FIG. 1

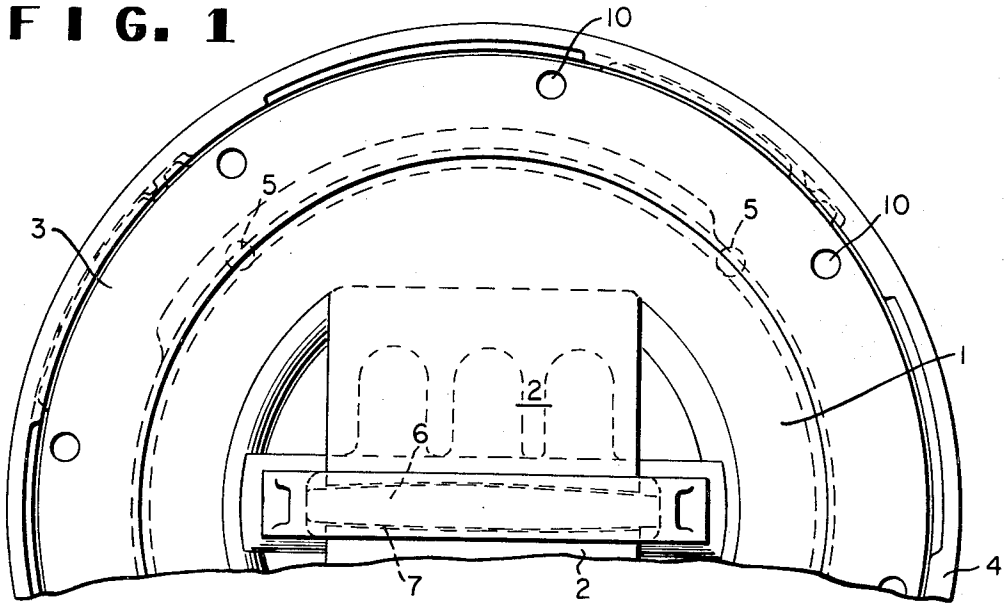
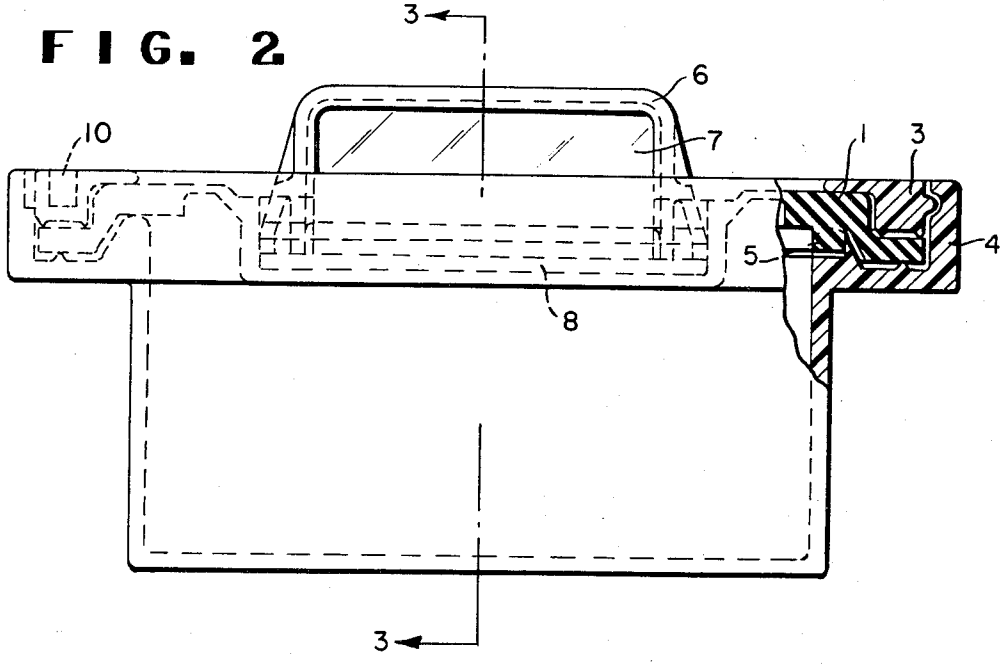


FIG. 2



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United States Patent [19]

Shields et al.

[11] **3,717,076**

[45] **Feb. 20, 1973**

[54] TRAFFIC LANE INDICATOR

[75] Inventors: **John Shields**, Wilmington; **James Mengason**, Hockessin, both of Del.

[73] Assignee: **E. I. du Pont de Nemours and Company**, Wilmington, Del.

[22] Filed: **Aug. 6, 1971**

[21] Appl. No.: **169,676**

[52] **U.S. Cl.** **94/1.5**

[51] **Int. Cl.** **E01c 23/16**

[58] **Field of Search** 94/1.5

[56] **References Cited**

UNITED STATES PATENTS

2,073,968	3/1937	Krebs	94/1.5
2,192,878	3/1940	Beebe	94/1.5
2,703,038	3/1955	Shaw	94/1.5
2,941,447	6/1960	Abbott	88/79
3,257,552	6/1966	Converso	94/1.5 X
3,292,506	12/1966	Kone	94/1.5
3,377,930	4/1968	Kone	94/1.5

Primary Examiner—Nile C. Byers, Jr.

Attorney—Herbert W. Larson

[57] **ABSTRACT**

A reflector-type lane marker comprising a base cup, a resilient elastomeric diaphragm peripherally anchored on the rim of said cup, means for sealing said diaphragm to said rim; an upright traffic lane indicator mounted on a retaining member having a channel for receiving said indicator and a plurality of titted projections at right angles to said channel and cooperatively molded into the center of said elastomeric diaphragm.

7 Claims, 7 Drawing Figures

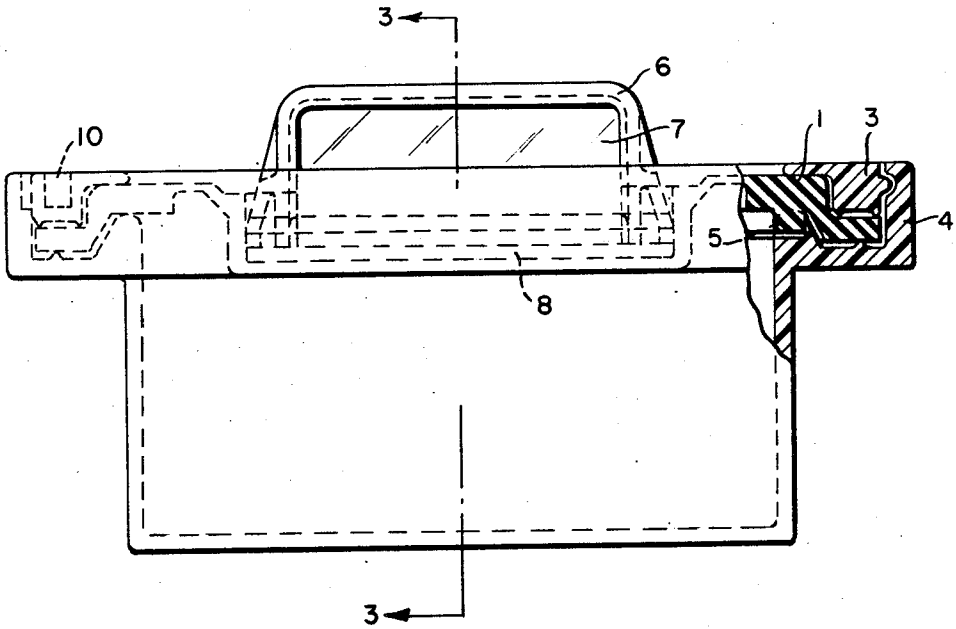


FIG. 3

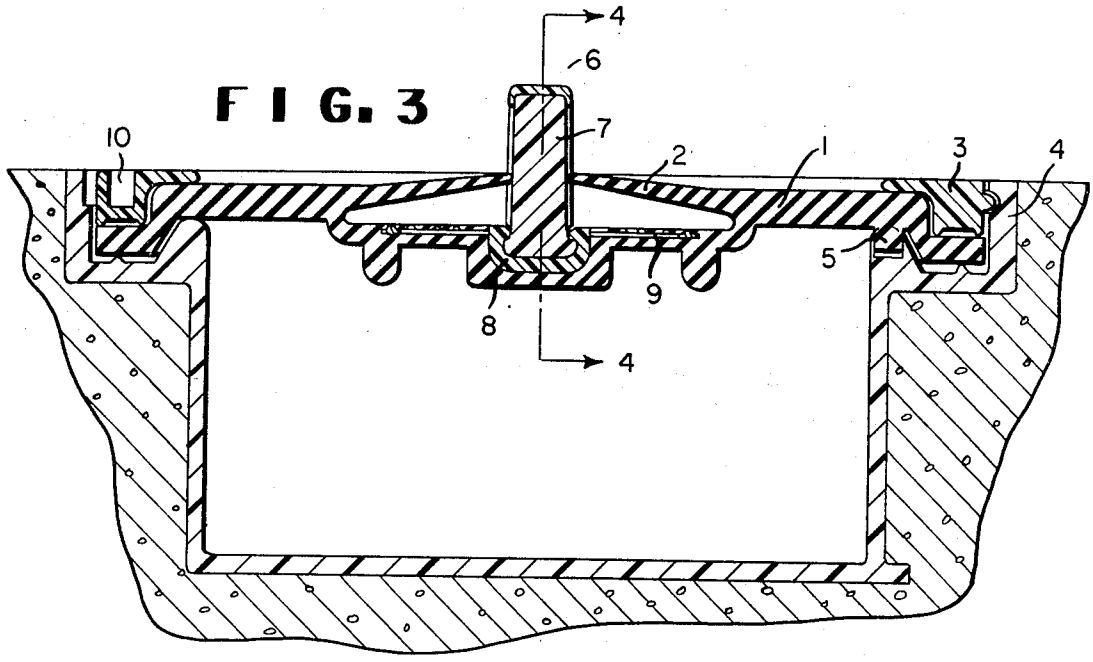
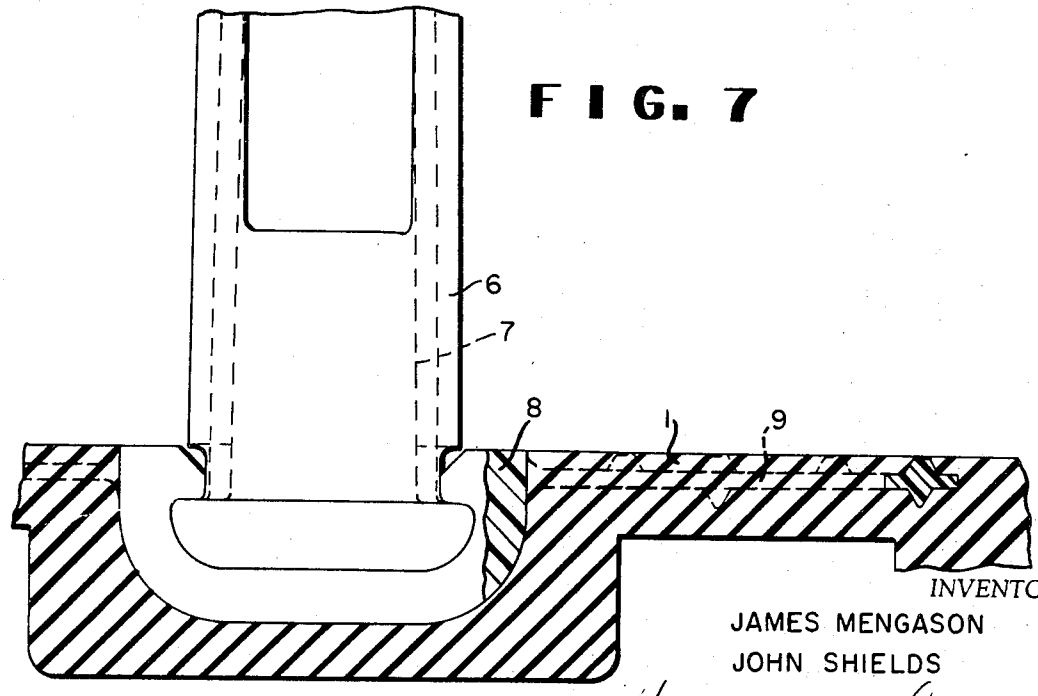


FIG. 7



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FIG. 4

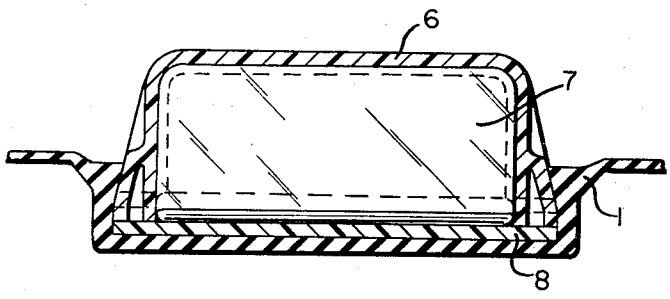


FIG. 5

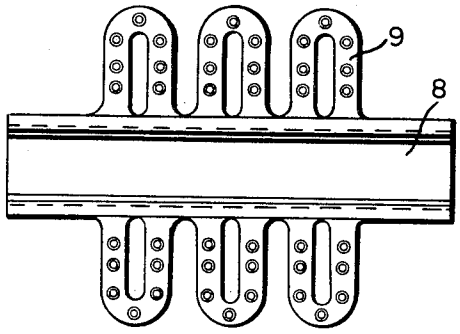
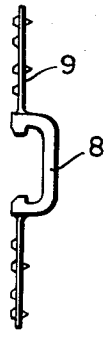


FIG. 6



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TRAFFIC LANE INDICATOR

SUMMARY OF THE INVENTION

This invention relates to reflector-type traffic lane delineators. More specifically, it refers to an improved device, for use in reflector-type traffic lane delineators, to support an upright reflector-lens and allow said lens to be moved downward by passing vehicles and pop-up thereafter without damage.

BACKGROUND OF THE INVENTION

Current emphasis on increased highway safety has generated many new and novel ideas on highway reflector-type lane markers. Such markers are described in U. S. Pat. Nos. 2,373,667, 2,377,930, 2,703,038 and 3,570,377. Whereas the road markers set forth in these patents may be useful as lane-delineators in some circumstances, it is apparent that a need exists for an improved mechanism for allowing the portion of the marker carrying the reflective lens to be pushed down into the cup and pop back up after an automobile tire or snowplow has passed over it without injury to the lens and without displacing the lens base from its mounted position.

The present invention allows the lens in the reflective-type lane marker to be pushed down and pop-up without injury even after a direct hit by the blade of a snowplow.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows a top or plan view of a portion of the traffic lane delineator. It shows the elastomeric diaphragm, 1, elastomeric flaps, 2, hinged to the elastomeric diaphragm and abutting the lens, 7, and its protective housing, 6. The diaphragm retaining ring, 3, and its holes, 10, for sealing the diaphragm to the cup, 4, and the diaphragm-lens locators, 5, are also depicted.

FIG. 2 is an elevational front view of the apparatus of FIG. 1, partially in section. The elastomeric diaphragm, 1, with its lens locator, 5, is shown sealed by the diaphragm retaining ring, 3, to the cup, 4. The lens, 7, and its protective housing, 6, is also shown.

FIG. 3 is a cross-section taken along lines 3—3 of FIG. 2. The elastomeric diaphragm, 1, is shown sealed by the diaphragm retaining ring, 3, to the cup, 4. The lens, 7, with its protective housing, 6, is shown seated in the plastic lens channel, 8, which is cooperatively molded (embedded) utilizing side projections, 9, into the elastomeric diaphragm, 1. The elastomeric flaps, 2, are shown as they are at rest against the lens, 7.

FIG. 4 is a sectional view taken along line 4—4 of FIG. 3. The view shows the lens, 7, edged by its protective housing, 6, seated within the elastomeric diaphragm, 1.

FIG. 5 is a plan view of the lens-housing retaining member showing the plastic channel, 8, and its titted projections, 9.

FIG. 6 is an end view of the lens-housing retaining member shown in FIG. 5 and also shows the plastic channel, 8, and its titted projections, 9, which are cooperatively molded into the elastomeric diaphragm. The channel, 8, receives the protective housing, 6, and the lens, 7, by sliding the base of the protective housing and lens into the channel or by mechanically snap-fitting the base of the protective housing and lens directly into the channel.

FIG. 7 is an enlarged end view of the lens, 7, housing, 6, plastic channel, 8, and side projections, 9, embedded in the elastomeric diaphragm, 1.

DETAILED DESCRIPTION OF THE INVENTION

The base cup of the lane delineator can be made out of many different materials such as metal, polyethylene, polypropylene and nylon. It is found that the use of a high density polyethylene plastic gives excellent results. The base cup can have projections at right angles to the exterior side of the cup so that the cup will not be movable when embedded in concrete, epoxy or other solid material.

The resilient elastomeric diaphragm can be made of neoprene, natural rubber or other resilient materials and is secured to the periphery of the cup by a ring (retaining) seal. The use of neoprene gives the best protection against weathering. The turning of the sealing ring, one-quarter turn, by placing a turning key in the holes, 10, is sufficient to seal the resilient elastomeric diaphragm to the rim of the cup.

The upright traffic lane indicator is a retroreflective methyl methacrylate, glass beaded surface or liketype reflective lens assembly mounted on a retaining member which in turn is cooperatively molded to the elastomeric material. In this manner, the lens assembly can be slidably removed from the retaining member and easily replaced without disturbing the entire lane marker. Alternatively, the ring seal can be removed and a new resilient elastomeric diaphragm with attached lens assembly and retaining member therefor can replace the old parts without disturbing the position of the base cup.

The supporting or retaining member for the reflective lens assembly must be sufficiently strong to withstand repeated flexure and the force of being hit by heavy objects. A plastic retaining member for the lens assembly having a tensile strength of at least 5,000 psi and a flexural modulus of elasticity of at least 300,000 psi at 73°F. and 50 percent relative humidity is used. Test procedures can be found in ASTM D 638 and D 790. It is preferred that the retaining member be a strong plastic and, in particular, one such as an acetal resin, nylon or ABS plastic and most preferably an acetal resin having a tensile strength of about 10,000 psi and a flexural modulus of elasticity of about 410,000 psi at 73°F. and 50 percent relative humidity. The lens assembly retaining member can be molded as a single unit in which a channel is provided as in FIGS. 5 and 6 and side projections are provided at an angle and preferably at a right angle to the channel with holes and spacing tits on the side projections so that there can be a cooperative molding with the elastomeric material to prevent tearing. The molding of the elastomeric material to the retaining member must be with a sufficiently thick layer of elastomeric material so that the side projections of the lens assembly retaining member will not tear and rip out of the elastomeric material by repeated movement of the lens reflector up and down into the cavity of the cup. It is preferred that three projections from each side of the retaining member be used for firm seating in the elastomeric material. It is understood, of course, that the number of

side projections can vary and can be more or less than three as desired.

One can coin the side projections just before the point of meeting the channel side so that a hinge arrangement is formed, thereby allowing for greater flexure without decrease in strength of the plastic member.

The lens assembly can be slidably inserted into the channel of the plastic retaining member from the end or snap-fitted downward into the channel. In the latter case, it would be difficult to replace the lens assembly. It is therefore preferred that a slidable channel be provided in the retaining member and that the lens assembly be fitted to slide into or out of this channel.

In operation, when a vehicle tire or blade of a snowplow passes over or hits the reflector lens, the lens assembly and its retaining member move sideways and downward deeper into the elastomeric material and the cavity of the road marker cup. As soon as the obstruction has passed the resiliency of the retaining member and the force of the compressed air pressure within the cup causes the lens assembly to return to its upright position.

The protective housing for the three exposed sides of the lens is made of molded nylon or other strong plastic to remove the chance that a sideways blow will crack the edge of the lens.

We claim:

1. In a reflector-type lane marker comprising a base cup with a bottom and upright rim forming a chamber open at the top of the rim, a resilient elastomeric diaphragm removably secured to the periphery of said rim and means for sealing said diaphragm to said rim to withstand passage of air and water, an upright traffic lane lens assembly and means for mounting said lens assembly in the central portion of said diaphragm and external to said chamber, the improvement comprising mounting said lens assembly in a plastic retaining member having a tensile strength of at least 5,000 psi and a flexural modulus of elasticity of at least 300,000 psi at 73°F. and 50 percent relative humidity, said retaining member having a channel for receiving said lens assembly and a plurality of titted angled projections on both sides of said channel, cooperatively molded into said elastomeric diaphragm.

2. The lane marker according to claim 1 wherein the retaining member is molded from acetal resin.

3. The lane marker according to claim 1 wherein the lens assembly is snap-fitted into said channel.

4. The lane marker according to claim 1 wherein the lens assembly is slidably mounted in said channel.

5. The lane marker according to claim 1 wherein the retaining member is a one-piece unit molded from acetal resin having a plurality of titted, angled and perforated projections on each side of said channel.

6. The lane marker according to claim 5, wherein the elastomeric diaphragm into which said retaining member is cooperatively molded is made of neoprene.

7. The lane marker according to claim 5, wherein there are three titted, right angled perforated projections on each side of said channel.

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