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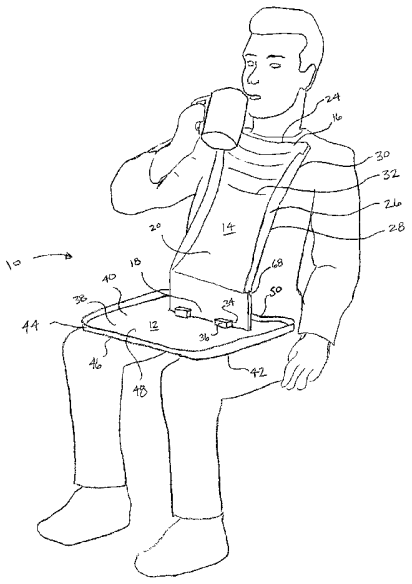
(54) Title: LAP SHIELD



(57) Abstract: A shield (10) for use when eating and drinking is provided that includes a torso protector (14) and a lap protector (12). The torso protector (14) has a front surface (20) and a back surface (22), an hourglass shape, and at least one first coupler portion (34). The lap protector (12) is a generally flat support surface (38) with a raised lip (44) extending along a perimeter of the lap protector (12). At least one second coupler portion (36) is located on a top surface (38) of the lap protector (12), within an area enclosed by the raised lip (44). The first (34) and second (36) coupler portions are selectively attachable.

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LAP SHIELD

The present application is a continuation-in-part of U.S. Patent Application Serial No. 10/456,120 filed June 6, 2003.

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to shields in general and, more particularly, to a shield for use when eating and drinking.

Background Information

In today's fast-paced society, there is an ever-increasing trend for people to consume food and beverages while traveling in a vehicle. Many people also frequent fast food and take-out establishments, as evidenced by the number of successful fast food and "drive-thru" restaurants. Moreover, the number of meals prepared and consumed within the home has decreased sharply for many families in recent years, as a result of the financial necessity for more parents or guardians to work longer hours outside the home.

While automobile designers have focused on appealing to customer convenience, very few improvements have been made regarding food consumption for the outside salesperson, truck driver and automotive travelers and their families. People who eat while seated in their vehicles must still do so without a table and must inconveniently lean over a makeshift surface such as a napkin or food wrap, in an effort to keep food or drink from spilling or dripping, thereby soiling their torso, lap and vehicle interior. Napkins and food wrapping materials are not designed for this purpose in that they are not very absorbent, inconvenient to use and offer little protection against liquid beverages or foods likely to drip or spill (i.e., ketchup, mustard, etc.), and provide virtually no protection from spills that are likely to occur on the torso. Using a plate or cafeteria-style tray while eating in a vehicle may be somewhat more convenient, but this practice does not solve the problem of the likelihood of the plate or tray sliding off the user's lap, and also offers no protection for the torso. The same problems listed above are commonly experienced while eating at sporting events,

picnics or any other situation where food or beverages may be consumed in a temporary setting.

Previous attempts have been made to provide a portable lap tray for eating or drinking while in a seated position as shown in U.S. Pat. No. 5,915,561; U. S. Pat. No. 6,305,532; U.S. Pat. No. 5,181,275; U.S. Pat. No. 5,425,455; U.S. Pat, 5,220,692; U.S. Pat. No. 5,530,968; U.S. Pat. No. 5,377,359; U. S. Pat. No. 4,660,224; U.S. Pat. No. 5,056,159; U.S. Pat. No. 5,701,605; U.S. Pat. No. 6,243,869; U.S. Pat. No. 5,778,450; U.S. Pat. No. 5,062,558; U.S. Pat. No. 5,621,916; which are all referred to herein. U. S. Pat. No. 5,915,561 issued to Lorenzana, U. S. Pat. No. 6,305, 532 issued to Overkamp, U. S. Pat. No. 5,181,275 issued to Spulgis, and U.S. Pat. No. 5,425,455 issued to Miller all include a means for consuming food and beverage in a seated position, however, none offer any means of torso protection.

Furthermore, in the case of the Overkamp and the Miller patents, both designs incorporate an aperture on the surface of the tray for holding beverages, allowing food or liquid to spill onto the user's lap through said aperture. The Spulgis patent has no containment feature and allows spilled liquid or food items to be channeled off the user's lap onto the floor. The Lorenzana patent provides a place for different food items, beverages and a compartment for utensils, but there is little room for spill containment within the recessed areas allowing spilled food or liquid to drain onto the user's lap.

U.S. Pat. No. 5,220,692 issued to Cox, U.S. Pat. No. 4,660,224 issued to Ashcraft, U.S. Pat. No. 5,530, 968 issued to Crockett, U.S. Pat. No. 5,377,359 issued to Jiang and U.S. Pat. No. 5,701,605 issued to Bowen all describe a portable food tray or apron with a means for protecting the user's torso, however, none of the designs provide a means for containment of spills as food and liquid may run freely off the sides of the tray as well as the areas intended for protection of the user's torso.

In reference to U.S. Pat. No. 5,056,159 issued to Zemke, Jr. and U. S. Pat. No. 6,243,869 issued to Ekovich, both designs must be fastened around the neck of the user and may be inconvenient to many users. In addition, both patents have no provision for preventing food or liquid from draining off the sides of the apron or bib, such as in the case that the flexible material develops folds when slackening from movement of the user, or the apron or bib material becomes situated in a convex manner across the user's torso due to the shape of the user's body. Furthermore, the Zemke, Jr. patent describes a combination tray and bib that

provides some spill protection in the tray portion, but it is not reusable and has no rigid tray surface to support food or beverages.

U.S. Pat. No. 5,621,916 issued to Bell describes a bib for use while operating a vehicle and is manufactured from plastic sheeting, but it must be inconveniently fastened with rings around the user's neck and the steering wheel and lacks a rigid support surface for food and beverage items.

U.S. Pat. No. 5,062,558 issued to Stang defines a food tray and bib system that includes a tray assembly for supporting food items, however, it is meant to be disposable, must be fastened around the user's neck, and the rigid tray assembly is inconvenient to store in a vehicle. Furthermore, there is no means for adjustability and may be uncomfortable for persons having long torsos wherein the tray could become suspended from the attachment point around the user's neck and may not reach the lap to rest in a comfortable and stable manner. Conversely, the lack of adjustability is unpractical for children with smaller torsos should the bib collapse upon itself, thereby hampering stability and defeating the purpose of the side walls to channel food and liquid into the lower tray section.

U.S. Pat. No. 5,778,450 issued to Hagestad describes a combination bib and tray system wherein the bib is made from a rectangular sheet of flexible material that provides Velcro anchor points for surface attachment of a tray with three compartments for food and beverage. While the tray's design does provide some protection from spills on the user's lap and torso, the crease at the lap of the user dividing the bib into a chest portion and a leg portion has no provision for preventing food or liquid from spilling and traversing along the crease down onto the user's lap and seat. Spilled food and drink could also migrate under the attached tray and onto the user's legs and floor, as there is no device for containment on the perimeter of the leg portion. The bib must also be inconveniently fastened around the neck of the user. The rigid tray attachment has a substantial height and cannot be compactly stored in a vehicle.

In reference to some previous designs that incorporate rigid or semi-rigid devices for torso protection, where the device is intended to be situated beneath the user's neck, the question of user safety must be addressed. In the case that these devices are used in a moving vehicle, a possible hazard exists should the user's body be thrust forward.

In reference to adjustability, all the above referenced combination tray-bib/apron designs do not provide a means for custom-fitting of the torso protection device (i.e., adults and children with torsos of varying size).

In reference to convenient cleaning and storage, all the above referenced combination tray-bib/apron designs do not combine the benefits of easy cleaning for reuse with convenient storage. Previous designs incorporating corrugated paper products or flexible sheeting material are either disposable, inconvenient to clean or may not provide a sanitary surface for future use.

Consequently, there is a need for a portable, reusable lap tray to be used for eating and drinking while in a seated position, that contains spills and effectively combines the benefits of lap and torso protection with user convenience.

A further need exists for a portable lap tray, having the aforementioned attributes that is easily cleaned and stored for reuse.

A further need exists for a portable lap tray, having the aforementioned attributes, that is safe, slip-resistant and adjustable to accommodate adults and children.

A further need exists for a portable lap tray, having the aforementioned attributes, that is stable, self-supporting, and need not be attached to the user.

BRIEF SUMMARY OF INVENTION

It is, therefore, an object of the present invention to provide a durable lap tray that is portable, reusable and has a detachable torso protector section. The torso protector section is made of soft, flexible material which is both safe to use and can be custom trimmed and adjusted to accommodate the size of both adults and small children.

It is a further object of the present invention, thereby, when both sections of the present invention are attached as intended, the invention provides effective protection for the user's lap and torso, in the case that food or liquid beverage is spilled by the user eating or drinking.

According to one aspect of the present invention, a shield for use when eating and drinking includes a torso protector and a lap protector. The torso protector has a front surface and a back surface that are generally flat and at least one first coupler portion. In some embodiments, the torso protector has an hourglass shape. The lap protector is a generally flat support surface with a raised lip extending along a perimeter of the lap protector. At least one second coupler

portion is located on a top surface of the lap protector, within an area enclosed by the raised lip. The first and second attachment elements are selectively attachable. One advantage of the shield of the present invention is that it provides the user the ability to eat while sitting without the need for a plate.

Another advantage of the shield of the present invention is the spill protection it provides to a user when the lap protector is attached to the torso protector, thereby protecting the user's clothes from having spilled food or drink undesirably spilling on them.

A further advantage of the shield of the present invention is the ability it provides for the user to quickly and easily attach and detach the torso protector from the lap protector for compact and convenient storage.

An even further advantage of the shield of the present invention is that the lap protector and the torso protector can be conveniently cleaned when detached from one another.

An even further advantage of the shield of the present invention is that does not require attachment to the user during use.

An even further advantage of the shield of the present invention is that it is reusable.

These and other objects, features, and advantages of the present invention will become apparent in light of the detailed description of the present invention.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

FIG. 1 is a perspective view of a one embodiment of the present invention in use.

FIG. 1A is a perspective view of one embodiment of the present invention in use.

FIG. 1B is a perspective view of one embodiment of the present invention in use.

FIG. 2 is a perspective view of one embodiment of the torso protector of the present invention.

FIG. 2A is a front view of the torso protector of FIG. 2.

FIG. 3 is a perspective view of one embodiment of the torso protector of the present invention.

FIG. 3A is a front view of the torso protector of FIG. 3.

FIG. 4 is a perspective view of the lap protector of the present invention.

FIG. 4A is a bottom view of the lap protector of FIG. 4.

DETAILED DESCRIPTION OF THE INVENTION

Now referring to FIGS. 1 and 1A, the shield 10 of the present invention includes a lap protector 12 and a torso protector 14. The torso protector 14 is selectively attachable to the lap protector 12 during use and selectively detachable from the lap protector 12 for cleaning and/or storage.

Referring to FIGS. 2, 2A, 3 and 3A, the torso protector 14 has a top 16, a bottom 18, a front surface 20 and a back surface 22 that are generally flat. The torso protector 14 preferably has an hourglass shape. In addition, the top 16 of the torso protector 14 may have a radius 24, as shown for example in FIGS. 2A and 3A, in order to accommodate motion of a user's neck during use. The torso protector 14 may be made of any suitable material; however, in some embodiments, the torso protector 14 is molded of a flexible composite material. The thickness of the flexible material of the torso protector 14 is greater at the bottom 18, where it attaches to the lap protector 12 to further enhance stability. The torso protector 14 becomes progressively thinner from the bottom 18 to the top 16, where increased flexibility and a lighter weight is desirable.

Referring to FIGS. 2 and 3, in some embodiments, a raised lip 26 extends along at least a portion of each side 28 of the torso protector 14. Each raised lip 26 is generally located at or near a perimeter 30 of the torso protector 14 and is operable to prevent spilled food and drink from falling off the sides 30 and onto the user. Rather, the raised lip 26 generally directs the spilled food and/or drink inward and downward toward the attached lap protector 12 (described infra.). Generally, the raised lip 26 extends approximately one-half inch from the front surface 20 of the torso protector 14; however, shorter or taller raised lips 26 are also acceptable.

In some embodiments, the torso protector 14 includes trim lines 32. Typically, the trim lines 32 are uniformly spaced apart from one another; e.g., one inch increments. In some embodiments, the trim lines 32 are substantially parallel with, and have a substantially similar curvature as, the radius 24 of the top 16. The trim lines 32 may be a visual and/or a mechanical aid for use in cutting, trimming, or otherwise removing a portion of the torso protector 14. For example, a small child may need a smaller torso protector 14 than an adult. Therefore, removing a portion of the torso protector 14 at or near one of the trim lines near the top 16

enables a user to customize the torso protector 14, as necessary. In the embodiment shown in FIG.1B, the torso protector 14 has a length "L" that is sized so that the torso protector 14 only extends a portion of the way up the torso of the user.

The bottom 18 of the torso protector 14 includes a first coupler portion 34 that is operable to couple with a second coupler portion 36 located on the lap protector 12. The first and second coupler portions 34, 36 (both described infra.) may be of any suitable type known to those of skill in the art.

Referring now to FIGS. 4 and 4A, the lap protector 12 has a generally flat support surface 38 having a top surface 40 and a bottom surface 42. A raised lip 44 extends about the perimeter 46 of the lap protector 12. The lap protector 12 may be made of any suitable material; however, the lap protector 12 is preferably molded from a rigid plastic material. The lap protector 12 also includes the second coupler portion 36 for selectively attaching to the first coupler portion 34 of the torso protector 14 (both described infra.). The second coupler portion 36 is located on the top surface 40 of the lap protector 12, within an area 48 enclosed by the raised lip 44. Although the lap protector 12 can be of any suitable shape, the lap protector 12 has a basic rectangular shape with rounded corners in a preferred embodiment. In addition, the lap protector 12 may have a curved back edge 50 in order to conform to the user's waist. The curved back edge 50 provides a more stable fit when resting on the user's lap in a seated position, as shown in FIGS. 1 and 1A. The raised lip 44 is operable to act as a containment barrier for spilled food and beverages. The embodiment of the lap protector shown in FIG.1B includes a cup holder 17. The cup holder 17 is shown as a plurality of ridges 19 that define a region in which a cup can be placed to inhibit movement of the cup. Other cup holder 17 designs may be used alternatively.

In some embodiments, the top and bottom surfaces 40, 42 of the lap protector 12 have a texture in order to provide slip resistance. Additional slip resistance on the bottom surface 42 of the lap protector 12 may be achieved by attaching additional slip-resistant material 52 thereto, as shown in FIG. 4A. For example, one or more pieces of adhesive-backed slip resistant material 52 may be placed in various locations on the bottom side 42 of the lap protector 12. In some embodiments, the bottom surface 42 of the lap protector 12 includes molded guidelines 54 that define areas 56 in which additional adhesive-backed slip-resistant material 52 may be applied.

Referring now to FIGS. 1A, 2, 2A and 4, in some embodiments, the first and second coupler portions 34, 36 may pivotally couple the lap protector 12 and the torso protector 14, as shown in FIG. 1A. In these embodiments, the first coupler portion 34 of the torso protector 12 includes at least one male attachment point 58 (e.g., cylindrically shaped) and the second coupler portion 36 includes one or more female attachment points 60 (e.g., clip channels). Each female attachment point 60 on the lap protector 12 receives a male attachment point 58 on the torso protector 14. The female attachment points 60 are sized to receive and hold the male attachment points 58 in place during use. Preferably, the friction created between each male attachment point 58 and the corresponding female attachment point 60 is sufficient to maintain the relative positions of the lap and torso protectors 12, 14, when attached. However, the frictional forces created, in most embodiments, are not so great as to prevent the user from selectively pivoting the torso protector 14 relative to the lap protector 12 in order to place the two in desired locations relative to one another. In other words, the frictional forces should enable a user to pivot the torso protector 14 relative to the lap protector 12 to a desired position and, once in the desired position, the frictional forces present maintain their relative positions during normal use.

Referring now to FIGS. 2, 2A and 4, in certain embodiments, the female attachment portions include retention mechanisms. For example, the female attachment points are shown as clip channels 60 in FIGS. 2, 2A, and 4 that include convex dimple "pressure" points 62 located on an interior wall 64 of the clip channel 60. The male attachment point(s) 58 of the torso protector 14 are inserted into the clip channels 60 such that each of the male attachment point(s) 58 move past the convex dimple pressure points 62 when the attachment points are fully received within the clip channels 60. The convex dimple pressure points 62 provide additional friction that helps to maintain the desired angle of the torso protector 14 in relationship to the attached lap protector 12. The convex dimple pressure points 62 also create an interference fit that helps retain the male attachment points 58 within the clip channels 60. In alternative embodiments, the male and female coupler portions 58, 60 may be attached to the other of the lap protector 12 and torso protector described above.

Referring now to FIGS. 3, 3A and 4, in some embodiments, the first and second coupler portions 34, 36 may alternatively couple the lap protector 12 to the torso protector 14 in a substantially rigid manner, as shown in FIG. 1. In these

embodiments, a male coupler portion 66 of the torso protector 14 is inserted into one or more female coupler portions 60 (e.g., clip channels similar to those described above) located on the lap protector 12. In the embodiment shown in FIGS. 3, 3A, and 4, the male coupler portion 66 comprises a portion of the body of the torso protector 14. The female coupler portions 60 are sized to receive and hold a sufficient portion 66 of the torso protector 14 such that a predetermined angle between the torso protector 14 and the lap protector 12 at the point of attachment during use is maintained. In these embodiments, the bottom 18 of the torso protector 14 may be contoured, as shown in FIG. 3, in order to allow the necessary portion 66 of the torso protector 14 to fit into each of the female coupler portions 60.

In embodiments where the first and second coupler portions 34, 36 rigidly connect the torso protector to the lap protector, the torso protector 14 may also include a hinge 68. The hinge 68 extends across the back surface 22 of the torso protector 14, substantially parallel to the top 16 and the bottom 18. In the embodiment shown in FIGS. 1 and 3, the hinge is formed by a slot that creates a decreased thickness portion of the torso protector 14. The hinge 68 allows flexure of the torso protector 14. The hinge 68 is not limited, however, to the slot embodiment shown.

During operation, the first coupler portion 34 of the torso protector 14 is coupled to the corresponding, complimentary second coupler portion 36 of the lap protector 12. The resulting shield 10 is rested on the user such that the lap protector 12 covers at least a portion of the user's lap and the torso protector 14 covers at least a portion of the user's torso during eating and/or drinking. In embodiments where the torso protector 14 and the lap protector 12 are pivotally coupled, the user may adjust the relative angle of the torso protector 14 relative to the lap protector 12 in order to achieve a desired position. In embodiments where the torso protector 14 and the lap protector 12 are rigidly coupled, the torso protector 12 can be flexed at the hinge 68. The flexing of the torso protector 14 causes or enables the top 16 of the torso protector 14 to conveniently move towards, and rest against the user when the lap protector 12 is placed in the user's lap.

When eating, any food or drink spilled by the user will typically land on either the torso protector 14 or the lap protector 12. Food and/or drink spilled onto the torso protector 14 are deflected downwards and inwards towards the lap protector 12 by the front surface 20 of the torso protector 14 and the raised lip 26

that runs along each side 28 of the torso protector 14. Any food and/or drink spilled directly or indirectly onto the lap protector 12 is confined within the raised lip 44 that extends about the perimeter of the lap protector 12. Therefore, spilled food and drink are substantially contained within the shield 10 and do not end up on the user or his or her clothing.

When not in use, the lap protector 12 may be selectively detached from the torso protector 14 for easier storage and/or cleaning.

Although the present invention has been shown and described with regards to the detailed embodiments thereof, it will be understood that those skilled in the art that various changes in form and detail thereof nay be made without departing from the spirit and scope of the invention.

What is claimed:

1. A shield for use when eating and drinking, comprising:

a torso protector having a front surface and a back surface and at least one first coupler portion, the torso protector having a hourglass shape;

a lap protector defining a generally flat, rigid support surface that includes a raised lip that extends along a perimeter of the lap protector and at least one second coupler portion, the second coupler portion being complimentary to the first coupler portion of the torso protector and located on a top surface of the lap protector, within an area enclosed by the raised lip; and

wherein the first and second coupler portions are selectively attachable.

2. The shield of claim 1, wherein a top edge of the torso protector has a curvature sized to accommodate the neck of a user during use.

3. The shield of claim 1, wherein the torso protector comprises a flexible composite material.

4. The shield of claim 1, wherein the torso protector has a bottom edge and a thickness, and the thickness of the torso protector is greater proximate the bottom edge than proximate the top edge.

5. The shield of claim 1 further comprising a raised lip that extends along at least a portion of each side of the torso protector.

6. The shield of claim 1, wherein the first coupler portion includes at least one cylindrically shaped attachment point and the second coupler portion includes one or more clip channels.

7. The shield of claim 6, wherein at least one of the clip channels includes one or more convex dimple pressure points.

8. The shield of claim 1, wherein the first coupler portion includes at least portion of the torso protector and the second coupler portion includes one or more clip channels, the torso protector being coupled to the lap protector by inserting the portion of the torso protector into the clip channel.

9. The shield of claim 8, wherein the torso protector includes a hinge that extends across the torso protector, the hinge being operable to allow the torso protector to flex.

10. The shield of claim 1, wherein the lap protector comprises a rigid plastic material.

11. The shield of claim 1, wherein the lap protector has a back edge that is arcuate shaped.

12. The shield of claim 1, wherein the torso protector has a hourglass shape.

13. The shield of claim 1, wherein a bottom surface of the lap protector further includes additional slip-resistant material.

14. The shield of claim 13, wherein a bottom surface of the lap protector includes molded guidelines that define areas in which additional slip-resistant material may be applied.

15. The shield of claim 1, wherein the lap protector comprises a cup holder.

16. A shield for use when eating and drinking, comprising:

a torso protector having a front surface and a back surface that are generally flat and at least one cylindrically shaped attachment point, the torso protector having a hourglass shape;

a lap protector defining a generally rigid, flat support surface that includes a raised lip that extends along a perimeter of the lap protector and at least one clip channel, the clip channel being sized to selectively receive and hold in place the cylindrically shaped attachment point of the torso protector; and

wherein the torso protector is pivotable relative to the lap protector when attached.

17. The shield of claim 16, wherein at least one of the clip channels includes one or more convex dimple pressure points.

18. A shield for use when eating and drinking, comprising:

a torso protector having a front surface and a back surface that are generally flat, the torso protector having a hourglass shape;

a lap protector defining a generally flat support surface that includes a raised lip that extends along a perimeter of the lap protector and at least one clip channel, the clip channel being sized to selectively receive and rigidly hold in place a portion of the torso protector; and

wherein a slot extends across the back surface of the torso protector, the slot being operable to allow the torso protector to flex.

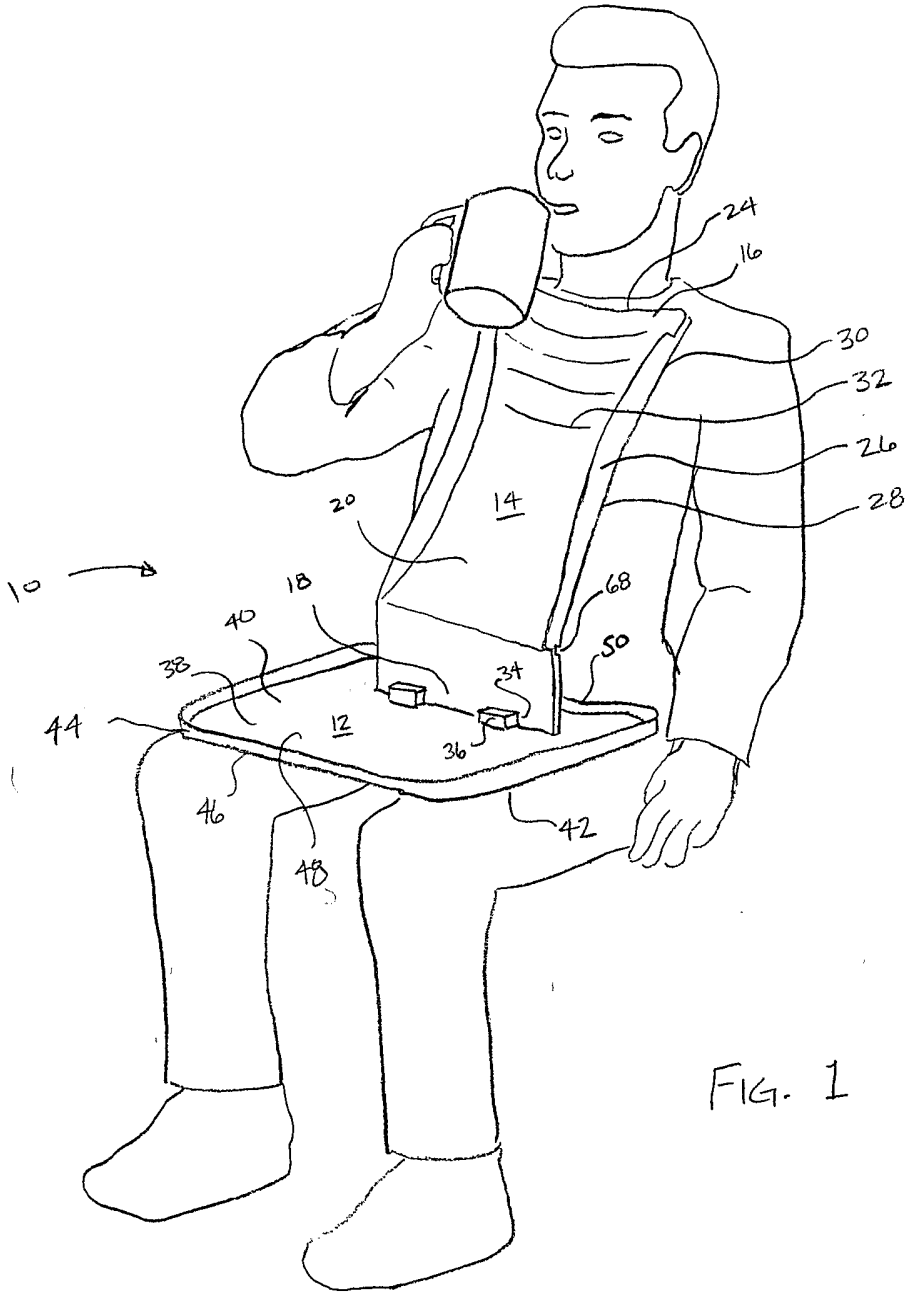


FIG. 1

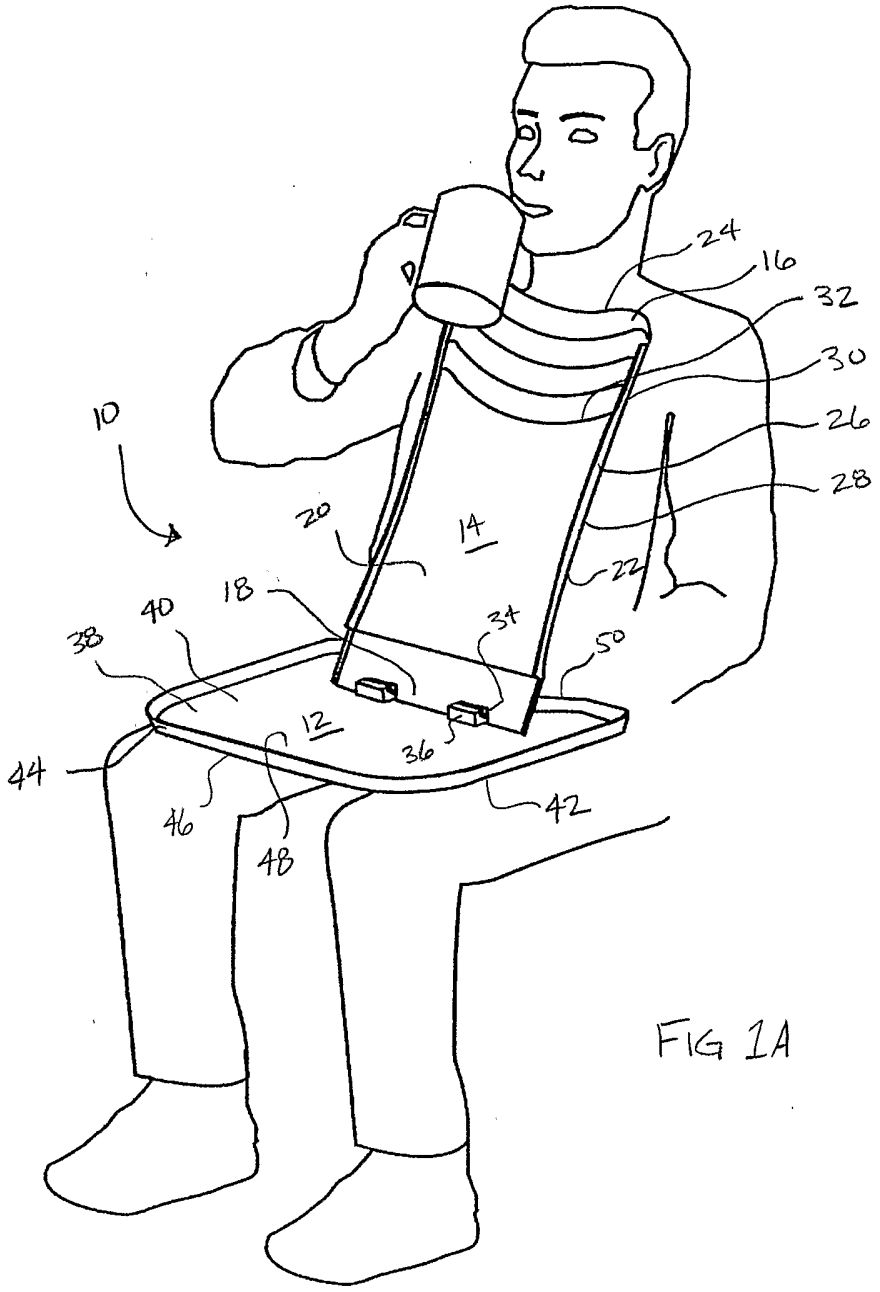


FIG 1A

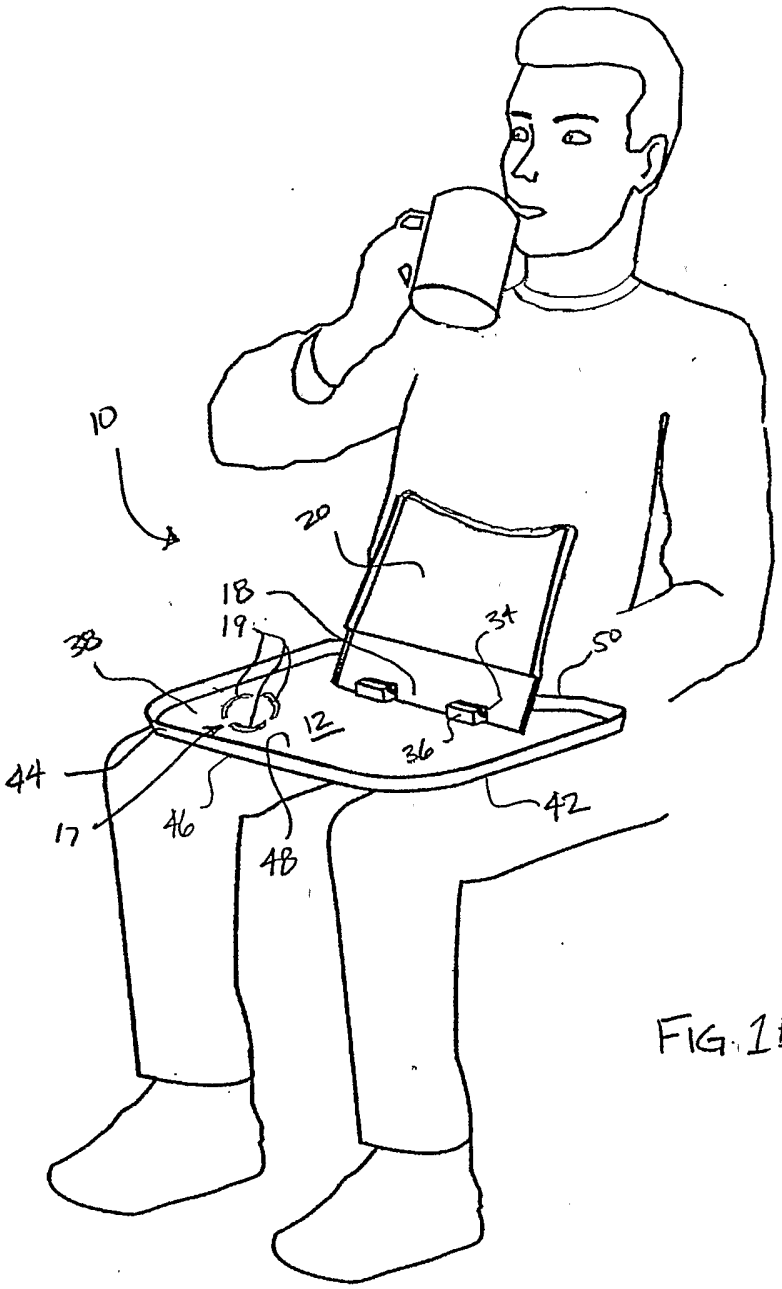


FIG. 1B

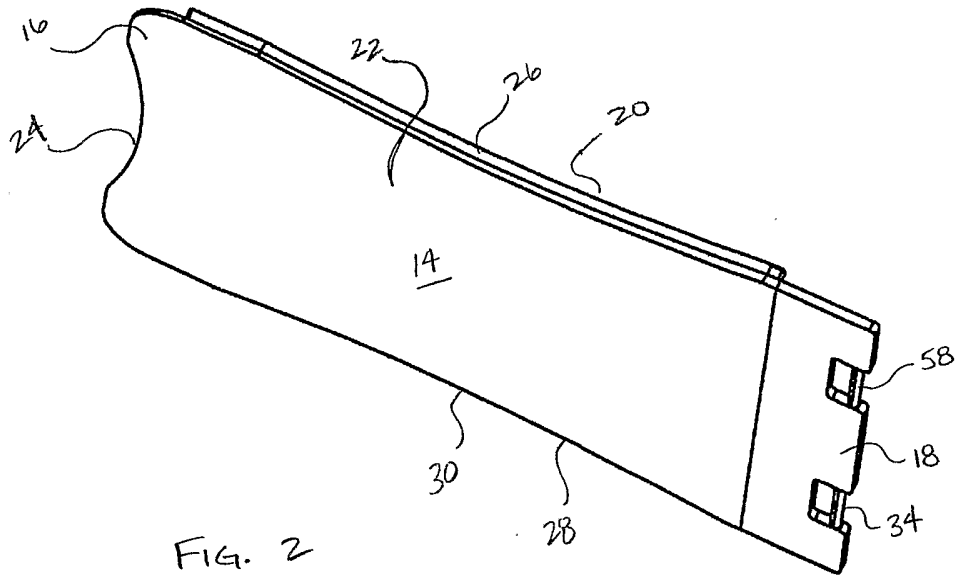
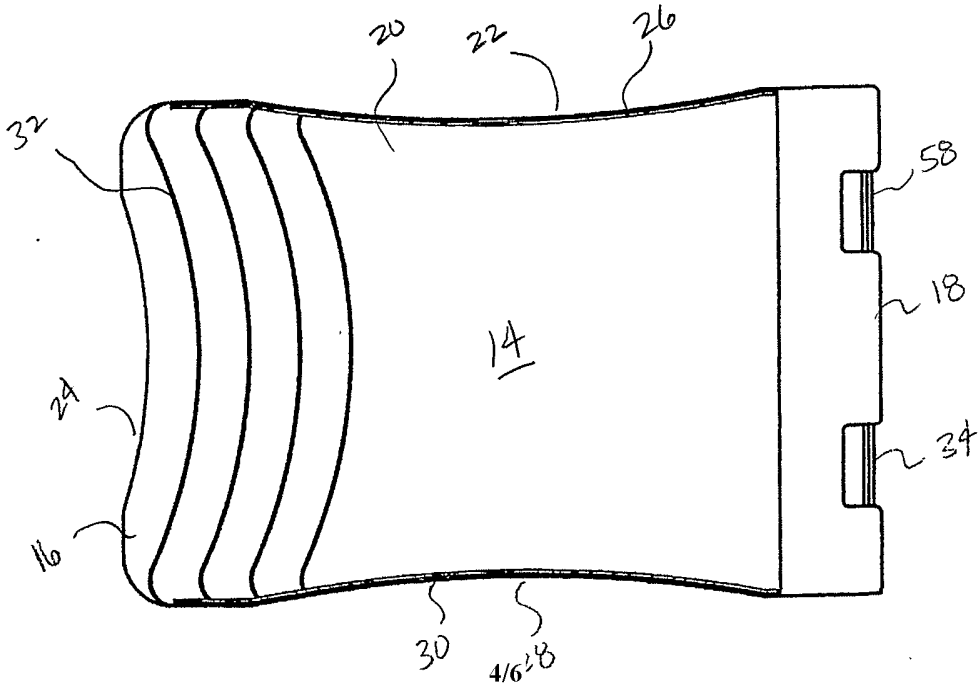


FIG. 2

FIG. 2A



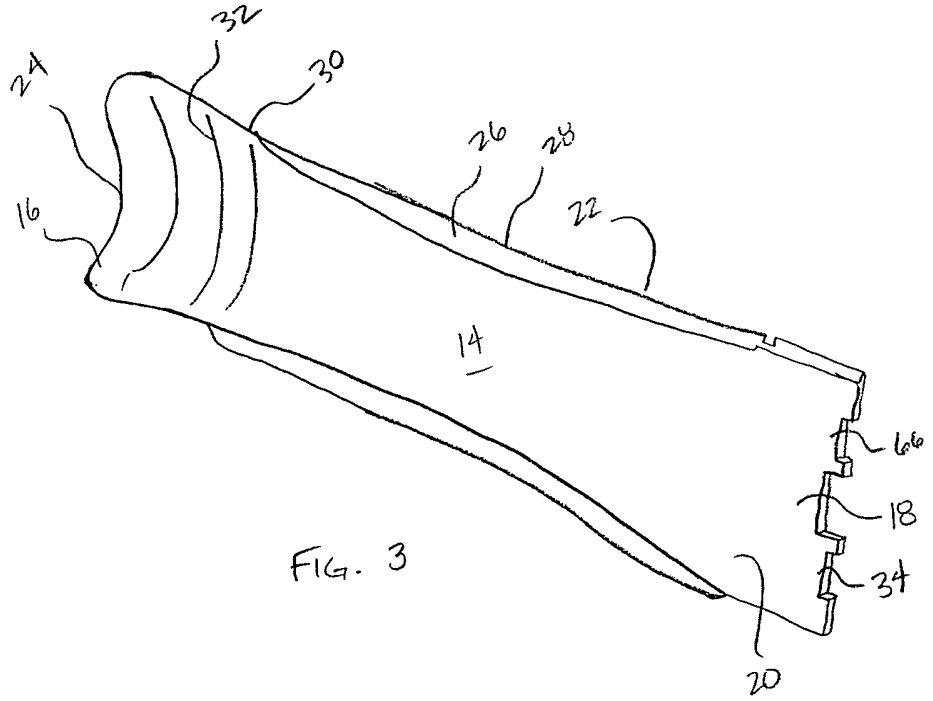


FIG. 3

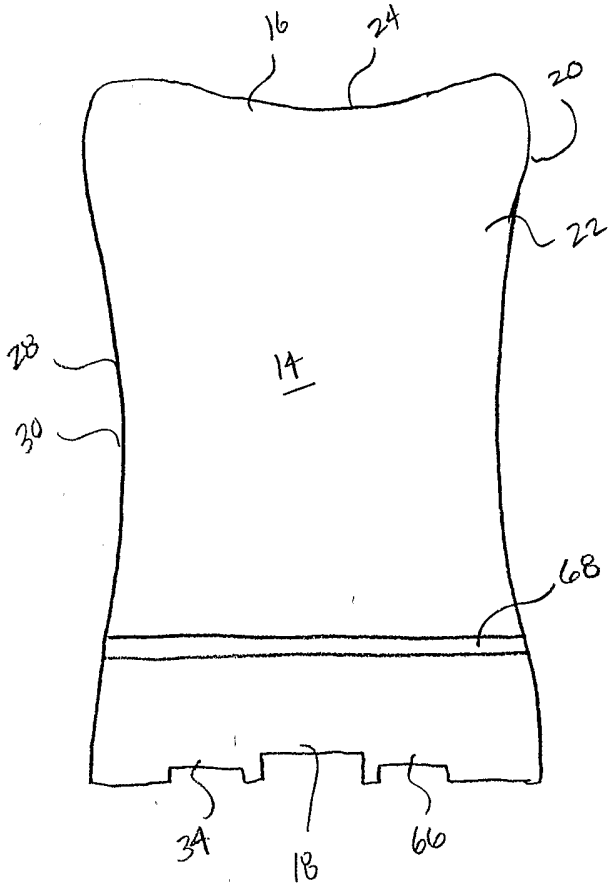


FIG. 3A

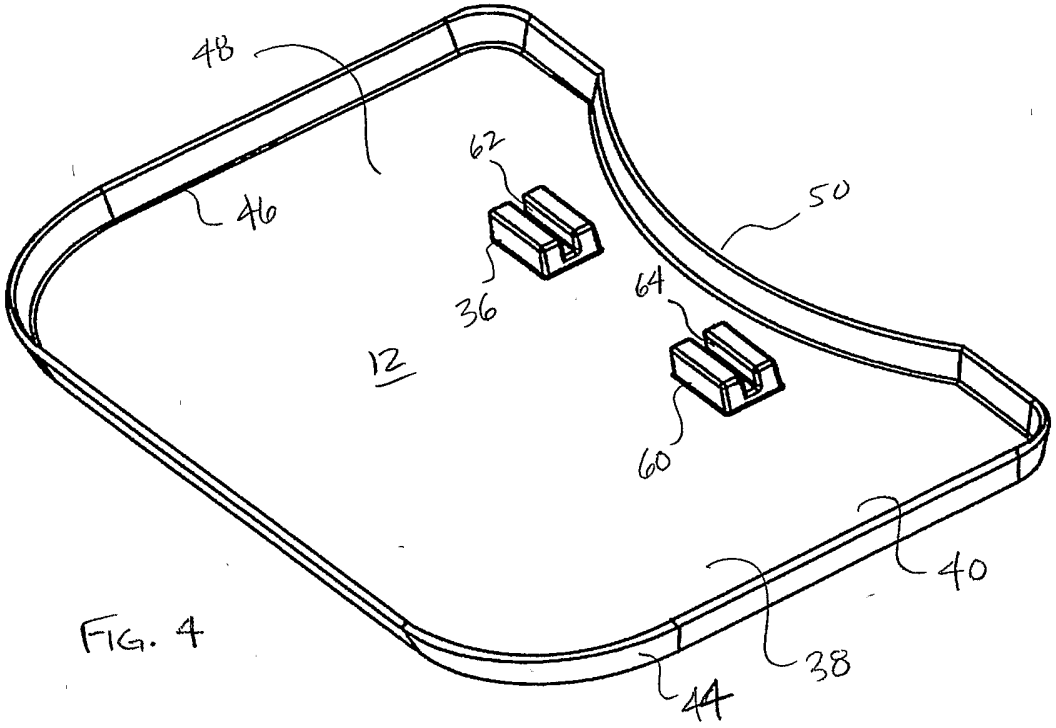


FIG. 4

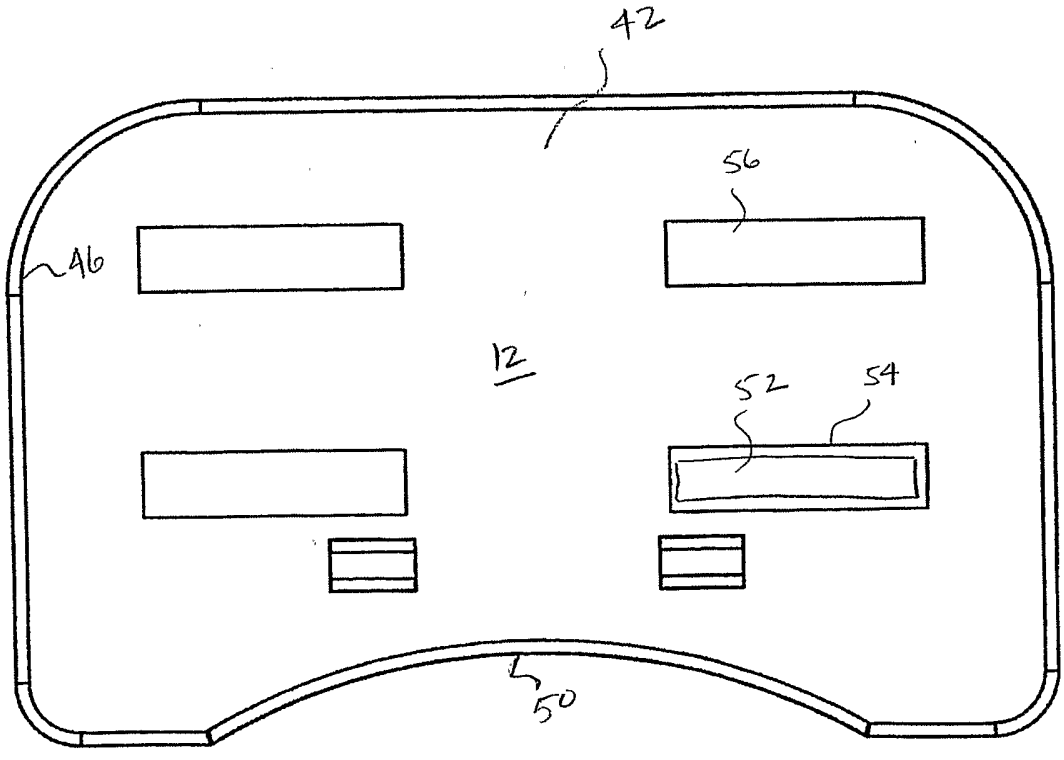


FIG. 4A

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US04/13237

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : B65D 6/04
US CL : 206/562
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)
U.S. : 206/557, 562-565, 217, 459.5; 108/43; 2/46, 48, 49.1, 49.3; D2/861; 224/257, 270, 600; 220/840, 841

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 practicable, search terms used)
EAST: car, automobile, food, drink, spill, lap, tray, bib, apron, trim, line, plastic, smooth, adhesive

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 6,021,521 A (BARATTA, Anthony V.) 08 February 2000 (08.02.2000), entire document.	1-4, 6, 8-10 --- 5, 7, 11-18
Y	US 2,569,915 A (ARSENEAULT, J. R.) 02 October 1951 (02.10.1951), Figures 1 and 3.	5
Y	US 4,821,751 A (CHEN, James S. K.) 18 April 1989 (18.04.1989), Figure 2.	7, 17
Y	US 6,305,532 B1 (OVERKAMP, Scott T.) 23 October 2001 (23.10.2001), Figure 1.	11, 15
Y	US 4,114,199 A (MALAN, Mabel) 19 September 1978 (19.09.1978), Figures 1 and 3.	12, 16-18
Y	US 6,059,115 A (OVADIA, Joseph) 09 May 2000 (09.05.2000), Figure 4, Column 3, lines 24-28).	13, 14
A	US 5,069,375 A (FLICK, Sandra) 03 December 1991 (03.12.1991), entire document.	
A	US 5,209,370 A (PICKETT et al.) 11 May 1993 (11.05.1993), entire document.	

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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"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

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Date of the actual completion of the international search
14 October 2004 (14.10.2004)

Date of mailing of the international search report
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US04/13237

C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,377,359 A (JIANG, Curtis T.) 03 January 1995 (03.01.1995), entire document.	
A	US 2003/0000357 A1 (TANAKA, Yoshinori) 02 January 2003 (02.01.2003) entire document.	