Dec. 17, 1940. T. W. STEDMAN 2,224,937

HIGHWAY MARKER AND METHOD OF SECURING THE SAME TO A HIGHWAY

Filed Jan. 11, 1937

Fig. 1.

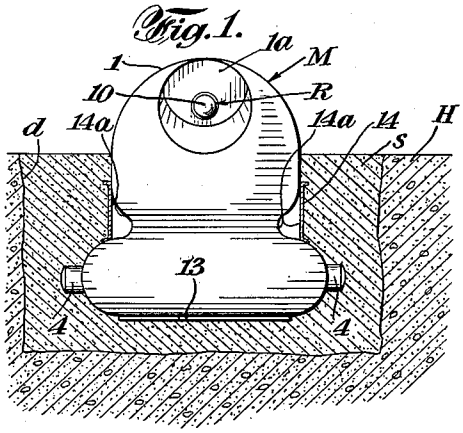


Fig. 6.

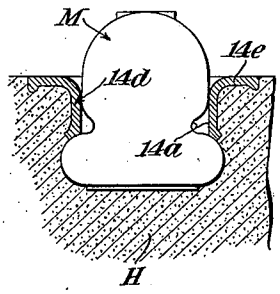


Fig. 7.

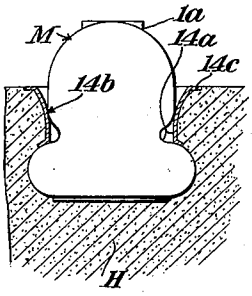


Fig. 2.

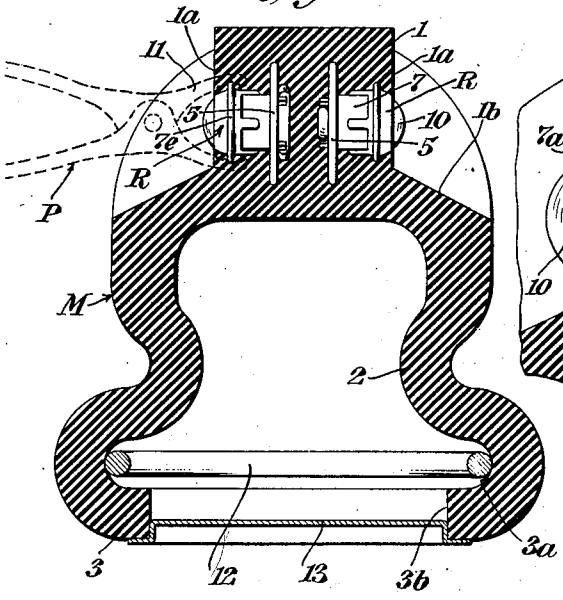


Fig. 3.

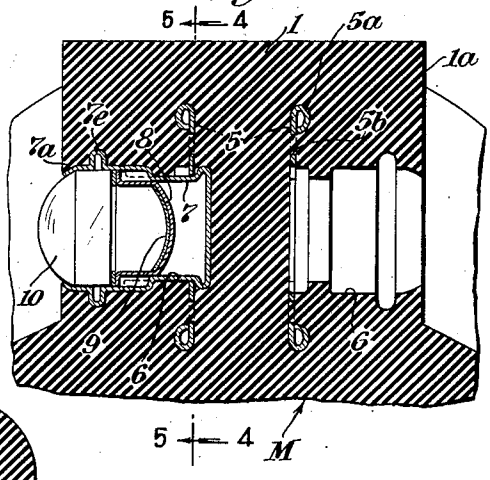


Fig. 4.

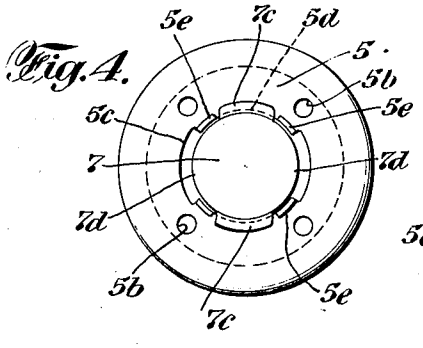
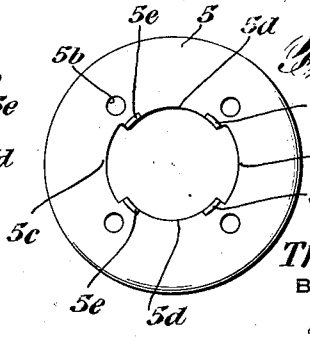


Fig. 5.



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HIGHWAY MARKER AND METHOD OF SECURING THE SAME TO A HIGHWAY

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4 Claims. (Cl. 40—125)

My invention relates to highway markers utilizable, for example, for guiding traffic because equipped with a light reflector or other source of light, for the formation of information-imparting sign arrangements and for other purposes as desired.

My invention has particular reference to a highway marker so constructed and arranged that the upper marker section is movable into a recess in the highway when engaged by an automobile wheel, or other heavy object.

My invention has further reference to a novel method of securing a marker to a highway.

Various other objects, advantages and characteristics of my invention will become apparent from the following description.

My invention resides in the highway marker, features, arrangements and method of the character hereinafter described and claimed.

For an understanding of my invention and for an illustration of various characteristics thereof, reference is to be had to the accompanying drawing, in which:

Figure 1 is a vertical sectional view, partly in elevation, showing my novel marker installed in a highway;

Fig. 2 is an enlarged vertical sectional view, partly in elevation, of the marker shown in Fig. 1;

Fig. 3 is an enlarged vertical sectional view, partly in elevation, of a part of the marker shown in Fig. 2;

Fig. 4 is a transverse elevational view taken approximately on the line 4—4 of Fig. 3 looking in the direction of the arrows;

Fig. 5 is a transverse elevational view taken, with light reflector absent, on the line 5—5 of Fig. 3 looking in the direction of the arrows;

Fig. 6 is a vertical sectional view, partly in elevation, showing a feature of the invention; and

Fig. 7 is a vertical sectional view, partly in elevation, showing another feature of the invention.

Referring to the drawing, M represents a molded, one-piece rubber structure of suitable color, said structure comprising an upper section 1 which, by a neck section 2, is connected to a base section 3. As illustrated, the rubber structure M is elongated and, when seated in the highway, the longitudinal axis thereof, preferably, is at right angles to the highway surface or substantially so. In the example shown, this rubber structure M is hollow, the upper section 1 thereof being of bulb-like configuration and substantially circular in horizontal section when the rubber structure M is positioned vertically as shown in Fig. 2, the neck section 2 being circular, and the base section 3 likewise being circular and of bead-like shape so as to define a circular pocket 3a. As illustrated, the lower rim of the base section 3 is apertured as indicated at 3b and, preferably, this aperture is circular for a reason hereinafter to be described. Further, as illustrated, the diameter of the neck section 2 should be less than that of the upper section 1 and, preferably, the exterior diameter of the base section 3 is somewhat greater than that of said upper section 1. When the exterior surface of the base section 3 is circular, as preferably it is, it is desirable that one or more sections 4, Fig. 1, extend laterally therefrom, these sections 4 preferably being integral with the rubber structure M and being utilizable as hereinafter described.

In accordance with the invention, the above described rubber structure M may serve as a support for one or more light reflectors R such, for example, as are well known in the art of reflecting the light emanating from automobile headlights. These light reflectors R may be secured to the rubber structure M in any suitable manner.

As herein shown, although not necessarily, the mold in which the rubber structure M is formed causes the upper bulb-like section 1 to be formed with oppositely disposed vertical surfaces 1a, 1a from which extend the respective outwardly and downwardly curved surfaces 1b, 1b. In accordance with the invention, that part of the section 1 between the vertical surfaces 1b forms a support for the light reflectors R, R which, as shown in Fig. 2, face in opposite directions. With a construction of this character, the glass lens member of a reflector R may be seated in a recessed section of the marker so as to lessen the liability of breakage of said lens member.

In order that said light reflectors R may be fastened securely in position, it is desirable that a pair of spaced rings 5, one for each light reflector R, be anchored in the aforesaid rubber section 1, each of these rings having a large central opening as disclosed. Preferably, these rings 5 are held in suitable spaced relation with respect to each other and with respect to the interior mold surfaces whereupon the rubber material is molded therearound, these rings, in the resultant molded structure M, being substantially incapable of dislodgement. As shown, it is desirable that each ring 5 be shaped to form a peripheral bead 5a and, further, it is desirable that said rings 5 be apertured as indicated at 5b.

The structural characteristics of these rings as just described contribute in an obvious manner to the secure anchoring of said rings in their intended positions.

During the molding operation, transverse, horizontally disposed passages **6**, **6** are formed in the aforesaid marker section **1**. These passages face in opposite directions and each is horizontally alined with respect to the large central opening of the adjacent ring **5**.

The light reflectors R may be of any suitable construction as well known in the art. As herein shown, each reflector comprises a generally cylindrical housing **7** formed from suitable corrosion-resisting metal. Disposed and seated interiorly of this housing **7** is a cup member **8** having a reflecting surface **9** adapted, when positioned as shown in Fig. 3, to reflect a beam of light substantially in a horizontal direction. Secured in the otherwise open forward end of the housing **7** is a glass lens member **10** of suitable color, this marker being maintained in its intended position by a peened section **7***a* of said housing **7**.

The aforesaid central opening of each ring **5** is generally circular, the diameter of opposite arcuate sections **5***c*, **5***c* thereof being greater than the diameter of opposite arcuate sections **5***d*, **5***d* thereof, Fig. 5, and a lateral lug **5***e* being disposed at the junction of each adjacent pair of these arcuate sections. In a corresponding manner and with corresponding dimensions, the housing **7**, at the rear thereof, is generally circular, opposite arcuate lug sections **7***c*, **7***c* thereof having a greater diameter than opposite arcuate sections **7***d*, **7***d* thereof. It follows, therefore, that a complete light reflector R may be passed axially into a passage **6** and, with the arcuate lug sections **7***c*, **7***c* of the reflector housing **7** alined with the respective arcuate sections **5***c*, **5***c* of the ring **5**, the rear end of said housing **7** may be passed through and beyond the central opening of said ring **5** until the lug sections **7***c* clear the lugs **5***e*. When this has been done, said housing **7** may be given a quarter turn whereby, in bayonet-slot fashion, the lug sections **7***c*, **7***c* move behind the respective arcuate sections **5***d*, **5***d* of the ring **5** and, due to the resiliency of the rubber, are positioned between adjacent pairs of the lugs **5***e*, the light reflector as a unit being held forwardly by the adjacent vertical rubber surface which, to some extent, is under compression at this time.

It will be understood that the peripheral configuration of the passages **6** should be such as to snugly receive the housing **7** of any light reflector R. Preferably, during the molding operation, channels such as shown are formed peripherally of the respective passages **6**, such channels being adapted to receive the respective peripheral projecting surfaces of a housing **7**.

It is highly desirable that the rubber material, by its elasticity, shall act upon the light reflectors R so as to positively retain them in their intended positions as shown on the drawing. Accordingly, it is preferable that the arrangement be such that force must be used to place the rubber material under stress when associating any light reflector with the rubber structure M and this is true particularly with respect to the rubber material at the rear of any passage **6**. To this end, it is desirable that the peripheral projecting surface **7***e* of a selected reflector housing **7** be firmly grasped by the slots formed on the inner surfaces of jaws **11** of a pair of pliers P, Fig. 2, whereupon the last named reflector may readily be associated with the structure M and given the necessary one-quarter locking turn. Further, in a ready manner, the pliers P may be used should it become desirable or necessary to remove any light reflector from its supporting structure M.

In a detailed manner above, I have described a present preferred arrangement for securing one or more light reflectors to a marker structure M. It shall be understood that the invention is not to be thus limited because the light reflectors may be secured to a marker structure M in various ways otherwise than as herein described.

In accordance with present preferred practice, although not necessarily, it is desirable that a metallic ring **12**, or equivalent, be disposed in the pocket **3***a* of the base section **3**, this ring **12** being utilizable in the manner hereinafter described.

Further in accordance with present preferred practice, the complete marker assembly comprises two members **13** and **14**, Figs. 1 and 2. The member **13** is a circular flanged closure device adapted to be inserted stopper-fashion into the above described circular aperture **3***b* formed in the base section **3**. The member **14** is a sleeve adapted to rest upon the upper surface of the base section **3** and forming, with the exterior surface of the neck section **2**, a circular chamber **14***a* utilizable as hereinafter described. The members **13** and **14** should be formed from relatively stiff sheet metal, or equivalent material.

Referring to Fig. 1, H represents any suitable highway and *d* represents a depression that has been formed or cut therein in any suitable manner. The highway H may be one which has previously been constructed and used and, if so, the depression *d* may be chiselled, drilled or otherwise suitably formed in the concrete, macadam, or other material forming said highway. If, for example, the highway is one formed from concrete in process of construction, the depression *d* may readily be formed by the utilization of a suitable tool before the concrete material has hardened or set. Preferably, although not necessarily, the depression *d* is of generally circular configuration and the depth thereof is such that a large part of the upper marker section **1** is disposed above the highway surface.

After formation of a depression *d* in a highway H as described above or otherwise as may be suitable, a highway marker M such, for example, as shown on the drawing is seated in this depression in such manner that the upper marker section **1** extends between 1 and 1½ inches, more or less, above the upper highway surface, whereupon suitable binding or sealing material *s* is disposed in and around the marker M as thus seated, such sealing material being leveled substantially flush with respect to the upper surface of the highway. This sealing material *s* may be of any suitable character. Thus, if the highway H is formed from concrete, the sealing material *s* may be wet concrete. Or, if said highway is formed from asphalt, for example, the sealing material, preferably, is asphalt.

If desirable or suitable, the depression *d* may be of such depth that the lower surface of the marker M seats on the lower horizontal surface of said depression. Or, under some circumstances, a layer of wet concrete, asphalt, or equivalent may be disposed in the bottom of the depression *d*, this layer of material being of suitable thickness so that the marker M, when

seated thereupon as shown in Fig. 1, rises the proper distance above the highway surface.

After the sealing material *s* has hardened or set, the marker M is positively retained in its intended position by the locking action of the set material on the upper exterior surface of the marker base section **3**. Further, such set material coacts with the lateral sections **4** of the base section so as to positively prevent rotation of the marker M while seated within the depression *d*.

As clearly appears from a consideration of Fig. 1, the hereinbefore described members **13** and **14** prevent the passage of the plastic sealing material *s* into the interior of the marker M or into the aforesaid chamber **14***a*. Accordingly, in accordance with a very important characteristic of the invention, the marker M, when the upper section **1** thereof is engaged by an automobile wheel, or equivalent, is depressed until the top marker surface takes a position flush or substantially flush with respect to the upper highway surface. This action occurs because, under the weight of the automobile wheel, the upper marker section **1** is moved downwardly, the bottom thereof moving toward and into the circular chamber **14***a*, and the neck section **2** flattening to some extent and moving downwardly into the base section **3**. The marker neck section **2**, in effect, is a rubber spring and, therefore, when the automobile wheel passes on, the marker immediately resumes its normal position as shown in Fig. 1. In view of the foregoing, it follows that the upper section of the marker M, normally, is disposed above the upper highway surface so as to perform its intended function. Even so, when struck by an automobile wheel, no damage results because the marker is immediately depressed, as described. This, obviously, is highly desirable because, among other advantages, there is no resultant jar or shock to the automobile wheel or to the automobile, the danger of a skid or other accident is obviated, and the shock or damage to the marker itself is decreased.

The use of a ring **12**, or equivalent, is desirable because contributing to the tenacity with which the marker is anchored. Thus, as clearly appears from a consideration of Figs. 1 and 2, should an attempt be made to pull the marker from its seat, the ring **12** positively prevents any substantial compression or distortion of the marker base section **3** and, therefore, when the marker is seated in a highway, as shown in Fig. 1, said ring **12** acts somewhat as a lock to retain the marker in its intended seated position.

As herein shown, the upper marker section **1** is circular and the diameter thereof is of the order of three inches, more or less. It results, therefore, that the diameter of the opening in the sealing material *s* which receives said upper marker section is approximately three inches. Obviously, an automobile wheel may readily pass over a depression of this diameter (as it necessarily does when it passes over a marker M) without any noticeable sinking of the wheel into such depression.

It shall be distinctly understood that the invention is not to be limited to a marker having a configuration nor to one having dimensions of the magnitude just stated. Thus, for example, the marker may have substantial length, as several inches or feet, more or less, and it may be either straight or curved. With such an arrangement, if the width of the marker is not greater than approximately three or four inches, it will be obvious that vehicles may pass thereover and that the depressing and springing action thereof will be substantially the same as hereinbefore described.

In the form of my invention illustrated in Fig. 7, a modified form of cylindrical member **14***b* is utilized in lieu of the member **14** of Fig. 1. This member **14***b* should be formed from relatively heavy sheet steel, or equivalent, and the dimensions thereof should be such that it extends to the level of the highway and terminates in a circular flange **14***c* which, preferably, is seated in the highway. As illustrated, the upper part of the member **14***b* is flared outwardly so as to form a smooth surface which is engaged by the upper marker section **1** when the latter is depressed by an automobile wheel. The provision of a member **14***b*, then, decreases wear on the marker and, therefore, it is desirable that the members **14***b* be used with those markers which, by reason of their location, are apt to be repeatedly depressed.

In the form of the invention shown in Fig. 6, another form of cylindrical member **14***d* is used instead of the member **14** of Fig. 1 and the member **14***b* of Fig. 7. The member **14***d* extends upwardly to the level of the highway and terminates in a circular flange **14***e* which, preferably, is seated in the highway surface as shown. This flanged section **14***e* should be of substantial width and it should have a significant color readily noticeable by a motorist. Thus, the member **14***d* or the flange **14***e* thereof may, for example, be formed from white or yellow rubber, porcelain, glazed tile, metal or the like. A combined arrangement such as shown in Fig. 6 is advantageous because the light reflectors R serve as guiding signals during the night time while the flange **14***e* is particularly useful as a marker signal during the day time.

As readily appears, the lower sections of the respective members **14***b* and **14***d* preferably serve in the same sense as the member **14** of Fig. 1 as a wall defining the chamber **14***a* and preventing the passage of plastic cementitious material thereinto.

Although the invention has been herein described in connection with a rubber marker, it shall be understood that the invention is not to be thus limited. Thus, for example, the upper marker section **1** could be formed from metal, a phenol condensation product, or equivalent, such upper marker section being secured to the base section **3** by the neck section **2**, if desired.

While I have shown my novel marker as having a pair of light reflectors R associated therewith, it shall be understood that, if desired, one, two or any other suitable number of such light reflectors may be utilized with each marker. Further, if desired, the marker may be utilized without any light reflector whatsoever.

While the invention has been described with respect to certain particular preferred examples which give satisfactory results, it will be understood by those skilled in the art after understanding the invention, that various changes and modifications may be made without departing from the spirit and scope of the invention and it is intended therefore in the appended claims to cover all such changes and modifications.

What is claimed as new and desired to be secured by Letters Patent is:

1. A highway marker comprising a structure adapted to be secured to a highway with its lon-

gitudinal axis disposed substantially vertically, said structure comprising an upper bulb-like section adapted to be normally disposed above the highway surface, a lower bead-like section adapted to be seated in the highway, and a connecting spring-forming neck section defining a convex surface protruding inwardly toward the longitudinal axis of said marker and the marker defining an interior space disposed above said convex surface, said spring-forming neck section being adapted to be disposed below the surface of the highway and yielding downwardly and inwardly when the marker is subjected to wheel impact.

2. A highway marker arrangement comprising an elongated structure adapted to be secured to a highway with its longitudinal axis disposed substantially vertically, said structure comprising an upper bulb-like section, a lower bead-like section and a connecting neck section, and a sleeve adapted to be positioned exteriorly on said structure and around said neck section so as to form a substantially closed circular chamber.

3. A highway marker arrangement comprising a tubular structure adapted to be secured to a highway with its longitudinal axis disposed substantially vertically, said structure comprising an upper bulb-like section and a lower bead-like section having a passage leading into the interior of said tubular structure, a reinforcing ring disposed interiorly of said bead-like section, and a member adapted to be associated with said bead-like section so as to close said passage.

4. The combination with a section of material forming a highway, of means secured to said section of material and comprising a bearing member having an aperture extending in substantially a vertical direction, said bearing member in part at least defining a recess in said section of material, a highway marker comprising an elongated structure adapted to be positioned in said recess with its longitudinal axis disposed substantially in a vertical direction and with the upper section thereof extending freely through said bearing member, said structure comprising a lower bead-like section, and means comprising some of the highway material for anchoring said bead-like section to the highway, the internal diameter of said bearing member being less than the external diameter of said bead-like section, said marker being so constructed and arranged that the upper section thereof moves downwardly with respect to said bearing member when subjected to wheel impact.

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