Aug. 10, 1937. A. S. MOFFAT 2,089,567

NEON GAS ILLUMINATING DEVICE

Filed May 18, 1935 2 Sheets-Sheet 1

Fig. 1.

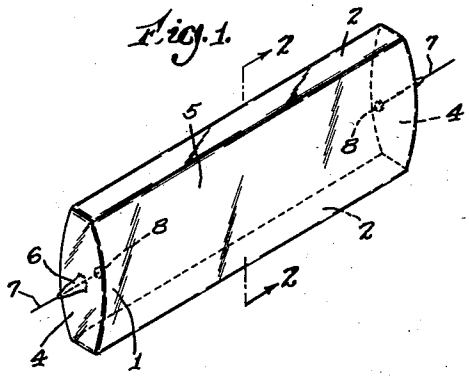


Fig. 2.

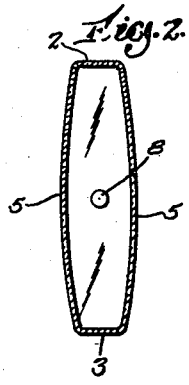


Fig. 3.

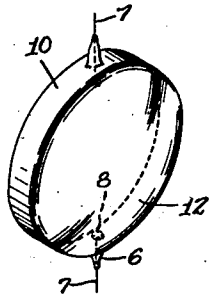


Fig. 4.

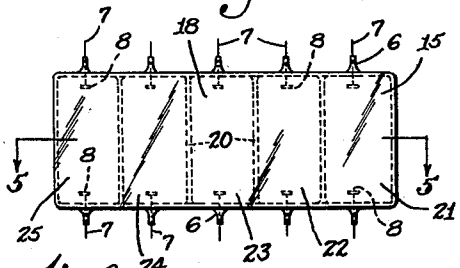


Fig. 5.

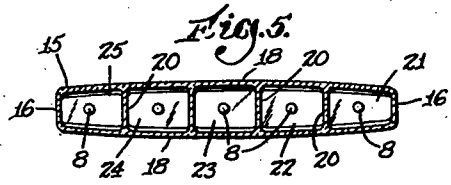


Fig. 6.

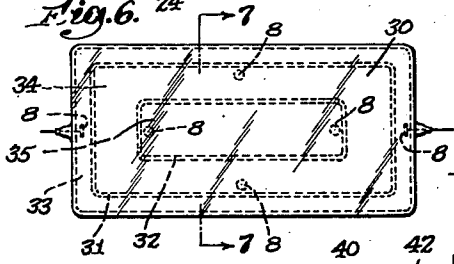


Fig. 8.

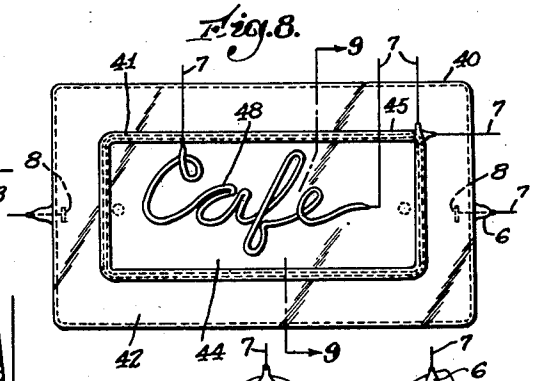


Fig. 7.

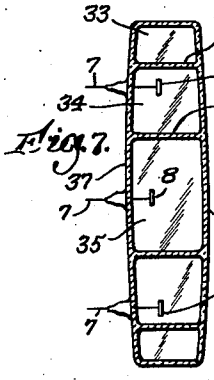


Fig. 9.

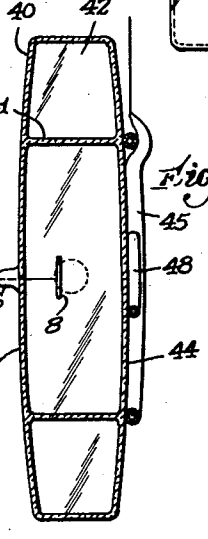


Fig. 10.



Fig. 11.



Inventor
Albert S. Moffat
by James R. Hodder
Attorney.

Aug. 10, 1937. A. S. MOFFAT 2,089,567

NEON GAS ILLUMINATING DEVICE

Filed May 18, 1935 2 Sheets-Sheet 2

Fig. 12.

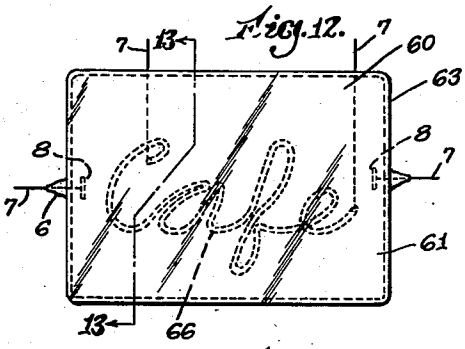


Fig. 13.

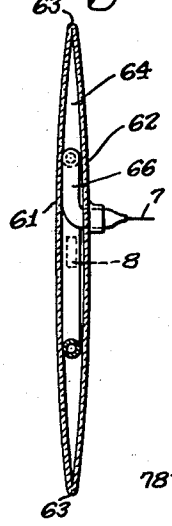


Fig. 15.

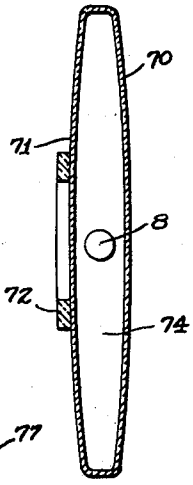


Fig. 14.

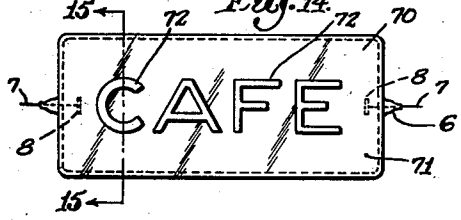


Fig. 17.

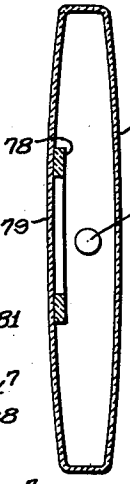


Fig. 16.

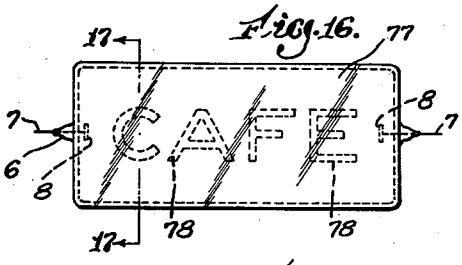


Fig. 22.

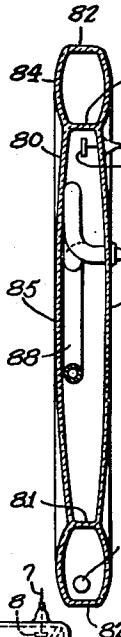


Fig. 18.

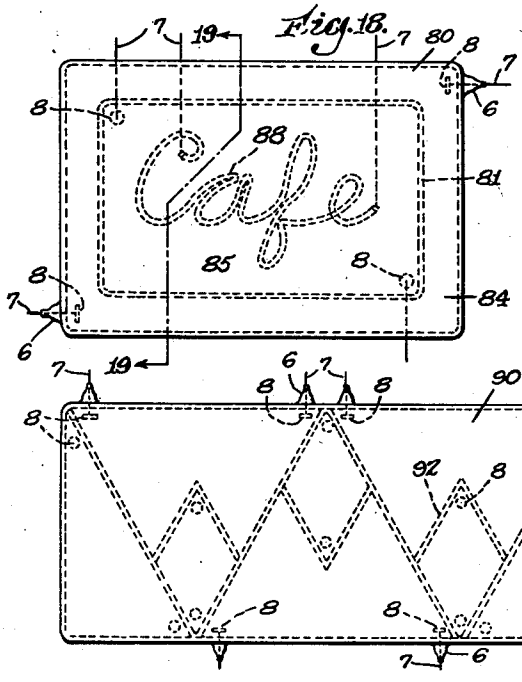


Fig. 19.

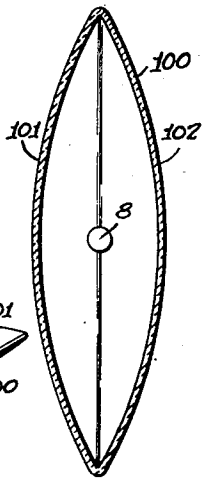


Fig. 21.

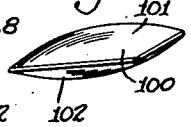


Fig. 20.

Inventor
Albert S. Moffat
by James R. Hodder
attorney

Patented Aug. 10, 1937 2,089,567

UNITED STATES PATENT OFFICE

2,089,567

NEON GAS ILLUMINATING DEVICE

Albert S. Moffat, Cambridge, Mass., assignor of one-half to Harvey C. Wheeler, Boston, Mass.

Application May 18, 1935, Serial No. 22,240

1 Claim. (Cl. 176—122)

My present invention is an improved neon gas illuminating apparatus primarily intended for utilization in advertising devices.

In the present use of neon gas for illuminating and advertising, it is customary and indeed essential to employ tubular devices to withstand the very considerable pressure on the exterior of the glass containing the neon gas because of the vacuum within the tube as well also to conserve the gas and effect the illumination.

In my present invention I have developed a novel and efficient method of utilizing the highly advantageous and desirous neon gas illumination in containers other than tubular, which may also be employed in combination with the usual neon tube illuminants where desired. Thus, I am enabled to produce attractive designs in a large, extensive, and wide variety of designs, forms, and combinations permitting the utilization of contrasting colors of neon gas, particularly important in advertising illumination although equally valuable for illuminating purposes broadly considered.

A feature of my invention is that I can prepare relatively large panels of neon gas illuminating capacity and, in fact, might fabricate standard types and sizes for border illumination as well as the masses of colors produced by a panel or the like, and I may build up series or sets of varying designs in combination with varying contrasting colored designs by means of my present invention.

From a construction as well as an advertising standpoint, this enables me to greatly simplify the expense in such panel or panel-like construction for neon gas illumination and, therefore, permits the same to be used commercially at relatively slight expense.

In carrying out my present invention I provide various shaped and sized panels constructed and arranged to resist the outside pressure and to contain either neon gas as the illuminant or neon tubes thereon, or a combination of both, thus giving an attractive illuminating and advertising feature not heretofore possible where neon tubes only were used.

Thus, for example, I may have a relatively large glass panel showing a neon gas border in a plurality of colors, or a plurality of borders, with lettering, words, or the like shown in the center by utilizing my invention, and a standard type of neon tube for the center lettering. This also gives the benefit of contrasting coloring where desired.

I am enabled to make these panels of relatively large size by arching the exterior walls to resist the atmospheric pressure, and may also form partitions therein to give pressure-resisting structure within the panel, which partitions will also serve to support contrasting and neon gas for illuminating effects.

Further features, details, and important advantages will be hereinafter more fully pointed out and claimed.

Referring to the drawings illustrating various modifications of my present invention,

Fig. 1 is a typical panel-like member adapted to contain neon gas and illuminate the same, to maintain a vacuum seal therein, and to resist atmospheric pressure on the exterior;

Fig. 2 is a cross-sectional view on the line 2—2 of Fig. 1;

Fig. 3 is a perspective view of a modification;

Fig. 4 is a plan view of a panel having reinforcing partitions which serve to strengthen the structure in pressure-resisting form and also to permit contrasting coloring to be employed;

Fig. 5 is a cross-sectional view on the line 5—5 of Fig. 4;

Fig. 6 is a plan view of an embodiment of my invention utilizing a plurality of partitions in a borderlike design;

Fig. 7 is a cross-sectional view on the line 7—7 of Fig. 6;

Fig. 8 illustrates a further modification utilizing reinforcing partitions for border effect, and containing neon tubes defining lettering, as a word or the like, in the center;

Fig. 9 is a cross-sectional view on the line 9—9 of Fig. 8;

Fig. 10 is a typical type of neon tube;

Fig. 11 is a modification for use as a corner border or the like;

Fig. 12 is a further modification showing a relatively large panel with the front and back arched to meet at the edges to give strength and capacity, and containing a standard type of neon tube for lettering;

Fig. 13 is a cross-sectional view on the line 13—13 of Fig. 12;

Fig. 14 is a plan view of a further modification showing lettering on the outside;

Fig. 15 is a cross-sectional view on the line 15—15 of Fig. 14;

Fig. 16 is a plan view showing the lettering on the inside;

Fig. 17 is a cross-sectional view on the line 17—17 of Fig. 16;

Fig. 18 shows a further modification showing in plan view a combined arch and partition reinforcing structure;

Fig. 19 is a cross-sectional view on the line 19—19 of Fig. 18;

Fig. 20 is a diagrammatic view illustrating a general design of paneling by reinforcing to contain contrasting colors;

Fig. 21 is a small diagrammatic view of a typical container, and

Fig. 22 is an enlarged cross-sectional view of the same.

Referring to the drawings, Figs. 1 and 2 illustrate a typical embodiment of the invention in a simple construction. This comprises the vacuum glass container designated generally at 1, and having substantially flat sides 2, 2, ends 4—4, and convex or curved, arc-shaped sides 5—5. This construction enables the container 1 to permit the air to be exhausted, neon gas supplied therein, the vacuum seal closing it, and electric conducting wires 7—7 led through the glass container at appropriate points, viz., the ends in Fig. 1, terminating in igniting electrodes 8—8 which ignite the neon gas and effect the illumination. The arc-shaped contour of the relatively broad surfaces 5—5 serves to impart appropriate strength to withstand the atmospheric pressure as the neon gas contained within gives practically no support, and the differential between the atmospheric pressure and the vacuum within is thus withstood by the arc-shaped contour.

In the form shown in Fig. 3, I have illustrated a typical type of bull's-eye construction, wherein the rim 10 and bull's-eye plate 12 withstand the pressure, a duplicate being on the back of same, or a sufficiently heavy plate of glass to stand up to the strain involved proportionally to the extent of the exterior pressure generated by the area within the rim 10.

In Figs. 4 and 5 I have illustrated a plate or panel 15 of substantial area having its ends 16 of suitable depth and the curved or convex panel surfaces 18 as shown, which are, furthermore, reinforced by interior partitions 20, thus producing a greatly strengthened structure as well as providing a series of recesses or chambers 21, 22, 23, 24, and 25, as herein illustrated for example, each of which may contain different or contrasting colored neon gas, and hence lights, each rendered incandescent by the igniting electrodes 8—8 for each division.

In Fig. 6 I have illustrated a still further modification wherein the panel designated generally at 30 has exterior partitions 31 and 32 dividing the areas 33, 34, and 35 into different and separate compartments which may contain differing or contrasting neon gas each rendered incandescent by the appropriate pair of igniting electrodes 8—8, as will be readily understood. Preferably, I also form the broad panel surfaces, even with these reinforcing partitions, with curved or arc-shaped form, as shown at 36 and 37.

In Fig. 8 I have illustrated a further form of panel 40, wherein the partition 41 is in the form of a border, giving a borderlike recess 42 with its pair of igniting electrodes 8—8. On the outside of one of the curved surfaces 43 or 44 is provided an illuminating neon tube 45 with its separate wires 7—7, and also on the outside of the surface 44 is the lettering or sign in the form of a separate tube 48 separately illumined by its pair of wires and igniting electrodes therein, and containing any contrasting neon gas desired or appropriate for the design accorded by the background and border construction illustrated.

In Figs. 10 and 11 I have illustrated somewhat a special design of border tubes as indicated at 50, and the corner or molding-like tube 51 to show the facility with which my present invention cooperates with a wide variety of designs, parts, panels, plates, tubes, and the like by which original and special designs can be readily assembled or built up, of suitable length and extending to fit in and be secured to the corners of the panel.

A further modification of my present invention is illustrated in Figs. 12 and 13, wherein I have formed my convex or arc-shaped strengthening structure entirely independently of ends, sides, or edge portions. An important advantage and feature of this concavo-convex exterior surface in a neon panel is that it affords ample room therewithin to receive the neon gas in sufficient quantities for illumination and may also receive a separate neon tube containing contrasting color.

In carrying out this feature of my invention, Fig. 12 illustrates a neon tube panel 60 formed entirely by the convex plates 61 and 62 meeting at their edges 63 in any form or design desired as round, square, oblong, rectangular, or otherwise, and providing space 64 therewithin to receive a supply of neon gas and igniting electrodes 8—8, and also a separate neon tube 66 which may be filled with contrasting colored gas and with its separate igniting electrodes and current-conducting wires, as will be readily appreciated.

In Figs. 14 and 15 I illustrate a still further modification wherein the panel 70 is of a construction substantially similar to that of Figs. 1 and 2 but has formed on the outside of one of the curved surfaces 71 convex and opaque or transparent glass lettering 72, relying upon the background of the neon illuminating gas contained within the interior 74 of the panel 70 to effect the name, advertising, or other feature desired.

In Figs. 16 and 17 a similar construction is shown wherein the container 77 has the fixed glass lettering 78 within the surface of the convex sides 79 of the panel 77, as will be readily appreciated on referring to the drawings. This gives a smooth exterior surface and preserves the lettering 78 from damage or accidental displacement.

In Figs. 18 and 19 I have illustrated a still further modification wherein the panel 80 is formed with a partition 81, here shown as in the form of a border, and with a series or set of curve, convex, or arc surfaces from the ends 82 to the partition 81, as shown at 84, and thence between the boundaries of the partition 81, as shown at 85 and 86. In this construction, also, the convex glass lettering may be used or the separate neon tubes either outside or inside, the form being herein illustrated showing the neon tube 88 contained within the inner side of the central chamber and with its separate wires 7—7 extending thereto.

In Fig. 20 a still further modification is shown wherein the panel 90 is provided with a large number of partitions 91, 92, and the like, giving any desired design and each partition forming a separate neon gas-receiving chamber, preferably to utilize contrasting coloring therein, and each with its pair of igniting electrodes 8—8 as shown, and as will be readily understood. A wide range and variety of designs may thus be formed within the area of a panel 90 either by a set and series of partitions or by the separate neon tubes contained therein, or by both.

Figs. 21 and 22 illustrate a still further form 100 with convex surfaces 101 and 102 meeting entirely around their edges without any substantial straight ends or edge portions, such as 2—2 of Figs. 1 and 2, and 16—16 of Fig. 5; Fig. 22 illustrating same in somewhat enlarged contour to show the interior capacity permitted by this type of construction.

It will be appreciated that my invention permits a wide range of design and facility of combination, and, so far as I am advised, it is broadly new to devise a panel or the like of substantial area for use with neon gas illumination, and I wish to claim this feature broadly.

My provision of reinforcing partitions and of reinforcing convex or arc construction enables the use of neon gas illumination in a greater range of utility than has heretofore been possible when simply employing neon tubes.

Furthermore, the facility of design and cooperation with neon tubes is a most important feature, and I wish to claim such combination broadly herein.

I claim:

The improved method of neon gas illumination, which consists in providing non-tubular panel-like containers of relatively large area and presenting a substantially rectangular appearance of greater length and breadth than depth, constructing said panel-like containers with a convex exterior surface in combination with a plurality of integral partitions, dividing said panel-like containers into separate and complete gas-containing portions of the panel-like containers, the partitions and convex exterior cooperating to withstand atmospheric pressure, each separated section being provided with current-conducting means to illuminate gas contained therein, whereby a complete panel-like neon gas illuminating device is provided with the combined area of all partitioned sections presenting a panel-like appearance.

ALBERT S. MOFFAT.