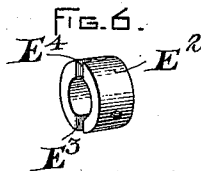
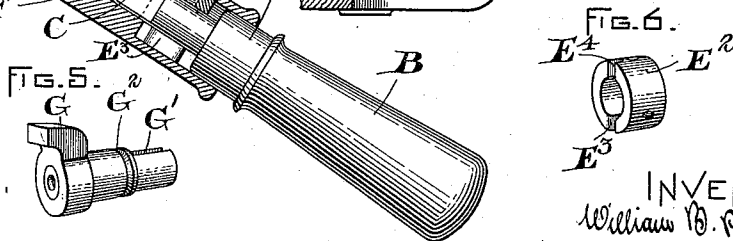
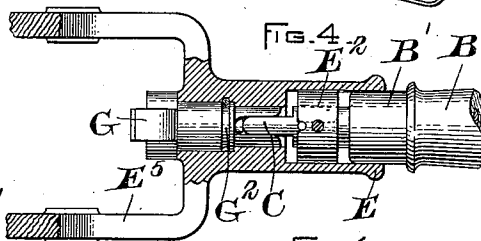
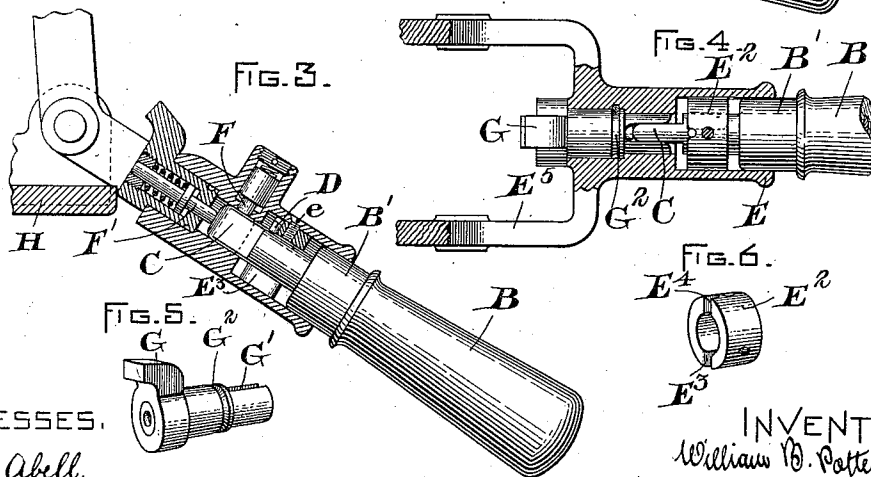
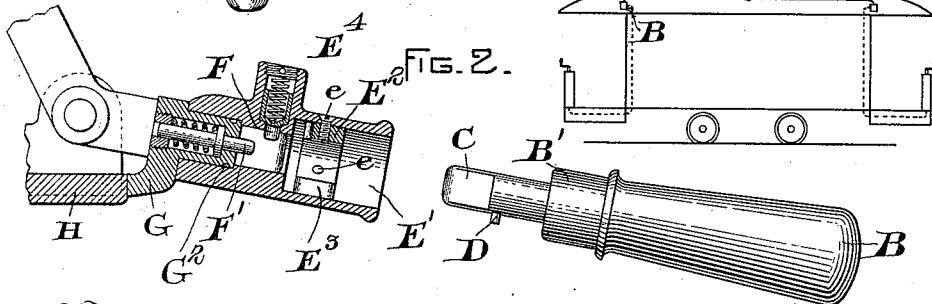
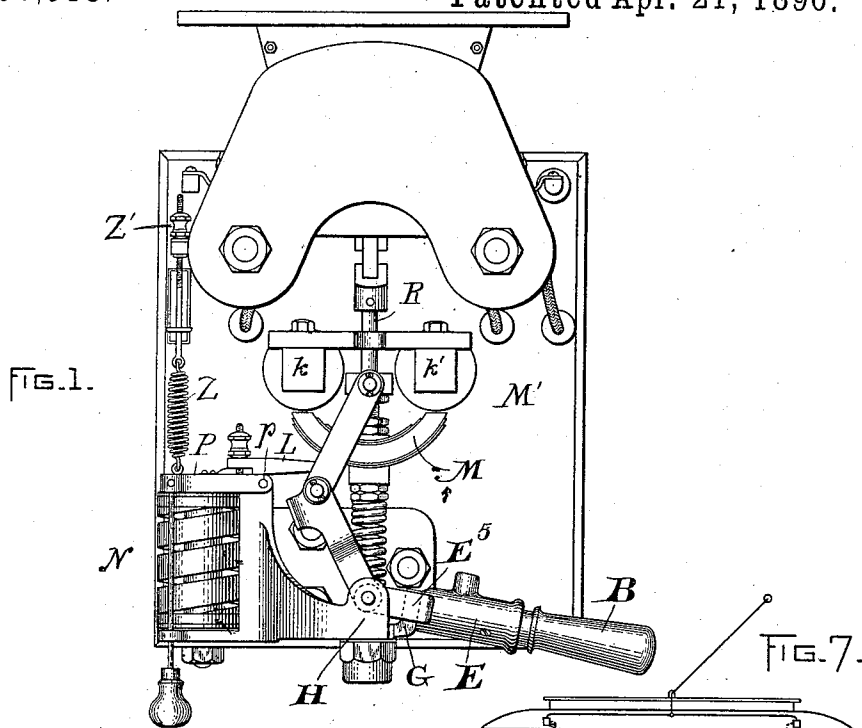


(No Model.)

W. B. POTTER.
HANDLE FOR CIRCUIT BREAKERS.

No. 558,518.

Patented Apr. 21, 1896.



WITNESSES.
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UNITED STATES PATENT OFFICE.

WILLIAM B. POTTER, OF SCHENECTADY, NEW YORK, ASSIGNOR TO THE
GENERAL ELECTRIC COMPANY, OF NEW YORK.

HANDLE FOR CIRCUIT-BREAKERS.

SPECIFICATION forming part of Letters Patent No. 558,518, dated April 21, 1896.

Application filed January 15, 1896. Serial No. 575,557. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. POTTER, a citizen of the United States, residing at Schenectady, in the county of Schenectady, State of New York, have invented certain new and useful Improvements in Handles for Circuit-Breakers, (Case No. 320,) of which the following is a specification.

My invention relates to circuit-breakers, particularly such as are adapted for use on electric tram-cars or other vehicles in which a separate automatic circuit-breaker is associated with each controller, the two circuit-breakers being connected in the circuit in parallel.

It is the purpose of the invention to provide for two circuit-breakers thus situated a single interchangeable handle which can be removed only when the circuit-breaker is open, so that the motorman in going from one end of the car to the other must remove the handle and thus open the circuit at one end before he can close the circuit-breaker at the other end to operate the controller.

The accompanying drawings show a form in which my invention may be embodied, in which—

Figure 1 is a front elevation of a suitable circuit-breaker. Fig. 2 is a view of the handle and its receiving part, the latter being shown in section and the handle in side elevation. Fig. 3 is a view of the same parts similarly shown with the handle inserted and turned through one hundred and eighty degrees. Fig. 4 is a plan view of the parts shown in Fig. 3, partly broken away. Figs. 5 and 6 are details, and Fig. 7 is a car equipped with two circuit-breakers in parallel having an interchangeable handle.

The invention is illustrated as applied to a circuit-breaker of the general type described in my Patent No. 533,083, issued January 29, 1895, with some unimportant modifications.

B is the handle, provided with the collar B', forming a cylindrical portion which steadies the handle in the socket. A tapered cut-away portion C is also provided, and upon a cylindrical extension, of which this tapered cut-away portion forms a part, is a pin D. The socket E has a cylindrical bore E' registering with the portion B' of the handle. The ex-

tended cylindrical portion of the handle passes through a fixed collar E², which is secured in place by screws e. This collar (best seen in Fig. 6) is cut through on its lower portion with a slot E³, the edges of which are rounded slightly to permit the free passage through it of the pin D upon the handle. A notch E⁴ is provided in the upper part of the collar. Connected with the socket is a lug G, mounted upon a bearing-piece and retained in the socket by a slot G², through which a pin is passed. The socket forms an integral part of the yoke E⁵, and the lug rotates in the socket, as will be seen in Fig. 4. In the rotating stud is a slot G', and the pin F', pressed outward by its spring, passes through the end of this bearing-piece. In the end of the bearing-piece the slot G' forms a seat for the extension C from the handle, and a spring-controlled pin F is seated in the slot G'.

The parts having been thus described, the method of operation is as follows: The handle B is inserted in the socket, the tapered extension passing through the collar E², and the pin D passing through the slot at the lower part of the collar. In so doing the tapered extension presses back the pin F' (the office of which is to throw the handle out when pressure upon it is released and to keep the pin D in the notch E⁴) and also presses upward the pin or tumbler F from the slot G'. The handle B is then rotated until the pin D drops into the notch E⁴ of the collar E², as is shown in Fig. 3. This rotation disengages the lug G from the part H of the frame of the apparatus, and the handle may then be depressed to close the circuit by the bridging-piece M, (seen in Fig. 1,) as referred to in my patent.

When it is desired to remove the handle, the operation just described is reversed, and the spring-pin F' forces the handle from its seat; but it is manifest that this can only be accomplished when the circuit is open, inasmuch as the rotation of the lug G will be prevented by the part H of the frame, unless the handle is in its upper position in which the circuit is opened.

M' is a base or frame which supports the various parts of the circuit-breakers.

N is a magnet-coil in the main circuit.

The main electrodes or terminals of the conductor from the negative brush of the generator and the line are conducted at $k k'$, respectively, and they are adapted to be bridged by a piece or pieces M, preferably made up of a number of superposed pieces of elastic and highly-conducting metal carried on a rod R and secured thereto by clamps or nuts, as shown.

The main current enters by a suitable conductor (not shown) adjacent to the coil N, traverses the latter, passes by a suitable conductor (not shown) to the terminal k by the bridge M to terminal k' and out by a conductor (not shown) to the omnibus-bar or external circuit.

The armature P of the coil N is supported at one end upon the pivot p and at its other end by a spring Z, whose power or attractive force may be adjusted by a nut Z'. On the pivot p is also fulcrumed a detent-lever L, whose outer end is notched and engages in a closed position of the switch with the edge of a lug. (Not shown.)

The remaining parts of the entire construction of the circuit-breaker are fully set forth in Patent No. 533,083, hereinbefore referred to.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A plurality of automatic circuit-breakers, and an interchangeable handle therefor, removable only when the circuit is open.

2. An electrically-propelled vehicle, a pair of automatic circuit-breakers thereon connected in parallel, and an interchangeable handle for the two devices, removable only when the circuit is open.

3. An automatic circuit-breaker constructed to be locked when in open position, in combination with a handle adapted to interlock therewith and removable only when the circuit-breaker is in open position.

4. The combination with an automatic circuit-breaker of a rotary locking device serving to lock the circuit-breaker when in open position.

5. The combination with the handle of an automatic circuit-breaker, of a rotary locking device, which locks the circuit-breaker when in open position, and a spring-actuated device which disengages the circuit-breaking handle when the circuit-breaker is in open position.

6. An automatic circuit-breaker having a rotary handle, socket, and locking device which locks the circuit-breaker when in open position, in combination with a removable handle which interlocks with the rotary socket and is removable therefrom only when the circuit-breaker is in open position.

7. An automatic circuit-breaker having a rotary handle, socket, and locking device which locks the circuit-breaker when in open position, spring-actuated means for holding the circuit-breaker handle in place when the handle is in operative position, and spring-actuated means for removing the handle when the circuit-breaker is in open position, in combination with said removable handle which interlocks with the rotary socket and is removable therefrom only when the circuit-breaker is in open position.

In witness whereof I have hereunto set my hand this 13th day of January, 1896.

WILLIAM B. POTTER.

Witnesses:

B. B. HULL,

A. F. MACDONALD.