

(No Model.)

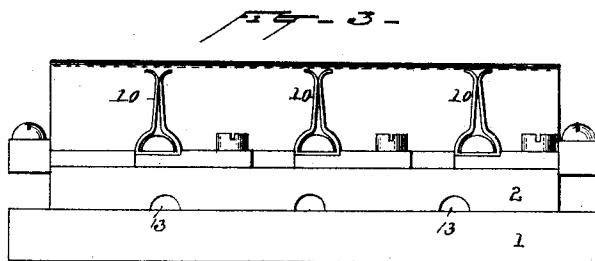
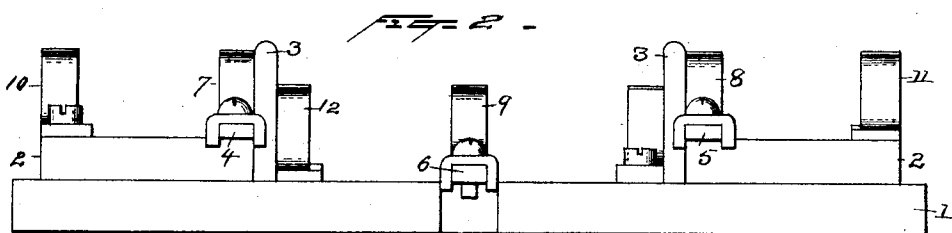
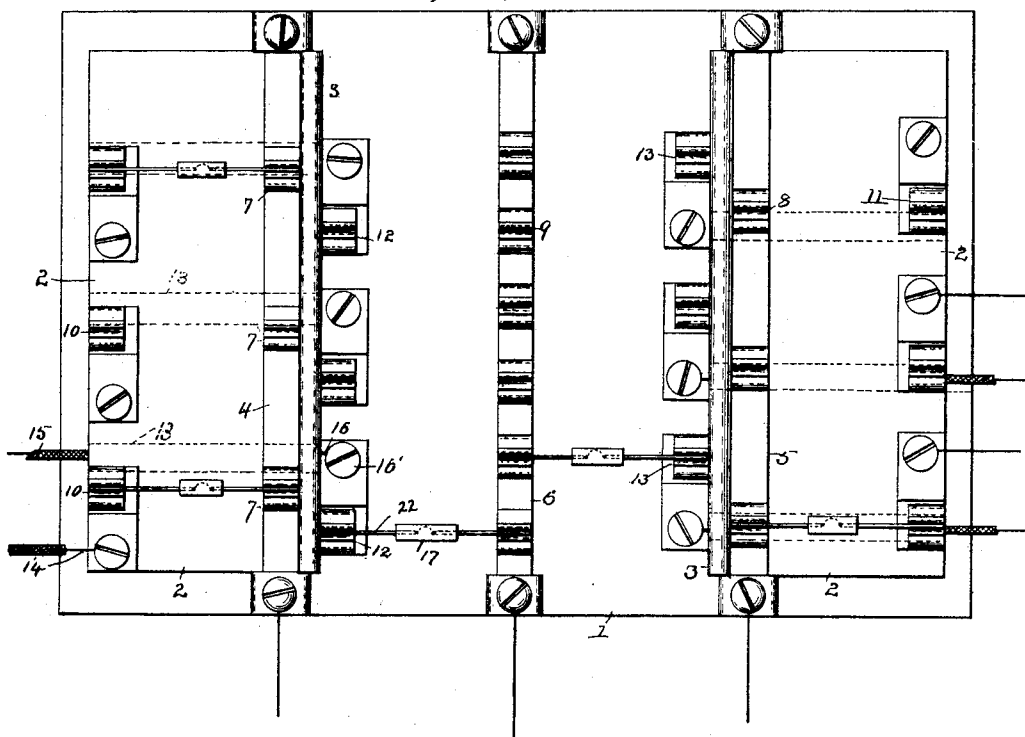
2 Sheets—Sheet 1.

J. HUTCHINSON & A. B. HERRICK.

TERMINAL AND SAFETY CATCH CONNECTION.

No. 474,960.

Patented May 17, 1892.



Witnesses
Norris A. Clark,
At. F. Charles

Inventors,
J. Hutchinson & A. B. Herrick,
By Their Attorneys
Syer & Seely.

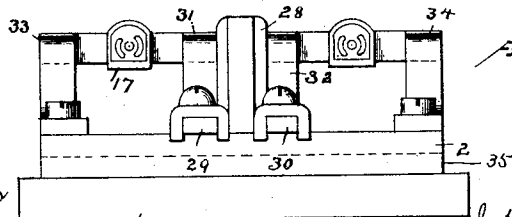
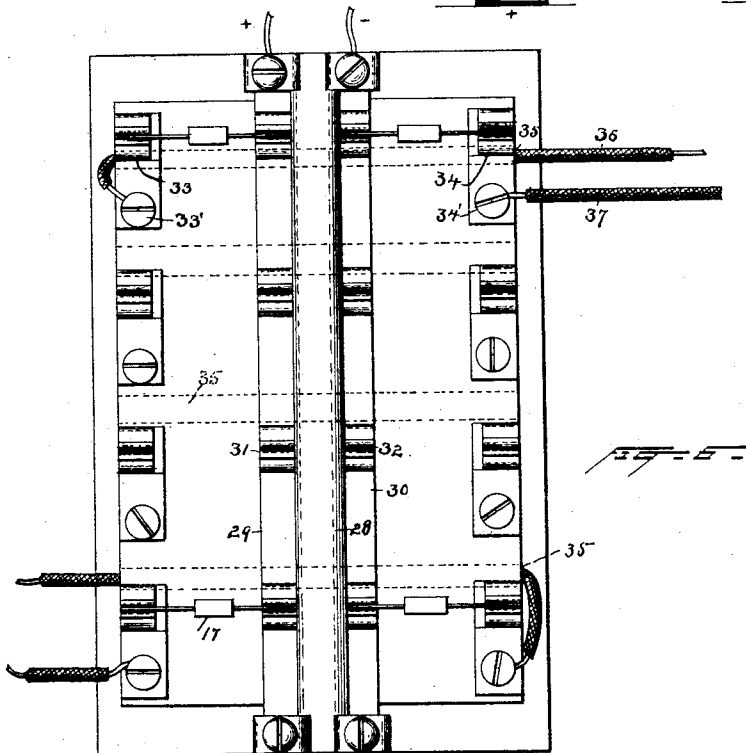
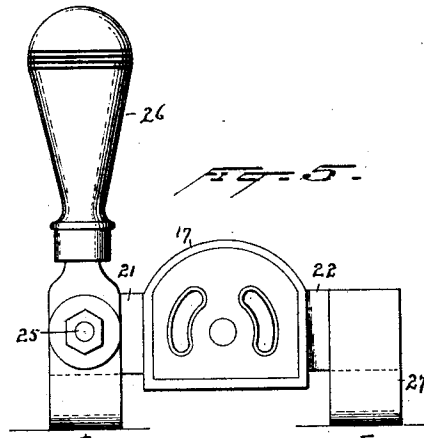
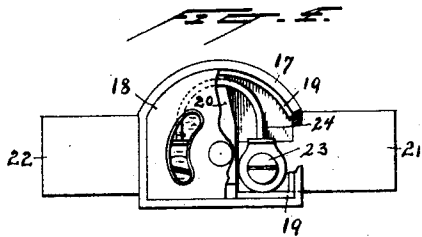
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2 Sheets—Sheet 2.

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TERMINAL AND SAFETY CATCH CONNECTION.

No. 474,960.

Patented May 17, 1892.



Witnesses
Norris A. Clark.
Dr. F. Oberly

Inventors
J. Hutchinson & A. B. Herrick.
By their Attorneys
Syer & Seely.

UNITED STATES PATENT OFFICE.

JOSEPH HUTCHINSON, OF NEW YORK, N. Y., AND ALBERT B. HERRICK, OF
BAYONNE, NEW JERSEY.

TERMINAL AND SAFETY-CATCH CONNECTION.

SPECIFICATION forming part of Letters Patent No. 474,960, dated May 17, 1892.

Application filed October 12, 1891. Serial No. 408,414. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH HUTCHINSON, residing at New York city, in the county and State of New York, and ALBERT B. HERRICK, residing at Bayonne city, Hudson county, New Jersey, both citizens of the United States, have invented a certain new and useful Improvement in Terminal and Safety-Catch Connections, of which the following is a specification.

The present improvement relates to improved arrangements of main-circuit and branch-circuit terminals on supporting-boards and the placing of safety-catches or fusible cut-outs in the circuits in an improved manner.

The main object is to provide a connecting-board on which the terminals are so arranged that there is no danger of accidentally connecting opposite terminals by the laying of conducting devices—such as metal tools—on the board, and in which said terminals cannot be connected except by a bent or irregular conductor and in which the bared portions of the branch wires connected to opposite mains are so located that they cannot accidentally come in contact.

Another object is to provide an improved form of connecting device or switch-blade; and the invention consists in the several features and combinations hereinafter more specifically pointed out.

In the accompanying drawings, Figure 1 is a plan view of one form of our improved device. Fig. 2 is a side view thereof, and Fig. 3 an end view. Fig. 4 illustrates the switch-blade or connecting device adapted to connect the terminals on the switchboard. Fig. 5 shows a similar connecting device or switch-blade applied to an ordinary hand-switch. Figs. 6 and 7 show a plan and end view, respectively, of a slightly-different form of connecting-board.

The board first to be described is adapted for use in connection with three-wire circuits.

1 is a slate or other insulating base, on which are mounted blocks or strips 2 of porcelain, fiber, wood, or other insulating material. At the inner edges of these blocks are vertical insulating-screens 3.

4 is a metal bar, to which the positive main is connected. 5 is a similar bar, to which the

negative main is connected, and 6 is a similar bar, to which the neutral wire or main is connected, the latter being about midway between the screens and the former being just outside of said screens. The three terminal bars are provided with spring-clips 7 8 9. The clips 7, of which there may be any suitable number, are in line with similar clips 10, and the clips 8 are in line with clips 11, while the clips 9 are in line with two sets of clips 12 13 on opposite sides of the neutral bar. It will be seen from Fig. 2 that none of these clips extend above the screens 3.

The clips 7 and 12 and 8 and 13, instead of being placed in line on opposite sides of the screen, are placed diagonally for the purpose of making it possible to lead off branch wires with less danger of cross connection and to lessen the danger of accidental connection. Passing through the blocks 2 or forming grooves along the under face thereof are passages 13, through which insulated wires may be led. In making branch connections the positive wire of the branch is connected to a terminal 10, as indicated at 14. This connection is made by baring the end of the wire for a short distance and connecting it with the screw on the terminal in the usual manner. The negative side of the branch—that is, the insulated wire 15—is carried through the opening 13, which is a little at one side of the connecting-screw just referred to and in line with the screw 16', and its bared end 16 is connected to terminal 12 by said screw. Since these two wires are held in different planes and since their ends, which are uninsulated for a short distance only, are on opposite sides of the insulating-screen and at opposite edges of the insulating-plate and are out of line with each other, it is practically impossible that an accidental short-circuit should take place. The terminals can only be connected by means of a flexible or bent piece of metal purposely placed thereon.

Between the main and branch terminals or spring-clips are mounted fusible conductors, and these are preferably supported as shown in Fig. 4, in which 17 is a small box, block, or case of porcelain or other insulating material having a removable cover 18, which rests against the ledge 19 of the box. The cover

preferably has sight-openings and behind the cover is a layer of mica. The cover is not rigidly held against the ledge, but is capable of slight movement to allow escape of gases when a fuse is burned out.

20 is a transverse partition extending nearly to the top of the box. In each end of the box is an opening, through which the metal blades 21 22 extend. At the inner ends of these blades are screws 23, which extend into the rear wall of the box to secure the blades and which serve as binding-posts for the fusible conductor 24. With this arrangement the fuse can be placed in circuit by slipping the blades 21 22 into the clips 7 10 8 11, &c. This same form of connecting device is useful in connection with hand-switches, as shown in Fig. 5, in which the blade 21 is pivoted at 25 and is provided with an operating-handle 26, while the blade 22 is adapted to enter between springs 27.

We are aware that it is old to connect metal plugs adapted to be connected to circuit-terminal clips by fusible conductors; also, that it is old to mount a fusible conductor with foil terminals on an insulating-plate and to insert the same between circuit-terminals. Our connecting device differs from these, in that the insulating box or block forms a mechanical connection between two independent blades.

In Figs. 6 and 7 a device similar to that of Fig. 1 is shown adapted to be used with wire circuits. In this form the base 1 is also provided with an overlying insulating-plate 2. At the center of this plate is a single screen 28. 29 is the positive bar, and 30 the negative bar, each being provided with spring-clips 31 32. Opposite these are other clips 33 34, adapted to be connected with the former by the device shown in Fig. 4. Through or under the plates 2 and at one side of the binding-screws 33' 34' are passages 35, corresponding to passages 13, already described. When it is desired to connect a branch to the right of the board, the connection is made, as shown, at the top of Fig. 6, the insulated positive wire 36 being threaded through the upper passage 35 and its bared end being secured to the terminal 33, while the negative insulated wire 37 has its bared end connected to the terminal 34. As already described, it will be practically impossible for an accidental cross to occur. When it is desired to make a branch on the opposite side, the connections will be similar but reversed, as clearly indicated at the bottom of Fig. 6.

In the "tree" system of electrical wiring hitherto generally used, in which branches were taken from the main conductors and minor circuits were taken from these branches, and so on until the circuits reached all points to be supplied, it was necessary, in order to comply with the underwriters' demands, to put safety-catches at all points where the conductors branched. In this system if a fuse burned out it rendered the whole net-work in

advance of the fuse inoperative, and it was frequently tedious to locate the point where trouble existed. These objections have led to quite a general adoption of the "closet" system, in which feeders are led to switchboards at convenient points, and branches are taken from the feeders at these points through cut-outs, thus grouping the cut-outs of the branches together. This not only avoids scattering the cut-outs, but makes each branch independent.

Heretofore the cut-out apparatus used in the tree system has been used in the closet system in lieu of anything better, but the piling up of the cut-out plugs is found unhandy and cumbersome. Our device is admirably adapted for use for the purpose indicated in the closet system. It will be seen that the hot metal or vapors produced by the burning of a fuse can only escape by traveling a sinuous course between the cover and the ledge of the insulating-box which holds it, and this causes the material to cool to some extent before it can come in contact with any inflammable material. When an arc forms, it is not near the switchboard-clips, but at a considerable distance therefrom.

What we claim is—

1. The combination, with main and branch terminals, of an insulating-screen, the positive main and branch terminals being on one side of said screen and the negative main and branch terminals being on the opposite side of said screen, substantially as described.

2. The combination, with main and branch terminals, of an insulating-screen, the main positive and branch positive terminals being on one side of said screen and the negative main and branch terminals being on the opposite side of said screen, there being an opening or passage through which one branch wire may be passed, so as to extend from the same side as the other branch wire without danger of cross connection, substantially as described.

3. The combination of a base, an insulating-block thereon, said block having grooves or passages through or under it, a positive main terminal and a positive branch terminal on the block on one side of the screen and a negative main and branch terminal on the opposite side of the screen, a branch conductor connected to one branch terminal, and a second branch conductor connected to the other branch terminal and passing through said opening, substantially as described.

4. The combination of an insulating-block having one or more grooves or passages through or under it, a screen thereon, one or more positive main and positive branch terminals on the block on one side of the screen and one or more negative main and branch terminals on the opposite side of the screen, a branch conductor or branch conductors connected to the first-mentioned branch terminal or terminals, and a branch conductor or branch conductors connected to the other branch ter-

5 minal or terminals and passing through said groove or grooves, said main and branch terminals being connected by fusible conductors, substantially as described.

5 5. The combination of an insulating-block having grooves or passages through or under it, a screen, a positive main terminal and a positive branch terminal on the block on one side of the screen and a negative main and
10 branch terminal on the opposite side of the screen, a branch conductor connected to one branch terminal and a branch conductor connected to the other branch terminal and passing through said opening, said main and
15 branch terminals being connected by connecting devices consisting of blades adapted to fit suitable clips and connected by an intermediate insulating box or support and a fusible wire carried thereby, substantially as described.
20

6. The combination, in a connecting-board for three-wire systems, of insulating plates or blocks, said plates or blocks having grooves

or passages, as described, positive and negative terminal bars and connecting devices on
25 said blocks, insulating-screens, and a neutral terminal bar and connecting device between the screens, branch terminals supported on said blocks outside of the screens, and other
30 branch terminals supported between the screens, substantially as described.

7. A connecting device consisting of metal blades, an intermediate insulating-box or hollow block to which the adjacent ends of the
35 blades are connected and by which they are mechanically united, and a fusible conductor within said box or hollow block electrically uniting the blades, substantially as described.

This specification signed and witnessed this 1st day of October, 1891.

JOSEPH HUTCHINSON.
ALBERT B. HERRICK.

Witnesses:

JOHN J. MCGHIE,
E. A. STEVENSON.