

(No Model.)

C. A. HITCHCOCK & W. BURNLEY.

TELEPHONE SWITCH.

No. 356,040.

Patented Jan. 11, 1887.

Fig. 1.

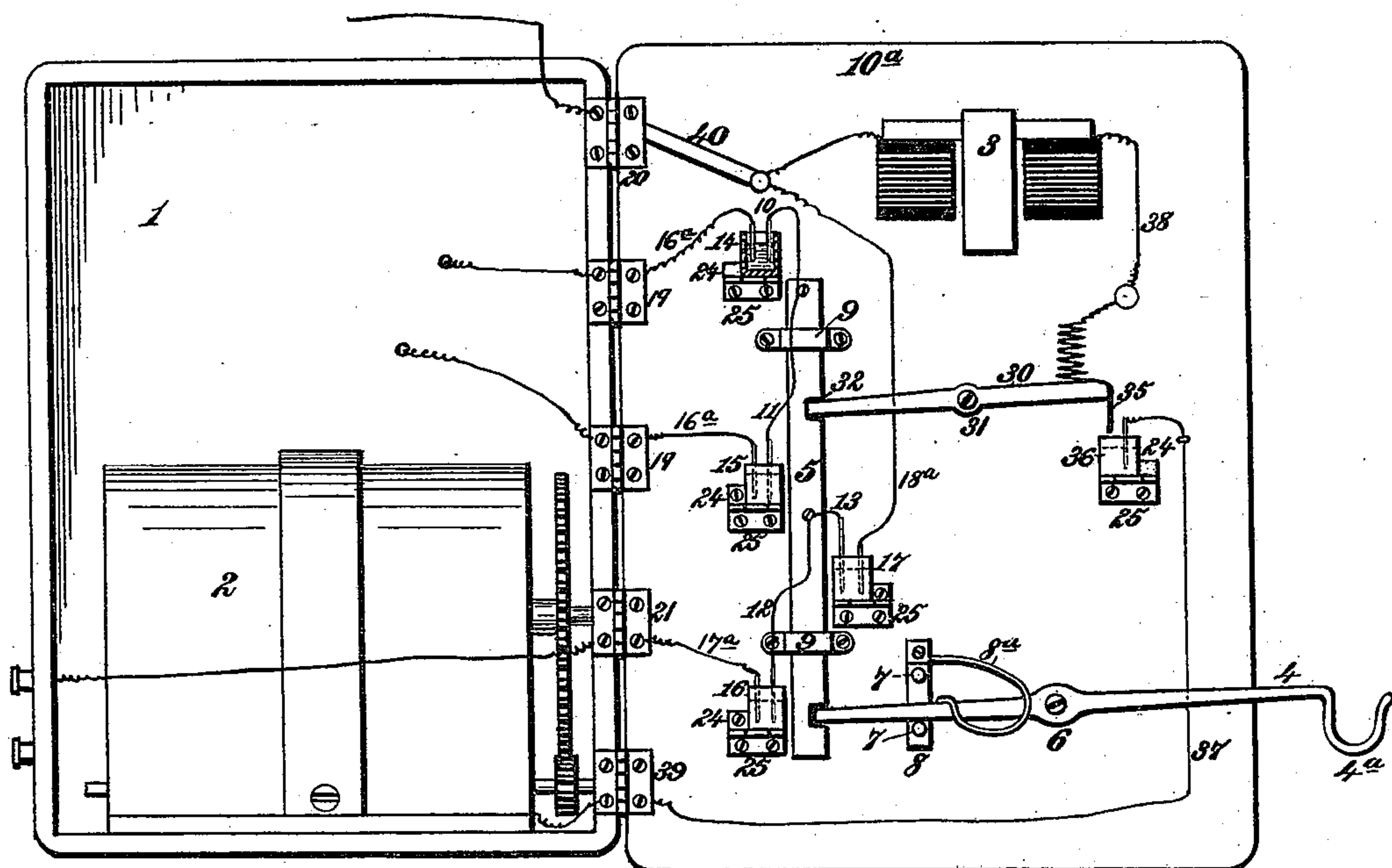
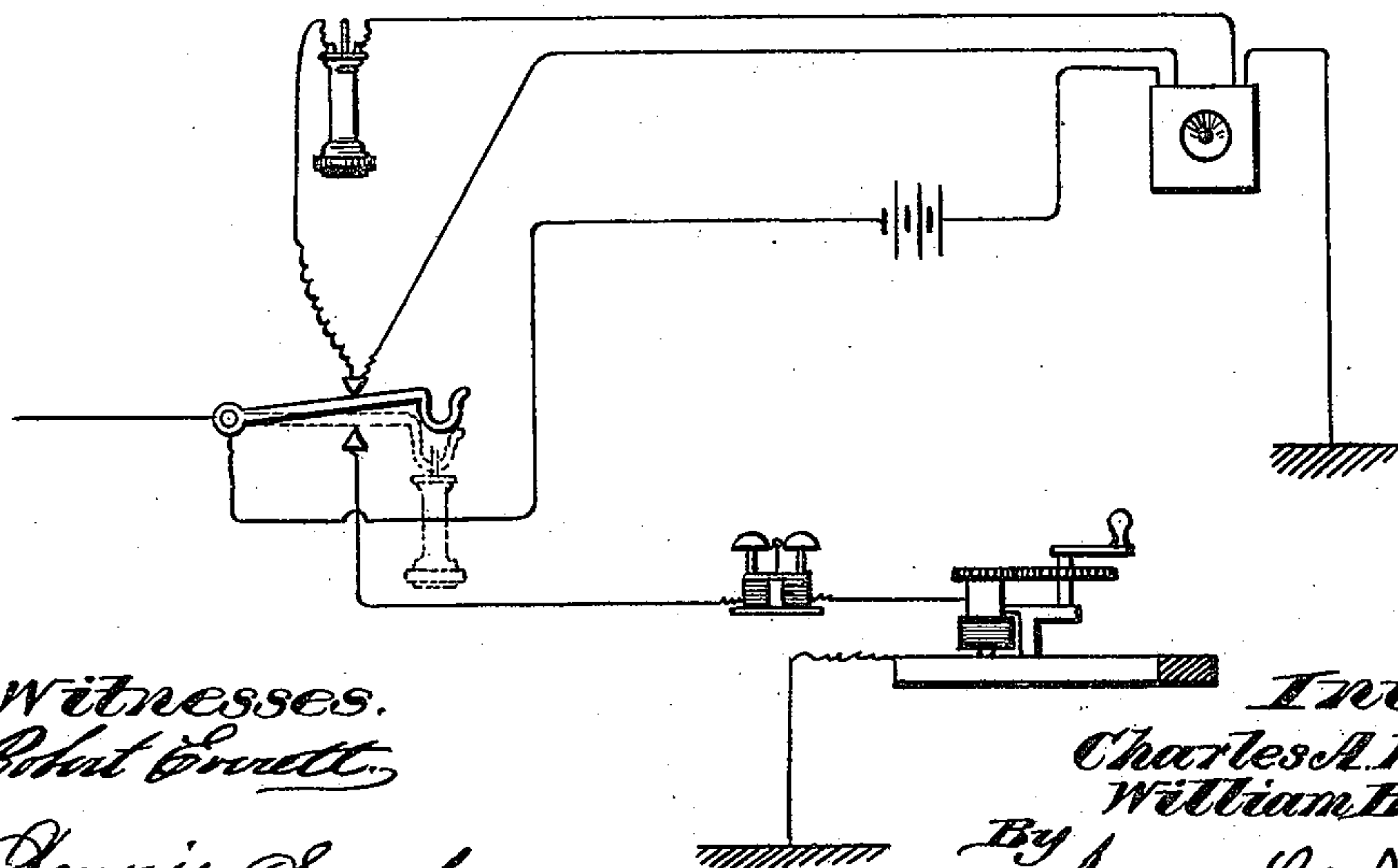


Fig. 2.



Witnesses.
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UNITED STATES PATENT OFFICE.

CHARLES A. HITCHCOCK AND WILLIAM BURNLEY, OF NORTH EAST, ASSIGNORS TO THEMSELVES, AND LEWIS F. WATSON, OF WARREN, AND SAMUEL A. DAVENPORT, OF ERIE, PENNSYLVANIA.

TELEPHONE-SWITCH.

SPECIFICATION forming part of Letters Patent No. 356,040, dated January 11, 1887.

Application filed April 10, 1886. Serial No. 198,482. (No model.)

To all whom it may concern:

Be it known that we, CHARLES A. HITCHCOCK and WILLIAM BURNLEY, citizens of the United States, residing at North East, in the county of Erie and State of Pennsylvania, have invented new and useful Improvements in Telephone-Switches, of which the following is a specification.

The present invention relates to that class of telephone-switches in which a hooked lever supports the receiver or hand-telephone in such manner that a movement of the lever in one direction by the removal of the receiver disconnects the call-circuit from the main line and connects with the latter the receiver and secondary circuit of the transmitter, and at the same time also completes the primary local circuit of the transmitter, while a movement of the lever in the other direction by the weight of the receiver cuts out the latter and the secondary circuit of the transmitter and restores the call-circuit.

The object of the invention is to provide a switch mechanism which is reliable, durable, and simple in construction, and in which the liability of the corrosion or destruction of the electrodes or contact-points is effectually prevented.

To these ends the invention consists in the construction and arrangement of devices, which will be hereinafter more fully described, and then set forth in the claims.

In the accompanying drawings, Figure 1 is a front view of an opened call or signal box having the switch mechanism in position for bringing the local battery, transmitter, and receiver in line-circuit. Fig. 2 is a diagram view representing the arrangement of circuits, but, for the sake of clearness, not showing the special form of contact devices which constitute our invention and are thrown into action by the switch-lever.

The reference-numeral 1 designates a telephone signaling or call box, which contains the ordinary magneto-electric generator 2 and the customary binding-posts for making connections with the various circuits, hereinafter referred to. The cover or door 10^a of the box carries the switch mechanism which constitutes

our invention and the ordinary bell or annunciator devices 3.

The switch mechanism comprises a horizontal lever, 4, having its outer end shaped into a hook, 4^a, and its inner end fitted into a recess in a vertical bar, 5. The lever is fulcrumed at or near its middle, as is seen at 6, and it moves between stop-pins 7 on a bracket or plate, 8, fastened to the inner side of the door 10^a. The object of these pins is to limit or define the degree of movement of the lever, and a spring, 8^a, bearing upon the same, serves to hold the lever in contact with the lower stop-pin when a weight in the shape of the ordinary telephone-receiver is not applied to the hook on the lever.

The spring 8^a may be of any desired form, but for the sake of strength and cheapness it is made of bent wire, and is curved so as to have one of its legs bear upon the lever while the other leg is secured to the bracket 8. The vertical bar 5 is fitted in loops or bands 9, and is capable of moving up and down in the same. In place of said loops we may resort to guide-pins passing through slots in the bar 5 for guiding the movement of the latter. The function of the bar 5 is to make and break different circuits belonging to an organized telephone system, the movement of the bar 5 being effected by taking the receiver off from the hook 4^a or hanging it thereon. The bar 5 carries the electrodes or wires 10, 11, 12, and 13, which co-operate in connection with mercury contact-cups 14, 15, 16, and 17, arranged in juxtaposition to the bar 5, in the manner clearly shown in Fig. 1. These mercury-cups are preferably made of wood, porcelain, or other material not liable to be affected or corroded by a conductive filling of amalgamated mercury or composition of tin and mercury. The various cups are each fastened to a small plate or support, 24, which is connected by a pintle and eye to a second plate, 25, secured to the door 10^a. By such means the mercury-cups can be set into an upright position when in use, as is shown in Fig. 1, or they can be turned horizontally, or at right angles to the door, for discharging their contents.

The mercury-cups above referred to are in

constant metallic connection with the wires 16^a 17^a 18^a, which are respectively included in the transmitter, receiver, and line-circuits of a local telephone system. The wires 16^a are
 5 connected with the hinges 19, the wire 18^a with the hinge 20, and the wire 17^a with the hinge 21, and all these hinges are in their turn connected with the out and ingoing portions of the transmitter, receiver, and line-
 10 wires, as is seen in Fig. 1. When the weight of the receiver is taken from the hook 4^a, the spring 8^a tends to throw the inner end of the lever 4 against the lower stop-pin, 7, thus moving the bar 5 downward in its guide-loops
 15 and bringing the electrodes or wires 10, 11, 12, and 13 into metallic connection with the mercury-filling of the contact-cups 14, 15, 16, and 17, and in such manner closing the transmitter, receiver, and line-circuits and per-
 20 mitting telephonic communication to be had with a distant station.

We have indicated the different circuits in the diagram, Fig. 2, omitting, however, from the latter the special form of mercury con-
 25 tact devices and the means for bringing the latter in and out of action. When the receiver is applied to the switch-lever, its weight serves to bring the latter against the upper stop-pin, 7, and the bar 5 is elevated at the
 30 same time for throwing the battery transmitter and receiver out of line-circuit, such result being effected by moving the electrodes 10, 11, 12, and 13 out of contact with the mercury-filling of the different cups. When the above
 35 circuits are broken, the magneto-electric generator and call-bell are brought into line-circuit by means of an auxiliary lever, 30, which is fulcrumed at its center, as is shown at 31, and has a tenon or point fitting into a gain or
 40 notch, 32, in the bar 5, so as to be vibrated by the movement of said bar. The lever 30 carries an electrode or wire terminal, 35, adapted to dip into the mercury-filling of the cup 36, the latter being in constant metallic connec-
 45 tion with the wire 37, extending to the mag-

neto-electric generator and ground, the connection between the door and box being through the hinge 39. A wire, 38, extending from the electrode 35 through the bell-coils
 55 passes to line, the connection being through a metal strip, 40, and hinge 20. The cup 36 is fastened to a hinged plate, 24, in the same manner as the cups included in the other circuits.

It has been demonstrated that by using mercury contact-cups and electrodes, as above
 55 fully described, the different circuits are reliably made and broken, and the corrosion or oxidation of the electrodes is effectually prevented, since the wires or electrodes are not
 60 affected by the amalgamated mercury-filling of the cups.

It should be observed that the levers of the switch mechanism are preferably made of wood or hard india-rubber; but any other non-con-
 65 ducting material may be used for the same.

What we claim as our invention is—

1. In a telephone switch system, the combination of mercury contact-cups, a movable bar, and electrodes carried by the latter with
 70 the switch-lever and the transmitter, receiver, and line-circuits, substantially as herein set forth.

2. In a telephone switch system, the combination of mercury contact-cups, a movable bar carrying electrodes, and an auxiliary lever pro-
 75 vided with an electrode with the switch-lever and the transmitter, receiver, call, and line-circuits, substantially as herein set forth.

3. In a telephone switch system, the combination of a mercury-cup and a pivoted or
 80 hinged support with the call-box door, and the switch appliances carried thereby, substantially as herein set forth.

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

CHARLES A. HITCHCOCK.

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Witnesses:

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