Nov. 14, 1939. F. J. FARRELL 2,180,105

ROAD MARKER AND METHOD OF APPLYING THE SAME

Filed Dec. 15, 1938

Fig. 1.

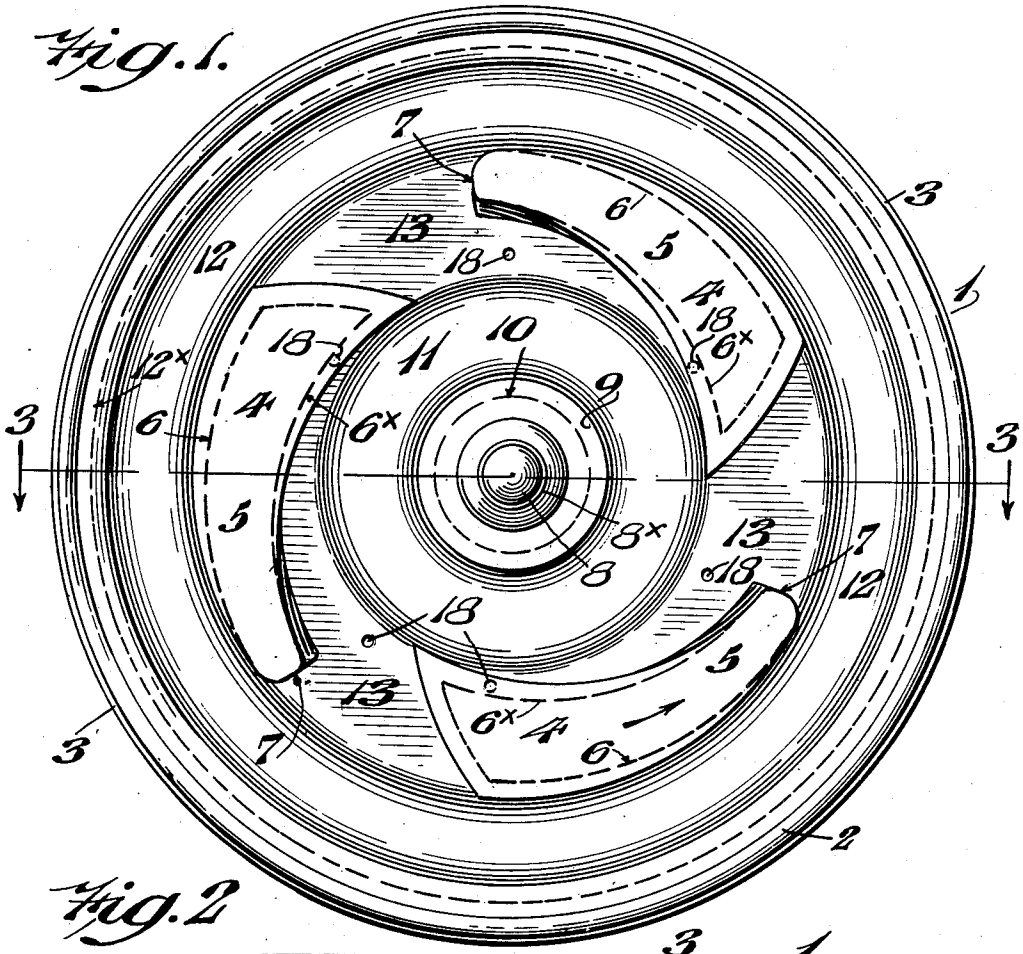


Fig. 2



Fig. 3.

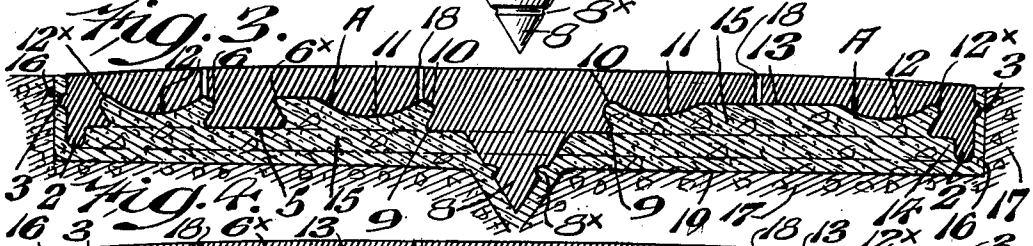
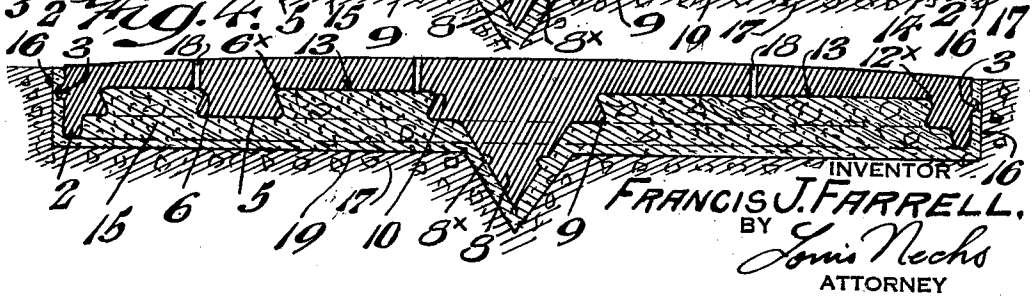


Fig. 4.



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ROAD MARKER AND METHOD OF APPLYING THE SAME

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7 Claims. (Cl. 94—1.5)

My invention relates to a new and useful road marker and the method of applying the same and it relates more particularly to a road marker formed exclusively of a flexible and resilient material such as rubber of the desired consistency which is adapted to be applied to a road surface to designate the center of the road, to divide the road into lanes, or to provide other signals having to do with the regulation of traffic such as "stop at intersections", "left turn", etc.

My invention still further relates to a road marker of this character which is in round or disc form and which is adapted to be positioned with the exterior, visible surface thereof substantially flush with the road bed so as not to constitute an obstruction projecting above the surface of the road, said marker being formed of a color contrasting with the color of the road so as to be clearly visible at all times.

My invention still further relates to a road marker of this character which is provided with novel and effective locking devices formed on the lower surface thereof for easy application to the surface of the road and for effective engagement with the road material or with a binder interposed between the marker and the road material, the locking means being so disposed as to afford, not only a greatly increased binding surface, but also to provide effective reinforcement for sustaining the stress to which the marker will be subjected by the passage of vehicle wheels thereover.

My invention still further relates to a marker of this character in which the locking devices are adapted to engage the road material or the binder interposed between the road material and the marker by a rotary action which, not only facilitates the engagement of the locking devices, but also serves to distribute the binding material by centrifugal force and pack the same hard into the various locking recesses formed in the bottom of the marker simultaneously with the placing of the marker in position.

My invention further relates to a marker of this character which is preferably provided with a centrally located pilot which projects beyond the plane of the lower side of the marker thus serving to guide and center the marker while it is placed in position.

My invention still further relates to a marker of this character which is provided with a bead projecting from the vertical, annular wall of the marker and adapted to be completely enclosed by the road material or the binder used when such material or binder fills the space between the vertical edge of the marker and the vertical edge of the surrounding recess to which it is positioned thus, not only further locking the marker in place, but also insuring a watertight connection between the marker and the recess to prevent the ingress of water between the marker and the wall of the recess or under the marker itself. The bead referred to is preferably undulating, horizontally considered, so as to function like the thread of a screw and thus insure proper packing of the road material or the binder used between the annular, vertical wall of the marker and the annular wall of the recess.

My invention still further relates to a marker of this character which is preferably provided intermediate the bottom interlocking devices thereof with cushioning and reinforcing portions which serve to prevent distortion of the body of the marker under the weight and strain to which it will be subjected and thus indirectly guard against possible excess strain on the interlocking devices themselves.

In the accompanying drawing:

Fig. 1 represents a bottom plan view of a road marker embodying my device showing the reinforcing and interlocking devices.

Fig. 2 represents a side elevation of Fig. 1.

Fig. 3 represents a section on line 3—3 of Fig. 1.

Fig. 4 represents a view similar to Fig. 3 showing a modified form of construction which is identical to that shown in Fig. 3 except that the reinforcements on either side of the interlocking devices have been omitted.

Referring to the drawing in which like reference characters indicate like parts, my novel road marker comprises a body portion 1 which is of a circular shape and which is formed of a composition having suitable resistance and resiliency such as suitably vulcanized rubber, said body portion 1 having the pendant annular flange 2. The flange 2 is provided with a bead 3 which extends beyond the vertical edge of the pendant flange 2 and which is preferably undulated as best seen in Fig. 2. The underside of the body portion 1, as will be best seen from Fig. 1, is provided with a plurality of cam-shaped elements 4 which are wider at their bottom edges 5 and narrower at their junction with the body portion 1 so as to produce the annular locking opposite recesses 6 and 6x. The cam-shaped elements 4 are provided with the slanted, blunt noses 7 on their leading edges. At the center of the body portion 1 is formed the pilot, spike-shaped member 8 which has an annular groove 8x. At the junction of the pilot 8 with the body portion 1 is formed the

annular shoulder 9 above and around which is formed the annular locking recess 10. Intermediate the shoulder 9 and the respective cam-shaped elements 4 is formed the annular, pendant, reinforcing, thickened portion 11, and between the cam-shaped elements 4 and the outer pendant flange 2 is formed the annular, pendant, reinforcing, thickened portion 12. Around the outer edge of the portion 12 is formed the annular locking recess 12x. It will be noted that the underside of the body portion 1 at the places 13 between the cam elements 4 is flat or substantially parallel with the upper surface of the body portion 1 as best seen in Fig. 3. The lower edge of the pendant flange 2 is recessed inwardly to form the locking shoulder 14.

The function of this road marker and its method of application are as follows:

A recess of the proper dimensions is cut into the road surface at the point at which it is desired to place the marker and, if the road is of an asphalt base, the bottom of the recess thus cut is sufficiently heated and a quantity of heated asphalt or other cement is used, and, if the road be concrete or other than asphalt, a suitable cement is placed in the recess cut in the road. The marker is then positioned in the recess over the cement or heated asphalt, or both as the case may be, with the pilot 3 thereof in the center of the recess. The upper surface of the marker is then engaged by any suitable rotating element such as a breast drill or the like by means of which the marker is rotated at a very high speed of about 600 R. P. M. Simultaneously with the rotation of the marker it is pressed downwardly into the recess so that the centrifugal force developed by the rotation, accompanied with the downward pressure, thoroughly packs the cement or heated asphalt or both into the interlocking recesses 6, 6x, 10 and 12x. Also the material fills the groove 8x and the recess adjacent the shoulder 14. The bead 3, during the rotation of the marker while it is placed in position, works as the thread of a screw and insures the packing of the cement or asphalt or both 15 both above and below the bead 3 which almost abuts against the edge 16 of the recess cut in the road 17 for the reception of the marker so that a completely tight connection is established between the vertical flange of the marker 1 and the edge 16 of the road. It will be noted that the locking recess 12x extends in the direction of the periphery of the marker while the recess 10 is directed towards the center thereof. The recesses 6 on the outer sides of the cam elements 4 run substantially parallel to the annular recess 10 while the inner recesses 6x around the cam elements 4 run substantially parallel to the outer recess 12x. In this way the cement, asphalt, concrete or other binding material 15 is distributed in annularly opposite directions and thus is disposed in a manner to receive and resist any thrust or strain which the surface of the marker is subject to from any direction. The pendant reinforcing portions 11 and 12 serve to increase the engagement surface between the bottom of the marker and the binder 15 and also serve to fortify the body of the marker against any creeping action to which resilient material is prone with the advent of excessive thrust on the surface of the marker. Thus the wheel of a vehicle approaching the marker from the right hand side of Fig. 2 will upon first riding on the marker thrust against the reinforcing portion 12 which is prevented from creeping by the raised portion of the binder 15 as at A. The same is true if the vehicle wheel approaches from any direction due to the annular character of the reinforcing portion 12. Similarly, the reinforcing portion 11 and the pendant cams 4 also serve to cushion and resist the thrust exerted from any direction.

In Fig. 4 I have shown the marker as shown in Fig. 1 except that the pendant, reinforcing portions 11 and 12 have been dispensed with.

If desired, a suitable number of vent holes 18 can be provided through the body portion 1 so as to allow the escape of air upwardly while the marker is being pressed on the cement or soft asphalt 15 to prevent the formation of air pockets and thus insure complete filling of the various recesses in the under surface of the marker by the cement 15. The size and number of the holes 18 can be varied at will and, while in the drawing the holes have been shown as empty in Figs. 3 and 4, it is to be understood that the binding material 15 working up through the holes 18 will ultimately fill these holes, or the same, if not quite filled while the marker is placed in position, will naturally be slightly packed with dust and dirt entering the holes downwardly from the surface of the road.

Also, it will be noted that the peripheral edge of the marker is practically flush with the surface of the road 17 but that the upper surface of the marker is slightly convexed, its highest point being at the center of the marker. In Figs. 2, 3 and 4 the marker is shown as being only slightly convexed but it will be understood that, since this convexity of the upper surface is intended to improve visibility at a distance, the extent to which the upper surface of the marker is convexed, is increased or decreased according to the requirements in various types of roads and under various conditions. The fact that the edge of the marker is flush with the surface of the road and that the surface of the road is only gradually and slightly convexed toward the center it protects the marker against being disturbed by street cleaning apparatus, snow plows or the like.

The marker as shown in Fig. 1 can be applied directly to the heated asphalt or other cement or binder 15 which is positioned in the recess cut in the road or the marker can, if desired, be coated upon its underside with a primer coating such as a combination of rubber and asphalt or any other suitable material which will adhere to rubber and which will present, when dry, an external surface which will firmly adhere to the particular type of binding material 15 which is used in securing the marker to the road.

In cutting the recess in the road 17 I preferably employ a tool which also has a pilot cutting edge at its center so that, while the recess is cut with a straight, vertical edge 16 and a straight or flat bottom edge 19, the recess is cut deeper at the point which registers with the pilot 8 so as to accommodate the latter. In the event that the marker is used without the pilot 8 projecting below the plane of the bottom edge of the flange 2 then the bottom of the recess cut in the road will be flat or straight clear across.

It will thus be seen that, when the marker has been spun and depressed into position in the recess in the road as best seen in Figs. 3 and 4, the binding material 15 adheres to the marker as well as to the road 17, completely fills the recesses 6, 6x, 10 and 12x, as well as the annular groove 8x and the seat 14, so that the binder 15 becomes practically integral with the marker 1 so that the marker cannot possibly be disturbed

or worked loose under the greatest possible stresses to which it may be subjected by vehicular traffic. Also, it will be noted that the contact surface available along the underside of the marker is greatly increased by the formation of the various recesses mentioned as well as the curved surfaces of the reinforcing portions 11 and 12 and the conical surface of the pilot 8. By filling the spaces above and below the bead 3 between the outer surface of the flange 2 and the edge 16 of the road the surface adhesion is increased, the marker is further locked in position and a seal is formed above and below the bead 3 which prevents any moisture from seeping below the marker and freezing in cold weather, or tending to damage the adhesion between the marker and the road under other than freezing weather.

It will also be noted that the portions of the binder 15, after setting or hardening with the marker in position, assume shapes molded according to the various recesses in the underside of the marker with the result that the binding material thus molded is bigger at its upper end than the opening through which the binding material was admitted when in the soft condition so that it cannot be withdrawn or retracted from the recess into which it has set and, when it is remembered that the flexible body of the marker cannot give or stretch due to its being surrounded by the hardened, binding material all around, it will be seen that nothing short of cutting the body of the marker will permit its removal from the road except the breaking of the binding material itself.

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

1. A road marker comprising a circular body portion, a flange depending from the periphery thereof, and a plurality of discontinuous longitudinally tapered tongues depending from said body portion, said flange and said tongues being adapted to engage a cement for securing said marker to the road.

2. A road marker comprising a circular body portion, a flange depending from the periphery thereof, and an undulating bead formed on the outer wall of said flange.

3. A road marker comprising a circular body portion, a flange depending from the periphery thereof, and a plurality of discontinuous longitudinally tapered tongues depending from said body portion, said flange and said tongues being adapted to engage a cement for securing said marker to the road and the lower edge of said flange extending below the plane of the lower edges of said tongues.

4. The method of applying a road marker of the character stated having interlocking recesses formed in the underside thereof and having longitudinally tapered, arcuate, horizontally disposed tongues on the underside thereof, which consists in cutting a seat for said marker in the road, placing in said seat a viscous cement, placing said marker on said cement and simultaneously depressing, and rotating said marker, whereby said cement is thoroughly packed into said recesses by the rotation of said tongues.

5. A road marker comprising a resilient one-piece circular body portion and a plurality of separate arcuate longitudinally tapered locking tongues integrally formed with and depending from the underside of said body portion, said tongues being arranged circularly and in spaced relation to each other.

6. A road marker comprising a resilient one-piece circular body portion and a plurality of separate arcuate longitudinally tapered locking tongues integrally formed with and depending from the underside of said body portion, said tongues being elongated and arranged concentrically with respect to the periphery of said body portion with the longitudinal axes of said tongues in a plane parallel with the plane of the underside of said body portion.

7. A road marker comprising a resilient one-piece circular body portion and a plurality of separate locking tongues formed integral with and depending from the underside of said body portion, said tongues being cam-shaped in longitudinally and transverse cross-section and being arranged circularly between the center and the periphery of said body portion.

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