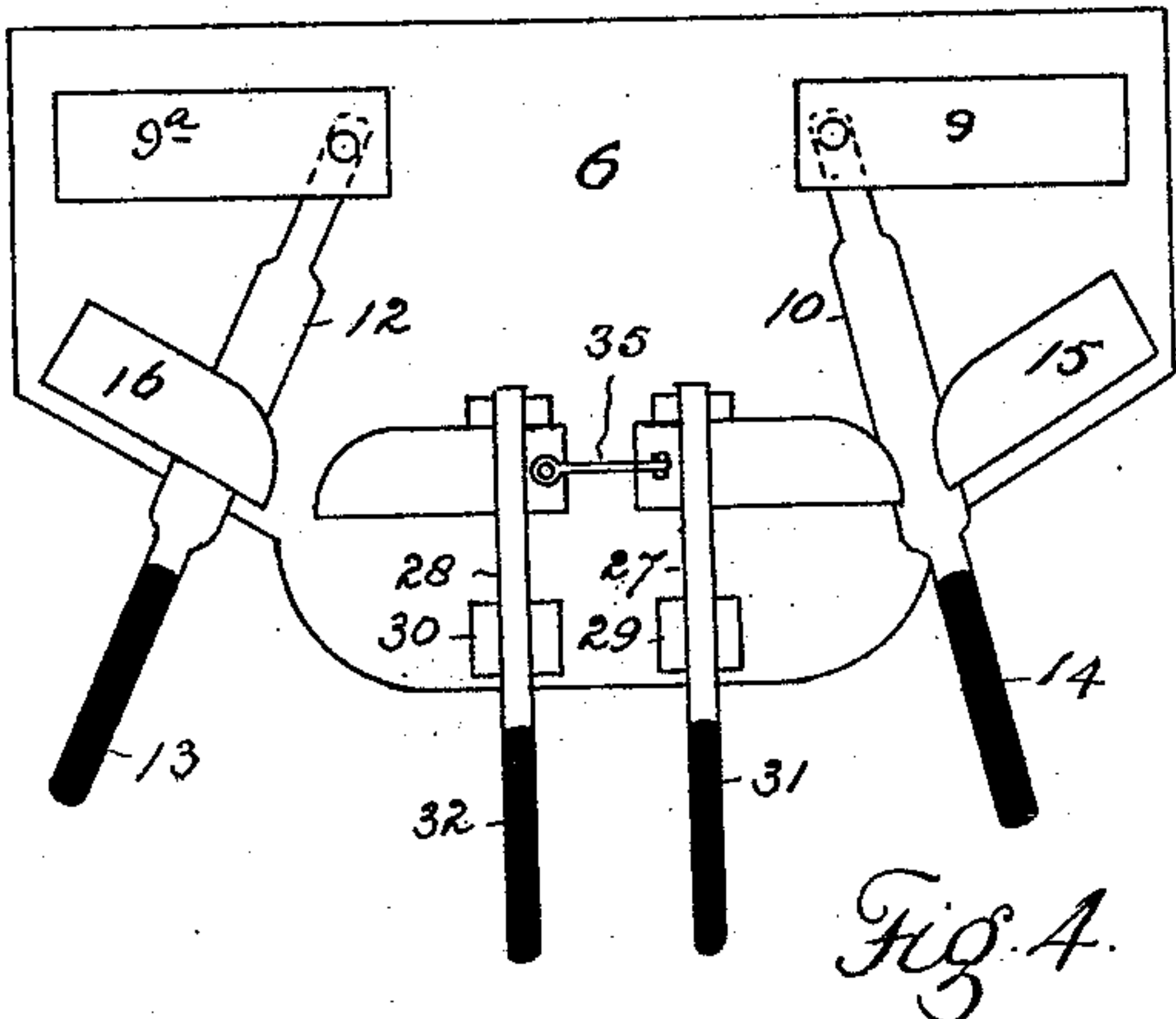


Fig. 4.

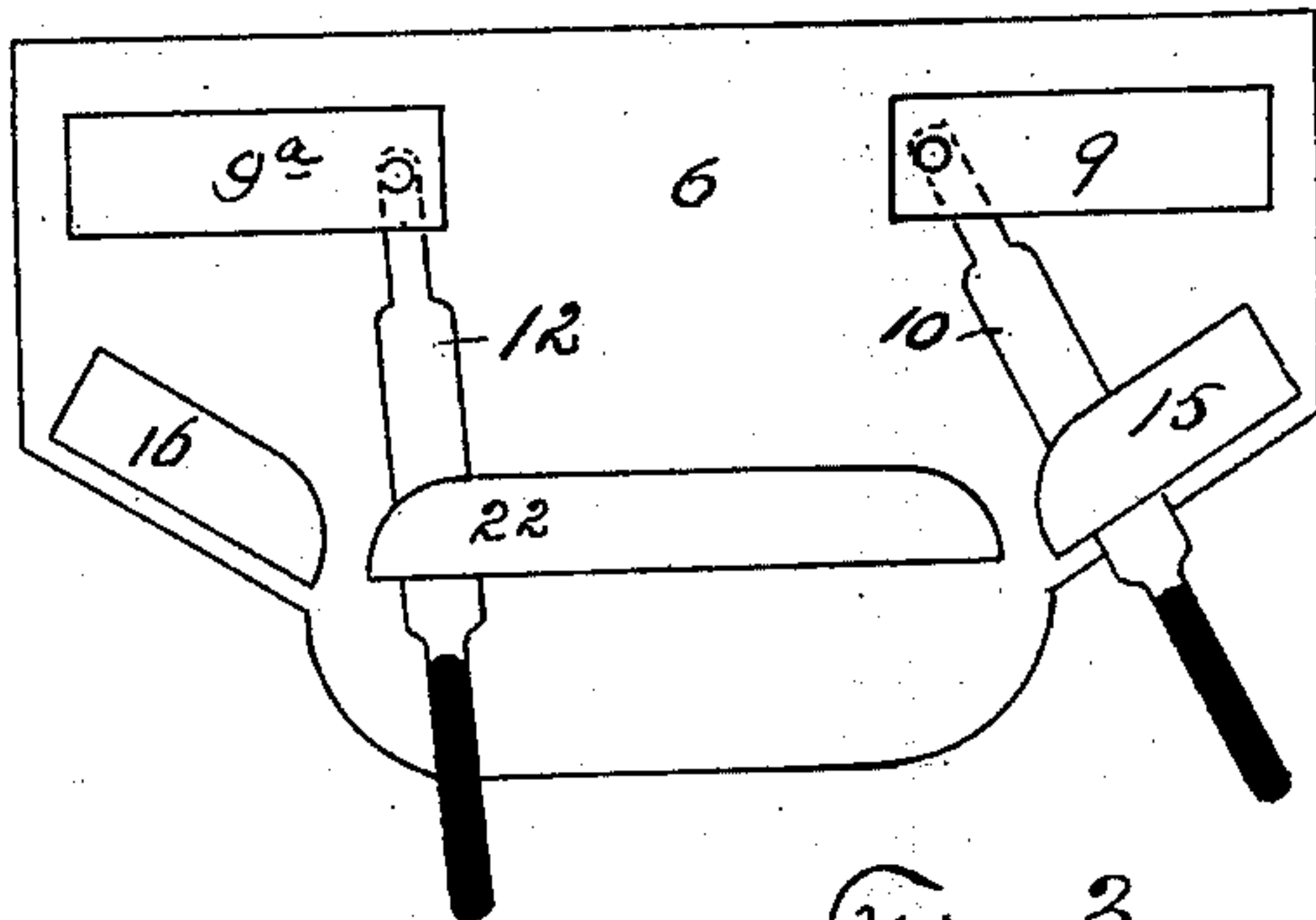


Fig. 3.

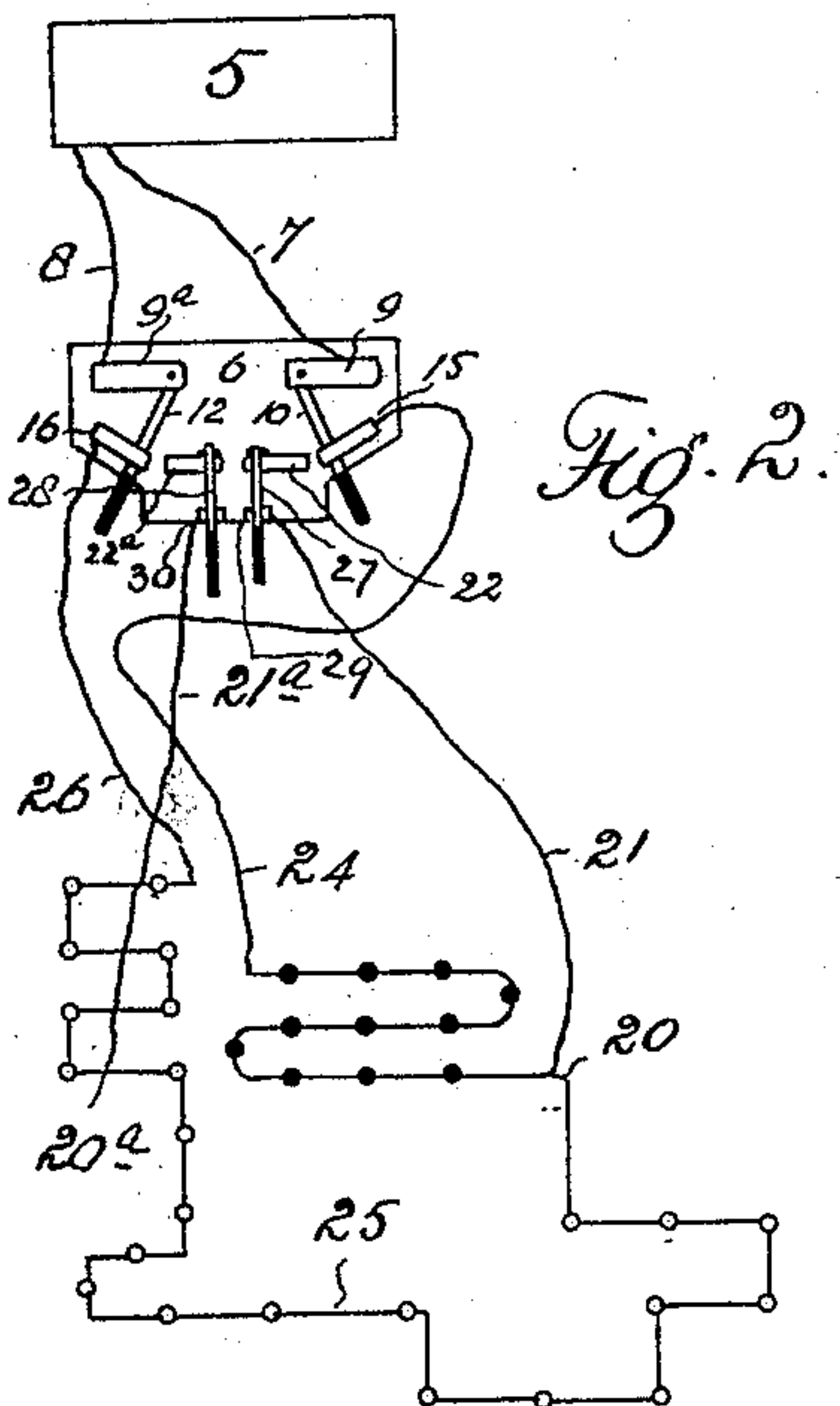


Fig. 2.

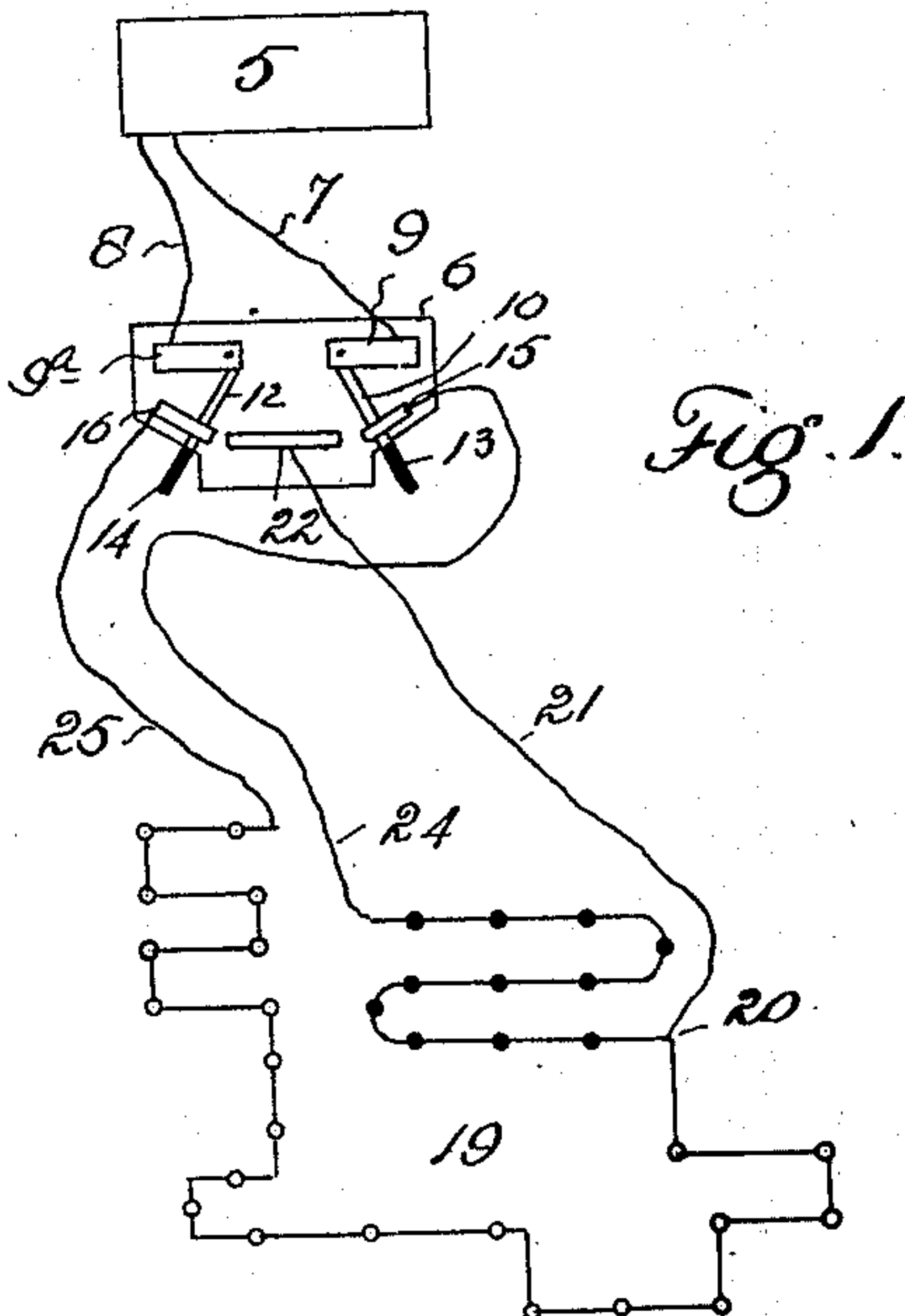


Fig. 1.

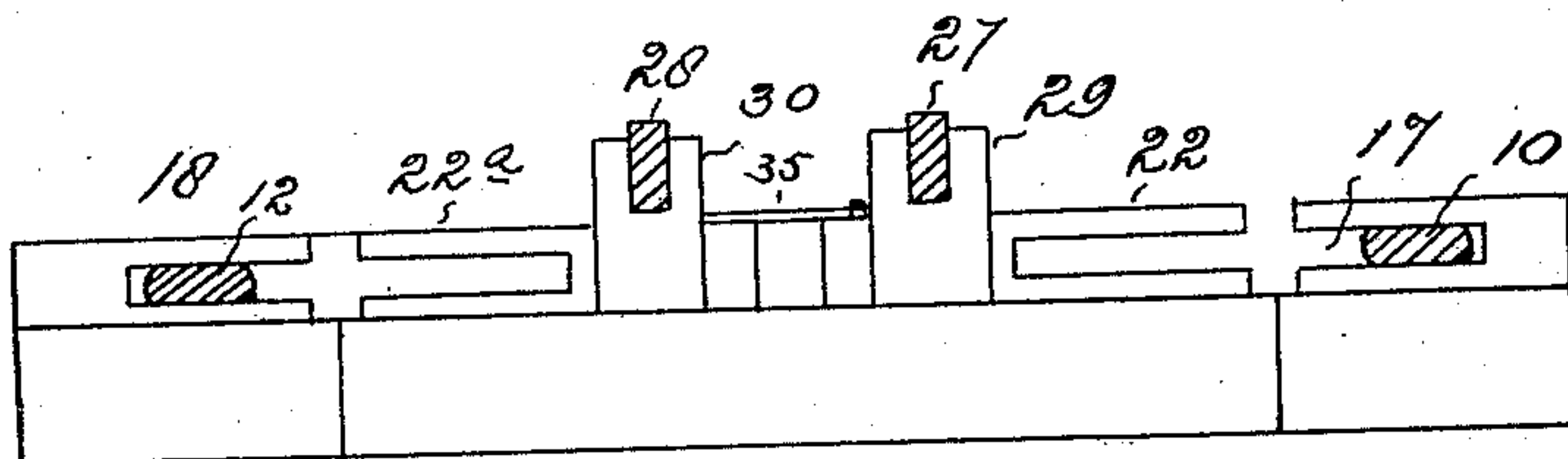


Fig. 5.

WITNESSES:

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MARVIN E. SULLIVAN AND JOHN DOSS, OF DENVER, COLORADO.

CIRCUIT-SWITCH.

SPECIFICATION forming part of Letters Patent No. 485,337, dated November 1, 1892.

Application filed April 2, 1892. Serial No. 427,557. (No model.)

To all whom it may concern:

Be it known that we, MARVIN E. SULLIVAN and JOHN DOSS, citizens of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Circuit-Switches; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

Our invention relates to improvements in circuit-switches, and its object is the division of the main circuit into sections, whereby the current may be cut off from any one section at will without in any manner interfering with the current-supply for the lamps or motors in the other parts of the circuit. For instance, by the use of our improved switch it becomes practicable to locate different sets of lamps—as house or store lamps and street-lamps—in the same circuit and cut out any set of lamps without interfering with those on the other parts of such circuit. By this means one set of lamps may be extinguished at one hour of the night and another set at a different hour, according to the requirements or necessities of the case.

To this end the invention consists of the features, arrangements, and combinations hereinafter described and claimed, and will be fully understood by reference to the accompanying drawings, in which is illustrated an embodiment of the invention.

In the drawings, Figure 1 is a diagrammatic view illustrating the use of the switch with a circuit divided into two sections. Fig. 2 is a similar view showing the main circuit divided into three sections. Figs. 3 and 4 are plan views of the switch, shown on an enlarged scale. Fig. 5 is an end elevation partially in section and still further enlarged.

Similar reference characters indicate corresponding parts or elements of the mechanism in the several views.

Let the numeral 5 designate the dynamo or electrical source; 6, the switch-block composed of suitable insulating material; 7 and 8, the conductors leading from the dynamo

to the contact-blocks 9 and 9^a, which are composed of any suitable material forming a good conductor for the electric current—as copper.

For convenience in this specification we will speak of the parts which are to act as good conductors for the current as “metallic,” not wishing, however, to limit ourselves to the employment of metal for this purpose, since it may be found desirable to make use of other material.

In blocks 9 and 9^a are pivoted the metallic arms 10 and 12, respectively, provided with the insulating extremities or handles 13 and 14. The normal position of arms 10 and 12 may be said to be in engagement or in electrical contact with metallic contacts 15 and 16, respectively, these contacts being secured to the switch-block 6, and slotted or recessed, as shown at 17 and 18, to receive said arms. The main circuit 19, through which it is desired to pass the current, terminates at or has its extremities connected with contacts 15 and 16. This main circuit is divided into two sections 24 and 25 at any desired point, as 20, by a branch wire 21, leading to another metallic contact-block 22, secured to the switch-block and located between contacts 15 and 16. This contact-block 22 is slotted on both sides—that is, on the sides adjacent to contacts 15 and 16—whereby arms 10 and 12 may be readily shifted from contacts 15 and 16 to the intermediate contact 22.

When all the lamps on the circuit 19 are burning, the pivoted arms 10 and 12 engage contacts 15 and 16, respectively, and the current may be said to pass from the dynamo through wire 7, contact 9, arm 10, contact 15, sections 24 and 25 of the main circuit, contact 16, arm 12, contact 9^a, and wire 8 to the electrical source. Now if it is desired to cut section 24 out of the circuit arm 10 is shifted from contact 15 to contact 22, these contacts being so located that a good electrical contact is formed with 22 before it is broken at 15, thus preventing sparking at the contacts and obviating any interference with the lamps on that part of the circuit where they are to remain lighted. When arm 10 has been shifted, as stated, the current passes from the dynamo through wire 7, contact 9, arm 10, contact 22, branch wire 21, and section 25 of the main circuit, contact 16, arm 12, con-

tact 9^a, and wire 8 to the dynamo. If it is desired to cut out the lamps on section 25 of the circuit, arm 10 is returned to contact 15 and arm 12 shifted from contact 16 to contact 22, their construction and location being such that the complete electrical contact is made at one point before it is broken at the other, as before stated with reference to contacts 15 and 22. Arm 12 being in engagement with contact 22 and arm 10 in engagement with contact 15, the current passes from the dynamo through wire 7, contact 9, arm 10, contact 15, wire 24, branch wire 21, contact 22, arm 12, contact 9^a, and wire 8 to the dynamo. When it is desired to divide the main circuit into three sections 24, 25, and 26, the switch-block is provided with an extra contact 22^a and movable arms 27 and 28 and pivoted on the contacts 22 and 22^a, respectively, and adapted to engage other contacts 29 and 30. These last-named arms are provided with insulating-handles 31 and 32. Another branch wire 21^a is then run from any desired point of the circuit between point 20 and contact 30, as 20^a, to the contact 30, while wire 21 leads to contact 29. If all the lamps are burning, arms 10 and 12 engage contacts 15 and 16, as before. If it is desired to cut out the lamp on section 24, arm 10 is shifted to contact 22 and all the other lamps will remain lighted, the current passing from the dynamo through parts 7, 9, 10, 22, 27, 29, 21, 25, 26, 16, 12, 9^a, and 8, in the order named, back to the dynamo. If afterward it becomes necessary to cut section 26 out of the circuit, arm 16 is shifted to contact 22^a, when the current after leaving section 25 passes through parts 21^a, 30, 28, 22^a, 12, 9^a, and 8 to the dynamo, and finally to cut out section 25 it will only be necessary to disconnect arm 27 or 28 from its respective contact 29 or 30. Contacts 22 and 22^a may be made practically a single contact, when it is desired to use only two sets of lamps, by the use of a suitable metallic connection 35, which may be so adjusted as to connect or divide these contacts as may be desired, according as it is necessary to control two or more sets of lights or motors on the main circuit. This switch may be placed on the dynamo or switchboard, or may be conveniently placed in the central station or any desired place in the circuit; or a number of the switches may be placed at different points in the circuit for cutting out and in different sets of lights at various times, as desired.

Our improved switch may be used on arc or incandescent circuits, direct or alternating, for light or power.

The branch-circuit wires, as 21 and 21^a, may be only large enough to safely carry the current required when part of the load is cut out by cutting these wires into the circuit. Hence they need not be as large as the main-circuit wires. These switches may be used on motor-circuits as well as elsewhere.

It will be observed there may be any number of intermediate contacts 22 22^a, &c., so constructed and arranged that they may be necessarily engaged by the pivoted arms 10 and 12. There must, of course, be a branch wire leading to each of these contacts from any desired point of the main circuit, thus dividing said circuit into as many sections as desired, each of which may be separately and independently controlled.

Having thus described our invention, what we claim is—

1. The combination, with the main circuit, of the switch composed of a suitable insulating-base, two contacts to which the wires from the dynamo lead, arms pivoted in said contacts, two other contacts to which the main-circuit terminals respectively lead and with which the pivoted arms are normally respectively connected, and an intermediate contact adapted to engage the pivoted arms as they are shifted from their normal position, and a branch-circuit wire leading from any point of the main circuit to said last-named contact, whereby either part of the circuit may be cut out or in at will without affecting the other part, substantially as described.

2. The combination, with the main circuit, of a switch consisting of an insulating-base, two contacts secured to said base and to which the mains from the dynamo respectively lead, arms pivoted in said contacts, two other contacts to which the main-circuit terminals lead and with which the pivoted arms are connected when the current passes through the entire main circuit, and two or more intermediate contacts adapted to be engaged by the pivotal arms when shifted, and branch-contact wires leading from different parts of the main circuit to said intermediate contacts, substantially as described.

3. The combination, with the main circuit, of the switch composed of the insulating-base, two contacts 9 and 9^a, to which the dynamo-mains lead, arms 10 and 12, movably connected with said contacts, contacts 15 and 16, to which the main-circuit terminals lead and adapted to engage the movable arms, intermediate contacts 22 22^a, &c., adapted to engage said arms when shifted, auxiliary contacts 29 and 30, located in proximity to the intermediate contacts, movable arms 27 28, &c., connecting each pair of the last two sets of contacts, and branch-circuit wires 21 21^a, &c., leading from the auxiliary contacts to different points of the main circuit, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

MARVIN E. SULLIVAN.
JOHN DOSS.

Witnesses:

ALBERT C. OVIATT,
CHARLES H. BENNET.