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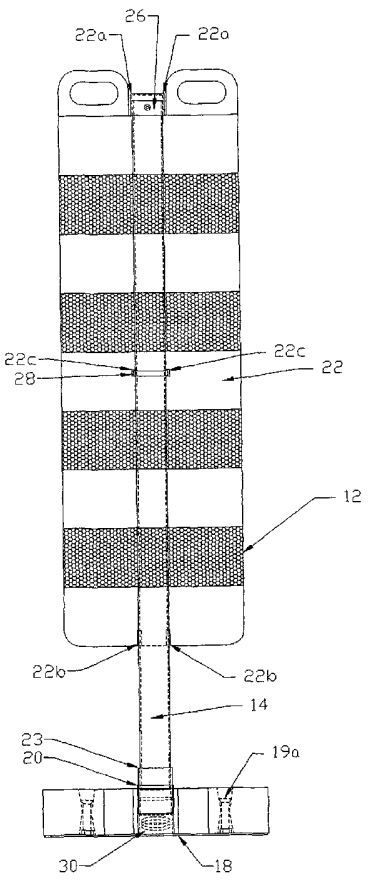
(54) Title: ROAD SIGN POST ASSEMBLY



(57) Abstract: A knockdown signalling post assembly for alerting motorists of a road hazard. The post assembly includes: a main elongated rigid tubular post member having a lengthwise slit, a bottom end portion and a top end portion; a ground support base member, including a ground engaging panel and a transverse socket, the transverse socket defining a hollow with a top mouth, this socket hollow being engaged by the post member bottom end portion in an upright condition of the post member. A spring-loaded quick-disconnect bayonet type coupling system cooperates with the transverse socket in releasably interlocking the post member into the transverse socket hollow. A sign panel fits into and extends through the lengthwise slit transversely thereto.

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TITLE OF THE INVENTION: ROAD SIGN POST ASSEMBLY

FIELD OF THE INVENTION

This invention relates to portable outdoor upright signs, and in particular to signs of the type used on the side of roads for alerting a motorist of a road hazard.

CROSS-REFERENCE DATA

This patent application claims convention priority based upon co-pending United States provisional patent application No 60/298,123 filed June 15, 2001.

BACKGROUND OF THE INVENTION

Upright road sign posts are nowadays frequently found along roads where road maintenance work is performed. Among the purposes of these road sign posts, there are the bodily protection of the workers from fast-moving road vehicles, and also the protection of these moving road vehicles against property damage from stationary road obstacles.

Another goal of these road sign posts, is that they may be easily dismanteable, to facilitate shipping from one working area to another. To be able to achieve the first mentioned goals, the road sign post must be weather resistant, and in particular, the road sign post must be resistant to different types of atmospheric wind pressure applied onto the sign post, including air drafts created by speeding vehicles passing closely adjacent to the sign post. On the other hand, these weather resistant features should not be such as to make installation or removal of the sign post a difficult or lengthy procedure. Also, sign posts are preferably of light weight

so as to minimize injuries to persons and damage to objects if they are hit by a vehicle and projected into the air.

To this effect, there already exists knockdown signs made up from rigid frame elements that are field assembled with lockups for removably interlocking these frame elements with one another.

A problem with existing upright sign post assemblies, is that it is usually an awkward and relatively lengthy operation for a worker to install or release the ground base member to/from the upright post, for example when the sign post is to be moved from one location to another. Screws and bolts required for the interlocking of sin post assembly elements, usually need to be released with special tools. When the weather is unfavorable, e.g. if there is a heavy rain downpour, the workers may not be able to have sufficient access to - or may be unwilling to perform - the releasable lockup between the ground base member and the upright post. Delays and thus higher labour costs can then be expected.

Another problem with known sign post assemblies is that they require significant space for storage. This is especially disadvantageous when the sign posts are stored in trucks to carry them to road construction site, where the sign posts will be distributed on the road to close off a portion of the road. Indeed, a relatively small number of the cumbersome prior art sign post assemblies will fit in a truck, thus requiring more truck loads of sign post assemblies for a given number of sign post assemblies that need to be installed on a road.

OBJECTS OF THE INVENTION

The main object of the present invention is to improve upon existing road sign posts, by providing a quick disconnect attachment between the ground base and the upright post of the sign post assembly, that does not require tools for installation or removal thereof.

Another object of the invention is to provide a road sign post assembly of improved convenience in use, while remaining very compact when not in use.

SUMMARY OF THE INVENTION

In accordance with the objects of the invention, there is disclosed a knockdown signaling post assembly for alerting motorists of a road hazard, said post assembly including:

a) main elongated rigid tubular post member having a lengthwise slit, a bottom end portion and a top end portion;

b) ground support base member, including a ground engaging panel and a transverse socket, said transverse socket defining a hollow with a top mouth, said socket hollow being engaged by said post member bottom end portion in an upright condition of said post member;

c) spring-loaded quick-disconnect coupling means, cooperating with said transverse socket in releasably interlocking said post member into said transverse socket hollow;

d) sign panel, fitting into and extending through said lengthwise slit transversely thereto.

An attachment means may be provided to releasably anchor said sign panel into said post member lengthwise slit. An anchor weight member also preferably releasably engages over the ground engaging panel to prevent accidental ground displacement of the post assembly under windborne conditions.

The invention also relates to a movable knockdown sign comprising:

a) an elongated slotted center post;

b) a ground base, for supporting said center post in upright condition;

c) a removable sign panel, mounted centrally into said slotted center post;

d) a spring-biased, bayonet-type lock member, releasably interlocking said post and said ground base.

Preferably, there would then be further included a separate U-shape weight member, placed over said ground base and around said center post.

The invention also relates to a quick-disconnect base member for use in supporting a knockdown sign post over ground, the sign post of the type having a top end portion, a bottom end portion and an sign plate carried intermediate the top and bottom end thereof, said base member defining:

a) a ground panel, for flatly engaging ground;

b) a tubular stud member, transversely projecting from a central portion of said ground panel integrally thereof, said stud member defining a hollow with an open top mouth, said stud member hollow sized for through sliding engagement therein of the sign post bottom end portion;

c) a compressible resilient member, mounted into said stud member hollow,said resilient member abutting against said ground panel in an operative position thereof and engageable by the sign post bottom end; and

d) key means, cooperating with said stud member for releasably locking the sign post bottom end portion into said stud member hollow upon the sign post compressing said resilient member against said ground panel.

Said resilient member may be a coil spring. Alternately, the resilient member could include a toroidal compressible elastomeric ring, laying flat against said ground panel, and a rigid flat ring washer, overhanging against said elastomeric ring opposite said ground panel.

The length of said stud member is preferably substantially shorter than the size of said ground panel.

In one embodiment of the invention, said key means includes a shaft member, anchored to said stud member and extending across said hollow and spacedly from said resilient member and opposite said ground panel, and an elbowed bayonet type notch member, for integrally mounting to the sign post bottom end portion, said elbowed notch member sized for releasable transverse engagement by said shaft member upon the sign post bottom end portion compressing said resilient member against said ground panel.

In an alternate embodiment of the invention, said key means includes a pair of screws, each anchored to said stud member on opposite sides thereof and extending across said hollow and spacedly radially extending toward one another

and spacedly from said resilient member and opposite said ground panel, and an elbowed bayonet type notch member, for integrally mounting to the sign post bottom end portion, said elbowed notch member sized for releasably transverse engagement by a selected one of said screws upon the sign post bottom end portion compressing said resilient member against said ground panel.

The invention also relates to a knockdown sign post assembly for use as a road hazard sign, said sign post assembly consisting of:

a) an elongated tubular rigid post, having a top end portion and a bottom end portion;

b) a sign plate, to be secured against said rigid post intermediate said top end portion and said bottom end portion thereof;

c) securing means, releasably securing said sign plate transversely to said rigid post;

d) a ground panel, for flatly engaging ground;

e) a tubular stud member, transversely projecting from a central portion of said ground panel integrally thereof, said stud member defining a hollow with an open top mouth, said stud member hollow slidingly releasably engaged by said sign post bottom end portion;

f) a compressible resilient member, mounted into said stud member hollow, said resilient member abutting against said ground panel in an operative position thereof, said resilient member engaged by said sign post bottom end portion; and

g) key means, cooperating with said stud member and releasably locking said sign post bottom end portion into said stud member hollow when said sign post is biased against said resilient member and compresses the latter.

The key means may then include a bayonet type component.

BRIEF DESCRIPTION OF THE EMBODIMENTS OF THE INVENTION

Figure 1 is an elevational view of a first embodiment of road sign post assembly;

Figure 2 is an elevational view of the road sign panel from figure 1;

Figure 3 is an elevational view of the upright post from figure 1;

Figure 4 is an enlarged view of the lower end portion of the upright post of figure 3;

Figure 5 is a view similar to figure 1, but without the ground base member;

Figure 6 is an enlarged elevational view of the ground base member according to the first embodiment of the invention;

Figure 7 is a view similar to figure 6, but with the ground base member rotated a quarter of a turn relative thereto;

Figure 8 is a top plan view of the ground base member of figure 6;

Figures 9 and 10 are edge views at right angle from one another respectively of the ground anchor weight member;

Figure 11 is a top plan view of the ground anchor weight member;

Figure 12 is a view similar to figure 2, but showing a second embodiment of road sign panel;

Figure 13 is a view similar to figure 6, but showing a second embodiment of ground base member;

and

Figure 14 is a top plan view of the embodiment of ground base member illustrated in figure 13 of the drawings.

DETAILED DESCRIPTION OF THE EMBODIMENTS OF THE INVENTION

In a first embodiment of signalling post assembly 12 according to the invention, there are illustrated in figures 1 to 11 of the drawings, four separate elements, releasably connected to one another:

a) a main elongated tubular post member 14, shown in figs 3-4;

b) a ground support base member 16, best shown in figs 6-8, and including a ground engaging panel 18 and a transverse open-top socket 20 for

frictionally receiving in upright condition inside its hollow the bottom end portion of the post member 14;

c) an oversized road sign panel 22, best shown in figures 2 and 5, and adapted to fit and extend through a lengthwise slit 14a made into post member 14 transversely thereto;

and

d) an anchor weight member 24, best shown in figures 9-11 of the drawings, for releasably engaging over the ground engaging panel to prevent accidental ground displacement of the post assembly 12 under wind conditions or the like.

A tubular cap 26 preferably closes the top end 14b of the upright post member 14. Preferably, securing means such as semi-flexible tie-cords 28 (fig 3) are provided across the panel 22, releasably extending through slits 22c made into an intermediate section of panel 22, and around the upright post member 14 intermediate its height, to prevent accidental escape of the panel 22 from the slit 14a of post member 14.

The top and bottom edges of sign panel 22 each include a pair of notches 22a, 22b, respectively. Top notches 22a are sized and spaced to frictionally but releasably accommodate the cover cap 26. Bottom notches 22b are sized and spaced to define a tongue therebetween, the tongue frictionally but releasably engaging the tubular post member 14 beyond the bottom extremity of slit 14a, with bottom notches 22b consequently engaging opposite sides of the tubular post member 14.

The post member 14 is covered with an adhesive sheeting or otherwise painted or drawn to replicate the picture and/or information that is partly concealed by the post member 14 on the sign panel 22. Consequently, the picture or information will be entirely apparent.

In the first embodiment of socket 20 illustrated in figure 6, a biasing spring 30 is mounted inside socket 20, for facilitating intentional release of the post 14 from the base member 16 by biasing the socket notch against a bayonet type notch. A shaft 32 is mounted transversely into the hollow of socket 20 integral to

socket 20, and located intermediate its upper mouth 20a and lower spring 30, spacedly over coil spring 30. To the bottom end of post 14 is fitted a short sleeve member 33, the latter including a bayonet type arcuate notch 34 (fig 2), for releasable locking engagement with shaft 32 against the bias of spring 30. Shaft 32 also prevents coil spring 30 from accidentally escaping from the hollow of socket 20, when base member 16 is turned upside down when detached and not in use.

U-shape weight member 24 illustrated in figures 9-11 should be made from a high density material, to provide a high mass to volume ratio. Weight member 24 includes a notch 24a, for transverse engagement therein of post 14, and a flat underface 24b, for flatly abutting conformingly against flat ground engaging plate 18. An ovoidal aperture 24c may be made into weight member 24 opposite notch 24a, with aperture 24c sized for hand engagement, to facilitate grasping and transport of the heavy weight member 24 from one site to another. It is understood that weight member 24 may have a different configuration than a U-shape.

Preferably, ground base member plate 18 includes a number of transverse upstanding projections, e.g. four nuts 19 (figure 6); and weight member 24 includes a corresponding number of transverse through bores, e.g. conico-conical milling bores 25 (figures 10-11) sized for frictional engagement by the bolt 19a, for releasable interlock between weight 24 and plate 18 to prevent accidental transverse shifts between same.

Preferably, post 14, as well as sign panel 22, are lined with a light reflecting film, for improved visibility by incoming motorists on the road. Any suitable desired pictogram or information may be displayed on the road sign post assembly 12.

Figure 12 shows an alternate embodiment of rectangular road sign panel, 122, being different from the first one (figure 2) in that it includes a pair of transversely spaced handle members 150, 152, along the top short edge thereof. Notches 122a similar to notches 22a of figure 2, extend freely between handle members 150, 152. Notches 122 b are similar to notches 22b of the first embodiment and extend along the lower edge of the panel 122.

Figures 13 and 14 show an alternate embodiment of ground base, for the road sign post. In this embodiment, the ground base includes a quadrangular rigid plate 118, with an integral rigid tubular short stud or socket, 120, extending transversely from the center portion of plate 118. Plate 118 and socket 120 may be for example from a metallic alloy. A resilient toroidal tube 160 forming a loop and made from elastomeric compressible material, sits flatly inside the hollow of socket 120 against a central flooring portion 118a of plate 118. A flat circular washer 162 sits over elastomeric ring 160. Two oppositely facing screws 164 project radially inwardly of socket 120 toward one another, integrally from an intermediate section thereof spacedly over washer 162 and loop tube 160. In use, screws 164, 166, have a purpose similar to bolt 32 from the first embodiment in figures 6-8, while compressible deformable elastomeric loop tube 160 has a spring-back purpose similar to that of coil spring 30 in figure 6.

Plate 118 further also preferably includes transverse nuts 119, similar to nuts 19 of the first embodiment and for same purpose.

In use, a worker may install the post 14 into socket 20 (120), simply by pushing the post 14 down into the hollow of the socket, by fully compressing the coil spring 30 (rubber ring tube 160), by rotating the post 14 so that key 32 (or keys 164) engage into the post bayonet notch 34, and by thereafter releasing the downward pressure on post 14 so that automatic interlock between post 14 and socket 20 (120) occur under limited upward motion of post 14 under bias of biasing member 30 (160). No tool is required for installation of post, since what is required is only downward manual push and rotation of post 14.

When the post 14 is locked into socket 20 (120), the spring member 30 (160) is partly compressed, not fully compressed, as suggested in figure 1. To release the post 14 from the socket 20 (120), a worker needs first to push the post 14 downwardly into socket 20 (120), to fully compress the spring member 30 (160) thus releasing the bayonet type notch 34, and thereafter counterrotating the post 14 to clear the bayonet type notch 345, to finally simply release downward pressure on post to enable upward release of post 14 from socket 20 (120) yieldingly to the spring bias of spring member 30 (160).

I CLAIM:

1. A knockdown signalling post assembly for alerting motorists of a road hazard, said post assembly including:

a) main elongated rigid tubular post member having a lengthwise slit, a bottom end portion and a top end portion;

b) ground support base member, including a ground engaging panel and a transverse socket, said transverse socket defining a hollow with a top mouth, said socket hollow being engaged by said post member bottom end portion in an upright condition of said post member;

c) spring-loaded quick-disconnect coupling means, cooperating with said transverse socket in releasably interlocking said post member into said transverse socket hollow;

d) sign panel, fitting into and extending through said lengthwise slit transversely thereto.

2. A post assembly as in claim 1,
further including an attachment means, releasably anchoring said sign panel into said post member lengthwise slit.

3. A post assembly as in claim 1,
further including an anchor weight member, releasably engaging over the ground engaging panel and defining a notch engaged by said post member, to prevent accidental ground displacement of the post assembly under windborne conditions.

4. A movable self-standing knockdown sign assembly comprising:

a) an elongated slotted center post;

b) a ground base, for supporting said center post in upright condition;

c) a removable sign panel, mounted centrally through and into said slotted center post; and

d) a spring-biased, bayonet-type lock member, releasably interlocking said post into said ground base.

5. A knockdown sign as in claim 4,
further including a separate weight member, placed over said ground base and around said center post.

6. A quick-disconnect base member for use in supporting in upright condition a knockdown sign post over ground, the sign post of the type having a top end portion, a bottom end portion and a sign plate carried intermediate the top and bottom end portion thereof, said base member defining:

a) a ground panel, for flatly engaging ground;

b) a tubular socket member, transversely projecting from a central portion of said ground panel integrally thereof, said socket member defining a hollow with an open top mouth, said socket member hollow sized for through sliding engagement therein of the sign post bottom end portion;

c) a compressible resilient member, mounted into said socket member hollow, said resilient member abutting against said ground panel in an operative position thereof and engageable by the sign post bottom end portion; and

d) key means, cooperating with said socket member for releasably locking the sign post bottom end portion into said socket member hollow upon the sign post compressing said resilient member against said ground panel.

7. A quick-disconnect base member as in claim 6,
wherein said resilient member is a coil spring.

8. A quick-disconnect base member as in claim 6,
wherein said resilient member includes a toroidal compressible elastomeric tube, laying flat against a registering section of said ground panel, and a rigid flat ring washer, overhanging against said elastomeric ring opposite said ground panel.

9. A quick-disconnect base member as in claim 6, wherein the length of said socket member is substantially shorter than the size of said ground panel.

10. A quick-disconnect base member as in claim 6, wherein said key means includes a shaft member, anchored to said socket member and extending across said hollow spacedly from said resilient member opposite said ground panel, and an elbowed bayonet-type notch member, for integrally mounting to the sign post bottom end portion, said elbowed notch member sized for releasable transverse engagement by said shaft member upon the sign post bottom end portion compressing said resilient member against said ground panel.

11. A quick-disconnect base member as in claim 6, wherein said key means includes a pair of screws, each anchored to said socket member on opposite registering sides thereof and extending across said hollow and spacedly radially toward one another spacedly from said resilient member opposite said ground panel, and an elbowed bayonet type notch member, for integrally mounting to the sign post bottom end portion, said elbowed notch member sized for releasably transverse engagement by a selected one of said screws upon the sign post bottom end portion compressing said resilient member against said ground panel.

12. A self standing knockdown sign post assembly for use as a road hazard sign, said sign post assembly consisting of

a) an elongated tubular rigid post, having a top end portion and a bottom end portion;

b) a sign plate, to be secured against said rigid post intermediate said top end portion and said bottom end portion thereof;

c) securing means, releasably securing said sign plate transversely to said rigid post;

d) a ground panel, for flatly engaging ground;

e) a tubular socket member, transversely projecting from a central portion of said ground panel integrally thereof, said socket member defining a hollow with an open top mouth, said socket member hollow slidingly releasably engaged by said sign post bottom end portion;

f) a compressible resilient member, mounted into said socket member hollow, said resilient member abutting against a registering portion of said ground panel in an operative position of said resilient member, said resilient member engaged by said sign post bottom end portion; and

g) key means, cooperating with said socket member and releasably locking said sign post bottom end portion into said socket member hollow when said sign post is biased against said resilient member and compresses the latter.

13. A post assembly as defined in claim 12,

wherein said key means includes a bayonet type component.

14. A signalling post assembly as defined in claim 3,

further including a number of projections, transversely upwardly projecting from said weight member, and a corresponding number of bores, extending through said weight member, each of said projections sized for frictional engagement into a given one of said bores of said weight member.

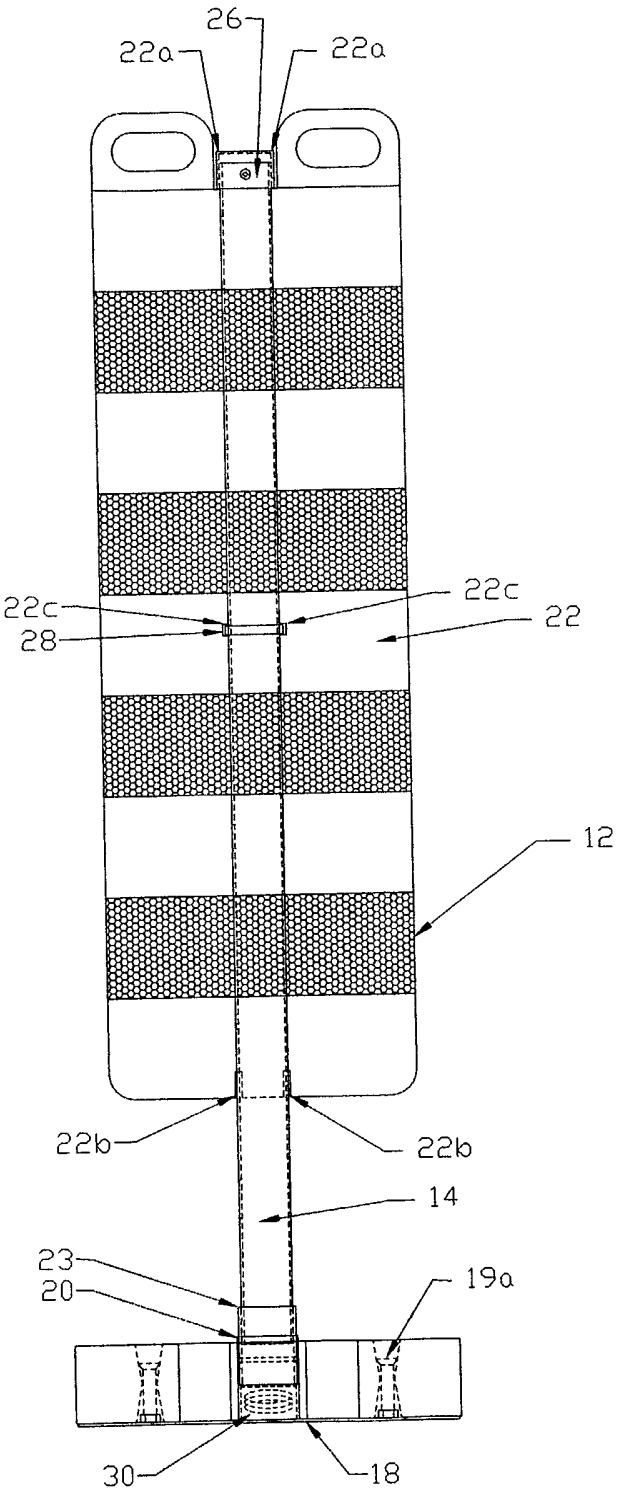

Fig 1

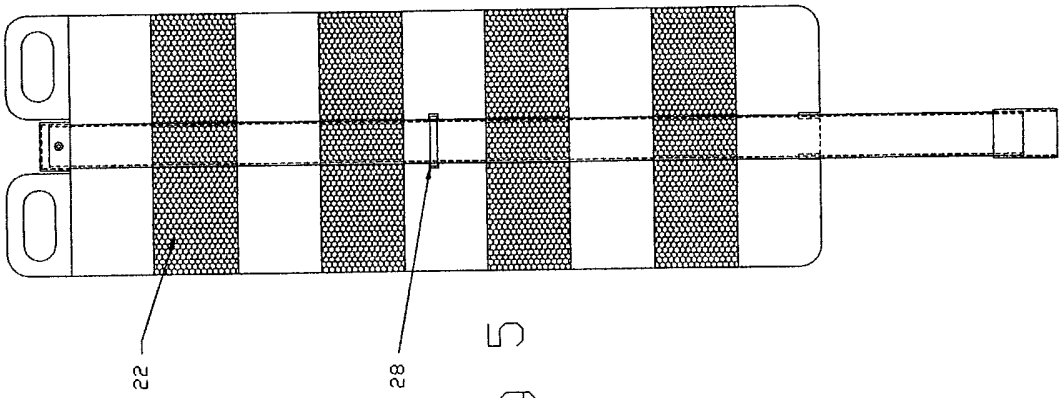

Fig 5

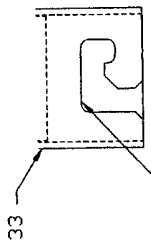

Fig 3

Fig 4

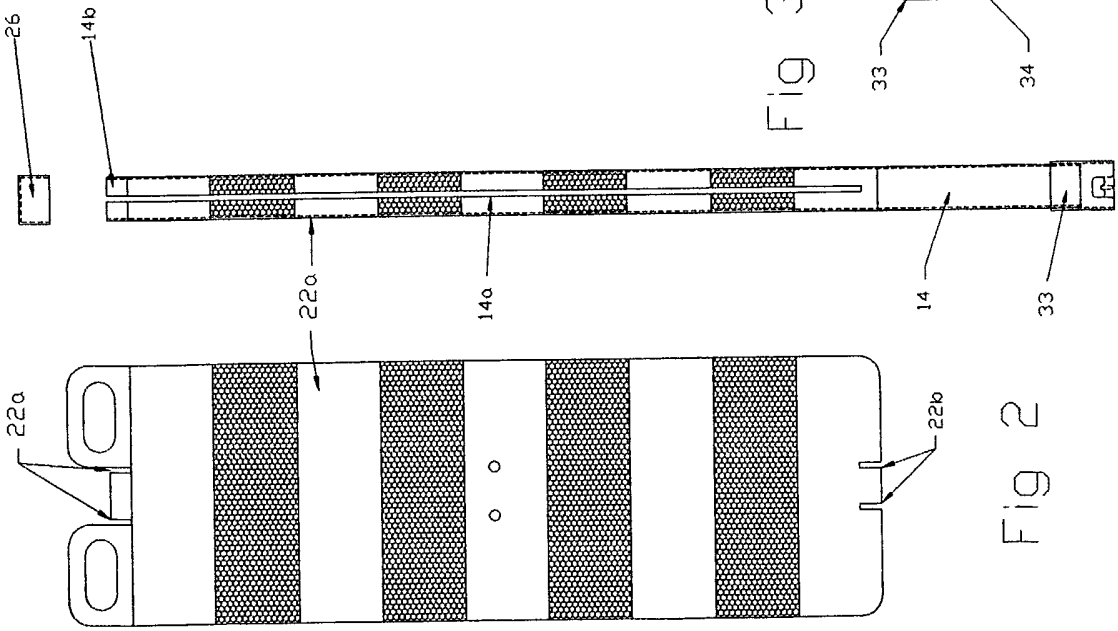

Fig 2

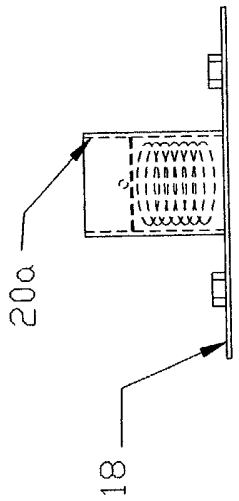

Fig 7

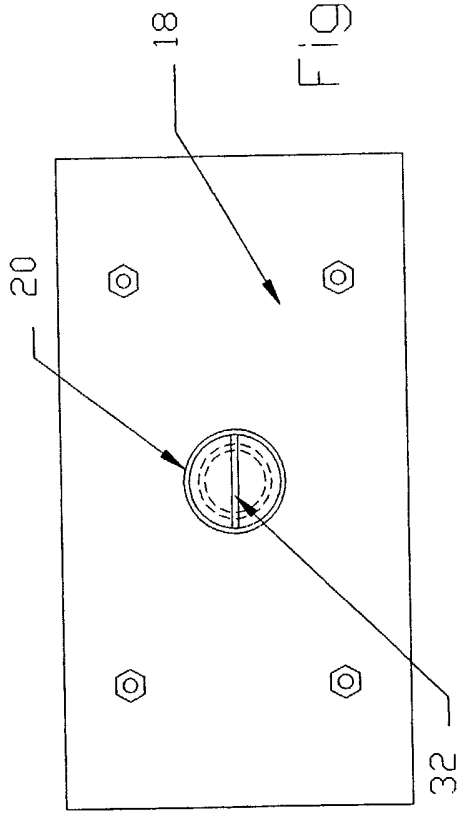

Fig 8

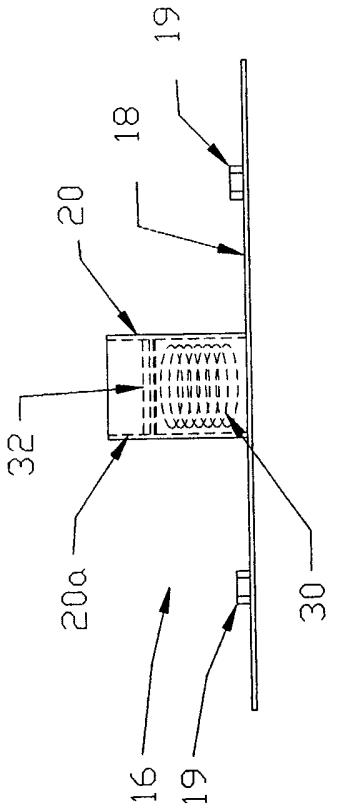

Fig 6

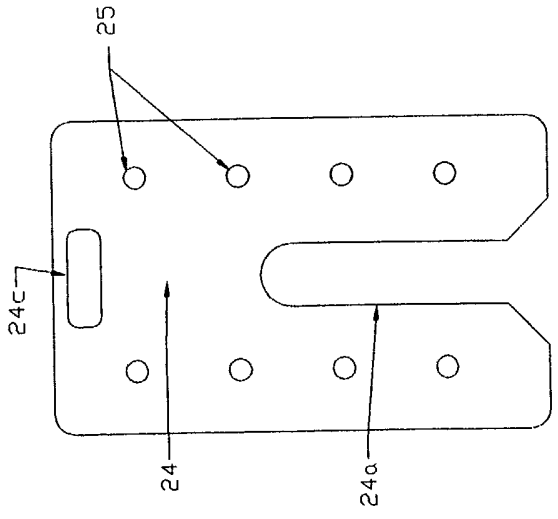

Fig 11

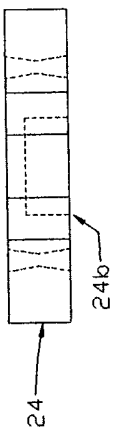

Fig 9

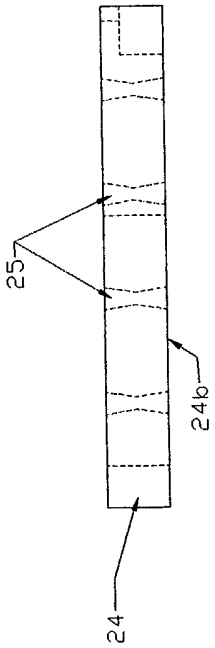

Fig 10

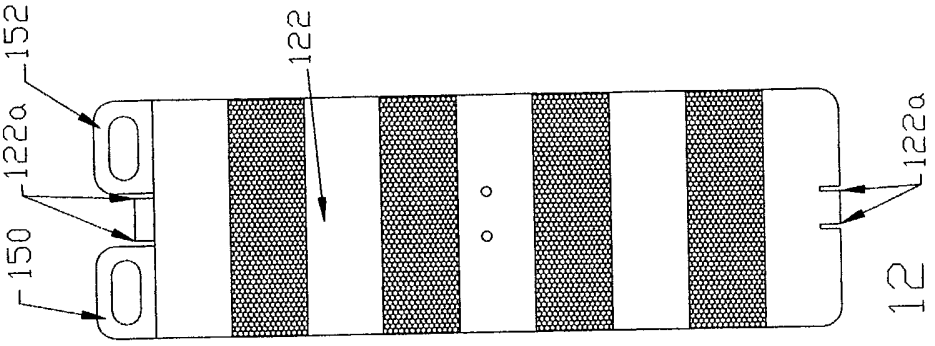

Fig 12

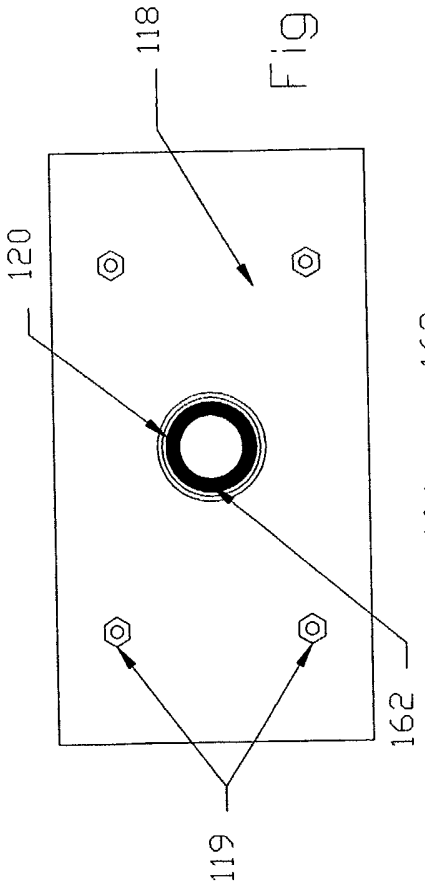

Fig 14

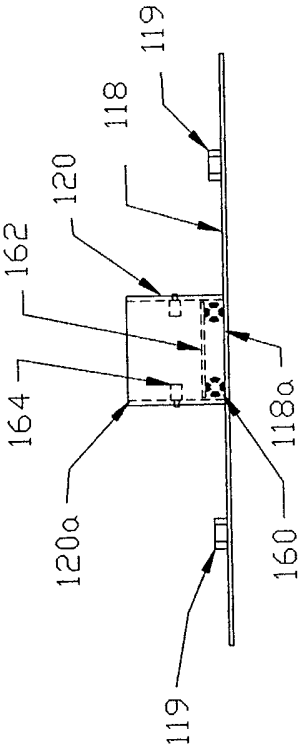

Fig 13

INTERNATIONAL SEARCH REPORT

Int ional Application No
PCT/CA 02/00867

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 E01F9/03

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 E01F G09F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 91 02 119 U (PATENTANWÄLTE STAEGER & SPERLING) 16 May 1991 (1991-05-16) figures 1-6 page 3, paragraph 1 page 4, paragraph 4 page 5, paragraph 3 page 6, paragraph 5 page 7, paragraphs 1-4 page 8, paragraph 4 ---	1-14
X	DE 86 07 898 U (PATENTANWÄLTE PECHMANN-BEHRENS-GOETZ) 7 May 1986 (1986-05-07) page 2, paragraph 3 page 3, paragraphs 1,2 page 5, paragraph 2 page 6, paragraphs 2,3 figure 1 ---	1-14
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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

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Date of the actual completion of the international search	Date of mailing of the international search report
8 October 2002	30/10/2002

Name and mailing address of the ISA	Authorized officer
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INTERNATIONAL SEARCH REPORT

Int ›nal Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 564 984 A (ALEXANDER ROBERT C) 23 February 1971 (1971-02-23) figure 5 column 3, paragraph 3	1-14
A	DE 12 96 153 B (BEILHARZ KG JOHANNES) 29 May 1969 (1969-05-29) column 1, paragraphs 1,5 figure 1	1-14

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
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