# United States Patent

**Matson et al.**

[15] **3,690,620**

[45] **Sept. 12, 1972**


[54] **ROAD MARKER, TEMPORARY BARRICADE OR THE LIKE**


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[52] **U.S. Cl.** ..... **256/64,** 248/459

[51] **Int. Cl.** ..... **E01f 13/00**

[58] **Field of Search** .....256/64; 248/459, 460, 461, 248/462, 174



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*Primary Examiner*—Dennis L. Taylor

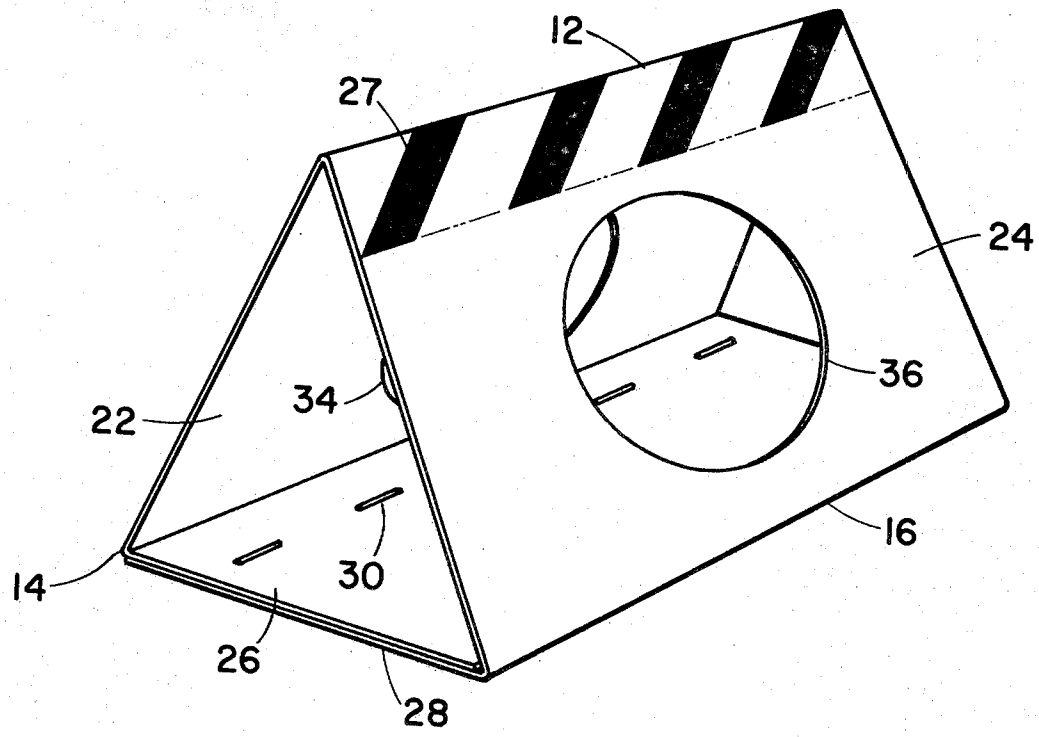
*Attorney*—Harold M. Knoth



[57] **ABSTRACT**

A collapsible structure useful in marking highways, etc. as to detours, road construction and the like and complying with safety and highway regulations. This structure is made of heavy non-metallic sheet-like material folded into triangular form to provide a base and a pair of panels joined to the base and converging to an upper apex and capable of being "trampled" by a vehicle striking same.


**5 Claims, 5 Drawing Figures**



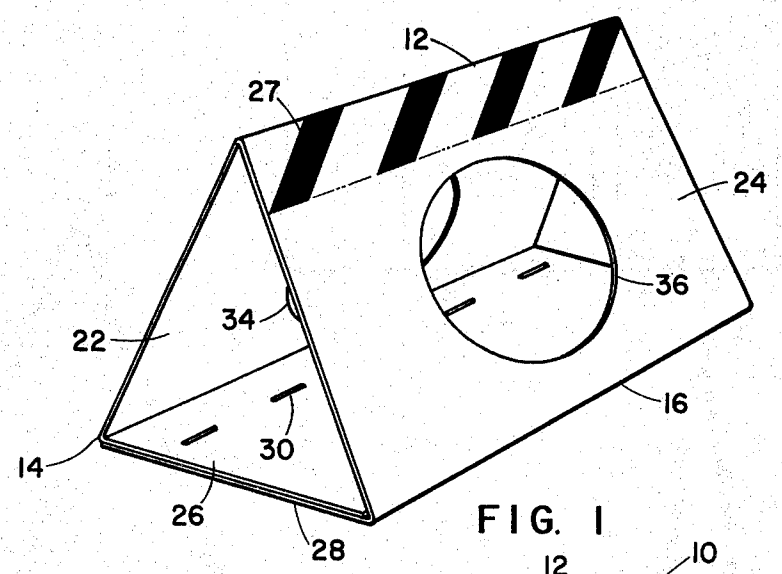



FIG. 1

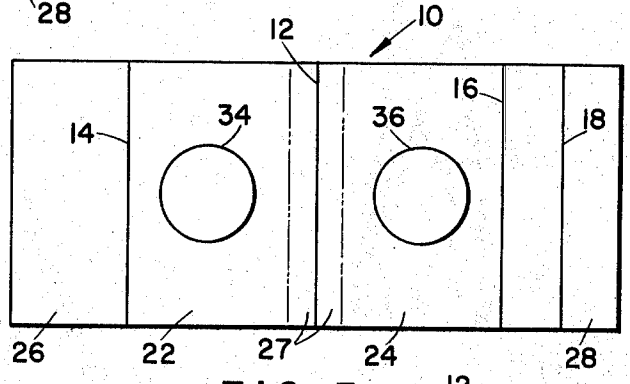



FIG. 3

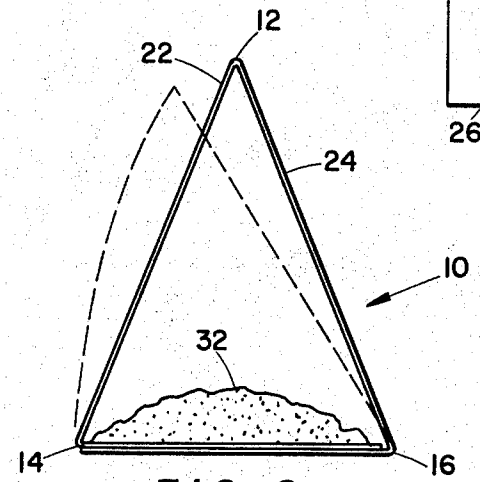



FIG. 2

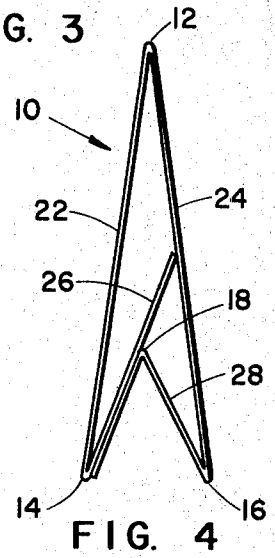



FIG. 4

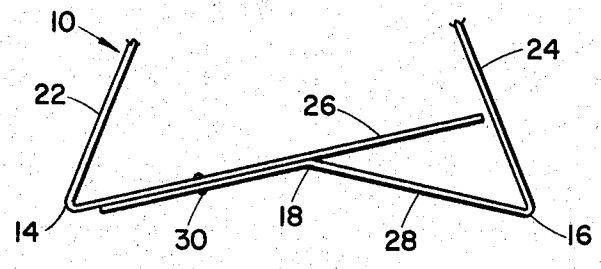



FIG. 5

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# ROAD MARKER, TEMPORARY BARRICADE OR THE LIKE

## BACKGROUND OF THE INVENTION

The relatively recent increase in new highway construction has created many problems, including marking detours, enabling temporary or limited use of completed highway portions, etc., all entailing the use of temporary barricades, markers and the like. This has been accompanied by a substantial increase in traffic accidents because of the non-regular flow of traffic, and many accidents have been caused by impact with the barricades and markers. As a consequence, a body of regulations has grown with respect to the design, construction and use of such barricades, etc., basic among which are those concerning size, markings and, above all, the capability of the barricade to yield under traffic impact without materially damaging the vehicle, without causing the vehicle to overturn or be deflected into other traffic and without causing the barricade to become a "missile" capable of flying through the air and endangering the impacting vehicle or other vehicles, workmen, etc.

The known prior art includes such structures as "-horses," trestles and the like, constructed of various combinations of wood and metal and capable of "disintegrating" upon impact. Such structures are of course quite expensive and must be reassembled after each impact. Also, these structures are not easy to store, transport and assemble on the site, and, when moved from one site to another, normally must be disassembled and reassembled. Besides this, these known structures are made up of several relatively sturdy parts, each of which could become a "missile." Further, if a part is lost, a careless workman may be tempted to assemble the structure improperly.

## SUMMARY OF THE INVENTION

The present invention provides a simple, inexpensive one-piece barricade or marker, preferably made of a single sheet of non-metallic moisture-proof material capable of normally holding the triangular shape into which it is assembled but having the capacity to yield to traffic impact, even to the extent that it may be "trampled" by a vehicle without coming apart and sending its components flying in all directions. Because of its one-piece construction, the structure may be readily moved from one site to another without disassembly and without the danger of loss of parts. The improved structure is foldable for easy transport and storage and is simple and inexpensive to manufacture. Further, it is readily disposable after its useful life is over. Because of its triangular nature, it provides a base having an exposed upper surface which may be ballasted or weighted quite simply, as by a sandbag, a few shovels full of dirt, sand etc. This puts the ballast or weight close to the ground, so that when the structure is struck directly by a moving vehicle, the vehicle lays the structure flat and must negotiate only the "bump" created by the ballast.

## DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective of an exemplary form of structure.



FIG. 2 is an end view, on a somewhat reduced scale, illustrating the weighted structure in full lines and its ability to yield in dotted lines.

FIG. 3 is a view of the sheet from which the structure is made.

FIG. 4 shows a pre-folded (or pre-unfolded) condition of the structure.

FIG. 5 is an enlarged fragmentary view illustrating the base construction.

## DESCRIPTION OF A PREFERRED EMBODIMENT

FIG. 3 will be referred to first, because it shows the pre-assembly condition of the structure, here comprising a sheet **10** of non-metallic relatively stiff but flexible material, such as moisture-proof paperboard having a strength of about 300 lbs. or more. The structure, when assembled to its FIG. **1** condition, must be capable of standing upright so as to meet height regulations; e.g., 30 inches above the ground. The sheet is scored or otherwise preliminarily conditioned to fold along a central fold or hinge line **12**, and is similarly prepared to form fold or hinge lines **14**, **16** and **18**. This gives the sheet a pair of panels **20** and **22** and a pair of base parts **24** and **26**. The sheet may be imprinted with the required "diagonals," as indicated at **27**.

The sheets may be shipped "as is" and assembled at the site by securing the base parts **24** and **26** together in overlapping relation by any suitable "stitching" machine to provide securing or stitch means, as at **30**.

When assembled, the base comprises the double-walled structure in which the base part **26** is uppermost and overlies the lower base part **28**, and the opposite parallel edges, afforded by the score or hinge lines **14** and **16**, provides respective junctions for the upwardly converging panels **22** and **24**, which, of course, meet at the hinge or fold line (apex) **12**. Because the triangular structure is open i.e., not solid, the interior enables the use of weight or ballast as at **32**, which serves to hold the structure in place. This weight or ballast may be a sandbag, a few shovels full of dirt or sand, etc., sufficient to prevent the barricade from blowing away. To further compensate for wind, the panels **22** and **24** may be perforated, as at **34** and **36**. These openings here circular and die-cut- may be of any shape or number and further enable the use of lights etc. within the structure which may be seen through the openings.

A significant feature of the invention is the base structure, best shown in FIG. **5**, wherein it is seen that the base part **28** includes the score or hinge or fold line **18**. It is also seen that the unscored upper base part **26** extends from its junction **14** with the panel **22** to the panel **24**; likewise, the scored (at **18**) lower base part **28** extends from its fold or hinge **16** to the fold or hinge **14**. The hinge or fold **18** lies intermediate the folds **14** and **16**, in this case substantially centrally. The stitching **30** occurs between the hinges or folds **14** and **18**. Thus the upper base part **26** is relatively rigid and the lower base part **28** is centrally foldable, yielding such features as the following: The structure, even when assembled, may be folded for transport, storage, etc. (see FIG. **4**). The overlapping of the rigid upper base part **26**, when weighted, prevents a reverse fold at **18**; i.e., the structure must yield according to FIG. **2** (dotted lines) and cannot fold downwardly or the opposite of FIG. **5** and thus prevents the structure from

rising rather than collapsing. This feature may be further enhanced, in the case of the use of corrugated paperboard, by running the corrugations between the edges **14** and **16**, creating greater resistance to unfolding in the wrong direction. For example, if the structure were capable of folding upwardly about the hinge **18**, uncontrolled by the rigid upper base part **26**, the structure would increase in height and would trap the ballast **32** and the device would become a missile, because the ballast could separate to opposite sides of a theoretical hinge **18** plus a fold in the part **26**. So long as the part **26** is rigid, the ballast spreads out over the entire part, giving results such as shown in FIG. **2** (dotted lines).

Even if the dirt, sand, etc. at **32** becomes frozen, it is not a serious obstacle to an overrunning vehicle, because the ballast is low and may be easily run over or "trampled" along with the rest of the structure. Of course, after a few "accidents" the structure may have become useless, but its cheap construction makes it readily disposable.

We claim:

**1**. A road marking structure such as a temporary barricade of the like yieldable to traffic impact, comprising a generally rectangular flat base adapted to rest on the ground and having first and second parallel edges and a pair of panels joined respectively to said edges and converging upwardly to meet and be joined together at an apex spaced a substantial height above the ground, said structure being made up of a single sheet of relatively stiff non-metallic material preliminarily prepared to fold along a plurality of fold lines respectively at the apex and at the junctions of said panels with said base edges, said base including an upper base part joined at one base edge with one panel and a lower base part joined at the other base edge with the other panel, said upper base part overlapping the lower base part to give the base as a whole a substantial area of double thickness so as to minimize downward being of said base, and means securing said parts together, at least said top base part providing an upper surface adapted to receive a weight to hold said structure in place and said fold lines providing hinges so that upon impact by a vehicle against one panel, said one panel is capable of yielding to the impact about its hinge with the base and its apex hinge and the other panel is also capable of yielding about its base hinge and the apex hinge, whereby the entire structure is capacitated to collapse as the vehicle passes over the collapsed structure.

**2**. The invention defined in claim **1**, in which the upper part overlies a major portion of the lower base part and is free from fold lines, said lower base part including a fold line parallel to and intermediate said base edges, and said base parts are joined together in the area between said lower base part fold line and the junction of said upper base part with its panel, so that the structure may be substantially flattened for packing and storing.

**3**. The invention defined in claim **2**, in which the upper base part extends from its junction with its panel to the opposite panel, the lower base part extends from its junction with its panel to the other panel, the lower base part fold line is substantially centered between said base edges, and the base parts are joined together as aforesaid.

**4**. The invention defined in claim **1** in which the converging panels are perforated to permit light and air to pass therethrough.

**5**. The invention defined in claim **1** in which said sheet is substantially moisture proof paper having a strength of approximately 300 lbs.

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