

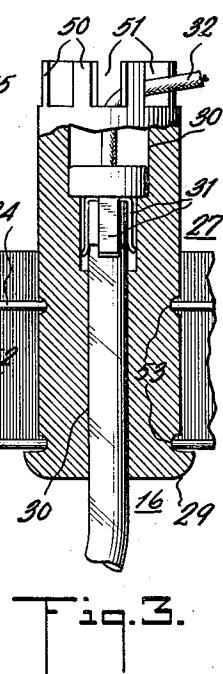
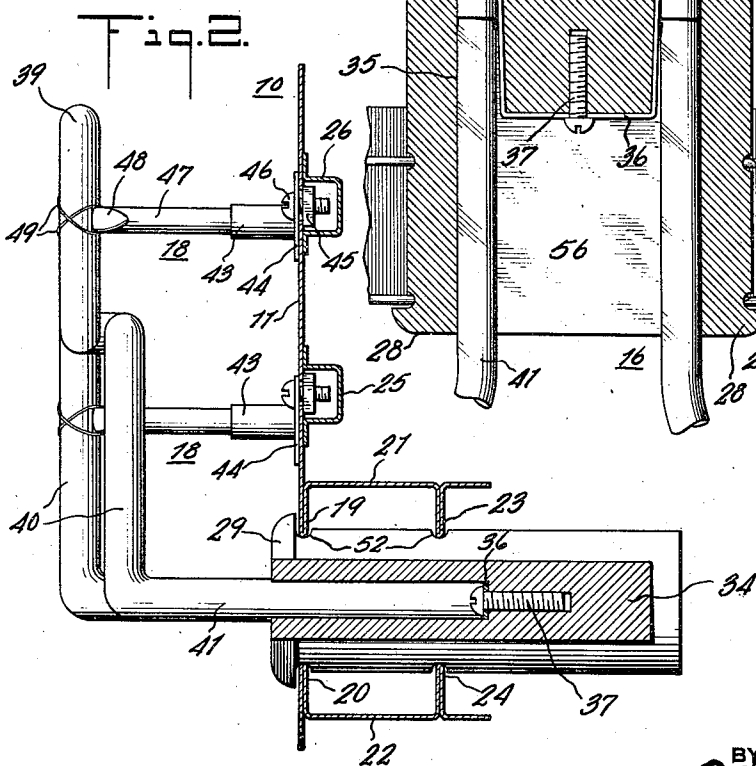
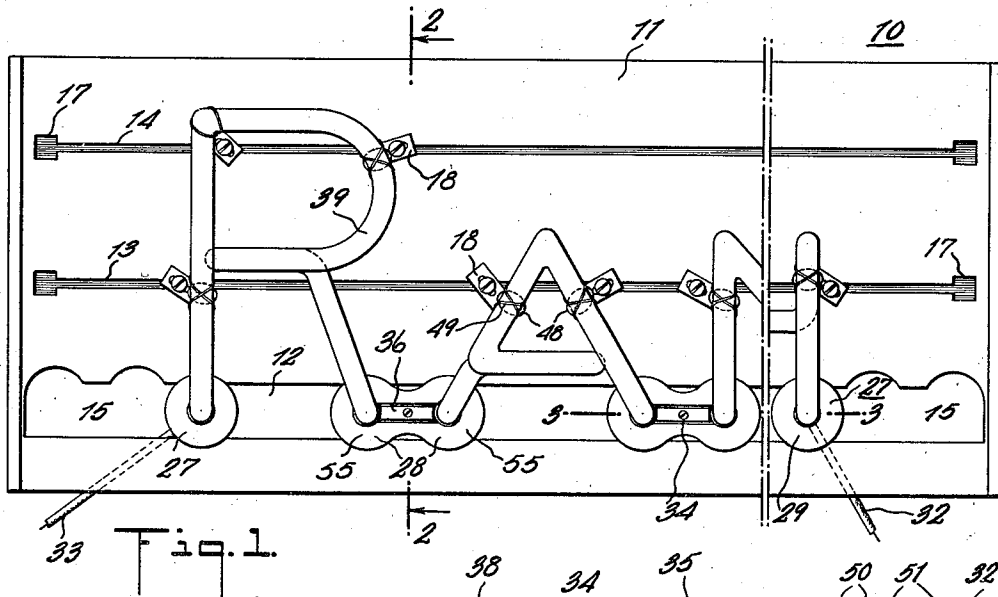
March 3, 1942.

D. O. FORD

2,274,682

LUMINOUS SIGN

Filed May 19, 1939



INVENTOR
DAVID O. FORD
BY
Orton and Geiswold.
ATTORNEYS

UNITED STATES PATENT OFFICE

2,274,682

LUMINOUS SIGN

David O. Ford, Petersburg, Va.

Application May 19, 1939, Serial No. 274,643

14 Claims. (Cl. 40—130)

The invention relates to a knock-down luminous sign of the type in which luminous gas filled tubes in the form of letters, figures and other conformations, hereinafter referred to generically as sign characters, are disposed on a fixed support in such way that the characters may be readily replaced or reassembled so as to vary the reading on the sign.

The primary object of the invention is to provide a simple form of such sign in which the sign characters may be of different sizes, and assembled selectively line by line, as complete electric units and which units may be adjustably mounted on the fixed support. The invention consists primarily of a fixed support which can be simply a slotted metal face plate, or multiples of the same where more than one line of writing is desired, a plurality of socket receptacles slidably mounted in the slots in the face plate and luminous gas sign characters which may be of the neon type with their electrode terminals demountably fitted in the sockets of the receptacles and which sign characters may otherwise be fastened to the support in whatever position they may find themselves in the line. In this way with a standardized form of support it is possible to form a selected line of lettering which need not be of any definite length or prefixed number of characters and in which the several characters selected for any one line or unit need not be of the same size. In this way a greater variety of effects may be produced than is possible with present forms of signs.

It is a common practice with such signs to mount in the support fixed parts of the electric circuit supplying the sign but this has the effect, more or less, of fixedly locating the position of the fabricated lettering or luminous display on the support.

Accordingly, another object of the invention is to provide as the frame or supporting part of the sign a simple standardized form of structure and which may be most conveniently formed simply by cutting and bending sheet metal to form and which resulting bent reinforced form or metal support is entirely free of any of the current carrying parts of the sign.

Still another object of the invention is to provide a simple form of floating connector or socket receptacle for use in fabricating the sign, which will be of the double socket type in the case of those used to connect an electrode of one sign character with an electrode of an adjacent sign character and which will be of a single socket type in the case of the end receptacle through

which the fabricated sign unit formed of the separate characters are connected to a source of electric energy.

The invention has for another object the providing of a simple form of readily replaceable insulating support by means of which the individual sign character may be secured directly to that portion of the support opposite which it may happen to come in the formation of the completed unit.

Various other objects and advantages of the invention will be in part obvious from an inspection of the accompanying drawing and in part will be more fully set forth in the following particular description of one form of sign embodying the invention, and the invention also consists in certain new and novel features of construction and combination of parts hereinafter set forth and claimed.

In the accompanying drawing:

Fig. 1 is a view in front elevation showing a preferred embodiment of the invention with the midportion broken away to save space;

Fig. 2 is a vertical transverse sectional view taken on the plane indicated by the line 2—2 of Fig. 1 and looking in the direction indicated by the arrows; and

Fig. 3 is an enlarged horizontal sectional view taken on the line 3—3 of Fig. 1 and showing a double and a single socket receptacle with the single receptacle partly shown in plan.

In the drawing there is shown a frame or support 10 formed primarily of sheet metal and including an upstanding face plate 11 provided with three parallel slots including a lower socket receptacle slot 12 and two bracket slots 13 and 14. The receptacle slot 12 is provided at opposite ends with pairs of enlargements 15 to permit the insertion therein of the socket receptacles 16. The bracket slots 13 and 14 are similarly provided at opposite ends with enlargement 17 to permit the insertion therein of brackets 18.

Referring particularly to the showing at the bottom of Fig. 2, the metal on opposite sides of the slot 12 is bent back upon itself to form an upper outer track 19 and a lower outer track 20 facing each other in the plane of the face plate and defining opposite sides of the slot 12. The metal in each case is then bent horizontally rearwardly away from the plate 11 to form an upper horizontal ledge 21 and a lower horizontal ledge 22. From these ledges the metal is again bent at right angles to their respective ledges and towards each other and then again bent back upon itself to form an upper inner track 23 and

a lower inner track 24 thus forming an inner slot parallel and opposite to slot 12.

Positioned on the rear face of the base plate and fastened thereto as by welding, are channel shaped housings 25 and 26 covering the portion of the plate which contains the bracket slots 13 and 14. These three slots extend for the full length of the frame or support and are intended to cover the entire area which may be used as a sign. The actual sign itself, that is, the luminous part formed as hereinafter described is adjustable as a unit horizontally anywhere about the frame or support within the limits imposed by these slots. While this frame is illustrated as being formed of sheet metal, it is obviously within the scope of the disclosure to otherwise form the slots as by a skeleton arrangement of angle bars arranged to form the slots and tracks herein featured.

The receptacles 16 herein illustrated are of two types. A single socket form of receptacle 27 is located at opposite ends of the assembly and double socket receptacles 28 are located therebetween and all shiftable along the tracks associated with the slot 12. The receptacles 27 are simply tubes of insulating material such as Bakelite, preferably of cylindrical form provided at one end with a flange forming a head 29 and provided with a bore 30 extending axially there-through. In the rear portion of the bore 30 is mounted a conventional form of spring contact 31 to which is connected one of a pair of leads 32-33 leading to a source of electric energy.

The double socket receptacles 28 each include a single casting of insulating material comprising in effect two cylindrical tubular elements 55 each provided with a bore 35 extending there-through. The front of the receptacle between the bores is cut away as shown at 56 and the remaining portion at the rear thereof forms a bridge piece 34.

A U-shaped spring contact 36 is secured at its crotch portion to the bridge piece by means of a screw 37. The end portions of the contact project rearwardly along opposite sides of the bridge piece and along one side of the rear portion of the associated bore 35 to make contact with the terminal electrodes hereinafter discussed. The extreme ends of each of the sides of the contacts 36 are bent sharply towards the axis of the bore 35 to provide in each case a stop 38 for limiting the intruding or rearward movement of the electrodes.

There are also disclosed two different sizes of sign characters in the illustrated embodiment being neon tubes 39 each comprising an offset display part 40 and a rearwardly bent glass tubular end 41 provided with a cap constituting a terminal electrode 42. It is a feature of this disclosure that all of the tube ends 41 be similarly located relative to the display part 40 and that all of these tube ends with the associated electrodes have a snug fit selectively in any one of the bores or sockets in either one of the forms of receptacle. These neon tubes are usually formed partly or wholly of glass and possess some structural strength so that in some cases, particularly where the letters are not of very large size they may be supported solely by virtue of the fact that they have their ends mounted in these receptacles. Where the characters are of such size as would place an undue strain upon the tube ends, it is suggested that they be entirely or mainly supported directly from the frame 10.

In the case of a small letter such as the *a* in

Fig. 1, one line of supports or brackets will be sufficient to provide the necessary attachment but in the case of a larger character such as the *R* of Fig. 1, it is preferable that the characters be supported at two or more places. As these brackets and their associated parts are of identical description so as to be readily interchangeable, the detailed description of one will be sufficient for the other. Each bracket is formed of a short metal tube 43 provided at one end with a flange 44 which fits flat against the face plate 11 and is secured in place by means of a nut and bolt form of fastening means in which the nut 45 is held from rotating by its engagement with the sides of the housing 26 when the bolt 46 is rotated to tighten the bracket to the plate in whatever position it may be adjusted thereon. Projecting outwardly from the tube 43 is a glass rod 47 provided with a T head 48 conformed to fit about the sides of the tubes which face the plate 11. Wires or other flexible fastening means 49 are used to temporarily secure the tubes 39 to the glass rod element 47 of the bracket.

It is further suggested that in the case of the end receptacles 27, that the rear end thereof be provided with a plurality of circumferentially spaced apart lugs 50 designed to provide recesses 51 therebetween. The high tension cable or lead 32 or 33 are each trailed through that one of the recesses which will act most efficiently to keep the same away from accidental contact with the sign or parts adjacent to the sign.

In operation, the particular sign characters desired to make up the word or other group of such characters are selected from a stock of tubes of the character described and there are mounted in the bracket slot two single socket receptacles 27 which will constitute end sockets and therebetween there will be located in the slot a number of double sockets one less than the number of sign characters used for the time being. Suppose, for instance, it was desired to form the word "Randolph" with a large *R*, then the left hand electrode of the large *R* selected from stock is intruded into the single socket receptacle at the left of the line and the right hand tube of the *R* would be inserted into the socket at the left side of the first double socket that is the second socket counting from the left. As to where these two left receptacles would come, depends upon the distance apart of the tube ends of the letter *R*. Then in assembling the next letter, the small *a*, into position, the left hand tube end thereof is inserted into the right hand socket of the receptacle which in its left socket contains an end of the *R*; then the right hand end of the *a* would be inserted into the next adjacent socket of the second double socket in the line and this would be continued inserting one end of each of the neon tubes in one socket of a double socket and its opposite end in the adjacent socket of the next contiguous receptacle. The last tube end is inserted in a single socket receptacle and as shown in Fig. 1, the part of the tube forming the down stroke of the *h* has its rearwardly extending tube inserted in the socket at the right hand end of the line. This will form an electric unit composed solely of the selected sign characters, that is in the illustrated case, necessary to form the word "Randolph," and the necessary number of receptacles, which unit as a whole can be shifted anywhere desired along the slot 12.

In those cases where it is desired to anchor the unit at any place to which it may be set, the desired number of brackets may be inserted in the

lower bracket slot in those cases where the letters are of small size and any desired number of brackets may be inserted in the upper slot 14 in those cases where one or more of the characters reach that high on the sign. In either case the brackets are located where they will be most effective in bracing the sign characters from the frame or support. The brackets are wired to the characters, it being suggested that the wires 49 be crossed as indicated to obtain as extensive an engagement as possible with the glass tubes 39.

The arrangement of the double track shown in Fig. 2 is suggested as it tends to maintain the receptacles in position with the axis of their sockets perpendicular to the plane of the face plate. In order to lock the receptacles in position against accidental canting when in the portion of the face plate remote from the enlargements which permitted their insertion in place, the upper and lower side of the intermediate or double socket receptacles 28 are provided with parallel grooves 52 and the single receptacles 27 are provided with annular grooves 53 which receive the four tracks as indicated in Fig. 2. The weight of the receptacles, of course, causes them to rest on the pair of lower tracks 20 and 24.

In dismantling one of these assemblies, it is simply necessary to cut the wires 49, gently pull the tube ends out of their associated sockets and remove or replace with additional double sockets those which may be needed for the next assembly or unit designed to be located in place of the dismantled unit.

Where it is desired to place luminous characters on opposite sides of the face plate 11, the receptacles may be located on the tracks as indicated in Fig. 2 but with the sockets for one electric unit facing in one direction and the sockets for the other electric unit facing in the other direction. It is also suggested that the track formation shown at the right hand side of the face plate in Fig. 2 be duplicated on the opposite or left side of the plate where it is desired to mount the sign characters on opposite sides of the plate. It will be understood that current is led into the fabricated unit so formed through one of the leads, say 32, the current passes in succession through each of the characters which are thus arranged in series and returned to the source of electric energy through the other lead, say 33, at the opposite end of the unit.

While there have been shown, described and pointed out in the annexed claims, certain novel features of the invention, it will be understood that various omissions, substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention.

I claim:

1. A sign frame for supporting replaceable sign characters and including a sheet metal face plate provided with a horizontally extending slot, the metal on each side of the slot being bent back upon itself to form an upper and lower outer track in the plane of the plate and defining opposite edges of the slot, the metal on each side of the slot extending rearwardly from its associated outer track to form upper and lower horizontal ledges and then bent towards each other parallel to the plane of the face plate and then back upon itself to form upper and lower inner tracks defining opposite edges of a rear slot facing the slot, an element of a sign character fitted between the four tracks and slidably mounted in

the two lower tracks, and said face plate also provided with another slot extending there-through and extending parallel to the first named slot and spaced vertically therefrom and a sign character securing bracket slidably mounted in said other slot and provided with means for locking the same in adjusted position.

2. A sign frame for supporting replaceable sign characters and including a sheet metal face plate provided with a horizontally extending slot, the metal on each side of the slot being bent back upon itself to form an upper and lower outer track in the plane of the plate and defining opposite edges of the slot, the metal on each side of the slot extending rearwardly from its associated outer track to form upper and lower horizontal ledges and then bent towards each other parallel to the plane of the face plate and then back upon itself to form upper and lower inner tracks defining opposite edges of a rear slot facing the slot, an element of a sign character fitted between the four tracks and slidably mounted in the two lower tracks.

3. A sign including a sheet metal face plate provided with a horizontally extending slot, the metal on each side of the slot being bent back upon itself to form an upper and lower outer track defining opposite edges of the slot, the metal then extending rearwardly from its associated outer track to form upper and lower ledges and then bent parallel to the plane of the face plate and then back upon itself to form upper and lower inner tracks paralleling the outer track and an electric element of the sign fitting between said four tracks and slidably mounted on the two lower tracks.

4. In a sign of the class in which the sign characters are readily interchangeable, the combination of a support provided with three parallel slots, one forming a socket receptacle slot and the other two each forming a bracket slot, a plurality of replaceable luminous sign characters which may be of different sizes and designs but each having its terminal electrodes of identical contour with those of every other character, means mounted in the bracket slot nearest the receptacle slot for securing to the support relatively small sign characters and mid-portions of relatively large characters and means mounted in the other bracket slot for additionally securing to the support the relatively large characters, a plurality of socket receptacles carried by the support and slidably mounted in the socket receptacle slot and each provided with at least one socket for receiving one of said electrodes, means for adjustably locating the receptacles on the support as may be determined for each character by the distance which its electrodes are spaced apart, and means for connecting the receptacles in series to a source of electricity.

5. In a device of the class described, the combination of a support, a line of at least three separate socket receptacles free to be spaced apart relative to each other on the support, the two receptacles at the end of the line provided with a single socket and the intermediate receptacle therebetween provided with a pair of sockets, each of said sockets provided with an electric contact and each adapted to receive a terminal of a replaceable sign character in electric engagement with its associated contact, means housed within the intermediate receptacle electrically connecting its contacts to each other, and means

for connecting the contacts of the end receptacles with a source of electric energy.

6. In a gaseous electric sign, a metal plate provided with an elongated slot, a pair of socket receptacles of insulating material and provided with an electric contact, relatively adjustable and slidable along the slot, a luminous sign character having one of its electrodes in electrical engagement with the electric contact in one of the sockets and its other electrode in electrical engagement with the electric contact in the other socket and means for connecting said contacts to a source of electricity, and combined mounting and locking means adjustable on the plate in parallel relation to and spaced from the slot for securing the sign character in its adjusted position on the supporting plate, said locking means including insulating means for insulating the sign character from the metal supporting plate.

7. A sign including a supporting frame including two pairs of parallel tracks, each comprising an upper and a lower track, a socket receptacle provided with two upwardly facing and two downwardly facing grooves, one for each track and guided thereon, whereby the receptacle may be held in position with its socket extending perpendicular to the planes of the tracks, and adjustably located along the length of the tracks and a luminous sign character having one of its terminal electrodes demountably positioned in the socket of the receptacle.

8. A sign including a supporting frame including a face plate provided with a horizontally extending slot, two sheets of metal projecting rearwardly from the face plate, said two sheets each being bent back upon itself along two spaced apart parallel lines to form two pairs of tracks paralleling said slot, each pair comprising an upper and a lower track, a socket receptacle slidably guided along the slot, supported on the lower tracks and fitted between the upper and lower track of each pair and a sign character having an end fitted in the socket of said receptacle.

9. A sign including a supporting plate provided with a slot, a protecting housing secured to the rear face of the plate and covering the portion thereof containing the slot, a sign character supporting bracket slidable along the length of the slot supported directly from the plate, and provided with fastening means engaging in the slot for temporarily securing the bracket in its adjusted position, a removable sign character, and means for temporarily securing the sign character to the bracket whereby the removable sign character is supported through the bracket from the plate.

10. An illuminated sign including a support for a plurality of replaceable sign characters, said support provided with at least two horizontal slots, a plurality of socket receptacles slidably mounted in one of the slots, a supporting bracket slidably mounted in another of the slots, means for securing the bracket in its adjusted position in said other slot, and a luminous sign character demountably secured to the bracket, having one of its terminals intruded into the socket of and connected electrically to one of the receptacles and its other terminal intruded into the socket of and connected electrically to another of said receptacles and means for supplying current to said receptacles.

11. In an illuminated sign, the combination of a frame provided with an elongated receptacle support, a socket receptacle demountably positioned in the support and shiftable selectively along the length of the same, a spring contact exposed in the socket of said support, said socket designed to have an electrode terminal of a replaceable luminous sign character inserted therein in electric engagement with the spring contact and a flexible electric lead having an end intruded into the receptacle and in electric engagement with said spring contact, and said receptacle provided with means for locating the position of the lead at its point of entrance into the receptacle.

12. In an illuminated sign, the combination of a frame provided with an elongated receptacle support, a socket receptacle demountably positioned in the support and shiftable selectively along the length of the same, a spring contact exposed in the socket of said support, said socket designed to have an electrode terminal of a replaceable luminous sign character inserted therein in electric engagement with the spring contact and a flexible electric lead having an end intruded into the receptacle and in electric engagement with said spring contact, and said socket receptacle provided at its rear end with a plurality of circumferentially spaced apart lugs providing recesses therebetween for guiding the lead in place.

13. A sign including at least two sign characters disposed in a substantially vertical plane and each having a terminal extending substantially horizontal and at right angles to said plane, means forming a plurality of sockets, one for each terminal of the sign characters in the sign and each terminal demountably fitting in its associated socket, said means comprising a plurality of receptacles of which the end receptacles have one socket each, and certain of the others between the end receptacles each have a pair of sockets, each of said two-socket receptacles provided therein with an electric bridge for connecting the two terminals inserted in the associated pair of sockets, said sign characters and receptacles coacting to form a complete unit with the characters located in their proper relative position, means for mounting the unit as a whole on a support therefor and current supplying means leading to the terminals in the end receptacle.

14. A sign including a fabricated unit formed at least in part of two adjacent sign characters each provided with two terminal electrodes, a double socket receptacle with one of the electrodes of one of the characters mounted in one of its sockets and with one of the electrodes of the other character mounted in the other of its sockets, an electric connection housed within the double socket for electrically connecting the associated electrode terminals, two other socket receptacles in each of which is mounted the other terminal electrode of each sign character and certain of said socket receptacles provided with grooves for guiding the same on a support and thus to assist in locating their associated sign characters relative to said support and a support provided with tracks received in said grooves.

DAVID O. FORD.