

[54] FOLDABLE BARRICADE AND SIGN

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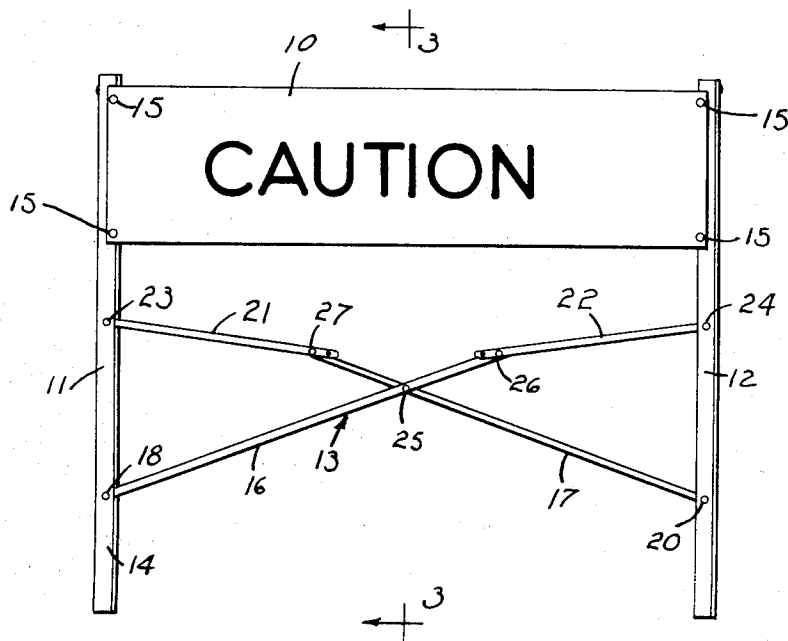
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[57] **ABSTRACT**

A barricade is formed by a pair of oppositely disposed rigid legs joined by a pivoted brace assembly that maintains the legs parallel to one another to form a foldable frame for support of a flexible sign display. The frame is supported by similar spaced legs either pivotally connected thereto or joined by similar brace assemblies. Each leg is angle-bar shaped with the free edges facing the opposite legs. The brace assembly lies between the parallel legs so that when the legs are brought together the braces are enclosed between the flanges of the angle-bars.

10 Claims, 16 Drawing Figures



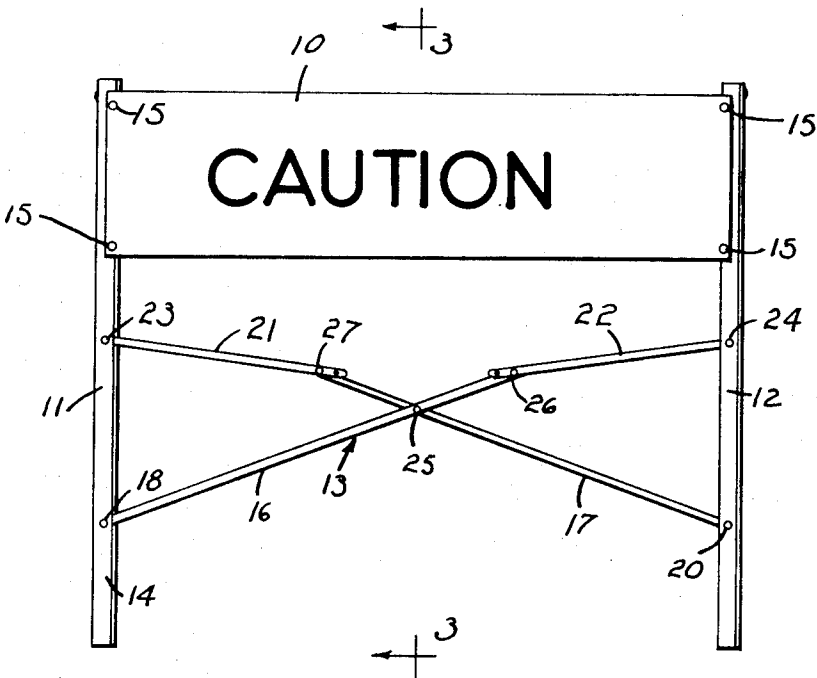


FIG. 1

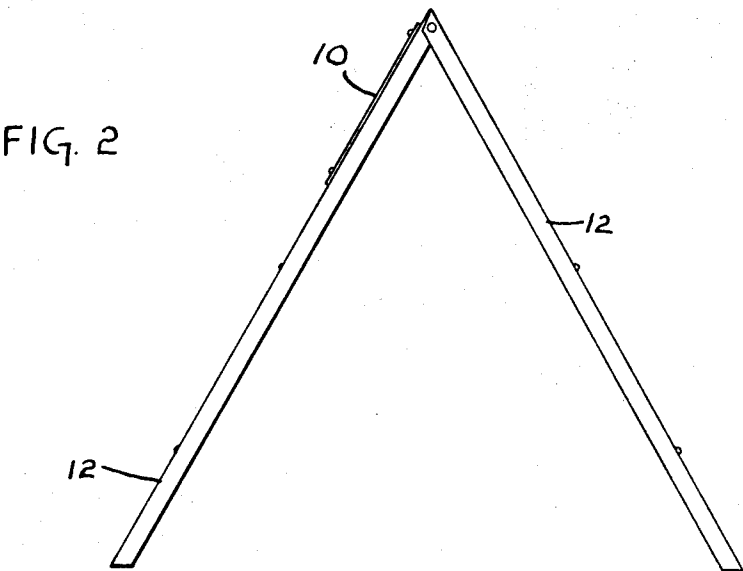


FIG. 2

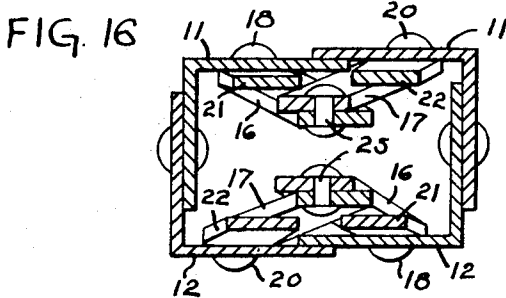
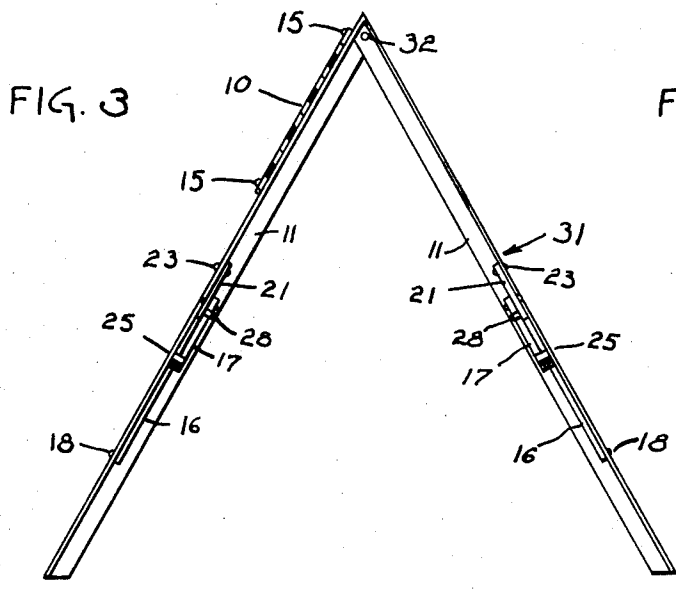
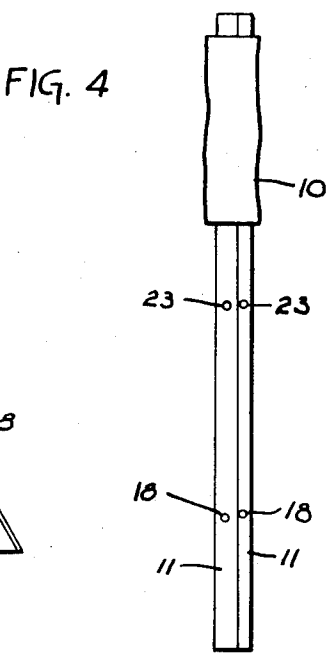
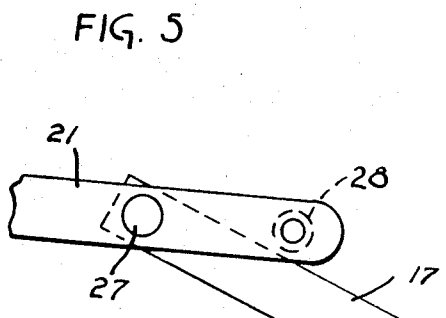
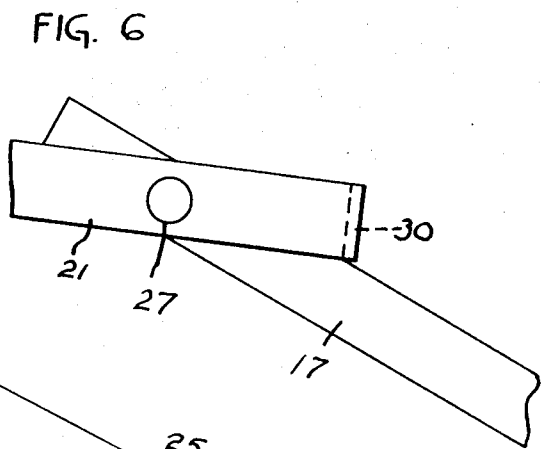
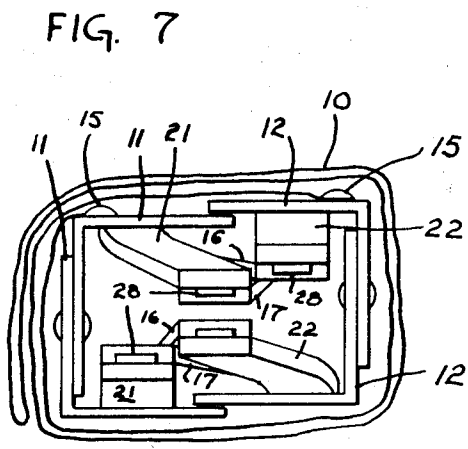


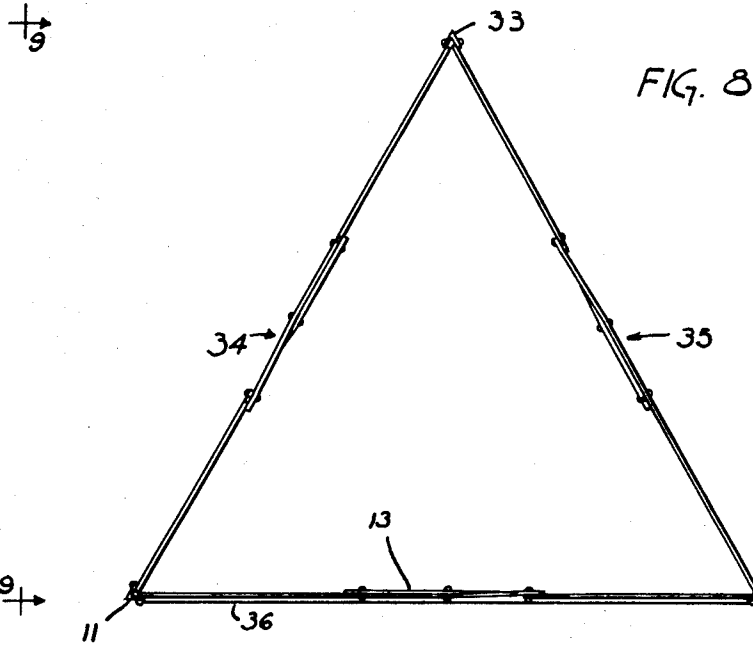
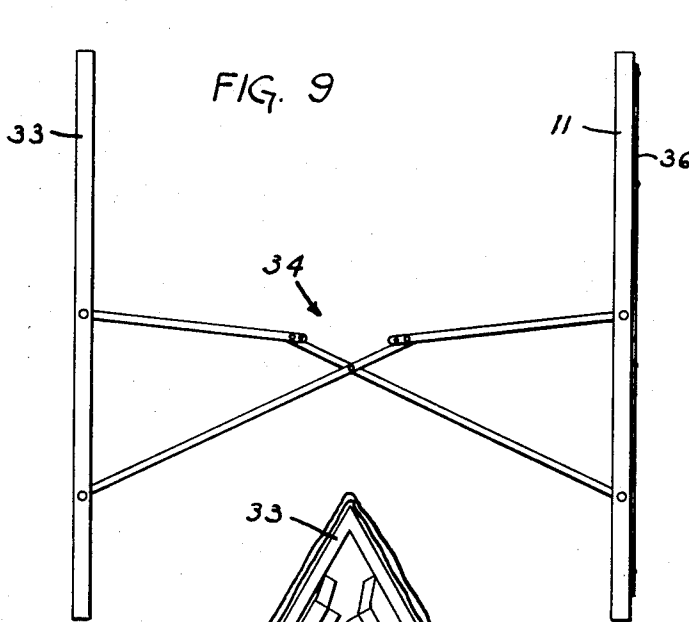
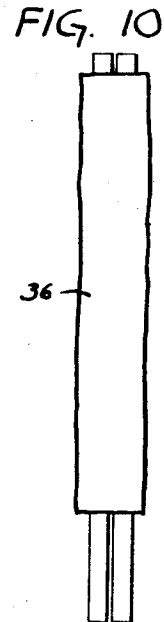
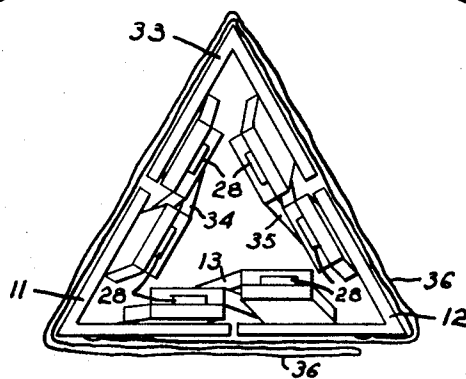
FIG. 16

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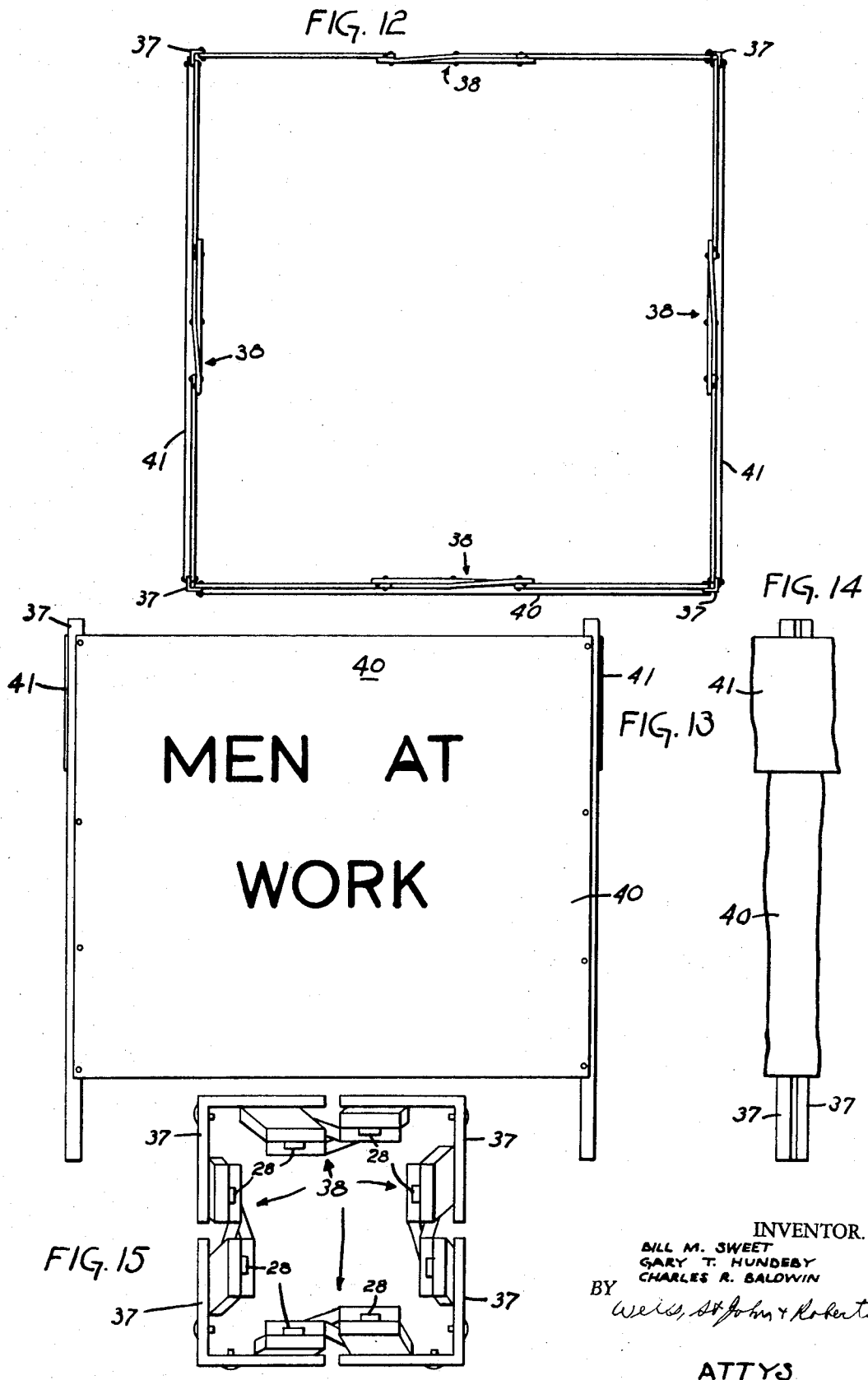


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FOLDABLE BARRICADE AND SIGN BACKGROUND OF THE INVENTION

The use of barricades about construction areas requires the provision of substantial support structures which will not be accidentally blown over under normal use due to contact or windy conditions. Most such barricades are today constructed of rigid structural members, releasably secured to one another at the site. Where such barricades are formed of members which can be disconnected, the members are sometimes lost during transfer from one location to another or are subject to damage during such movement. Where barricades are made of substantial material and not foldable, they require considerable storage room and are somewhat difficult to move from one location to another. The barricade and sign combination disclosed herein was developed in an effort to produce a truly portable barricade, one which can be readily folded to a minimum storage size and can be easily extended to present a relatively wide sign surface area. It is designed for maximum flexibility in use. The entire folded brace assembly is housed within a rigid protective shell formed by the support legs when the device is folded to a contracted condition.

SUMMARY OF THE INVENTION

The invention basically comprises the use of a sign-supporting frame including oppositely disposed angle-bar legs having opposed flanges directed toward one another. A collapsible rigid brace assembly is pivotally connected to the opposed flanges of the respective legs and movable between collapsed and extended conditions to maintain the legs parallel in alternate abutting and spaced positions. A third support spaced from the legs is connected to the legs so as to make the device self-standing. This support in one embodiment takes the form of a second identical frame assembly pivotally connected to the legs of the first frame at their respective upper ends. In a second embodiment the third support takes the form of a third leg joined in a triangular configuration to the first pair of legs by identical brace assemblies. In a third embodiment the support comprises a second pair of legs joined to one another and to the first pair of legs by brace assemblies to complete a rectangular barricade configuration. Flexible signs are attached at their respective ends to the flanges of the parallel legs along one or more sign-bearing surfaces of the leg flanges.

It is one object of this invention to provide an easily foldable barricade and sign combination which can be readily transported from one site to another and which, when in its extended condition, is suitably stable for outdoor use as a protective barricade.

Another object of this invention is to provide a novel folding mechanism for a folding barricade and sign combination wherein all of the braces connecting the supporting legs for the barricade and sign are located within the angle-bar leg assemblies when folded. This permits use of lighter brace members, and provides adequate protection against accidental damage of such members during transport and storage.

Another object of this invention is to provide a foldable barricade and sign which does not require positively locking latches to secure the foldable braces used in the support of a flexible sign.

Another object of the invention is to provide a highly versatile standard for a flexible sign, together with means for readily detaching or changing the sign itself as required.

These and further objects will be evident from the following disclosure, taken also with the accompanying drawings, which illustrate a preferred form of the invention. It is to be understood that this form of the invention is illustrated only by way of example and that the invention itself is set out in the accompanying claims.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front elevation view of a first embodiment of the invention;

FIG. 2 is a side elevation view of the device shown in FIG. 1;

FIG. 3 is an elevational cross-sectional view taken along line 3—3 in FIG. 1;

FIG. 4 is a front elevation view of the device shown in FIG. 1, illustrated in its collapsed condition;

FIG. 5 is an enlarged fragmentary front view of a brace joint;

FIG. 6 is a view similar to FIG. 5, showing a modification of the brace joint;

FIG. 7 is an enlarged top view of the device in the condition illustrated in FIG. 4;

FIG. 8 is a top view of a second embodiment of the invention shown in its extended condition;

FIG. 9 is a side elevation view of the device as viewed along line 9—9 in FIG. 8;

FIG. 10 is a front elevation view of the device shown in FIG. 8, illustrated in its collapsed condition;

FIG. 11 is an enlarged top view of the device shown in FIG. 10;

FIG. 12 is a top view of a third embodiment of the invention, illustrated in its extended condition;

FIG. 13 is a front elevation view of the device as shown in FIG. 12;

FIG. 14 is a front elevation view of the device as shown in FIG. 12, illustrated in its collapsed condition;

FIG. 15 is an enlarged top view of the device shown in FIG. 14 with the flexible signs removed; and

FIG. 16 is a sectional view on an enlarged scale of the folded up barricade taken on the line 16—16 of the FIG. 4, with the flexible display left off.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The drawings illustrate three typical examples of a foldable barricade and sign embodying the present invention. A first (one or two-sided) form of the device is illustrated in detail in FIGS. 1-7. A second (three-sided) form of the device is illustrated in FIGS. 8-11. A third (four-sided) form of the device is illustrated in FIGS. 12-16. The barricade and sign assembly has many uses, being particularly designed for construction and repair projects where portable warning signs are required for vehicle or pedestrian traffic about the project. The barricade and sign is used for traffic control and to serve as a visible warning or guide to those viewing it.

Each form of the device comprises a rectangular frame upon which a flexible or removable sign may be suspended. The rectangular frame is bounded at its two ends by upright legs, which are pivotally joined by a collapsible brace assembly that maintains the legs in

parallel condition whether abutting one another or whether spaced apart.

In addition to the two legs, an additional support is utilized to provide at least a three-legged structure which will have the required stability to be self-standing and to be capable of withstanding normal usage and wind conditions in exterior use. In the first embodiment of the invention support is provided by an identical rectangular frame hinged to the first at their upper ends so as to provide one or two sign support surfaces as desired. In the second embodiment of the invention, support is provided by a third leg connected in a triangular configuration by collapsible braces and permitting the use of one, two or three signs directed 120° apart. In the third form of the invention, support is provided by a second frame whose legs are joined to the respective legs of the first frame by third and fourth brace assemblies to provide a rectangular enclosure which can support one, two, three or four signs facing 90° from one another.

Referring now to FIGS. 1-7, which illustrate the first embodiment of the invention, there is shown a flexible display sign 10 made of cloth, film or other suitable material capable of being wrapped about the barricade when collapsed. The display sign 10 may carry any desired warning or symbol. It is suspended between parallel spaced legs 11, 12 which rest on a support surface and which are joined by a collapsible brace assembly generally designated by the numeral 13. The connection that exists between the legs 11, 12 and the brace assembly 13 is such as to permit alternate positioning of legs 11, 12 parallel and spaced from one another (FIG. 1) or parallel and abutting one another (FIG. 4).

Each leg 11, 12 is formed of material having an angular cross-section and including at least one flange 14 that opposes a similar flange in the leg paired therewith, said flange including parallel outer surfaces. The display sign 10 is attached to these surfaces on flanges 14 by releasable snap fasteners 15 or other suitable releasable fastening devices.

The brace assembly 13 includes a pair of elongated rigid brace elements 16, 17 which are respectively pivoted to legs 11, 12 at 18, 20 about fixed axes perpendicular to the plane outer surfaces of flanges 14. Third and fourth shorter brace element 21, 22 are similarly pivoted at 23, 24 about fixed axes located elevationally above the axes at 18, 20. The elongated brace element 16, 17 are pivoted to one another at 25 intermediate their respective ends. The outer ends of brace element 16, 17 are respectively pivoted adjacent the outer ends of brace element 22, 21, respectively, these pivotal joints being illustrated in FIG. 1 by the numerals 26, 27. The respective brace element 16, 22 and 17, 21 pivoted to legs 11, 12 and to one another form articulated braces which fold and extend transversely to control legs 11, 12.

As illustrated in the drawings, to be able to fold the brace assembly with the legs engaging it is necessary that the length of the long brace element 16 from the fixed pivot axis at 18 to the articulating joint pivot axis at 26 be equal to the length of the short brace element 22 from the fixed pivot axis 24 to the pivot axis at 26 plus the distance between the fixed pivot axes 20 and 24 and that the length of the long brace element 17 between the fixed pivot axis at 20 and the pivot axis at 27 be equal to the length of the short brace element 21 from the fixed pivot axis 23 to the pivot axis at 27 plus

the distance between the fixed pivot axes 18 and 23. It should be noted that when the sign is expanded the long brace elements 16 and 17 extend upward from their fixed pivot axes 18 and 20 respectively and that the short brace elements 21 and 22 extend downward from their fixed pivot axes 23 and 24 respectively.

The details of joint 27 are clear in FIG. 5. The outer end of brace element 21 projects beyond the axis at 27. It has a protruding button 28 that projects outwardly from brace element 21 and which lies in the pivotal path of brace element 17 about the axis at 27. The button 28 limits downward movement of the outer end of brace element 21 to hold braces 17, 21 in their extended condition.

As seen in FIG. 6, the desired locking effect might alternately be provided by bending the outer end of brace element 21 over the pivotal path of brace 17, the bent outer end of brace 21 being designated by the numeral 30. Other releasable latch assemblies may be substituted.

In the first embodiment of the invention, support for the frame that carries display sign 10 is provided by an identical frame 31 located rearwardly thereof. Frame 31 is identical in all respects to the elements shown in FIG. 1, and identical reference numbers are used herein to identify its elements. The upper ends of the corresponding legs 11 and the corresponding legs 12 are pivoted to one another about an axis parallel to sign 10. This pivotal joint is illustrated by hinged connectors at 32. The tops of the legs 11 and 12 are cut at an angle to make them abut the opposing flange to limit a swinging of frame 31 outward away from the display carrying frame.

One feature of this disclosure is the maximum protection of the lightweight braces 16, 17, 21 and 22 when the device is in its collapsed condition (FIGS. 4 and 7). As can be seen in FIG. 7, the brace assembly is located entirely within the confines of the structural boundaries of legs 11 and 12. The legs 11 and 12, being preferably of stronger material and having wider dimensions than the elements of the brace assembly 13, envelope the bracing members and protect them from accidental damage or bending during transport and storage. The sign 10 is wrapped about the collapsed legs 11, 12 for storage purposes (FIG. 4).

The embodiment shown in FIG. 8-11 is a three-sided barricade formed in a manner similar to that described with respect to the first embodiment herein. It also includes a sign-supporting frame comprising legs 11 and 12. Reference numerals identical to those used in the description of the first embodiment are utilized with respect to the frame in FIG. 8-11. Support is provided by a third leg 33, which is connected to legs 11 and 12 respectively by brace assemblies 34 and 35. The brace assembly 34, 35 are identical to the brace assembly 13. The legs 11, 12 and 33 shown in FIGS. 8-11 are each comprises of two angular flanges having an inclined angle of 60° and therefore present three sets of flange surfaces which are parallel to one another and on which signs may be supported.

The device shown in FIGS. 8-11 is capable of supporting one sign as illustrated, or can be used with one or two additional signs suspended between legs 11, 12 and the third support leg 33. Again, as shown in FIG. 11, the brace assemblies 13, 34 and 35 all fit within the confines of legs 11, 12 and 33 when the barricade is in its collapsed condition with the legs parallel to one another.

other in the manner shown in FIG. 10. FIGS. 10 and 11 also illustrate the manner by which a flexible sign, indicated at 36, can be wrapped about the device so as to provide a barricade and sign foldable to a minimal volume.

The third embodiment of the invention, shown in FIGS. 12-15, has an extended rectangular configuration when viewed from above. It includes four legs, 37 connected by four brace assemblies 38, which support legs 37 when extended (FIGS. 12, 13), and which are housed within the confines of legs 37 when contracted (FIGS. 14, 15). The parallel flanges of the angular legs 37 can suspend one, two, three or four signs along the respective sides of the device, as required by a particular use thereof. In the drawings, a large front sign is illustrated at 40 and a pair of smaller side display signs are illustrated at 41. The signs 40, 41 are wrapped about the legs 37 when the device is in its collapsed condition (FIG. 14).

The above description and accompanying drawings illustrate a basic collapsible or foldable barricade and sign which is readily converted between a collapsed and extended condition so as to be easily transportable and readily available for use. It provides maximum protection to the hinged and more vulnerable brace assemblies used to maintain the legs in the desired parallel relationships. The locking of the brace assembly by extension thereof does not require any positive or releasable latch mechanisms, since the very extension of the brace assemblies and the weight thereof will maintain the rigid brace elements in their substantially aligned condition when extended. The brace assemblies are readily contracted by lifting the braces at their connecting hinges 26, 27, after which the collapse of the sign frames can be completed by urging the parallel legs towards one another. To erect a sign, the frame is extended by urging the legs apart.

The display sign is extremely versatile. Each leg may be provided with a plurality of conventional snap fasteners along the length thereof. A variety of flexible signs can then be selectively attached to the legs as required by a particular job project. When collapsed, the flexible signs wrap about the parallel legs and can be held securely by a releasable band or other fastener.

Many variations in sign shape and size are possible. In a triangular arrangement, the legs need not form an equiangular triangle, nor must the rectangular arrangement be limited to a square configuration.

In the enlarged showing of FIG. 5, it will be noted that the pivot 25 is offset upwardly from the center lines of the members 16 and 17 so that upon folding, these members are offset from the members 21 and 22 as illustrated in FIG. 16 to enable compact closing of these brace members. When closed the angle-bars overlap each other and protect all of the light weight braces from damage while the barricade is folded.

Minor modifications might be made in the exact details of the elements shown without deviating from the basic concepts of this disclosure. For these reasons, only the following claims are intended as definitions of the invention.

Having thus described our invention, we claim:

1. A foldable barricade sign, comprising:

a pair of support legs, a common end of each leg being adapted to engage a supporting surface when the legs are upright;

an expandable brace means pivotally interconnecting the pair of legs, said brace means being movable between alternate folded and expanded conditions for maintaining said legs parallel and abutting one another when said brace means is in its folded condition and for alternately maintaining said legs parallel and spaced apart when said brace means is in its expanded condition;

said brace means having a pair of elongated criss-crossing braces that are pivotally interconnected together at the intersection of the braces defining a pivot connection;

each brace having one end pivotally connected to one leg at a fixed pivot axis and an opposite end pivotally connected to the other leg at a fixed pivot axis;

each brace having an articulating joint intermediate its ends, vertically spaced from the pivot connection to enable each brace to be folded and extended between said legs;

said pivot connection being laterally offset from centerlines of the elongated braces in a vertical direction toward the articulating joints to enable the legs to abut when the brace means is in the folded condition;

support means foldably joined to said first and second legs for engaging the supporting surface at a position spaced from the respective locations of engagement of said support surface by said legs while said brace means is in the extended condition; and sign means mounted between said legs for display when the brace means is in the extended condition.

2. A device as set out in claim 1 wherein said support means comprises an identical pair of legs joined by identical brace means, the second pair of legs being respectively hinged to the first pair of legs at the ends opposite thereof to those which engage said support surfaces.

3. A device as set out in claim 1 wherein said support means comprises an identical pair of legs joined by identical brace means, and further comprising:

collapsible rigid brace means pivotally joined to a first leg of each of said pair of legs;

collapsible rigid brace means pivotally joined to a second leg, of each of said pair of legs;

said brace means joined to said first legs and second legs being movable between alternate collapsed and extended conditions for maintaining the respective legs joined thereby parallel and abutting one another when said brace means is in its collapsed condition or for alternately maintaining said legs parallel and spaced apart when said brace means are in their extended conditions.

4. The foldable barricade sign as defined in claim 3 where each leg has an opposing flange directed toward one another to enclose the brace means within the flanges when the brace means is in the folded condition.

5. A device as set out in claim 1 wherein said support means comprises a third leg;

collapsible rigid brace means pivotally joined to each of said pair of legs and to said third leg, said last-named brace means being movable between alternate collapsed and extended conditions for maintaining said third leg parallel and abutting said pair of legs when said brace means is in its collapsed condition and for alternately maintaining said third

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leg parallel and spaced apart from said pair of legs when said brace means is in its extended condition.

6. The foldable barricade sign as defined in claim 1 wherein each brace has a long brace element extending from one leg to the articulating joint and a short brace element pivotally connected to the long brace element at the articulating joint and extending to the other leg and wherein the long brace elements criss-cross and are pivotally interconnected to each other at the intersection.

7. The foldable barricade sign as defined in claim 6 wherein the long brace element of one brace and short brace element of the other brace are pivotally connected to one leg at fixed pivot axes that are spaced a prescribed distance along the one leg and wherein the length of the long brace between its fixed pivot point on one leg and the articulating joint is equal to the prescribed distance plus the length of the short brace element from the articulating joint to its fixed pivot point

on the other leg to enable the brace means to be completely folded to maintain the legs parallel and abutting one another.

8. The foldable barricade sign as defined in claim 6 wherein each long brace element has an outer end extending beyond the articulating joint with a releasable latching means on the other end for releasably locking the brace in the extended condition.

9. The collapsible barricade sign as defined in claim 8 wherein the releasable latching means includes means on the outer end of the long brace element for engaging the short brace element and limit the pivotal movement of the long and short brace elements.

10. In a foldable barricade sign as defined in claim 9 wherein the means on the outer end of the long brace elements engage the short brace element to prevent the brace from being fully extended in the expanded condition.

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