Jan. 17, 1933. J. E. LONG 1,894,380

PANEL UNIT SIGN

Filed March 31, 1930 2 Sheets-Sheet 1

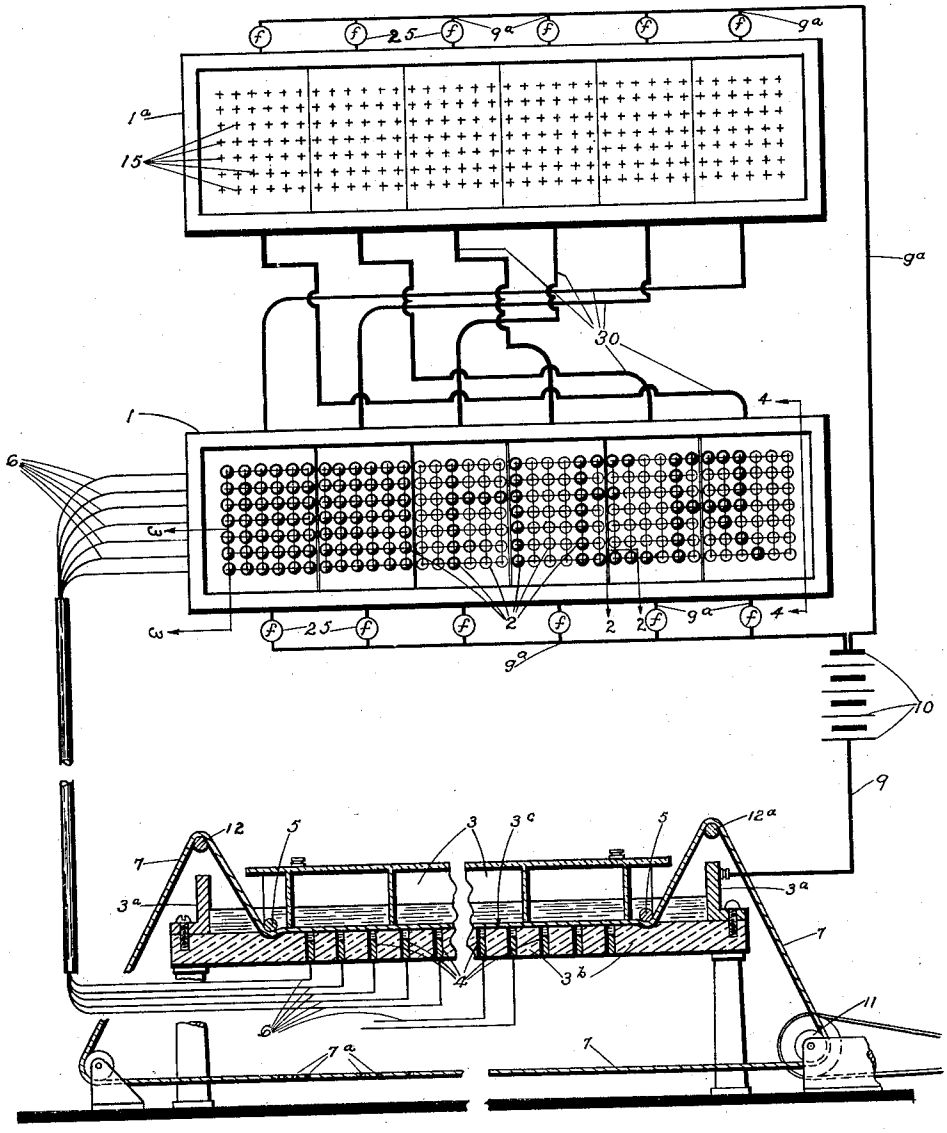


Fig. 1.

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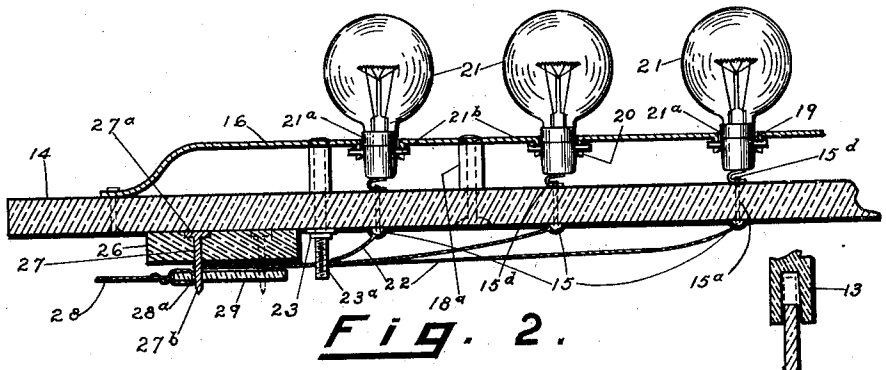


Fig. 2.

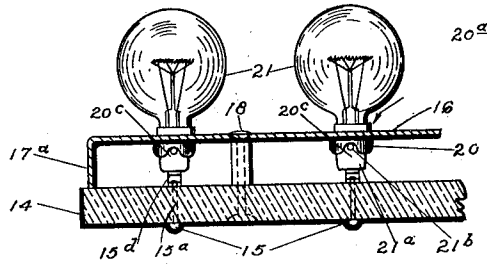


Fig. 3.

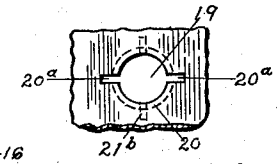


Fig. 3a.

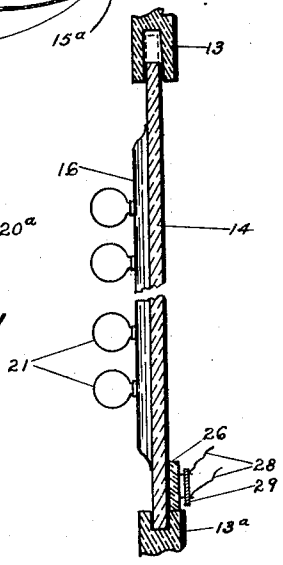


Fig. 4.

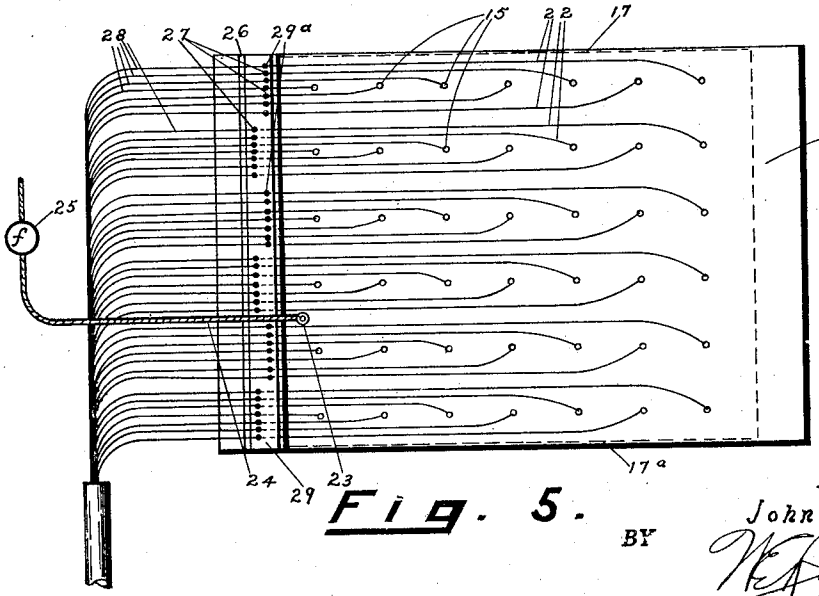


Fig. 5.

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UNITED STATES PATENT OFFICE

JOHN E. LONG, OF MULTNOMAH, OREGON

PANEL UNIT SIGN

Application filed March 31, 1930. Serial No. 440,462.

My invention relates to electric signs of the type shown in the United States Re-issue Patent issued to myself December 6, 1927, which bears Patent No. 16,809, and more particularly to the display board or sign proper illustrated in Patent No. 1,681,491, issued August 21, 1928, to myself.

In such patents, a display or sign board comprises a bank of lights mounted upon an integral conducting face plate, which constitutes a common terminal for all of the lamps. Each of the lamps is intermittently energized thru a separate wire and such separate wires constitute the other terminal for each of the lamps. For this reason, it is difficult to provide adequate fuses or protective devices for the circuits, as required by the underwriters and by the authorities in various communities, as it is necessary to fuse each separate wire or to fuse the entire sign by a single fuse, such fuse being arranged in the return circuit from such terminal plate to the source of energy. Also because of the large number of separate wires necessary for feeding the individual lights, it is difficult to keep an accurate check upon the path of each wire.

The object of my present invention is to provide a sign of this character having a face plate comprising a series of panels of substantially uniform size, thus dividing the return circuit into a number of branches, each feeding a proportionately less number of outlets, such panels being arranged side by side and being insulated from each other.

A further object of my invention is to provide a sign composed of panels of uniform character, in which the face plates are mounted upon an insulated base and spaced therefrom, except upon the bounding or marginal edges, the latter being fitted tightly to the face plate and being sealed relatively with the latter. A further object of my invention is to provide a sign or display board of this character made of panels, in which the insulating base board and the conductive face plate are proportioned relatively to each other so that the adjacent panels are electrically insulated from their support from each other solely by the relative proportions of such parts and independent of auxiliary insulating means.

A further object of my invention is to so arrange the portions of the face plate in a sign of this character that such face plate is formed to constitute a plurality of spaced integral sockets capable of receiving and holding light bulbs having bases of the so-called bayonet types, as opposed to those having screw bases and in this manner eliminating the necessity for providing separate sockets.

A further object of my invention is to provide a convenient arrangement of the connections with each of such spaced sockets so that all of such circuits are provided with terminals grouped in predetermined pattern to expedite the completing and matching of such plurality of such individual circuits.

The details of construction and the mode of operation are hereinafter described with reference to the accompanying drawings, in which:

Fig. 1 is an elevation of two display units shown connected, as for example in a double faced sign, and shows somewhat in diagram the electrical connections and control apparatus for such sign;

Fig. 2 is a section on a somewhat enlarged scale taken substantially on the line 2—2 in Fig. 1;

Fig. 3 is a somewhat similar section taken on the line 3—3 in Fig. 1;

Fig. 3A shows portions of the devices in Fig. 3 detached and in plan;

Fig. 4 is a fore-shortened section taken on a smaller scale and on substantially the line 4—4; and

Fig. 5 is a diagrammatic elevation of the back portion of one of the panel units embodying my invention.

I have shown my invention as being embodied in an electric sign having two display boards 1 and 1*a*. Upon the face of each of such display boards embodying my invention, I arrange a plurality of alined electric lamps 2 covering substantially the entire display surface of such board. The electric circuit control apparatus for such board comprises an open-top receptacle 3, having a body 3*a*, and a bottom portion 3*b*, prefer-

ably made of non-conducting material, because it is in such bottom that the terminals 4 are embedded.

The upper surface 3*c* of such bottom is plane except at the ends to receive guide rolls 5. The terminals 4 of the electric lamps 2 are connected by conduits 6, each contact being separately connected to its corresponding lamp. A ribbon-like control element of non-conducting material such, for example, as paper is led into such receptacle and beneath said guide rolls 5 and slidingly engages the upper surface 3*c* of the bottom 3*b*.

A body of mercury is contained within a receptacle and is adapted to overlie such ribbon-like control element and is adapted to serve as a common terminal for all of the terminals arranged in such bottom 3*b*. Such body of mercury is connected to the lamps 2 in the sign 1, through a return conduit 9, having branches 9*a*, which conduit is connected to a source of supply of electric energy shown diagrammatically as a battery 10. The ribbon-like control element 7, having perforations 7*a*, preferably is arranged in endless form and is moved continuously by a driving element 11. In addition to the guide rolls 5, provided within the receptacle, other guides 12 and 12*a* are provided to lead such endless ribbon-like control into such receptacle and out of the latter.

Each display board embodying my invention comprises a plurality of electrically separated panels, such panels being shown as mounted in two opposed slotted racks 13 and 13*a*, which constitute the border portions for such display board. Each panel comprises a base 14 made of electrically non-conductive material and spaced uniformly over such base are a plurality of terminals 15.

Carried by such base is an electrically conductive face plate 16, the marginal or border portions 17 and 17*a* being inclined downwardly and abutting tightly against such base. These marginal portions of such face plate which aline with the horizontal margin of the display board, are finished in ogee curves respectively, so as to constitute moldings for such face plate. The other marginal or border portions 17*a* terminate in a pendent flange extending substantially at right angles to the surface of the face plate. The overall width of the face plate is slightly less than the overall width of the base and thus when the panels making up the display board are arranged side by side their bases will be in abutment and the face plates will be spaced slightly apart so as to be insulated relatively with each other. The face plates are fastened to the board by screws 18, which pass thru spacers 18*a* and except for the marginal portions, the face plate extends in a plane substantially parallel to that of the base. Arranged in registration with the terminals 15 and mounted upon such base are apertures 19 in the face plate and the marginal portions of such apertures are flanged inwardly relatively to the base to constitute integral sockets 20. Such sockets are shown as being formed to receive electric lights 21 of the automobile type, which lights are provided with cylindrical bases 21*a* having pins or trunnions 21*b* extending radially outward from such cylindrical bases. Such sockets have radial openings 20*a* for receiving such pins or trunnions and the portions 20*b* adjacent such openings 20*a* are turned downwardly and are provided with a central recess 20*c*. The lamps are fitted in place by forcing them into the sockets and giving them a turn of approximately 90° so that the pins or trunnions are adapted to fit in such recesses 20*c*. The terminals 15 carry strips 15*d* of hard copper having a substantial degree of resiliency and are proportioned and arranged to flex to permit the lights to be fixed in place and to bear tightly against such strips and in electrical contact therewith. An inspection of Fig. 1 will disclose that the uniform spacing of such apertures 19 is with respect to the overall width of the bases in certain respects and not with respect to the overall width of the face plates and thus the space between the vertical rows of lights at the ends of the panels is exactly equal to the spacing between other vertical rows, even though such face plates are spaced from the adjacent panels. In standard signs, I provide a space of approximately one-fourth of an inch between face plates.

Each of the terminals 15 is provided with a pin 15*a*, which extends thru the base and is connected with a wire 22 extending across the rear surface of such base. A terminal 23 is fast and preferably brazed to the face plate 16 and constitutes the electrical connection with such face plate. Such terminal preferably is a threaded brass or copper bolt and is provided with a threaded shank 23*a* with which the return wire 24 for each panel is connected. In each of such wires 24, I arrange fuse or protective devices 25, so that each panel of the sign is fused independently of the remainder and in case that any portion of one panel should become short-circuited, its effect on such protective device or fuse would indicate the presence of such overloaded condition. Arranged upon the back of such primary base 14 is an auxiliary base 26 arranged along the bottom edge of such panel and being offset from the primary base 14 provides a shoulder for supporting the weight of such panel in the lower rack 13*a*, as is apparent in Fig. 4.

The portions of the base constituting the horizontal margins of the sign are arranged to extend a substantial distance beyond the face plate and being uniform in thickness provide a convenient support and fastening for the sign. Inasmuch as the base is made

of non-conductive material, the margin portions extending beyond the face plate are non-conductive of electricity and thus such marginal portions provide a support for the sign completely insulated from the racks without requiring auxiliary insulation. As is apparent in Fig. 4, the upper rack 13 is grooved substantially deeper than the width of the marginal portion extending therein. This is to permit the sign to be slipped into place to permit the lower marginal portion to become seated in the lower rack 13*a* with the auxiliary offset base 26 seated upon the face of the rack.

Preferably carried by such auxiliary base are a series of upstanding pin-like contacts 27 preferably provided with heads 27*a*, which in position lie between the auxiliary base and the primary base with the shank portions 27*b* extending thru the auxiliary base. The heads of such contacts provide a support for holding the pin-like terminals upright. Such terminals are arranged in groups corresponding in number to the number of lamps in a vertical row on the display board. Each group is preferably offset relatively to the adjacent groups and each group is arranged in substantial alinement with the vertical row with which it is connected by the wires 22.

The wires 28 which constitute the remainder of the individual circuits are fastened to connecting blocks 29 and preferably one connecting block is provided for each panel. Such connecting blocks are provided with a series of perforations or recesses 29*a*, spaced and proportioned to correspond with the spacing and proportions of the contact pins 27, with which they are adapted to connect. The end 28*a* of the wires 28 are bared of insulation and passed respectively thru the proper perforations in the connecting block 29. Thus when the connecting block is arranged in alinement with the contacts 27, the perforations with the wires associated therewith are arranged in registration with the terminals and fit tightly thereover.

When two display boards 1 and 1*a*, as shown in Fig. 1, are connected for simultaneous operation, such for example as in a double-faced sign, the panels of each sign corresponding with each other are connected together by wires formed into cables and provided with contacts which are a duplicate of the ones provided for the wires 28. This is diagrammatically illustrated in Fig. 1, in which such wires are illustrated as being connected together into short-length cables 30 and connected across to opposite ends of the sign. The terminals are arranged to extend a sufficient distance thru the auxiliary block so that two connecting blocks can be arranged thereon and can be electrically connected therewith.

I claim:

1. In an electric sign of the character described, including a display board, such board comprising a plurality of uniform separately removable panels, each electrically separated from the others and consisting of an electrically non-conductive base, a plurality of terminals arranged thereon, an electrically conductive face plate carried by such base, such face plate being provided with apertures arranged in registry with such terminals, means adjacent such apertures to constitute light-receiving sockets and an electric circuit, one portion comprising a plurality of branches, each serving as an individual electrical connection for one of such terminals and another portion serving as a common return connection for the face plate of such panel.

2. In an electric sign of the character described, including a display board, such board comprising a pluarlity of uniform panels, each electrically separated from the others and consisting of an electrically non-conductive base, a plurality of terminals arranged thereon, an electrically conductive face plate carried by such base, such face plate being provided with apertures arranged in registry with such terminals, means adjacent such apertures to constitute light-receiving sockets, an electric circuit, one portion comprising a plurality of branches, each serving as an individual electrical connection for one of such terminals and another portion serving as a common return connection for the face plate of such panel and a fuse element arranged in such common return connection.

3. In an electric sign of the character described, including a display board, such board comprising an electrically non-conductive base, a plurality of terminals arranged thereon, spaced uniformly over the surface of said base an electrically conductive face plate carried by such base, individual electric circuits connected to such terminals and a series of alined contacts carried by the base portion and spaced from said terminals in predetermined groups, each of such terminal circuits including a conduit leading to one of said contacts, the latter being arranged upon the base at one edge thereof.

4. In an electric sign of the character described, including a display board, such board comprising an electrically non-conductive base, a plurality of terminals arranged thereon, spaced uniformly over the surface of said base an electrically conductive face plate carried by such base, individual electric circuits connected to such terminals, a series of alined contacts carried by the base portion and spaced from said terminals in predetermined groups, each of such terminal circuits including a conduit leading to one of said contacts, the latter being arranged upon the base at one edge thereof, the contacts in each group being arranged in predetermined relation.

5. In an electric sign of the character described, including a display board, such board

comprising a primary electrically non-conductive base, a plurality of terminals arranged thereon, an electrically conductive face plate carried by such base, individual electric circuits connected to such terminals, a series of contacts carried by the primary base portion, each of such terminal circuits including a conduit leading to one of a series of contacts, the latter being arranged upon the base, and carried by a removable auxiliary non-conductive base fastened to and offset from the surface of such primary base.

6. In an electric sign of the character described, including a display board, such board comprising a primary electrically non-conductive base, a plurality of terminals arranged thereon, an electrically conductive face plate carried by such base, individual electric circuits connected to such terminals, a series of contacts carried by the primary base portion, each of such terminal circuits including a conduit leading to one of a series of contacts, the latter being arranged upon the base and carried by a removable auxiliary non-conductive base fastened to and offset from the surface of such primary base, such contacts comprising pins having head portions lying between such bases and shanks extending thru such auxiliary base.

7. In an electric sign of the character described, including a display board, such board comprising a plurality of grouped elements, each consisting of an electrically non-conductive base, a plurality of terminals arranged thereon, an electrically conductive face plate carried by such base, individual electric circuits connected to such terminals, a series of contacts carried by the base portion of each group, each of such terminal circuits including a controller and a conduit leading to one of a series of contacts, the latter being arranged upon the base, such series of contacts being arranged in grouped relation in such series and individual conduits connecting the terminals with such controller, such conduits for each group being physically connected but electrically separated by a connecting block the latter provided with connections grouped and spaced to connect electrically with such panel contacts.

8. In an electric sign of the character described, including a display board, such board comprising a plurality of uniform panels each consisting of an electrically non-conductive base, a plurality of terminals arranged thereon, an electrically conductive face plate carried by such base, such face plate being provided with apertures arranged in registry with such terminals, individual electric circuits connected to such terminals and individual electric circuits from the face plates of such panels, a series of contacts carried by the base portion of each panel, each of such terminal circuits including a controller and a conduit leading to one of a series of contacts, the latter being arranged upon the base, such series of contacts being arranged in grouped relation in such series and individual conduits connecting the terminals with such controller such conduits for each panel being physically connected but electrically separated by a connecting block the latter provided with connections grouped and spaced to connect electrically with such panel contacts.

9. In an electric sign of the character described, including a plurality of separated display boards adapted for simultaneous manipulation, each board comprising a plurality of grouped elements each consisting of an electrically non-conductive base, a plurality of terminals arranged thereon, an electrically conductive face plate carried by such base, individual electric circuits connected to such terminals, individual electrical circuits connecting the elements of each display board to be manipulated simultaneously, the electrical conduits defining such circuits being physically connected with each other but electrically separated by insulating connecting blocks adapted to engage the contacts on each display board.

10. In an electric sign of the character described, including a plurality of separated display boards adapted for simultaneous manipulation, each board comprising a plurality of uniform panels, an electrically non-conductive base, a plurality of terminals arranged thereon, an electrically conductive face plate carried by such base, such face plate being provided with apertures arranged in registry with such terminals, individual electric circuits connected to such terminals and individual electric circuits from the face plates of such panels, individual electrical circuits connecting the elements of each display board to be manipulated simultaneously, the electrical conduits defining such circuits being physically connected with each other but electrically separated by insulating connecting blocks adapted to engage the contacts on each display board.

11. In an electric sign of the character described, including a plurality of separated display boards adapted for simultaneous manipulation, each board comprising a plurality of uniform panels, an electrically non-conductive base, a plurality of terminals arranged thereon, an electrically conductive face plate carried by such base, such face plate being provided with apertures arranged in registry with such terminals, individual electric circuits from the face plates of such panels, a series of contacts carried by the base portion of each panel, each of such terminal circuits including a controller and a conduit leading to one of a series of contacts, the latter being arranged upon the base, such series of contacts being arranged in grouped relation in such series, individ-

ual conduits connecting the terminals with such controller such conduits for each panel being physically connected but electrically separated by a connecting block the latter provided with connections grouped and spaced to connect electrically with such panel contacts and individual electrical circuits connecting the elements of each display board to be manipulated simultaneously, the connections providing such circuits also being physically connected but electrically separated by connecting blocks adapted to engage the contacts on each display board.

12. In an electric sign of the character described, including a display board, such board comprising an electrically non-conductive base, a plurality of terminals arranged thereon in uniform alined spaced relationship, an electrically conductive face plate carried by such base, the border portions of such face plate abutting closely against such base thereby sealing such plate with the latter, and auxiliary devices arranged across the central portions spacing the latter uniformly from said base, such face plate being provided with apertures arranged in registry with such terminals and means adjacent such apertures to constitute light-receiving sockets.

13. In an electric sign of the character described, including a display board, such board comprising an electrically non-conductive base, a plurality of terminals arranged thereon in uniform alined spaced relationship, an electrically conductive face plate carried by such base, the border portions of such face plate flanged downwardly toward such base thereby stiffening said face plate, and auxiliary devices arranged across the central portions spacing the latter uniformly from said base, such face plate being provided with apertures arranged in registry with such terminals and means adjacent such apertures to constitute light-receiving sockets.

14. In an electric sign of the character described, including a display board, such board comprising an electrically non-conductive base, a plurality of terminals arranged thereon in uniform alined spaced relationship, an electrically conductive face plate carried by such base, such face plate being provided with apertures arranged in registry with such terminals, means adjacent such apertures to constitute light-receiving sockets and the ends of the base portions of each panel extending beyond the face portions a substantial distance to provide an insulated marginal support for such panels.

15. In an electric sign of the character described, including a display board, such board comprising an electrically non-conductive base, a plurality of terminals arranged thereon in uniform alined spaced relationship, an electrically conductive face plate carried by such base, such face plate being provided with apertures arranged in registry with such terminals, means adjacent such apertures to constitute light-receiving sockets and the ends of the base portions of each panel extending beyond the face portions a substantial distance to provide an insulated marginal support for such panels, the ends of the face portions at such ends being inclined toward the base and secured thereto, for the purpose described.

16. In an electric sign of the character described, including a display board, such board comprising a plurality of panels each consisting of an electrically non-conductive base, a plurality of terminals arranged thereon in uniform alined spaced relationship, an electrically conductive face plate carried by such base, such face plate being provided with apertures arranged in registry with such terminals, means adjacent such apertures to constitute light-receiving sockets and the opposed edge of such face plates in adjacent panels being foreshortened with respect to their bases thereby being spaced apart when the base portions of adjacent panels are arranged in abutment.

17. In an electric sign of the character described, including a display board, such board comprising a plurality of panels each consisting of an electrically non-conductive base, a plurality of terminals arranged thereon in uniform alined spaced relationship, an electrically conductive face plate carried by such base, such face plate being provided with apertures arranged in registry with such terminals, means adjacent such apertures to constitute light-receiving sockets. The opposed edges of such face plates in adjacent panels being foreshortened with respect to their bases thereby being spaced apart when the base portions of adjacent panels are arranged in abutment, such apertures and terminals being spaced with relation to the dimensions of the base thereby making such spacing longitudinally of such sign uniform thruout.

18. In an electric sign of the character described, including a display board, said board comprising a plurality of uniform separately removable panels, each panel being electrically separated from the others and comprising an electrically non-conductive base, a plurality of terminals arranged thereon, an electrically conductive face plate carried by said base, such face plate being provided with apertures arranged in registry with such terminals, means located adjacent each of said apertures and constituting light-receiving sockets, an electric circuit, one portion comprising a plurality of branches, each branch serving as an individual electric connection for one of said terminals, and another portion serving as a common return

connection for the face plate of such panel, and a protective device limiting excess current, which device is common to all of the terminals of said panel, arranged in said return connection.

In testimony whereof he has affixed his signature.

JOHN E. LONG.