

Dec. 7, 1926.

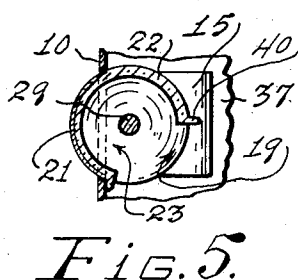
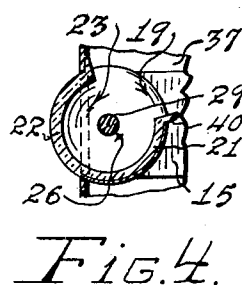
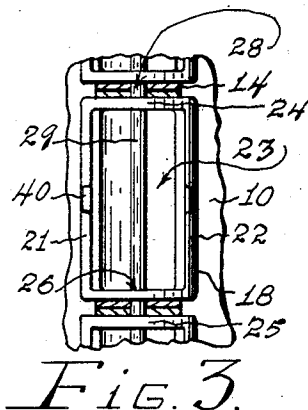
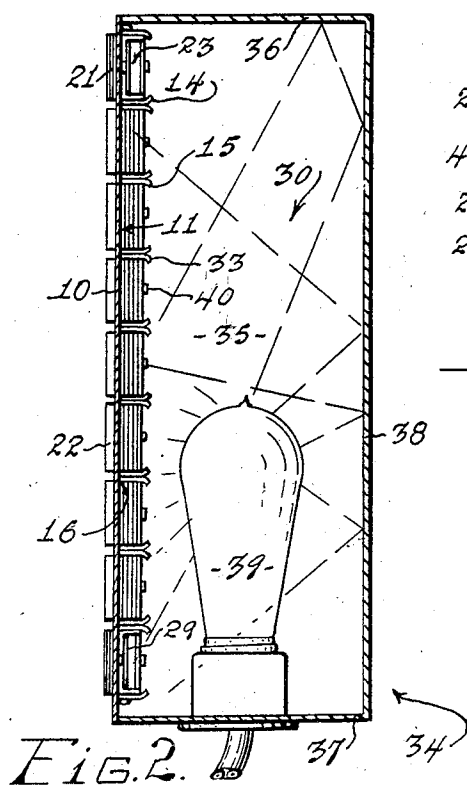
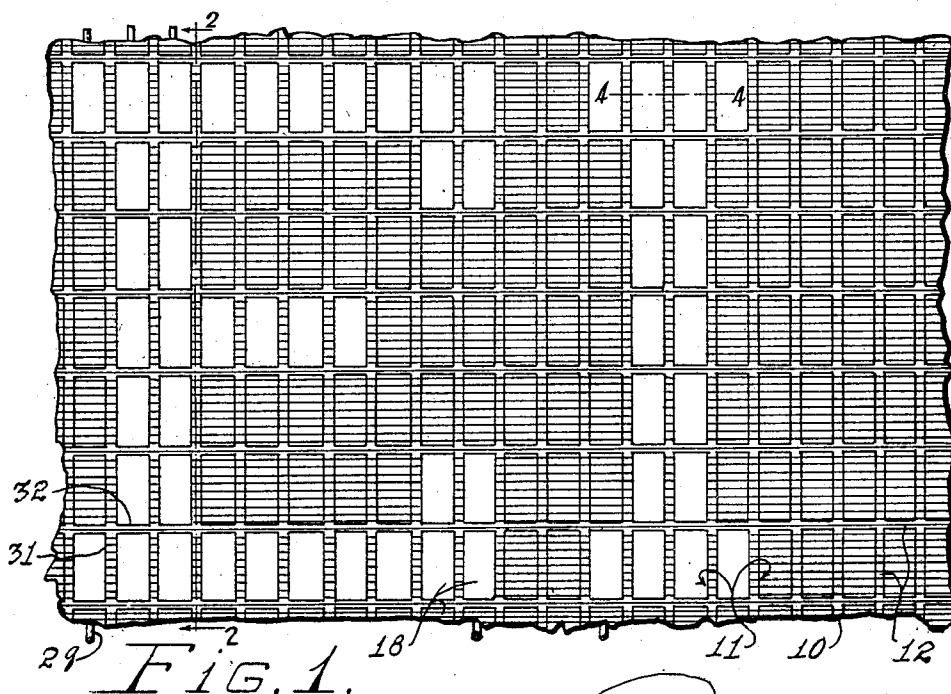
1,609,989

R. N. CHUBB

CHANGEABLE SIGN

Filed Sept. 23, 1924

2 Sheets-Sheet 1



R. N. Chubb,
INVENTOR

BY *J. H. Shelly*
ATTORNEY

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R. N. CHUBB

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2 Sheets-Sheet 2

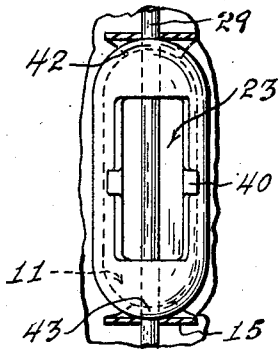


Fig. 6.

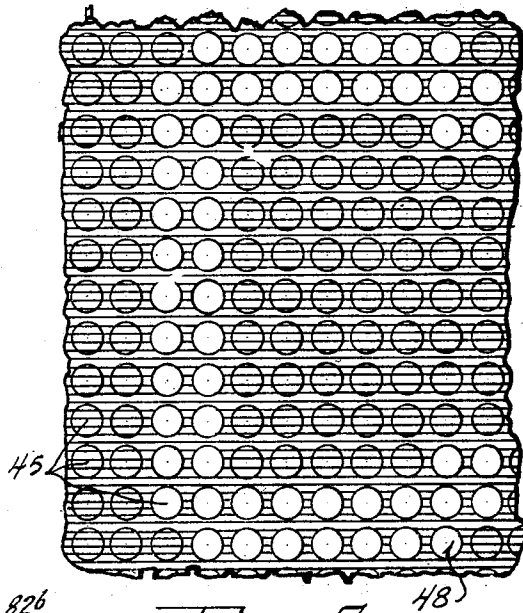


Fig. 7.

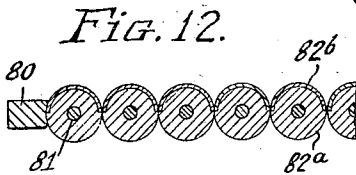


Fig. 12.

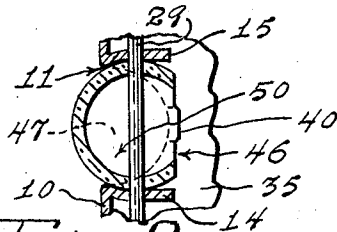


Fig. 8.

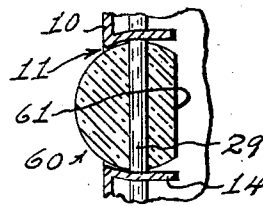


Fig. 9.

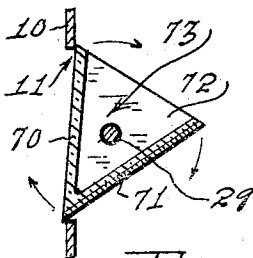


Fig. 10.

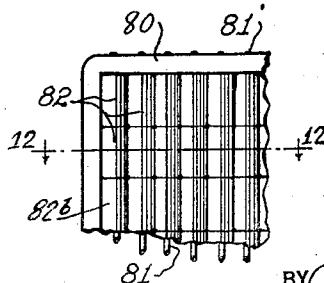


Fig. 11.

R. N. Chubb,
INVENTOR.

BY *J. W. Shulz*
ATTORNEY

UNITED STATES PATENT OFFICE.

ROWLAND N. CHUBB, OF LOS ANGELES, CALIFORNIA.

CHANGEABLE SIGN.

Application filed September 23, 1924. Serial No. 739,291.

The present invention relates to changeable signs, and has for its principal object to provide a changeable sign which is particularly visible and striking in appearance, both in daylight and darkness.

Another object of the invention is to provide a sign in which all the component parts of the sign are always in place and in which the letters are formed and changed merely by manipulation of certain of a multiplicity of similar movable elements. Usual signs of this character are provided with a plurality of openings, each having a shutter, or the like, capable of being moved to open or closed position with regard to its opening. Such signs have a so-called "flat" appearance and are not particularly attractive as compared with the usual non-changeable luminous signs.

It is, therefore, another object of the invention to provide a changeable sign having all of the advantages of the last mentioned type of sign, but in which the elements which go to make up a letter actually stand out from the usual dark background.

In luminous signs of the character above mentioned, extreme care must be exercised, in the design and manufacture, to prevent the casting of shadows and it is necessary in such signs that a large number of closely spaced lamps be employed to insure an evenly luminous appearance.

It is, therefore, another object of the invention to provide a changeable sign in which fewer lamps need be used and in which shadows cast by parts internally of the sign do not manifest themselves on the luminous face of the sign.

Another object of the invention is to provide for close spacing of the multiplicity of movable elements which make up a letter or character.

Still another object of the invention is to provide a changeable sign in which the letters will have the attractive profile and appearance common to pearl colored convex letters now in common use.

Many other objects and advantages will appear hereinafter and will be better understood by virtue of the order of their appearance.

I have illustrated by the accompanying drawings a practical embodiment of my invention and some slight modifications thereof.

In the said drawings,

Figure 1 is a view in front elevation of a portion of a sign built in conformity with the invention, the sign having the letter E set up;

Figure 2 is a view in vertical section thereof on a line 2—2 of Figure 1;

Figure 3 is an enlarged view in rear elevation of a fragment of the sign shown in Figure 1;

Figure 4 is a view in section thereof seen on a line 4—4 of Figure 1; showing one of the movable elements of the sign in open position;

Figure 5 is a similar view showing the same element in closed position;

Figure 6 is an enlarged view in rear elevation of a fragment of a sign which is a slight modification of the one shown in Figure 1;

Figure 7 is a view in front elevation of another form of the invention, showing the letter C;

Figure 8 is a view in vertical section on an enlarged scale of one of the movable elements thereof;

Figure 9 is a similar view of a modified form of the element shown in Figure 8.

Figure 10 is a view in horizontal section of a modified form of the invention embodying a different movable element.

Figure 11 is a view in front elevation of a fragment of a modified form of the invention, to be used either as a sign or instructive toy.

Figure 12 is a view in section, on a larger scale, as seen on a line 12—12 of Fig. 11.

More specifically, in carrying out my invention in the embodiment illustrated in Figures 1 to 5, inclusive, I employ a face plate 10 which is provided with a plurality of closely and equally spaced apertures 11. Preferably the apertures are rectangular and elongated vertically. The apertures are separated only by the comparatively narrow strips 12 of metal which remain when the apertures are struck out. In conformity with a salient feature of the invention, the metal removed to form an aperture is divided centrally into two portions or ears 14 and 15, respectively. Said ears are left attached to the plate and bent as at 16 and 17, respectively.

For each aperture there is provided a movable element 18 which resembles a hollow cylinder having a portion cut away as at 19. In addition to the cut-away portion

19, said cylinder is provided with an opaque portion 21 and an unaltered portion 22. The cylinder is formed of a translucent material such as glass and, therefore, the portion 22 will appear luminous when the interior space 23 of the cylinder is illuminated.

The cylinders each include a top wall 24 and a bottom wall 25, each having an opening 26. In assembling a sign, each of the cylinders is fitted in between corresponding spaced ears with a portion of the cylinder protruding through the corresponding aperture. The glass employed should be treated to provide a white or pearly appearance so that each cylinder is particularly visible in daylight. The nature and coloring of the glass employed is well understood by those skilled in the manufacture of luminous signs.

Each ear is formed with a small central aperture 28 and a single wire or rod is vertically arranged and passed through aligned apertures 26 and will serve to hold a plurality of cylinders each in oscillatable position within the corresponding aperture of the face plate. Therefore, each and all of the cylinders may be individually or collectively moved so that the light portion of each is visible from the front of the face plate. In such position each cylinder will appear as a slight but particularly visible convexity on the front surface of the plate. When a cylinder is turned about one-third of a revolution in the correct direction the darkened or coated portion only will be exposed to view, and such darkened portion will be practically inapparent to an observer.

Since the diameter of a rectangular aperture is less than the diameter of a cylinder, it is obvious that there can be no direct line of vision into the interior space 30 of the sign, from the exterior, along the vertical side margins 31 of an aperture. Light is prevented from escaping between the ends of the cylinders and the corresponding horizontal margins 32 of the apertures, because of the fact that each ear is bent over as at 33.

The sign should include a box 34 having walls 35, 36, 37 and 38, respectively, the face plate providing the front wall. Within the space 30 enclosed by the box suitable lamps 39 are provided. The inner surfaces of the said walls are preferably reflective so that all light emanating from the lamps and striking the walls will be integrated and eventually allowed to pass out through the rectangular apertures.

In order to best explain the action and advantages of the movable members or cylinders, attention is called to Figures 4 and 5 of the drawings particularly. When the cylinder is moved to the position shown in Figure 4, light may find its way into the interior of the cylinder and thence escape

through the translucent portion which is aligned with the aperture. The exposed translucent portion of a cylinder, so illuminated, would be particularly visible at night and would be recognized instantly as being convex in profile. It will be noticed particularly that light enters the interior of a cylinder sidewise and usually after it has been reflected from one of the reflective surfaces of the box. Those translucent portions of cylinders coming immediately in front of an aperture are shielded from direct rays of the lamps by the opaque or coated portion. In other words, the interior of each cylinder receives indirect illumination and from the interior of the cylinder light emanates through the translucent portions. Thus the exposed portion of each cylinder has a characteristic glow which is particularly visible in darkness.

Any letter or character is set up by moving the correct cylinders into open position. Movement of a cylinder is accomplished merely by brushing a finger across the protruding opaque part thereof, in a line crossing the axis of rotation. To limit movement of a cylinder in either direction each cylinder is provided with stops 40. In setting up the letter E, for instance, as shown in Figure 1, the first horizontal stroke of the letter E is made by brushing a finger horizontally over ten successive cylinders. The operation is extremely simple and any letter, figure or character may be so formed. By virtue of the true white appearance of the glass employed the sign may be seen as readily in daylight without illumination.

In the form of the invention shown in Figure 6, the cylinder is provided with rounded ends, as at 42 and 43, and may be said to be of capsule shape. The aperture in said embodiment is correspondingly rounded at its ends. Therefore it may be said that the aperture is of less diameter than the cylinder both horizontally and vertically. Each cylinder therefore thoroughly covers the corresponding opening and prevents direct leakage of light rays.

In the embodiment shown in Figures 7 and 8, the movable elements are in the form of hollow spheres 45, rather than cylinders. Each sphere is provided with an opening 46 which cuts away about a one-third portion of the wall of the hollow sphere. Another one-third portion is coated, as at 47, to be black and opaque, while a remaining portion 48 is left the natural color of the glass and is translucent. In the case of the sphere, as in the case of the hollow cylinder, light will always find its way into the interior space 50 indirectly, regardless of where the source of light may be. In those types of changeable signs in which the apertures are actually uncovered, shadows and shadow-casting portions of the interior of the sign interfere

with visibility, whereas with the hollow cylinder or hollow sphere light rays of varying strength are received in the hollow and are therein integrated to produce a soft glow. The spheres are provided with integral stops 40, similar to the stops shown on the cylindrical member in Fig. 5, to limit movement thereof, and said spheres may be moved from one position to the other by merely rubbing an object or finger across the protruding surface. Each aperture is truly circular and of less diameter than the spherical movable member. In Figure 7 the spheres are shown as arranged in lineal formations both vertically and horizontally and are evenly spaced vertically and horizontally. The letter C, for example, may be set up as shown. A great variety of arrangements of circular objects and openings are known to those skilled in the art of forming letters, and any of the known arrangements may be employed in constructing the embodiment shown in Figures 7 and 8.

In the form shown in Figure 9 a solid glass ball 60 is employed. Said ball is provided with an opaque portion 61 which may be moved to close the opening against passage of light rays. When the opaque portion is moved to the position shown, then the translucent portion of the ball is visible forwardly of the sign. Light falling on the rear portions of the ball will be diffused in passing through and the forward visible part of the ball will have a characteristic glow. The ball is turned from translucent to opaque position merely by sweeping a finger across the exposed surface.

In the form of the invention shown in Fig. 10, the movable member comprises a V arrangement of two walls 70 and 71, respectively; such arrangement providing an open interior triangular space 73. Said walls are joined by top and bottom walls respectively, such as 72. The unit is preferably translucent and is so arranged within the aperture 11 that both the walls 70 and 71 act as their own stops. Wall 70, for instance is left clear and translucent, while wall 71 should be coated. The interior space may be illumined by indirect illumination, and said space will be substantially shadowless, as in the case of the other light integrating units.

In Figures 11 and 12 I have shown and illustrated the upper left hand corner of a simple embodiment of my invention. In said embodiment I provide a frame 80 having a plurality of parallel wires or shafts 81 vertically arranged. On each shaft there are strung a plurality of cylinders 82. The shafts are riveted at their ends, as at 81'. The cylinders are preferably solid and complete; one half 82^a of the cylinder is to be black or dark, while the other half 82^b should be light or white. Letters visible by daylight

or lamplight, may be set up as in previously described signs by turning the requisite portions uppermost. The embodiment shown in Fig. 11 is well adapted as an instructive toy for children to assist them in mastering the alphabet and formation of letters, or the embodiment may be used as a sign. No face plate is needed because of the close arrangement of the cylinders.

While I have shown and described specific constructions and arrangements of parts, and while I have shown specific shapes and specific means for mounting the movable members, I do not limit myself to any specific constructions or arrangements of parts or to any specific shape or mounting for the movable members, and I may use any constructions, arrangements, shapes or mountings, without enlarging the scope of my invention, within the appended claims.

I claim as my invention:

1. In a sign of the character described, a plate provided with a plurality of apertures, members, one for each aperture, each movably mounted in alinement with a corresponding aperture, an opaque portion to each of said members adapted to be positioned, by proper movement of the member, to prevent passage of light rays through the corresponding aperture, and a translucent portion to each of said members adapted to be moved into alinement with the corresponding aperture, each of said members being a hollow body formed with an opening for the direct admission of light rays to the interior thereof.

2. In a sign of the character described, a plate provided with a plurality of apertures, members, one for each aperture, each movably mounted in alinement with a corresponding aperture, an opaque portion to each of said members adapted to be positioned, by proper movement of the member, to prevent passage of light rays through the corresponding aperture, and a glass translucent portion to each of said members adapted to be moved into alinement with the corresponding aperture, each of said members being a hollow body formed with an opening for the direct admission of light rays to the interior thereof.

3. In a sign of the character described, a plate provided with a plurality of apertures, for each aperture a glass member oscillatably mounted behind the aperture, and an opaque portion to said member, adapted upon movement of said member to be moved into a position to close the aperture against passage of light rays.

4. In a sign of the character described, a plate provided with a plurality of apertures, for each aperture a translucent member oscillatably mounted behind the aperture, and an opaque portion to said member, adapted upon movement of said member to

be moved into a position to close the aperture against passage of light rays, each member being provided with a light integrating cavity arranged to be disposed to the rear of the plate when a non-opaque portion of the member is visible at the front of the plate through the corresponding aperture.

5. In a sign of the character described, a plate provided with a plurality of apertures, for each aperture a glass member oscillatably mounted behind the aperture, and an opaque portion to said member, adapted upon movement of said member to be moved into a position to close the aperture against passage of light rays, each member being provided with a light integrating cavity arranged to be disposed to the rear of the plate when a non-opaque portion of the member is visible at the front of the plate through the corresponding aperture.

6. A plate provided with a plurality of apertures, an oscillatable member for each aperture having a circular cross section and arranged to protrude convexly through the corresponding aperture, an opaque portion to said member whereby the member may be moved to bring the opaque portion in alignment with the corresponding aperture to prevent passage of light rays, and a translucent portion to said member.

7. A plate provided with a plurality of apertures, an oscillatable glass member for each aperture having a circular cross section and arranged to protrude convexly through the aperture, an opaque portion to said member whereby the member may be moved to bring the opaque portion in alignment with the corresponding aperture to prevent passage of light rays, and a translucent portion to said member.

8. A plate provided with a plurality of apertures, an oscillatable member for each aperture having a circular cross section and arranged to protrude convexly through the corresponding aperture, an opaque portion to said member whereby the member may be moved to bring the opaque portion in alignment with the corresponding aperture to prevent passage of light rays, and a translucent portion to said member, said members each being a hollow body having a portion of its wall removed to provide an aperture for the direct admission of light to the interior.

9. A plate provided with a plurality of apertures, an oscillatable glass member for

each aperture having a circular cross section and arranged to protrude convexly through the corresponding aperture, an opaque portion to said member whereby the member may be moved to bring the opaque portion in alignment with the corresponding aperture to prevent passage of light rays, and a translucent portion to said member, said members each being a hollow body having a portion of the wall removed to provide an aperture for the direct admission of light to the interior.

10. In a sign of the character described, a plate provided with a plurality of apertures, an oscillatable member for each aperture mounted oscillatably immediately behind said aperture and protruding through the aperture whereby it may be oscillated by frictional engagement with an object passed across the exterior surface of the plate, said members each including an opaque portion capable of closing the aperture against passage of light rays, each member also including a translucent portion capable of appearing in the full area of an aperture.

11. In a sign of the character described, an opaque plate provided with a plurality of lineal groups of apertures, a shaft centrally arranged behind each lineal group, and oscillatable members one for each aperture, independently oscillatable on said shaft and each visible through a corresponding aperture, a portion of said member being opaque and another portion of said member being translucent.

12. In a sign of the character described, a plate provided with a plurality of apertures, a revoluble translucent member for each aperture occupying the aperture in full and having an opaque portion adapted by movement of said member on its axis to be disposed to close the corresponding aperture against the passage of light rays.

13. In a sign, a plate provided with a plurality of apertures a plurality of translucent members, one for each aperture and means for revolubly holding the members in corresponding apertures; said means and members so arranged that any appreciable light can pass through the complete sign only by way of the translucent members; each translucent member having an opaque area so arranged that the member may be revolved to dispose the opaque area to prevent passage of light forwardly through the area occupied by the member.

ROWLAND N. CHUBB.