

LE MOINE F. RANDOLPH.
ILLUMINATED SIGN.
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1,190,459.

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Fig. 1.

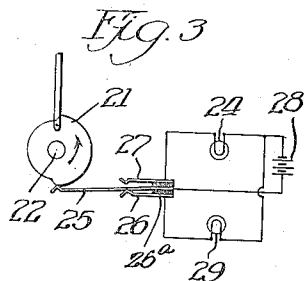
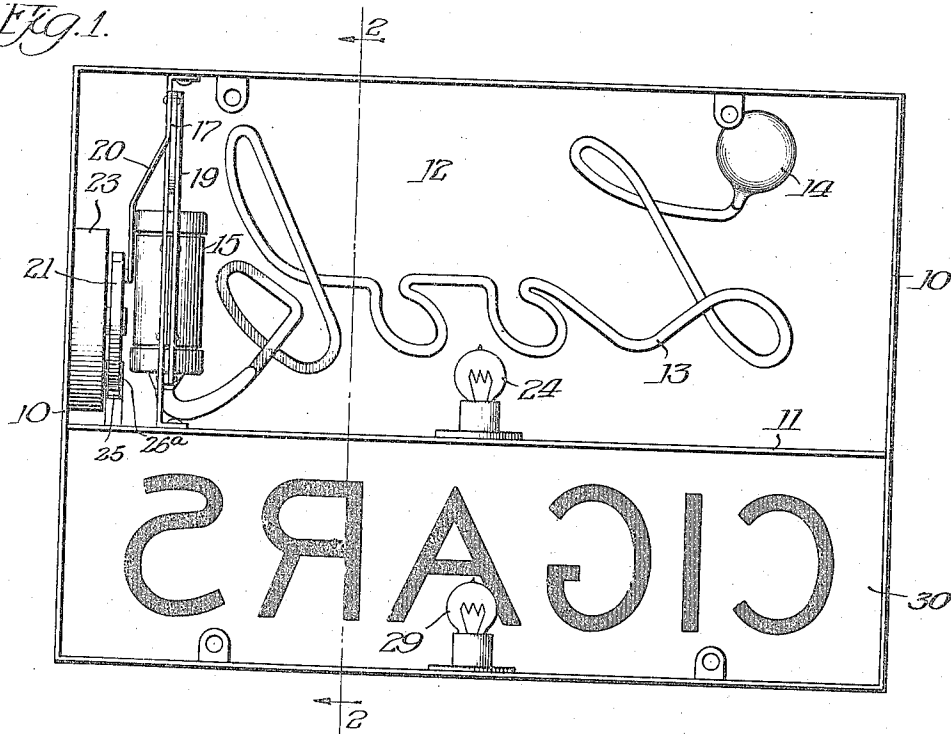
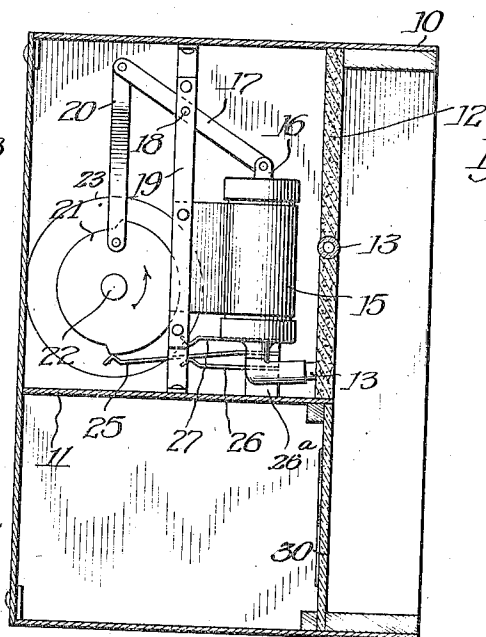


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

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ILLUMINATED SIGN.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, LE MOINE F. RANDOLPH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Illuminated Signs, of which the following is a specification.

My invention relates to an improved form of illuminated sign in which the advertising matter is traced through an opaque screen in the form of a continuous passage or channel for the flow of opaque fluid, so that when the passage is filled with the fluid the advertising matter or wording is not visible but becomes visible by the withdrawal of the fluid from the passage as a result of a source of illumination placed behind the screen.

In carrying out my invention I find that the best effect is secured by filling the passage with the opaque fluid while the light is extinguished and then with the light turned on, withdrawing the fluid from the passage in the direction of tracing or writing the words or advertising matter comprising the sign so that the effect is one of tracing or writing the sign with a continuous band or line of bright light through the opaque screen.

In carrying out my invention I find that it is convenient to form the passage for the opaque fluid by means of a transparent tube bent into the shape of the letters or characters of the sign, which tube thus formed is located in corresponding apertures in the opaque screen or in alinement with corresponding transparent portions of said screen. The mechanism employed for controlling the flow of the fluid and the illumination of the sign will appear more fully from the description of the drawings, in which—

Figure 1 is a back view of the complete mechanism, the back wall of the casing being removed to disclose the parts contained therein; Fig. 2 is a sectional view of the parts shown in Fig. 1, taken along the line 2—2; and Fig. 3 is a diagrammatic drawing showing the circuit connections employed in connection with the illuminating devices.

As shown in Figs. 1 and 2, the mechanism is mounted in a casing 10 divided into upper and lower compartments by a horizontal partition 11. All of the walls of the casing are preferably opaque, with the exception of the front wall, which is constructed in a manner to be described.

The front wall 12 of the upper compartment is formed of opaque material through which an aperture or path is cut conforming with the letters or characters of the sign indicated at 13, and in the aperture or slot thus formed a continuous transparent tube, preferably of glass or celluloid, is disposed, as indicated at 13 in Fig. 2. One end of the tube is connected with a bulb 14, of elastic material, such as rubber, and the other end of the tube 13 is connected by suitable pipe connections with the lower end of a pump 15 having a piston operated by the rod 16, which rod is connected by a lever 17 pivotally supported at 18 from a bracket 19, the other end of the lever articulating with the connecting rod 20 pivotally secured to a cam disk 21 carried by the end of a shaft 22, which is given rotation in the direction indicated by suitable motor mechanism 23.

The motor mechanism employed is preferably an electric motor of a construction adapted to be operated from the electric conductors supplying the current for illuminating the sign, and as this motor mechanism forms no particular part of the present invention, a detailed construction of the same is not specifically shown, and described, since any well known motor mechanism adapted for the purpose may be employed.

The bracket 19 supporting the lever 17 is secured to the top wall and the partition 11 of the casing, and this bracket also serves, as indicated in Fig. 2, to support the pump 15. An electric lamp 24 is supported in the upper compartment of the casing, preferably upon the partition 11, to illuminate the sign from the rear. The illumination of the lamp 24 is controlled, as indicated in Fig. 3, by switching mechanism operated by the cam disk 21 as follows: A switch spring 25 rests upon the edge of the cam disk 21, and when this spring rests upon the portion of the cam of larger diameter it is brought into contact with a second switch spring 26, the switch

spring 25 when resting upon the portion of the cam disk 21 of smaller diameter being removed by its spring action from engagement with the switch spring 26 and brought into contact with the switch spring 27. The three switch springs 25, 26 and 27 are held at their ends in the insulating support 26^a. The switch spring 27 is connected with one terminal of the electric lamp 24, the other terminal thereof being connected with one terminal of a source of electricity, such, for example, as a battery 28, the other terminal of said source of electricity being connected with the switch spring 25. The switch spring 26 is connected with one terminal of the electric lamp 29, the other terminal of which is connected with the source of electricity in the manner indicated, so that when the switch spring 25 is in the position indicated in Fig. 3 the lamp 29 is lighted and when the switch spring 25 is in its alternate or upper position the lamp 29 is extinguished and the lamp 24 is lighted. The lamp 29 is located in the lower compartment of the casing, preferably upon the bottom wall thereof so as to illuminate a second sign 30, formed preferably of transparent or translucent material having thereon opaque letters or characters forming the desired advertising matter of this portion of the device, although of course this relation may be reversed if preferred.

When the piston connected with the rod 16 is in its lower position, as indicated in Fig. 2, the tube 13 is filled with an opaque fluid, such, for example, as mercury, or other fluid that will prevent the passage thereof of light, and for this condition the air which would otherwise fill the tube 13 is compressed in the bulb 14 against the resilient action thereof, so that when the pump piston rod 16 is subsequently raised, the opaque fluid is gradually withdrawn from the tube 13 due to gravity and to the pressure of the air in the bulb 14, and the effect produced by the lighted lamp 24 back of the opaque wall 12 is that of writing the sign in a band or line of bright light, since the opaque fluid is withdrawn in the natural direction of writing the letters or characters of the sign. It will be understood that for some constructions it is not necessary to have the air chamber 14 made of resilient material but that by suitably proportioning the same it may be constructed of rigid material, as, for example, metal, and that the air forced into it by the filling of the tube 13 will by its compression subsequently drive the opaque fluid from the tube 13 when the pump piston rod is drawn out from the pump.

The pump is so proportioned that a single up-stroke of its piston and piston rod will completely remove the fluid from the tube

13, thus completely illuminating the sign in the front wall of the upper compartment, and when this up-stroke of the pump has been completed the cam 21 moves the switch spring 25 from engagement with the switch spring 27 and into engagement with the switch spring 26, thus leaving the upper compartment in darkness, while the down-stroke of the pump again fills the tube 13. During this filling operation the lamp 29 is lighted to illuminate the sign in the front wall of the lower compartment of the casing. In this way the effectiveness of the sign as a whole is increased by alternately illuminating the two portions of the sign rather than leaving the entire sign in darkness during the filling of the tube 13. The reason for leaving the upper portion of the sign in darkness during the filling of said tube is that the tube is filled in the opposite direction to the natural writing of the letters or characters forming the upper portion of the sign, and thus if the upper portion of the sign were illuminated during this interval the effect produced would not be an agreeable one to the eye of the spectator.

It will be understood that the switching mechanism referred to may be constructed in any desired manner for accomplishing the indicated result, and mounted in any desired manner in the casing, a convenient way of mounting the same being indicated in Fig. 2, in which the switch springs are insulated from each other and mounted upon the partition 11. It will also be understood that the continuous passageway for the opaque fluid may be formed in any other equivalent way instead of by using a tube.

From the above description it will be understood that by my invention I have not only produced an improved mechanism for writing or tracing an illuminated sign, much superior to that produced by the use of a number of electric lamps which are successively lighted since by my invention at the beginning of the writing of the sign the sign is entirely dark, and then during the writing a continuous path of light is produced in the conformation of the letters or characters of the sign in the same manner that the letters or characters would be written ordinarily instead of having the sign composed of a succession of illuminated points, as results when a plurality of electric lamps is used to approximate the outlines of the letters or characters of illuminated signs.

While I have shown my invention in the particular embodiment herein described, I do not, however, limit myself to this construction, as I may employ equivalent constructions without departing from the spirit of my invention, as set forth in the appended claims.

What I claim is:

1. In an illuminated sign, the combination of a casing having an opaque wall through which a light-transmitting path in the form of the letters or characters of the sign is formed, a continuous translucent tube shaped in conformity with said letters or characters, a closed pressure-receiving chamber connected with one end of said tube, a pump connected with the other end of said tube, and an opaque fluid filling the tube for one condition of the pump and removed from the tube for another condition of said pump, whereby operation of the pump alternately fills the tube with said fluid and removes said fluid from the tube.

2. In an illuminated sign, the combination of a casing having an opaque wall through which a light-transmitting path in the form of the letters or characters of the sign is formed, a continuous translucent tube shaped in conformity with said letters or characters, a pressure-receiving chamber connected with one end of said tube, a pump connected with the other end of said tube, an opaque fluid filling the tube for one condition of the pump and removed from the tube for another condition of said pump, whereby operation of the pump alternately fills the tube with said fluid and removes said fluid from the tube, the removal of the fluid from the tube being in the direction of the tracing or writing of the sign, a lamp in the casing for illuminating the sign, and mechanism for extinguishing the lamp during the filling of the tube with said opaque fluid.

3. In an illuminated sign, the combination of a casing having an opaque wall through which a light transmitting path is formed in the shape of the letters or characters of the sign, a continuous translucent tube shaped in conformity with said path, a pressure receiving chamber connected with one end of said tube, a pump connected with the other end of said tube, an opaque fluid filling the tube for one condition of the pump and removed from the tube for another condition of said pump, whereby operation of the pump alternately fills the tube with said fluid and removes said fluid from the tube, means for actuating said pump, an electric lamp for illuminating the sign from a suitable source of current, switching mechanism for controlling the illumination of the lamp, and a cam operated by said pump actuating means for operating said switching mechanism to light the lamp during the emptying of the tube and darken the lamp during the filling of the tube, the emptying of the tube being in the direction of the tracing or writing of the sign.

4. In an illuminated sign, the combina-

tion of a casing having an opaque wall 65 through which a light transmitting path is formed in the shape of the letters or characters of the sign, a continuous translucent tube shaped in conformity with said path, a pressure receiving chamber connected 70 with one end of said tube, a pump connected with the other end of said tube, an opaque fluid filling the tube for one condition of the pump and removed from the tube for another condition of said pump, whereby operation of the pump alternately fills 75 the tube with said fluid and removes said fluid from the tube, a motor-driven shaft, mechanism for operating the pump from said shaft, an electric lamp for illuminat- 80 ing the sign from a suitable source of current, switching mechanism for controlling the illumination of the lamp, a cam operated by said shaft for actuating said switching mechanism to light the lamp dur- 85 ing the emptying of the tube and darken the lamp during the filling of the tube, the emptying of the tube being in the direction of the tracing or writing of the sign, a second compartment in the casing, an 90 illuminated sign forming the front wall of said second compartment, an electric lamp in said second compartment, and circuit connections from said switching mechanism for illuminating the lamp in the second com- 95 partment when the other lamp is extinguished and for extinguishing the lamp in the second compartment when the other lamp is lighted.

5. In an illuminated sign, the combina- 100 tion of a casing having an opaque front wall through which a continuous slot is made in the form of the letters or characters constituting the sign, a translucent tube formed to fit said slot and located 105 therein, a pressure receiving chamber connected with one end of said tube, an opaque fluid for filling the tube, and pumping mechanism connected with the other end of the tube for alternately filling and emptying 110 said tube, the emptying of the tube being in the direction of the writing or tracing of the sign.

6. In an illuminated sign, the combina- 115 tion of a casing having an opaque front wall through which a continuous slot is made in the form of the letters or characters constituting the sign, a translucent tube, formed to fit said slot and located 120 therein, a pressure receiving chamber connected with one end of said tube, an opaque fluid for filling the tube, pumping mechanism connected with the other end of the tube for alternately filling and emptying said tube, the emptying of the tube being 125 in the direction of the writing or tracing of the sign, motor mechanism for operating the pumping mechanism, an electric

lamp for illuminating the sign, and switching mechanism operated by the motor mechanism for lighting the lamp during the emptying of the tube and extinguishing the
5 lamp during the filling of the tube.

7. In an illuminated sign, the combination of a continuous translucent tube formed into characters or letters, means for alternately filling and withdrawing from one

end of said tube an opaque liquid, said tube 10 adapted to allow the passage of light through the portion of the same free from said opaque liquid, and means adjacent to said tube for preventing the passage of light.

In witness whereof, I hereunto subscribe my name this 2nd day of April, A. D., 1915.

LE MOINE F. RANDOLPH.