

A. L. GOLDSCHMIDT.  
 SWITCHBOARD.  
 APPLICATION FILED JULY 3, 1908.

918,845.

Patented Apr. 20, 1909.

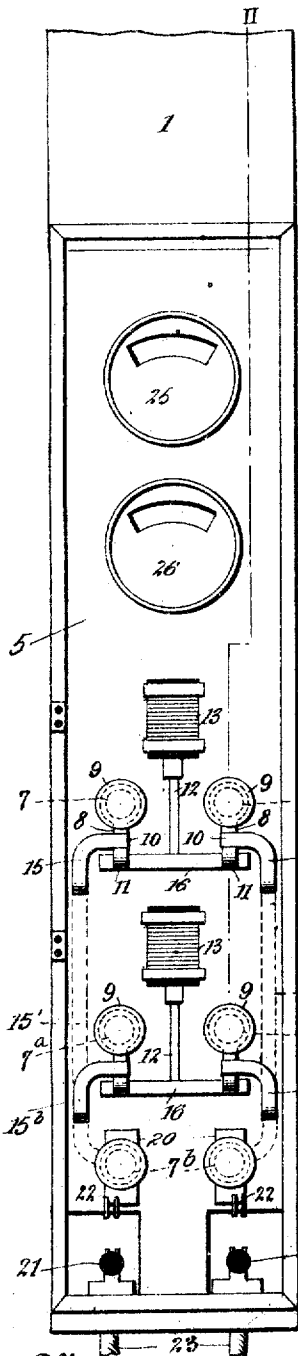


Fig. 1.

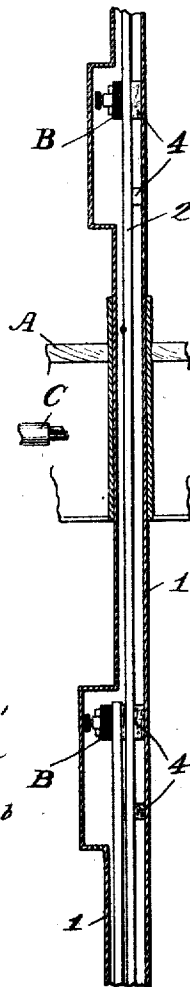


Fig. 3.

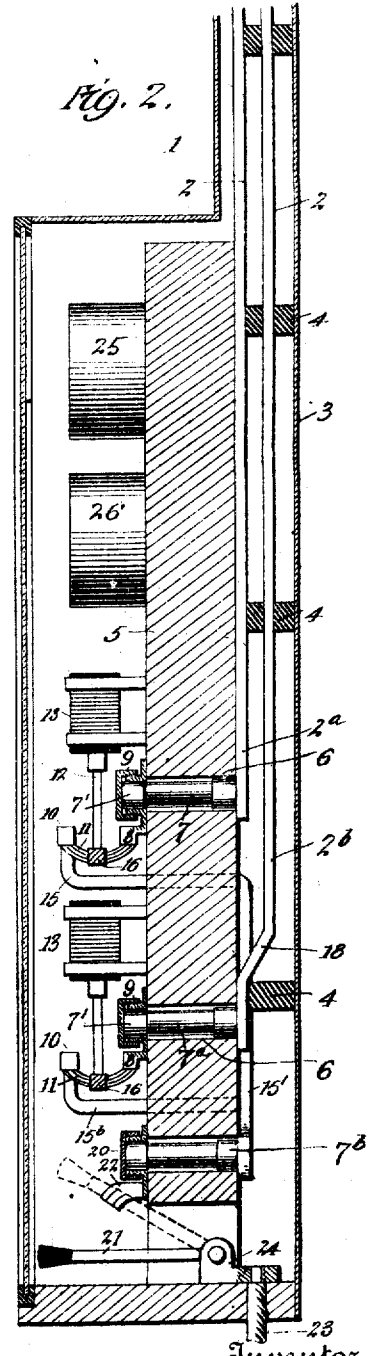


Fig. 2.

Witnesses:  
 Hans. Ober  
 [Signature]

Inventor  
 Adolph L. Goldschmidt  
 By his Attorneys  
 Rossmann, Stockard & Co.

# UNITED STATES PATENT OFFICE.

ADOLPH L. GOLDSCHMIDT, OF NEW YORK, N. Y.

## SWITCHBOARD.

No. 918,845.

Specification of Letters Patent.

Patented April 20, 1909.

Application filed July 3, 1908. Serial No. 441,758.

*To all whom it may concern:*

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

This invention relates to electrical distribution systems for buildings, particularly tall buildings, making use of the wiring construction described in my Patent No. 895,362, issued August 4, 1908, in which is described a system of bus-bars extending vertically through the building and inclosed in a conduit. With this apparatus the circuit connections for the various floors are established by means which can be superposed directly upon the bus-bars and supported thereby at any desired points of their length.

The present application shows a construction of switchboard most particularly adapted to the above wiring construction, and taking up a minimum amount of wall space in the basement of the building where the generator or generators are contained. The invention is, however, not limited or restricted to this particular field of use.

In carrying out the present invention I make use of an insulating support which is fastened over the bus-bars or series of tiers of bus-bars, which extend downward into the basement of the building, as above described. On this insulating base I mount the various switches and apparatus for the different circuits, there being a separate circuit for each tier of bus-bars, with separate controlling switches. By my invention the various circuits are made in a very simple and direct way, but the conductors of different circuits are widely separated at all points by an air gap or by intervening insulating material, so as to minimize the danger of accidental cross connections.

A feature of the invention lies in the form of main switch which I employ for connecting the circuits of the switchboard to the mains from the generator.

With these various and other objects in view, my invention consists in the features of construction and combination as herein-after set forth and claimed.

In the drawings: Figure 1 is a front elevation of a switchboard embodying the principles of my invention. Fig. 2 is a vertical

sectional view of the same on the line II—II of Fig. 1. Fig. 3 is a similar view showing a portion of the conduit and conductors which extend upward through the building.

Referring to the drawings, in which like parts are designated by the same reference sign, 1 designates a conduit, for example, the lower portion of a conduit such as described in my above mentioned patent which is illustrated in its general features in Fig. 3. The conduit is adapted to extend vertically through the floors A of a building, and has switches B controlling the circuits of the branch connections C, which are joined to the switches in an obvious manner (not shown.)

2 designates the bus-bars contained therein, of which there are two tiers or layers shown, each having a pair of conductors corresponding to individual circuits. For three-wire circuits there would, of course, be three conditions in each tier or layer. The bus-bars are supported from one another and from the supporting rear surface 3 of the conduit by cleats 4 at suitable spaced intervals.

5 designates a block or base of insulating material, such as marble, supported in any suitable way, preferably fastened to and resting against the outer tier 2<sup>a</sup> of the conductors. This outer tier of the conductors or bus-bars 2 terminates short of the tier or layer 2<sup>b</sup> therebeneath. Only two tiers or conductors are shown in the drawings, but it is to be understood that as many tiers may be employed as desired, in every case each tier terminating short of the tier immediately therebeneath, in a regular succession. At points opposite the lower extremities of the outer tier of conductors 2<sup>a</sup>, the insulating base 5 has holes or perforations 6 in which are received ordinary cartridge fuses 7. These fuses have the usual metallic heads at their extremities adapted to establish a circuit therethrough, and the size of the fuses employed is so related to the thickness of the insulating base 5 that the outer head 7' projects slightly beyond the surface of this base.

8 designates fixtures or terminals secured to the insulating base 5 and adapted to surround the projecting heads 7' of the fuses. Each of these fixtures or terminals has a screw-cap 9 which can be screwed down so as to press tightly upon the metallic head 7' of the fuse and cause a good electrical connection to be established therethrough from the

corresponding bus-bar 2<sup>a</sup> to the terminal 8. The screw-cap 9 can, of course, be removed whenever desired to insert a new cartridge fuse.

10 10 designates terminal blocks supported perpendicularly outward from the terminals 8 and having lower flat faces in a horizontal plane which also includes lower flat faces of the terminals 8. These faces of the respective terminal blocks 8 and 10 are adapted to be engaged by brushes or switch blades 11 which are vertically moved upward to engage the same by a common supporting bar 16 and a connection 12 with a solenoid-operating device 13. I have illustrated the terminal blocks 10 supported in properly spaced-apart relation from the terminals 8 by rigid bent conducting supports 15 which project through openings of the insulating base 5 and extend outward from the face thereof in planes which are slightly to one side of or offset from the paths of movement of the switch blades 11. In this way there is established a very compact and convenient double pole switch for completing or interrupting the circuit between the conductors 15 and the terminals 8 which are connected to the conductors of the upper tier of bus-bars 2<sup>a</sup>. Any other forms of circuit-opening devices may, however, be used. The conductors 15 are continued directly downward at 15' on the under face of the insulating base 5, in which relation they are laterally offset from the other series or tier of bus-bars 2<sup>b</sup>, which lie between the conductors 15', as will be clear from Figs. 1 and 2 of the drawings.

The conductors or bus-bars of the tier 2<sup>b</sup> may be deflected at 18 and brought into vertical alinement with the corresponding conductors of the tier 2<sup>a</sup>. In this relation they are adapted to be engaged by cartridge fuses 7<sup>a</sup> which are received in the insulating base 5 in all respects similar to the fuses 7 already described. There are also provided terminal blocks and switch mechanism for the fuses 7<sup>a</sup> substantially identical with those already described for the fuses 7, and denominated by the same reference characters in the drawings. The conductors for the bus-bars 2<sup>b</sup> corresponding to the conductors 15 already described, are denominated 15<sup>b</sup> in the case of the lower switch apparatus, and are extended through the insulating base 5 to join the extremities 15' of the conductors 15. At this point, therefore, the separate circuits join one another in the common connections from the generator. The generator connection includes a main switch and fuses, of which I have shown a very compact and convenient construction.

20 designates fixtures generally similar to the fixtures 8 already described, and which are adapted to cooperate with cartridge fuses 7<sup>b</sup> in the same way as has been described for the fuses 7 and 7<sup>a</sup>.

21 designates a double pole knife-blade switch movable to engage the spring clip extremities 22 of the terminals 20. The respective poles or blades of this switch form the electrical connections or terminals from the mains 23 from the generator, which are brought upward into the base of the switchboard for this purpose. It will be observed that the pivot supports 24 for the blades 21 of the main switch are located some distance back from the front face of the insulating base 5, and swing through a limited arc of movement which may be less than a right-angle, as shown in the dotted and full line positions of Fig. 2. The form of the terminals 22 is such as to provide downwardly projecting clips in a path to make good electrical connection with the corresponding switch blade 21 when the latter is swung upward thereagainst. It is evident that this construction permits the use of a switch which is the equivalent of the comparatively large switches now in use in all matters of strength and current-carrying capacity, but which takes up a minimum amount of space upon the switchboard.

Any additional accessories or devices, such as volt-meters and ammeters 25 and 26, may be supported upon the insulating base 5 of the switchboard in any convenient way. The circuit connections of these devices may be provided by small flexible insulated wires carried outside of the conduit proper, and possibly inclosed in a separate pipe or conduit for purposes of protection.

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, an insulating base supported on the bus-bars, and a circuit-opening device supported on said base for opening the circuit of said bus-bars from the source of current supply.

2. 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, an insulating base supported on the bus-bars, fuses extending through said base to establish connection with said bus-bars, and a circuit-opening device supported on the outside face of said base for opening the circuit of said fuses and bus-bars from the source of current supply.

3. In a system of electrical distribution, a conduit extending vertically in a building continuously through the floors thereof, un-

insulated 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, an insulating base supported on the bus-bars, connections extending from said bus-bars through the base, and a plurality of circuit-opening devices on the outside face of said base and joined to said connections for opening the circuit of said bus-bars, one of said devices being the main switch from the source of current supply.

4. In a system of electrical distribution, a conduit extending vertically in a building continuously through the floors thereof, un-insulated 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, an insulating base supported on the bus-bars, said base having holes extending transversely therethrough in alinement with the respective bus-bars, fuses received in said holes and adapted to engage said bus-bars, terminals surrounding the outer ends of said fuses, removable caps received on said terminals to engage the fuses, and a circuit-opening device engaging said terminals to open the circuit of said bus-bars from the source of current supply.

5. In a system of electrical distribution, a plurality of tiers of bus-bars, each tier terminating short of the set immediately therebeneath, an insulating base having holes opposite the lower ends of the respective tiers of bus-bars, separate sets of fuses received in said holes to establish separate connections with the bus-bars of the respective tiers, and conductors connected to all of said fuses to connect the latter to a single source of current supply.

6. In a switchboard, an insulating base having a plurality of holes in separate vertically spaced-apart sets, fuses received in said holes, means for establishing separate circuits from said fuses on the under side of said base, terminals surrounding the exposed ends of said fuses on the face of the base conductors joined in a common circuit from the same current source and projecting through said base at points laterally offset from the planes of said fuses, and circuit-opening devices for controlling circuits from said conductors to said terminals for the respective sets of fuses.

7. In a switchboard, an insulating base having a plurality of holes in separate vertically spaced-apart pairs, fuses received in said holes, means for establishing separate circuits from said fuses on the under side of said base, terminals surrounding the exposed ends of said fuses on the face of the base, conductors joined in a common circuit from the same current source and projecting through said base at points laterally offset

from the planes of said fuses, circuit-opening devices for controlling circuits from said conductors to said terminals for the respective pairs of fuses, and a main switch for controlling the circuit of said conductors.

8. In a system of electrical distribution, a plurality of tiers of bus-bars, each tier terminating short of the set immediately therebeneath, an insulating base having holes opposite the lower ends of the respective tiers of bus-bars, fuses received in said holes to establish circuit connections with the bus-bars of the respective tiers, circuit connections for the fuses of such respective tiers, and separate circuit opening devices for controlling the same.

9. In a system of electrical distribution, a plurality of tiers of bus-bars, each tier terminating short of the set immediately therebeneath, an insulating base having holes opposite the lower ends of the respective tiers of bus-bars, fuses received in said holes to establish circuit connection with the bus-bars of the respective tiers, terminals for said fuses, separate circuit-opening devices coöperating with terminals for controlling the circuit connections for the fuses of said respective tiers, and a single main switch having circuit connections for opening the circuits of all of said bus-bars from the source of current supply.

10. In a system of electrical distribution, a plurality of tiers of bus-bars terminating at different levels at their lower ends, a base supported over the outer tier and having holes overlying the respective bus-bars, fuses received in said holes, terminals for said fuses, and circuit-opening devices coöperating with said terminals for controlling circuits through said fuses to the bus-bars of the respective tiers.

11. In a system of electrical distribution, a plurality of tiers of bus-bars terminating at different levels at their lower ends, a base supported over the outer tier and having holes overlying the respective bus-bars, fuses received in said holes, terminals for said fuses, circuit-opening devices coöperating with said terminals for establishing circuits through said fuses to the bus-bars of the respective tiers, and a single main switch having connection for opening the circuit of all the bus-bars from the source of current supply.

12. In a switchboard, an insulating base having switches, conductors extending through said base, the conductors of corresponding polarity being connected together at their lower ends, fuses received in said base to engage said conductors at said lower ends, terminals having clips and located on the outside face of said base and engaging said fuses, and switch blades pivoted behind the plane of said front face of the base and movable upward to engage said clips to the

establish a circuit from the source of current supply.

13. In a switchboard, a base having holes, fuses received in said holes, terminals having  
5 clips on the face of said base and in electrical connection with said fuses, and switch blades pivoted behind the plane of the front face of said base and movable upward through a

limited angle to establish connection with said clips.

In witness whereof, I subscribe my signature, in the presence of two witnesses. 10

ADOLPH L. GOLDSCHMIDT.

Witnesses:

WALDO M. CHAPIN,  
JAMES D. ANTONIO.