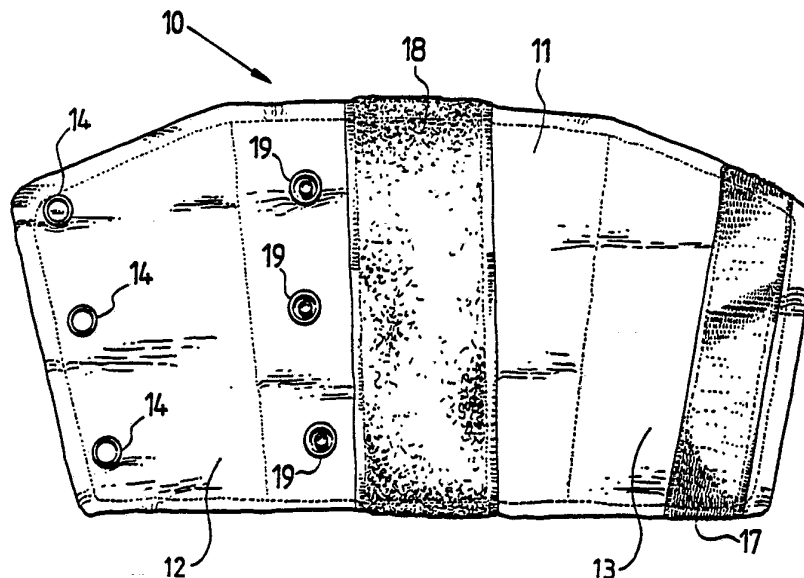




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁵ : B60R 22/14, 22/10, 22/02 A62B 35/00</p>	A1	<p>(11) International Publication Number: WO 93/01956 (43) International Publication Date: 4 February 1993 (04.02.93)</p>
<p>(21) International Application Number: PCT/AU92/00350 (22) International Filing Date: 13 July 1992 (13.07.92) (30) Priority data: PK 7267 16 July 1991 (16.07.91) AU (71)(72) Applicants and Inventors: MARTIN, John, Barrie [AU/AU]; MARTIN, Debra, Ann [AU/AU]; 33 Erwin Road, Carbrook, QLD 4130 (AU). (74) Agent: PIZZEY, John, Kingston; Pizzey & Company Patent Attorneys, Level 6, Trustee House, 444 Queen Street, Brisbane, QLD 4000 (AU).</p>		<p>(81) Designated States: AU, CA, JP, RU, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, MC, NL, SE). Published <i>With international search report.</i></p>

(54) Title: SECURING APPARATUS



(57) Abstract

There is provided a securing device (10) including a padded chest panel (11) having opposed side flaps (12) and (13) formed integrally therewith. The side flap (12) is provided with press studs (14) along the outer edge thereof so that the flap (12) may pass around a shoulder strap whereby the press studs clip into complementary stud portions (19) provided on the front panel (11) forming a sleeve which accommodates the strap. The side flap (13) is provided with a hook pile fastening strip (17) on its rear face engageable with a complementary hook pile fastening strip (18) supported centrally on the rear face of the chest panel (11) so that the flap (13) may wrap around an opposite shoulder strap and securing in position by the hook pile fastenings (17) and (18). It is difficult for a young child to release the hook pile fastening to release the securing device. Accordingly in use the child is restrained from placing their arms through the head opening or pulling the shoulder straps down over their shoulders, as the head aperture is sufficiently constricted by the securing device to make such inoperative positioning of the harness unlikely.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	FI	Finland	MI	Mali
AU	Australia	FR	France	MN	Mongolia
BB	Barbados	GA	Gabon	MR	Mauritania
BE	Belgium	GB	United Kingdom	MW	Malawi
BF	Burkina Faso	GN	Guinea	NL	Netherlands
BG	Bulgaria	GR	Greece	NO	Norway
BJ	Benin	HU	Hungary	PL	Poland
BR	Brazil	IE	Ireland	RO	Romania
CA	Canada	IT	Italy	RU	Russian Federation
CF	Central African Republic	JP	Japan	SD	Sudan
CG	Congo	KP	Democratic People's Republic of Korea	SE	Sweden
CH	Switzerland	KR	Republic of Korea	SN	Senegal
CI	Côte d'Ivoire	LI	Liechtenstein	SU	Soviet Union
CM	Cameroon	LK	Sri Lanka	TD	Chad
CS	Czechoslovakia	LU	Luxembourg	TG	Togo
DE	Germany	MC	Monaco	US	United States of America
DK	Denmark	MG	Madagascar		
ES	Spain				

"SECURING APPARATUS"

This invention relates to securing apparatus.

This invention has particular reference to securing apparatus for securing small children in full harness type seat belts and for illustrative purposes, reference will be made hereinafter to such application. This invention can also be utilized in other applications such as with adult seat harnesses.

Young children are often individually restrained in vehicles by a restraint in the form of a child's seat secured to the vehicle seats and provided with a child size full shoulder harness. Typically the harness includes shoulder straps which buckle to one another and to the lower straps by means a child proof buckle.

When properly worn, such harnesses are effective for restraining children generally and particularly effective in restraining children in automobile accidents. However such harnesses do have the disadvantage that young children can place their hands between the shoulder straps and then slide their arms therebetween to separate the shoulder straps, thus permitting their upper body to become substantially unrestrained. This is believed to be a significant disadvantage which the present invention aims to alleviate. Other objects and advantages of this invention will hereinafter become apparent.

With the foregoing and other objects in view, this invention in one aspect resides broadly in securing apparatus for securing apparatus for securing the opposed pair of shoulder straps of a safety harness against the unaided passage of a wearer's shoulders therebetween, said securing apparatus including:-

a resilient chest panel;
connecting means for connecting said chest panel to one of the shoulder straps, and
releasable securing means for connecting said chest panel to the other shoulder strap.

Preferably the chest panel is formed so as to extend upwardly from the buckle securing the shoulder straps together to a position adjacent a wearer's neck and so as to extend laterally to cover the space between the shoulder
5 straps. In one form the invention includes a sleeve portion, which may be a permanent sleeve portion or a releasable sleeve portion extending along one edge of the chest panel whereby the chest panel may be slidably retained on the one shoulder strap and the releasable securing means is an edge
10 portion of the chest panel which may be releasably formed into a sleeve extending about the other shoulder strap. It is also preferred that both sleeves converge towards the bottom of the chest panel.

Of course if desired the resilient chest panel could be
15 adapted for connection to one of the shoulder straps by having a panel portion adapted for sewing, gluing or riveting or the like and the other releasable securing means could be secured to the other of said shoulder straps by a buckle or press clips or the like. It is also preferred that the chest
20 panel be formed of fabric which has sufficient bulk whereby in use it remains in a panel-like configuration and suitably the chest panel is padded to provide a soft abutment for a user's chest. Of course the chest panel could be formed of a resilient material such as leather, hide or a plastics
25 material if desired.

In one preferred embodiment of the invention the securing apparatus is adapted for use securing small children in full harness type seat belts and the releasable securing means are so formed as to be substantially inaccessible to the user.
30 In such embodiments, the chest panel suitably extends upwardly from the wearer's lap to a position beneath a wearer's chin and the upper laterally opposed portions of the chest panel are formed to retain the shoulder harness straps in such manner that they are not readily separated by a child
35 sufficiently for the child to place their arms and upper body between the shoulder straps above the chest panel. It is

also preferred that the releasable securing means be substantially concealed whereby it cannot be readily accessed and released by a young wearer.

Suitably the releasable securing mean is provided along
5 one edge of a laterally extending flap portion extending from the chest panel and on a complementary back portion of the chest panel whereby the flap portion may be passed around the shoulder strap and returned behind the chest panel for connection thereto. Press studs or lacing or VELCRO strip or
10 the like be used to connect the returned edge to the flap portion to the back of the chest panel.

In a further aspect, this invention resides broadly in a safety harness assembly including a harness having opposed
15 shoulder straps and securing apparatus substantially as described variously herein attached to one of the shoulder straps.

In order that this invention may be more readily understood and put into practical effect, reference will now be made to the accompanying drawings which illustrate typical
20 embodiments of the invention and wherein:-

FIG. 1 illustrates the manner in which children release their upper body from the shoulder restraints of a full harness seat restraint;

FIG. 2 is a front view of one form of securing apparatus;

25 FIG. 3 is a corresponding rear view of the securing apparatus;

FIG. 4 is a plan view which illustrates the manner of securing the securing apparatus to one shoulder strap;

30 FIGS. 5 and 6 illustrate the method of operatively securing the securing apparatus of FIG. 2 to a harness;

FIG. 7 is a rear view of another form of securing apparatus, and

35 FIG. 4 is a plan view illustrating the securing apparatus, of FIG. 7 in its operative securing configuration.

Conventional full safety harnesses for small children

such as the harness 9 illustrated in FIG. 1 have the disadvantage that a child restrained thereby may free their shoulders by firstly passing their hands behind the shoulder straps and then forcing the shoulder straps over their shoulders so as to free their upper body from the restraint. This is dangerous and very distracting for the driver or other occupants of the vehicle.

As illustrated, a securing device 10 of the present invention is in the form of a padded chest panel 11 having opposed side flaps 12 and 13 formed integrally therewith. The side flap 12 is provided with press studs 14 along the outer edge thereof and arranged so that the flap may be passed around behind a shoulder strap 15 for return in front of the strap 15 whereby the press studs may clip into complementary press studs 19 provided on the back face of the front panel 11 so as to form a sleeve 16 which closely accommodates the strap 15. In this manner the securing device may be fastened to a shoulder strap as illustrated in FIGS. 4 and 5.

The side flap 13 is provided with a VELCRO strip 17 on its rear face and adapted to be engaged with a complementary VELCRO strip 18 supported substantially centrally of the chest panel 11 on the rear face thereof so that the flap 13 can be wrapped around the opposite shoulder strap 20, as illustrated in FIG. 4, and be secured in position by pressing the VELCRO strips 17 and 18 together to form a further strap retaining sleeve 22. This operation is performed by an adult after a child has been secured in the restraint by securing the shoulder straps 15, 20 of the harness 9 by the lap buckle 21.

It will be seen from FIG. 6 that when the device is operatively attached to the shoulder straps 15, 20 of the harness 9 the chest panel 11, which is padded so as to retain its panel-like form, extends upwardly from the buckle 21 to a position adjacent the wearer's neck. The padding also serves to provide a soft restraint for the child. It will also be

seen that the chest panel 11 tapers downwardly to the buckle 21 so that the strap sleeves conform to the normal positions of the shoulder straps 15 and 20 and that the releasable VELCRO connection is concealed between the child's body and the chest panel 11. Thus it is difficult for a young child to release the VELCRO fastening to permit the securing device to be removed. Accordingly in use a child secured in position by the harness 9 is restrained from placing their arms through the head opening or pulling the shoulder straps down over their shoulders, as the head aperture is sufficiently constricted by the securing device to make such inoperative positioning of the harness unlikely.

The securing apparatus 30 illustrated in FIGS. 7 and 8 is of similar configuration to the above described embodiment. However it differs in that it is formed from a single sheepskin panel 31 provided with an edge binding 32.

At one edge, the panel 31 has inner socket-part press-studs 33 which project to the woolly side of the panel and outer spigot-part press-studs 34 which project to the skin side of the panel 31. The press studs 34 mate with socket-part press studs 35 which project to the skin side of the panel substantially centrally thereof so as to form the sleeve 36 which affixes the securing apparatus 30 semi-permanently to one shoulder strap 42 as illustrated, and at the opposite edge the panel 31 has a pair of spigot-part press-studs 39 which project to the skin side of the panel 31 and engage with the press-studs 33 at the opposite face thereof to form the releasable sleeve 40 adapted for affixing to the other shoulder strap 43. As in the previous embodiment all press studs are substantially inaccessible to a restrained young wearer and thus provide security of restraint for the wearer.

It will of course be realised that the above has been given only by way of illustrative example of the invention and that all such modifications and variations thereto as would be apparent to persons skilled in the art are deemed to

fall within the broad scope and ambit of the invention as is defined in the appended claims.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:-

1. Securing apparatus for securing the opposed pair of shoulder straps of a safety harness against the unaided passage of a wearer's shoulders therebetween, said securing apparatus including:-
 - a resilient chest panel;
 - connecting means for connecting said chest panel to one of the shoulder straps, and
 - releasable securing means for connecting said chest panel to the other shoulder strap.
2. Securing apparatus as claimed in claim 1, wherein said chest panel is formed so as to extend upwardly from the lap buckle which secures the shoulder straps together to a position adjacent a wearer's neck.
3. Securing apparatus as claimed in claim 1 or claim 2, wherein said releasable securing means includes an extension flap at one side of said chest panel and connecting means for connecting the free edge of said extension flap to said chest panel so as to form a sleeve which may extend about said other shoulder strap.
4. Securing apparatus as claimed in any one of the preceding claims, wherein said connecting means includes a sleeve which extends about said one shoulder strap.
5. Securing apparatus as claimed in claim 4, wherein said sleeve is a releasable sleeve.
6. Securing apparatus as claimed in claim 4 or claim 5 when appended to claim 3, wherein said sleeves converge towards the bottom of said chest panel.
7. Securing apparatus as claimed in any one of the preceding claims, wherein said resilient chest panel is so formed

whereby in use it remains substantially in an extended panel configuration.

8. Securing apparatus as claimed in any one of the preceding claims, wherein said releasable securing means is substantially concealed between the wearer restrained and said chest panel.

9. Securing apparatus as claimed in any one of the preceding claims, wherein said releasable securing means is a push together connection.

10. A safety harness assembly including:-
a harness having opposed shoulder straps, and
securing apparatus as claimed in any one of the preceding claims attached to one of the shoulder straps.

11. Securing apparatus substantially as hereinbefore described with reference to FIGS. 2 to 6 or FIGS 7 and 8 of the accompanying drawings.

1 / 4

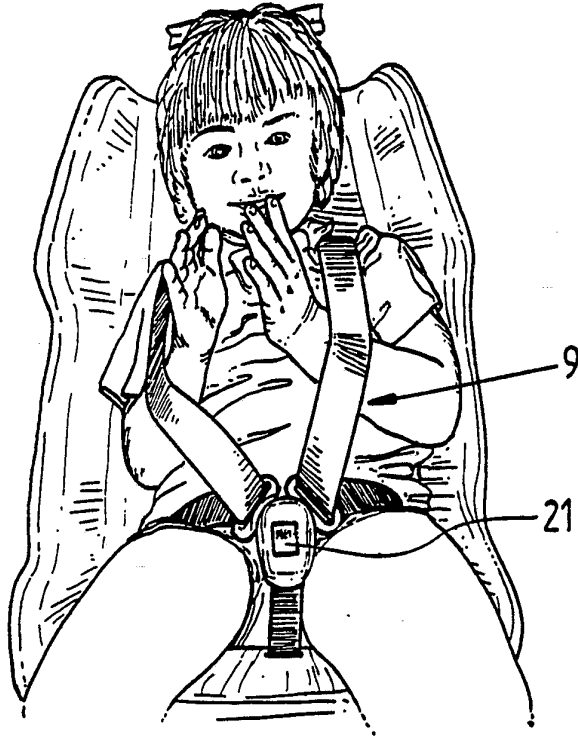


FIG. 1

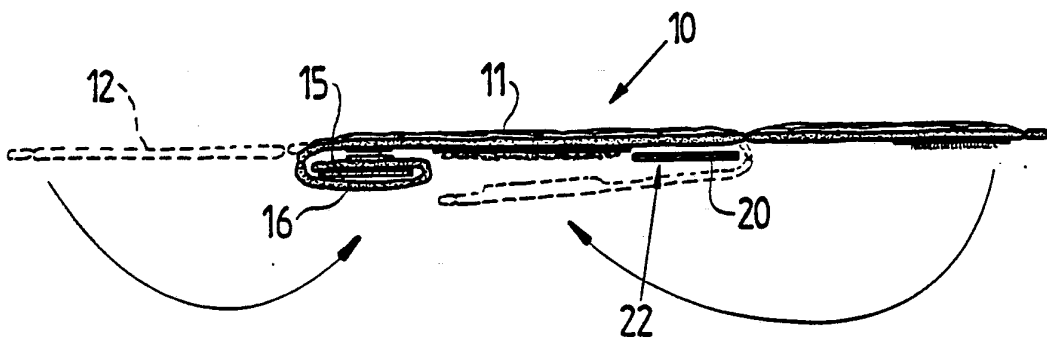
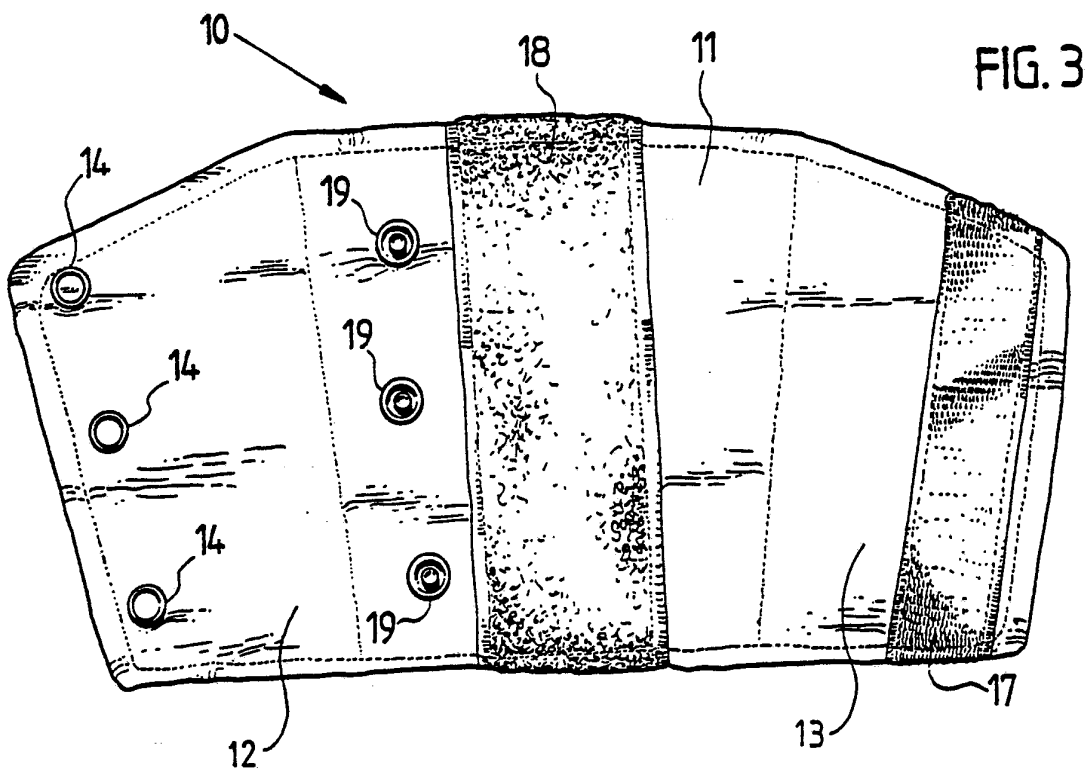
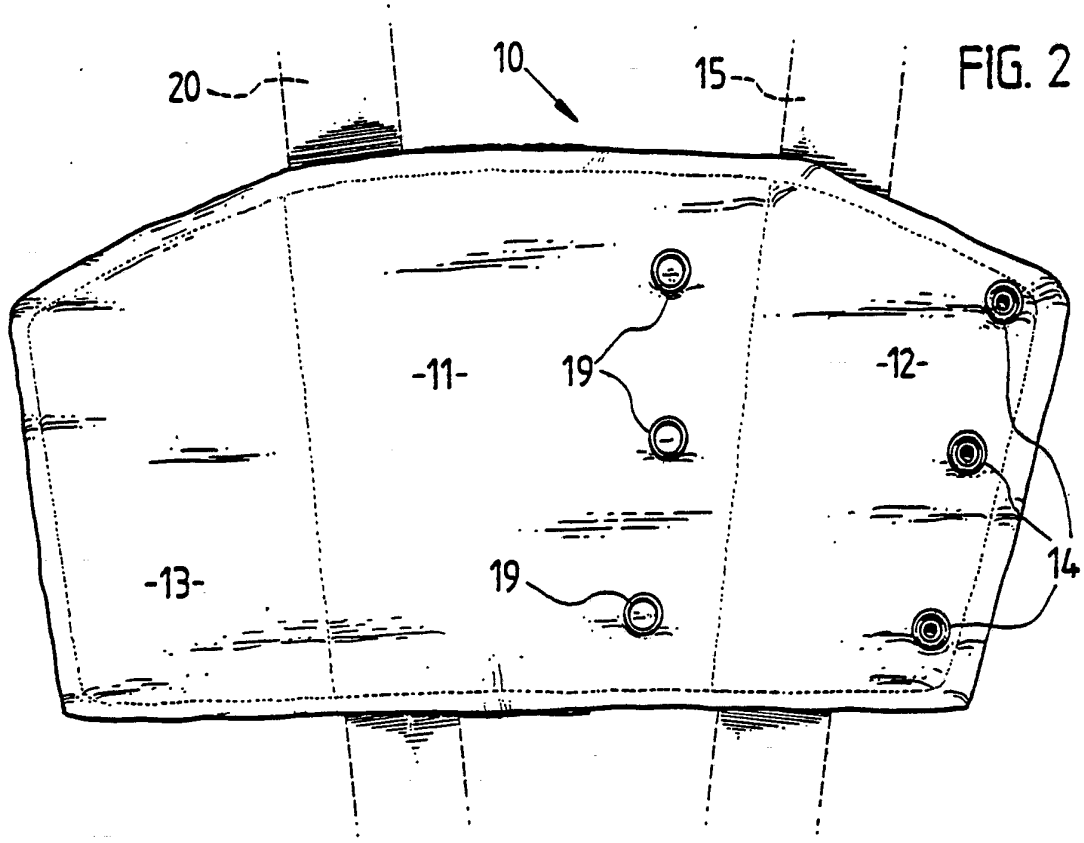


FIG. 4



3 / 4

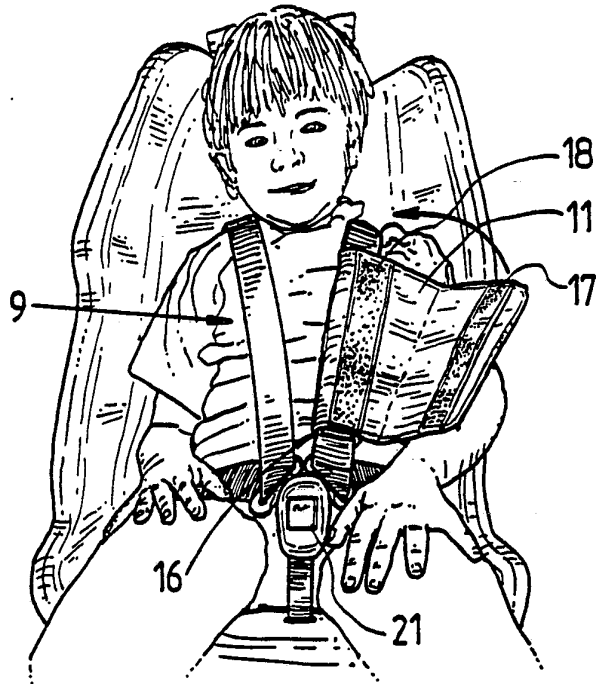


FIG. 5

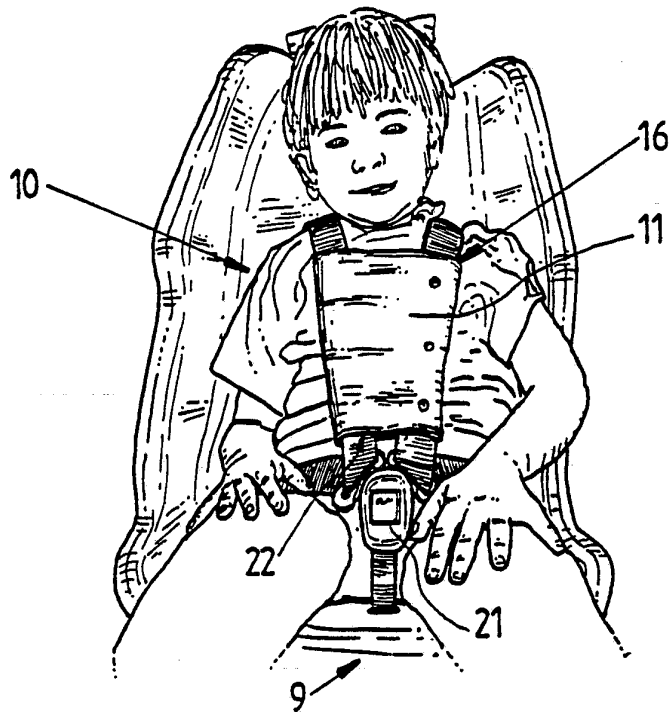


FIG. 6

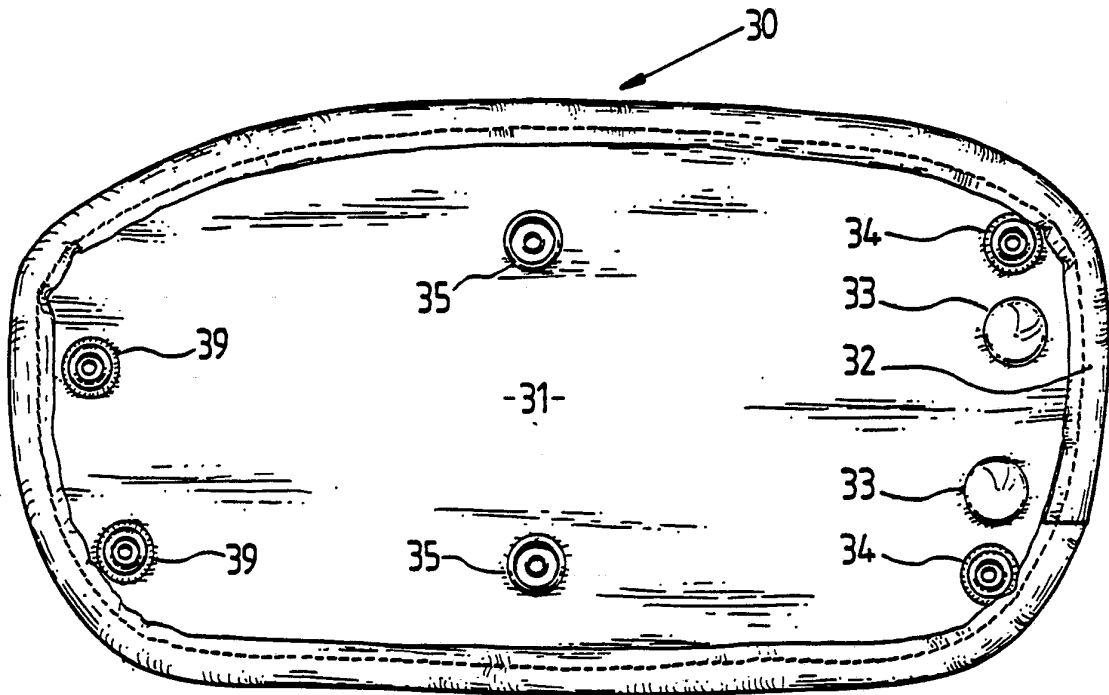


FIG. 7

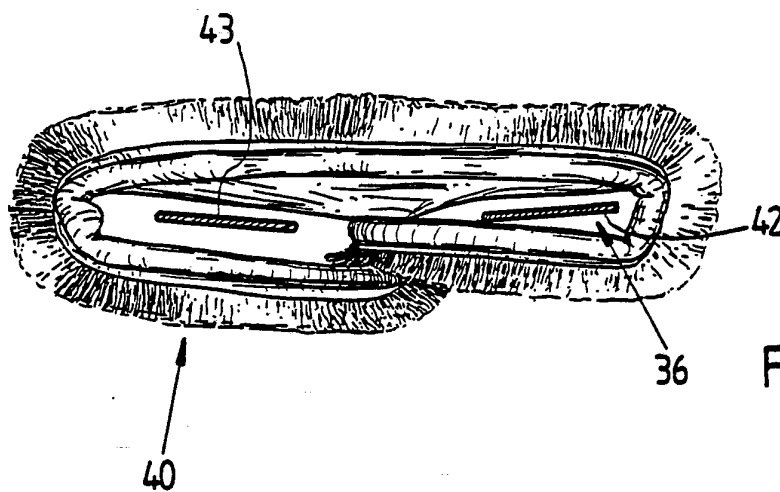



FIG. 8

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU92/00350

<p>A. CLASSIFICATION OF SUBJECT MATTER Int. Cl.⁵ B60R 22/14, 22/10, 22/02, A62B 35/00</p> <p>According to International Patent Classification (IPC) or to both national classification and IPC</p>																						
<p>B. FIELDS SEARCHED</p> <p>Minimum documentation searched (classification system followed by classification symbols) IPC B60R 22/14, 22/10, 22/02, A62B 35/00</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched AU : IPC as above</p> <p>Electronic data base consulted during the international search (name of data base, and where practicable, search terms used) DERWENT</p>																						
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p> <table border="1"> <thead> <tr> <th>Category *</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to Claim No.</th> </tr> </thead> <tbody> <tr> <td>X Y</td> <td>AU,A, 21193/88 (SAFE-N-SOUND PTY LIMITED) 2 MARCH 1989 (02-03-89) page 6, lines 3 to 10 and 18 to 21 page 7, lines 18 to 21 and the drawings</td> <td>1,2,7,10 3-6,9</td> </tr> <tr> <td>P X Y</td> <td>US,A, 5080191 (SANCHEZ) 14 January 1992 (14-01-92) column 4, lines 27 to 37; column 6, lines 40 to 45 and figures 1 and 7</td> <td>1,3,7, 9-10 2,4</td> </tr> <tr> <td>Y</td> <td>US,A,4762364 (YOUNG) 9 August 1988 (09-08-88) column 7, lines 10 to 13 and figure 1</td> <td>1,7,9-10</td> </tr> </tbody> </table>			Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.	X Y	AU,A, 21193/88 (SAFE-N-SOUND PTY LIMITED) 2 MARCH 1989 (02-03-89) page 6, lines 3 to 10 and 18 to 21 page 7, lines 18 to 21 and the drawings	1,2,7,10 3-6,9	P X Y	US,A, 5080191 (SANCHEZ) 14 January 1992 (14-01-92) column 4, lines 27 to 37; column 6, lines 40 to 45 and figures 1 and 7	1,3,7, 9-10 2,4	Y	US,A,4762364 (YOUNG) 9 August 1988 (09-08-88) column 7, lines 10 to 13 and figure 1	1,7,9-10								
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.																				
X Y	AU,A, 21193/88 (SAFE-N-SOUND PTY LIMITED) 2 MARCH 1989 (02-03-89) page 6, lines 3 to 10 and 18 to 21 page 7, lines 18 to 21 and the drawings	1,2,7,10 3-6,9																				
P X Y	US,A, 5080191 (SANCHEZ) 14 January 1992 (14-01-92) column 4, lines 27 to 37; column 6, lines 40 to 45 and figures 1 and 7	1,3,7, 9-10 2,4																				
Y	US,A,4762364 (YOUNG) 9 August 1988 (09-08-88) column 7, lines 10 to 13 and figure 1	1,7,9-10																				
<p><input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.</p>																						
<p>* Special categories of cited documents :</p> <table> <tr> <td>"A"</td> <td>document defining the general state of the art which is not considered to be of particular relevance</td> <td>"T"</td> <td>later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</td> </tr> <tr> <td>"E"</td> <td>earlier document but published on or after the international filing date</td> <td>"X"</td> <td>document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</td> </tr> <tr> <td>"L"</td> <td>document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</td> <td>"Y"</td> <td>document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</td> </tr> <tr> <td>"O"</td> <td>document referring to an oral disclosure, use, exhibition or other means</td> <td>"&"</td> <td>document member of the same patent family</td> </tr> <tr> <td>"P"</td> <td>document published prior to the international filing date but later than the priority date claimed</td> <td></td> <td></td> </tr> </table>			"A"	document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	"E"	earlier document but published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family	"P"	document published prior to the international filing date but later than the priority date claimed		
"A"	document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention																			
"E"	earlier document but published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone																			
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art																			
"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family																			
"P"	document published prior to the international filing date but later than the priority date claimed																					
<p>Date of the actual completion of the international search 26 October 1992 (26.10.92)</p>		<p>Date of mailing of the international search report 3 NOV 1992 (03.11.92)</p>																				
<p>Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No. 06 2853929</p>		<p>Authorized officer  C.M.WYATT Telephone No. (06) 2832538</p>																				

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate of the relevant passages	Relevant to Claim No.
X	FR, A, 2261906 (BEZIADE) 19 September 1975 (19-09-75) page 2, line 21 to page 3, line 16 and the drawings	1,3-5,7,10
A	GB,A, 1150085 (TELEFLEX PRODUCTS LIMITED) 30 APRIL 1969 (30-04-69)	1
Y	AU,A, 46562/79 (REPCO LIMITED) 1 November 1979(01-11-79) page 4, lines 18-19 and figure 1	1
Y	DT,A, 2552056 (SCHEEL SITZE GmbH) 26 May 1977 (26-05-77) page 4, line 24 to page 5 line 5; page 6, lines 17 to 23	1-2,7,10

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member			
AU	21193/88	NZ	225865		
US	4762364	AU	18458/88	EP	302607
		JP	1113007		
END OF ANNEX					