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ELECTRIC SIGN

Original Filed March 5, 1938

2 Sheets-Sheet 1

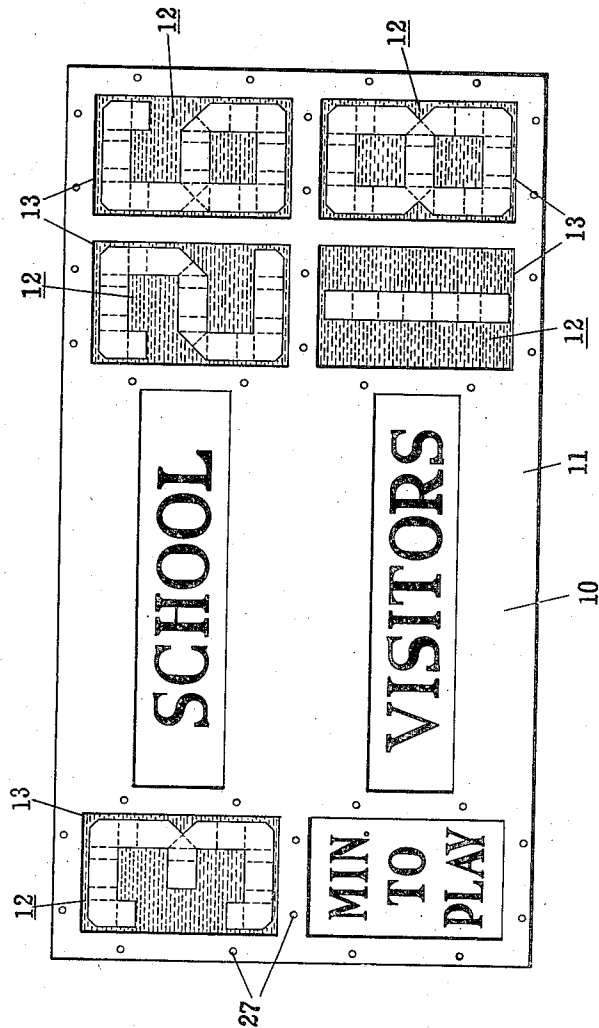


Fig. 1

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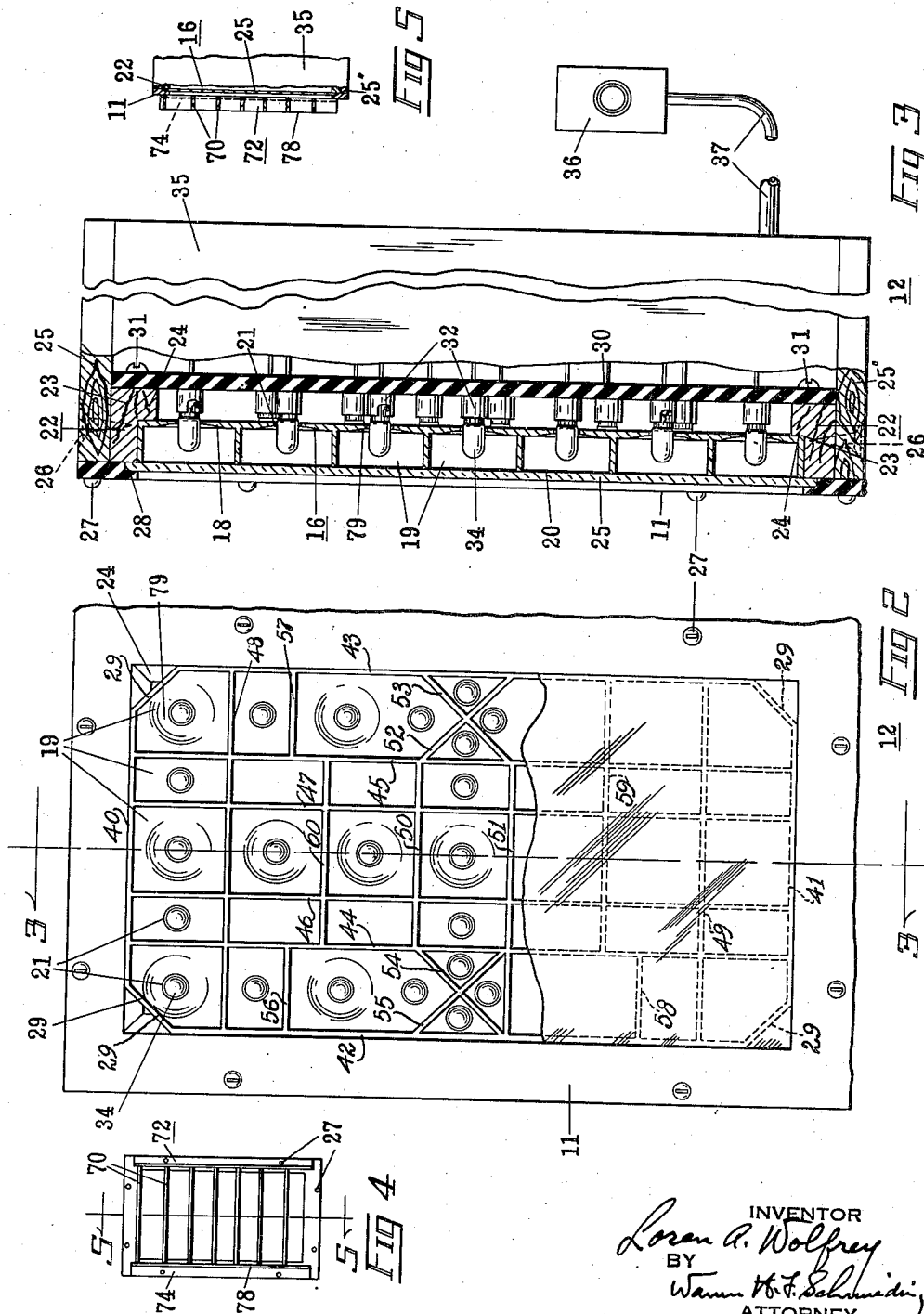
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2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

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## ELECTRIC SIGN

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4 Claims. (Cl. 40—130)

This invention relates to illuminated signs, and more particularly to illuminated signs forming characters by a composite of illuminated sectors.

5 An object of this invention is to provide an illuminated sign having a plurality of cells comprised of opaque side walls and having an open front, and a lamp in each of the cells so that when certain of the lamps are lit, the illuminated cells will form a composite character or figure  
10 having a clearly defined outline.

Another object of this invention is to provide an illuminated sign having an aggregation of cells formed with opaque side walls and an open front, the cells having straight side walls for forming  
15 straight sections of a character or figure, and a pair of cells disposed one on each side of the aggregate and adjacent the center section thereof having opaque side walls disposed at angular relation with the other of said walls for forming  
20 turned sections of characters.

It is another object of the invention to provide a sign board for producing illuminated characters having a plurality of spaced and parallel opaque walls extending across the face of the illuminated  
25 characters and at substantially right angles therewith, to shade the characters from light from other sources, and yet having the characters produced clearly visible.

Other and further objects and advantages will be apparent from the following description, reference being had to the accompanying drawings wherein preferred forms of embodiments of the present invention are clearly shown.

In the drawings:

35 Fig. 1 is a front view of a score board showing the digit forming units;

Fig. 2 is a fragmentary view of the front of a digit forming unit with part of the glass facing broken away;

40 Fig. 3 is a view taken on line 3—3 of Fig. 2;

Fig. 4 is a fragmentary view showing a unit having light shades mounted across the face of the unit, and,

Fig. 5 is a view taken on line 5—5 of Fig. 4.

45 In the present disclosure an embodiment of my invention is shown in the form of a score board for indicating scores and time of play in athletic contests between schools. It is to be understood, however, that the invention is not limited to this particular form but may be used for any purpose where it is desirable to display numbers or characters which are to be readily changed from time to time and which may be viewed from a distance and from various angles.

55 A score board indicated generally at 10 is com-

prised of a face board 11 having digit forming units 12 mounted thereon. The face board 11 may be formed of any suitable material such as sheet metal, wood, or Bakelite, and may be supported by a suitable frame structure (not shown).  
5 The units 12 are positioned in rectangular openings 13 formed in the board 11, four of them being grouped at the right end of the board, two above the other two, and the fifth being formed adjacent the upper left corner of the board.  
10 The word "School" is marked opposite the pair of units 12, in the upper right corner of the board, the word "Visitors" is marked opposite the two lower openings in the lower right corner of the board, and the words "Min. to play" are suitably marked beneath the unit in the upper left corner of the board. These words may be painted on the board 11, printed on a card mounted on the board, or suitably illuminated words may be used.  
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The digit forming units 12 are comprised of a rectangular plate 16, preferably formed of a suitable metal casting, such as aluminum, having a rear wall 18 and thin opaque walls extending forwardly from the rear wall. The forwardly extending walls include a top wall 40, a bottom wall 41, left side wall 42 and a right side wall 43 connected at the corners by diagonal walls 29. The top and bottom walls are connected by vertical walls 44 and 45 that are spaced from the side walls 42 and 43, respectively, the width of a segment of a figure and each being spaced equidistant from the center of the unit. Two horizontally extending walls 48 and 49 interconnect the two side walls 42 and 43. These two horizontal walls are each spaced from the top and bottom walls, respectively, the width of a segment of the figures to be formed. A horizontal wall 50 interconnects the vertical walls 44 and 45. The wall 50 is spaced approximately half the width of a segment of a figure above a horizontal plane through the center of the unit. Wall 51, parallel with the wall 50, connects the side wall 42 with the vertical wall 45. The wall 51 is spaced below the wall 50 the width of a segment of a figure. Two diagonal walls 52 and 53 interconnect the walls 43 and 45. The wall 52 joins the wall 45 at the junction of the wall 50 with the wall 45 and joins the wall 43 at a point opposite the junction of the walls 51 and 45. The diagonal wall 53 intersects the wall 52 at the middle thereof and is joined with the wall 45 at the junction of the walls 45 and 51 and joins the wall 43 opposite the end of the wall 50. Two diagonal walls 54 and 55 interconnect the side wall 42 and  
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the vertical wall 44. The walls 54 and 55 intersect at the middle thereof. The wall 54 is joined with the wall 44 at the junction of the walls 44 and 50 and is joined with the wall 42 at the junction of the walls 51 and 42. The wall 55 is joined with the wall 44 at the intersection of walls 44 and 51 and is joined with the wall 42 opposite the junction of the walls 44 and 54. Two horizontal walls 56 and 57 interconnect the walls 42 and 44 and the walls 43 and 45, respectively. The walls 56 and 57 are spaced downwardly from the horizontal wall 48 approximately half the width of the segment of the figures to be formed. A horizontal wall 58 interconnects the walls 42 and 44 and is spaced above the wall 49 approximately half the width of a segment of the figure. Another horizontal wall 59 interconnects the walls 43 and 44. Wall 59 is spaced above the wall 49 approximately the width of a segment of a figure. A horizontal wall 60 interconnects the walls 44 and 45. This wall 60 is disposed intermediate the walls 48 and 50. These forwardly extending walls form an aggregation of cells indicated generally at 19 which cells have open fronts 20. The back wall 18 is provided with a plurality of openings 21 each being located substantially at the center of the cells 19. The plate 16 is mounted in a rectangular frame 22 formed by wood members 23, having a shoulder 24 formed thereon, against which the rear side of the wall 18 abuts. The frame 22 is attached to the inside walls 25' of a box 35 by suitable bolts or screws 26. The plate 16 is retained in the frame 22 by a glass plate 25 held in place over the open front of the cells 19 and against the edges of the forwardly extending walls by the face board 11. The board 11 is formed with overlapping edges 28 around the openings 13, which engage the edges of the glass plate 25. The glass plate 25 is preferably flashed on the surface adjacent the cells 19 so that the plate is translucent. A panel 30, formed of an insulating material such as Masonite or Bakelite, is connected to the frame 22 by the screws 31, and a plurality of bayonet type lamp sockets 32 are suitably attached to the panel 30, a socket being positioned to register with each opening 21. Electric lamps 34, each having bayonet pins in the side of the shell thereof, are connected in the sockets 32 and extend through the openings 21 into the cells 19. The lamp sockets 32 are connected in circuits controlled by a relay device located in the box 35, which is connected to the rear of the face board 11 by screws 27 and disposed in back of the panel 30, the relay device not being shown. A contactor button 36 for controlling the relay is connected to the relay by a wire 37. The relay is arranged to light the lamps 34 in certain selected cells adjacent one another so that the walls of these cells will outline an illuminated digit on the glass plate 25. The digit formed will have sharp edges and appear in full block segments. When a lamp is lit, the flashed glass causes diffusion of the light within the glass so that the part of the glass covering the front of the cell is illuminated substantially evenly throughout an area slightly larger than the front area of the cell whereby when certain of the lamps are lighted by the relay the composite of the illuminated cells form a clearly defined and uninterrupted figure visible on the surface of the glass. This figure is easily discernible from an oblique angle as well as from the front. Each time the button 36 is pressed the relay causes a different digit to be formed, preferably the digits being formed in the order of "0" to "9."

It is to be noted that the forwardly extending walls are arranged to form a row of cells extending entirely around the outer edge of the plate 16, a row of cells extending horizontally across the center of the plate 16, and a vertical row of cells through the center of the plate 16. The diagonal walls 52, 53, 54 and 55 form cells that may be selectively lighted to form turned sections of digits. For example, in forming the digit "2" the cells above the wall 53 are lighted and the cells below the wall 53 are not lighted so that the vertical segment of the figure is joined with the central horizontal segment by a segment having a diagonally disposed edge. Similarly the wall 54 forms a segment between the central horizontal segment and the vertical segment in the lower left hand portion of the unit. This is clearly illustrated in Fig. 1 when the illuminated figure "2" is shown. Any figure formed with a central horizontal segment may be formed having a diagonal section connecting the horizontal segment with a vertical segment. The formation of the digits 2, 3, 6 and 8 is illustrated in Fig. 1. The diagonal sections harmonize with the diagonal corners of the figures formed by the walls 29.

I have found that when this sign is used in a bright light, for example, such as where the sign is used in the open on a bright day, the illuminated figures cannot be seen clearly from the necessary distance, which it may be required to serve, due to the intense light of the sun. In order to shade the face of the units 12 from the sun, or any other intense light striking the face of the units 12 at an angle, I have provided a plurality of relatively thin opaque strips 70 which extend across the face of the unit and at right angles therewith. These strips 70 are preferably formed of metal and soldered or otherwise attached to a pair of metal sheets 72 forming a wall 78 having a base 74 which is bolted to the face board 11. These strips being thin and relatively narrow, do not interfere with the visibility of the figures, yet they provide ample shade for the face of the unit so that the illuminated figures will be clearly visible.

It is desirable that the intensity of the illumination on the glass covering the front of the larger cells be approximately equal to that on the glass covering the front of the smaller cells so that an evenly illuminated figure will be produced. To this end small concave polished surfaces shown at 79, are provided on the front of the wall 18, surrounding the opening 21, in each of the larger cells. These surfaces form reflectors and intensify the illumination on the glass covering the front of the cell.

While the forms of embodiment of the present invention as herein disclosed constitute preferred forms, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

I claim:

1. In an illuminated sign, a frame; a panel supported on the frame; a plurality of lamps mounted on the panel; a plate formed with a back wall and a plurality of forwardly extending opaque walls, said walls cooperating to form a plurality of open front cells, said back wall having a plurality of openings registering with said lamps; concave reflectors formed in the said back wall around the openings; and means for securing the plate on the frame in front of said panel in a position in which the lamps extend through the said openings into the cells.

2. In an illuminated sign, a frame; a panel 75

supported on the frame; a plurality of lamps mounted on the panel; a plate formed with a back wall and a plurality of forwardly extending opaque walls, said walls cooperating to form a plurality of open front cells, some of said cells having larger open front areas than other of said cells, said back wall having a plurality of openings registering with said lamps; concave reflectors formed in the said back wall around the openings in the said cells having the large open front area; and means for securing the plate on the frame in front of said panel in a position in which the lamps extend through the said openings into the cells.

3. In an illuminated sign, a panel; a plurality of lamps mounted on the panel; a plate formed with a back wall and a plurality of forwardly extending opaque walls, said walls cooperating to form a plurality of open front cells, said back wall having a plurality of openings registering with the lamps; concave reflectors formed in the back wall around the openings; means forming a translucent front surface extending across the cells of the plate; and means for securing the panel, plate and the first means with one another with the first means disposed forwardly of the plate and the plate disposed forwardly of the panel.

4. In an illuminated sign, a rectangular figure forming unit comprising a back wall and forwardly extending walls including top, bottom and side walls, diagonal walls at each corner connecting the side and top and bottom walls, two vertical walls interconnecting the top and bottom walls, said vertical walls each being spaced from a side wall the width of a segment of a figure, two vertical inner walls interconnecting the top and bottom walls, said inner walls being spaced apart the width of a segment of a figure and each being spaced equidistant from the center of the unit, two horizontally extending walls interconnecting the side walls and being spaced from the top and bottom walls respectively the width of a segment of a figure, a horizontally and centrally disposed wall interconnecting the first mentioned vertical

walls, a second horizontally and centrally disposed wall interconnecting the left side wall and the right hand wall of the first mentioned vertical walls, said centrally disposed walls being spaced apart the width of a segment of a figure, a diagonally disposed wall interconnecting the right hand wall of the first mentioned vertical walls at the junction of the latter wall and the first mentioned centrally disposed wall and the right hand side wall opposite the end of the second mentioned centrally disposed wall, a second diagonally disposed wall intersecting the first mentioned diagonal wall at substantially right angles thereto and at the middle thereof, said second diagonal wall interconnecting the two walls which are interconnected by the first mentioned diagonal wall at points opposite the interconnecting points of the first diagonal wall and the said two walls interconnected thereby, a third diagonal wall interconnecting the left hand wall of the first mentioned vertical walls and the left side wall, a fourth diagonal wall interconnecting the last two mentioned side and vertical walls and intersecting the third diagonal wall at substantially right angles thereto, said third and fourth diagonal walls joining the said walls interconnected thereby substantially at the intersection of the planes of the two central horizontal walls with the last mentioned interconnected walls, a pair of horizontal intermediate walls spaced below the upper of the first mentioned horizontal walls less than the width of a segment of a figure, one of said pair of walls interconnecting the left side wall and the left hand wall of the first mentioned vertical walls, the other of said pair of walls interconnecting the right hand wall of the first mentioned vertical walls and the right side wall, and a horizontal wall spaced from the lower one of the first mentioned horizontal walls less than the width of a segment of a figure and interconnecting the left side wall and the left wall of the first mentioned vertical walls; and means for selectively illuminating the interior of the inclosures formed by the said walls.

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