Sept. 16, 1969 D. A. RICHARDSON ET AL 3,466,985

REFLECTING ROAD BEACONS

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Fig. 1.

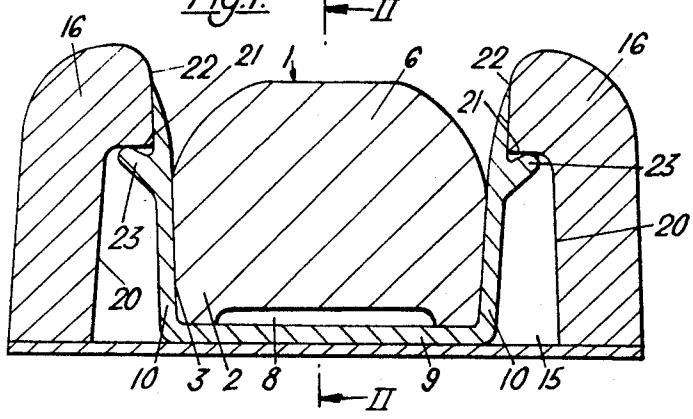

Fig. 2.

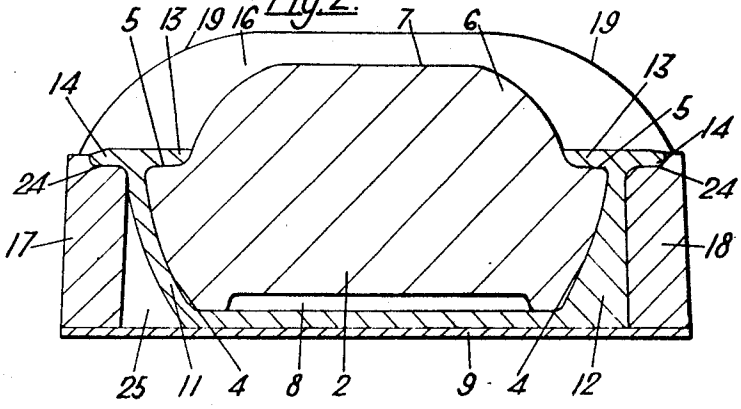

Fig. 5.

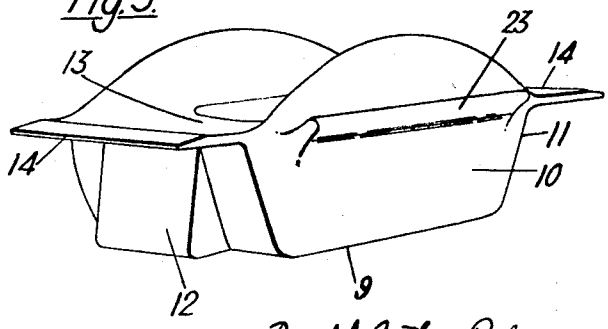

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Fig. 3.

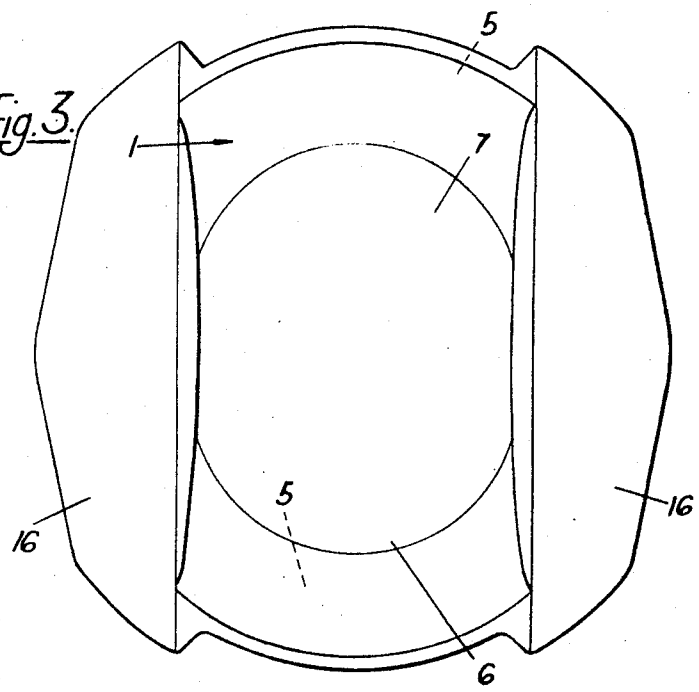


Fig. 4.

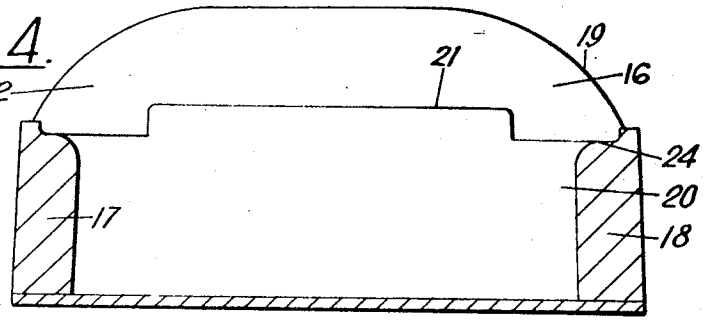
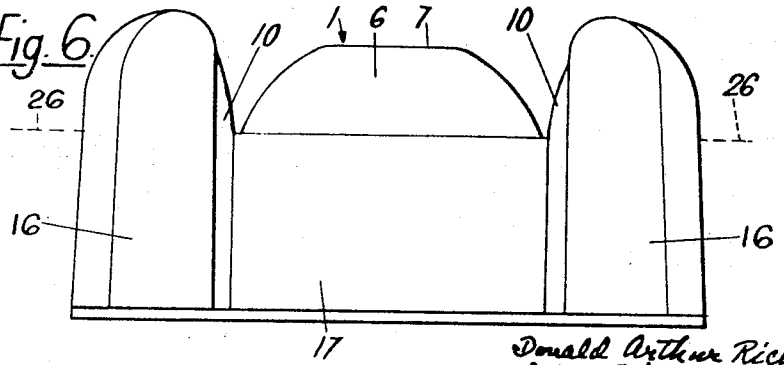


Fig. 6



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REFLECTING ROAD BEACONS

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Int. Cl. E01f 9/06

U.S. Cl. 94—1.5 2 Claims

ABSTRACT OF THE DISCLOSURE

A reflecting road stud is mounted in a resilient mounting which is held in a casing for mounting the stud in a hole in a road surface.

Background of the invention

This invention relates to reflecting road beacons incorporating reflecting road studs and more especially to road beacons for use in marking a line on a highway and incorporating moulded glass road studs of the auto-collimating type.

It is a main object of the present invention to provide an improved reflecting road beacon which can be conveniently seated in a road surface and which is protected from traffic when in position in the road surface.

Summary

According to the invention a reflecting road beacon comprises a moulded glass stud of rectangular form consisting of a base portion with curved reflecting surfaces at either end, shoulders joining the ends of the base portion to a dome projecting centrally from the base portion, a resilient mounting for the stud in which the stud is seated and held, and a casing for mounting the stud in a hole in a road surface, which casing is formed with a central depression in which the resilient mounting carrying the stud is held.

In a preferred embodiment of the invention, the resilient mounting for the stud has flexible lips which fit over the shoulders on the glass stud to hold the stud in the mounting.

In the preferred embodiment of the invention, the resilient mounting is of generally rectangular shape corresponding to the form of the stud, and has integral flanges projecting upwardly from the sides of the mounting, the casing is formed with a central depression of rectangular form having shoulders extending along the upper edge of each of the longest side walls of the depression, and the flanges on the resilient mounting snap under the shoulders to hold the stud in its mounting in the casing.

Preferably the side walls of the casing curve upwardly above the level of the top of the central dome of the glass stud. This feature provides some protection for the exposed surface of the stud against abrasion by grit as vehicle wheels run over the road beacon.

In use the road beacon is so positioned in a road surface that the longest axis of the stud of rectangular form lies parallel to the direction of travel of vehicles on the road so that there is a maximum light reflection from the shorter ends of the stud which are exposed to light from the oncoming traffic. The special shaping of the casing which mounts the stud in the road surface is such that the shorter ends of the stud are completely exposed to the beams of light from the headlamps of oncoming vehicles.

Brief description of the drawings

FIG. 1 is a vertical section through a reflecting road beacon according to the invention, illustrated by way of example, the section being along the shorter axis of the glass road stud of elongated shape,

FIG. 2 is a section on line II—II of FIG. 1,

FIG. 3 is a plan view from above of the road beacon of FIGS. 1 and 2,

FIG. 4 is a sectional view of the casing which is fitted into a hole in the road surface. This view being similar to that in FIG. 2 but with the glass stud and its resilient mounting removed,

FIG. 5 is a perspective view of the resilient mounting for the stud, and

FIG. 6 is an end elevation of the road beacon.

Description of the preferred embodiment

Referring to the drawings a reflecting road beacon according to the invention, comprises a moulded glass road stud indicated by the general reference **1** and consisting of a base portion **2** of elongated and generally rectangular form. The longer sides of the rectangular base portion **2** are flat as indicated at **3** in FIG. 1. The shorter end surfaces of the base portion are formed as curved reflecting surfaces **4** at either end of the base portion. These curved reflecting surfaces are joined at their upper peripheries by shoulders **5** to a central dome **6** of elliptical form which projects centrally from the base portion **2**. The top of the dome section is flattened off as indicated at **7** in FIGS. 1 and 2.

At the central part of the longest sides **3** of the stud the outer surface of the dome **6** is continuous with the side walls **3** of the base portion **2** of the stud.

The curved surfaces **4** of the end of the base portion **2** of the road stud are spherical surfaces and their reflecting properties may be enhanced by coating them with a reflecting metal coating. For example the surfaces **4** may be coated with a metal by vapourising a metal under vacuum onto the surfaces **4** in well known manner and then applying a protective coating of paint. The surfaces of the dome **6** which are exposed to incident light from vehicle headlamps, that is notably the surfaces of the dome at the ends of the stud, are also of spherical shape and form with the spherical surfaces **4** of the base portion auto-collimating surfaces for light incident on the front and rear parts of the dome surface.

That is light incident on the dome is emergent after reflection from one of the surfaces **4**, back in the direction of the incident light. When the road beacon is in position in a road its longer axis is substantially parallel to the direction of approach of the traffic and light from a headlamp of a vehicle strikes one end of the dome and is reflected back to the driver of the vehicle so that he sees the road stud as a bright patch of light in the road surface.

The stud has a central dimple **8** formed in its lower surface in the moulding operation by the action of the plunger entering the charge of molten glass in the mould, and after moulding the stud is toughened before any reflective coating is applied to the surfaces **4**.

The stud **1** is seated in a resilient mounting which is also of generally rectangular form and consisting of a base **9** and side walls **10** into which the road stud **1** fits snugly. At its ends the resilient mounting is curved internally to accommodate and fit closely the end curved surfaces **4** of the base portion of the stud. At one end of the resilient mounting shown at the left hand side of FIG. 2, the end wall of the mounting is a thin curved wall **11**. At the other end of the mounting, the end wall is formed as a solid nose **12** whose function will be referred to below. The formation of the nose **12** is also

illustrated in the perspective view of the resilient mounting shown in FIG. 5.

The tops of the end walls **11** and **12** of the resilient mounting are formed with flexible lips **13** which fit over the shoulders **5** at the ends of the road stud. The lips **13** also extend outwardly as indicated at **14** to assist the location of the resilient mounting in the outer casing of the road beacon.

The casing for mounting the stud in a hole in the road surface is a moulded cast iron casing which is formed with a central depression **15** of rectangular form for receiving the moulded glass stud in its resilient mounting.

The casing is moulded so that it projects upwardly above the level of the top **7** of the dome **6** along the longest sides of the stud to form two side walls **16** which curve upwardly from the front and rear faces **17** and **18** of the casing as indicated at **19** in FIG. 2. A vehicle type can ride up over these curved surfaces thereby avoiding damaging contact with the surface of the dome of the glass stud.

The side walls **16** of the casing have their inner surfaces recessed as indicated at **20**. This results in the formation of shoulders **21** in the inner surfaces of the casing which shoulders are at a level just above the bottom of the dome **6** of the stud. The side walls **10** of the resilient mounting extend above the level of the base portion of the stud and are tapered away to a top edge so as to fit against the inner surfaces **22** of the upwardly extending parts of the side wall **16** of the casing. Projecting from the sides **10** of the resilient mounting at a slight angle there are integral flanges **23**, and these flanges engage under the shoulders **21** when the stud is in position in its casing.

In assembling the reflecting road beacons the glass stud is first of all pressed into its resilient mounting and the lips **13** hold the stud in the mounting by their pressure on the shoulders **5** at the front and rear ends of the stud. The end walls **17** and **18** of the casing are rabbeted as indicated at **24** to receive the extensions **14** of the lips **13** of the resilient mounting.

First of all the nose **12** of the mounting is placed downwardly into the casing. The fact that the opposite end wall of the resilient mounting is a thin wall whose outer surface is curved to the same shape as the curved reflecting surface **4** at that end of the stud enables the resilient mounting to be pivoted down into the casing there being a space indicated at **25** existing between the end wall **11** of the resilient mounting and the end wall **17** of the casing.

As the stud is, in its mounting, pivoted downwardly in the casing the flanges **23** on the side walls of the resilient mounting snap under the shoulders **21** formed in the side walls of the casing and by this means the stud in its resilient mounting is firmly held down in the casing. After this simple assembly operation the complete road beacon in its cast iron casing is ready for insertion into a prepared hole in the road surface. The casing is sunk in the road surface to the level of the tops of the front and rear end walls **17** and **18** of the casing so that the dome of the reflecting stud is visible to the driver of an approaching vehicle and all the base portion of the stud with its reflecting end faces **4** is sunk below the road surface. The level of the road surface is indicated at **26** in FIG. 6.

The resilient mounting in which the stud is seated in the casing not only permits the stud to be slightly depressed in its seating if a vehicle will press on the dome **6** of the stud but also prevents any possibility of the glass chafing against the cast iron casing, and also prevents the ingress of dirt and moisture around the reflecting surfaces **4** of the base portion of the stud.

The front and rear faces of the dome **6** of the elongated stud are unobstructed as clearly shown in FIG. 6 and there is a maximum possible reflection of incident light back from the stud to the driver of an oncoming vehicle. The presence of the thickened side walls **16** as well as enabling the stud to be easily mounted, also protects the upper surface of the stud by providing tracks for vehicle wheels running over the road beacon and in addition prevents spurious light reflection from the sides of the glass stud, so that the stud only reflects light from oncoming vehicles.

We claim:

1. A reflecting road beacon comprising a moulded glass stud of rectangular form consisting of a base portion with curved reflecting surfaces at either end and shoulders joining the ends of the base portion to a dome projecting centrally from the base portion, a resilient mounting for said stud in which said stud is seated and held, which mounting is of generally rectangular shape corresponding to the form of said stud, has flexible lips which fit over said shoulders of said glass stud to hold the stud in said mounting, and has integral flanges projecting upwardly from the sides of the mounting, and a casing for mounting said stud in a hole in a road surface, which casing is formed with a central depression of rectangular form in which the resilient mounting carrying the stud is held and has shoulders extending along the upper edge of each of the longest side walls of said depression, said upwardly projecting flanges on the resilient mounting snapping under said shoulders of said casing to hold the stud in its mounting in the casing.

2. A road beacon according to claim **1**, wherein the side walls of the casing curve upwardly above the level of the top of the central dome of the glass stud.

References Cited

FOREIGN PATENTS

1,018,831 2/1966 Great Britain.

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