United States Patent

[11] 3,596,628

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[73] Assignee **Utility Products Inc.**
Oakland, Calif.
Substitute for application Ser. No. 599,427, Dec. 6, 1966.

[54] **WARNING MARKER**
1 Claim, 6 Drawing Figs.

[52] **U.S. Cl.** ..... **116/63 P,** 40/125 N, 94/1.5
[51] **Int. Cl.** **E01f 9/00**
[50] **Field of Search** ..... 116/63, 63 P; 40/125 N; 94/1.5

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ABSTRACT: Disclosed herein is a method of making a weighted warning marker wherein the warning marker body is formed about a rigid core, and wherein the rigid core is acted upon to make it nonrigid while it is enclosed within the marker body. Also disclosed is a weighted warning marker made by the above method wherein the core which acts as a weight is composed partly of magnetic material.

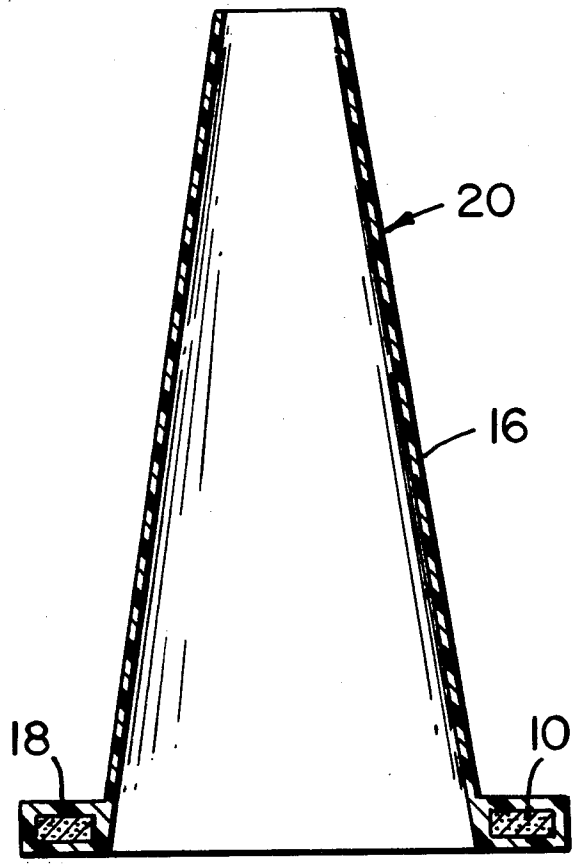


FIG_1

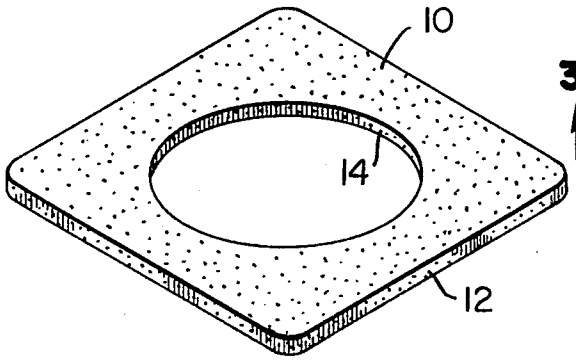


FIG_2

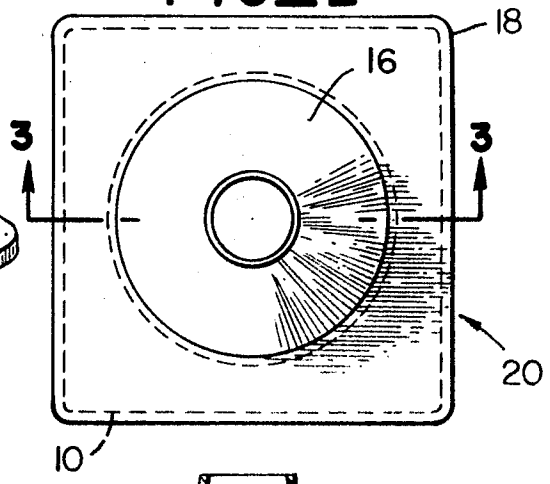


FIG_3A

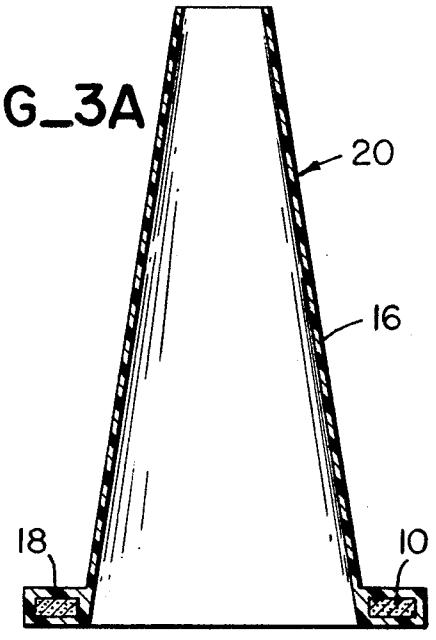


FIG_3B

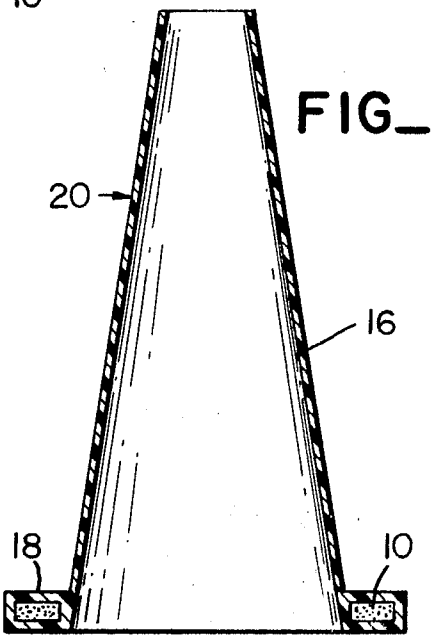
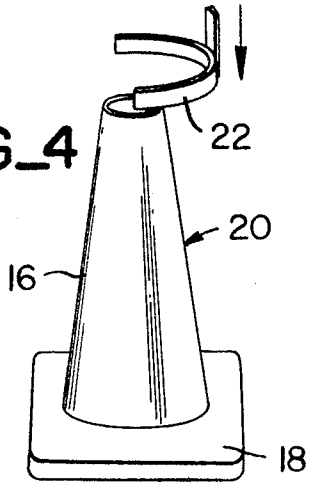


FIG_4



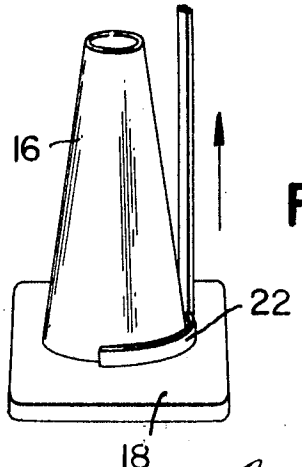


FIG_5

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WARNING MARKER

CROSS-REFERENCES TO RELATED APPLICATIONS

This application is a substitute for forfeited application Ser. No. 599,427, filed Dec. 6, 1966 and allowed Dec. 14, 1967.

BACKGROUND OF THE INVENTION

This invention relates to a method of making a weighted warning marker, and, more particularly, to a method of making a warning marker which contains a disintegrated core to act as a weight. The invention also relates to a weighted warning marker which is most favorably made by that method.

Warning markers have, of course, found many uses, one of the most important being in connection with highways, wherein they are used to separate highway lanes, to warn of road construction ahead, to reroute traffic, and the like. Their use in connection with highways as above puts certain demands on their physical properties. For example, it is desirable to have a relatively resilient highway marker body so that if the marker body is struck by a vehicle, little or no damage will result to the vehicle or to the marker. Yet it is also desirable for the highway marker to be as stable as possible so that it will remain upright and in proper position when acted upon by wind or by the air pressure or vacuum created by a passing vehicle. Thus it is known for a highway marker to be of generally light construction but with a relatively heavy weight disposed within its base.

A further refinement of this type of marker is known. It has been found advantageous to form the weight of a relatively heavy granular material such as sand. This type of construction meets the demands pointed out above, plus having the added advantage that if the highway marker is thrown up against a passing vehicle by a strong wind, or by air pressure or vacuum produced by the passing vehicle, little or no damage will result to the vehicle. This is so because the weight is not rigid but flexible, and thus it will flex under the force of the blow.

This form of marker is conventionally fabricated by molding a marker body with an annular depression in its base, filling the annular depression with sand, and then sealing the sand within the base. This method, however, is unsatisfactory for several reasons.

The loose sand must first be placed into the depression, and handling of loose sand in such a relatively exact operation can be quite difficult. Then the body must be sealed about the sand so that the sand is completely enclosed. This may involve a great deal of sealing, since the exposed area of sand before sealing is often relatively large, unless instead of an annular depression an annular hollow portion is formed within the base during the molding operation. The latter method would allow the use of a relatively small opening in the marker body through which sand could be introduced into the hollow portion, thus reducing the amount of sealing to be done. But this method results in the handling of the sand being quite difficult and time consuming, since the sand must be passed through a relatively small aperture on its way to the hollow portion.

Applicant's invention overcomes the above problems by providing a method of making a flexible-core weighted warning marker which is quite simple, and wherein the problems of sealing and introducing sand pointed out above do not arise.

It is also conventional practice to place and pick up warning markers by running a truck alongside a row of the markers and having a man place or pick up by hand each marker. This requires the man to reach and lean to a great degree, and perhaps to continuously dismount and mount the truck. A crew of two or more men may be required. In any case, it is a relatively slow operation. Applicant's invention overcomes these problems by providing a warning marker which can be placed and picked up by means held remotely from the truck.

SUMMARY OF THE INVENTION

Broadly stated, applicant's method of forming a weighted marker comprises forming a rigid core, fabricating a warning marker body about the rigid core, and disintegrating the rigid core enclosed within the warning marker body. Broadly stated, applicant's apparatus comprises a body, and a core consisting at least partially of magnetic material, the core being enclosed within the body.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a top perspective view of the core;

FIG. **2** is a plan view of the weighted warning marker;

FIG. **3***a* is a section of the weighted warning marker taken along line **3–3** of FIG. **2** while the core is still rigid;

FIG. **3***b* is a section of the weighted warning marker taken along line **3–3** after the core is disintegrated;

FIG. **4** is a top perspective view of the weighted warning marker and a pickup device; and

FIG. **5** is a top perspective view of the weighted warning marker and pickup device after the marker has been picked up.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In FIG. **1**, a flat rigid core **10** has been formed. The outer periphery **12** of the core **10** may be substantially square, and the inner periphery **14** of the core **10** substantially circular. The core **10** consists of granules of relatively heavy material which are bonded together. The relatively heavy material may preferably be a mixture of iron and sand, or it may also be only sand. The binder holding the granules together may with advantage be heat-sensitive, or force-sensitive. That is, the application of heat will melt the heat-sensitive binder, resulting in the granules being loose. Similarly, the application of force, such as a blow, will shatter the force-sensitive binder, resulting in the granules being loose. It may also be advantageous to use a binder which disintegrates with time. Binders of all these types are known.

In FIG. **2**, a highway marker cone body **16** has been molded preferably of relatively light plastic, with its base **18** enclosing the core **10**. This is preferably done by supporting the core **10** within an injection mold by resting it on pins each of which is connected to the injection mold. The core **10** is so supported within the mold that the core **10** is coaxial with the cone body **16** to be formed and is so held that the entire surface of the core **10** is covered by molded material except those points where the pins contact.

After molding the cone body **16**, it and the core **10** are removed from the injection mold and pins. If necessary, the small holes produced by the pins are fused over or plugged, depending on the material used for the cone body. Thus a weighted warning marker **20** is formed.

In FIG. **3***a*, the rigid core **10** is shown completely enclosed within the base **18** of the highway marker cone body **16**.

In FIG. **3***b*, the core **10** is shown in a disintegrated state completely enclosed within the base **18** of the highway marker cone body **16**. In the case of the use of a heat-sensitive binder, the disintegration has been effected by the application of heat to the base **18**. In the case of the use of a force-sensitive binder, the disintegration is the result of an impact on the base **18**. In the case of the use of a binder which disintegrates with time, the disintegration has been effected by the passage of time. In any case, the core **10** is no longer rigid but is composed of individual loose granules.

FIG. **4** shows a weighted warning marker **20** when the core **10** within the base **18** has been formed at least partially of magnetic material, such as iron granules. This use of magnetic material allows the weighted warning marker **20** to be picked up or placed remotely by means of a magnet **22**, shown schematically in FIGS. **4** and **5**, which is adapted to fit around the marker body **16** and in contact with the base **18**.

FIG. **5** shows the weighted warning marker **20** suspended by the magnet **22** acting on the magnetic material of the core **10**.

Applicant has thus disclosed a simple method of fabricating a flexible-core weighted warning marker with the advantages attendant thereto, and has overcome the problems of handling granules, and of sealing the granules in. The problem of handling granules never arises since the core is rigid until the warning marker body is formed about it. The problem of sealing involves, at most, the sealing of a few pinholes in the warning marker body. Applicant has further disclosed a weighted warning marker which can advantageously be produced by applicant's method and which can be picked up and placed by remote means, dispensing with the requirement that a man lean and reach from a truck to a great degree, or perhaps mount and dismount the truck to place or remove the markers, and dispensing with any need for two men.

It will be seen that the present invention provides a simple method of forming a weighted warning marker and also provides a weighted warning marker which can be placed or

picked up by remote means. Obviously, the invention can be carried out in many different ways, of which the embodiment shown in this application is merely illustrative. Therefore, I do not desire to be limited by the embodiment shown and described, but rather only by the scope of the following claim.

I claim:

1. A warning marker comprising:
   a. a generally frustoconical body of flexible nonmagnetic material;
   b. an integral flange extending outwardly from said body and forming a base portion for supporting said body in an upright position;
   c. said flange having formed therein a cavity containing a granular magnetizable weighting material;
   d. said magnetizable material being incapable of retaining any significant remanent magnetism.