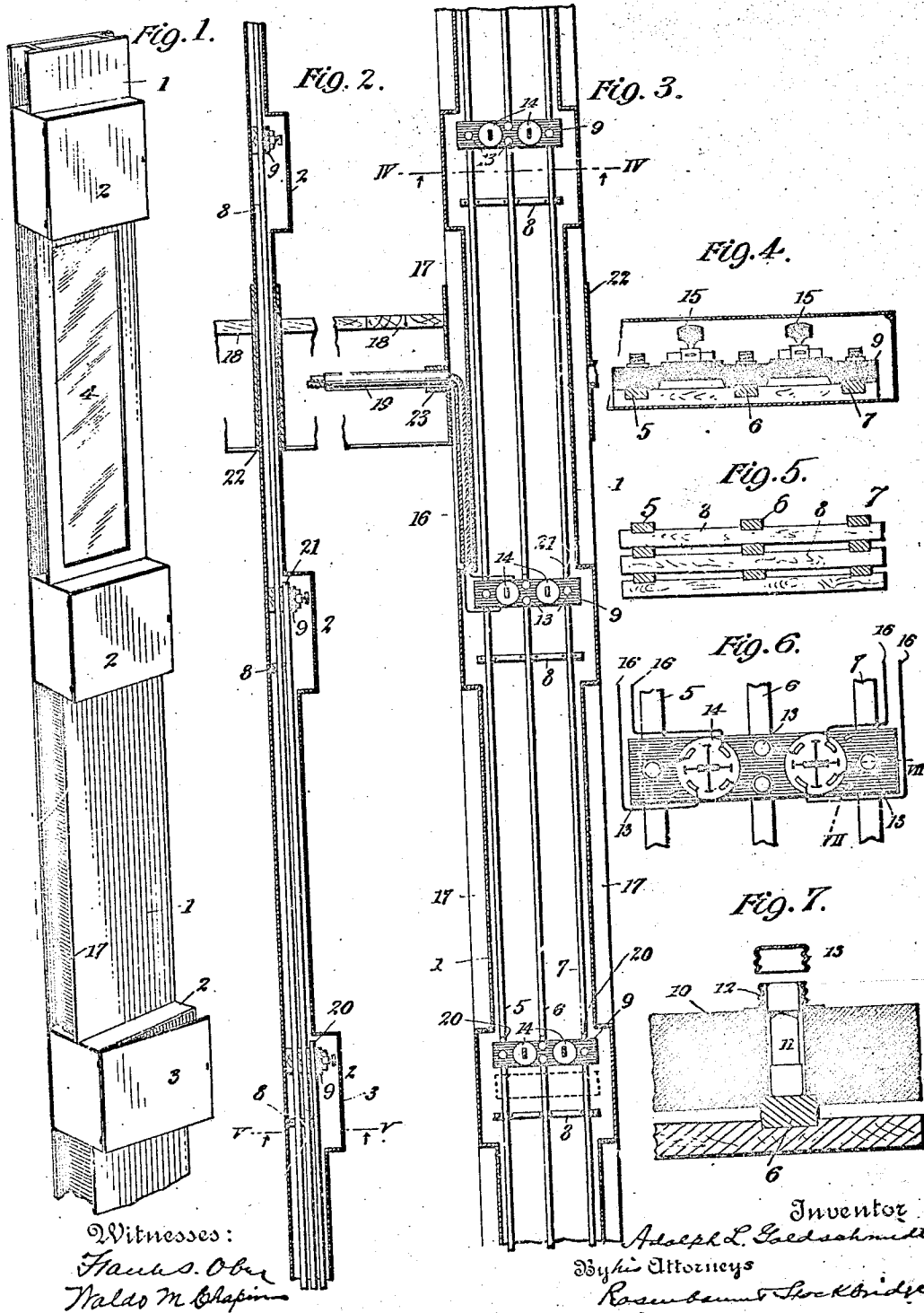


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A. L. GOLDSCHMIDT.
WIRING CONSTRUCTION FOR BUILDINGS.
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WIRING CONSTRUCTION FOR BUILDINGS.

No. 895,362.

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To all whom it may concern:

Be it known that I, ADOLPH L. GOLDSCHMIDT, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Wiring Construction for Buildings, of which the following is a full, clear, and exact description.

My invention relates to electrical distribution systems for buildings, particularly high steel frame buildings.

The principal objects are to make the construction more efficient, safer and better insulated, more elastic to accommodate the growing and varying needs of an installation, and finally, very much reduced in cost over the present constructions for the purpose.

It is the practically universal system, in wiring buildings, to have individual distributing stations or panel boards on each floor, which connect with the current mains running through the building, either to generators in the basement, or to the city supply. Each such distributing station or panel board provides for the local supervision of the lamps of the different floors, whereby any desired groups may be cut off. The local circuits are in this way enabled to be individually protected by fuses. This style of construction has proved particularly convenient in large buildings having a limited number of floors each of considerable area. But the trend of modern construction is in the direction of making buildings higher and of less ground area, so that in some cases the number of distributing stations or panel boards becomes excessive in proportion to the number of lamps carried. Moreover the current mains have to be interrupted and soldered connections made at each panel board, and inclosed in special pipes or conduits between the panel boards, so that the construction becomes exceedingly complex and expensive. The current carrying capacity of the mains is moreover impaired by the frequent interruption thereof at the panel boards.

It is the purpose of my invention to overcome all of these difficulties, and to provide uninterrupted current leads or mains throughout the entire system, and to provide for any desired distributing stations on every floor, the capacity of each of which may be varied from time to time to suit the requirements. Finally, I improve the construction by having a continuous conduit extending through-

out the entire system without interruption, instead of the arrangement usually employed where there are intermittent short sections of conduit pipe interrupted by the panel boards.

In addition to all of these objects, I have a still further and very important object, which is the saving of floor space. Where high steel frame buildings are used, the floor space is generally very valuable, and the use of panel boards which take up two or three square feet of area on each floor means a large annual loss in the way of rentals. It will be seen that in carrying out my invention, a construction is provided which takes up only a few square inches of floor space, hardly more than that of the usual mail chute, in proximity to which the present invention may be installed, if desired.

With these and other objects in view the invention consists in the features of construction and combination hereinafter set forth and claimed.

In the drawings: Figure 1 is a perspective view of a portion of the conduit of a wiring construction embodying the principles of my invention; Fig. 2 is a vertical sectional view of the same; Fig. 3 is another vertical section of the same, the plane being transverse to that of Fig. 2; Fig. 4 is a detail sectional view on the line IV—IV of Fig. 3, looking in the direction of the arrows; Fig. 5 is a partial sectional view on the line V—V of Fig. 2, looking in the direction of the arrows; Fig. 6 is a top or face view of the structure shown in Fig. 4; Fig. 7 is a detail sectional view on the line VII—VII of Fig. 6.

The essential principle of the present invention lies in the provision of bus-bars continuous throughout the entire height of the building to be wired, instead of individual bus-bars at each local panel board on the different floors, connected by cable and conduit sections, as is now the usual construction. By having vertically extending bus-bars in this way, the current carrying mains or conductors are made continuous and of uniform cross section throughout the system, which is a very great practical advantage in that it avoids the usual losses due to numerous splicings and connections. In addition to this advantage, it will be seen that many other advantages are secured, as will be later pointed out.

Referring to the drawings in which like parts are designated by the same reference

sign, 1 indicates a vertically extending tubular conduit, preferably of rectangular section. This conduit is conveniently made of sheet metal, and extends vertically upward through the entire building to be wired. In the drawings only the extent of this conduit corresponding to three floors is illustrated, and this is a good deal foreshortened vertically, on account of the space limitations of the patent drawings. The principle is, however, believed to be made sufficiently clear, in view of the present description. At each floor there may be an enlargement 2, of the conduit, although this is not absolutely necessary. I prefer, however, to have the conduit enlarged at a point between the floors, and a door 3 provided thereat, through which access is had to the interior. It is, however, possible to merely have the glass front 4 of the conduit removable in the manner of an ordinary mail chute. 5, 6 and 7, are vertical bus-bars, extending through the entire conduit 1. Three of these bus-bars are shown, corresponding to the three-wire system of wiring, and each is a substantially rigid rectangular rod of copper or aluminum, or other conducting metal, supported by spaced cleats 8, along the conduit, so as to be very efficiently insulated therefrom at every point. The conduit being metallic furnishes the adequate protection against fire required by the insurance regulations.

At the boxes or enlargements 2, or at any other point of the conduit where it is desired to establish a distributing station corresponding to the usual panel board, I provide means or devices which are assembled upon the bus-bars 5, 6 and 7, so as to make electrical contact therewith, and establish the necessary branch lines or circuits. The means which I have adopted for this purpose is particularly shown in Figs. 4 and 6.

9 denotes a block or base of porcelain or insulating material, the essential characteristics of which are holes or openings 10, spaced apart from one another such distances as to directly overlie the bus-bars 5, 6 and 7.

11 denotes ordinary cartridge fuses, which may be inserted in these holes so as to contact at their lower ends with the bus-bars.

12 denotes a threaded collar at the upper ends of the holes 10, which receives a metallic cap 13. When a cartridge fuse 11 is inserted in this hole and the cap screwed down thereon, it is evident that a perfect electrical connection through the fuse is established between the bus-bar and the metallic collar 12.

14 denotes ordinary snap switches, with turn buttons 15, which are received in appropriate recesses in the porcelain base 9. The circuit connections of these snap switches are made to the metallic collars 12, and to the extension or branch circuit wires

16. As clearly shown in Fig. 6, the disposition of the fuses, snap switches, and connections is such that one branch circuit is made between the bus-bars 5 and 6, while another separate branch circuit is made between the bus-bars 6 and 7.

The branch circuits being established in the above way, it is merely necessary to provide for conducting them to the desired lamps. For this purpose the conduit 1 is conveniently made with channels or depressed portions 17, between the different enlargements 2, and the circuit wires 16 are led upward from the switches 14 through these channels. 18 denotes a floor of the building, and 19 is a conduit-pipe therein for the circuit wires 16. In this way the wires are led outward from the main conduit 1, through the ceiling to the points desired, and the circuits thereof are controllable by the snap switches 14, conveniently disposed between the floors. Not only are the circuits controllable by the snap switches, but they are protected by the fuses 11, which are all of the necessary functions of a distributing station or panel board.

It will be noted that in Figs. 2 and 5, there are three separate sets of bus-bars at the lower part of the conduit. This is an indication of one important feature of the construction. For various reasons, and particularly to avoid an improper fall in the voltage at the remote distributing points, it is best to have separate feeders, one set for the first six or eight floors, another set for the second six or eight floors, and so on. In this way the lamps of the first floors do not shunt those of the upper floors to the loss of voltage at the latter, as would be the case if only one set of feeders or bus-bars were used. I provide for these separate feeders by having a number of sets of bus-bars 5, 6 and 7, at the lower part of the conduit. At such lower floors, the porcelain blocks or bases 9 rest merely on the outermost tier of bus-bars, so that the latter are the only ones from which current is obtained at these floors. After the sixth or seventh floor, however, the outermost tier of bus-bars is interrupted, as shown at 20, and on the succeeding floors, the next tier of bus-bars becomes available for the distribution circuits. The second tier is finally dropped off or interrupted at 21, and thereafter the lowermost or final tier of bus-bars becomes available for the remaining or upper stories of the building. The different tiers of bus-bars are conveniently supported and insulated from one another by having the cleats superposed upon one another at the spaced intervals where support is required, in the manner clearly shown in Fig. 5.

If at any time the needs of any branch circuit increase beyond the capacity of a single distributing base 9, with its two snap switches

14, it is evident that another base, or as many bases as desired, may be assembled side by side within the enlargements 2. In the lower part of Fig. 3, an additional base or block 9 is indicated in dotted lines in the position where it would be placed adjacent to the one completely represented in full lines at this point. I consider this feature of the invention by which bases or blocks can be added or removed at will so as to accommodate the varying requirements of each floor, as a very important one.

In order to protect the conduit 1 at the points where it emerges from the successive floors, I provide in practice a shield 22, which is of rigid construction, preferably cast iron, and extends around the conduit, projecting a few inches above the floor level. This plate is sufficiently strong and rigid to withstand the knocks and kicks to which it is subjected, and also provides a ready means for the attachment of the conduit pipes 19, through the outlet lugs or collars 23 thereon. It is evident that the form of the conduit 1 and the way in which the branch circuits or connections are made therefrom, is largely a matter of individual requirements, and does not itself constitute an important part of the present invention.

What I claim, is:—

1. In a system of electrical distribution, a conduit extending vertically in a building continuously through the floors thereof, uninsulated rigid bus-bars extending vertically therethrough in parallel and spaced apart relation to one another and to said conduit, cleats for supporting the bus-bars at intervals, and means adapted to be superposed on the bus-bars at points between said cleats for establishing branch circuit connections therefrom.

2. In a system of electrical distribution, a conduit extending vertically through the floors of a building, rigid uninsulated bus-bars contained therein and spaced apart from one another and from said conduit, cleats for supporting said bus-bars at intervals, blocks including switches and fuses adapted to be superposed on said bus-bars at points between said cleats, and branch circuits therefrom.

3. In a system of electrical distribution, a conduit extending vertically through a building and through the various floors thereof, rigid uninsulated bus-bars supported vertically in said conduit and spaced apart from said conduit and from one another, porcelain blocks having switches therein and adapted to be superposed on said bus-bars at any selected point along their length, and means including fuses for establishing branch connections from said switches to the bus-bars.

4. In a system of electrical distribution, a conduit extending vertically through a building, rigid uninsulated bus-bars vertically

contained therein and spaced apart from one another and from said conduit, means adapted to be positioned on said bus-bars at any desired point vertically in the conduit, and means for establishing branch connections therefrom.

5. In a system of electrical distribution, rigid bus-bars extending vertically in a building continuously through the floors thereof, insulating cleats at spaced intervals for supporting said bus-bars, a conduit inclosing said bus-bars and having enlargements between the different floors, means at points between said enlargements for establishing branch connections from said bus-bars, and branch circuits extending to said means and leading into said conduit at said enlargements.

6. In a system of electrical distribution, rigid bus-bars extending vertically in a building continuously through the floors thereof, insulating cleats at spaced intervals for supporting said bus-bars, a continuous conduit therefor, said conduit having lateral channels, and branch circuits from the bus-bars contained in said channels.

7. In a system of electrical distribution, rigid bus-bars extending vertically in a building continuously through the floors thereof, insulating cleats at spaced intervals for supporting said bus-bars, insulating blocks adapted to be positioned on said bus-bars, switches on said blocks, said blocks having holes overlying the bus-bars, and fuses adapted to be inserted in said holes for establishing electrical connection from the bus-bars to the switches.

8. In a system of electrical distribution, rigid bus-bars extending vertically in a building continuously through the floors thereof, insulating cleats at spaced intervals for supporting said bus-bars, insulating blocks adapted to be positioned on said bus-bars and having holes overlying the bus-bars, cartridge fuses inserted in said holes, and means for establishing electrical connection with the upper ends of said fuses.

9. In a system of electrical distribution, rigid bus-bars extending vertically in a building continuously through the floors thereof, insulating cleats at spaced intervals for supporting said bus-bars, insulating blocks adapted to be positioned on said bus-bars, said blocks having holes overlying the bus-bars, fuses contained in said holes, threaded collars on said blocks surrounding the fuses, caps on said collars, and means for establishing branch circuits from said collars.

10. In a system of electrical distribution, a plurality of rigid bus-bars extending vertically in a building continuously through the floors thereof, insulating cleats at spaced intervals for supporting said bus-bars, a continuous conduit therefor, branch connections from the bus-bars at the various floors, and

protecting shields 22 surrounding said conduit at the point of its passage through the floors, said shields extending slightly above the level of the floors, as and for the purpose set forth.

11. In a system of electrical distribution, a plurality of rigid bus-bars, a conduit therefor, insulating blocks adapted to be superposed on said bus-bars at any point longitudinally thereof and having holes overlying the bus-bars, fuse cartridges inserted in said holes for making electrical connections with the bus-bars, and switches carried by said blocks for controlling branch circuits therefrom.

12. In a system of electrical distribution, a conduit extending vertically through a building and through the various floors thereof, three rigid uninsulated bus-bars of rectangular transverse sections supported vertically in said conduit and spaced apart from one another and from said conduit, porcelain blocks adapted to be superposed on said bus-bars at any desired point longitudinally therein, said blocks having single holes overlying the outside bus-bars and a pair of holes

overlying the middle bus-bar, connecting means adapted to be inserted in said holes, and switches adapted to establish circuits between the two pairs of adjacent connecting means thus provided.

13. In a system of electrical distribution, a plurality of tiers of rigid bus-bars extending vertically in a building continuously through the floors thereof, the different tiers terminating at different levels and being insulated from one another throughout their length, means for supporting the bus-bars at spaced points along their length, and means placed on the bus-bars and supported thereby at different levels for establishing circuit connections therewith, whereby the different bus-bars are connected to different circuits, the uppermost circuits being fed from the lowermost tier of bus-bars.

In witness whereof, I subscribe my signature, in the presence of two witnesses.

ADOLPH L. GOLDSCHMIDT.

Witnesses:

WALDO M. CHAPIN,
MAY BIRD.