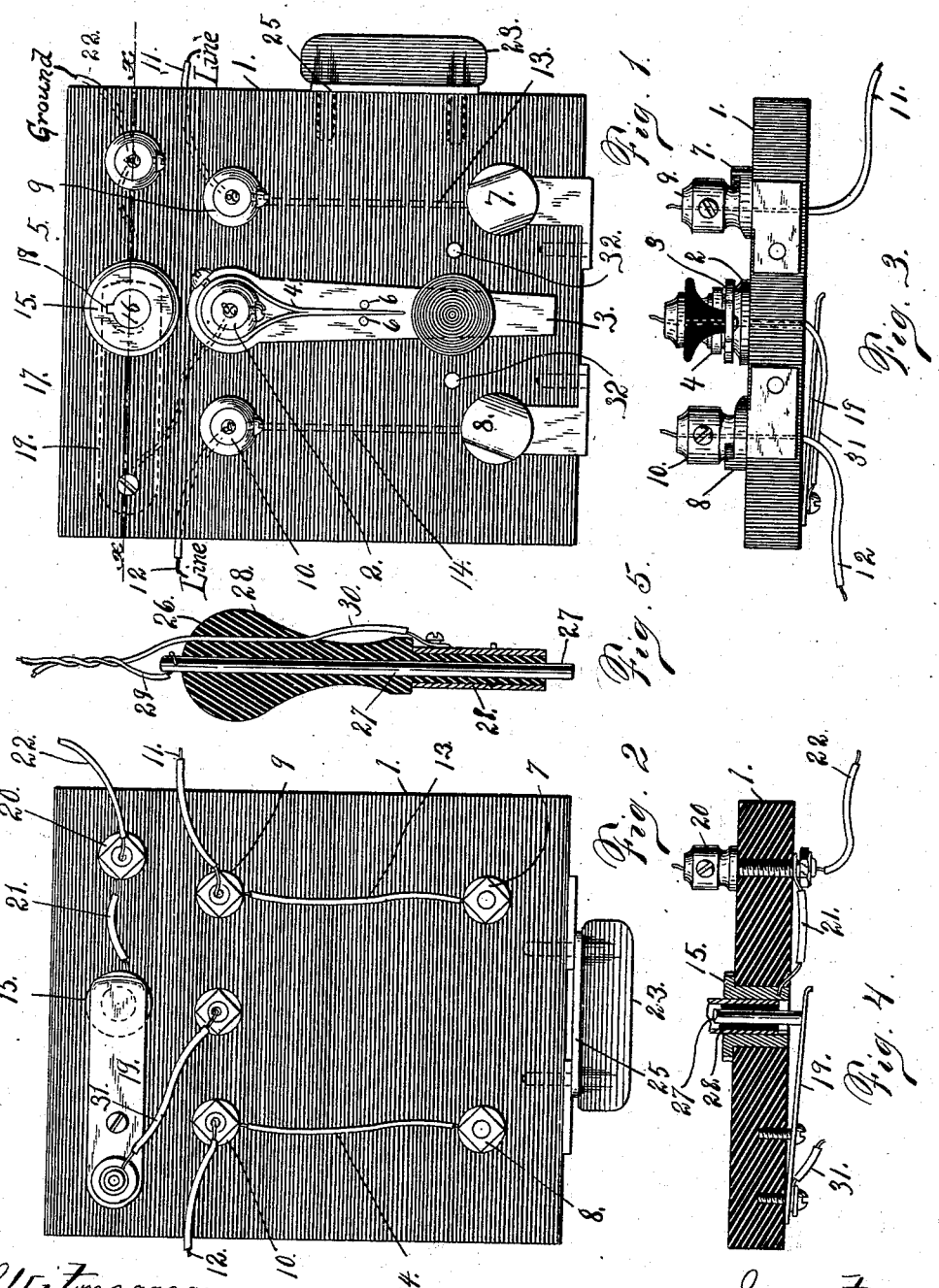
(No Model.)

H. SMITH.

ELECTRICAL TESTING SWITCH.

No. 524,844. Patented Aug. 21, 1894.



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UNITED STATES PATENT OFFICE.

HENRY SMITH, OF BUFFALO, NEW YORK.

ELECTRICAL TESTING-SWITCH.

SPECIFICATION forming part of Letters Patent No. 524,844, dated August 21, 1894.

Application filed March 29, 1894. Serial No. 505,576. (No model.)

To all whom it may concern:

Be it known that I, HENRY SMITH, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Electrical Testing-Switches; and I do hereby 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.

This invention relates to an improved testing device for electric circuits, and more particularly to a device for testing and locating the grounding or breakage on a metallic circuit such as fire alarm, police or call box services, one of the devices being placed at each station on the circuit.

Its object is to enable the operator, when trouble has been found upon the line (such as the grounding or crossing of the circuits), to readily locate such trouble and also enable him to readily close the circuit between the stations where such trouble has occurred.

To that end it consists in a simple and compact arrangement of binding-posts, contact-buttons and switch-lever so placed upon a switch board as to enable the operator to ground the circuit either to the right or left of the stations at which it is placed, or cut out the station entirely if desired.

It further consists in an arrangement of looping-in device for the introduction of testing instruments into the circuit such as galvanometers, &c., thus enabling the operator to test the circuit from any one of the stations equipped with my improvement.

I will now proceed to more definitely describe the manner in which I have carried out my invention and then point out in the claim what I believe to be novel.

In the drawings, Figure 1 is a top face view of my improved testing device. Fig. 2 is a bottom side view of the same; Fig. 3 an end view. Fig. 4 is a sectional view taken through the line *x*—*x* of Fig. 1, and Fig. 5 is a central sectional view of the looping-in key.

Referring to the drawings, 1 is the bed plate or board, being of insulated material upon which my improved construction is arranged.

2 is a post passing through the bed plate and over which the switch lever 3 is loosely pivoted. Fitting over and secured to the post 2 is the spring 4 its arm extending parallel with the switch 3 and its outer end resting between the pins 6, 6, the spring being held in place by the set screw 5. In this manner the switch lever is held in its normal position as shown in Fig. 1.

7 and 8 are what I herein term, the grounding-buttons arranged respectively to the right and left of the switch-lever 3. Connected to these grounding-buttons 7 and 8 are the binding posts 9 and 10 which receive the current from the line wires 11 and 12 and convey it to the grounding buttons 7 and 8 through the connecting wires 13 and 14.

15 is a metallic sleeve having arranged in its orifice 16 the groove 17 and cut away portion 18 for the reception of the looping-in key which is secured therein on the principle of a locking button.

19 is a flat metallic spring secured to the under side of the switch board its loose end resting in broken circuit with the sleeve 15. This sleeve 15 is connected by the wire 21 to the binding post 20 to which in turn is secured the ground wire 22.

23 is the ground locking or cutting out key having the pin 24 and connecting strip 25.

26 is the looping-in key consisting of the metallic rod 27 for contact with the flat spring 19 and the sleeve 28 for contact with the sleeve 15. This rod 27 and sleeve 28 are insulated from each other by the insulated handle 26 which extends down between them; and the circuit to the ground wire is completed through the wires 29 and 30 forming a loop in which testing instruments may be placed such as galvanometers, &c.

The current is conveyed from the post 2 to the flat spring 19 through the connecting wire 31. In operation when it is desired to test a line having several stations and one of my improved testing devices placed at each station the operator in testing has but to place the switch lever to the right and left according to the direction in which the test is to be made in which position it may be held by placing the locking key 23 with its pins 24

into the holes 32, 32, in the bed plate. The current then enters through the line 11 (assuming that the switch has been placed to the right) and passes through the connecting wire 13 to the grounding button 7 thence through the switch lever 3 and post 2 to the connecting wire 31. Now the looping in key is inserted with testing instrument attached (not shown). This looping in key permits the current to pass to the ground through its rod 27, wires 29 and 30, and sleeve 28 which is in electrical connection with the sleeve 15 which is in turn connected with the ground wire 22 and post 20 by the connecting wire 21. (See Fig. 4.)

When it is desired to test the line to the left the locking key 23 is simply removed and the switch lever thrown to the left the locking key being again returned in the holes 32, 32 thus causing the current entering through the line wire 12 to pass through the post 10 connecting wire 14 to grounding button 8 where it passes off to the ground in a similar manner as above described. When the looping in key is not employed it will be seen that should the line become broken between two adjoining stations the circuit may be held in operation by simply grounding the line in the manner above described at each line.

When it is desired to cut a station out of the line entirely the locking key 23 is inserted in the orifices 33, 33, connecting the metallic plates 34, 34. The current will then pass respectively in through the line wire 11, post 9, connecting wire 13, grounding button 7, plate 34, connecting strip 25, plate 34, grounding button 8, connecting wire 14, post 10 and out through line wire 12.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

The herein described testing switch consisting essentially of the insulated bed-plate 1, post 2 upon which is pivoted the spring set switch lever 3 grounding buttons 7 and 8 connected to the posts 9 and 10 to which are also connected the line wires 11 and 12; the metallic sleeve 15 with groove 17 and the flat spring 19 connecting the wire 31 to the sleeve which in turn is connected to the ground through the wire 21 post 20 and ground wire 22, the looping-in key 26 having the metallic projection which connects with the spring 19 and sleeve 28 to connect with the sleeve 17 the locking and cutting out key 23, the whole arranged and operating substantially as shown and for the purpose stated.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY SMITH.

Witnesses:
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