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Meek et al.

[11] **3,742,897**

[45] **July 3, 1973**

[54] **REFLECTOR SIGNAL MARKER FOR HIGHWAY USE**

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[73] Assignee: **Miro-Flex Company, Inc.,** Wichita, Kans.

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[52] **U.S. Cl.** ..... **116/63 P,** 40/125 J

[51] **Int. Cl.** **E01f 9/10**

[58] **Field of Search** ..... 116/63, 63 P, 28; 40/125 J; 248/472; 94/1.5; 350/97

[56] **References Cited**

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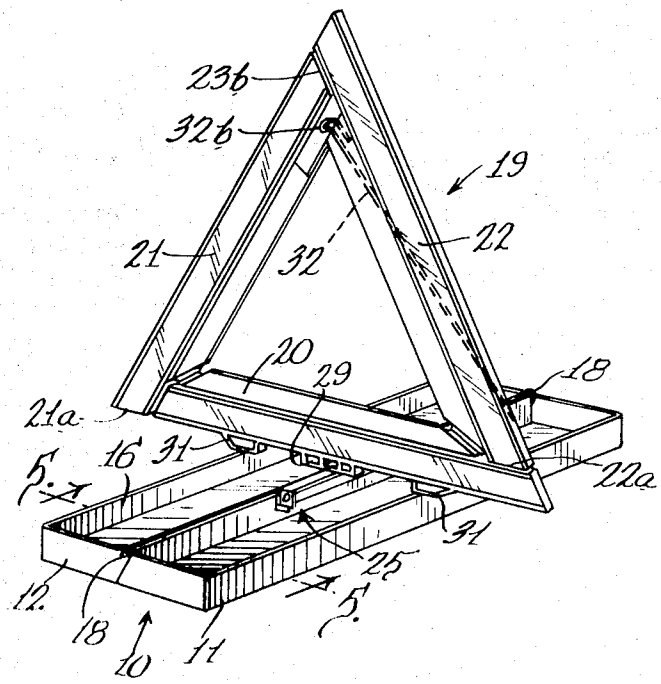
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Attorney—Axel A. Hofgren et al.

[57] **ABSTRACT**

A triangular reflector signal marker for highway use which meets standards of the National Highway Safety Bureau for such devices. A folding reflector signal marker is mounted in a box which provides a storage container for the folded signal marker and which serves as the base for the signal marker in its erected, operating position. The box has two identical portions which are hingedly connected so that when the box is open the body panels of the box portions are coplanar and may rest on a supporting surface. A first pivotal connection permits the signal marker to be moved from a position within the box to a position above and parallel to the long dimension of the box, and a second pivotal connection permits the signal marker to be turned across the box in operating position.

7 Claims, 5 Drawing Figures



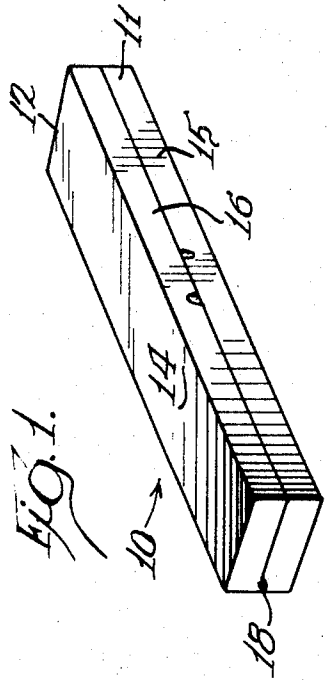


FIG. 1.

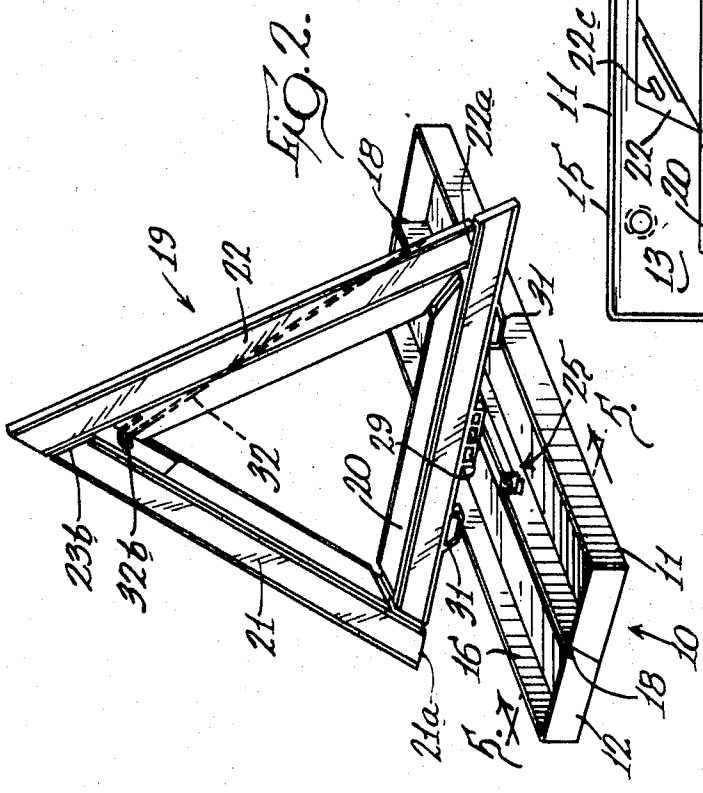


FIG. 2.

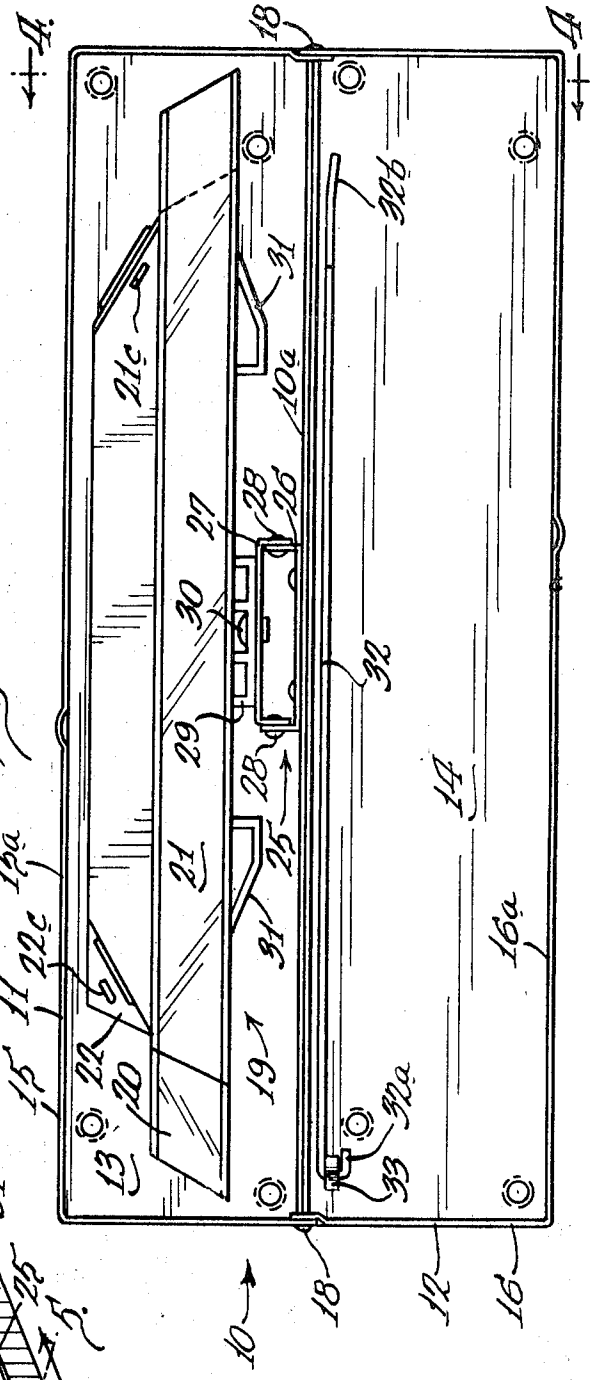


FIG. 3.

Fig. 4.

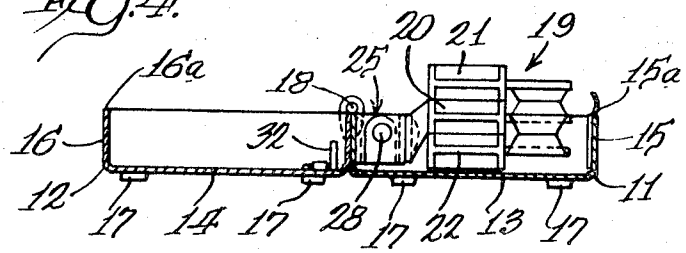
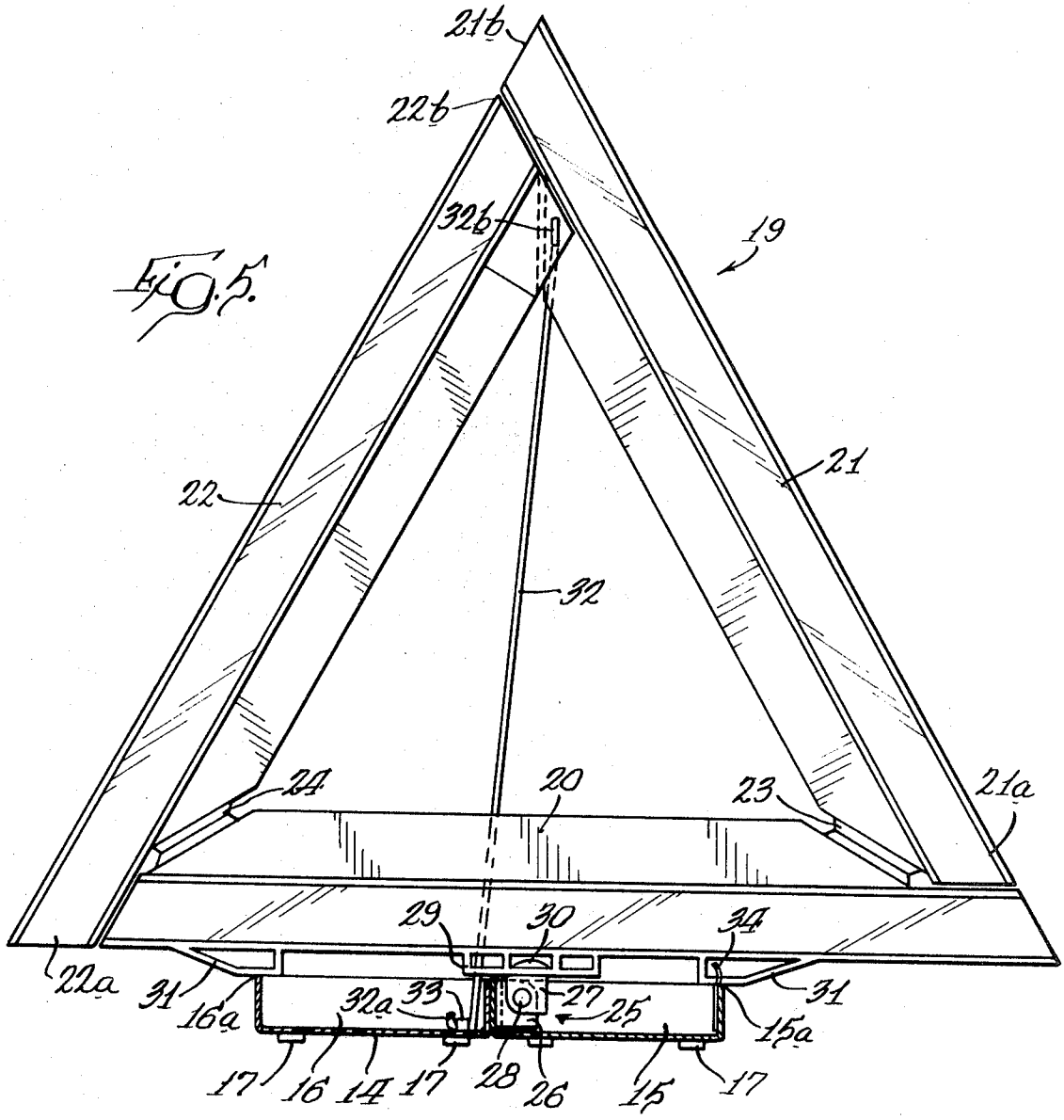

20
21
19
16a
25
18
15a
16
32
15
12
11
17
14
17
28
17
22
13
17

Fig. 5.


21b
22b
32b
19
21
22
32
24
20
23
21a
29
30
34
22a
31
16a
32a
33
27
25
31
15a
17
16
14
17
28
26
15
17

REFLECTOR SIGNAL MARKER FOR HIGHWAY USE

BACKGROUND OF THE INVENTION

The National Highway Safety Bureau has published standards which are expected, within the foreseeable future, to require that all passenger automobiles, trucks and buses carry at least one reflector signal marker which, in the case of the passenger automobile requirements, must be accessible to a person in the front seat of the automobile. The reflector signal markers, when erected, must have the shape of an equilateral triangle which is 20 inches on a side and must be sufficiently stable when erected to meet rather drastic requirements for stability in high winds.

Applicants are aware of only four patents which relate to folding reflector signal markers which are equilateral triangles when set up. They are as follows:

French Pat. No. 1.124.659, published Oct. 16, 1956.

U. S. Pat. No. 3,135,235 issued June 2, 1964.

British Pat. No. 1,167,085 published Oct. 15, 1969.

U. S. Pat. No. 3,593,681 issued July 20, 1971.

None of the foregoing patents discloses a reflector signal marker which combines simplicity of erection and return to a stored condition with the stability required by the National Highway Safety Bureau and with another requirement of the National Highway Safety Bureau that both sides of the reflector signal marker must present the identical appearance.

SUMMARY OF THE INVENTION

In accordance with the present disclosure, a long, narrow storage box for a folding triangular reflector signal marker has two identical box portions which lie side by side when the box is opened so that the body panels of the two box portions may rest flat upon a supporting surface. A double pivot arrangement permits the reflector signal marker to lie in one portion of the box when it is folded, so that the box may be closed with the entire signal marker inside it, and permits the signal marker to be pivoted on an axis parallel to the length of the box to a position above the edges of the box walls and then rotated **90°** on a second pivot so that it is transverse to the length of the box and the base of the triangular signal marker bears firmly against the edges of the box wall to provide great stability of the signal marker on its box-base.

The signal marker is easily erected, and in its erected condition the box provides a base which is longer than the height of the signal marker and which underlies nearly one-half the width of the signal marker so as to afford great stability in all directions.

THE DRAWINGS

FIG. **1** is a perspective view of a reflector signal marker embodying the invention when it is collapsed and closed in its box for storage;

FIG. **2** is a perspective view of the reflector signal marker of the present invention in its erected, operating position;

FIG. **3** is a plan view of the device of the invention to a scale larger than FIGS. **1** and **2**, with the box open and the signal marker in its storage position;

FIG. **4** is a transverse sectional view taken substantially as indicated along the line **4—4** of FIG. **3**; and

FIG. **5** is a transverse sectional view taken substantially as indicated along the line **5—5** of FIG. **2**.

DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings in detail, the reflector signal marker of the present invention includes a long, narrow box having substantially identical first and second box portions **11** and **12**. The box portions **11** and **12** have long, narrow body panels **13** and **14**, respectively, and they have upstanding perimetrical walls **15** and **16**, respectively, which are of equal height and each of which has an outer edge, said edges being designated **15a** and **16a**, respectively. The box portions **11** and **12** are provided, on the outer surfaces of their body panels **13** and **14**, with rubber feet **17**.

The two box portions **11** and **12** are connected together by hinge means **18** which extends along adjacent outer edges of the perimetrical walls **15** and **16** along a long side of the box so that the two box portions **11** and **12** may occupy a closed storage position as illustrated in FIG. **1** or an open position as illustrated in FIGS. **2** to **5**. In the open position the body panels **13** and **14** are coplanar so that the feet **17** may rest upon a supporting surface.

A reflector signal marker, indicated generally at **19**, consists of a base member **20** and side members **21** and **22**, with each of the side members being connected at one end, designated **21*a*** and **22*a***, respectively, by respective hinge members **23** and **24** with opposite ends of the signal marker base member **20**. The signal marker base member **20** and side members **21** and **22** are all molded from single pieces of plastic, and the hinges **23** and **24** are provided by thin plastic sections which permit the sides **21** and **22** to be moved from the folded position of FIG. **4** to the erected position of FIG. **5**. In erected position, the free ends **21*b*** and **22*b***, respectively, of the signal marker side members are connected to form the apex of an equilateral triangle.

Each of the signal marker members **20, 21** and **22** is constructed to meet the requirements of National Highway Safety Bureau standards, and accordingly they have bodies of orange fluorescent material and border areas of red reflective material which are on both sides of the reflector so that it presents an identical appearance from either direction.

The reflector signal marker is mounted for movement between the storage position of FIG. **3** and the erected operating position of FIG. **2** by connecting pivot means, indicated generally at **25**. As best seen in FIG. **3**, the connecting means **25** includes a U-shaped pivot bracket **26** which is riveted to the perimetrical wall **15** equidistant from the ends of one of the long sides **10*a*** of the box, and at that side of the box nearest the hinge **18**. A U-shaped signal marker mounting member **27** is connected by loose rivets **28** to the pivot bracket **26**, with the rivets providing an axis of rotation of the mounting member **27** which is parallel to the long side **10*a*** of the box.

Also forming part of the signal marker mounting means is a pivot boss **29** which is molded integrally with the signal marker base member **20** and which is impaled by a headed stud **30** that provides a pivotal connection between the signal marker base member **20** and the mounting member **27** on an axis which is perpendicular to the mounting member pivot axis provided by the aligned rivets **28**.

The double pivotal connection permits the folded signal marker **19** to be moved from the storage position of FIGS. **3** and **4** to a position (not shown) in which the

pivot **30** is upright as viewed in FIG. **5** but the signal marker is still parallel to the length of the box. The signal marker may then be rotated 90° on the pivot **30** to bring it to an operating position in which it is oriented transversely with respect to the length of the box. In this position a pair of pressure bosses **31** which are molded integrally with the signal marker base member **20** bear firmly upon the top edges **15***a* and **16***a* of the box walls **15** and **16** in alignment with the pivot **30** so as to stabilize the signal marker **19** against lateral rocking movement.

To hold the signal marker in its erected position and stabilize it against rocking movement longitudinally of the box, a strut rod **32** is provided which has a return bend **32***a* at one end which pivotally mounts the strut rod in a sheer formed loop **33** in the box body panel **14.** In storage position the rod **32** rests in the bottom of the box portion **12** as seen in FIG. **3,** while in the erected position of the signal markers the rod **32** is swung to an inclined position with its free end portion **32***a* impaling a pair of aligned holes **21***c* and **22***c* so as to connect the free ends **21***b* and **22***b* of the side members in the erected position of the signal markers.

Finally, a combined latch spring finger and stop member **34** is welded to the box wall **15** in an upwardly projecting position where it is abutted by one of the signal markers base bosses **31** to fix the flare in its operative position extending transversely of the length of the box and at 90° to the length of the box. When the signal markers is folded and the box is closed, the spring finger **34** frictionally engages the inner face of the box wall **16** to normally hold the box closed.

The foregoing detailed description is given for clearness of understanding only and no unnecessary limitations should be understood therefrom, as modifications will be obvious to those skilled in the art.

We claim:

1. A reflector signal marker for highway use comprising, in combination:

a long, narrow box having substantially identical first and second portions each of which has a rectangular body panel and an upstanding perimetrical wall with an outer edge, said walls being of equal height;

hinge means connecting an outer edge of each perimetrical wall to an outer edge of the other such wall along a long side of the box so that the two box portions may selectively occupy a closed storage position or an open position with the body panels of the two portions coplanar;

a pivot bracket within the box, said bracket being secured to one of the walls equidistant from the ends of a long side of the box;

a signal marker mounting member pivoted on said bracket on an axis parallel to said long side of the box;

a folding reflector signal marker having a base member and a pair of side members each of which has an end movably connected to an end of the base member and a free end, said side members being movable between a storage position along side the base member and an erected position in which said signal marker forms an equilateral triangle;

means for connecting the free ends of the side members to one another in said erected position;

and means pivotally connecting the signal marker base member to the signal marker mounting member on an axis perpendicular to the mounting member pivot axis;

whereby said signal marker may selectively occupy a storage position lying in one of the box portions or an operating position with its base member overlying the outer edges of the box portion walls and extending transversely of the long sides of the box.

2. The reflector signal marker of claim **1** in which the pivot bracket is secured to the side of the box which has the hinge connection.

3. The reflector signal marker of claim **2** which includes means on the signal marker base member that, in the operating position of the flare, firmly abuts the box wall edges in transverse alignment with the pivot means for the signal marker base member.

4. The reflector signal marker of claim **3** which includes a stop member that projects upwardly from one of the box walls in the open position of the box, said stop member being located to orient the signal marker base member at substantially a right angle to the long sides of the box in the operating position of the signal marker.

5. The reflector signal marker of claim **4** in which the stop member is a fixed, resilient finger which serves as a friction latch when the box is closed.

6. The reflector signal marker of claim **1** which includes means on the signal marker base member that, in the operating position of the signal marker, firmly abuts the box wall edges in transverse alignment with the pivot means for the signal marker base member.

7. The reflector signal marker of claim **1** which includes a rod that has an end pivoted within the box near an end of the latter, said rod being movable between a storage position lying in the box and an inclined bracing position in which its free end engages the apex of the signal marker in the operating erected position of the latter.

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