

Nov. 26, 1929.

R. M. ANDERSON

1,737,290

ANIMATED SIGN

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Fig. 1.

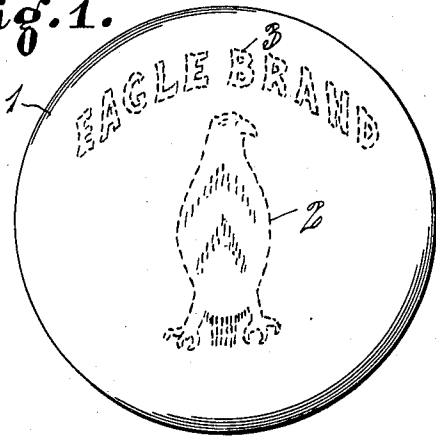


Fig. 2.

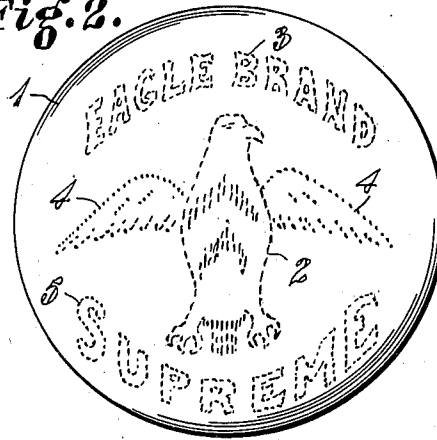


Fig. 3.

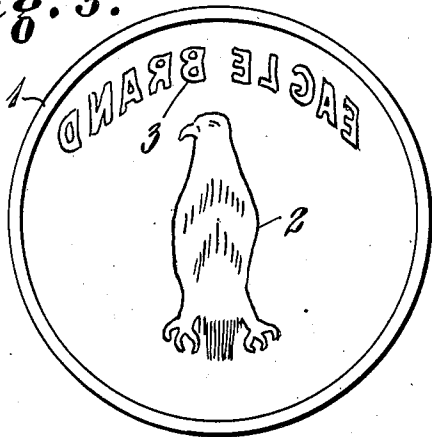


Fig. 4.

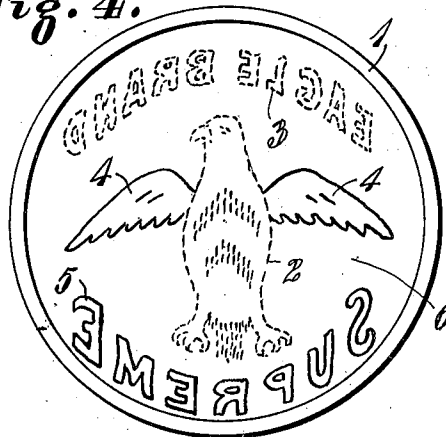


Fig. 5.

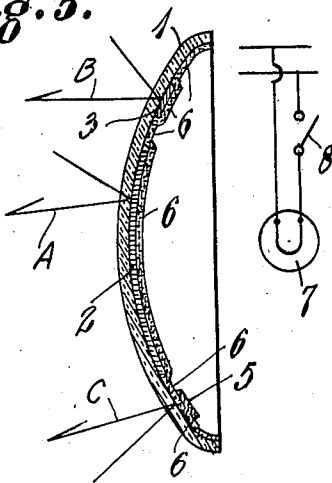


Fig. 6.

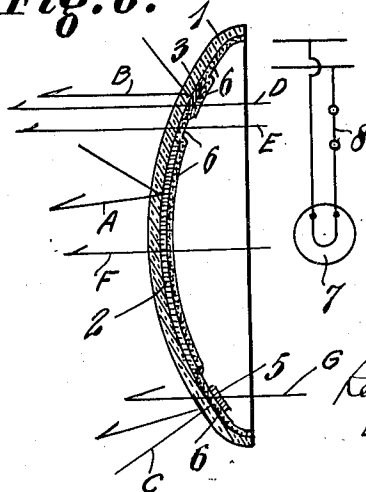
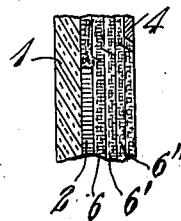


Fig. 7.



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## UNITED STATES PATENT OFFICE

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## ANIMATED SIGN

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My invention relates to illuminated signs, and its object is to afford an animation or changeable appearance in such signs by very simple means economically produced on a commercial scale, both as regards the sign surface and the source of illumination, and which affords a maximum durability of the sign surface. Other objects will appear in the source of the following description.

I accomplish the above objects by the device illustrated, for example, in the accompanying drawing, in which—

Figure 1 is a front view of a sign in one stage of its operation;

Fig. 2 is a similar view of the sign in the next stage of its operation;

Fig. 3 is a rear view of the sign at the end of the first stage of its production;

Fig. 4 is a similar view of the sign in its finished condition;

Fig. 5 is a vertical section of the sign together with diagrammatic representations of its light source and its operation in the stage of operation indicated in Fig. 1;

Fig. 6 is a similar view representing its stage of operation indicated in Fig. 2; and

Fig. 7 is a fragmentary enlarged section at right angles to the one of Figs. 5 and 6, affording a more detailed disclosure of the operative surface structure of the sign.

The sign element illustrated as embodying my invention is of a well known type now supplied for illuminated "still" displays; a large use of these being for automobile filling station signs, advertising various brands of gasoline or other automotive supplies, although it will be understood that such signs are useful for, and are to some extent being used for, advertising and display in various other lines of business. Such a sign element is of transparent glass of concavo-convex formation; the convex side being the outer or front side, exposed to view. The concave or rear side receives the display material, which is seen from the front either by reflection of daylight or of artificial light, usually incidentally available as street or store lights. For night display, however, the display material, which is translucent, is chiefly seen by light trans-

mitted through this translucent material and through the transparent glass element itself, from an artificial light source, such as an electric lamp, set behind the element. In practice, the glass element forms the front of a casing which encloses the lamp; and often two such elements are provided in a casing, facing in opposite directions and both illuminated by the same light source within the casing. All of the above structure is well known; but so far as I am aware, always makes up a "still" or non-animated sign, usually with steady lighting from within at night and with no variable appearance as seen by daylight. Or, if intermittently lighted from within, there is no variation other than in degree of illumination.

Sign elements of the character above described have been made with translucent paint as the display material, which, confined to the rear or inner surface, is protected from the weather; the exterior or front surface being merely smooth glass unaffected by weather conditions except for the need of occasional cleaning, which is readily done. A further improvement in such sign elements, which also is well known, is the provision of the display material on the rear side in the form of ceramic particles, usually powdered glass, which is made into a paste and stenciled onto the rear smooth surface of the element, upon which the element and this display material thereon are subjected to heat such as to fuse the display material onto the back of the glass in a continuous translucent coating. Various colored displays are thus provided by using ceramic particles of various colors, thus applied to various areas of the back of the glass; or, in some cases, the colors may overlap, or one color may overlies another, merely incidentally to convenience in applying the materials to the glass, as in any ordinary sign painting. In no instance, so far as I am aware, has there been any arrangement of the contrasting display materials, either as to relative position on the glass or as to composition or combination of the materials, intended for or capable of producing, with the aid of intermittent lighting from the rear of the element, any

animation or other changeability as seen from the front.

These all-ceramic, fused-together combinations have an especial merit in that they are, aside from actual breakage, practically non-deteriorating; and when of the concavo-convex form are hardly at all breakable; and are very economically manufactured both as to formation of the element itself and as to the application of the display materials thereto as before described. My present invention avails of all of this merit now well known in "still" signs of this character, in the production of a changeable or animated sign, with very little additional expense of production of the sign element itself or of the lighting means to operate in conjunction therewith; the improvement consisting in the selection and arrangement of the display materials applied to the back of the transparent element or glass, whereby a portion thereof, although visible by the transmitted light supplied from the back, is masked in respect of reflected light coming from the front, so as to afford variation of display, as seen from the front, by intermittent supply of light from the back along with continuous supply of light, either daylight or artificial light, from the front.

I have chosen a simple example of my improved sign, illustrating animation of a figure and also intermittent display of reading matter; the two stages of operation of which are indicated in Figs. 1 and 2. In Fig. 1 the transparent element 1 is viewed from the front by exterior lighting, displaying the representation 2 of an eagle with folded wings, and above this the reading matter 3. In Fig. 2 is shown the same element 1 viewed from the front by the interior lighting in addition to the exterior lighting, which latter now becomes relatively of little effect, so that the outstretched wings 4 of the eagle 2 are represented, and the additional reading matter 5, below the eagle, appears. As all of the display material is on the back of the element 1, it is, in both Figs. 1 and 2, indicated by dotted lines; that appearing in both stages being represented by long dots, while in Fig. 2 the additionally appearing matter is represented by very short dots. It will be understood, however, that in either stage, the actual appearance would be full lines and shades as in any sign.

The displays 2 and 3 appearing by reflected light in Fig. 1 are placed immediately upon the rear surface of the element 1 as seen in Fig. 3. Then a background or field display 6 is applied over the rear surfaces of these displays 2 and 3 as well as immediately upon the surrounding portions of the element 1; this display 6 (Fig. 4) being indicated in that the displays 2 and 3 become dotted lines in Fig. 4 instead of solid lines before covering by this display 6 in Fig. 3.

Upon the back of this background or field display 6 are applied the wing displays 4 and the added reading matter display 5, seen in full lines in Fig. 4. Upon the composition or color of this field or background display 6, relatively to the composition or color of the displays 4 and 5 applied to the back thereof, depends the masking of these later applied displays 4 and 5 against reflection forwardly, through the transparent element 1, of light coming from the front or exterior through this element 1, and the permission of transmission by these displays 4 and 5 of light from the rear of these displays 4 and 5, out through the element 1 forwardly. This composition or color of the field or background display matter 6 will depend, in each case, upon the composition or color of the display matter 4 and 5 which it controls; being determined by tests and trials in each case, and, after some experience in the making of the signs, being dictated by empirical, approximate rules learned from such experience; such accomplishment, in the light of my invention, being readily acquired by artists and workmen skilled in the art of making signs of this character. In view of this, I deem it sufficient to set forth one color combination which, among many others, I have found to accomplish the object of my invention. In this combination which I set forth merely as an example, to which I am not to be understood as being limited herein, the displays 2 and 3 immediately on the back of the glass 1 may be blue or red, or, for example, the eagle 2 may be blue, while the reading matter 3 thereabove may be red. If the field or background matter 6 is of a cream color or yellow, the display matters 4 and 5 on the back thereof may be gray or red, or, for example, the wings 4 may be gray, and the reading matter below the eagle may be red.

I have indicated such a combination of colors in the sectional views of Figs. 5, 6 and 7, where the color patches are represented as of exaggerated thickness hatched with the appropriate indications of color, except that the gray wing matter 4 (Fig. 7) is shown as purple for lack of a conventional representation for gray. Also, in Fig. 7, several layers of the field or background matter 6, 6' and 6'' are indicated; it being necessary to provide more than one coating of this matter in most cases, to produce the required masking effect. In Figs 5 and 6 an incandescent lamp 7 represents the rear or interior light source, with a switch 8 to provide the intermittent lighting of this lamp. The switch 8 being open in Fig. 5, the sign is seen only by reflected light from the front, as indicated by the direction lines. Thus, light indicated by line A strikes display patch 2, indicated as blue and immediately at the rear of glass 1, and is reflected forwardly.

Similarly, light indicated by line B strikes display patch 3, indicated as red, and is reflected forwardly. Light indicated by line C strikes field or background display patch 6 in front of additional display patch 5, indicated as red, and patch 6, yellow as indicated, reflects this light forwardly as a yellow, without transmitting forwardly any light ray impinging upon the rearwardly lying red patch 5, which thus is masked in respect of this light coming from the front or exterior of the sign. In Fig. 6, the switch 8 being closed, the lamp 7 is lighted, and light therefrom is transmitted through all the translucent color patches, as at D through both patches 6 and 3, at E through patch 6, at F through both patches 6 and 2, and, which is most significant, at G, through both rearwardly lying and formerly masked patch 5 and the formerly masking patch 6, thus displaying the additional matter incident to the interior illumination. The reflections A, B and C continue during this rearward illumination, as indicated in Fig. 6, but become negligible relatively to the transmitted light from the rear. The result is that with the lamp 7 extinguished as in Fig. 5 the display is as in Fig. 1, and with the lamp 7 lighted as in Fig. 6, the display is as in Fig. 2. In practice, the switch B is replaced by some automatically acting device for periodically making and breaking the circuit; that which I use being the very simply constructed thermally acting "flasher" plug now well known, which will provide alternate intervals of lighting and extinguishment of the lamp 7 of about two seconds' duration.

When both the element 1 and the display materials 2, 3, 4, 5 and 6 are ceramic, preferably glass, the combination which I have used as an example just above, may be produced with one firing; that is, all the materials may be applied in the order described, and then all fused onto the element 1 at the same time. In other cases it is necessary to fuse only single layers of material onto the structure at a single firing; as for instance the immediately applied layers 2 and 3, then the background layer 6, and finally the rear-most layers 4 and 5. Or in some cases the three firings thus necessary may be reduced to two; as for instance, the immediately applied layers 2 and 3 and the background layer 6 at one firing, and then the rearmost layers 4 and 5 at a second firing. And, as before noted, the field, background or masking layer 6 may have to be increased to a plurality of layers, as 6, 6' and 6'' in Fig. 7, each of which may have to be fused on separately; or all three of these may be fused at once, either along with the immediately applied layers 2 and 3, or at a separate firing. These matters are largely determined by the colors used, as well as the skill of the workman in this now rather well developed art of making all

ceramic translucent multicolored signs; and my invention lies in the development of the principle of controlling the composition and arrangement of the various color patches relatively to each other to afford the alternate masking and display of portions thereof, as distinguished from uniform and continuous display of all of them, to which the prior art is limited.

My invention is more directly concerned with these all-ceramic translucent signs, and finds its most practicable application therein; but it will be understood that the materials are not necessarily all ceramic, as the element 1 may be transparent glass and the display patches on its rear may be paints of any kind, so long as they are translucent to light from the rear; or the element 1 may be any other sufficiently transparent material, as celluloid, paper, cloth or the like, with the color patches as paint, ink or the like, so long as these are translucent for the purposes described. Therefore, while I have rather specifically described a preferred example, and mentioned certain materials and colors, in order to elucidate my invention as is required, I do not wish to be understood as being limited to such precise disclosure, but what I claim as new and desire to secure by Letters Patent is:

1. A sign comprising a transparent element having immediately at its rear side patches of translucent material of contrasting appearance and having on the rear side of one patch an additional patch of translucent material of appearance contrasting with said one patch, said one patch being so constituted as to mask said additional patch in respect of reflection forwardly, but to be translucent along with said additional patch in respect of illumination from the rear of said patches, and means for supplying said illumination intermittently.

2. A sign comprising a transparent element having immediately at its rear side patches of translucent material of different colors and having on the rear side of one patch an additional patch of appearance contrasting with said one patch, said one patch being so constituted as to mask said additional patch in respect of reflection forwardly, but to be translucent along with said additional patch in respect of illumination from the rear of said patches, and means for supplying said illumination intermittently.

3. A sign comprising a transparent element having immediately at its rear side patches of translucent material of contrasting appearance and having on the rear side of one patch an additional patch of color different from that of said one patch, said one patch being so constituted as to mask said additional patch in respect of reflection forwardly, but to be translucent along with said additional patch in respect of illumination from

the rear of said patches, and means for supplying said illumination intermittently.

4. A sign comprising a transparent element having immediately at its rear side patches of translucent material of different colors and having on the rear side of one patch an additional patch of color different from that of said one patch, said one patch being so colored as to mask said additional patch in respect of reflection forwardly, but to be translucent along with said additional patch in respect of illumination from the rear of said patches, and means for supplying said illumination intermittently.

5. A sign comprising a transparent ceramic element having fused immediately onto its rear side patches of translucent ceramic material of contrasting appearance, and having fused onto the rear side of one of said patches an additional patch of translucent ceramic material of appearance contrasting with said one patch, said one patch being so constituted as to mask said additional patch in respect of reflection forwardly, but to be translucent along with said additional patch in respect of illumination from the rear of said patches, and means for supplying said illumination intermittently.

6. As a new and improved article of manufacture, a transparent ceramic element having its front side convex and its rear side concave, and having fused onto its concave rear side patches of translucent ceramic material of contrasting appearance, and having fused onto the rear side of one of said patches an additional patch of translucent ceramic material of appearance contrasting with said one patch, said one patch being so constituted as to mask said additional patch in respect of reflection forwardly, but to be translucent along with said additional patch in respect of illumination from the rear of said patches.

7. The art of producing an animated sign element consisting in coating one surface of a transparent plate with patches of translucent colors, and causing one of said patches to overlie another, and so controlling the relative colors of the latter mentioned patches as to cause masking of the overlying color patch to reflection of light through said plate, but to permit transmission of light through both these patches and through said plate.

REN M. ANDERSON.