

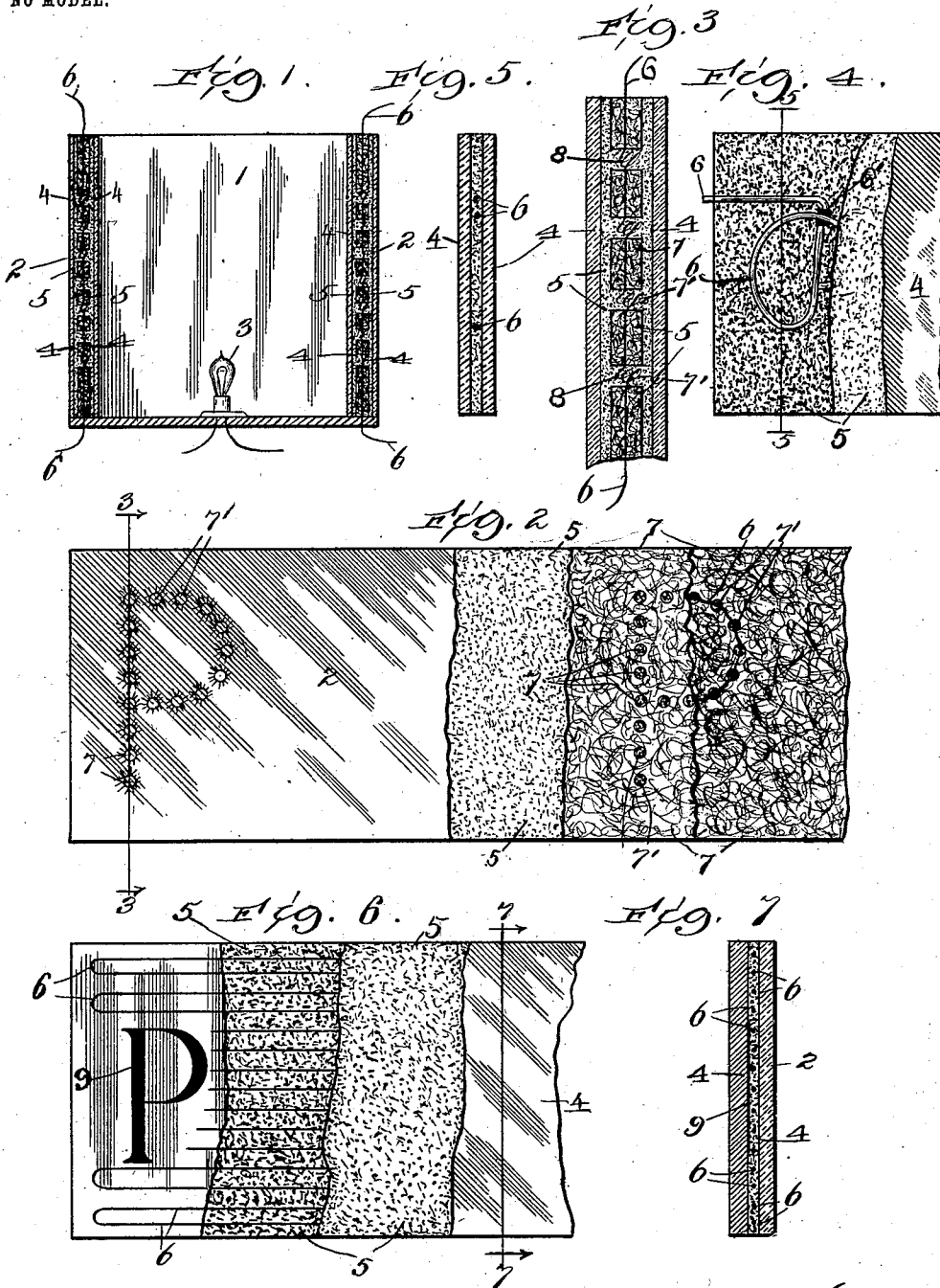
No. 728,731.

PATENTED MAY 19, 1903.

C. E. LEE.
ILLUMINATED SIGN.

APPLICATION FILED OCT. 6, 1902.

NO MODEL.



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES EUGENE LEE, OF CHICAGO, ILLINOIS.

ILLUMINATED SIGN.

SPECIFICATION forming part of Letters Patent No. 728,731, dated May 19, 1903.

Application filed October 8, 1902. Serial No. 126,066. (No model.)

To all whom it may concern:

Be it known that I, CHARLES EUGENE LEE, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Illuminated Signs; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in illuminated signs, and more particularly in changeable or disappearing illuminated signs, in which the letters or symbols composing the matter to be displayed may be caused to appear or disappear at pleasure.

The object of my invention is to provide a sign of the character described which will be simple and cheap in construction and efficient in operation.

To these ends my invention consists in embedding in a mass of material opaque at normal atmospheric temperatures and transparent or translucent at higher temperatures a heat-conductor capable of being heated from some exterior source of energy-supply and in so arranging said conductor that its thermic effect causes the surrounding material to become transparent or translucent, so that when light is transmitted through the transparent portion of the material it will bring into view symbols or letters constituting the sign to be displayed.

My invention is capable of various embodiments, and in the drawings I have illustrated the conductor as an electrically-conductive wire filament, showing several specified arrangements thereof.

In the drawings, Figure 1 is a central vertical section of a transparency constructed in accordance with my invention. Fig. 2 is an elevation of one side thereof, broken away on several planes to illustrate its composite construction. Fig. 3 is a transverse vertical section on line 3 3 of Fig. 2. Fig. 4 is a broken elevation of a fragment of a sign, illustrating another embodiment of my invention. Fig. 5 is a transverse vertical section on line 5 5 of Fig. 4. Fig. 6 is a view similar to Fig. 2, showing another embodiment of the said invention. Fig. 7 is a transverse vertical section on line 7 7 of Fig. 6.

In the drawings, 1 represents a box-like

casing having sides 2 2 constructed in accordance with my invention, said box being internally provided with a lamp 3 or other suitable illuminating means.

Each of the sides 2 2 of the box is composed of backing-sheets 4, of glass or other transparent material, including therebetween a layer of wax or other suitable material 5, opaque in ordinary atmospheric temperatures, but which becomes fluid and transparent when raised to a higher temperature, said wax layer having embedded therein a conducting-wire 6, adapted to become heated upon the passage therethrough of a suitable electric current.

In Figs. 2 and 3 the conductor 6 is shown as embedded in a layer of cardboard, asbestos, or other suitable opaque material 7, having portions rendered permeable to light by perforations 7' therein, so disposed as to form letters or symbols. In such perforations the wire 6 may be looped or coiled, as indicated at 8. The opaque sheet 7 is preferably coated with wax, as indicated at 5, and the apertures 7' therein are filled with wax. Thus when the sign is cooled to an ordinary temperature at which the wax becomes hard it presents a solid opaque face of uniform appearance, through which no light passes. If, however, current be passed through the wires 6, the heating effect thereof will at once become manifest upon the wax at the points at which the wire contacts therewith—that is to say, in the apertures or perforations in the asbestos layer—and light thrown upon the rear of the sign, as by the lamp 3, will be transmitted through the now transparent perforations 7', so that the sign will gradually appear in illuminated outline. As soon as the current ceases to flow through the wire 6 the wax begins to harden and gradually though quickly the sign becomes opaque again.

In Figs. 4 and 5 the wire 6 is shown as arranged to represent the outline of a letter and is embedded directly in the wax layer 5, inclosed between the glass sheets 4. Wherever the wires cross in their contortion suitable insulation is interposed between them, as indicated at 6'. If current be passed through the wire 6, the heating effect of the wire will melt the wax in immediate proximity thereto and light will be transmitted only

through the portion of the wax immediately surrounding the wire, thus forming in the wax layer transparent lines contorted to form letters or signals.

5 In Figs. 6 and 7 the letters to be displayed are shown as painted or otherwise permanently impressed upon one of the backing-sheets, as indicated at 9, and the entire surface of such sheet is coated with the wax 5, the
10 coating having embedded therein a network of wires 6, arranged to render transparent the entire wax coating when current is transmitted through the wires. Thus the lettering 9 will be hidden from view as long as
15 the wax remains opaque and exposed when the wax becomes transparent under the influence of heat generated in the wire 6.

It will be apparent that many variations might be made in the specific embodiment of
20 my invention, those herein described being selected as merely illustrative. For instance, the wax or the glass backing, or both, might be made of various colors upon various parts of the sign, so that the light transmitted
25 therethrough will be tinted. Other material than wax might also be employed, the requirement being that it be more or less opaque when under temperatures corresponding to ordinary atmospheric conditions and trans-
30 parent when heated to a greater degree.

I have found that a supersaturated solution of camphor in dilute alcohol may be successfully employed for this purpose when it is desirable to use a liquid in place of the
35 solid wax.

Signs made in accordance with my invention are particularly applicable to show-window displays and afford a novel variation of the flashing signs commonly in use. When
40 current is passed through the conducting-wire and withdrawn at intervals, the letters gradually appear and brighten as the wax melts and fade out and disappear in like manner as the wax hardens.

45 While I have herein described an energized electric conductor as a convenient and operative heating agency, I do not desire to limit myself to its use as the heating means in my novel sign.

Having described my invention, what I 50 claim as new and useful, and desire to secure by Letters Patent of the United States, is—

1. A sign of the character described comprising a backing-sheet of transparent material, a body of a substance normally opaque 55 but transparent when heated, supported thereby, and an electrical conductor adapted to become heated when an electric current is passed therethrough, embedded in said body.

2. In a sign of the character described, a 60 body of a substance normally opaque but transparent when heated, and an electrical conductor embedded in said substance adapted to heat the portions thereof in proximity to such conductor when a current of electric- 65 ity is passed therethrough, said conductor being so disposed that the portions of the embedded substance heated thereby form symbols to be displayed.

3. In a sign of the character described, a 70 body of material normally opaque but transparent when heated, and means permanently associated with said material for heating portions of the same, said portions to be heated being disposed to form symbols to be dis- 75 played.

4. In a sign of the character described, a pair of glass plates, a layer of wax interposed between said plates, and a conductor embedded in said wax, said conductor being ar- 80 ranged to heat portions of the wax to form the outlines of symbols to be displayed.

5. In a sign of the character described, a sheet of material permeable to light in portions thereof to form symbols visible when 85 light is passed therethrough, a covering for said sheet composed of a substance normally opaque but transparent when heated, and a conductor embedded in said covering to heat the same when said conductor is heated. 90

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

CHARLES EUGENE LEE.

Witnesses:

FORÉE BAIN,
MARY F. ALLEN.