

D. C. HOOKER.
DISCONNECTING ELECTRICAL SWITCH.
APPLICATION FILED OCT. 27, 1911.

1,039,129.

Patented Sept. 24, 1912.

2 SHEETS—SHEET 1.

Fig. 1

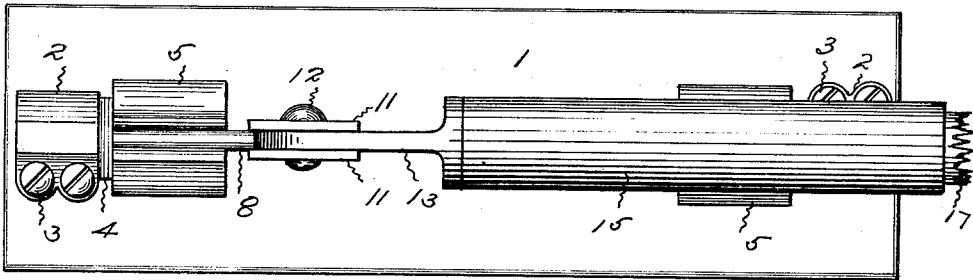


Fig. 2

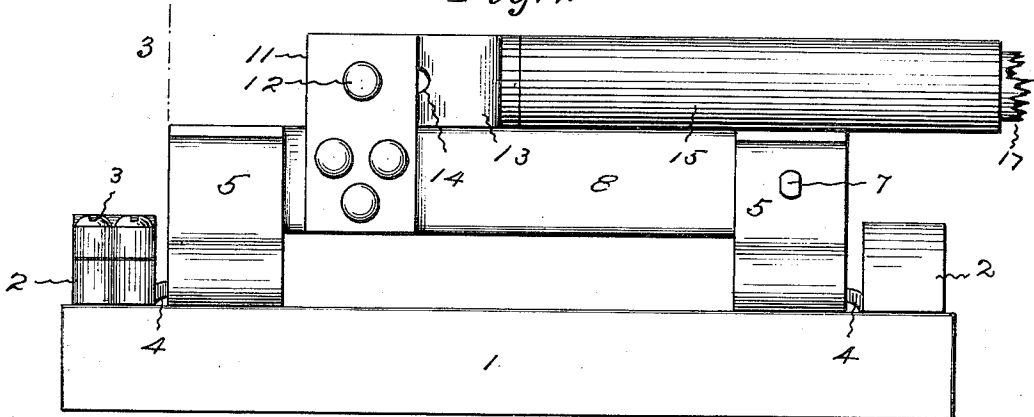
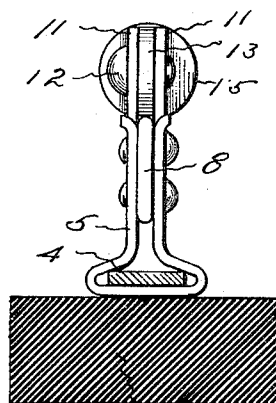


Fig. 3



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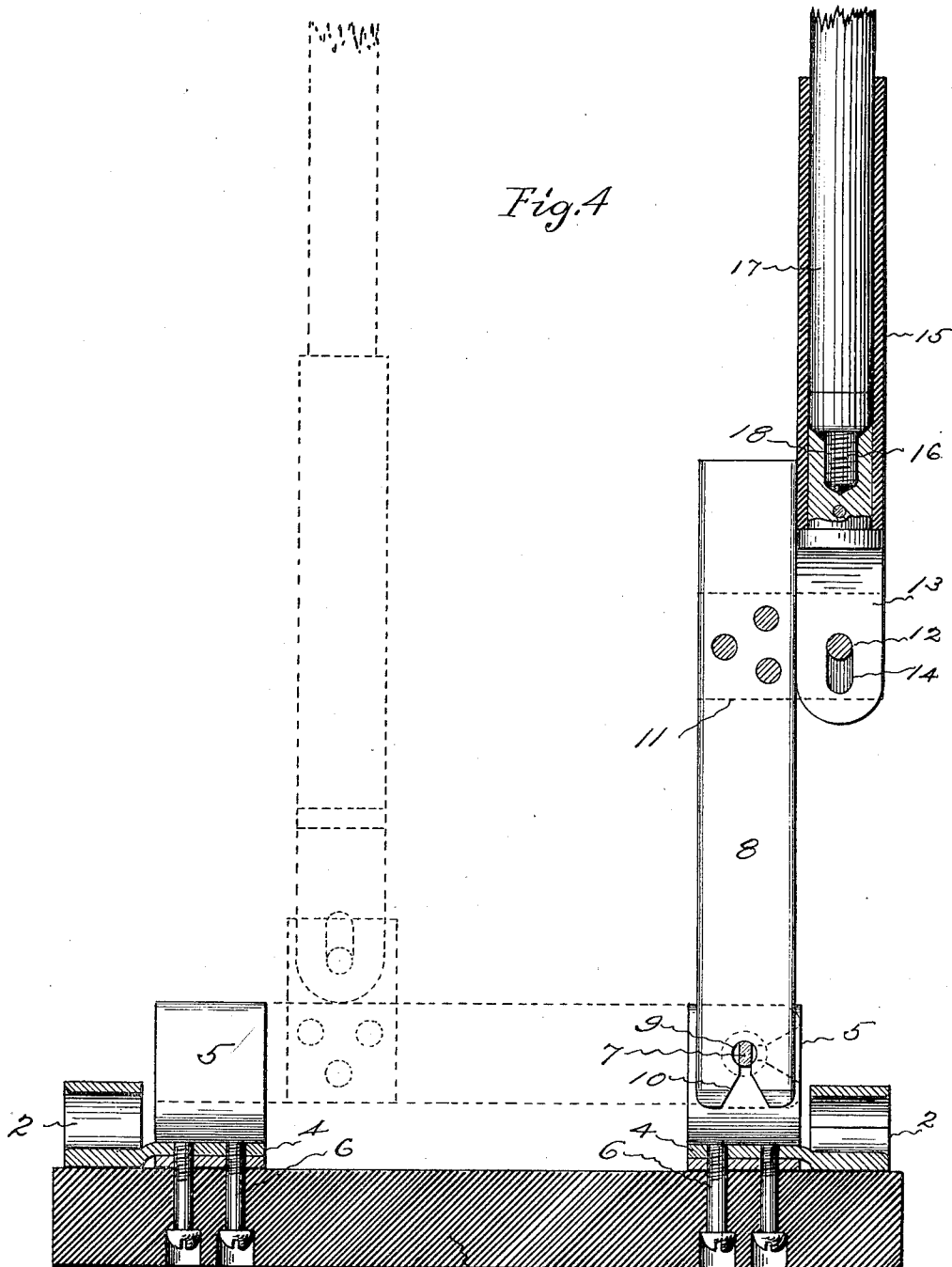
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UNITED STATES PATENT OFFICE.

DUNCAN C. HOOKER, OF FARMINGTON, CONNECTICUT, ASSIGNOR TO THE JOHNS-PRATT COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF CONNECTICUT.

DISCONNECTING ELECTRICAL SWITCH.

1,039,129.

Specification of Letters Patent.

Patented Sept. 24, 1912.

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To all whom it may concern:

Be it known that I, DUNCAN C. HOOKER, a citizen of the United States, residing at Farmington, in the county of Hartford and State of Connecticut, have invented a new and useful Improvement in Disconnecting Electrical Switches, of which the following is a specification.

This invention relates to a disconnecting electrical line switch, or switch of the type which has the movable conductor completely removed when the circuit is opened. These switches are particularly adapted for heavily charged lines of lighting and power systems. The switch illustrated and described herein is especially designed to be operated in a manhole box of an underground line carrying a current of several hundred amperes and a number of thousand volts. Such currents are dangerous to human life and consequently to prevent accidental contact with and short circuit between live parts and eliminate danger for the operator, the switch conductor is arranged to be connected and disconnected by means of a long handle made of insulating material, which is detached after the movable conductor has been manipulated.

The object of the present invention is to provide a disconnecting switch with very simple, cheap, and easily and safely operated means for inserting and removing the switch conductor.

Figure 1 of the accompanying drawings shows a plan of a disconnecting switch constructed according to this invention. Fig. 2 shows a side elevation of the same. Fig. 3 shows a transverse section on the plane indicated by the dotted line 3—3 on Fig. 2. Fig. 4 shows a longitudinal section of the parts illustrating the switch conductor and its operating means in different positions.

The embodiment of the invention that is illustrated is a single pole switch of the knife blade type. The invention, however, is not limited to a single pole switch, nor to a switch having a knife blade movable conductor.

The base 1 of the switch is desirably made of a block of marble or slate, although it can be made of any other suitable insulating material. Secured to the face of the base near the ends are split clamping sleeves 2 for receiving the ends of the line wire. Screws 3 are provided for causing the split

sleeves to clamp the wire ends. These sleeves have lugs 4 which are fastened to the bottom of the terminal spring clips 5. A preferred manner of securing the lugs and the spring clips together and to the base is by means of screws 6 which pass through the base and the bottom of the clips and the lugs. Extending through one pair of spring clips is a pivot 7. This pivot is desirably a flattened pin held in such manner that it cannot rotate.

Near one end the switch blade 8 has a circular perforation 9, and opening through the end of the blade into this perforation is a tapering slot 10, the narrowest part of which slot is only as wide as the smaller diameter of the pivot pin 7. This end of the switch blade is pivotally connected by forcing it longitudinally between the spring clip with the pivot pin until the pin is in the perforation, and then after the blade has been turned on the pivot pin it will not become disengaged. The pivot pin and slot are so designed in the switch illustrated that the blade can be attached and detached only when it is at right angles to the base.

A pair of plates 11 are fastened to the blade near the swinging end, and loosely held between these plates by a pivot pin 12 is a lug 13. The pivotal slot 14 through this lug is oblong so that the lug may slide as well as turn on the pivot. Fastened on the end of this lug is a tube 15 of insulating material, and in the end of the lug that is in the tube is a threaded socket 16. If the lug is in such position that the pivot passes through the outer end of the slot, the tube can be freely oscillated. When the lug is pushed so that the pivot passes through the inner end of the slot, the tube cannot be oscillated—it becomes rigid with relation to the blade. The operating handle 17, which is of considerable length, is desirably made of a long bar of wood. At the end of this bar is a screw stud 18. The stud end of the handle is of such size that it may be thrust into the tube, and the stud screwed into the socket in the inner end of the lug.

When the blade is to be connected, the handle is inserted into the tube and the stud screwed into the socket in the lug. The handle and tube are then forced forward and the lug slid parallel with the blade until the pivot pin lies in the inner end of the slot in the lug. As shown by the full lines

in Fig. 4, the parts are then in such position that the lug cannot oscillate on the pivot, and the handle is practically rigid with the blade. In this condition, the slotted end of the blade is thrust at right angles to the base upon the pivot pin that extends between one pair of the terminal clips. The blade is then turned by means of the handle, and as soon as turned, the blade cannot be drawn from the pivot pin. Then the handle is pulled back until the lug is free to oscillate, after which the free end of the blade is forced down by the handle between the other pair of terminal clips, as illustrated by the dotted lines in Fig. 4. When the blade is connected with the clips and the circuit is completed, the wooden handle is unscrewed and removed from the tube and the tube turned down to the position shown in Fig. 2. In order to remove the blade, the wooden handle is thrust into the tube and the stud screwed into the lug, then by pulling the handle the blade is swung on the pivot pin and the free end disconnected from its clip. After the blade has been swung open 90 degrees, the slotted end of the blade is withdrawn from between its clip, the pivot pin permitting this when the blade is in this position. With this construction, a long and safe operating handle is easily and quickly attached to or detached from the short insulated handle which is connected with the contact blade, and the handle is readily manipulated so that it may hinge as the blade swings, or may be made rigid with the blade as is necessary for properly and safely connecting the pivoted end of the blade with its clip.

The invention claimed is:

1. The combination in a disconnecting switch, of conducting line terminals, a conductor adapted to be engaged with and electrically connect said terminals, also to be removed from and electrically disconnect said terminals, an insulating handle for manipulating said conductor, and means adjustably connecting said conductor and said handle, said means when in one adjustment permitting free oscillation of the handle with relation to the conductor, and when in another adjustment causing a rigid connection of the handle to the conductor.

2. The combination in a disconnecting

switch, of conducting line terminals, a blade adapted to connect the terminals, said blade being removably pivoted to one terminal and adapted to swing into and out of engagement with the other terminal, an insulating handle, and means adjustably connecting the handle and the blade, said means when in one relation permitting free oscillation of the handle, and when in another relation rigidly connecting the handle and the blade.

3. In a switch in combination, conducting terminals, a conductor adapted to be engaged with and electrically connect said terminals, an insulating handle, and a pin and slot connection between said handle and the conductor, said slot being so arranged as to permit longitudinal movement of the handle with relation to the conductor, and when the parts are in one relation permit independent oscillations of the handle and conductor, and when the parts are in another relation, hold the handle rigid against oscillation independently of the conductor.

4. In a switch in combination, conducting terminals, a conductor pivoted to one terminal and detachable therefrom when in one position, and an insulating handle pivotally connected to the conductor and adapted to swing the free end thereof into and out of engagement with the other terminal, said pivotal connection of the handle to the conductor being adjustable and when in one position holding the handle and the conductor rigidly united, and when in another position allowing the handle to swing freely on the pivotal connection.

5. In a switch in combination, conducting terminals, a conductor pivoted to one terminal and detachable therefrom when in one position, an insulating tube pivoted to the conductor and adapted to swing the free end thereof into and out of engagement with the other terminal, said tube being movable longitudinally on its pivot and when in one position being rigid with the conductor, and when in another position being free to swing on the pivot, and a handle detachably attached to said tube.

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