(12) UK Patent Application (19) GB (11) 2 261 856 (13) A

(43) Date of A publication 02.06.1993

(21) Application No 9224810.3

(22) Date of filing 26.11.1992

(30) Priority data
(31) 9125070 (32) 26.11.1991 (33) GB

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(51) INT CL[5]
B60R 21/02, B60P 7/14 / E05D 11/10

(52) UK CL (Edition L)
B7B BHH BSES
E2F FAG F115
U1S S1819

(56) Documents cited
GB 2222358 A GB 2213780 A GB 2118490 A
GB 2078180 A GB 0955221 A US 4621856 A

(58) Field of search
UK CL (Edition L) B7B BHD BHH BHL BHM BLB BSES, B7L LK
INT CL[5] B60P, B60R, B61D

(54) A cargo barrier for use in a vehicle

(57) The cargo barrier comprises a base 10 which has a transverse upwardly extending panel 12 at its forward end which normally lies behind a vehicle seat 1. The transverse panel is made up of an upper section 13 hinged at 18 to a lower section 14 so that it may be folded down on to the base 10. Side panels 19, can be provided which are slidable along the base 10. The side panels can be collapsed on to the base 10 for storage. An additional movable bracing member (Fig 7) may be provided to secure cargo against the panel 12. The upper and lower sections 13, 14 are interconnected by hinges 18 comprising relatively slidable strips 40, 44 locked together by a pin 45 and relatively pivotable about pin 43.

FIG. 1a

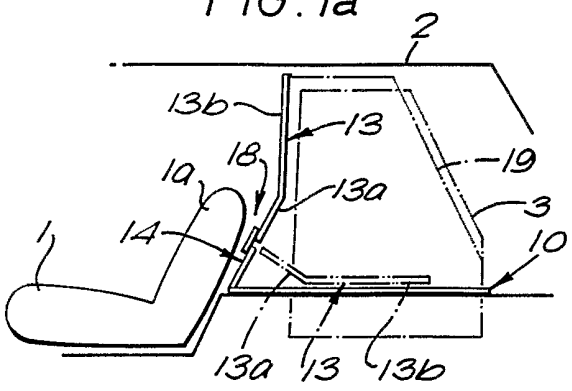
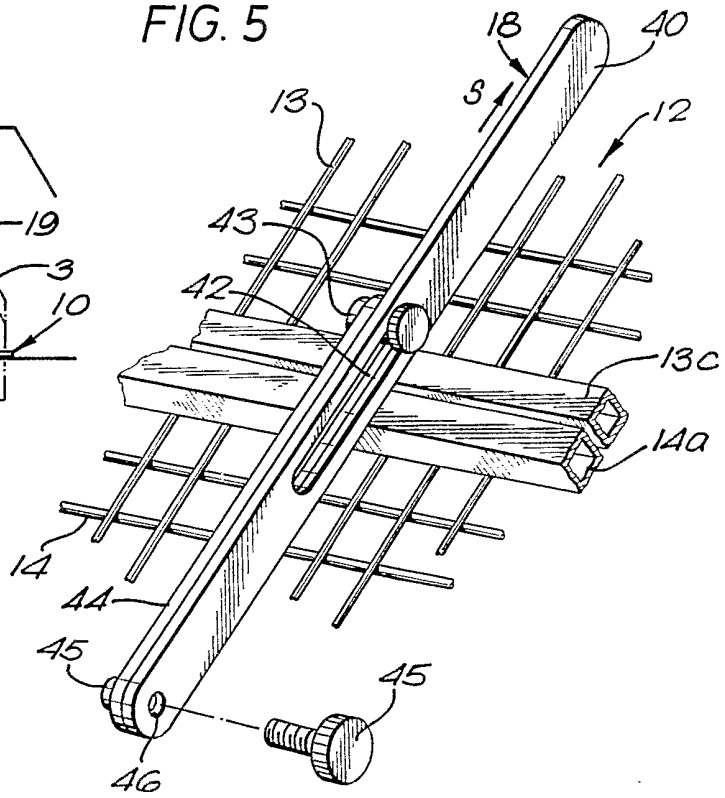


FIG. 5



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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

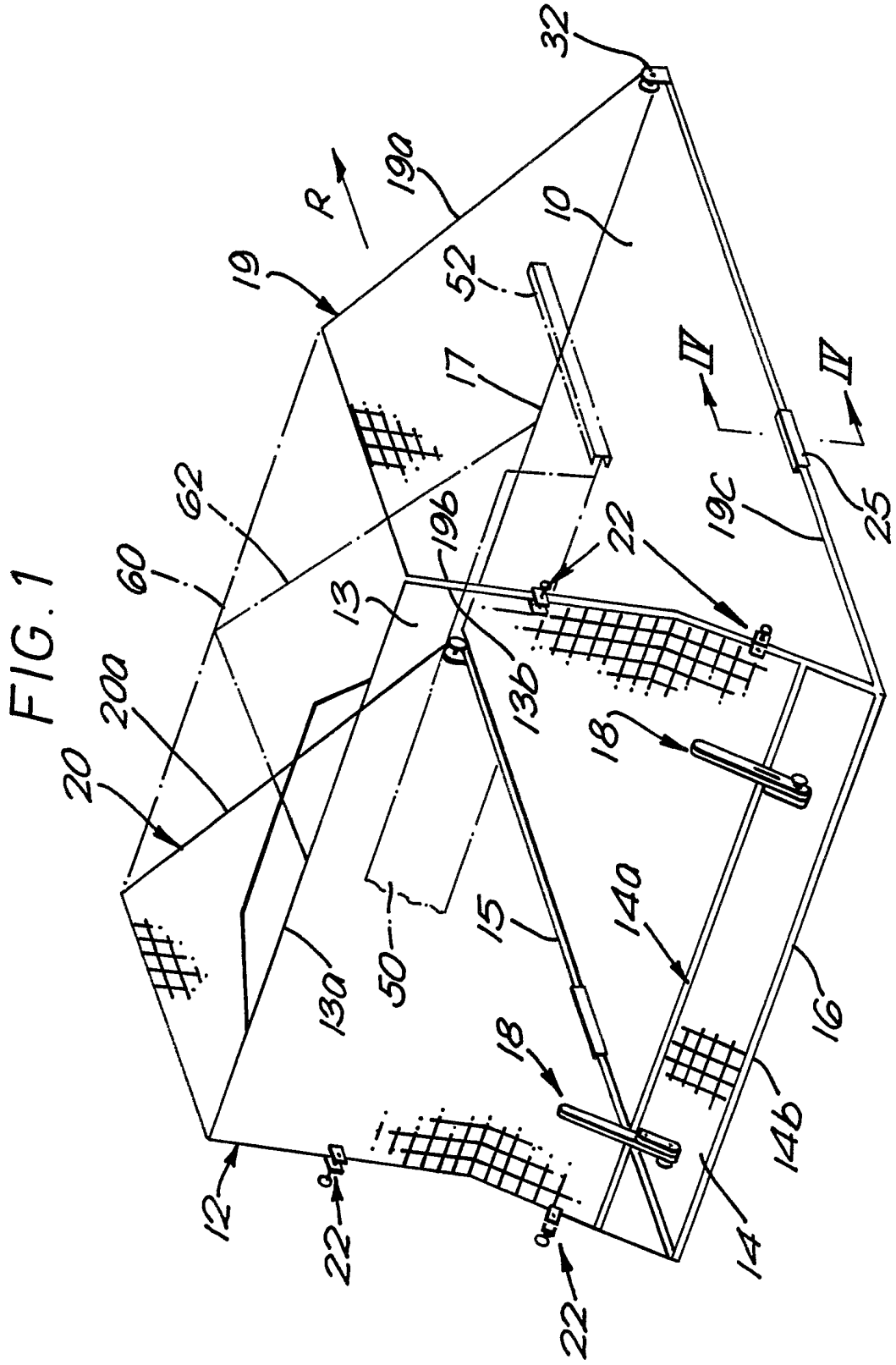
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FIG. 1

FIG. 1a

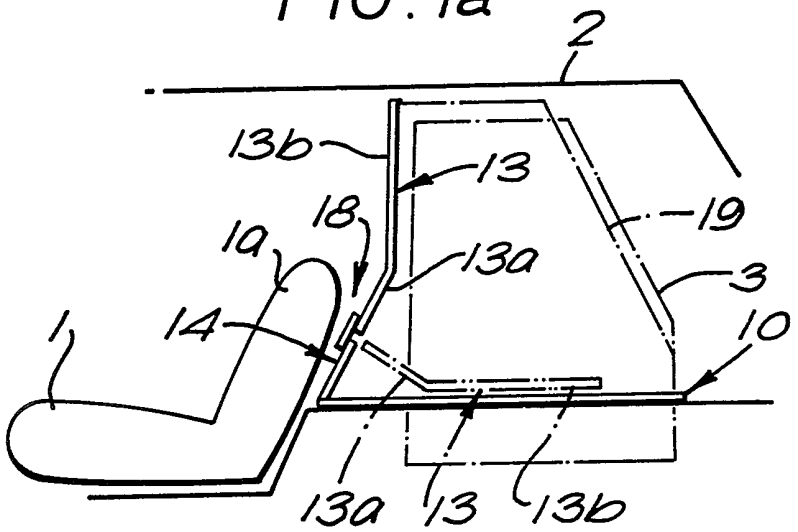
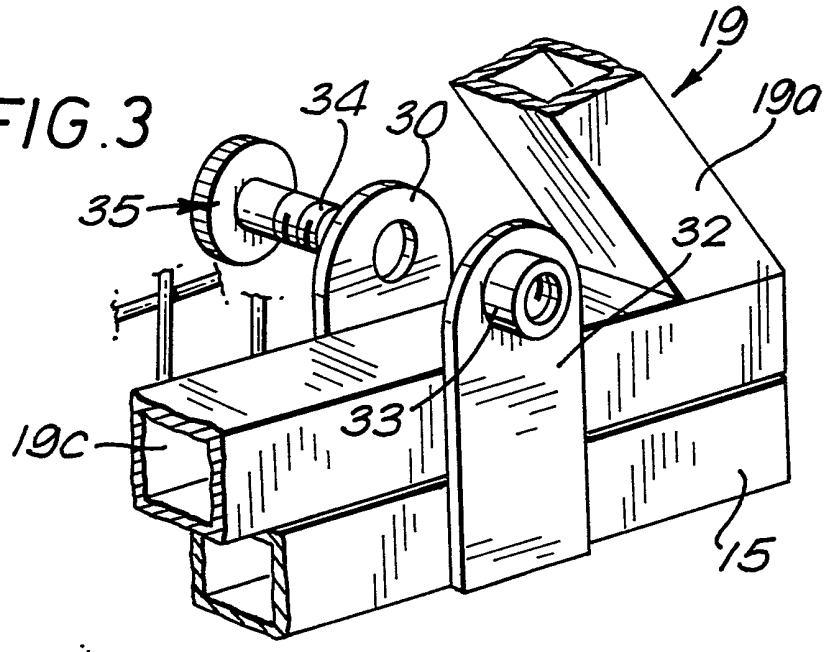


FIG. 3



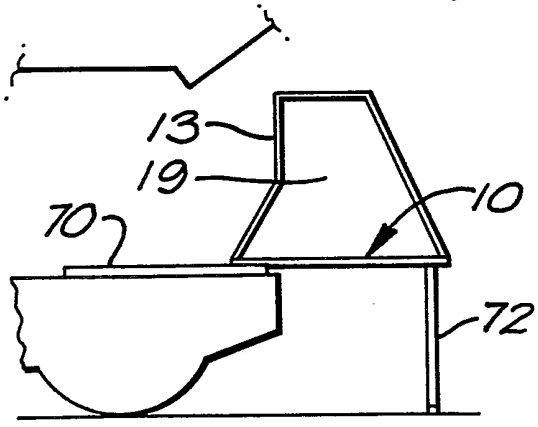


FIG. 8

FIG. 2

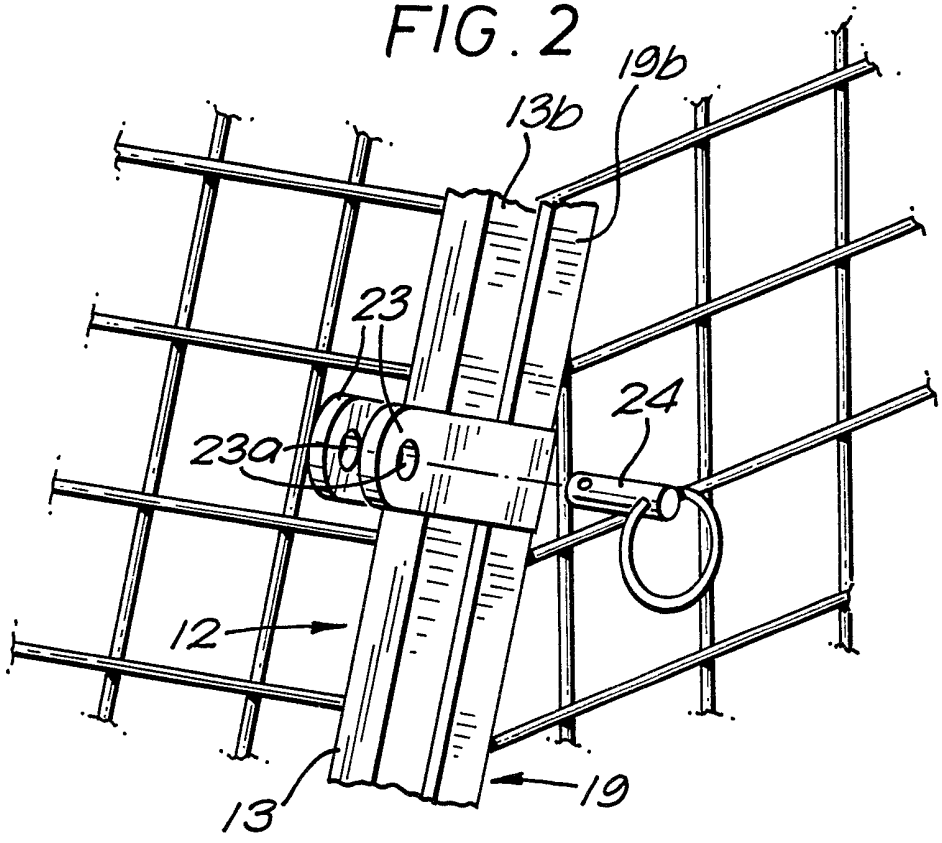


FIG. 4

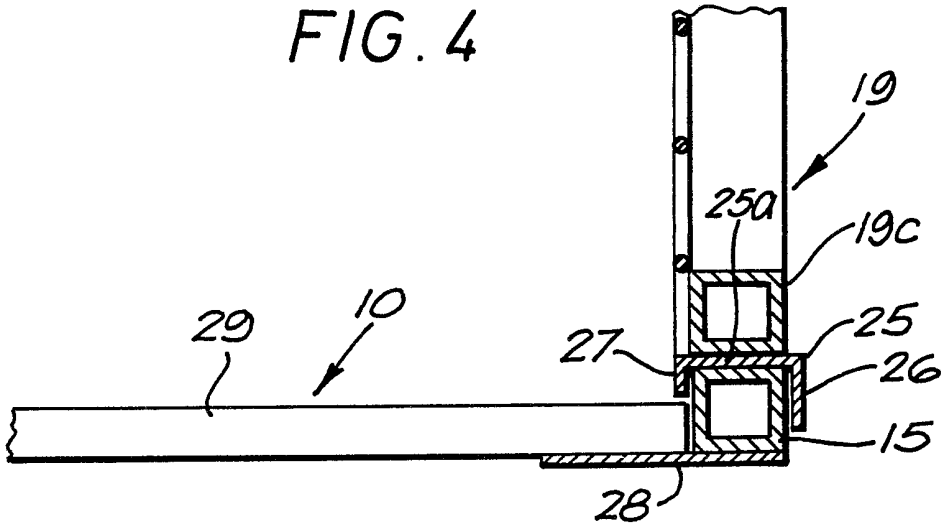


FIG. 5

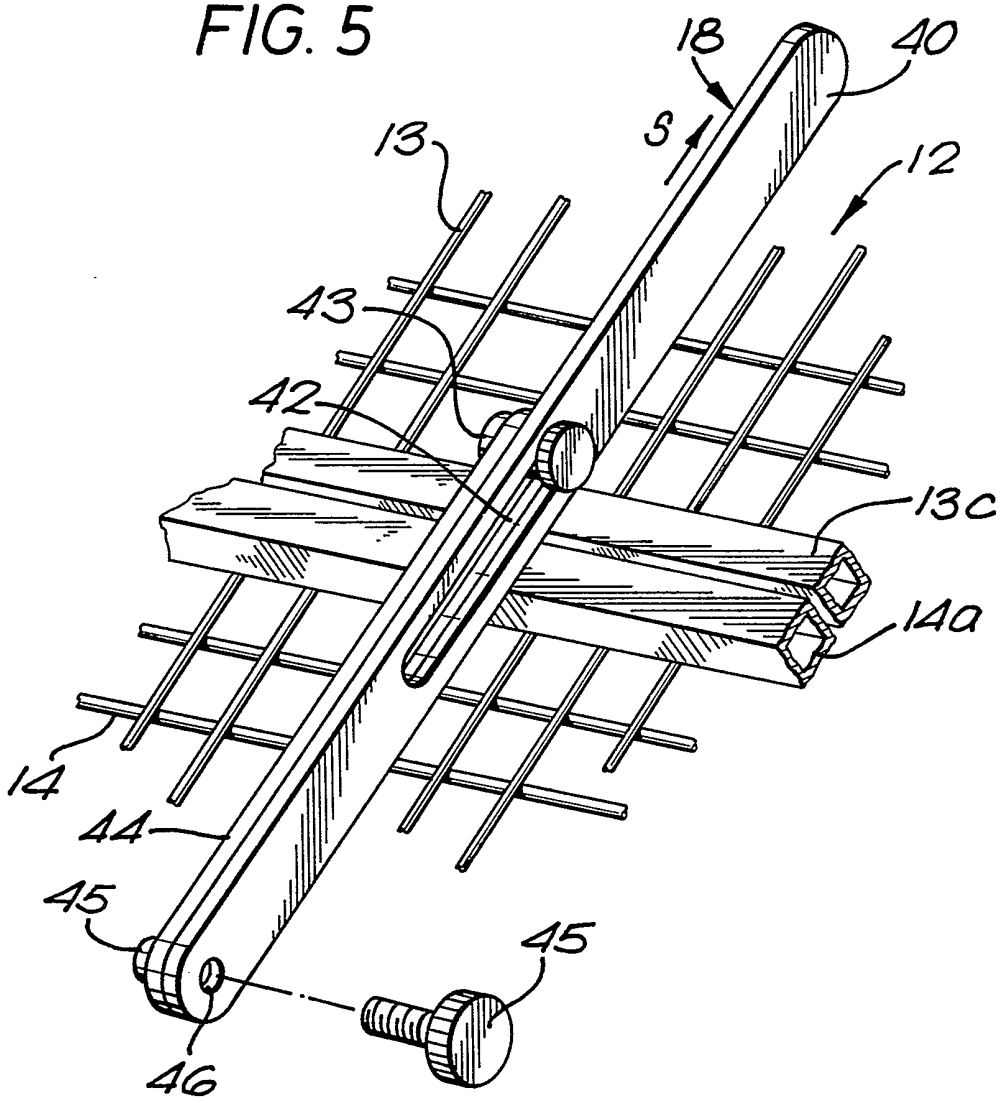


FIG. 6

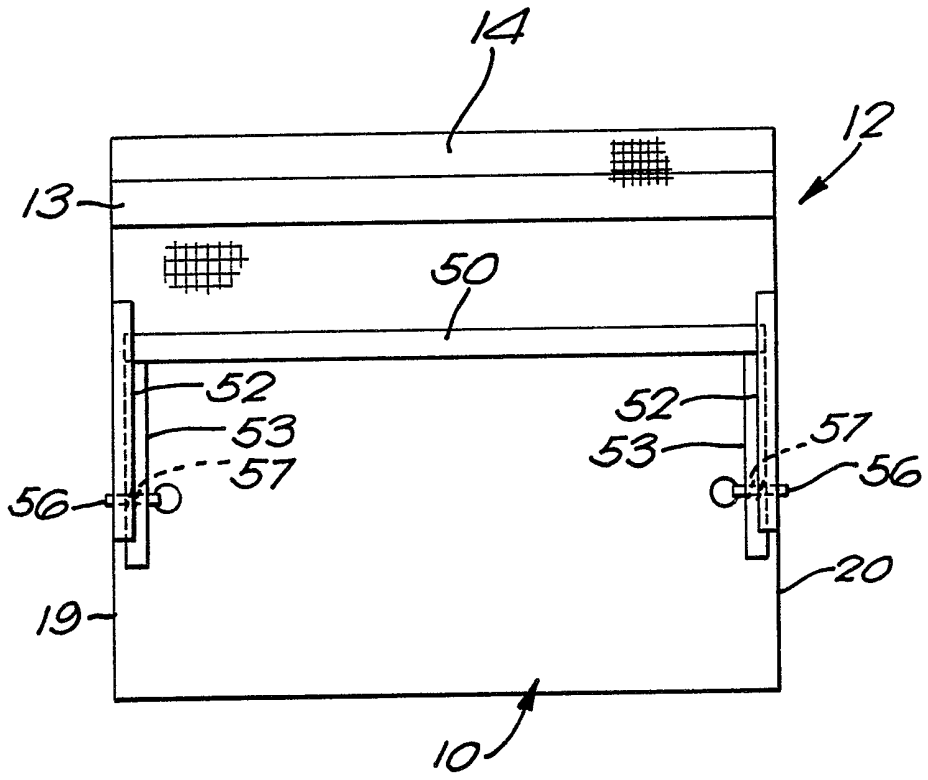

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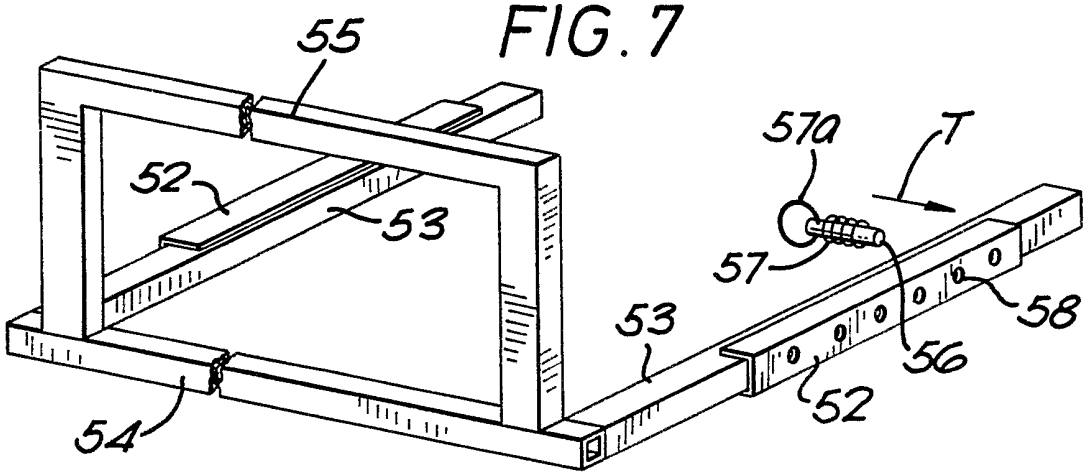
FIG. 7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A CARGO BARRIER FOR USE IN A VEHICLE

The invention relates to a cargo barrier for use in a vehicle and is particularly, but not exclusively, concerned with a barrier which can be used in the rear of a vehicle designed to carry heavy articles of cargo. The barrier is particularly intended to prevent such articles of cargo from moving forwardly and injuring the driver of the vehicle or passenger during heavy braking or frontal impact.

It has been proposed hitherto to place barriers across a vehicle in order to protect the driver and/or passenger from articles of cargo moving forwardly during the frontal impact. An object of the present invention is to provide an improved form of barrier which will enable articles of cargo to be carried more safely.

According to one aspect of the invention there is provided a barrier having an upwardly extending panel for extending across a vehicle in the direction transverse to the direction of travel, the panel including a section which is rigidly secured to a rearwardly extending base to form a rigid and strong barrier.

According to a second aspect of the invention there is provided a cargo barrier having an upwardly extending panel for extending across a vehicle transverse to the direction of travel, the panel including a lower upwardly extending section which is rigidly secured to a rearwardly extending base and an upper section which is connected to the lower section for hinging movement from an erected position to a folded position on or adjacent the base.

Preferably, the panel consists of a very strong outline frame, e.g., of tubular material such as tubular steel to which a mesh can be secured.

To enhance the connection between the transverse panel and base, it is desirable that a longitudinal panel be connected thereto and also to the base. The longitudinal panel may comprise a very strong outline frame to which a mesh is secured.

Where the longitudinal panel is provided, it is preferably slidably mounted on a section of the base. The base may conveniently comprise a strong outline frame and at least one longitudinal panel is provided which is, e.g., slidable and/or hingeable on part of the outline frame of the base. Preferably two longitudinal panels are provided arranged one each

side of the base at each end of the transverse panel. In that way, the two longitudinal panels form side panels extending upwardly from the base. The or each side panel is preferably connected to an outline frame section of the transverse panel (which forms a front panel on the base) by suitable attachments, e.g., spaced plates which receive the outline frame of the transverse front panel. Two or more such brackets can be provided. Furthermore, an additional bracket may be provided towards the rear of the base by which a rear lower edge part of the side panel may be suitably connected to the base.

Preferably, a quick release type pin may be used to hold a longitudinal panel to the front panel to facilitate quick release of the side panel from the front panel when loading the vehicle.

As mentioned above, as well as being slidable or instead of being slidable, the or each side panel may be hingedly connected to the base to enable it to be folded, for example, inwardly onto the base for ease of stowage.

The movable side panels form a very convenient way of providing access to a cargo carrying area to the rear of the transverse panel from a side door of the

vehicle as either of the side panels can be moved to enable cargo to be loaded. The base may have a panel thereon, e.g., of timber, which forms a cargo carrying surface.

The upper section of the transverse panel is preferably so connected to the lower section that it can be hinged from an erected to a folded position on the base. In that way, the base and front panel can easily be stowed outside the vehicle in a collapsed form. The folding of the upper section relative to the lower section may be conveniently accommodated by providing one or more hinge arrangements the or each of which may comprise a rigid strip connected to the upper section and which extends across part of the lower section, a pivot being provided preferably in the form of a suitable pin-like arrangement which may extend through a slot in the aforesaid strip and into a mounting on the lower section. To hold the upper section in its erected position, a locking bolt, pin or the like can be inserted through the strip and mounting.

If, when carrying cargo, the cargo does not fill completely the available area, it is sometimes possible for the cargo to move around particularly during heavy braking or cornering and that can cause

problems. Where the articles or cargo are particularly heavy or, for example, cylindrical, they may roll around in the vehicle behind the driver or passenger and can cause damage. Another object of the present invention is to provide an arrangement which helps to overcome that particular disadvantage. According to another aspect of the invention there is provided a barrier arrangement for a vehicle comprising a panel for extending transverse to the direction of travel of the vehicle, and mounting means arranged behind the panel which will permit a space varying member to be moved towards or away from the transverse panel to vary the size of a cargo carrying area immediately behind the transverse panel.

Where side panels as described above are provided, we prefer to arrange the mounting means for the space varying member on the side panels.

Conveniently, the mounting means may consist of a slide arrangement whereby the space varying member can be easily slid forwardly or rearwardly and then held in a desired position.

Where the base has a panel thereon to form a cargo carrying surface, it may carry or be coated with a material e.g., rubber or plastics to provide an anti-

slip surface for the cargo being carried.

While specific reference has been made to the use of mesh, it will be appreciated that the panels themselves may be substantially solid e.g., an outline frame having a solid sheet of material for extending therebetween. Alternatively each panel or any of the panels including the base may comprise a simple heavy duty sheet or plate of material.

If desired, a rear transverse panel may be provided with or without access doors. In such a case the rear panel, side panels and front panel could all be security locked together to form a secure cargo enclosure within the vehicle.

If desired, the load-carrying area can be divided into compartments by one or more further panels, e.g. one or more longitudinal divider panels.

If desired, shelving, trays or other storage means may be provided on the barrier.

The invention can also be applied to provide a free-standing animal guard for a vehicle. If necessary, the actual panels themselves could be made less robust for that purpose. Such a free-standing guard would

not necessarily require any form of vehicle fixings such as friction pads or other fixing means as the base would adequately support the transverse front panel. However, for additional strength, anchoring points may be provided in a vehicle, e.g., for the base.

If desired, a roller shutter arrangement could be provided on the barrier which, when the shutter were extended, would close off access to the interior of the cargo carrying area from the side even if either of the side panels were slid away from the front panel.

If desired, a flexible zip-curtain could be provided to cover-up cargo being carried thereby giving extra security.

A cargo barrier in accordance with the invention will now be described by way of example with reference to the accompanying drawings in which:-

Fig. 1 is a diagrammatic perspective view of one form of barrier in accordance with the invention,

Fig. 1a is a diagrammatic side view of the barrier (without side panels) installed in a vehicle,

Fig. 2 is a perspective view drawn to a larger scale showing a fixing between a front and side panel,

Fig. 3 is a perspective view drawn to a larger scale showing a connection between a side panel and a base of the barrier,

Fig. 4 is a cross section of part of the barrier shown in Fig. 1 on the line IV - IV in Fig. 1 and drawn to a larger scale,

Fig. 5 is a perspective view drawn to a larger scale showing a hinge arrangement,

Fig. 6 is a diagrammatic plan view of a barrier in accordance with the invention incorporating a cargo space varying member,

Fig. 7 is a perspective view of the cargo space varying member shown partly broken away, and

Fig. 8 is a diagrammatic side view of a barrier in accordance with the invention on a rail arrangement in the vehicle.

In Fig. 1, the barrier comprises a base 10 welded at

its forward end to a front panel 12 which comprises an upper section 13 and a lower section 14. The base 10 has side members 15 and front and rear members 16, 17 to form a rectangular open frame. The members 15, 16 and 17 are formed from rectangular cross-section tubing as apparent from Figs. 3 and 4.

The lower section 14 of the front panel 12 comprises a rectangular tubular outline frame 14a having a lower member 14b welded rigidly to the front member 16 of the base 10. The lower section 14 is hingedly connected to the upper section 13 by hinge arrangements 18 which will be described in detail with respect to Fig. 5.

The upper section 13 of front panel 12 is connected to spaced apart side panels 19, 20 by sets of bracket arrangements 22. The front panel 12 and the side panels 19, 20 include outline frames 13a, 19a and 20a respectively and Fig. 3 shows the configuration of each bracket arrangement 22.

In Fig. 3, a front outline frame section 19b of the side panel 19 carries two spaced apart plates 23. The spacing of the plates 23 is sufficient to enable an end outline frame section 13b to be received between the plates as shown in Fig. 3. The plates 23 have

coaxial apertures 23a therein for receiving a quick-release pin 24 of known kind. With the pin in situ in the apertures 23a, the front panel 12 is securely attached to the side panels 19, 20.

Each side panel 19, 20 is slidably mounted on the side member 15 of the base 10. As shown in Fig. 4, the side panel 19 has a lower outline frame member 19c which carries a slide element 25. The slide element 25 has an outer flange 26 which is longer than an inner flange 27 thereof and the slide element 25 is generally of inverted channel cross section. The slide element 25 has a web 25a which rests slidably on the side member 15 of the base 10, the flanges 26, 27 extending downwardly with working clearance alongside the side member 15. The members 15, 16 and 17 of the base carry plates 28 which extend inwardly to support a wooden floor 29 between the members 15, 16 and 17 of the base 10. It will be noted that the lower edge of the flange 27 clears the upper surface of the wooden floor 29. If desired the floor 29 can be coated with or can carry a suitable anti-slip material.

As shown in Fig. 3, the rear end of the side panel 19 is positioned slidably between two upwardly extending plates 30, 32 attached to each side member 15 of the base 10. The plate 32 carries a screw-threaded collar

or nut 33 which receives a screw-threaded shank 34 of a fastener 35 which passes between the plates to hold the side panel 19 in position. The side panel 20 is mounted in a similar manner to side panel 19.

In use, the cargo barrier as shown in Fig. 1a is positioned in a vehicle with the base 10 resting on the floor of a cargo space so that the front panel 12 lies immediately behind, for example, the front seats 1 of the vehicle. It will be noted that the lower section 14 and a lower part 13a of the upper section are inclined rearwardly to follow the angle of a backrest 1a of the adjacent seating and an upper part 13b of the upper section 13 extends from a position adjacent the top of the seat backrest generally vertically towards a roof 2 of the vehicle. The side panels 19, 20 (panel 20 being shown in broken outline) will then lie adjacent rear side doors of the vehicle 3 (one only of which is shown in broken outline). To place cargo on the floor 29, one of the side doors 3, e.g., adjacent side panel 19, is opened. The quick-release pins 24 are then withdrawn from the apertures 23a in plates 23 of the bracket arrangement 22 for that side panel. With the quick-release pins 24 removed, the side panel 19 is then slid rearwardly in the direction of arrow R in Fig. 1 so that the slide element 25 slides along the side member 15 of the base

10. The side panel 19 is then held steady in its vertical position by the plates 30, 32 engaging the sides of outline frame member 19c of the side panel 19. Once the cargo has been loaded, the side panel 19 is slid back into the Fig. 1 position and the quick-release pins 24 are re-inserted through apertures 23a. The side panel 20 can be slid rearwardly in the same manner.

For stowage purposes, the side panels 19, 20 can easily be removed. Alternatively, they may be hingedly mounted, e.g., on the slide elements 25 to enable them to be collapsed inwardly onto the base 10. With the side panels 19, 20 removed or folded inwardly, it then remains for the front panel 12 also to be folded to provide a substantially flat folded barrier.

The upper section 13 only of the front panel 12 is foldable and reference is now made to Fig. 5 which shows in detail the hinge arrangements 18.

In Fig. 5, the hinge arrangement comprises a metal strip 40 welded to the upper section 13 so that it extends beyond a lower outline frame section 13c. The strip 14 is formed with a slot 42 which slidably receives a headed pivot stud 43 which passes through

the slot 42 and through an aperture (not shown) in a further strip 44 welded to the lower section 14. A locking bolt 45 passes through a bore 46 at the lower end of strip 40 and through a coaxial bore (not shown) in strip 44. The locking bolt is suitably held in place, e.g., by a nut or screw-threaded collar 45 secured to the strip 44.

To fold the upper section 13 downwardly onto the floor 29, the locking bolt 45 is first withdrawn from the bore 46 and the panel 13 is moved upwardly in the direction of arrow S in Fig. 5 in order to move the outline frame section 13c away from the upper frame section 14a of the lower section 14. Such movement is facilitated by the slot 42. Once the outline frame sections 13a, 14a are sufficiently separated, the upper section 13 is swung downwardly about the pivot pin 43 which is positioned above the upper edge of outline frame section 14a. A shown in broken lines in Fig. 1a, the obtuse angle between the lower and upper parts 13a, 13b of the upper section 13 is such as to permit the upper part 13b to lie substantially flat on the floor 29.

We prefer to provide a member which will enable the cargo carrying area to be varied. Part of such a member is shown in Fig. 1 as indicated at 50 and is

slidably mounted in channel sections 52 (one only of which is shown in Fig. 1) mounted on the side panels 19, 20. Such an arrangement is shown in slightly more detail in Fig. 6 and in greater detail in Fig. 7. As shown in Fig. 7, the member for varying the cargo carrying area comprises tubular side beams 53 which locate in the channel members 52 and a front beam 54. An inverted U-shaped main section 55 extends vertically from the front beam 54. A spring loaded pin 56 or the like is provided for each side beam 53. Each pin 56 passes through opposed apertures (not shown) in its side beam 53 and is normally biased outwardly in the direction of arrow T by a helical coil spring 57 such that the pin 56 will project through one of a plurality of apertures 58 in the channel section 52. Each spring 57 is disposed on a section of the pin 56 within its side beam 53. One end of the spring 57 is secured to the pin 56 and the other end abuts an inside surface of the beam 53 which lies between the spring and a pull ring 57a on the join. The pins 56 can be pulled inwardly to disengage the apertures 58. In that way, the position of the main member 55 can be varied in relation to the front panel 12 to vary the load carrying space. The height or depth of the main section 55 can be designed to suit the positioning of the channels 52. If desired, the side beams 53 could be arranged to co-operate with

the side members 15 of the base 10 and the pins 56 could locate in selected apertures (not shown) in the side members 15.

If desired, a rear panel 60 (provided with one or more doors if required) could be positioned between the side panels 19, 20 and could be conveniently held in position. If the front panel 12, side panels 19, 20 and rear panels 60 were all locked together by suitable security means, then the complete assembly would provide a very secure housing for loads. A top or roof panel (not shown) could be provided to enable a complete enclosure cage to be formed.

A central divider panel 62 can be provided if desired.

As shown in Fig. 8, the barrier can be slidably mounted on two parallel rails 70 (one only of which is shown) in the back of a vehicle. Once a rear door 4 of the vehicle has been opened, the barrier can be slid rearwardly on the rails to the position shown. One or more legs 72 suitably mounted on the base 10, eg. hinged thereto or movable vertically thereon, can then be lowered to engage the ground and, if necessary, locked in position to support the rear of the barrier. The front of the barrier remains supported on the rails 70. Such an arrangement

facilitates easy access to the floor 29 of the barrier. For transport, the or each leg 72 is raised and the barrier is slid forwardly along the rails 70 fully into the vehicle.

If desired, suitable vertical shuttering e.g. roller shuttering could be provided inboard of the side panels 19, 20 which could be locked in position to give extra security in the event that an intruder managed to move the panels 19, 20 aside after opening a rear door of the vehicle.

If desired, a suitable blind could be provided to cover cargo on the base 10.

The front and side panels 12, 19 and 20 can include steel mesh or may be substantially solid in construction.

The invention is particularly useful in that it provides an extremely robust front panel 12 on a base 10 which makes the panel 12 effectively free-standing. In other words, it is not essential to provide fixings by means of which the front panel and base are actually attached to the vehicle itself. However, if desired, extra security could be provided by the addition of suitable vehicle attachments.

It is envisaged that the cargo barrier could be applied to an animal guard which is typically positioned in the vehicle by a suitable attachments, e.g., friction pads. Where a base is rigidly attached to a front panel to form an animal guard, the base itself will enable the guard to be suitably positioned within a vehicle without the need for specific fixings.

CLAIMS

1. A barrier having an upwardly extending panel for extending across a vehicle in the direction transverse to the direction of travel, the panel including a lower upwarding extending section which is rigidly secured to a rearwardly extending base and an upper section which is connected to the lower section for hingeing movement from an erected position to a folded position on or adjacent the base.

2. A barrier according to claim 1, in which the upper section of the panel is connected to the lower section by a hinge arrangement.

3. A barrier according to claim 2, in which the hinge arrangement comprises a rigid strip of material connected to the upper section and which extends over part of the lower section, and a mounting on the lower section, the strip and the mounting being hingedly interconnected at a position above the lower section to permit downward hinging movement of the upper section when required.

4. A barrier according to claim 3, in which one of the said strip and mounting is formed with a slit through which a pivot passes into the other to form a

hinge axis.

5. A barrier according to claim 3 or 4, in which a locking element is provided which extends between the mounting and the strip to hold the upper section in the erected position.

6. A barrier according to claim 5, in which the locking element is removable to permit hinging movement of the upper section.

7. A barrier according to claim 4, 5 or 6, in which the upper section is movable upwardly relative to the lower section to cause relative sliding movement to occur between the pivot and the slot to permit hinging movement of the upper section.

8. A cargo barrier in a vehicle, the barrier having an upwardly extending panel extending across the vehicle transverse to the direction of travel, and a base extending rearwardly from the transverse panel, the transverse panel being movable at least in part from a position in the panel extends rigidly upwardly from the base behind a seat in the vehicle to a position in which at least part of the panel lies on or adjacent the base.

9. A barrier according to any preceding claim, in which a longitudinal panel is connected to the transverse panel and the base.

10. A barrier according to claim 9, in which the longitudinal panel is slidably mounted on a section of the base.

11. A barrier according to claim 9 or 10, in which two longitudinal panels are provided arranged one each side of the base.

12. A barrier according to claim 9, 10 or 11, in which the or each side panel is connected to the transverse panel by an attachment comprising spaced apart plates which receive an edge part of the transverse panel.

13. A barrier according to claim 12, in which means is provided for retaining the edge part of the transverse panel between the plates.

14. A barrier according to claim 12 or 13, in which the edge part is an outline frame of the transverse panel.

15. A barrier according to claim 13, 14 or 15, in

which a plurality of said attachments is provided.

16. A barrier according to any of claims 9 to 15, in which the or each longitudinal panel is hingedly connected to the base to permit folding thereof into a position adjacent the base.

17. A barrier according to any preceding claim, in which a rear transverse panel is provided extending between the longitudinal panels.

18. A barrier according to any preceding claim, in which an upper panel is provided extending between tops of the transverse panel and longitudinal panels in the base.

19. A barrier according to any preceding claim, in which the base is a rectangular frame.

20. A barrier according to claim 19, in which the base supports a floor.

21. A barrier according to claim 20, in which the floor is in the form of a panel.

22. A barrier according to claim 20 or 21, in which the floor is positioned within the rectangular

frame.

23. A barrier according to any preceding claim, in which mounting means is provided behind the transverse panel and a space varying member is provided on the mounting means for movement towards or away from the transverse panel to vary the size of a load carrying area immediately behind the transverse panel.

24. A collapsible cargo barrier having an upwardly extending panel for extending across a vehicle transverse to the direction of travel, the carrier including mounting mans arranged behind the transverse panel and a space varying member on the mounting means for movement towards or away from the transverse panel to vary the size of a load carrying area immediately behind the transverse panel.

25. A barrier according to claim 23 or 24, in which the mounting means comprises a slide arrangement to enable the space varying member to be slid forwardly or rearwardly.

26. A barrier according to claim 23, 24 or 25, in which releasable means is provided for holding the space varying member in a desired position.

27. A barrier according to any preceding claim, and where the transverse panel has upper and lower sections in which the upper section of the transverse panel includes a lower part and an upper part which is arranged at an obtuse angle.

28. A barrier according to claim 27, in which the lower part and the lower section of the transverse panel lie substantially in a common plane.

29. A barrier according to any preceding claim, mounted on rails or guides which permit sliding movement of the barrier whereby the barrier can be slid at least partly out of a door opening of the vehicle.

30. A barrier according to claim 29, in which a ground engaging leg is provided to permit the barrier to be supported in part by the ground when slid partly out of the vehicle.

31. A cargo barrier for use in a vehicle, the barrier having an upwardly extending panel for extending across a vehicle in the direction transverse to the direction of travel, the panel including a section which is rigidly secured to a rearwardly

extending base to form a rigid and strong barrier.

32. A cargo barrier for use in a vehicle constructed and arranged substantially as described herein with reference to the accompanying drawings.

Patents Act 1977
Examiner's report to the Comptroller under section 17 (The Search Report)

Application number

GB 9224508.3

Relevant Technical fields

(i) UK Cl (Edition K) G2J (JB7P,JX15); G2A (ACL,ACN)

(ii) Int Cl (Edition 5) G02B, G03B

Search Examiner

MR C J ROSS

Databases (see over)

(i) UK Patent Office

(ii)

Date of Search

27 JANUARY 1993

Documents considered relevant following a search in respect of claims 1-4

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB 0846272 (KODAK) see especially Figures 1-3	1 at least
X	GB 0338250 (RUDALL) see especially Figures 3-5	1 at least
X	GB 0224954 (GIRSDANSKY)	1 at least

Category	Identity of document and relevant passages	Relevant to claim(s)

Categories of documents

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

&: Member of the same patent family, corresponding document.

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).

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