

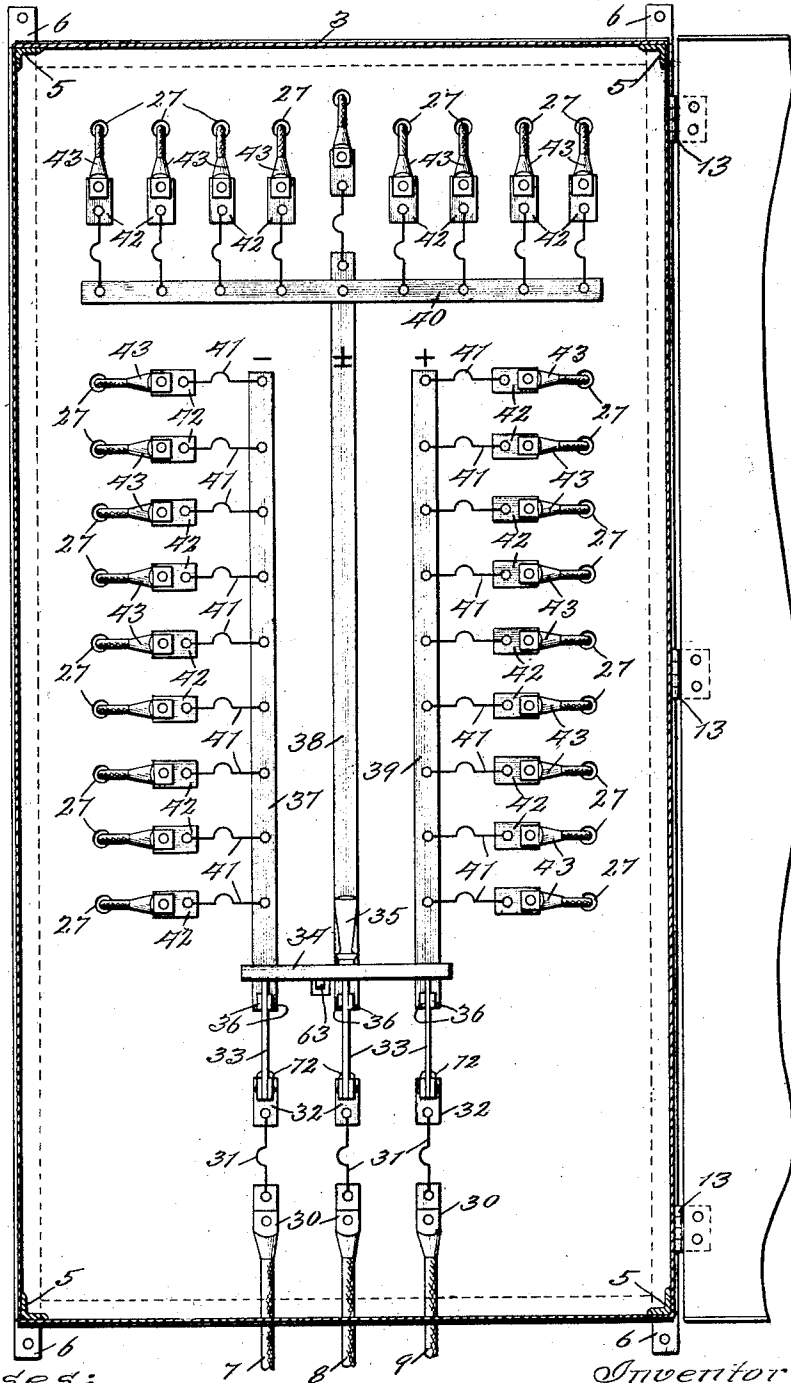
N. JOLEEN.
ELECTRIC SERVICE BOARD.
APPLICATION FILED AUG. 25, 1911.

1,063,265.

Patented June 3, 1913.

4 SHEETS-SHEET 1

Fig. 1.



Witnesses:

Wm. D. Perry
G. W. Brown Jr.

Inventor:

Nels Joleen

By Cheever & Cox

Attys

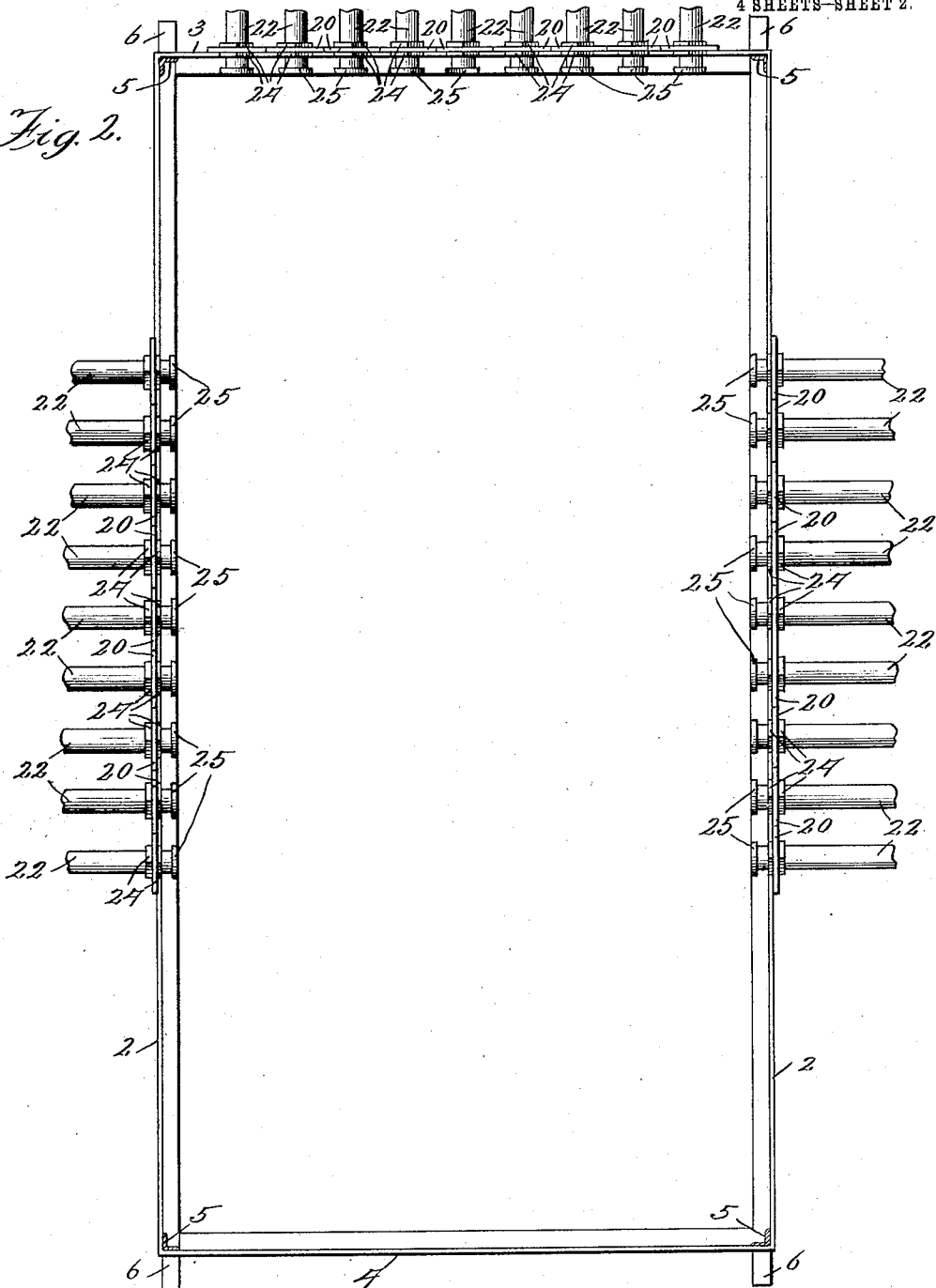
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4 SHEETS-SHEET 2.

Fig. 2.



Witnesses:

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4 SHEETS-SHEET 3.

Fig. 3.

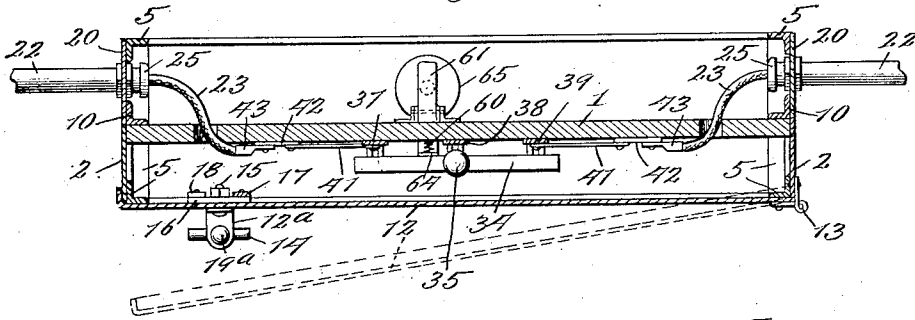


Fig. 4.

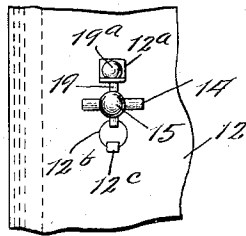


Fig. 5.

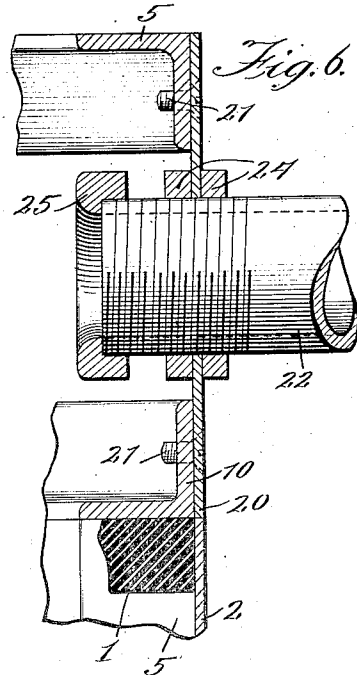
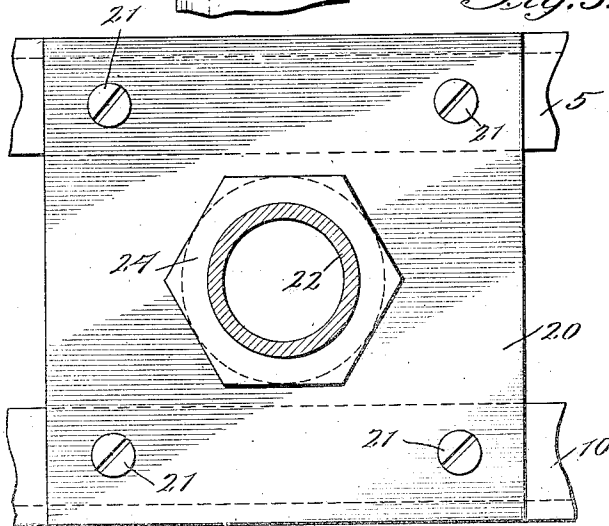


Fig. 7.

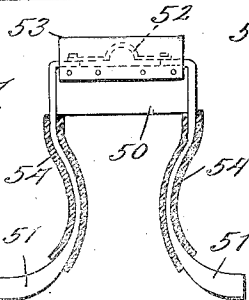
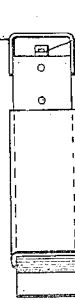


Fig. 8.



Witnesses:

W. H. Perry

G. W. Warner

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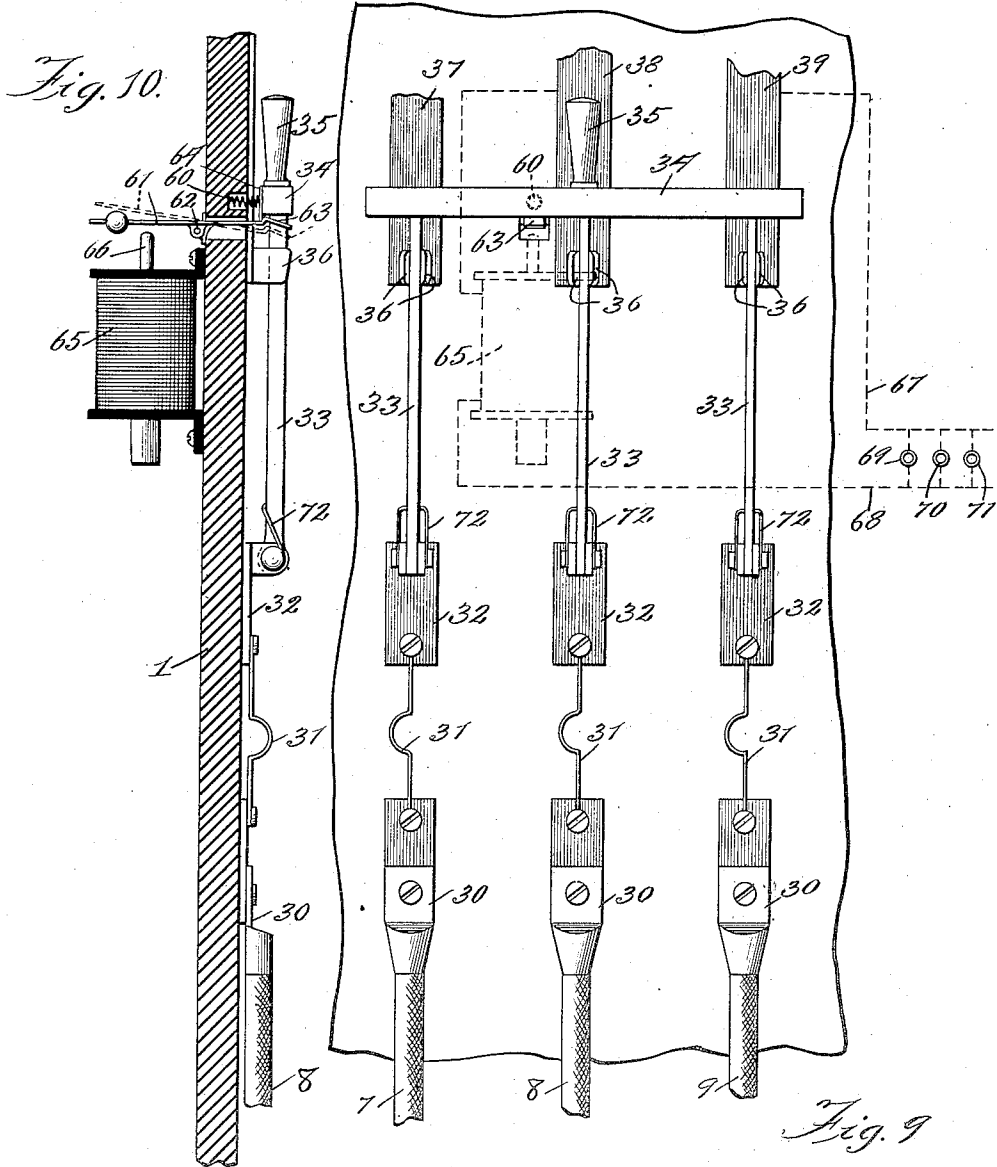
Attys

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1,063,265.

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4 SHEETS—SHEET 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

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ELECTRIC-SERVICE BOARD.

1,063,265.

Specification of Letter's Patent.

Patented June 3, 1913.

Application filed August 25, 1911. Serial No. 345,984.

To all whom it may concern:

Be it known that I, NELS JOLEEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Electric-Service Boards, of which the following is a specification.

My invention relates to electric service boards, and is particularly adapted for use in buildings where electrical energy for lighting, heating, or power is distributed to different floors or different parts of the building, and is received from a central station located at a greater or less distance from the building.

A service board embodying my invention is especially applicable in cases where the current is supplied upon a meter basis by a power company. It is well known that current is frequently stolen from power companies owing to the fact that the terminals of the company's mains and the terminals of the leads running to the various parts of the building are exposed in such manner that an unauthorized person may lead part or all of the current around the meter, thus enabling tenants to obtain current without paying for it. Sometimes this is done more or less innocently, for the electricians of the power company may not always be immediately available, and, as the tenant usually requires immediate service in case of a break-down or of new installation, local electricians are frequently called in to make the necessary connection, and finding no meters, connect the house wires directly to the main supply conductors and thus receive unmetered current before the power company is aware that the connection is made. Furthermore, it is very common at the present day even in well built and finely appointed buildings to pay little or no attention to the symmetrical arrangement of the various wires at the point where they join the main supply conductors and hence it is very difficult for the company's electricians to check up the various connections and ascertain whether any of them are unauthorized or fail to pass through the company's meters.

The object of my invention is to provide apparatus which will in a practical and efficient manner remedy the evils mentioned.

Another object is to provide means whereby in case of fire or other special circumstance, the main service switch may be

opened by merely pressing a button at any one of various convenient points located within and around the building, thus instantly breaking all connections and electrically "killing" the building.

I accomplish my objects by the apparatus illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of the board with the door thrown open. Fig. 2 is a rear elevation. Fig. 3 is a plan section. Fig. 4 is a detail view showing the preferred form of door lock in front elevation. Fig. 5 is a top plan view of one of the removable plates located at the top and sides of the board. Fig. 6 is a horizontal central sectional view of one of the removable side plates. Figs. 7 and 8 are front and edge views respectively of an advantageous form of connector or jumper for use in connection with my apparatus. Figs. 9 and 10 are front and transverse sectional views respectively of the main switch and its operating means.

Similar reference characters denote similar parts throughout the several views.

The panel 1 consists of slate, marble or other insulating material and is arranged vertically within a box or cabinet comprising the sides 2, 2, the top 3 and bottom 4. In the preferred form the sides, top and bottom consist of sheet metal reinforced at both the front and rear edges by angle bars 5. The cabinet is provided, preferably at a convenient point in the rear, with lugs 6, whereby it may be fastened to the wall, usually near the point of entrance of the main service conductors 7, 8, 9 into the building. Said panel is located approximately midway between the front and rear edges of the cabinet and is held in position by angle bars 10 or other suitable contrivance. The back of the cabinet is preferably open, but the front is provided with a door 12 consisting preferably of sheet metal and mounted upon hinges 13.

A lock or a seal or both are provided for the door, a suitable form being shown in Figs. 3 and 4. In this form a handle 14 rotatable upon a horizontal stud 15 passes through the door and is squared on its inner portion to operate a bar 16 having an upwardly and a downwardly extending locking rod 17 and 18 respectively, articulately connected to its ends. These rods serve to lock the door at top and bottom as in the ordinary safe. Stud 15 is vertically aper-

tured to receive a seal bolt 19 having a head 19^a at its upper end adapted to rest upon an apertured lug 12^a secured to the door. When said bolt is dropped down through said lug and through the stud it prevents the bolt from rotating, and thus holds the door locked. The bolt is apertured at its lower end to receive a seal ring 12^b which also passes through an apertured lug 12^c fastened to the door. Thus it is apparent that the door cannot be opened without breaking and removing said seal ring.

It will be seen that when the cabinet is secured in position against a wall or other flat surface, and the door of the cabinet is closed, two compartments will be formed, one in front and one in back of the panel 1. Communicating with the rear compartment along the sides and top are removable plates 20, shown in details in Figs. 5 and 6. These plates are rectangular and are removably secured to the angle bars 5, 10 by screws 21 or other suitable means. In the preferred construction these plates are mounted end to end and cooperate with the side walls 2 and top wall 3 to form the side and top closures for the rear compartment of the cabinet. Said plates 20 are apertured, preferably in the center, to receive the pipes 22 which form conduits for the conductors 23 which lead to the various parts of the building. The ends of these pipes project a slight distance inwardly through the plates and are threaded to take the lock nuts 24 and pipe bushings 25. Said lock nuts receive the plates 20 between them and thus rigidly secure the pipes and plates together. The bushings 25 serve to protect the insulation upon the conductors 23 when the latter are being passed through the pipe during assembling, but may be omitted if desired.

Associated with each removable plate 20 is an aperture 27 in the panel 1 through which the conductors 23 may pass from the pipes 22 forwardly through the panel to the front thereof, as best shown in Figs. 1 and 3. In the preferred arrangement shown in the drawings there are two vertical rows of said apertures near the lateral edges of the panel and one horizontal row near the top edge thereof. This arrangement not only presents a symmetrical appearance to the eye and assists the electrician in determining the identity and lead of the various conductors 23 but also economizes space the edge of the panel facilitates the "fishing through" of said conductors 23 by the company's electrician when the latter makes the final connection in the manner hereinafter described. The arrangement illustrated in which the removable plates 20 are located both at the sides and top is especially adapted for a three-wire system of distribution, and it will be understood that in a two-wire

system the removable plate and associated parts at the top of the board may be omitted.

In the three-wire system illustrated the main service conductors 7, 8, 9 previously mentioned pass into the cabinet preferably through the bottom of the front compartment, as best shown in Fig. 1. Under ordinary circumstances a lug 30 will be soldered to the inner end of each of said service conductors and a fuse 31 will connect each lug to a switch terminal 32 to which the blades 33 of the main switch are pivoted and electrically connected in the ordinary manner. The switch blades 33 are connected mechanically but not electrically by a cross bar 34 provided with a handle 35 by which the switch may be operated. Said blades are adapted to enter the jaws 36 formed at the ends of the bus bars 37, 38, 39. The outer bus bars 37 and 39 are arranged parallel to the lateral rows of apertures 27, while the central bar 38 leads to the bus bar 40 arranged parallel to the apertures 27 at the top of the board. The bars 37, 39 and 40 are connected through fuses 41 or otherwise to the terminal blocks 42 secured to the panel near the apertures 27. If desired said terminal blocks 42 may be provided with switches of any suitable type so that they may be individually disconnected from the bus bars.

In operation, when the building is being wired the cabinet is secured against a wall in the basement or other point convenient to the ends of the service wires 7, 8, 9 leading from the company's mains. If the building is far enough advanced so that tenants are apt to be moving in, a representative of the company locks and seals the door of the cabinet before any of the connections in the front compartment are made. The constructing electricians secure the pipes 22 to the plates 20 to the number which will be required in the immediate future and then fasten the plates in position in the cabinet. The capacity of the cabinet is usually greater than will be immediately required and if this is the case blank plates having no apertures in them, but otherwise like the plates 20, will be secured in position to form a closure for the rear compartment of the cabinet. The constructing electricians then pass the ends of the house conductors 23 from the pipes 22 forward through the apertures 27 in the panel. As the pipes and plates are added one at a time the free ends of the conductors may be readily passed through the apertures while the cabinet is in place, but further than this no connection can be made by the constructing electricians because the door at this time will be locked. This is an important feature of my apparatus for it will be seen that all of the real constructive work may be done

by the constructing electricians but the final connection cannot be made without opening the door. When the constructive work has thus been finished the company is notified and sends over its representative to connect up with such of the conductors 23 as lead to the rooms or apartments of the building which are properly metered or are occupied by tenants who have made their arrangements with the company. All that the representative has to do is to solder a lug 43 onto the end of each conductor 23 projecting through the panel and then connect the lug in the ordinary manner to the respective terminal block 42. Said representative will also make the necessary connection between the main service conductors 7, 8, 9 and the switch terminals 32. He will then close the main switch 33, 34, 35 and close and lock or seal the door. Thereafter no additional wires can be connected up to the bus bars without opening the door, and if the door is sealed it cannot be opened without ultimate detection by the company.

In view of the foregoing it will be seen that with my apparatus all of the actual constructive work may be done by the owner of the building or by the tenants, and that after the lugs 43 are once soldered to the conductors (and this need be done but once) the work of final connection to the source of supply is the work of but a few moments and yet this final connection cannot be made by anybody but the company's representative without detection. The building owner is, therefore, independent of the power company, except for the final act of turning on the current, which is and properly should be done by the company, and by the company only. After the installation has once been made, if a tenant moves out, the company can readily disconnect the conductors leading to the quarters vacated and the new tenant cannot obtain current until he has made proper arrangements with the company. Another advantage of my construction is that the pipes and plates and conductors need be added only as actual requirements arise, for the assembling of the pipe, bushing plate and lock nuts for a new conductor may be done at the bench, and afterward fastened in place merely by screwing the plates to the sides or top of the cabinet. One or more of the adjacent unused plates may be removed if desired to make room for the hand of the electrician in fishing the conductor through the panel, but ordinarily this will not be necessary. This construction, therefore, permits addition to the equipment at any time without affording access to the supply of bus bars.

It may frequently happen that a tenant may burn out his circuit by overloading it or having a "ground" occur, whereupon it will be necessary for him to send to the company

for a company electrician to come and replace the burned out fuse 41. As the tenant's lead is usually left "on," the electrician runs some risk of being burned in adjusting a new fuse, for the condition which burned out the fuse may still exist. I have provided means for eliminating this danger, the device being illustrated in Figs. 7 and 8. This device, which constitutes a bridge or jumper, consists of a block 50 of fiber or other insulating material. To the ends of this block are attached conducting elements 51 which are preferably enlarged at the ends, as shown, to increase their contact area. These conducting elements being preferably of copper, are resilient to a certain extent and are adapted to exert at one end a moderate pressure against the terminal block 42 and at the other end against the associated bus bar 37, 39 or 40. The conducting elements 51 are connected at the block by a fuse 52 covered by a hood 53. Said conducting elements are covered with suitable insulating material 54.

In operation, when the representative starts to replace the burned out fuse 41 he first places a jumper in position between the terminal block of said fuse and the adjacent bus bar and thus immediately energizes the burned out circuit. If said circuit is grounded the fuse 52 in the jumper will burn out, but if the load is not excessive the circuit will remain energized and the tenant will have the use of his lights and power during the period of repair. As the current is shunted through the jumper the operator may safely replace the fuse 41 and as soon as it is in position he may remove the jumper, whereupon the current will be carried by the fuse. Thus the current is not interrupted after the jumper is positioned, and the operator is protected during the operation.

In case of fire it is desirable before the firemen go into the building to cut off the supply of current therefrom. I have provided means whereby the building may be thus electrically "killed" from a number of points within and adjacent to it. This portion of the apparatus is illustrated chiefly in Figs. 9 and 10 of the drawings, and will now be described. A strong compression spring 60 is interposed between panel 1 and the cross bar 34 of the main switch. This spring is strong enough to throw the blades 33 out of engagement with the switch jaws 36 unless restrained. The restraining means here consist of a detent 61 pivoted to the panel at the point 62 and having at its forward end a shoulder 63 adapted to engage a projection 64 upon said cross bar. Said detent is weighted so as to normally hold said shoulder in engagement with said projection. An electromagnet 65 is fastened to the back of the panel in such position that its mov-

able core 66 will rise when the magnet is energized and impart a hammer blow to said detent and release the shoulder 66 from the projection 64. Said electromagnet is energized through conductors 67 and 68, shown diagrammatically in Fig. 9. The circuit through these conductors may be closed at various points in and around the building by pressing push buttons or switches 69, 70, 71 which may be provided to the number and in the locations desired. Springs 72 are mounted concentric with the pivots of the switch blades 33 and act upon said blades in such manner as to pull the same away from the jaws 36 as soon as the shorter and stronger springs 60 have overcome the friction of the jaws upon said blades. Thus the springs 60 operate to release the blades from the jaws, after which the lighter springs 72 serve to keep the switch in open position. It will be understood that this electric control of the main switch will not be availed of frequently, and consequently from lapse of time the parts might tend to stick, but all danger of non operation from this cause is avoided by the construction shown, where a hammer blow is exerted upon the detent by the core of the electromagnet.

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

1. Apparatus of the class described, comprising a cabinet, a panel arranged vertically therein, and a set of rectangular plates forming a portion of the side wall of the cabinet, said plates being rectangular in outline and located edge to edge and being individually removable for the purpose described.

2. An electric service apparatus comprising a cabinet, a panel board arranged ver-

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tically therein between the front and the back thereof, electric connections on the front of the board and plates forming a portion of the side walls of the cabinet behind the panel board, said plates being rectangular in outline and located edge to edge and being individually removable for the purpose described.

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3. An electric service apparatus comprising a cabinet of fixed size, a panel board therein located between the front and back, electrical connections on the front of the board, a plurality of plates forming a portion of a wall of the cabinet behind the panel, said plates being rectangular in outline and individually removable and fastening means for each of said plates accessible from the outside of the cabinet.

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4. Apparatus of the class described comprising a cabinet consisting of side walls, a top wall and a bottom wall reinforced by bars, a door for the front of the cabinet, a panel arranged vertically within the cabinet between the front and rear edges thereof, bus bars attached to the front of the panel, terminal blocks arranged parallel to the bus bars, there being an aperture in the panel adjacent to each of said terminal blocks, and a set of removable plates rectangular in outline and removably secured to the reinforcing bars of the cabinet edge to edge, said plates being apertured substantially as described.

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In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

NELS JOLEEN.

Witnesses:

ETTA L. WHITE,
MARGARET D. ROBB.