July 10, 1934. F. H. STEPHENS 1,966,318

HIGHWAY MARKER

Filed Feb. 18, 1931

Fig. 1.

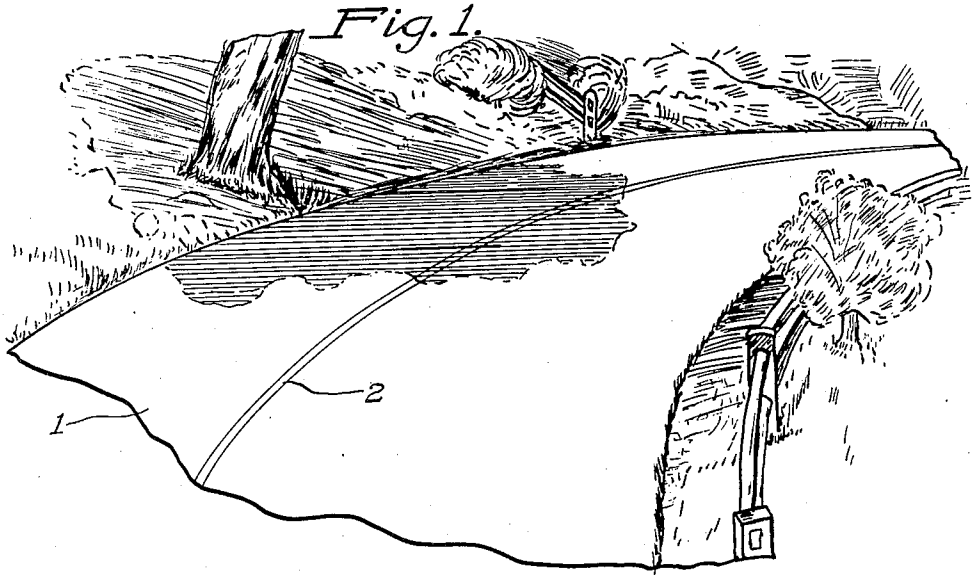


Fig. 2.

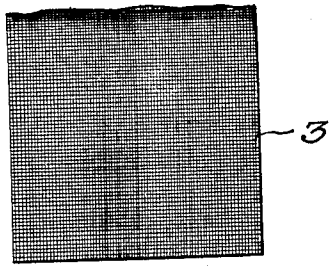
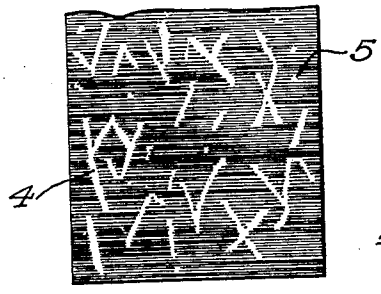


Fig. 3.



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HIGHWAY MARKER

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1 Claim. (Cl. 94—1.5)

The invention relates to the marking of streets and highways with traffic-controlling indications, and more particularly to the marking out of traffic lanes at curves, crossings and other dangerous places.

The most common form of traffic lane marking heretofore employed consists in painting white or colored lines on the road surface. This system of marking has many disadvantages, one of the foremost of which is its inefficiency from the standpoint of maintenance due to the rapid obliteration of the painted lines under the incessant beat of swiftly moving traffic. When the visibility of the painted line becomes markedly impaired, it is necessary to renew it. On heavily travelled roads the work of repainting has to be carried out at night time or at a time when traffic is comparatively light, and, therefore, at great inconvenience. Furthermore, in order to reopen the road for traffic as soon as possible, the painted lines are frequently subjected to the wearing action of traffic before they have become properly dried and hardened, which still further shortens the life of the lines.

Many attempts have been made to devise a more permanent form of traffic marking, but these have not been attended with any appreciable success. For example, it has been proposed to use metal markers embedded in the pavement or lagged into the surface thereof by mechanical means. These have found only a limited application because of the expense and difficulty of installation. Also, as compared with the painted line, their visibility is poor. The use of such metal markers has, therefore, been restricted for practical purposes to the marking of crossings and safety zones at busy intersections in cities and towns.

It is an object of the present invention to devise a system of marking traffic-controlling indications on roadways which combines the advantages of the painted line and the metal marker. More particularly the object of my invention is a traffic marker which at once possesses the good visibility and ease of application of the painted line and the permanency of the metal marker.

A further object of the invention is to provide a traffic marker formed of a metal foil, such as aluminum foil, or of metallic strip of a gauge sufficiently thin to admit of being secured to the pavement of streets and highways by adhesive means, without the use of mechanical lagging in any form.

In the accompanying drawing, Figure 1 illustrates the application of my improved traffic marker to a stretch of curved highway;

Figure 2 is a fragmentary plan view of one form of marker; and Fig. 3 is a fragmentary plan view of another form of marker.

In Figure 1, the surface of the roadway is represented at 1, and may for example consist of any smooth-surfaced pavement commonly employed in the construction of streets or highways such as concrete, asphalt, or the like. To the surface of the pavement is adhesively secured a metallic marking strip 2, which in the embodiment illustrated extends down the center of the roadway and indicates the dividing line between the traffic lanes for vehicles moving in opposite directions of travel thereover.

The form of marker illustrated in Figure 2 is a thin metallic strip or metal foil 2, the surface of which has been artificially roughened to produce the embossed surface 3, the purpose of which will hereinafter appear.

Figure 3 represents an alternative form of traffic marker, the surface of which has not been artificially roughened. This form of marker may be the preferred type where it is desired to apply it to a comparatively rough-surfaced road, as for example a concrete highway. When the marker is applied, it is pressed into close conformity with the minute irregularities of the road surface, the effect of which is indicated in Figure 3 by the unevenness produced in the upper surface of the marker, represented by the irregular depressions and pits 4 and 5. The advantages of translating the road surface irregularities into the surface of the marker will more fully appear hereinafter.

As an example by which the nature of my invention may be more fully ascertained, a preferred embodiment may be described as follows:

A strip of foil in the form of a coil, cut to the width of the line which it is desired to produce, is coated on its under surface with a binder consisting preferably of hot asphalt or other bituminous material as it is unwound for application to the surface of the roadway. The strip is pressed into contact with the pavement by means of any suitable instrument. The tools and equipment for use in applying the marker do not form any part of the present invention, but it will be seen that with the aid of suitable equipment for carrying the coil of metal and coating the under surface thereof, with a binder, a continuous strip of metal of any desired length can be easily and expeditiously applied without restricting traffic for any considerable period of time. The strips may be pressed into intimate contact with the

road surface by means of a yieldable object, such as a rubber wheel, so as to cause it to conform with minute irregularities in the surface of the road, thereby producing increased adherence and insuring against any substantial displacement of the strip.

A further advantageous result of conforming the foil with the minute irregularities in the road surface, is the diffusion of the light which falls upon the metal from the head lamps of vehicles and street lamps. Were the surface of the foil perfectly smooth, an additional hazard would be introduced into night driving due to the specular reflection of light from the head lamps of vehicles approaching in the opposite direction. This would produce a glare of light which may be objectionable. Moreover, under this condition of nearly perfect specular reflection, the visibility of the line might be very low when illuminated solely by the driver's own head lamps, because of the fact that the light therefrom is reflected forwardly, at an angle equal to the angle of incidence. Thus a substantial portion of the light would not serve to make visible the foil marker, but would simply be reflected in a forward direction. Such an obviously undesirable situation is effectively obviated by the slight irregularities produced in the foil when pressed, as it is, into conformity with irregularities in the road surface itself. The effect is to produce a diffusing surface which enhances visibility of the marker and reduces glare.

If desired, the surface of the foil may be made more perfectly diffusing by some roughening process, such as embossing the foil before it is applied to the pavement, as illustrated in Figure 2. Whether or not the use of an embossed foil is to be preferred may depend to a considerable extent on the character of the surface to which it is to be applied. Thus, a smooth-surfaced foil might be satisfactory for a comparatively rough-surfaced concrete highway, whereas an embossed foil would undoubtedly be preferred for application to a smooth asphalt pavement.

I prefer to use an aluminum foil having a thickness of about .003 of an inch. Aluminum foil up to a thickness of about .006 of an inch may be successfully used, but I have found by experiments that foil having a thickness of .003 of an inch is particularly advantageous for the purposes of my invention. The thinness of the metal strip of foil makes it peculiarly adaptable from the standpoint of being conformable to the contour of light surface irregularities so as to, in effect, become an integral part of the surface of the highway. This characteristic of the foil contributes to the permanence and stability of the strip and as a further resultant advantage a metal strip so formed offers no perceptible interference with the swiftly moving wheels of traffic. To a considerable extent, therefore, the metal traffic strip forming the subject of my invention is made more securely a part of the surface of the road itself under, and because of, the action of vehicles passing thereover. Anchoring devices are rendered unnecessary, simplifying the method of laying the strip. Another advantage incident to a strip thus pressed into the crevices and minute pits on depressions in the surface is that even after the metal has been worn off the high spots, sufficient metal will remain to make a good marker.

In the interests of visibility it is preferable to form the marker of aluminum or other corrosion-resistant metal. If desired, the strip may be laid while the road is under construction, being pressed onto the surface while it is still green, so as to form a natural bond between the road and the marker as the surface sets or hardens. This procedure may be found convenient, for example, in the case of asphalt-surfaced roads and would eliminate the necessity of a superficially applied bonding material.

While in the foregoing discussion I have referred primarily to the laying of continuous strips for marking traffic lines at curves, crossings, etc., it will be readily understood that markers of the general form described may be used for other traffic-controlling indications, such as are commonly placed on the surface of roads at intersections and other dangerous places.

I claim:

The combination with a roadway of a metallic strip adhesively applied to the upper surface of the roadway and lying wholly above or in the plane of said surface and conforming with the contour thereof, said metallic strip being of a gauge sufficiently thin to admit of being secured solely by said adhesive means and adapted to assume the surface configuration of the roadway beneath the strip by the action of vehicles passing over the strip.

FORREST H. STEPHENS.