C. A. CHASE.

ELECTRIC SIGN.

APPLICATION FILED OCT. 7, 1912.

1,203,582.

Patented Nov. 7, 1916.

4 SHEETS—SHEET 1.

Fig. 1.

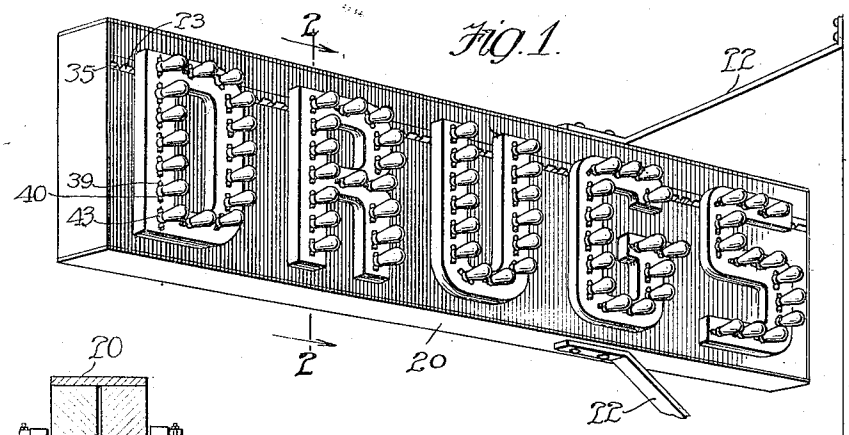


Fig. 2.

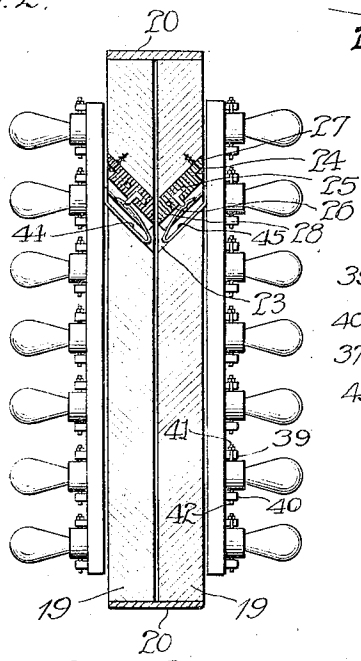


Fig. 3.

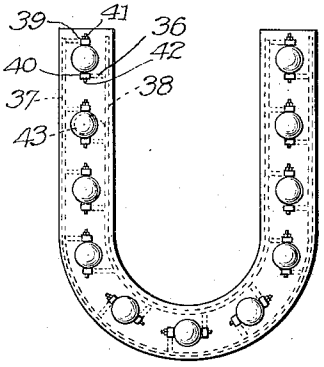


Fig. 4.

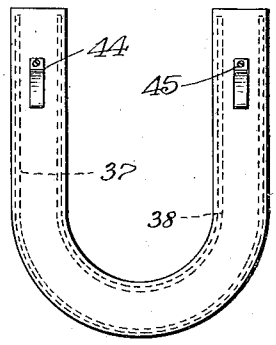


Fig. 5.

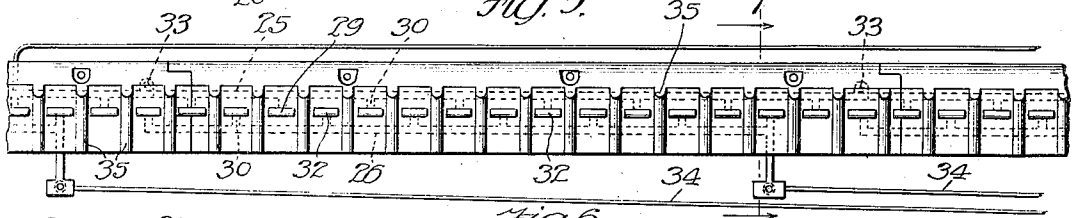


Fig. 6.

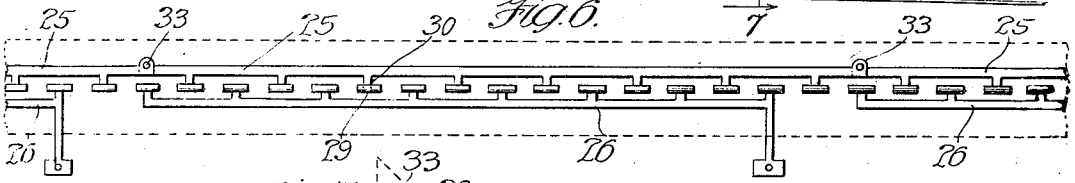
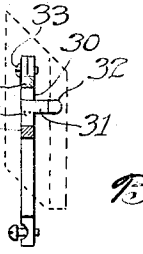


Fig. 7.



Witnesses

Martin H. Olsen. 16

Robert Dobberman

Inventor

Charles A. Chase

By Keefer, Hibben, Davis & Macauley

His Attys

C. A. CHASE.

ELECTRIC SIGN.

APPLICATION FILED OCT. 7, 1912.

1,203,582.

Patented Nov. 7, 1916.

4 SHEETS—SHEET 2.

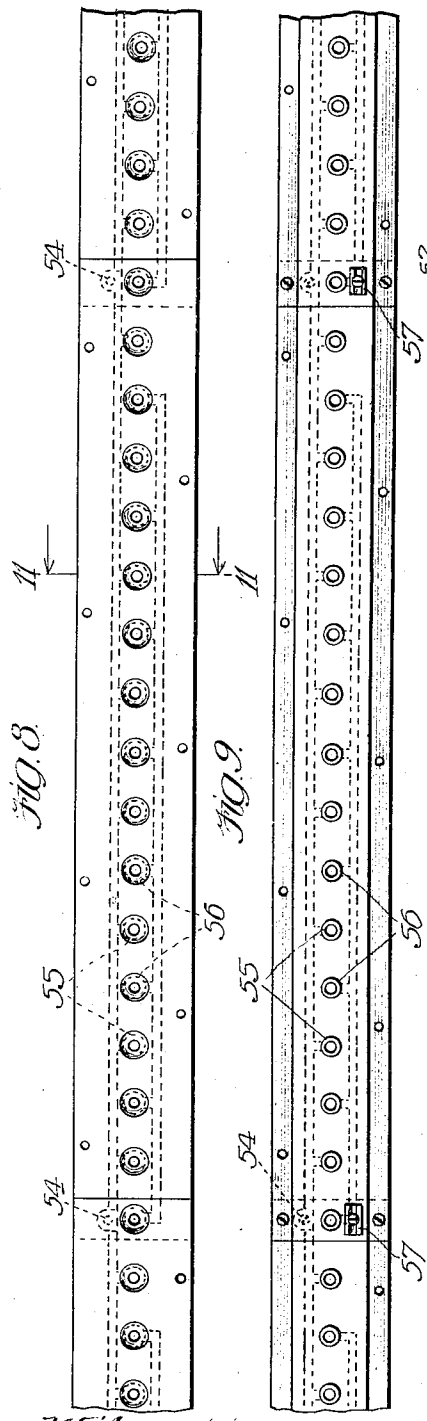


Fig. 8.

Fig. 9.

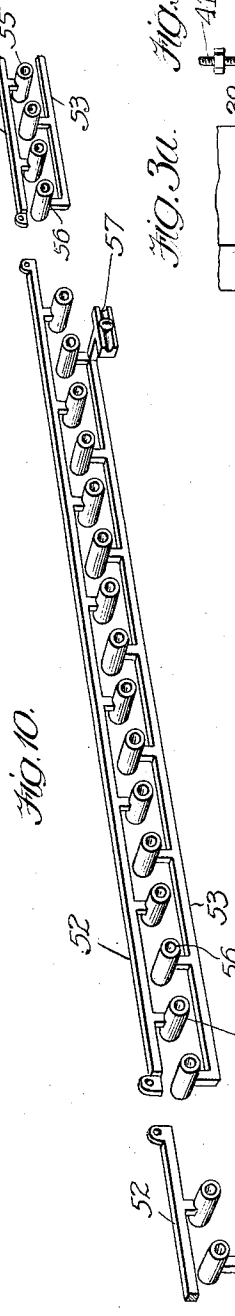


Fig. 10.

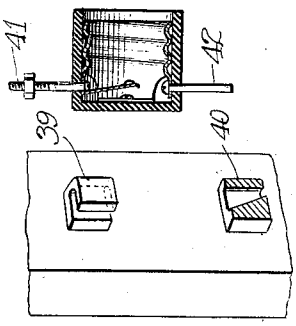


Fig. 3b.

Fig. 3a.

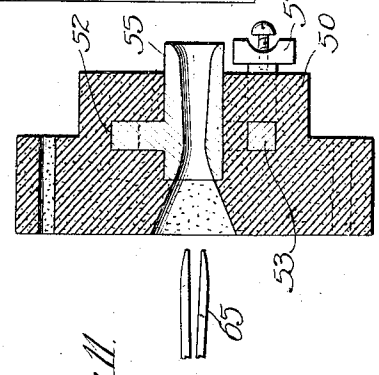


Fig. 11.



Fig. 12.

Witnesses
Martin H. Olsen.
Robert Dahlman

Inventor
Charles A. Chase
By Reeter, Hibben, Davis & Macauley
His Attys.

C. A. CHASE.

ELECTRIC SIGN.

APPLICATION FILED OCT. 7, 1912.

1,203,582.

Patented Nov. 7, 1916.

4 SHEETS—SHEET 3.

Fig. 13.

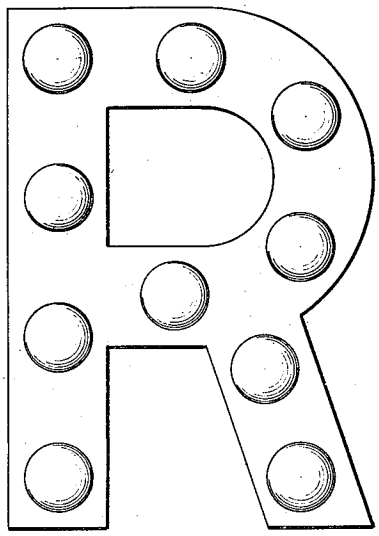


Fig. 14.

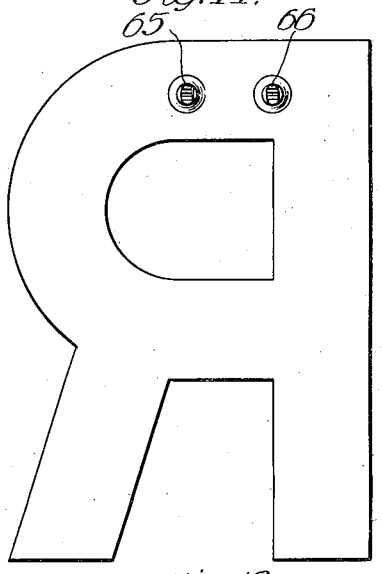


Fig. 15.

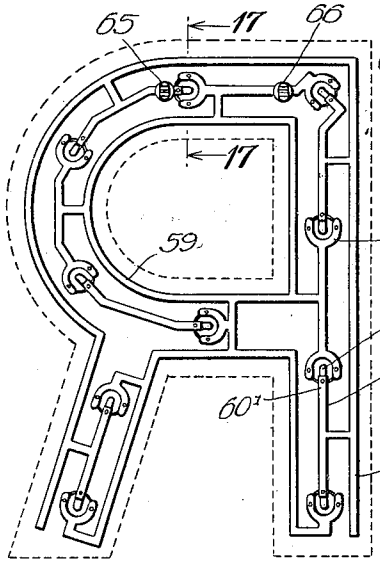


Fig. 16.

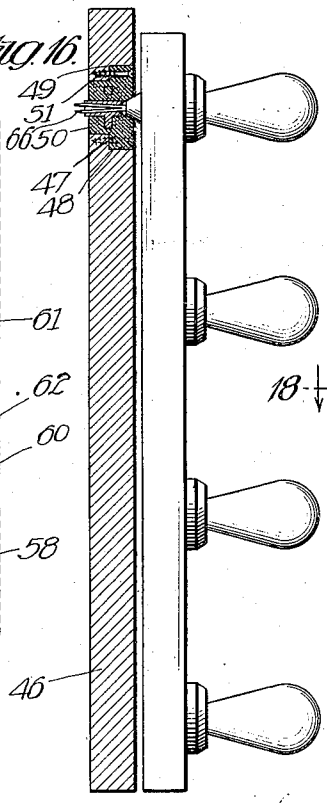


Fig. 18.

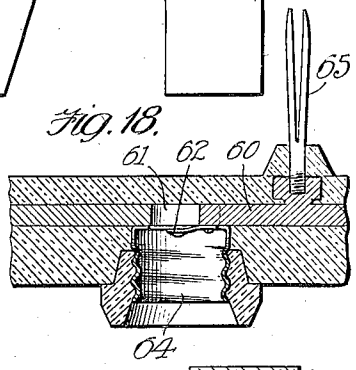
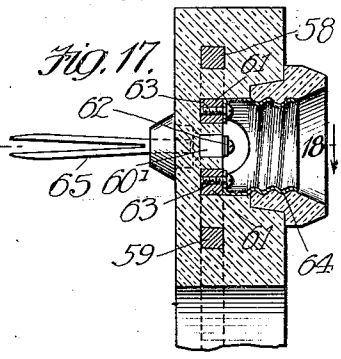


Fig. 17.



Witnesses

Martin H. Olsen.

Robert Dobberman

Inventor

Charles A. Chase

By Reeder, Hibben, Davis & Macauley

His Attys

C. A. CHASE.

ELECTRIC SIGN.

APPLICATION FILED OCT. 7, 1912.

1,203,582.

Patented Nov. 7, 1916.

4 SHEETS—SHEET 4.

Fig. 19.

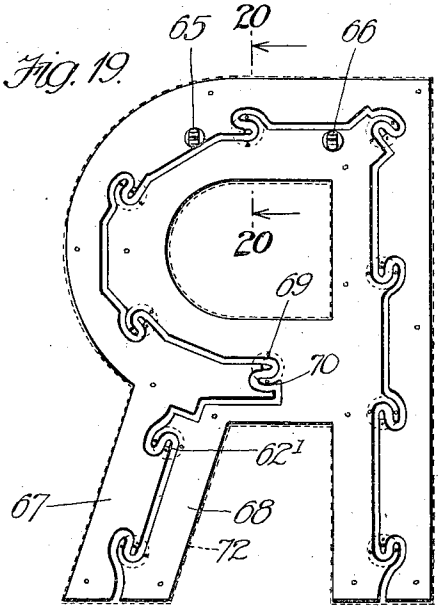


Fig. 22.

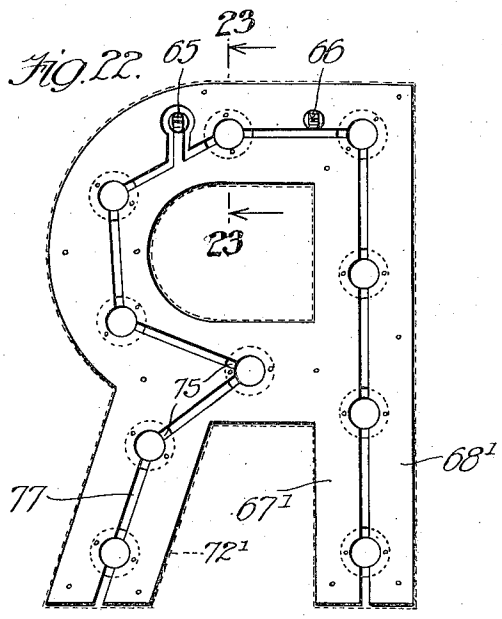


Fig. 20.

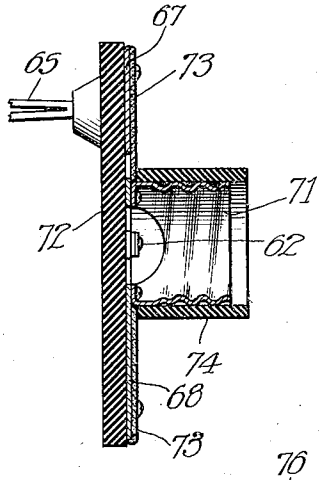


Fig. 23.

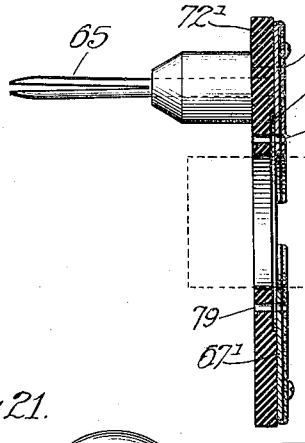


Fig. 24.

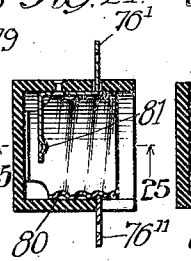


Fig. 25.

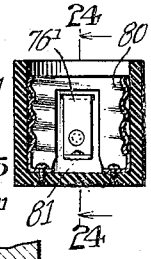


Fig. 21.

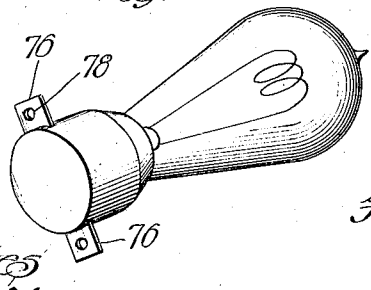
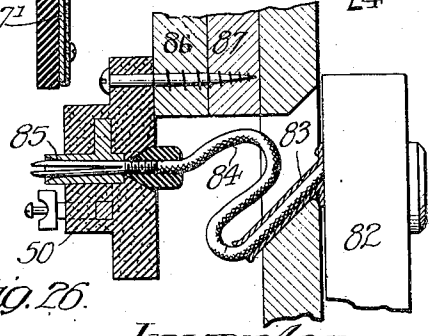


Fig. 26.



Witnesses

Martin H. Olsen.

Robert Dobberman

Inventor

Charles A. Chase,

By Reeder, Hibben, Davis & Macauley

His Attys

UNITED STATES PATENT OFFICE.

CHARLES A. CHASE, OF CHICAGO, ILLINOIS.

ELECTRIC SIGN.

1,203,582. Specification of Letters Patent. Patented Nov. 7, 1916.

Application filed October 7, 1912. Serial No. 724,424.

To all whom it may concern:

Be it known that I, CHARLES A. CHASE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electric Signs, of which the following is a specification.

My invention relates more specifically to electric signs employing removable or interchangeable letters which may be readily changed or removed from and applied to a stationary backing, such signs being used more particularly by theaters and other places of amusement to advertise or indicate changes of program or attractions as they occur. The detachable letters in such signs ordinarily consist of forms or mountings having the outlines of the various letters and studded upon their faces with a plurality of electric lamps or lamp sockets and provided with means for attachment to the backing, and conductors or contacts for connection to the bus-bars or leads upon the sign board.

It is the object of my invention to provide an improved sign board and a series of removable and interchangeable letters such that the latter may be quickly applied to and removed from the former without unnecessary manipulation and will remain securely in position when applied.

A further object is to provide a construction which will be relatively permanent and immune from destruction or deterioration from weather or other ordinary causes.

In carrying my invention into effect in connection with a sign of the above described character, I provide a backing board upon which the letters are mounted having one or more longitudinal slots, depending upon the number of lines of lettering to be used, in connection with which slots are mounted rigid conductors of opposite polarity having contacts at suitable intervals and preferably embedded in or surrounded by insulating material. The letters which are to be arranged upon the board are provided with rigid conductors across which the lamps are connected and means extending into or through the slots for holding them in position and connecting them up with the contacts of the longitudinally-extending conductors or bus-bars.

In the accompanying drawings and in the detailed description which follows I have disclosed with particularity several specific forms in which my invention is embodied. It is to be understood, however, that my invention is not limited to these specific forms which are disclosed for the purpose of exemplification only; and in the following claims I have endeavored to point out wherein my invention is distinguished from similar structures of the prior art. It is to be understood, however, that it is my intention to claim the invention in its greatest breadth as well as in its various details and not to relinquish or abandon any part thereof.

In the accompanying drawings forming part of this specification, Figures 1 to 7 inclusive illustrate one form of my invention including the back board of a sign and the detachable letters to be applied thereto; Fig. 1 being a perspective of a sign, Fig. 2 a cross-section of the same on the line 2—2 of Fig. 1, Figs. 3 and 4 front and rear views respectively of one of the letters used in connection with the sign board, Figs. 3^a and 3^b details of a fragment of a letter and a lamp socket showing the means of attachment of the latter to the former, Fig. 5 a front view of one of the strips of insulating material having embodied therein the longitudinally-extending bus-bars or conductors, Fig. 6 a view showing the arrangement of the conductors or bus-bars with the insulating material indicated in dotted lines and Fig. 7 a cross-section of the same; Figs. 8 to 12 inclusive represent a modified form of insulating strip and conductors, Figs. 8 and 9 being front and rear views respectively of the strip having the conductors embedded therein as shown by dotted lines, Fig. 10 a perspective showing the arrangement of the conductors or bus-bars, Fig. 11 a transverse section on the line 11—11 of Fig. 8 but on a larger scale, and Fig. 12 a detail on an enlarged scale showing the method of joining together abutting ends of the insulator strips: Figs. 13 to 18 inclusive show a modified form of detachable letter adapted to the form of strip of Figs. 8 to 12, Figs. 13 and 14 representing respectively front and rear views of the same, Fig. 15 a plan of the electrical conductors and connections, the outline of the letter being shown in dotted lines, Fig. 16 a vertical transverse section through a signboard having the form of insulating strip and conductors shown in Figs. 8 to 11 with the form of lamp shown in Figs. 13 to 18 applied thereto, Fig. 17 a vertical section on the plane of the line 17—17 of Fig. 15, the body of the letter,

however, being shown in full lines and Fig. 18 a section at right angles to the plane of Fig. 17 on the line 18—18 of said figure; Figs. 19, 20 and 21 represent a further modification, Fig. 19 showing a form of letter in plan, Fig. 20 an enlarged section on the line 20—20 of Fig. 19 and Fig. 21 a perspective of the lamp used in connection with this form of letter: Figs. 22 to 25 represent a still further modification of the letter, Fig. 22 being a plan, Fig. 23 a vertical section on an enlarged scale on the line 23—23 of Fig. 22, Fig. 24 a section of a lamp socket used in connection with this form of letter upon the line 24—24 of Fig. 25, and Fig. 25 a section upon the line 25—25 of Fig. 24 at right angles to the plane thereof; and Fig. 26 is a vertical transverse section of yet another form of sign-board with a detachable letter in position for attachment thereto.

Each part is designated by the same reference character wherever it occurs in the several views.

Referring now to Figs. 1 to 7 inclusive it is seen that the sign there shown is composed of a pair of boards or backings 19, 19 arranged back to back and connected together by the ties 20, 20. As shown in Fig. 1 the sign is connected to a suitable support by braces 22, 22 connected to the top and bottom thereof respectively, but any other form of support might be employed or if desired and especially where the sign is arranged against a wall it may consist of a single board or backing member with the letters attached thereto. In the form of the device which we are now considering each board is slit or slotted longitudinally but at an angle to the face thereof, there being a slit for every row of letters which it is desired to use, though in the sign showing the drawings of this application but a single slit 23 and a single row of letters are employed. Upon one face of each slit, here shown as the upper face, though the lower face would answer equally well, is arranged a strip 24 of insulating material which is firmly screwed to the sign board and carries embedded therein the contact grids or conductors 25, 26. The insulating strip is chamfered upon its opposite edges as at 27, 28 to correspond with the planes of the front and back of the board when the strip is in position.

The grids, bus-bars or conductors 25, 26 are made of any suitable conducting material and may be cast, stamped, stenciled or otherwise formed of sufficient cross section to be strong and rigid and comprise each a longitudinal member extending lengthwise of the insulating strip and having at suitable intervals contact members 29 which extend first laterally in the plane of the longitudinal members as at 30, then outward as at 31 and terminate in cross heads 32 which form the contacts for the letters. As will be seen by reference to Figs. 6 and 7, the longitudinal members of the bus-bars or conductors 25, 26 are arranged parallel to each other within the insulating strip with their contact members extending toward each other so that the contact heads 32 lie in a common plane intermediate the longitudinal conductors and project slightly beyond the material of the non-conducting strip. The bus-bar 25 is substantially continuous throughout, being made in sections which overlap at their adjacent ends and are secured together by screws as at 33; but the grids or bus-bars 26 are formed in short, unconnected lengths, the extent of which is limited by the number of lamps which can with safety be included in a single branch circuit, and each such section is connected by an independent wire or conductor 34 with a fuse in a suitable fuse box. The arrangement of the fuse box and the provision of suitable cut-outs is within the skill of the ordinary electrician and need not be described here as it forms no part of my invention.

The contacts upon the conductors 25, 26 when the latter are assembled in the position which they occupy in use, as before stated, alternate in a plane intermediate the two conductors with their outer or contact faces extending slightly beyond the surface of the surrounding insulation, and these contacts are evenly spaced from each other longitudinally of the conductors and at such a distance that the two contact springs upon each letter, which will be described later, are adapted when the letter is arranged upon the board to rest upon two adjacent contacts which being of opposite polarity by reason of their connections to the bus-bars or grids, transmit current to the conductors and lamps of the letter. In order to insure against short circuiting and to form a means for aiding in the ready adjustment of the letters, the insulating strip in this form of device is provided with transverse ribs 35′ intermediate the adjacent contacts.

As shown in Figs. 3 and 4 each letter to be used with the above described back board is composed of a form of backing 36 in which are embedded or inclosed grids or conductors 37, 38 having cast or otherwise formed integral therewith contact members 39, 40. As in the case of the contact members upon the longitudinal strips above described, the present contact members are offset laterally toward the center of the letter formed and bent outwardly or at right angles to the surface of the letter. They extend, however, materially beyond said surface and the contact 39 connected to conductor 37 is perforated while the contact member 40 connected to conductor 38 is

slotted from the side to receive the conductor pins 41, 42 extending from opposite sides of a lamp socket 43 (see Fig. 3[a]). The pin 42 is preferably screw threaded as shown in Fig. 3[b] and provided with a nut whereby when the lamp socket is in position between the contacts it may be firmly secured in place. The grids or conductors 37, 38 are each proveded with a terminal 44, 45 (see Fig. 4) which terminals are so spaced from each other upon the back of the letter as to engage contacts of opposite polarity upon the bus-bars 25, 26 before described. By reference to Fig. 2 it will be seen that the spring contacts 44, 45 are set at an incline to the back of the letter corresponding to the inclination of the slot in the back thereof and being of substantial dimensions and of suitable metal, not only act as contact members but serve also to support the letter. In order to adjust the letters to the sign it is only necessary to locate them in the proper position with the ends of their spring contacts in the slot and press them into their final position when the spring contacts 44, 45, will wipe against the contacts projecting from the insulating strips finally coming to rest with the contacts resting in notches provided for the purpose in the free ends of the spring, all as shown in Fig. 2.

In the modification shown in Figs. 8 to 18 inclusive, the principal features disclosed in connection with the first described form of invention are retained though some of the details are different. In this form of the invention the back board 46 is formed with a series of longitudinal slots 47 corresponding in number as before with the desired number of lines of lettering. The form of the slot, however, is different, it being rectangular in cross section and rabbeted upon its opposite front edges as shown at 48, 49. The slot in this form of the device is completely filled by the insulating strip 50 which is shaped to conform to the walls of the slot and secured therein as by the screw 51 (see Fig. 16.) Within the body of the insulating strip are embedded the conductors or bus-boards 52, 53 which extend longitudinally of the strip as in the previously described form of the device, the adjacent ends of the conductor sections 53 overlapping and being secured together by screws 54 and the sections of the conductors 53 being independently connected to fuses in the fuse box as in the previously described form of the invention. In this modification also the contacts are alternately arranged in a plane intermediate the conductors 52, 53, but take the form of cylindrical sockets 55, 56 which are adapted to receive in their bores the contact ends of the letters hereinafter described, (see Fig. 10). The conductor or bus-board 52 is suitably connected to one terminal of a source of energy and the members of the sectional conductors 53 are provided with terminals 57 to which may be secured conductors for connecting them with the fuses in a fuse box as heretofore described. As heretofore stated, the conductors are surrounded by the body of the insulating strip which is perforated opposite each cylindrical socket, the opening being tapered to assist in guiding the contact pins of the removable letters into said sockets, see particularly Fig. 11.

The illustrative letter for use with the last described form of back board, shown in Figs. 13 to 17 inclusive, comprises a body which may be formed of insulating material within which are embedded or inclosed the grids 58, 59 which form the conductors for supplying current to the lamps. These grids, as in the previously described modification, are cast, stamped, stenciled or otherwise formed of substantially rigid material and extend in substantially parallel lines through the letter. The grid 58 is formed with a series of T-shaped offsets 60, the ends of the arms of which each extend between the branches of yokes 61 formed upon offsets from the other conductor 59. The ends 60′ of the offsets from the conductor 58 are perforated and tapped to receive screws which secure small contact springs 62 for engaging the central contact of an electric lamp of the ordinary type, and the branches of the yokes 61 are likewise perforated and tapped to receive screws 63 by which the screw shell or socket 64, which receives the threaded shank or base of an electric lamp of the usual type, is attached.

In order to form the connections with the sockets upon the stationary insulator strips the two conductors are severally provided with split pins 65, 66 which are arranged upon a horizontal line at the back of each letter and spaced apart at a distance necessary to enable them to simultaneously register with sockets of opposite polarity. In the particular letter illustrated (see Fig. 15) the pins are arranged upon the T-shaped projections from the respective conductors at the top of the letter. Obviously all that is required in order to adjust the letter is to bring the split pin in register with the sockets in the required location and press the letter until it brings up against the board.

The insulator strips which surround and carry the conductors, as well as the body of the letter, may be of a great variety of materials, such, *e. g.*, as condensite or hemite, and formed in a variety of ways. I have found that any insulating cement may be employed for the purpose or preferably, in case the insulating strip or letter is to be cast, glass may be employed for the purpose. As heretofore remarked, the conductors or

bus-bars are of rigid material and of a cross section such that they not only serve as conductors, but materially strengthen the insulating body of the strip or even furnish substantially all the rigidity thereof, and, in case of cracking of the latter hold the sections thereof in position so that any cracks which may be formed are immaterial.

Signs constructed according to my invention are practically indestructible by reason of the body and rigidity of the grids or conductors, the protection afforded the grids and contacting connections and by reason of the reinforcement of the letters by the contacting grids.

Obviously, if desired, the grids or conductors of Fig. 15 could be employed in skeleton form without the surrounding mass or form of insulating material, and in Figs. 19 to 21 I have shown a form of letter in which the grids are stamped out of sheets of metal, the grids being spaced apart throughout to prevent short circuiting, and together forming the outline of the desired letter. Thus, one of the grids or conductors is indicated at 67 and the other at 68, the grid 67 being formed with tongues 62′ corresponding to the tongues of the letter shown in Figs. 13 to 18 and the other grid or conductor 68 embodying substantially an equivalent of the yokes 61 and provided with tapped openings 69, 70 for the attachment of the screw sockets 71. The tongues 62′ of course receive the springs 62 for engaging the central contact of a lamp of the Edison type. The grids 67, 68 are preferably mounted upon an insulated backing 72 and coated with an insulating covering or enamel 73 and an insulating annulus or sleeve 74 surrounds the screw socket 71. In this form of letter the grids 67′, 68′ are likewise provided with attaching and conducting pins 65, 66 for insertion in the conducting sockets as heretofore described, though other attaching and connecting means might obviously be used.

In Figs. 22 and 23 is shown a form of letter resembling that described immediately above in that the conductors or grids are stenciled from sheet metal, together form the outlines of the letter and are mounted upon an insulating backing 72′. The means of attachment of the lamp, however, are entirely different. At each point where a lamp is to be located the letter is pierced by a circular opening formed partly in one grid or conducting member and partly in the other. Concentric with this opening and immediately beneath the edge of the conductor members is a shallow circular depression 75 in the backing. The shank of the lamp to be used in connection with this modification is provided with flat ears 76, 76 located diametrically opposite each other and of a width to permit their introduction through the space 77 between the adjacent edges of the conductor grids. When a lamp has been inserted in the circular openings and the ears 76, 76 brought into contact with the insulating backing in the depression above mentioned, the lamp is given a partial rotation so that the ears are held against removal and the lamp prevented from falling out. If desired, the ears may be provided with perforations 78, 78 and similar perforations 79, 79 formed through the letter at the proper points and the lamp after it is placed in position turned to bring the perforations in registry and pins inserted to prevent the turning of the lamp. Ordinarily, however, the friction between the backing plate and the lugs will be sufficient to prevent the accidental displacement of the lamp. Instead of modifying the shank of the lamp it may be of the ordinary character and a socket 80 employed in connection therewith having the lugs 76′, 76² for securing the same in place. In this event the lug 76′ will be provided with a central tongue 81 and be insulated from the screw socket 80 and the latter will be electrically connected to the lug 76′ (see Figs. 24 and 25).

In Fig. 26 is seen yet another modification partaking in part of the character of that seen in Figs. 1 to 7 inclusive and in part of the modification shown in Figs. 8 to 11 inclusive. In this modification the insulating strip 50 and conductors embedded therein are precisely as shown in Figs. 8 to 11, but the strip is mounted at a distance behind the slot in the back board which is at an angle as in the modification shown in Figs. 1 to 7 inclusive. The letter 82 for use in connection with this modification is provided with tubular shanks 83 which extend through the inclined slot in the back board and receive the ends of flexible conductors 84 connected to the conductors of the letter and which at their other ends are provided with plugs 85 for insertion in the proper sockets in the insulating strip. In applying the letter to the board in this modification the plug is first inserted in the socket, the flexible conductor or cord being long enough to permit this to be done through the inclined slot with the letter conveniently removed and then the letter is hung in position with the inclined shanks in the slot. In the construction shown the strip 50 is spaced from the back of the back board by suitable filling strips 86, 87.

I claim:

1. In a sign board, a strip of insulating material, a pair of parallel longitudinal conductors spaced apart and embedded therein, a series of lateral conductors extending from each longitudinal conductor toward the other, those connected to one longitudinal conductor alternating with those connected to the other longitudinal conductor, and an

exposed contact connected to each lateral conductor, said contacts being arranged in a single line intermediate the longitudinal conductors.

2. In a sign board, a strip of insulating material, a pair of parallel longitudinal conductors spaced apart and embedded therein, a series of lateral conductors extending from each longitudinal conductor toward the other, those connected to one longitudinal conductor alternating with those connected to the other longitudinal conductor, and an exposed contact connected to each lateral conductor, said contacts being arranged in a single line intermediate the longitudinal conductors and projecting beyond the face of the strip.

3. In a sign board, a strip of insulating material, a pair of parallel longitudinal conductors spaced apart and embedded therein, a series of lateral conductors extending from each longitudinal conductor toward the other, those connected to one longitudinal conductor alternating with those connected to the other longitudinal conductor, an exposed contact connected to each lateral conductor, said contacts being arranged in a single line intermediate the longitudinal conductors and projecting beyond the face of the strip, and transverse ribs of insulating material intermediate the contacts.

4. An electric sign board of the class described having a longitudinal slot inclined from the front toward the rear of the sign board, a strip of insulating material arranged in said slot and connected to one of the walls thereof, a pair of longitudinal conductors embedded in said strip, each of said conductors having lateral conductors extending toward the other, the lateral conductors on one longitudinal conductor being arranged intermediate the lateral conductors on the other, a contact arranged on each lateral conductor and projecting beyond the face of the strip, and one or more letters having inclined tangs upon their rear faces, said inclined tangs having conductors adapted to make contact with the contacts within the inclined slot.

CHARLES A. CHASE.

Witnesses:
LOUIS B. ERWIN,
ROBERT DOBBERMAN.