United States Patent

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Continuation-in-part of application Ser. No. 815,105, Apr. 10, 1969, now abandoned. This application Mar. 26, 1970, Ser. No. 22,760

[54] COLLAPSIBLE SAFETY BARRICADES

10 Claims, 10 Drawing Figs.

[52] U.S. Cl. 256/64
[51] Int. Cl. E01f 13/00
[50] Field of Search 256/64, 13, 24, 1

[56] References Cited

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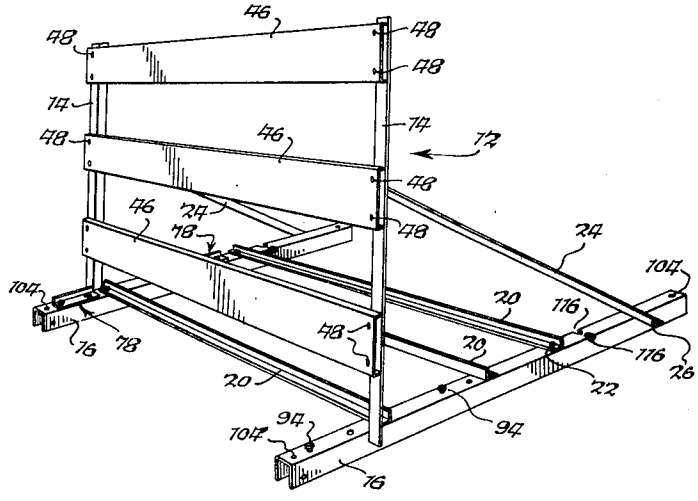
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Primary Examiner—Dennis L. Taylor
Attorney—Christel & Bean

ABSTRACT: A pair of upright legs having horizontal panels extending therebetween are pivotally mounted at their lower ends to horizontally extending members. The panels are provided with reflective faces having markings thereon. Diagonally extending brace members are pivotally mounted at their lower ends to the base members by shear bolts and at their upper ends to the legs for quick detachment therefrom enabling the legs and brace members to be swung into a collapsed inoperative position. Link members are employed to connect adjacent barricades together to form a continuous barricade system of any desired length.



4 Sheets-Sheet 1

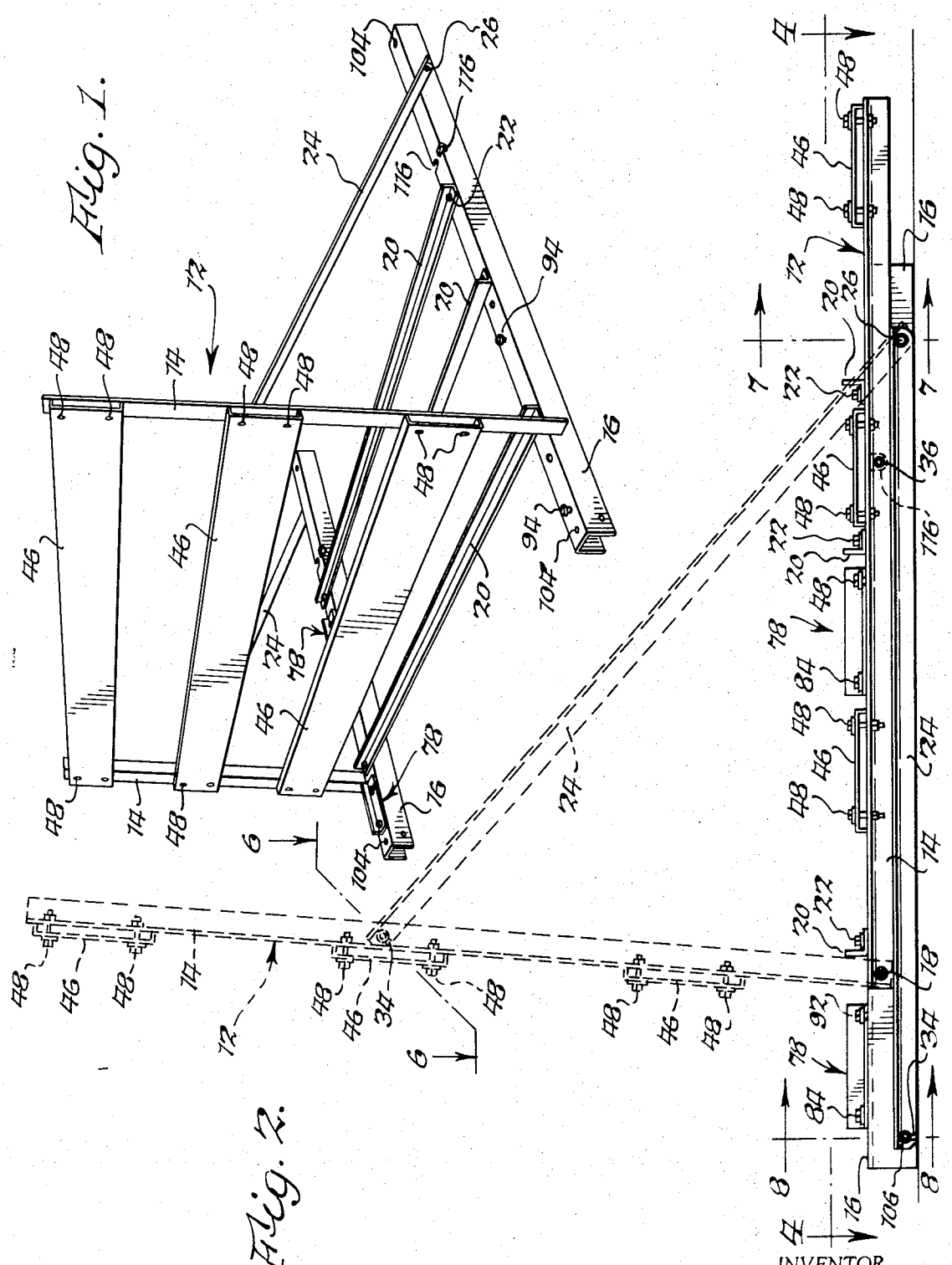
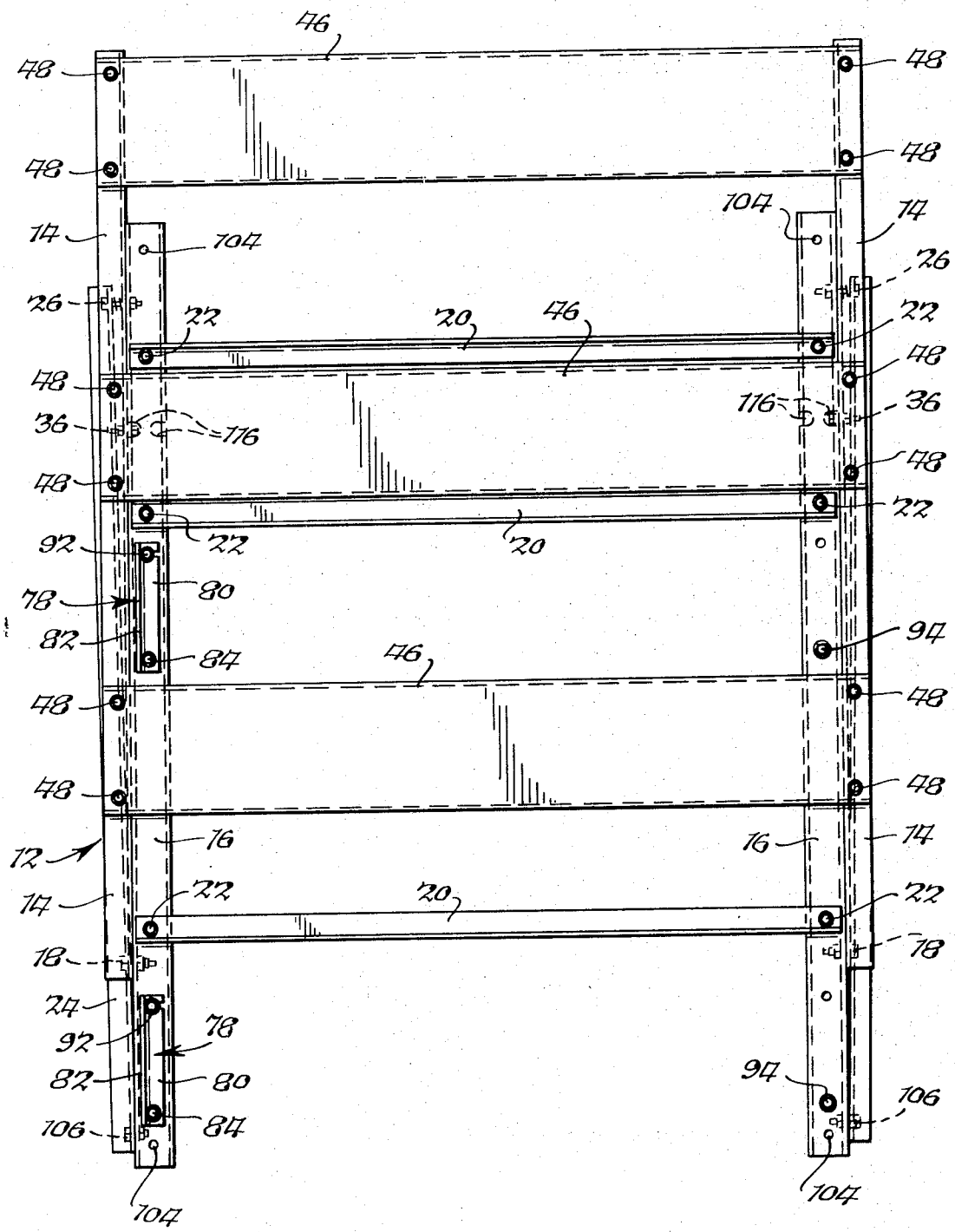


Fig. 1.

Fig. 2.

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Fig. 3.



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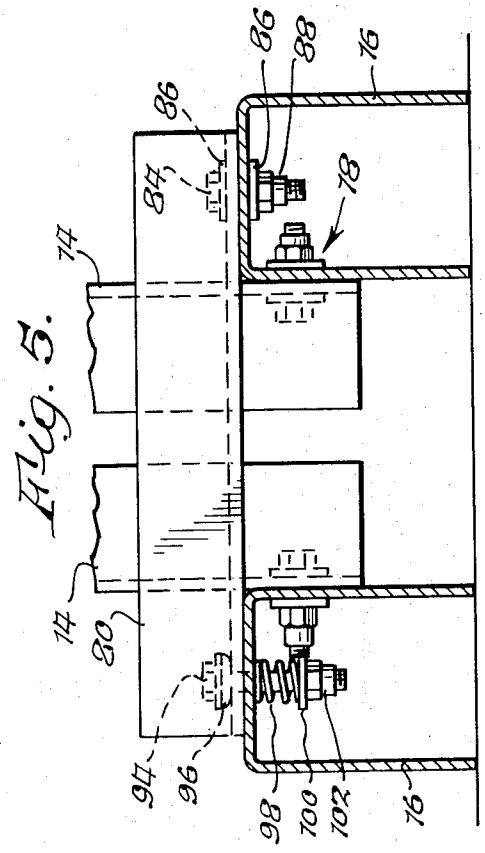


Fig. 5.

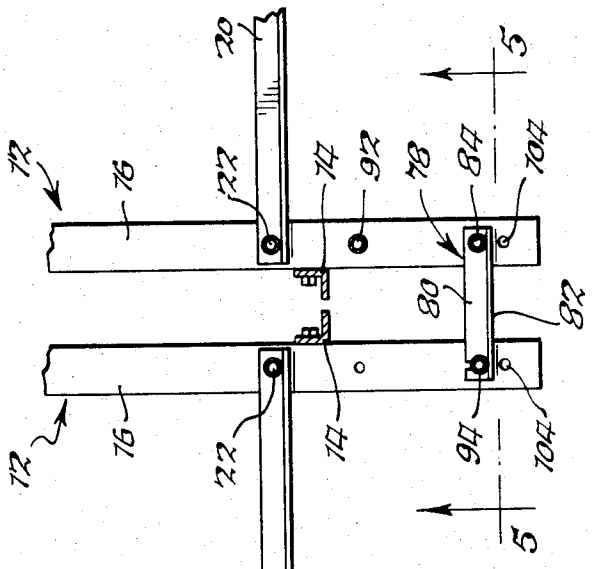
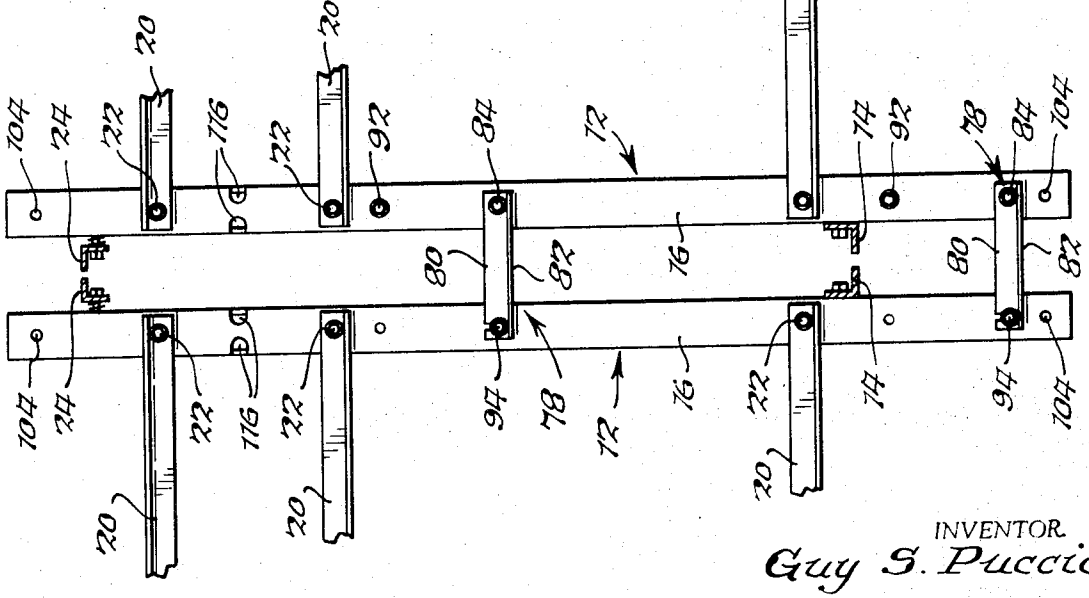


Fig. 4.



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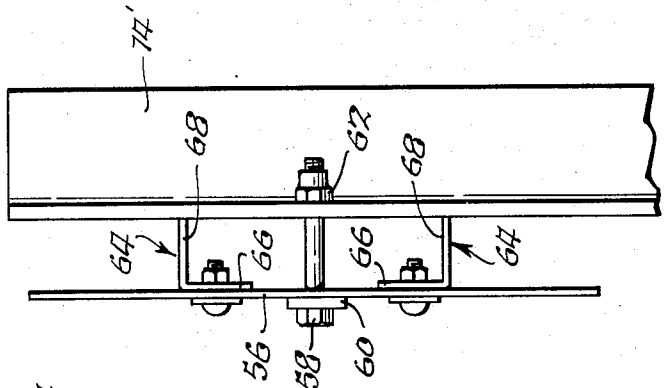


Fig. 10.

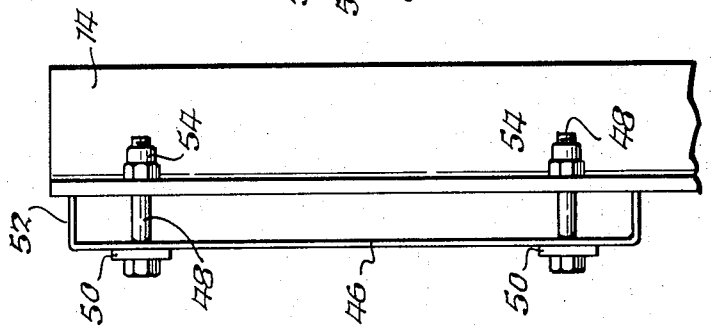


Fig. 9.

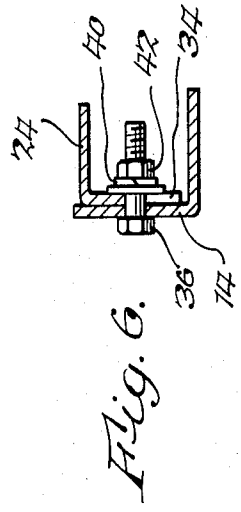


Fig. 6.

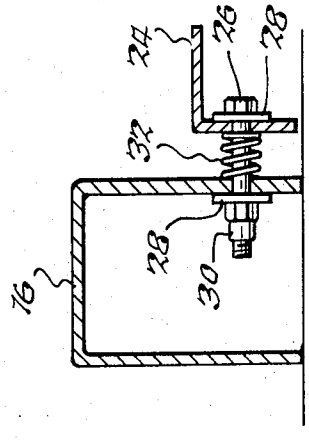


Fig. 7.

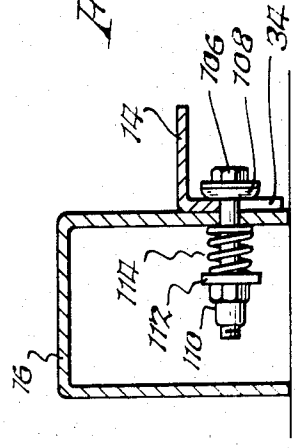


Fig. 8.

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COLLAPSIBLE SAFETY BARRICADES

CROSS-REFERENCE TO A RELATED APPLICATION

This application is a continuation-in-part of application Ser. No. 815,105, filed Apr. 10, 1969, now abandoned, on Collapsible Safety Barricades.

BACKGROUND OF THE INVENTION

This invention relates to a traffic control device and, more particularly, to a collapsible safety traffic barrier or barricade.

It is known to use safety barricades for directing and protecting pedestrian and vehicular traffic at road construction and repair sites, or to temporarily close off unused traffic lanes, temporarily obstruct ends of lanes, to guard excavations and building sites, and generally warn against hazards. While many such barricades are admirably suited for their intended purpose, they possess certain disadvantages. For example, these barricades offer a certain amount of resistance against impact and in the event a vehicle accidentally collides against such barriers, the impact causes damage to the barricades themselves, to the vehicle, and possible personal injury to any of the occupants of the vehicle. If the barricade is embedded in earth material or a concrete base, the damage can be much more extensive. Also, some of these known barricades require separate illumination means in order to be visible during periods of dusk and darkness.

SUMMARY OF THE INVENTION

An object of the present invention is to overcome the above disadvantages by providing a safety traffic barricade collapsible upon impact to minimize property damage and personal injuries.

Another object of this invention is to provide a collapsible safety traffic barricade which is simple and strong in construction, rugged and durable in use, easy to fabricate, and which can be collapsed when not in use into a compact unit for storage and ease of handling.

In one aspect thereof, the collapsible barricade of the present invention is characterized by a pair of upright legs having horizontally extending panels connected thereto and pivotally mounted at their lower ends to a pair of spaced base members. A pair of diagonally extending brace members are pivotally mounted at their lower ends to the base members by shear bolts and at their upper ends thereof by bolt and slot arrangements for quick disengagement, enabling the barricade to be swung into a collapsed inoperative position for storage and ease of handling. Two or more barricades can be serially joined by connecting links to form a continuous safety barricade system of any desired length. The faces of the panels are provided with highly reflective surfaces clearly visible under the headlights of a vehicle during periods of dusk and darkness.

The foregoing and other objects, advantages and characterizing features of the present invention will become clearly apparent from the ensuing detail description of certain illustrative embodiments thereof, taken together with the accompanying drawings wherein like reference characters denote like parts throughout the various views.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a safety traffic barricade constructed in accordance with the present invention;

FIG. 2 is a side elevational view, on an enlarged scale, of the barricade of FIG. 1 showing the barricade in a collapsed inoperative position in full lines and in an extended position of use in phantom;

FIG. 3 is a top plan view, on an enlarged scale, of the barricade of FIG. 1 shown in a collapsed position;

FIG. 4 is a fragmentary top plan view, partially in section, showing a plurality of barricades of this invention joined together to form a continuous barricade system;

FIG. 5 is a fragmentary vertical sectional view taken about on line 5—5 of FIG. 4;

FIG. 6 is a sectional view, on an enlarged scale, taken about on line 6—6 of FIG. 2;

FIG. 7 is a vertical sectional view, on an enlarged scale, taken about on line 7—7 of FIG. 2;

FIG. 8 is a vertical sectional view, on an enlarged scale, taken about on line 8—8 of FIG. 2;

FIG. 9 is a fragmentary side elevational view, on an enlarged scale, showing one form of panel incorporated in the barricade of the present invention; and

FIG. 10 is a fragmentary side elevational view illustrating another form of panel used in the barricade of this invention.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

Referring now in detail to the drawings, there is shown in FIG. 1 a preferred form of a safety traffic barricade, generally designated 12, constructed in accordance with this invention and comprising a pair of upright legs 14 in the form of angle bars pivotally mounted at their lower ends to the outer sides of a pair of inverted U-shaped channel members or base members 16 as by means of fasteners 18 (FIG. 2). Members 16 serve as the base of barricade 12 when in its extended position of use. A plurality of brace members 20 in the form of angle bars are connected at their opposite ends to channel members 16 in a spaced, parallel relation. Of course, any number of brace members 20 can be employed, as desired. It should be noted that the two rearwardmost members 20 are disposed in an opposed relation with the horizontal legs thereof facing each other for receiving sandbags or concrete blocks for added stability.

A pair of diagonally extending brace members 24 in the form of angle bars are pivotally connected at their lower ends to the outer sides of channel members 16, respectively, by means of shear bolts 26 (FIG. 7) extending through aligned openings in channel members 16 and brace members 24. Each bolt 26 is provided with washers 28 bearing against the inner sides of channel member 16 and brace member 24, respectively, and a self-locking nut 30 threaded onto bolt 26. A coil spring 32 disposed about bolt 26 between channel member 16 and brace member 24 urges said members apart and permits lateral movement therebetween against the bias of spring 32.

The upper ends of brace members 24 are provided with slots 34 (FIG. 2) for engagement about bolts 36 (FIG. 6) to secure brace members 24 to upright legs 14 in the extended position of barricade 12. Bolts 36 extend through suitable openings in legs 14 and are provided with a suitable washer 38, a lock washer 40 and nut 42 firmly securing the upper end of brace members 24 in place.

A plurality of horizontally extending, vertically spaced, cross panels 46 are mounted at their opposite ends to upright legs 14 by means of bolts 48 equipped with washers 50 and extending through aligned openings in panels 46 and legs 14. As shown in FIG. 9, panels 46 have inturned flanges 52 along the upper and lower edges thereof, such flanges 52 abutting the front faces of legs 14. Self locking nuts 54 are threaded onto bolts 48 for securing panels 46 in place. The faces of panels 46 can be painted or decorated to provide any desired effect. For example, alternate black and white illuminous, diagonal strips or directional arrows can be painted on the faces of panels 46 to provide a highly reflective surface clearly visible at night under the headlights of a vehicle.

FIG. 10 illustrates another form of panel assembly of the present invention comprising a panel 56 connected at its opposite ends to legs 14' by bolts 58 extending through aligned openings in panel 56 and legs 14'. Bolt 58 is equipped with a suitable washer 60 and self-locking nut 62. Instead of integral, inturned flanges, panel 56 is provided with separate spacing means at opposite ends thereof, such spacing means including a pair of angle members 64 having right angularly related legs 66 and 68. Members 64 are oriented in a spaced-opposed relation with the legs 66 extending toward each other and legs 68 abutting against upright legs 14'. Bolts 70, having washers 72 and nuts 74, extend through aligned openings in panel 56 and

legs 66 for fastening panels 56 to angle members 64. One advantage residing in this form of the invention is that the opposite faces of panel 56 can be provided with different markings, such as a striped design and a directional arrow for example, whereby changing from one to the other can be quickly effected.

A pair of connecting links 78 in the form of angle members having right angularly related legs 80 and 82 are mounted on one of the channel members 16 for the purpose of connecting two or more barricades 12 in a side by side relation as shown in FIGS. 4 and 5. Legs 80 of angle members 78 are mounted at their one ends on the left channel member 16 as viewed in FIGS. 1 and 3 by means of bolts 84 equipped with washers 86 and a self-locking nut 88. The other end of legs 80 are provided with slots 90 normally engaging beneath the head of bolts 92. The right channel member 16 is provided with a pair of spring-loaded bolts 94 (FIG. 5) having a chamfered washer 96 disposed thereon and disposed in a suitable opening in channel member 16. A compression spring 98 encircles bolt 94 and is disposed between a washer 100 and channel member 16. A self-locking nut 102 is threaded on bolt 94. In connecting barricades 12 together, connecting angles 78 are pivoted in a counterclockwise direction about bolt 84 and swung above and beyond bolt 94 of the adjacent barricade. Then members 78 are swung clockwise and slipped into engagement about bolt 94 beneath the head thereof into the position illustrated in FIGS. 4 and 5. Thus, two or more barricades may be serially joined to form a continuous warning system of any desired length. It should be understood that connecting angles 78 may be pivotally mounted on either channel member 16 with bolts 94 attached to the other channel member 16 of each set. Note that a series of openings are provided in both channel members 16 to selectively attach angles 78 or bolts 94 thereto. Also, openings 104 are provided adjacent the opposite ends of channel members 16 for receiving suitable anchor pins (not shown), if desired. Although all of the components of barricade 12 preferably are formed of metal, it should be understood that wood, plastic or other suitable materials can be employed, if desired.

In use, barricade 12 is fully extended as shown in FIG. 1 and in phantom lines in FIG. 2. As earlier noted, diagonally extending legs 24 are attached at their upper ends to legs 14 by bolts 36 and at their lower ends to channel members 16 by shear bolts 26. In the event a vehicle should collide with barricade 12, the impact transmitted through diagonal brace members 24 shears bolts 26 causing the upright legs 14 to collapse resulting in only minimal damage to the vehicle and barricade.

A significant feature of this invention is that barricade 12 can be folded into a compact collapsed position when not in use for convenient storage and transportation. In order to collapse barricade 12, each nut 42 is loosened and the upper end of the associated brace member 24 is pivoted upwardly about bolt 26 to disengage the upper end of brace member 24 from bolt 36. The slot and bolt arrangement at the upper end of brace members 24 constitutes a quick disconnect for permitting quick and easy detachment of brace members 24 from legs 14. The upper end of brace member 24 is then swung laterally outwardly of legs 14 and panels 46 to clear the same. To accommodate this movement, the lower end of brace member 24 is moved laterally inwardly toward channel member 16 compressing spring 32 with bolt 26 serving as the fulcrum point. Brace member 24 is then lowered with slot 34 engaging about a spring-loaded keeper bolt 106 (FIG. 8) inserted in a suitable opening in channel member 16 and having a chamfered washer 108, a self-locking nut 110, a washer 112 and a spring 114 encircling bolt 106 and disposed between washer 112 and the inner side of channel member 16. When brace member 24 is disengaged from bolt 106, spring 114 biases washer 108 against the outer side of channel member 16. Thus, brace members 24 are latched to channel members 16 in the collapsed inoperative position of barricade 12.

Upright legs 14 are then free to be lowered about bolts 18 into a collapsed folded position of rest against brace members 24 as shown in full lines in FIG. 2 and in FIG. 3. Channel members 16 are provided with slots 116 to accommodate the projecting portions of bolts 36. In this collapsed compact condition, barricade 12 can be readily handled and carried to the desired site by one workman. Also, barricades 12 can be neatly stacked one on top of the other for convenient storage, thus occupying a minimum of space.

From the foregoing, it is apparent that the objects of the present invention have been fully accomplished. As a result of this invention, an improved traffic safety barricade is provided, which is simple and strong in construction and which can be quickly and simple erected at highway and/or construction sites and readily collapsed for convenient storage and handling by one workman. By the provision of shear pins, the barricade of this invention collapses upon impact causing minimal damage to the barricade itself and to the vehicle. By the provision of pivotal connecting angles or links, a plurality of barricades can be serially joined to form a continuous system of any desired length. The panel faces are provided with highly reflective surfaces which can be easily seen during periods of dusk and darkness under the headlights of a vehicle.

Preferred embodiments of this invention having been disclosed in detail, it is to be understood that this has been done by way of illustration only.

I claim:

1. A traffic barricade comprising: a pair of spaced, horizontally extending base members, a pair of upright legs, at least one horizontally extending panel connected at its opposite ends to said upright legs and spaced above said base members, means pivotally mounting said legs adjacent their lower ends to said base member for swinging movement between an upright extended position and a collapsed position, a pair of brace members extending diagonally from said base members to said upright legs for supporting the same in an upright position, means pivotally mounting said brace members to said base members, and means detachably securing said brace members to said upright legs intermediate their upper and lower ends.

2. A traffic barricade according to claim 1 wherein said panel includes a face having a reflective surface thereon and flanges along opposite longitudinal edges thereof extending away from said face and having ends in abutting engagement against portions of said legs.

3. A traffic barricade according to claim 1 wherein said panel comprises opposite faces having reflective surfaces thereon provided with different markings.

4. A traffic barricade according to claim 3 including means for spacing said panel forwardly from said upright legs.

5. A traffic barricade according to claim 3 including wherein said last-mentioned pivotal mounting means includes shear bolts connecting said brace members to said base members whereby impact forces directed against said barricade are transmitted through said brace members to sever said shear bolts and collapse said barricade.

6. A traffic barricade comprising: a pair of spaced, horizontally extending base members, a pair of upright legs, at least one horizontally extending panel connected at its opposite ends to said upright legs, means pivotally mounting said legs adjacent their lower ends to said base members, a pair of brace members extending diagonally from said base members to said upright legs for supporting the same, means pivotally mounting said brace members to said base members, and means detachably securing said brace members to said upright legs intermediate their upper and lower ends, said detachably securing means including a fastener on each leg and a slot in each brace member for quick disengagement whereby said brace members and said upright legs can be pivoted about their respective pivotal mountings into a collapsed inoperative position for storage and handling.

7. A traffic barricade according to claim 11 including keeper means on said base members engageable with said slots

on said brace members for latching the latter in said collapsed inoperative position.

8. A traffic barricade according to claim 1 including link means on at least one of said base members for attachment to a base member of an adjacent barricade.

9. A continuous safety barricade system comprising at least two traffic barricades as defined in claim 1 in combination with means for linking said barricades together to serially connect the same.

10. A continuous safety barricade system according to claim 9 wherein said linking means includes at least one connecting member pivotally mounted on one base member of one barricade and having a slot engageable with a fastener on the adjacent base member of the other barricade.

* * * * *