July 23, 1935. L. H. BRADY 2,008,782

LUMINOUS SIGN

Filed Nov. 29, 1929

Fig. 1

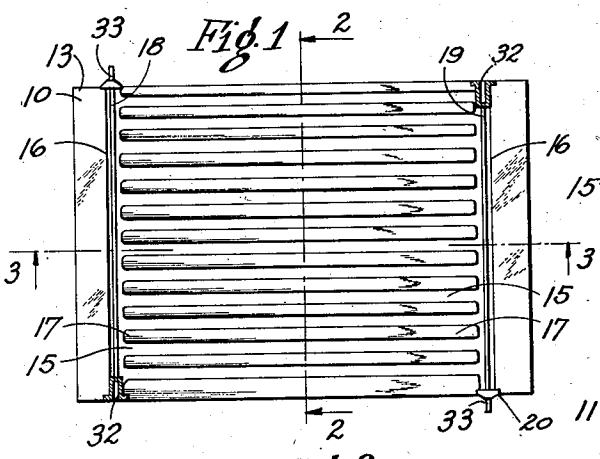


Fig. 2

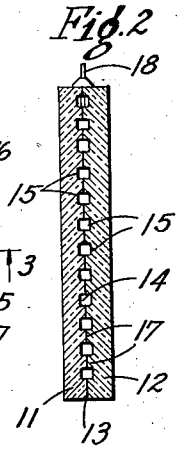


Fig. 3

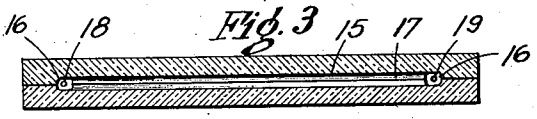


Fig. 4

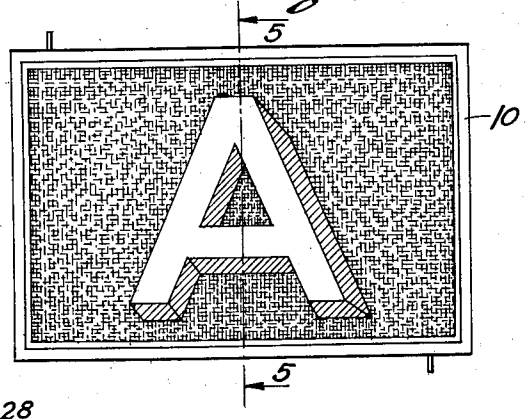


Fig. 5

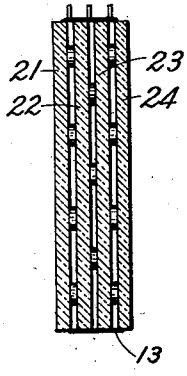


Fig. 6

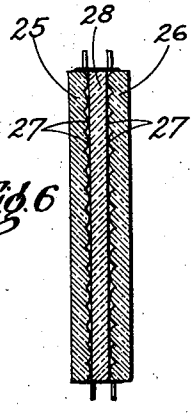
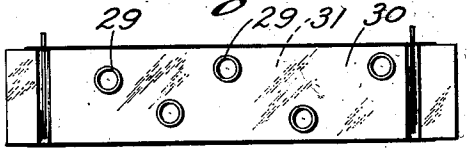


Fig. 7



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LUMINOUS SIGN

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7 Claims. (Cl. 176—14)

This invention relates to luminous signs, and more particularly to signs deriving luminosity from an electric discharge through a gas.

One object of this invention is to produce a luminous sign element having relatively flat radiating surfaces.

Another object is to construct a sign of this character in such a manner that radiations of different colors may be thoroughly blended.

Another object is to simplify the construction and reduce the cost of luminous signs.

In the accompanying drawing, which illustrates the invention:

Fig. 1 is a plan view of a luminous element,

Fig. 2 is a section taken on the line 2—2 of Fig. 1;

Fig. 3 is a section taken on the line 3—3 of Fig. 1;

Fig. 4 is a plan view of the element arranged to display a particular design;

Fig. 5 is a section taken on the line 5—5 of Fig. 4 and showing a modification;

Fig. 6 is a similar section showing a further modification; and

Fig. 7 is a plan view of another modified form.

Referring to Figs. 1 and 3 of the drawing, the luminous element 10 of the sign is composed of a pair of mating sheets 11 and 12 of non-opaque material, such as glass or quartz, suitably sealed together at their edges, as indicated at 13, and forming therebetween a thin gas chamber 14 of relatively large area.

Each of the sheets 11 and 12 is formed with a plurality of channels or grooves 15 communicating at their ends with transverse channels 16. The formation of the channels leaves projecting ribs 17 flush with the surface of the sheet. When the plates are placed together, the ribs 17 contact and form intermediate supports for the sheets to avoid breakage thereof by the atmospheric pressure when the spaces formed by the channels are exhausted or subjected to reduced pressure. Electrodes 18 and 19 are disposed in the channels 16 as shown in Fig. 1.

In assembling the element, the sheets are placed together and sealed around their edges, the electrodes are sealed in position as indicated at 20, and the air is exhausted from the space between the sheets. A suitable luminescent gas, such as neon, is introduced between the sheets and the sealing operation is then completed. Preferably the electrodes are disposed as shown in Fig. 1, with electrical connections on opposite sides of the sheets, so that a uniform current flow is obtained throughout the gas filled space.

When a suitable current is passed through the element, a light of characteristic color is emitted in the usual manner, the color depending upon the particular gas with which the space has been filled. The ribs 17 on the opposite sheets contact sufficiently to brace the structure, but not being sealed together, permit diffusion of the gas therebetween so that the entire area of the element is luminous.

As shown in Fig. 4, a sign may be formed by painting a suitable design on one or both surfaces of the element, or by covering the same with a stencil in any convenient manner. Striking effects may be produced by painting a part or all of the design in translucent colors which blend with the color of the light.

Fig. 5 illustrates the manner in which the luminous element may be constructed to produce differently colored lights blended to form a secondary color, or to produce different resultant colors at different times. In this embodiment, sheets 21, 22, 23 and 24, similar to the sheets 11 and 12, are sealed together at their edges, a gas space being formed between each two contacting surfaces by ribs and channels, as shown in Figs. 1-4, or in any other manner. Separate pairs of electrodes are sealed in each chamber, as shown in Fig. 1, and different gases producing different characteristic colors are introduced into the chambers. It will be seen that with four sheets, as shown in Fig. 5, three superimposed chambers are formed.

Passing currents simultaneously through any two or more of the chambers causes the differently colored lights to blend, producing a secondary color in which the individual colors of the various chambers cannot be separately distinguished. By actuating the chambers separately at different times, the resultant color of the element can be varied at will.

Fig. 6 shows a modification of the spacing means between the sheets. In this form, sheets 25 and 26, each having a surface formed with corrugations 27, are placed on opposite sides of a smooth sheet 28. The corrugations contact the smooth surfaces of the sheet 28 and serve to space and reinforce the sheets. Obviously as many additional sheets as desired can be added to the element.

Fig. 7 illustrates another modification in which small spacers 29 of any suitable material are disposed between the sheets 30 and 31. In this embodiment, it is unnecessary to specially construct the sheets, which may be flat pieces of glass or other material.

In the forms shown in Figs. 6 and 7, the sheets are sealed only around their edges, and the gas permeates between the spacing devices and renders the entire surfaces of the element luminous.

It will be evident that in each of the forms disclosed both surfaces of the luminous element emit light, and that in the multiple units, as illustrated in Fig. 5, the same color blend is radiated from each surface. This renders the element readily adaptable for advertising and similar signs, as a design may be shown on each side.

The electrodes are preferably arranged to form sockets **32** at one end and projecting terminals **33** at the other, the terminals **33** being arranged to fit into sockets of similar elements. In this manner a large sign may be built up of interchangeable units.

While the foregoing description is necessarily of a detailed nature in order that the invention may be fully set forth, it is to be understood that the specific terminology is not to be construed as restrictive or limiting, and that modifications and re-arrangements of parts may be resorted to without departing from the spirit and scope of the following claims.

What I claim is:

1. In a sign, a plurality of superimposed imperforate sheets of non-opaque material, each two adjacent sheets being spaced apart and sealed together around their edges to form a plurality of gas chambers, and means within said chambers maintaining said sheets in spaced relation.

2. In a sign, a plurality of superimposed imperforate sheets of non-opaque material, each two adjacent sheets being spaced apart and sealed together around their edges to form a plurality of superimposed chambers, luminescent gas in each of said chambers, and spaced electrodes in each of said chambers.

3. A sign comprising, a pair of sheets of non-opaque material sealed together at their edges with opposed surfaces in contact, one of said sheets having grooves therein arranged to form a plurality of parallel closely spaced passages and a pair of transverse passages at the ends thereof interconnecting said parallel passages, and electrically conductive gas in said passages and electrodes disposed in said transverse passages.

4. In a sign, a gas glow light unit having therein a substantially rectangular gas chamber of large area and relatively small thickness, the side walls of said chamber being non-opaque, an electrically conductive gas in said chamber and substantially parallel electrodes within said chamber arranged in alignment with and closely adjacent to two opposite end edges of said chamber and extending completely across said end edges of the chamber.

5. In a sign, a gas glow light comprising a pair of spaced parallel plates of non-opaque material, means between said plates dividing the same into a plurality of intercommunicating gas passages, an electrically conductive gas in said passages, and a pair of slender rods constituting electrodes disposed in the space between said plates and spaced apart from each other in the plane of said plates with said intercommunicating gas passages disposed between said rods.

6. In a sign, a pair of sheets of non-opaque material sealed together at their edges and having spaced portions within the sealed edges forming a gas chamber enclosed by said sheets, an electrically luminescent gas in said chamber, a pair of spaced parallel electrodes secured between said sheets and extending across opposite ends of said chamber and means between said sheets dividing said chamber into a plurality of intercommunicating passages extending from one of said electrodes to the other.

7. In a sign, a plurality of gas glow lights, each light consisting of a pair of substantially rectangular sheets of non-opaque material sealed together around their outer edges and formed with a space therebetween extending from one side edge to the other and from one end edge to the other forming a chamber, an electrically conductive gas in said chamber and a pair of parallel electrodes, each of said electrodes having its opposite ends secured between said sheets, and terminating in electrical conductors accessible from outside said sheets and having its intermediate portion disposed within said chamber and extending along substantially parallel to and adjacent an end edge of said chamber, each of said lights adapted to be arranged with its side edges in juxtaposition to a side edge of a similar light and each end of each of said electrodes being adapted to be electrically connected to an end of an electrode on an adjacent similar light.

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