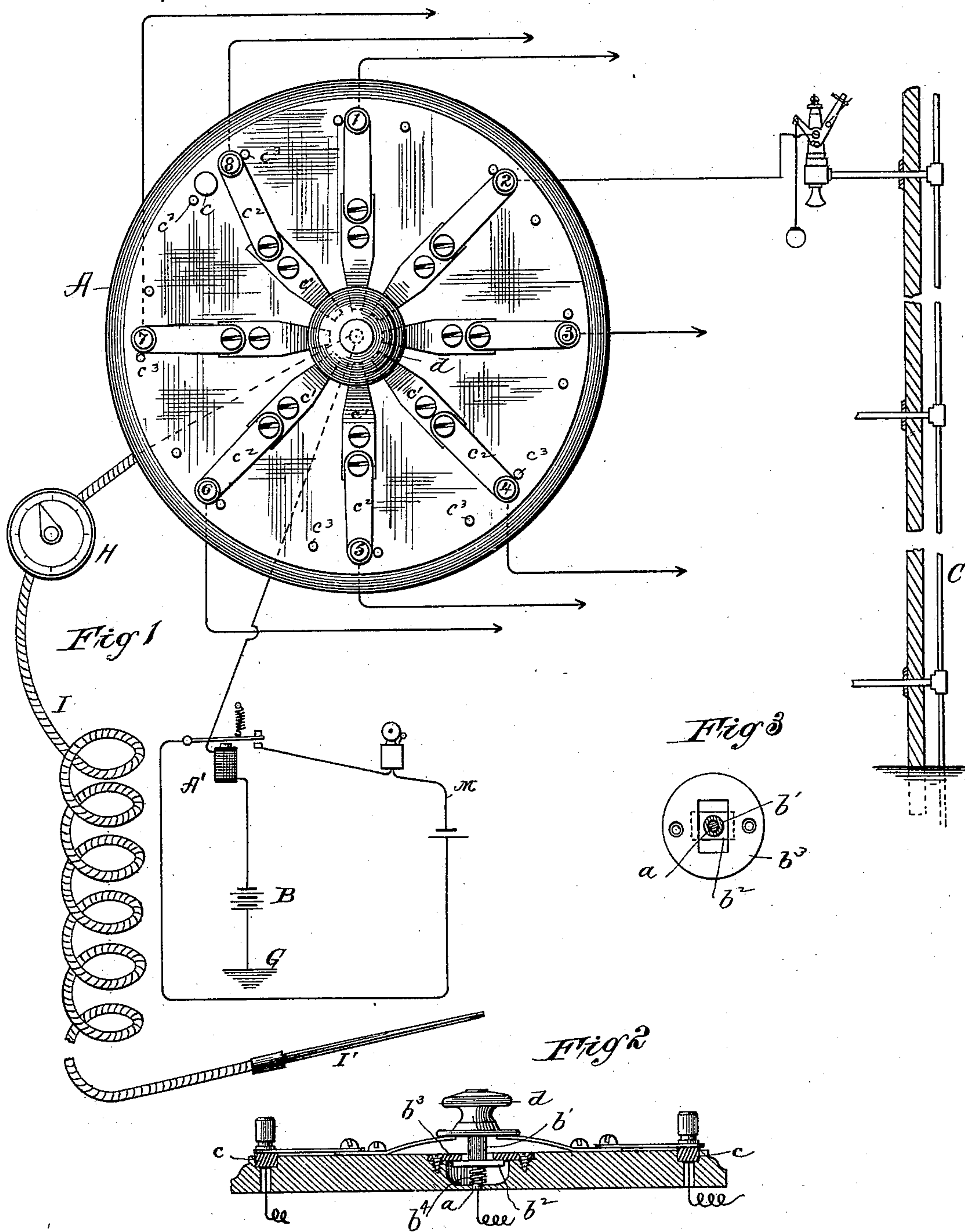


(No Model.)

M. ROBINSON.
ELECTRIC CIRCUIT TESTING DEVICE.

No. 400,951.

Patented Apr. 9, 1889.



WITNESSES:

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ELECTRIC-CIRCUIT-TESTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 400,951, dated April 9, 1889.

Application filed June 11, 1888. Serial No. 276,709. (No model.)

To all whom it may concern:

Be it known that I, MINER ROBINSON, a citizen of the United States, residing at Newton, in the county of Middlesex and State of Massachusetts, have invented a certain new and useful Improvement in Electric-Circuit Testing and Detecting Devices; and I do hereby declare that the following is a full, clear, and exact description of my invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to electric gas-lighting systems. It has been found in using these systems that considerable difficulty arises from faulty circuits caused by a sticking of the electrodes at the burners from a ground, a short-circuit caused by bad insulation, or a leak, and these faults have given rise to great inconvenience and trouble for the want of a quick and convenient device for detecting in which circuit the fault lies and for cutting out that circuit from the system, so that the battery will not be needlessly used up. I have invented such a device; and it consists, generally, of a base carrying a center post to which one side of a grounded battery is connected. This post is also adapted to be connected with all of a series of contacts arranged around it, the contacts constituting the terminals of the wires from the different burners in the system. The normal condition of the circuits is closed through the contacts and the center post and open at the burners. If, by accident or otherwise, the electrodes at a burner stick together, and thus complete that circuit, an alarm is rung notifying the attendant of the fact, and he may immediately break all the circuits at the board by severing connection between the center post and the contacts. This stops consumption of battery. Then by passing a brush or electrode having a connection with the center post around the board, touching each of the contacts in succession, the faulty circuit may be detected by the formation of a spark when the brush passes over its contact-terminal; or, if there is not a complete circuit in the system, but simply a leak, the same may be found by noticing the movements of a galvanometer placed in the brush-circuit when the brush is passed over the contacts.

I have illustrated my invention in the accompanying drawings, in which—

Figure 1 represents a plan of the testing-board with a diagram of the circuits. Fig. 2 represents a section of the testing-board, and Fig. 3 is a detail.

Referring to the drawings by letter, A represents the base or support upon which are mounted the devices constituting my invention.

B is the battery, grounded at G; A', a sparking-coil, which, when energized, closes a local bell-circuit, M.

C is a system of gas-piping, which constitutes a conductor for the current and grounds the same to complete the battery-circuit.

In the center of the support A, I fix a post, *a*, which is connected with battery through the sparking-coil. This post projects above the surface of the base, and is adapted to receive a metallic knob or nut, *d*, which has a central perforation for the purpose. The knob has a neck, *b'*, and a cross-head, *b²*, the latter of which is adapted to pass through an oblong slot in a plate, *b³*, and be held beneath the plate when the knob is given a partial turn. A spring, *b⁴*, surrounds the post and resists the downward movement of the knob. The terminals *c* of the wires from all the gas-burners in the system are located in a circle around the outer edge of the board or base, and these are all adapted to be connected with the knob and center post by means of two metallic strips, *c'* and *c²*, for each contact. The strips *c'* are rigidly secured to the base by screws and the inner ends bent upward to about equal distances, so as to make contact with the knob simultaneously. The strips or switches *c²* are pivoted, in contact, to the strips *c'*, and their outer ends are provided with knobs by which to swing the strips into and out of contact with the several circuit-terminals. Stop-pins *c³* are provided to limit the movement of the switches.

I have connected with the center post, *a*, a flexible conducting-cord, I, having at its free end a contact brush or trailer, I', for a purpose to be hereinafter explained.

The normal position of the knob *b* is down in contact with the strips *c'*, and strips *c²* are in contact with the terminals. The circuits

are then from grounded battery to post a , to knob, to strips c' and c^2 , to terminals c , to line and burners, and through the piping to ground. The circuit however is, as usual, open at the

5 burners.

Now, if in igniting the gas one of the vibrators or other form of sparking device should stick and hold the circuit closed, this would energize coil A' sufficiently to hold down its
10 armature and keep the local bell-circuit closed. The ringing of the bell indicates to attendant that there is trouble, and to prevent waste of battery he goes about to discover which circuit is closed. He first breaks
15 all the circuits (from each other and from the battery) by lifting the knob from the strips c' , and, then taking the brush or trailer I' in hand, he passes it around the board, making contact with each of the strips c' and c^2 in
20 succession. When contact is made or broken with the strip in the faulty circuit, a spark is produced. He simply opens that switch, returns the knob, and the apparatus is in order again except for the one faulty circuit, which
25 may be repaired at leisure. The location of the faulty circuit is indicated by the numbers on the switches.

If a test is desired for a leak, the brush is

used in the same manner, and a galvanometer, H , in the brush-circuit will show a deflection if there is any leakage. 30

Obviously this device is adapted to annunciator and other systems having a similar arrangement of circuits, and I therefore do not confine myself to gas-lighting systems alone. 35

Having now described my invention, what I claim is—

1. A series of normally-open grounded circuits terminating at a testing-board, gas-igniting apparatus in said circuits, a series of manually-operated switches on said board for
40 connecting the circuits with a generator, a sparking-coil between the circuits and the generator, and a local bell-circuit adapted to be closed by the sparking-coil, as set forth. 45

2. The base or board A , having central post, a , the knob d , strips c' and c^2 , and contacts c , for the purpose set forth.

In witness whereof I have hereunto fixed my seal and signed my name in the presence
50 of two subscribing witnesses.

MINER ROBINSON. [L. S.]

Witnesses:

CHAS. ROBINSON,
FRANCIS K. SWEETSER.