Jan. 19, 1965 R. R. GUNDERSON 3,165,847

FOLDABLE SUPPORT FOR A SIGN PANEL

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FIG. 4

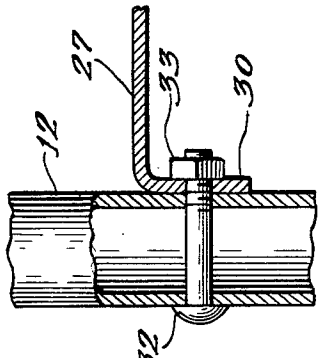


FIG. 5

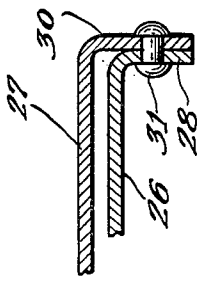


FIG. 3

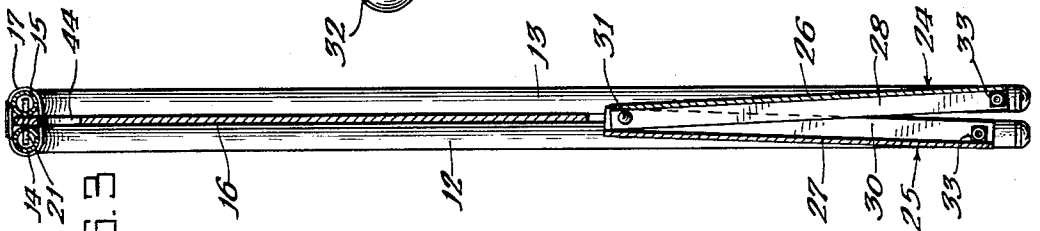
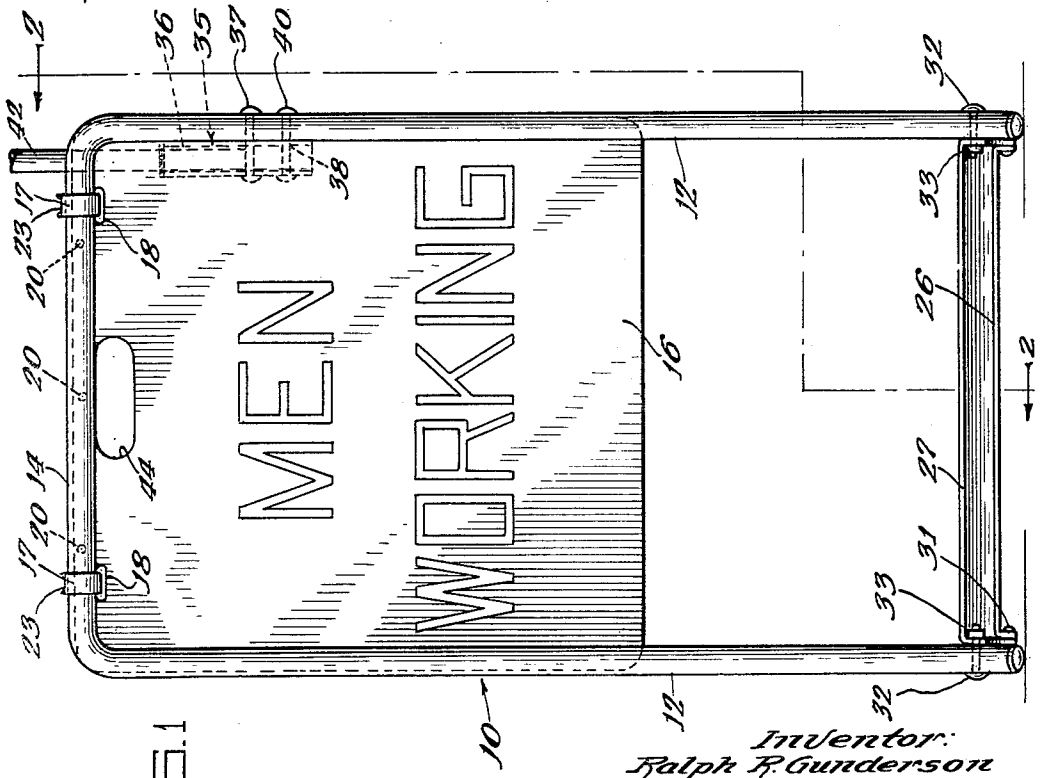


FIG. 1



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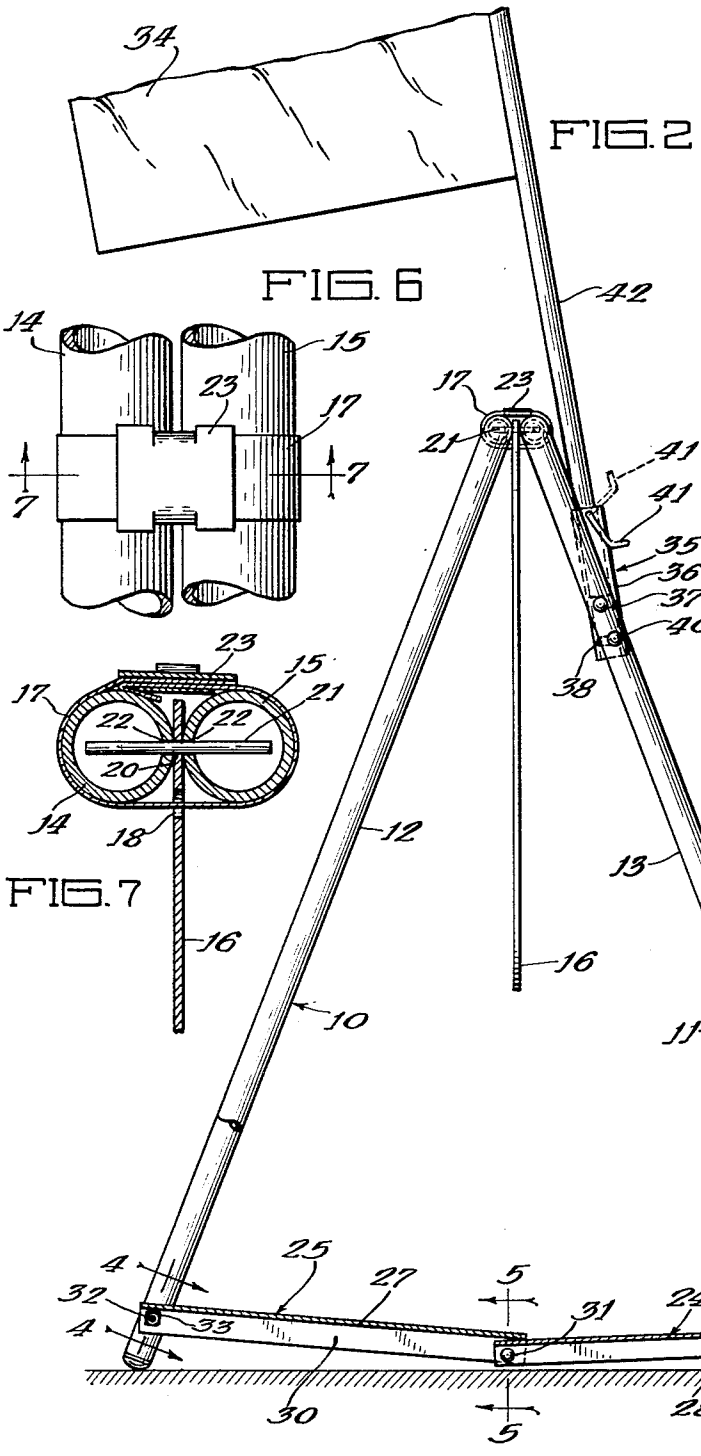


FIG. 6

FIG. 2

FIG. 7

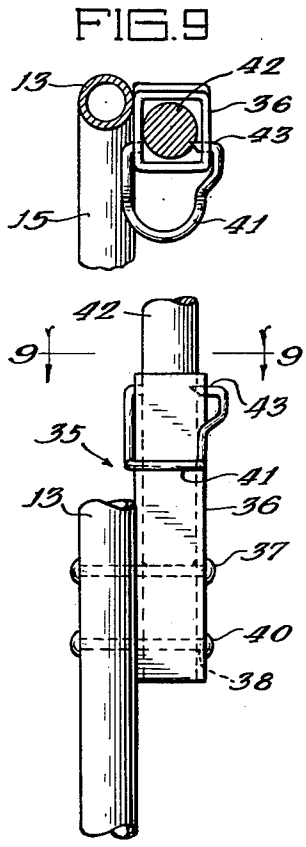


FIG. 9

FIG. 8

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FOLDABLE SUPPORT FOR A SIGN PANEL

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This invention relates to a foldable portable support for a sign of the type which is normally used as a warning signal by men working on the highway or as an advertising medium by business establishments.

Heretofore, such foldable supports have been conventionally made from lengths of metal of L-shaped cross section which have required a great number of drilling and riveting operations to accommodate the hinges and bracing links of the support. Such supports have been more costly to manufacture because of the more expensive parts and additional labor needed, and they have been cumbersome and difficult for an individual to handle and set in operative position.

The primary object of the present invention is to provide a new and improved foldable support for a sign.

Another object is to provide a foldable support having a new and improved hinge structure provided with a pair of opposed surfaces which are relatively movable in opposed relation to afford swingable movement to the support members of the foldable support, the hinge structure being provided with means for holding the opposed surfaces together in swingable opposed relation and with abutment portions for preventing shifting movement of the opposed surfaces during hinging action.

Still another object is to provide a foldable support which is light in weight but which has a low center of gravity so as to have increased stability when in operative position.

A further object is to provide a novel hinge structure for such a foldable support which retains the leg members in swingable relation while at the same time anchoring the indicating sign to the device.

A further object is to provide a foldable support which is extremely durable in operation, but which is much less expensive to manufacture than supports heretofore known.

A preferred embodiment of the invention is illustrated in the accompanying drawings, in which:

FIGURE 1 is an end elevational view of the foldable support placed in upright operative position but with only part of the warning flag staff shown;

FIGURE 2 is a view partly in section taken along line 2—2 in FIGURE 1;

FIGURE 3 is a sectional view taken substantially centrally through the foldable support and showing the support in collapsed or inoperative position;

FIGURE 4 is an enlarged fragmentary sectional view taken as indicated on line 4—4 of FIGURE 2;

FIGURE 5 is an enlarged fragmentary sectional view taken as indicated on line 5—5 of FIGURE 2;

FIGURE 6 is an enlarged fragmentary top plan view of one of the lock straps at the hinged end of the foldable support;

FIGURE 7 is a sectional view taken as indicated on line 7—7 of FIGURE 6;

FIGURE 8 is an enlarged fragmentary view of the staff holder for the warning flag as viewed from the right of the staff holder of FIGURE 2; and

FIGURE 9 is a sectional view taken as indicated on line 9—9 of FIGURE 8.

In the embodiment illustrated, a front support member or leg unit, generally designated 10, and a rear support member or leg unit, generally designated 11, are preferably provided of similar construction and configuration

to provide a suporting base or leg assembly for a foldable support. As best seen in FIGURE 1, each of the leg units 10 and 11 may be formed from tubular metal or plastic material and each is preferably bent into a U-shaped configuration to provide front leg members 12, rear leg members 13 and top bridge members or hinge portions 14 and 15, respectively, joining the leg members.

The bridge members 14 and 15 of the leg units 10 and 11 are joined to afford a hinged connection to permit the foldable support to be swung between collapsed or inoperative position, shown in FIGURE 3. and an operative or supporting position, shown in FIGURE 2, in which the front leg members 12 and the rear leg members 13 are angled outwardly of each other. The hinged connection is also preferably formed so as to give firm and stable support to a warning or advertising sign 16, and it is provided with means for preventing the bridge members 14 and 15 from moving laterally of one another during swinging movement of the foldable support.

As herein shown, a pair of straps 17 of the type conventionally used to reinforce heavy loads in cardboard containers snugly and firmly embrace the opposite adjacent end portions of the bridge members 14 and 15, as best seen in FIGURES 1, 6 and 7. Referring to FIGURES 1, 3 and 7, the upper marginal edge portion of the warning sign 16 is preferably provided with spaced slots 18 through which the straps 17 pass to position and secure the warning sign 16 to the foldable support. The upper marginal edge portion of the warning sign 16 also preferably extends upwardly between the two bridge members and is provided with apertures 20 at laterally spaced locations each to receive a guide pin 21, which guide pins abut laterally spaced stop portions on the bridge members to prevent shifting movement of the bridge members 14 and 15 during swinging movement.

There are preferably three guide pins 21 each spaced laterally of the hinge connection between the bridge members 14 and 15. As best seen in FIGURES 3 and 7, each of the opposed surfaces of the bridge members 14 and 15 is provided with a similar opening 22 which openings are positioned in alignment with the respective apertures 20 in the marginal edge portion of the warning sign 16. The openings 22 make a close fit with the outer surfaces of each of the guide pins 21 so as to afford guide portions for the pins during hinging movement of the support. The marginal edges of each of the openings 22 actually provide stop portions for the pins 21 to limit or prevent shifting movement between the adjacent bridge members. The guide pins 21 are preferably about twice as long as the internal diameter of one of the bridge members and may be arcuate or flexible if desired. In any event, each of the pins' lengths is such that when inserted into one of the openings 22, its opposite end will project through the aperture 20 of the warning sign 16 and into the interior of the other bridge member through the other opening 22.

Thus, in assembly, the guide pins 21 can simply be dropped into position through the openings 22 in one of the bridge members, the aperture 20 of the warning sign 16 can be fitted over the projecting ends of each of the guide pins, and the opening 22 of the other bridge member can be fitted over the projecting ends of the guide pins 21. The straps 17 are then threaded through a number of strap locks 23 and through the spaced slots 18 of the warning sign 16. The straps 17 are then drawn up tightly and secured in place by the strap locks 23 to complete the hinged connection. The marginal edges of the strap locks 23 and the straps 17 are slit and pinched inwardly as shown in FIGS. 6 and 7.

The hinged connection of the present invention differs markedly from the conventional hinge structure. The present hinged connection affords a pair of bridge mem-

bers 14 and 15 each having a surface positioned in opposition to a surface on the other bridge member so that the surfaces are relatively movable with respect to each other to provide for the swingable movement of the leg units 12 and 13. From a consideration of FIGS. 2, 3 and 7, it will be seen that the opposed surfaces roll with respect to one another during the hinging action while the retaining means or straps 17 hold the opposed surfaces in swingable opposed relation and the abutment means, that is, the pin 21 and the marginal portions surrounding the apertures 22, prevent shifting movement of the opposed surfaces during the hinging action.

In order to further stabilize the foldable support, a pair of bracing plates 24 and 25 is provided. As best shown in FIGURES 1–5, each of the bracing plates is channel shaped in cross section affording broad central webs 26 and 27 and downturned marginal flanges 28 and 30. One of the bracing plates 24 is slightly narrower than the other so that its inner end is nestable within the inner end of the other plate 25, and the inner ends of the respective plates are hingedly connected to each other by rivets 31 passing through the adjacent marginal flanges 28 and 30 of the respective plates. The outer ends of the bracing plates 24 and 25 are each hingedly joined to the inner surfaces of the front and rear leg members by a number of bolts 32 each passing transversely through a leg member and one of the marginal flanges 28 and 30 and being secured in place by nuts 33.

The bracing plates 24 and 25 are preferably formed of relatively heavy gauge sheet steel and their central hinge connection, by the rivets 31, is so positioned that the plates when moved to open position preferably pass slightly over central so that the web 27 of the bracing plate 25 bears on the top of the web 26 of the bracing plate 24. The bracing plates thus afford a broad durable base platform upon which heavy objects may be placed in violent gales or winds to insure stability of the foldable support at all times. The positioning of the heavy gauge steel plates 24 and 25 in this manner provides an extremely low center of gravity for the foldable support to make it highly immobile and completely stable throughout all normal conditions of use.

If desired, a warning flag 34 and flag staff holder, generally designated 35, may be provided with the present support. As best shown in FIGURES 2, 8 and 9, a tubular receptacle 36, preferably square in cross section, is pivotally secured by rivet 37 to the outer face of one of the rear leg members 13. The lower end of the receptacle 36 is preferably provided with slots 38 in its inner and outer faces and receives therethrough a second rivet 40 to limit the pivotal movement of the receptacle 36. Thus, the receptacle 36 can be pivoted counterclockwise, see FIGURE 2, so as to be alined with the leg member to which it is secured when the foldable support is moved to inoperative position.

A resilient wire latch 41 may be provided on the receptacle 36 to secure the staff 42 of the flag 34 within the open upper end of the receptacle 36. As herein shown, the wire latch 41 is pivoted at opposite sides of the receptable 36, and offset end portion 43 is arranged so that when the latch 41 is swung downwardly as shown in FIGURE 2, the offset end portion 43 bites into the periphery of the staff 42 to retain the staff within the receptacle. When the latch 41 is raised to the dotted line position shown in FIGURE 2, the offset end portion is removed from its engagement with the periphery of the staff 42 and the flag staff may be removed from the receptacle 36.

The foldable support of the present invention is particularly compact when in collapsed position (FIG. 3). The most common use of the support is by telephone linemen and city or highway street repair men. Several of the supports can be easily carried by a single man, and to this end, a cut-out portion 44 is normally afforded in the upper end of the warning sign 16 so that the bridge

members 14 and 15 actually provide a carrying handle for the support.

To place the foldable support in operative position, it is merely necessary to spread the front and rear legs to the proper angle and lower the plates 24 and 25 to their bracing position. The warning sign 16 is automatically firmly held in proper viewing position. To return the foldable support to collapsed position, the centrally hinged bracing plates are raised upwardly once more and the legs are moved inwardly so that the bracing plates nest one within the other between the leg members as shown in FIGURE 3. When in collapsed position, it should be noted that it is preferred that the warning sign 16 be of such width that its lateral marginal edge portions be embraced and protected by the folded leg members of the front and rear leg units 10 and 11.

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

I claim:

1. A foldable support for a sign, comprising: a front leg unit affording laterally spaced front leg members joined at their upper end portions by a front bridge member; a rear leg unit affording laterally spaced rear leg members joined at their upper end portions by a rear bridge member; a hinged connection joining said front and rear bridge members and affording swinging movement between collapsed position and a supporting position in which the front and rear leg members are angled forwardly and rearwardly of each other, said hinged connection including a hinge strap firmly embracing the bridge members and a guide pin extending between the bridge members to prevent shifting movement of the bridge members during said swinging movement, and a sign panel having an upper marginal edge portion positioned between the front and rear bridge members, said upper marginal edge portion being apertured to receive the hinge strap and guide pin to suspend the sign panel between the leg units.

2. A foldable support as specified in claim 1, in which the sign panel is of such width that its opposite outer edge portions are held between the leg members of the front and rear leg units when the foldable support is in collapsed position.

3. A foldable support as specified in claim 1, in which the upper marginal edge portion of the sign panel has a cut-out portion spaced downwardly from the bridge members so that the bridge members afford a carrying handle for the support in collapsed position.

4. A foldable support for a sign, comprising: a front leg unit and a rear leg unit for maintaining the support in upright operative position, each of said leg units being of U-shaped configuration and being formed of tubular stock to afford laterally spaced leg members joined at their upper end portions by a transverse bridge member; a sign panel positioned between the transverse bridge members and extending downwardly between the leg members; guide pins positioned laterally of the bridge members and each extending from the interior of one of the bridge members through the sign panel into the interior of the other of the bridge members to prevent shifting movement of said bridge members with respect to each other; and an endless hinge strap firmly encircling the bridge members and passing through the sign panel to hold the bridge members of the leg units in assembled relation and to afford swinging movement to said leg units between a collapsed position and an upright supporting position.

5. In a foldable support for a sign having front and rear support members, a hinge structure for affording relative swingable movement to the support members between supporting and closed position, comprising: a pair of laterally extending portions one on each support member, the portions each having a surface positioned in

opposed relation to each other and the portions when in opposed relation being movable with the support members between supporting and closed position, one of the laterally extending portions being provided with spaced lateral stops; retaining means on the laterally extending portions for holding said opposed surfaces in said swingable opposed relation; and a guide pin extending outwardly of the other of the laterally extending portions and between the spaced lateral stops of said one portion to prevent shifting movement of said laterally extending portions.

6. A hinge structure as specified in claim 5 in which the retaining means is an endless hinge strap firmly embracing the laterally extending portions and their opposed, relatively movable surfaces.

7. A hinge structure as specified in claim 5 in which a sign panel is provided having an edge portion positioned between the opposed surfaces, the opposed surfaces being

arcuately formed and the retaining means securing the edge portion between the opposed arcuate surfaces whereby said surfaces roll relative to each other on said edge portion to provide swingable movement for the support members.

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