

Fig. 1.

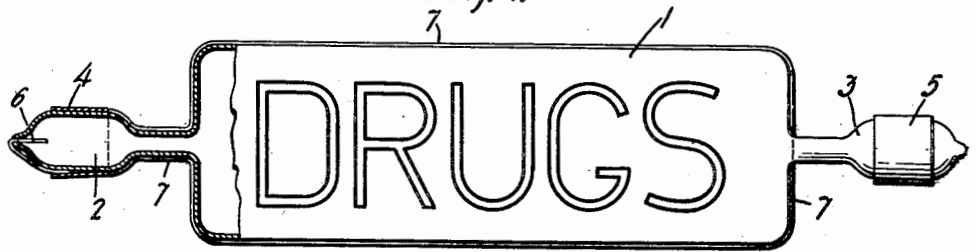
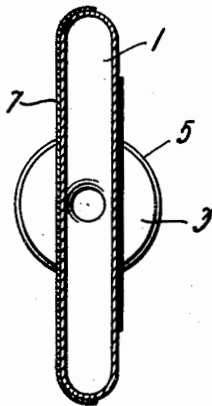


Fig. 2.



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LUMINOUS TUBE SIGN

Filed Dec. 4, 1926

2 Sheets-Sheet 2

Fig. 3.

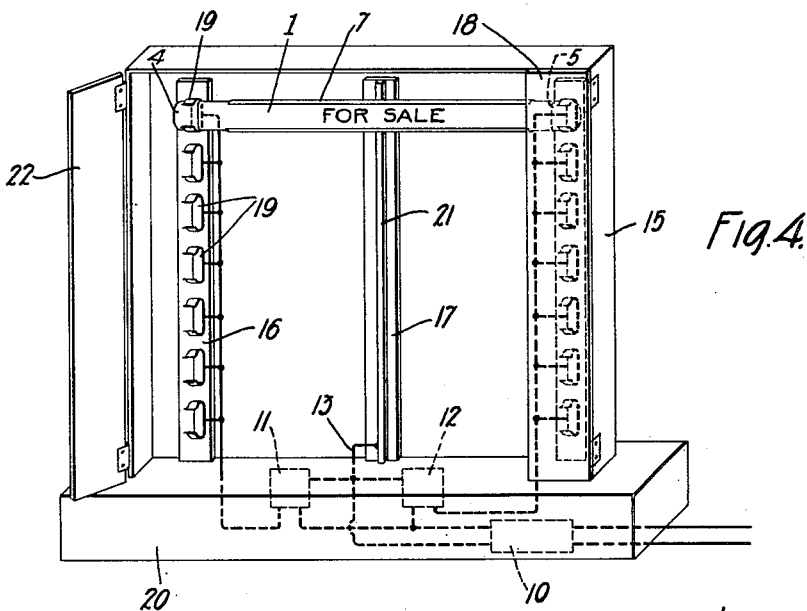
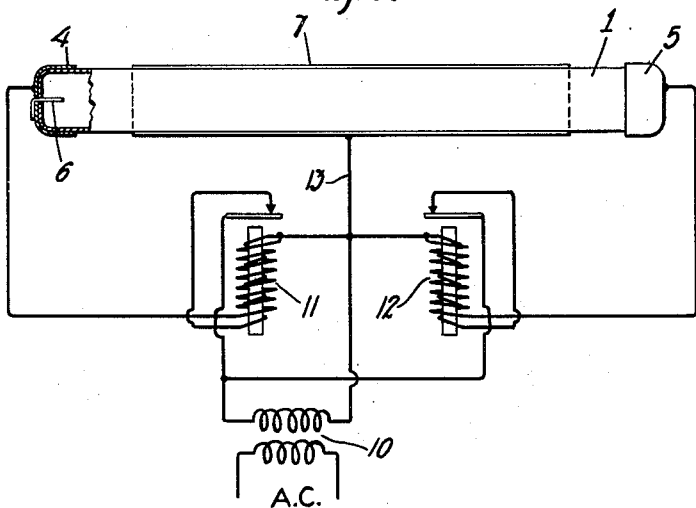


Fig. 4.

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UNITED STATES PATENT OFFICE.

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LUMINOUS-TUBE SIGN.

Application filed December 4, 1926. Serial No. 152,629.

This invention relates to luminous tube signs and more particularly to electric discharge tubes adapted for display or advertising use.

5 It is the object of the present invention to provide a neon or other gas-filled discharge tube of transparent or translucent material, and paint or otherwise apply letters or other symbols to the outside thereof.

10 With this object in view a discharge tube having a substantially flat surface is provided with the usual electrodes to create a discharge across a space which is preferably filled with a rare gas such as neon. Owing
15 to this discharge the gaseous filling of the tube will be rendered luminous. The luminous discharge takes place between the electrodes and does not entirely fill the envelope. This is particularly noticeable if
20 a tube of large diameter is used, in which case the discharge appears as a thin stream going from one electrode to the other.

In accordance with the present invention means are provided for spreading the luminous discharge over a large area. I accomplish this by constructing the vessel in the form of a flattened envelope, one of the sides of which is covered with tinfoil or other suitable metallic backing. The tube
30 is preferably provided with external electrodes, one of which is connected with the tinfoil backing. When current is applied to the two external electrodes the exposed flat side of the tube will appear to be entirely illuminated.
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The invention will be more clearly understood from the following detailed description of two embodiments of the invention. In the drawings Fig. 1 is a front view and Fig. 2 a sectional view of one embodiment; Fig. 3 illustrates a second embodiment; and Fig. 4 a sign assembly.
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The glass or other transparent or translucent vessel 1 is flattened and has a substantially oval cross-section. The vessel
45 opens into two chambers 2 and 3 which are surrounded by external metallic electrodes 4 and 5 at which current may be applied to the tube in the well-known manner. The chamber 2 has also a small internal electrode 6 which is connected with the external electrode 4 in the manner and for the purpose fully set forth in my copending application Serial No. 147,298, filed November 9, 1926. A discharge will take place
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from electrodes 4 and 6 to electrode 5, the width of which would be normally about one-third of that of tube 1. In order to spread this discharge throughout the width of tube 1, one side of the latter is covered
60 by an extension of electrode 4. In the present case this is accomplished by placing tinfoil 7 over the one face of the tube 1, the tinfoil extending from the electrode 4 to the connection between chamber 3 and tube
65 1. The tinfoil will spread the luminous gas throughout the tube 1, whereby the exposed front wall of the tube will appear to be entirely illuminated. This effect is heightened by black paint applied to the
70 tinfoil backing 7 and the reflecting quality of the tinfoil.

The exposed face of tube 1 may be used as a background for advertisements or other signs. Words or pictures may be painted,
75 stencilled, or otherwise applied on the outside of the glass vessel and will appear entirely illuminated when current is applied to electrodes 4 and 5.

Since tubes of the present construction
80 run cold, the symbols or characters painted on the tube need not be protected against heat.

Fig. 3 illustrates a modified form of the tube embodying the present invention. In
85 this figure the envelope 1 is not provided with narrow necks leading to chambers 2 and 3 of Fig. 1, but is of substantially uniform width throughout. Here also the envelope is oval in cross-section and presents a
90 substantially flat surface for the application of advertising matter. A further difference between the embodiment illustrated in this figure and the one previously described consists in not extending the metallic backing
95 all the way to the external electrode 4. The metallic backing is connected with the current supply circuit as a third external electrode and operates as in the previous case to fill the entire cross-section of the tube with light of
100 even density.

The circuit illustrated in this figure comprises an alternating current source which is associated through a transformer 10 with two induction coils 11 and 12 of a well-known
105 type. The induction coils in turn are connected with the external electrodes 4 and 5 and the grounded ends of the coils are connected through a conductor 13 with the metallic backing 7.
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Tubes like the ones illustrated in Figs. 1 and 3 may be mounted in suitable holders such as the one illustrated in Fig. 4. A cabinet 15 carries on its rear panel vertical strips of insulating material 16, 17 and 18. On strips 16 and 18 clips such as 19 are mounted which are adapted to hold the tubes 1 at their ends, and through these clips connections are established with the induction coils 11 and 12 mounted in the base 20 of the cabinet. The central insulating strip 17 carries a bus bar 21 which is adapted to contact with the metallic backing 7 of the tubes. If tubes like the one shown in Fig. 1 are used, the central strip 17 is left out. The tubes are held in place by means of hinged doors 22 mounted on the cabinet. The height of the cabinet will, of course, depend on the number of tubes it is desired to mount therein.

What I claim is:

1. A gaseous discharge tube having a flattened wall on the outside of which symbols are applied, and means for spreading the gaseous discharge in said tube to fill substantially the entire cross-section thereof with light of even density.

2. A gaseous discharge tube having an elongated cross-section at least one wall of which presents a flattened surface for the application of symbols, and means for spreading the gaseous discharge in said tube to fill substantially the entire cross-section thereof with light of even density.

3. In a gaseous tube advertising sign, an envelope containing a gaseous atmosphere, said envelope being elongated and having one substantially flat surface, an external electrode at each end of said envelope whereby an electric current can be passed through said atmosphere, an external electrode covering a major part of the envelope except said flat surface, whereby the discharge is caused to spread out and fill substantially the entire cross-section of the envelope with light of even density, and means applied to the flat surface of the envelope whereby a symbol is illuminated with the tube in operation.

4. In a gaseous tube advertising sign, an envelope containing a gaseous atmosphere, said envelope being elongated and having one substantially flat surface, an external electrode at each end of said envelope whereby an electric current can be passed through said atmosphere, an external electrode covering a major part of the envelope except said flat surface, whereby the discharge is caused to spread out and fill substantially the entire cross-section of the envelope with light of even density, means applied to the flat surface of the envelope whereby a symbol is illuminated with the tube in operation, and an alternating current source connected with all the three external electrodes.

In testimony whereof, I have signed my name to this specification this 3rd day of December, 1926.

WILLIAM F. HENDRY.