May 10, 1932. A. J. McMASTER 1,858,052

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Filed July 18, 1929 2 Sheets-Sheet 1

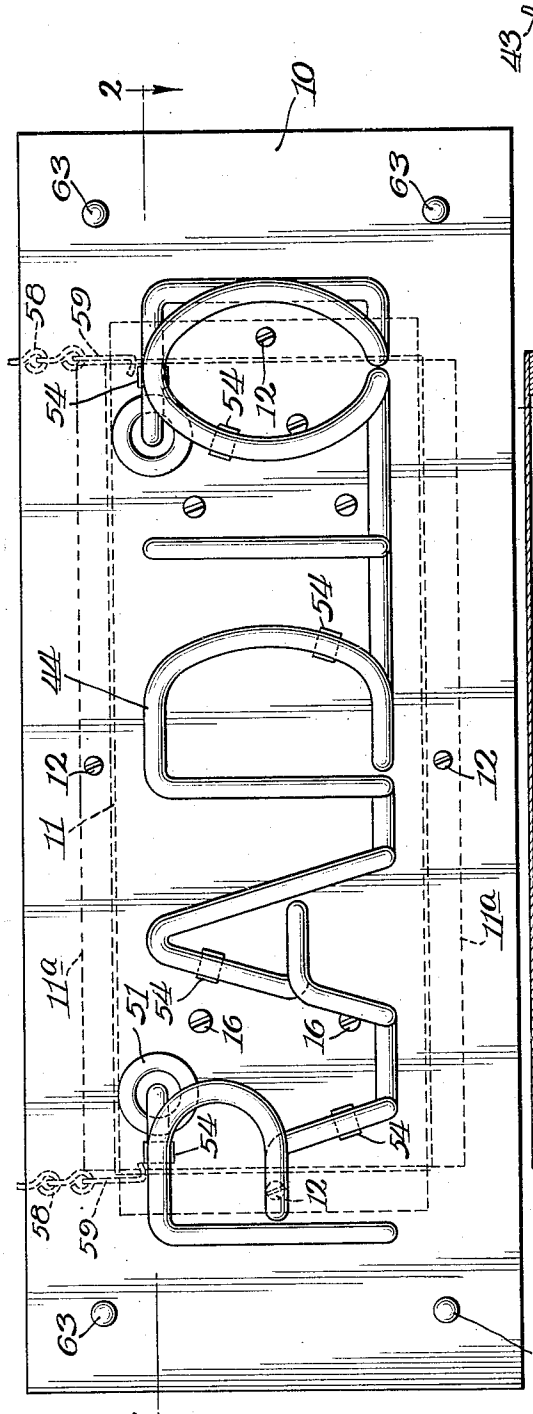

Fig. 1

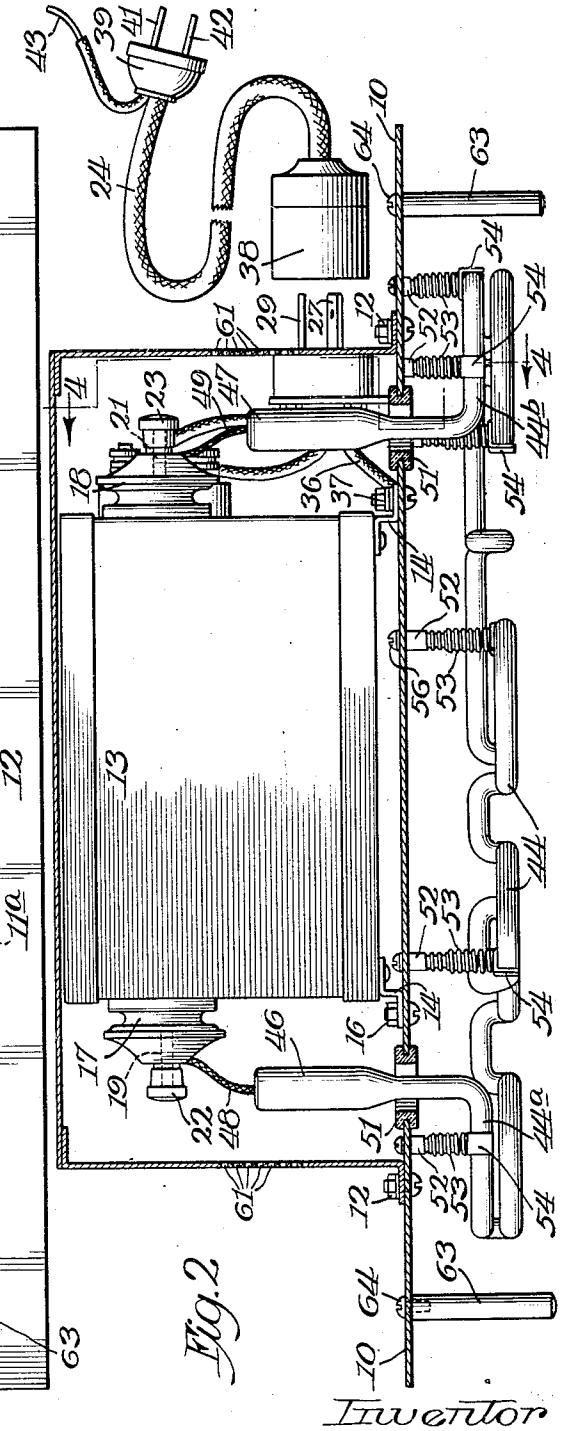

Fig. 2

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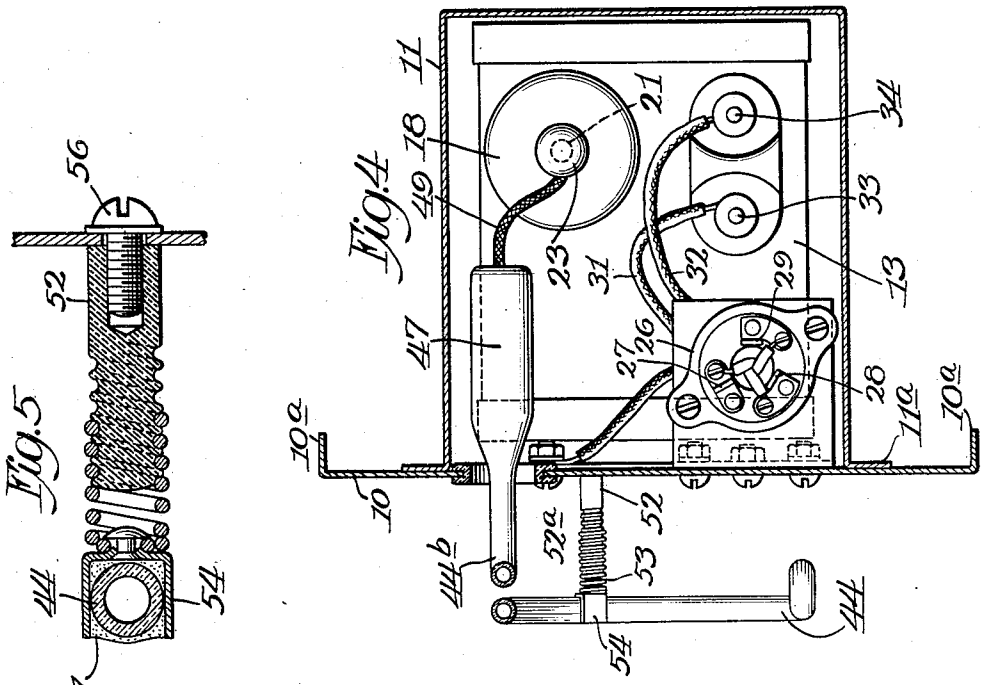

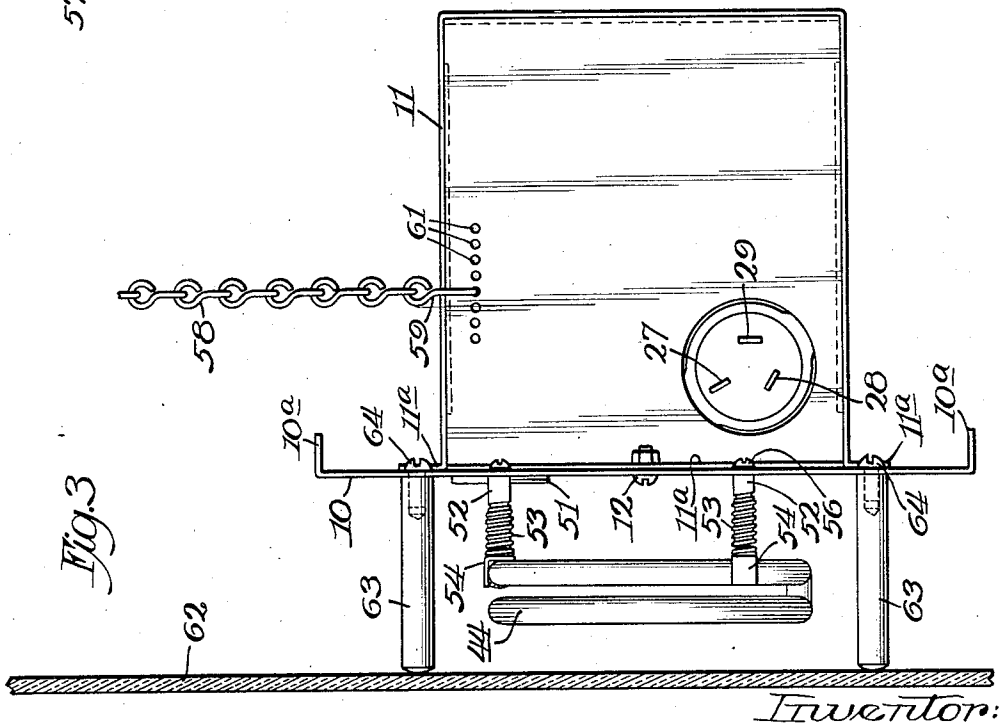

Inventor:
Archie J. McMaster
By George E. Mueller Atty.

Patented May 10, 1932 1,858,052

UNITED STATES PATENT OFFICE

ARCHIE J. McMASTER, OF CHICAGO, ILLINOIS, ASSIGNOR TO G-M LABORATORIES, INC., OF CHICAGO, ILLINOIS

SIGN

Application filed July 18, 1929. Serial No. 379,134.

My invention relates in general to electric signs and more in particular to the type of electric sign employing luminescent tubes and known in the trade generally by the term Neon sign.

These signs are produced by forming glass tubes to the shape of the letters or other indicia which will appear on the sign exhausting the tubes introducing a small quantity of a rare or inert gas which by means of suitable electrodes may be made to carry a current of high pressure resulting in a glow in the tubing. This tubing is mounted on a suitable support for either inside or outside use, and the type of mounting employed is generally determined by the location in which the sign is to be used.

There are many problems encountered in the manufacture, installation and use of signs of this character, these problems occurring principally on account of the fragile character of the glass tubing, the use of a high voltage, etc. The character of the current employed introduces fire and injury hazards which are of great importance when the sign is to be used for inside display as for example in a shop window.

Accordingly the principal object of my present invention is to overcome all of the objections heretofore encountered in the manufacture, installation and use of neon signs.

Another object is to provide a sign mounting of an improved character which will not impart a strain to the glass.

Another object is the production of a sign assembly which may be standardized for use with substantially all classes of signs.

Another object is the provision of a sign mounting wherein all of the high tension wires are fully protected and concealed.

Another object is to produce a neon sign which will pass all the tests laid down at the present time by Underwriters Laboratories for general electrical apparatus.

Another object is the production of a neon sign which can be mounted for operation by the ordinary shop keeper without the services of an electrician or other expert.

Another object is the provision of a neon sign of a unitary character and adapted for any usual type of inside or outside display.

Another object is the provision of a neon sign assembly which is arranged to be mounted easily and adjusted to position in accordance with its elevation.

Other objects and features of the invention will be apparent from a consideration of the detailed description taken with the accompanying drawings wherein

Fig. 1 is a front elevational view of a preferred embodiment of my improved sign;

Fig. 2 is a plan sectional view taken along the line 2—2 of Fig. 1;

Fig. 3 is an end view showing the way the sign may be mounted in a shop window;

Fig. 4 is a vertical sectional view taken along the line 4—4 of Fig. 2 looking in the direction of the arrows, and

Fig. 5 is an enlarged view of the mounting means.

The improved sign of my invention has been developed with the principal object in view of furnishing a stock sign carrying such well known words as Radio, Drugs, Waffles or the like, and intended to be shown in the shop window or on a sign display in the front of the shop above the sidewalk. It was my purpose also to furnish stock signs of this character which could be produced for reasonable cost and shipped to a purchaser in such condition that the purchaser himself without expert help could install and use the sign. While the sign of my invention is preeminently adapted for such use the novel features employed may have a number of utilities in the general sign business whether used in the combination shown or not.

Considering first the general features of the invention I provide a mounting panel of considerable strength and made generally of reinforced sheet steel the back of which carries a casing housing the transformer, and the front of which serves as a background for the luminescent tube sign. The terminals of the tube run into the casing at the back of the mounting panel and connect to the transformer by two short high tension cables which are the only parts of the high tension line at all exposed. The mounting posts for the tube are novel serving as insulators be-

tween the mounting panel and glass, as a shock absorbing means to prevent breakage of the glass by the imparting of undue strain thereto, and the glass tubing is secured to the mounting posts by transparent cement which does not interfere with the light reflecting character of any portion of the tube.

Referring now to the drawings and considering the details of the invention I provide a mounting panel 10 having flange edges 10*a* for reinforcing purposes, this panel preferably being formed of sheet steel and finished in any suitable color and design. At the back of the panel I provide a rectangular casing or housing 11 with flanged portions 11*a* for receiving nuts and bolts 12 which secure the casing to the rear of the mounting panel.

First considering the assembly at the rear of the mounting panel, a suitable type of transformer 13, mounted to the panel 10 by means of mounting brackets 14—14 secured by suitable fastening means such as bolts 16. The transformer is mounted within a suitable housing which appears in the drawings and high tension terminals are provided at the ends thereof in the form of vitreous mounting posts 17 and 18 through which terminal posts 19 and 21 project and on which thumb screws 22 and 23 are threaded for securing the high tension tube leads to the output side of the transformer.

The transformer 13 is designed to operate with standard commercial alternating current and a source of current is connected to the primary side of the transformer by a suitable cable 24. I arrange to ground the entire sign frame, however, to avoid any possibility of accident and I employ the cable 24 which is of course then made of special design, for this purpose.

On the back of the mounting panel a plug 26 is secured having three contacts 27, 28 and 29, the contacts 27 and 28 being connected to conductors 31 and 32 leading to primary terminals 33 and 34 respectively on the transformer housing. The terminal 28, however, is connected to a conductor 36 which is grounded with one of the screws 37 (Fig. 2). The socket 38 at one end of the cord 24 is of a three way type and adapted to engage with the plug 26. A plug 39 is connected to the opposite end of the cord and has contacts 41 and 42 adapted to plug into the usual wall socket, while a third conductor 43 is taken out from the rear of the plug and is adapted to be grounded by suitable means such for example as the usual fastening screw (not shown) on the usual outlet plug escutcheon plate (not shown).

Now referring to the sign proper at the front of the mounting panel I show the usual type of tubing 44 making up the word Radio and the tube being provided with electrodes 46 and 47 of any suitable type. These electrodes have secured thereto high tension cables 48 and 49 adapted to be secured to the output terminals of the transformer 13. The tube is so constructed that the distance between the terminals 46 and 47 is standardized and will also be substantially in line with the high tension transformer terminals so that they can be readily connected thereto. This means that if the sign is long the tube will have to be doubled back substantially at 44*a* and 44*b* in order to be extended through the standardly placed apertures in the mounting panel. Rubber insulating liners 51 are provided around these holes for the further protection and insulation of the entire sign.

I employ unusual mounting means for the tube 44 in the form of mounting posts 52 having springs 53 secured at one end thereof and with U shape tube engaging means 54 at the outer end of the spring. The posts 52 have threaded portions 52*a* on which the springs 53 are adapted to be turned to increase or decrease the over all length of the mounting posts. For mounting the posts to the panel machine screws 56 are employed threaded into the hollow end of the posts 52. The tube engaging portion 54 of the mounting posts receives the tube 44 and a transparent cement 57 is employed to cement the tube in position. The type of cement which I have used most satisfactorily in this connection is the cellulose nitrate composition known generally under the name of pyralin.

Heretofore it was customary to employ the portion of the tube connecting the letters for mounting purposes because wire or strips of metal were usually used to fasten the tube and this would show as a black spot on the sign. This manner of fastening is desirable because there is really only one part of the tube which is all in a single plane and that is the letters proper. With my mounting means I can connect to the letter portion of the tube and since this is all of equal height the mounting operation is simplified. There are places, however, where it is necessary to employ a mounting post on connecting portions of the tube, particularly where the tube connects with the terminal. An advantage of this type of mounting is that the tube can be removed readily by the use of a suitable solvent which will dissolve the bond about the glass, or a sharp tool may be employed to cut through this pyralin band and free the tube.

The principal intended use for the sign of my invention is to hang in suitable positions in retail shops, particularly in the window thereof. In order to mount the sign I use chains 58 on the end of which are small hooks 59. These chains are supported at suitable positions on the ceiling or the like and the hooks are fastened in any of a plurality of holes 61 arranged in the casing 11. The center of gravity of the sign as a whole is of course below these holes and by suspending

the sign entirely from this position the sign may be inclined forwardly or backwardly depending upon which pair of holes the hooks 59 are engaged in.

When a sign is used in a store window it is generally advisable to hang it as close to the window as possible. I arrange for this and in order to protect the tube from actual contact with the window 62 I provide a plurality of spacing posts 63 formed of suitable material such as wood, four in number generally and arranged in the manner shown. These spacing posts are secured to the mounting panel in any suitable way as for example by screws 64.

The advantages of the various features and the manner in which the sign is used appear to be plain from the preceding description. In the claims I refer to "neon signs" for the sake of convenience but it is obvious that the features of the invention can be employed with any luminescent tube of this general character whether utilizing neon or not. The various details described to bring out the novel features are illustrative only and the invention is limited only by the scope of the appended claims.

What I claim as new and desire to protect by United States Letters Patent is:

1. In a neon sign, a mounting panel, a transformer mounted on one side thereof, a luminescent tube, means for resiliently mounting said tube on the opposite side of the panel, terminal members for said tube, said panel having apertures through which the terminal members extend, the terminal members being supported only by the tube to permit movement thereof upon expansion and contraction of the tube, and a flexible conductor connecting the terminal members with the transformer.

2. In a neon sign, a mounting panel, a luminescent tube, means for resiliently mounting said tube on the front side of the panel, a transformer mounted on the opposite side of the panel, said panel having a pair of apertures adjacent opposite ends of the transformer, a terminal member on each end of said tube, the ends of the tube being bent to project through said apertures, an insulating washer in said apertures surrounding the tube and spaced therefrom whereby the entire tube is resiliently mounted, and conductors for connecting the terminal members of the tubes to the output of the transformer.

3. In a neon sign, a metallic mounting panel, a metallic casing secured to the back of said panel, a transformer mounted in said casing, said transformer having output terminals at its opposite ends, a grounded conductor connected to said panel whereby the panel and casing are mounted at ground potential, a luminescent tube resiliently mounted on said panel, the ends of said tube extending into opposite ends of the casing and into close proximity to said transformer terminals, and a short conducting lead connecting the ends of the tube with said transformer terminal.

4. In a neon sign, a mounting panel, a luminescent tube mounted on the face thereof, a energizing transformer mounted upon the back thereof, suspension means for suspending the panel in a vertical position, and spacing posts extending from the front face of the panel for spacing the luminescent tube from a window and preventing contact therewith.

5. In a neon sign, a mounting panel, a floating luminescent tube secured thereto, the ends of said tube being bent and extending through said panel but spaced therefrom, terminal members on the ends of said tube, a transformer mounted on the back of said panel and having output terminals extending laterally therefrom into close proximity to the tube ends and flexible leads connecting the tube ends and transformer terminals.

6. In a neon sign, a mounting panel having apertures in its face, a floating luminescent tube secured thereto and spaced therefrom, said tube being doubled back from the letter forming portion and having its ends bent to loosely extend through the apertures in said panel, a transformer having terminal members extending laterally therefrom and into close proximity to said tube ends, and flexible conductors connecting the tube ends and transformer terminals.

In witness whereof, I hereunto subscribe my name this 14th day of June, 1929.

ARCHIE J. McMASTER.