March 25, 1924. 1,488,236

D. F. DUCK

SIGN

Filed April 12, 1922 2 Sheets-Sheet 1

Fig. 1.

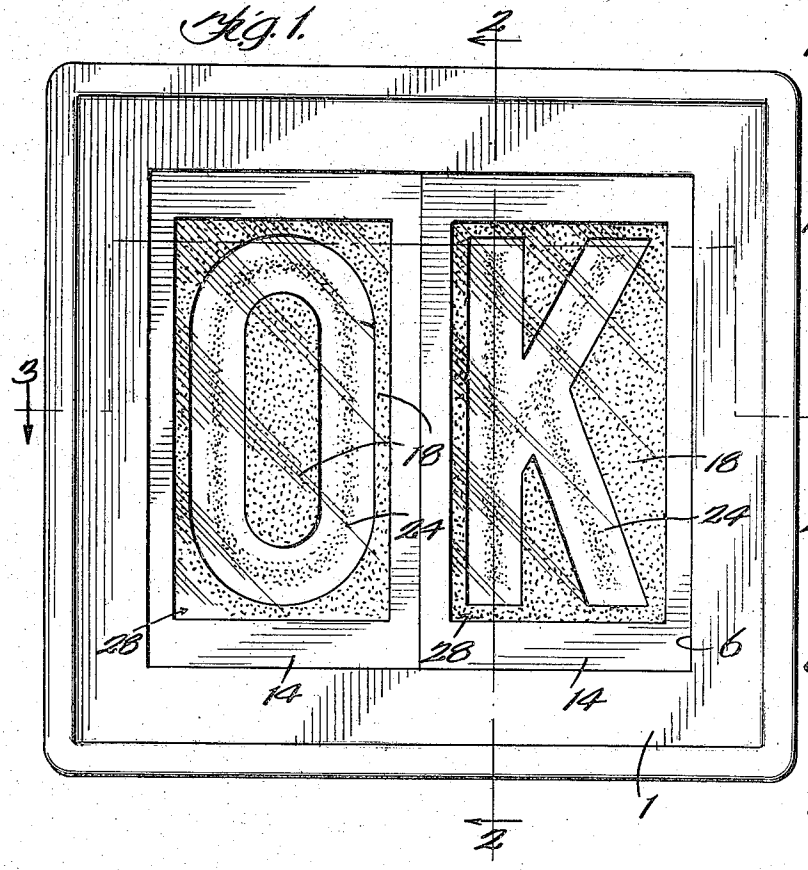


Fig. 2.

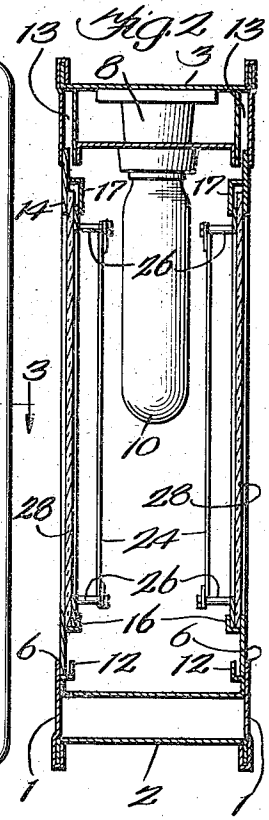


Fig. 3.

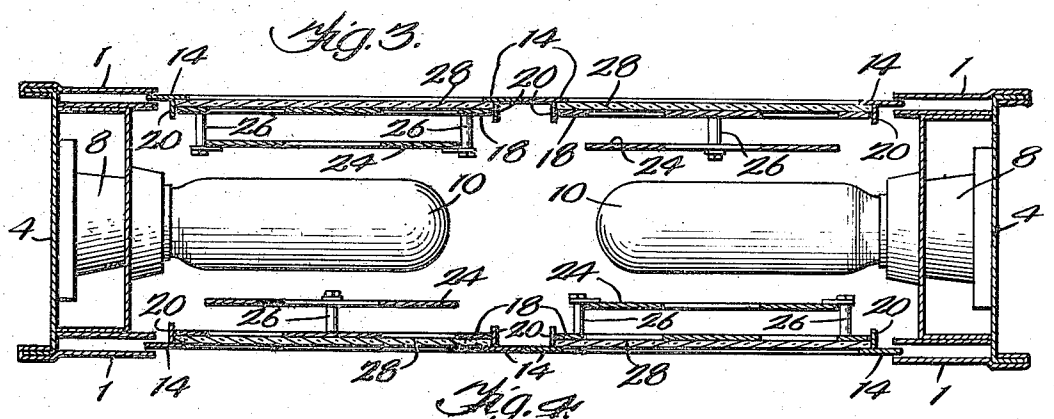
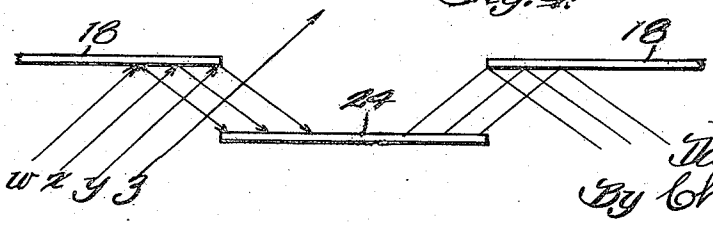


Fig. 4.



Inventor:
Daniel F. Duck
By Cheever & Cox
Atty's.

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Fig. 5.

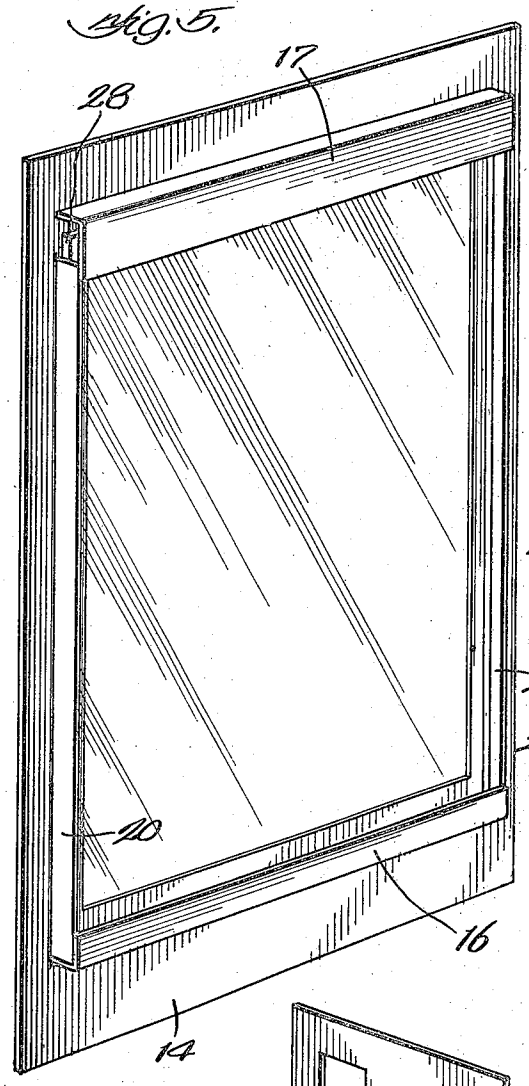
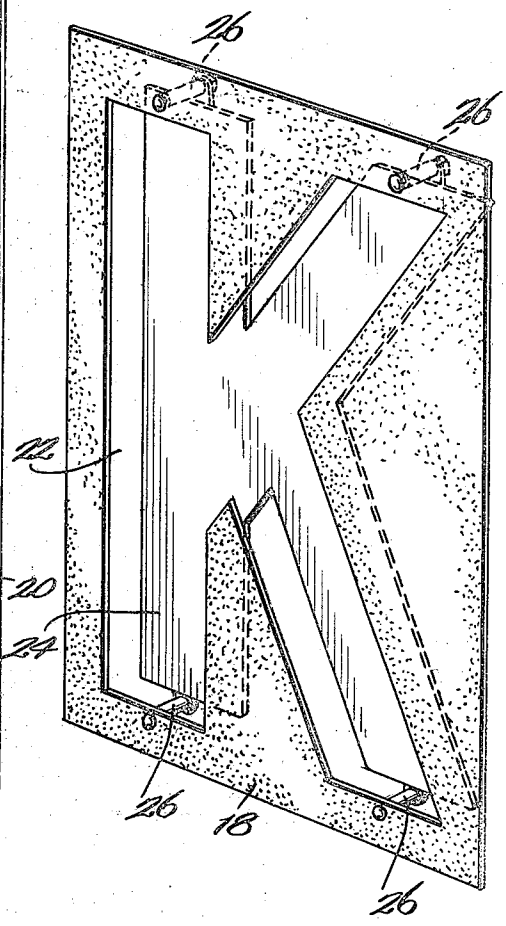


Fig. 6.



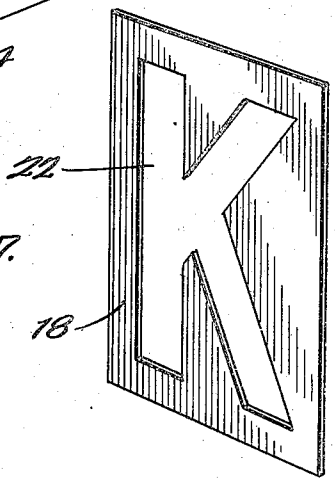


Fig. 7.

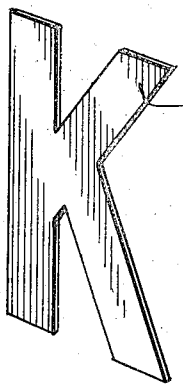


Fig. 8.

Inventor:
Daniel F. Duck
By Cheever Cox Atty's.

Patented Mar. 25, 1924. 1,488,236

UNITED STATES PATENT OFFICE.

DANIEL F. DUCK, OF CHICAGO, ILLINOIS.

SIGN.

Application filed April 12, 1922. Serial No. 551,877.

To all whom it may concern:

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

My invention relates to signs, especially of the type composed chiefly of sheet metal. My invention is concerned primarily with electric lighted signs for either indoor or outdoor display, and one of the objects is to provide a construction by which the sign may be inexpensively produced and at the same time possess attractive characteristics. Another object is to provide a mounting for the individual sign letters by means of which they may be readily assembled with and behind a glass pane for rendering the sign waterproof and at the same time improving its appearance. Other contributory objects will become apparent as the description proceeds.

I accomplish my objects by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a front view of the assembled sign.

Figure 2 is a sectional view on the line 2—2, Figure 1.

Figure 3 is a plan sectional view.

Figure 4 is a diagrammatic view showing the principle upon which the peculiar lighting effect in my sign is obtained.

Figure 5 is a prespective view looking from the rear side of a mounting frame embodying one feature of the invention.

Figure 6 is a perspective view showing a complete individual letter.

Figure 7 is a perspective view of the face plate of one of the sign letters, and

Figure 8 is a perspective view of the back plate belonging to the face plate of Figure 7.

Like numerals denote like parts throughout the several views.

Referring to the form illustrated in the drawings, there is a main casing or external housing, which may be of various constructions, its purpose being to house the letters and lighting elements. In the form illustrated it comprises two front plates 1, a bottom plate 2, top plate 3 and end plates 4. The front plates have rectangular openings 6 approximately co-extensive with the sign as a whole for exposing the letters. Located within the casing and distributed in convenient positions within it are lamp sockets 8 for the electric lamps 10. Channels 12 and 13 are arranged on the lower and upper edges of the opening 6 for receiving and retaining the lower and upper edges of the mounting frames 14, one of which is shown in perspective in Figure 5. These mounting frames are flat pieces of sheet metal in the form of a hollow rectangle and when a full complement is in place the sign will be completely closed at the front except for the central openings of the frames, (which in practice will be closed by the letters themselves). The mounting frames are detachably supported in the casing, the lower edge resting in the lower channel 12 and the upper edge being retained in the upper channel 13. The upper channel is sufficiently extended vertically to permit the insertion of the frames, which will be shifted upward and then permitted to descend into the lower channels 12. These mounting frames are also provided with channels for supporting the letters and the glass panes (when the latter are used). Said channels are shown on a large scale in Figure 5, the lower channel 16 supporting the lower edge of the face plate 18 of the letter and the upper channel retaining the upper edge thereof. It is desirable to provide vertical flanges 20 on the mounting frames for preventing lateral displacement of the face plates of the letters proper.

The face plate of each individual letter is a rectangular piece of sheet metal having an opening 22 in the form of the letter. Spaced behind this front plate in the plane parallel to it is a back plate 24 which is usually imperforate and is of the same size and shape as the opening 22 in the front plate 18—in fact, according to the preferred method of manufacture, the back plate consists of the punching removed from the front plate by the die or other tool used in manufacture. This principle is well illustrated in Figures 7 and 8, Figure 8 showing the material removed from the plate illustrated in Figure 7. The back plate is held in fixed position by any suitable means, for example, the spacing studs 26.

In operation, the letters proper compris-

ing the front and back plates 22, 24, may be inserted into the mounting frames 14 either with or without a pane of glass 28 in front of them. One advantage of using glass is to improve the appearance and also to render the sign weatherproof, and prevent rain, snow or dust from entering the housing through the letter openings 22. In case such a pane is used it is inserted by first passing the upper edge under the upper channel 17 and then lifting it high enough to clear the upper edge of the channel 16, after which it is permitted to descend into channel 16 to be supported by it. It occupies a position in close contact with the back of the mounting frame, and after this is inserted, the letter proper is inserted behind it in the same manner. The weather is prevented from entering at the sides by the marginal flanges 20. After the letter and pane (if used) are inserted into the mounting frame the letter is inserted into the main housing in a similar manner, the mounting frame being first moved upward with its upper edge within the upper channel 13, after which it is lowered into the lower channel 12 where it remains.

A sign constructed upon this principle—especially where the back plate is an imperforate letter of the same size and shape as the space in the front plate—gives a lighting effect that is both peculiar and attractive. The fact is that the marginal portions of the back plate are more highly illuminated than the inner portions for reasons which will become apparent from a study of Figure 4. Let us take four parallel beams of light w, x, y, z emanating from within the housing. It will be seen that the first three of these beams are reflected from the inner side of the front plate 18 to the front side of the back plate 24. The fourth, z, will issue directly out through the letter opening and hence will not be reflected. The result is that the marginal portions of the back plate receive greater illumination than the inner portions. The result is that the eye of the observer receives the impression that the back plate is dished with the concave surface facing outward. This effect may be enhanced by somewhat dishing the back plate by the same die which removes it from the front plate, but the greater the degree of curvature, the greater will be the expense of producing the dies, and a flat surfaced die is less expensive; consequently I am able to obtain this attractive lighting effect at a minimum of expense. Furthermore not only is the same metal employed for the back plate that is removed from the front plate, but the curved effect is produced even though the front plate is flat. It will be understood that the beams w, x, y, z are not necessarily direct rays. They may be rays of diffused or reflected light, as the interior of the housing is preferably white and there will be much diffused light within the housing; but the rays indicated are typical and will answer for the purpose of analysis.

Another advantage of my construction is the ease with which the letters may be interchanged, and the fact that the sign may be rendered weatherproof without changing its construction. In other words, if it is desired to produce a sign at a minimum of expense the glass plates 28 may be removed, and yet if it is afterward decided to use the panes, they may be added without changing the construction of the sign.

Having thus described my invention, what I claim is new and desire to secure by Letters Patent is:

1. A sign having a sign letter consisting of a plate having a letter opening and a second plate located directly behind said opening and of the same size as said opening, whereby the second plate may, if desired, consist of the material removed from the front plate to make the letter opening.

2. A sign having a letter consisting of a front plate of sheet metal and a back plate spaced behind it and arranged in a parallel plane with it, the front plate having an opening conforming to the letter and the back plate being of a size and shape substantially equal to the size and shape of the opening in the front plate and registering with said opening.

3. A sign having a housing, a letter mounted therein, and consisting of a front plate of sheet metal, and a back plate spaced behind it and arranged in a parallel plane with it, the front plate having an opening of the shape of the letter, and the back plate being of a size and shape substantially equal to the size and shape of the opening in the front plate, and registering with said opening, and means within the housing behind the plane of the back plate for illuminating the sign.

4. A sign having a housing open at the front and provided with marginal channels on the inside at the upper and lower edges of the opening, and sign letters removably mounted in the casing, each letter consisting of a front plate of sheet metal having an opening of the size and shape of the letter and a back plate secured behind the front plate in parallel relation thereto, and consisting of an imperforate sheet of metal of the same size and shape as the letter opening, the front plate being adapted to project into said marginal channels to be held in position by them.

5. A sign having a housing open at the front and provided with marginal channels on the inside at the upper and lower edges of the opening, a mounting frame having a rectangular opening and adapted to be

retained in and supported by said channels, said mounting frame having marginal channels at the upper and lower edges of the opening, and a letter consisting of a front plate and a back plate arranged in parallel, spaced planes, the back plate being in the form of a letter and the front plate having an opening of the same size and shape as the letter, the front plate of the letter being adapted to be retained in and supported by the channels in the mounting frame.

In witness whereof, I have hereunto subscribed my name.

DANIEL F. DUCK.