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PATENT REQUEST : STANDARD PATENT/PATENT OF ADDITION

We, being the person(s) identified below as the Applicant, request the grant of a patent to the person identified below as the Nominated Person, for an invention described in the accompanying standard complete specification.

Full application details follow.

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[54] Invention Title: "DEMOUNTABLE BACKREST"

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BASIC CONVENTION APPLICATION(S) DETAILS

[31]	[33]	
[32]		
Application Number	Country	Country Code
823,485	USA	US

ADDRESS FOR SERVICE
ENTERED
Dated
21/01/1992

Drawing number recommended to accompany the abstract ...3...

Dated this 21st day of January, 1993.

BIO-SUPPORT INDUSTRIES, INC.
By its Patent Attorneys
PETER MAXWELL & ASSOCIATES

.....
Thomas G. Ahearn

P/00/008
Section 29(1)
Regulation 3.1(2)

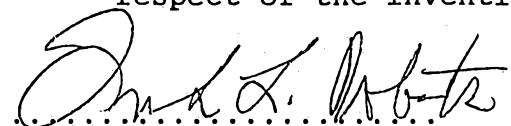
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NOTICE OF ENTITLEMENT

We, BIO-SUPPORT INDUSTRIES, LTD. a company incorporated under the laws of the Province of Ontario, Canada, of 550 Hopewell Avenue, Toronto, Ontario, Canada, M6E 2S6, being the applicant in respect of Application No. 31955/93, state the following:-

1. The person nominated for the grant of the patent namely, Bio-Support Industries, Ltd. has entitlement from the actual inventor as assignee of the actual inventor.
2. The person nominated for the grant of the patent namely, Bio-Support Industries, Ltd. has entitlement from the applicant of the basic application listed on the Patent Request Form namely, Frank L. Roberts by Assignment.
3. The basic application listed on the Request Form is the first application made in a Convention country in respect of the invention.


.....
Frank L. Roberts,
President of
Bio-Support Industries, Ltd.

Feb 4, 1993
.....
Date

TO: THE COMMISSIONER OF PATENTS
COMMONWEALTH OF AUSTRALIA



AU9331955

(12) PATENT ABRIDGMENT (11) Document No. **AU-B-31955/93**
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. **661885**

- (54) Title
DEMOUNTABLE BACKREST
- International Patent Classification(s)
(51)⁵ **A47C 007/42**
- (21) Application No. : **31955/93** (22) Application Date : **21.01.93**
- (30) Priority Data
- (31) Number (32) Date (33) Country
823485 21.01.92 US UNITED STATES OF AMERICA
- (43) Publication Date : **05.08.93**
- (44) Publication Date of Accepted Application : **10.08.95**
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- (72) Inventor(s)
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- (56) Prior Art Documents
US 4784436
US 4556254
US 2668584
- (57) Claim

1. A backrest having a top to bottom longitudinal axis and including:

an upper backrest part having a bounding margin therearound including a lower generally transversely extending margin portion;

a lower backrest part separate from said upper part and of approximately the same top to bottom axial length as said upper part, said lower part having a bounding margin therearound including an upper generally transversely extending margin portion generally coextensive with said lower margin portion of said upper part, and

load transfer means for demountably joining said upper and lower backrest parts together with the transversely extending margin portions generally contiguous with each other to form a

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unitary backrest, the load transfer means including matable elements respectively disposed along the transversely extending margin portions.

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P/00/011
Regulation 3.2

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Patents Act 1990

COMPLETE SPECIFICATION FOR A STANDARD PATENT

Name of Applicant: BIO-SUPPORT INDUSTRIES, LTD.

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Invention Title: "DEMOUNTABLE BACKREST"

Details of Basic
Application: UNITED STATES PATENT
APPLICATION SERIAL NO.
823,485, FILED 21 JANUARY
1992.

The following statement is a full description of this invention, including the best method of performing it known to us:



DEMOUNTABLE BACKREST

FIELD OF INVENTION

This invention relates to backrests. It particularly relates to backrests
5 that are demountable for portability.

BACKGROUND OF INVENTION

In U.S. Patent 4,556,254, commonly owned herewith the contents of
which are incorporated herein by reference thereto, there is described an
orthopaedic backrest that comprises a thin, stiffly resilient, shell-like frame
10 upholstered with a foam padding. The frame has a controlled rigidity and a height
such that the backrest will provide support for an average person over the
lumbo-sacral area. It is also known to provide backrests of a frameless type
wherein the foam padding is relatively thick and provides the desired structural
rigidity for the backrests. A need has been expressed by many persons for a
15 backrest that will provide the requisite degree of spinal support, but which is more
readily transportable.

Although the backrests are orthopaedic devices, users normally prefer

that the devices have an aesthetically pleasing rather than a strictly functional appearance.

In accordance with this invention, a demountable backrest includes an upper part and separate therefrom, a lower part, the two parts suitably having an approximately equal top to bottom axial length. It should be clearly understood that the requirement that the two backrest parts be separate does not preclude their being attached together with a flexible strap or the like so that the two parts will always be available together for assembly. The upper part has a bounding margin therearound including a lower generally transversely extending margin; similarly the lower portion has a bounding margin therearound including an upper, generally transversely extending margin generally coextensive with the lower margin of the upper part. The backrest further comprises load transfer means for joining the upper and lower backrest parts together with the transversely extending margins generally contiguous with each other. The load transfer means includes matable elements respectively disposed along the transversely extending margins. Preferably releasable fastening means are provided for retaining the upper and lower backrest parts together when the matable elements are engaged to form a unitary backrest.

Generally speaking, the matable elements will have an axis of engagement; in accordance with one embodiment of the invention, the axis is parallel to the top to bottom axis of the backrest, and the matable elements are in the form of pairs of relatively deep pockets and tongues which are received in the

pockets, which elements may be relatively thin in a front to back direction. This form of matable elements is particularly useful where the structural rigidity of the backrest is provided by a frame, as the upholstered finish which normally covers this type of backrest is relatively thin, and any protrusions are desirably minimized so as to avoid discomfort for the user and high spots which will conduce to rapid wear of the upholstered finish. In accordance with another embodiment of the invention, the matable elements are engageable in a transverse direction, which will generally necessitate a somewhat increased front to back thickness of the matable elements. This form of the matable elements is described in relation to a backrest wherein the structural rigidity of the backrest is provided at least in part by a structural foam material, which tends to be relatively thick in relation to the frame-type of backrest. However, it should be appreciated that the invention is not limited to these specific forms of matable elements nor is their use limited in the above manners.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 - is a perspective view from the rear left side of the upper and lower portions of the frame of the demountable backrest seen in proximate disengaged relationship;

FIG. 2 - is a rear elevational view of the upper and lower frame portions, with the right hand side of the frame partially upholstered;

FIG. 3 - is similar to Fig. 2 but shows the frame parts fully upholstered, with a small skirt shown in an upturned position to reveal detail;

FIG. 4 - is a longitudinal mid section of the backrest of Fig. 3, taken along the line 4-4 with the parts in assembled relationship;

FIG. 5 - shows the lower part of the backrest with a carrier bag therefor normally contained in a pouch forming part of the backrest;

FIG. 6 - shows the carrier bag in front elevation with the backrest contained therein for transportation, and

FIG. 7 - is a sectional view on enlarged scale along line 7-7 of Fig. 3 with the parts in their assembled relationship;

FIG. 8 - is a perspective view of a second embodiment of the invention, with the parts shown separated; partly broken away to reveal detail with other detail shown in dashed outline;

FIG. 9 - is a cross sectional view on 9-9 of Fig. 8;

FIG. 10 - is a cross sectional view on 10-10 of Fig. 8;

FIG. 11 - an elevational view corresponding to Fig. 9, with the upholstery removed, and

FIG. 12 - is a perspective view corresponding to Fig. 10, with

the upholstery removed.

DESCRIPTION OF PREFERRED EMBODIMENT

A demountable backrest in accordance with one embodiment of the invention is identified generally by the numeral 10 and includes an upper art 10U and a lower part 10L. Backrest 10 includes a thin shell like frame 12 which may suitably be molded from a high impact plastic material such as polycarbonate resin or laid up from glass fiber reinforced polyester. Frame 12 comprises a lower part 12L and physically separate therefrom an upper part 12U. Frame 12 has a forward facing major surface 14 and a rearward facing major surface 16. Frame 12 has a complex form which in medial longitudinal section, i.e. from top to bottom, which direction may also be referred to as the axial direction, is a shallow S shape, with a forward concavity in the upper frame part 12U and a forward convexity in the lower frame part. A zone of inflexion locates between the concave and convex portions at about mid axial position. Frame parts 12L, 12U have a bounding margin 20L, 20U, therearound, the upper margin portion of the lower frame part being specifically identified by the numeral 22 and the lower margin portion of the upper frame part by the numeral 24. Upper margin portion 22 and lower margin portion 24 locate in the zone of inflexion and are generally coextensive and opposed. Major apertures 26,28 are respectively provided centrally in the lower and upper frame parts 12L, 12U to control the resiliency thereof and heat transmission therethrough.

Three pairs of matable elements 30 are disposed in transversely

spaced apart relationship on frame 12 to inter-connect frame parts 12L, 12U, and to form therewith a means for transferring loads between the upper and lower parts of frame 12 to which backrest 10 will normally be subject in use. Each matable element 30 comprises a tongue 32 and a pocket 34. The matable elements have an axis of engagement which is aligned with the axis of frame 12. Tongues 32 are conveniently disposed on the upper frame portion 12U, and pockets 34 on the lower frame portion 12L, as illustrated, but this could be reversed, or both tongues and pockets formed on each of the frame portions.

Distal portions 36 of tongues 32 project below the lower margin portion 24. The forwardly facing surface of tongues 32 is rearwardly offset from adjacent portions of the forward surface 14 of frame 12, and conveniently forms a continuum of the rearward surface 16 of the frame. The upper proximal end 40 of tongues 32 overlaps frame portion 12U somewhat to increase the axial rigidity and strength thereof in this area, without unduly limiting the transverse resiliency of the frame 12. Preferably tongues 32 are integrally formed with the frame portion, although they may be separately formed and secured thereto should this be desired. The width and thickness of distal tongue portions 36 decrease on approach to the free end thereof to facilitate the entry of the tongues into the entrance 42 to pockets 34.

Pockets 34 are defined in part by the frame portion on which they are disposed, the forward surface 14 thereof forming the front wall of the pockets. The rear wall 44 of pockets 34 is rearwardly offset from the rearward surface 16

and side walls 46, which serves to buttress the frame portion associated therewith to increase the axial rigidity, strength and load transmitting capability thereof, without unduly decreasing the resiliency in the transverse direction. The upper extremity of walls 44 and 46 define in part the pocket entrances 42, which are further defined in part by margin portions 22. A lacuna 50A is formed in margin portion 22 intermediate adjacent pockets 34 for a purpose to be described subsequently. A thin flange 52 surrounds the entrance 42 to each pocket 34, and a similar flange 54 is disposed on each tongue 32 spaced apart from both the distal end 36 thereof and margin portion 24, for a purpose to be described.

Backrest 10 further comprises a means for releasably fastening the upper and lower parts thereof together. As illustrated this comprises two pairs of latchable members 60, Latchable members 60 which locate on frame 12 transversely outwardly of load transfer members 30, comprise a tab 62 suitably secured to upper frame portion 12U rearwardly thereof, and a socket 64 therefor secured to the lower frame portion 12L. Tabs 62 and sockets 64 have an axis of engagement that is axially aligned with the axis of backrest 10. Sockets 64 have an entrance 66 thereto; suitably pocket entrances 42 and socket entrances 66 are in the same plane, and will be somewhat spaced apart from margin portion 24 when the two frame portions 12U, 12L are latched together. The distal end 68 of tab 62 is resiliently movable in the forward direction, and is directed downwardly outwardly at a small angle. Accordingly, as tab 62 is engaged in its socket 64, the tab becomes rearwardly biased, and a shoulder 70 provided on tab 62 will then

5 snap behind a shoulder 72 associated with a rearward surface of socket 64, the socket being rearwardly open beneath should 72. A locating finger 74 locates on tab 62 adjacent the proximal end thereof forwardly of distal end 68; the finger engages an interior wall of socket 64 to counter the resilient biasing action of the tab. A lacuna 50B similar to lacuna 50A is provided between sockets 64 and adjacent pockets 34. A thin flange 76 surrounds socket entrance 66, flanges 52 and 76 being generally contained within the same transverse plane. The means for releasably fastening the upper and lower parts of backrest 10 together is supplemented by a resiliently engageable latch element associated with the medial one of the pairs of matable elements 30, the latch element comprising a latch shoulder 78S integrally formed with tongue 32 and a window opening 78W formed in a wall of associated pocket 34 through which window opening shoulder 78S may latchingly engage.

10 Backrest 10 further includes an upholstery finish 80 separately enveloping each frame portion 12U, 12L. Upholstery finish 80 comprises a relatively thick layer 82 of resilient plastic foam overlying the forward surface 14 of each part of frame 12, which layer wraps over the margins 20U, 20L, other than at margin portions forming part of entrance 42 and 66, and which is preferably adhesively secured to the frame. A thinner layer of plastic foam material 84
20 suitable covers the rearward surface of each frame portion 14,16, also covering the proximal portion 40 of tongues 32, tabs 62 and walls 44,46 defining pockets 34 and sockets 64. In the vicinity of pockets 24 and sockets 64, foam layers 82, 84

are tailored to terminate marginally beyond the plane flanges 52 and 76 to be slightly compressed thereby, and to generally fill lacunas 50A, 50B. Similarly foam layer 82 and 84 associated with the upper backrest part terminate marginally beyond the plane of flanges 76 to be marginally compressed thereby. Foam layer 84 is preferably made to be somewhat thinner or cut away in the vicinity of the location of the distal ends 68 of tabs 62 when engaged in their sockets 64, so that a user may easily locate and apply a manual pressure to the distal ends to unlatch shoulders 72,74 when it is desired to disengage the two parts 10U, 10L of the backrest for transportation and storage purposes.

Upholstery finish 80 further includes a woven stretch fabric cover 86, which is normally sewn up from flat jersey knitted fabric. Cover 86 for the upper part 10U of backrest 10 is provided with openings 88U through which distal tongue portions 36 and distal tab ends 68 project. Similarly, in the cover 86 for the lower part of backrest 10, openings are provided 88L. As the cover 86 is drawn tightly over the respective foam covered frame portion 12L, 12U, the foam layer 82 adjacent to margin portions 22,24 is compressed to form backrest margins 22B, 24B, and cover 86 surrounding openings 88L, 88U is tucked beneath associated flanges 52,54 and 76 to retain the foam in its compressed condition and provide a neatly trimmed appearance.

When the upper and lower halves of backrest 10 constructed in the foregoing manner are latched together, the upholstered finish covering margin 24 will be pressed into touching compressive engagement with the upholstered finish

covering margin 22 and the wall structure defining entrances 42, 66 whereby the demarcation between the two halves will be barely discernible to the view and will not cause any discomfort for a user. A vestigial skirt 90 is formed as an integral part of the cover 86 for the upper half of backrest 10 to mask the demarcation between the two halves of the backrest. The slight compression of the foam layer 82 when the two halves of the backrest 10 are latched together also serves to generate a small force to urge the latching shoulders 70,72 into contact to reduce any tendency to rattle. Additionally, when tab distal end 68 is depressed, the tab will tend to move towards its unlatched position, and it is unnecessary that each pair of latching shoulders be disengaged simultaneously.

It may be noted that when both pairs of shoulders 72,74 are disengaged, this will permit a small degree of relative rotational movement of the upper and lower parts of backrest 10; latching elements comprising latch shoulder 78S and latch window 78W should be configured whereby they will tend to unlatch when the upper and lower backrest parts are relatively rotated, so that it is not necessary for a user to manually unlatch latching shoulder 78S.

A bag 92 is provided for the storage and transportation of backrest 10 when in its demounted condition. Bag 92 is conveniently stored a pouch 94 which is formed between the cover 86 for the lower backrest part and its underlying foam layer 84, and which is bounded by layer 82 when it wraps over the bounding margin 20L. The foam layers which form part of pouch 94 are covered by a slick skin 94S so as not to crumble and disintegrate over time. Pouch

94 has a flap entrance 96 thereto, which also permits the removal of cover 86 for cleaning purposes. A web 98 interconnects bag 92 to the interior of pouch 94.

In a second embodiment of the invention seen in Figs. 8 through 19, structural elements that are similar to those of the first embodiment are similarly numbered with the addition of 100. Thus a backrest 110 of the second embodiment comprises an upper part 110U and a lower part 110L each having a bounding margin respectively defined in part by margin portions 122 and 124. Matable elements 130 are provided along margin portions 122 and 124, which elements comprise a transversely extending web 132 having a plurality of key elements 133 which project therefrom adjacent the lower edge thereof at spaced apart intervals on opposed sides thereof. Matable elements 130 also comprise a transversely extending slotted member 134 having an entrance 142 thereto which connects to an underlying keyway 143 along which key elements 133 are slidable in a transverse direction. Entrance 142 is shaped to permit the entry of key elements 133 into keyways 143, the matable elements engaging and disengaging with a bayonet movement. Key elements 133 are chamfered at 145 along their leading edges to facilitate their passage into keyways 143. A plurality of thin blade like members 147 project in an axial direction from the matable elements 130 in the plane of web 132 to form therewith a load transfer means, members 147 being encapsulated within and bonded to a relatively thick structural foam 184 which provides much of the desired rigidity for backrest 110.

A thin flange 152 surrounds entrance 142 to form a trim covering

underlying structure. A plurality of transversely elongated aligned beads 149 are provided on opposed sides of web 132 vertically spaced apart from key elements 133. A thin flange 154 having a continuous slot therealong is supported on beads 149 to form a trim covering underlying structure. Hook and pile tabs 162 are used for retaining backrest 110 in its assembled relationship.

It will be apparent that many changes may be made to the illustrative embodiments, while falling within the scope of the invention and it is intended that call such changes be covered by the claims appended hereto.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:-

1. A backrest having a top to bottom longitudinal axis and including:

an upper backrest part having a bounding margin therearound including a lower generally transversely extending margin portion;

a lower backrest part separate from said upper part and of approximately the same top to bottom axial length as said upper part, said lower part having a bounding margin therearound including an upper generally transversely extending margin portion generally coextensive with said lower margin portion of said upper part, and

load transfer means for demountably joining said upper and lower backrest parts together with the transversely extending margin portions generally contiguous with each other to form a unitary backrest, the load transfer means including matable elements respectively disposed along the transversely extending margin portions.

2. A backrest as defined in Claim 1, wherein each said part comprises a shell frame, and wherein said matable elements are disposed on said shell frame to form therewith said load transfer means.

3. A backrest as defined in Claim 2, wherein said shell frame forms at least a part of said matable elements.

4. A backrest as defined in Claim 2, wherein said matable elements comprise a plurality of pairs of tongues and pockets therefor disposed at transversely spaced apart intervals along said upper and lower margin portions.

A backrest as defined in Claim 4, wherein said pockets



each have an entrance thereto for receiving respective tongues therein, and said entrance is surrounded by a thin flange.

6. A backrest as defined in Claim 4, wherein at least one of said pairs of tongues and pockets is provided with a latch element for releasably retaining said at least one pair in mated relationship.

7. A backrest as defined in Claim 1, 2 or 3 further comprising releasable fastening means for releasably retaining said matable elements in mated relationship.

8. A backrest as defined in Claim 7, wherein said releasable fastening means includes a tab and socket therefor having cooperating shoulder means, and means is provided for resiliently biasing said shoulder means into engagement as said tab is urged into said socket to lock said tab therein.

9. A backrest as defined in Claim 8, wherein distal portions of said tab project beyond said socket therefor when said shoulder means is engaged, said distal portions serving to permit a manual pressure to be applied to said tab to disengage said shoulder means and the withdrawal of said tab from said socket therefor.

10. A backrest as defined in Claim 2, including an upholstered finish separately covering said shell frame of each part.

11. A backrest as defined in Claim 1, wherein said matable elements engage together along a transverse axis.

12. A backrest as defined in Claim 1, wherein one of said parts includes a pouch, and wherein bag means is secured to the interior of said pouch by connecting web means, said backrest when demounted being insertable into said bag means for transportation.



13. A backrest as defined in Claim 12, wherein said backrest comprises an upholstered finish including a resilient foam layer and a fabric cover layer and said pouch is defined by said layers.

14. A backrest as defined in Claim 1, wherein one of said margin portions is surrounded by a skirt which surrounds the other of said margin portions when said parts of said backrest are joined together.

15. A backrest substantially as hereinbefore described with reference to Figs. 1 to 7 of the accompanying drawings, or modified as described with reference to Figs. 8 to 12 of the drawings.

Dated this 7th day of June, 1995.

BIO-SUPPORT INDUSTRIES, LTD.
By its Patent Attorneys
AHEARNS

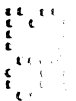


ABSTRACT OF THE DISCLOSURE

DEMOUNTABLE BACKREST

A backrest comprises upper and lower parts which are separable to facilitate the transportation of the backrest. The parts have easily engageable matable elements and locking elements to permit the parts to be assembled and disassembled without the use of any tool.

FIGURE 3



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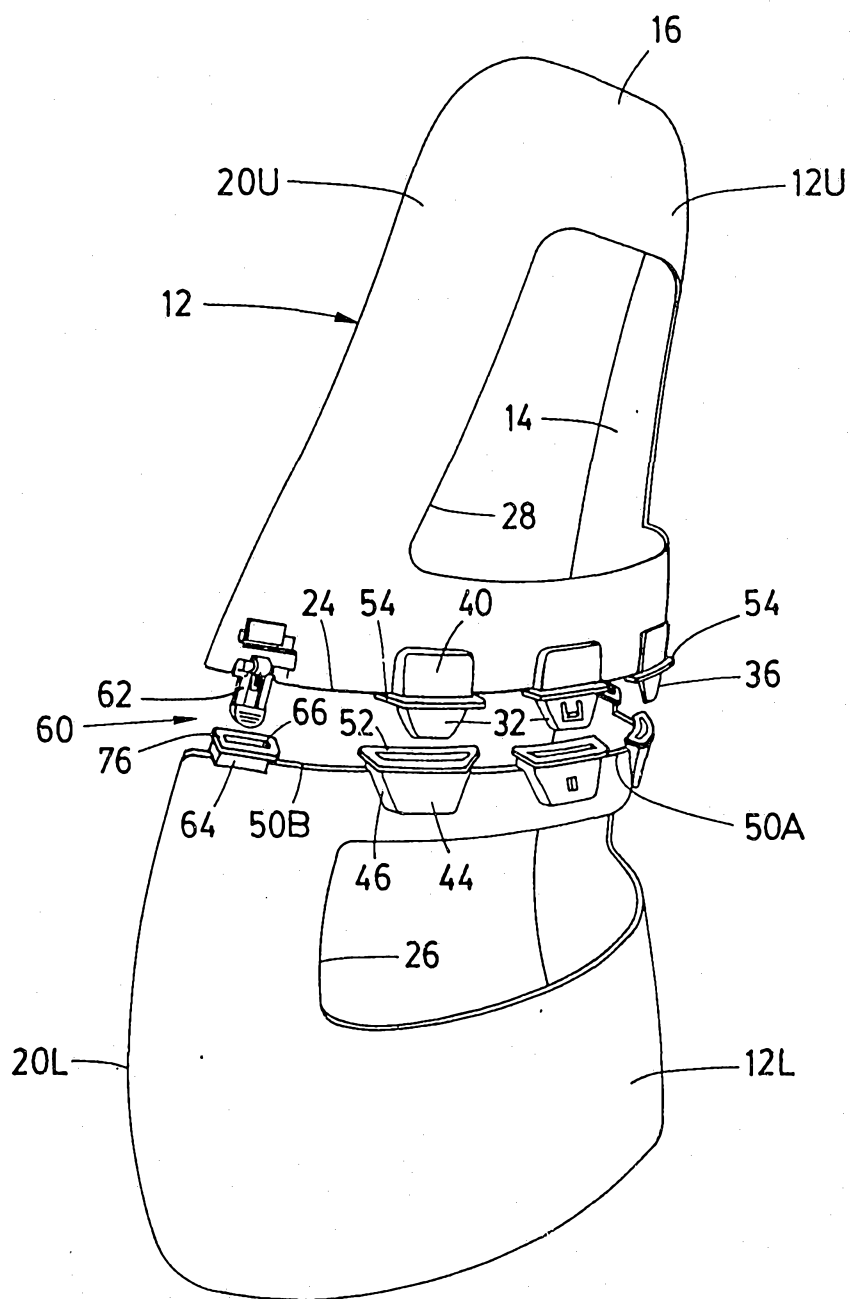


FIG. 1

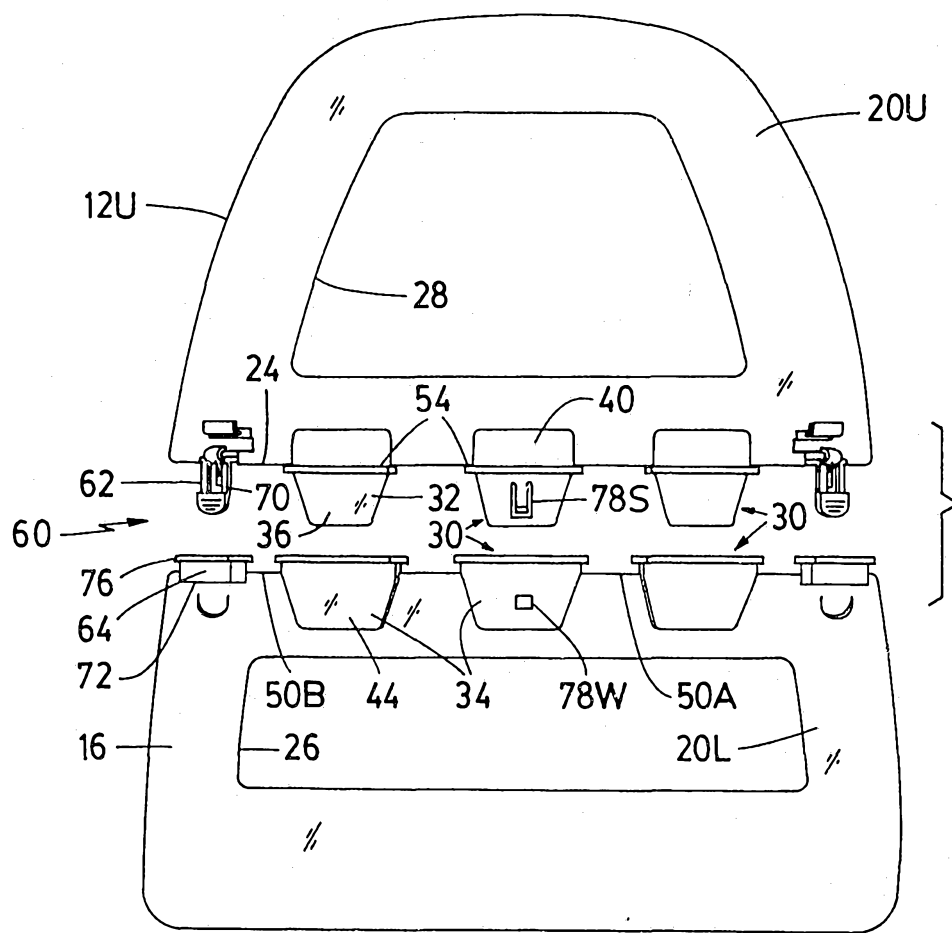


FIG. 2

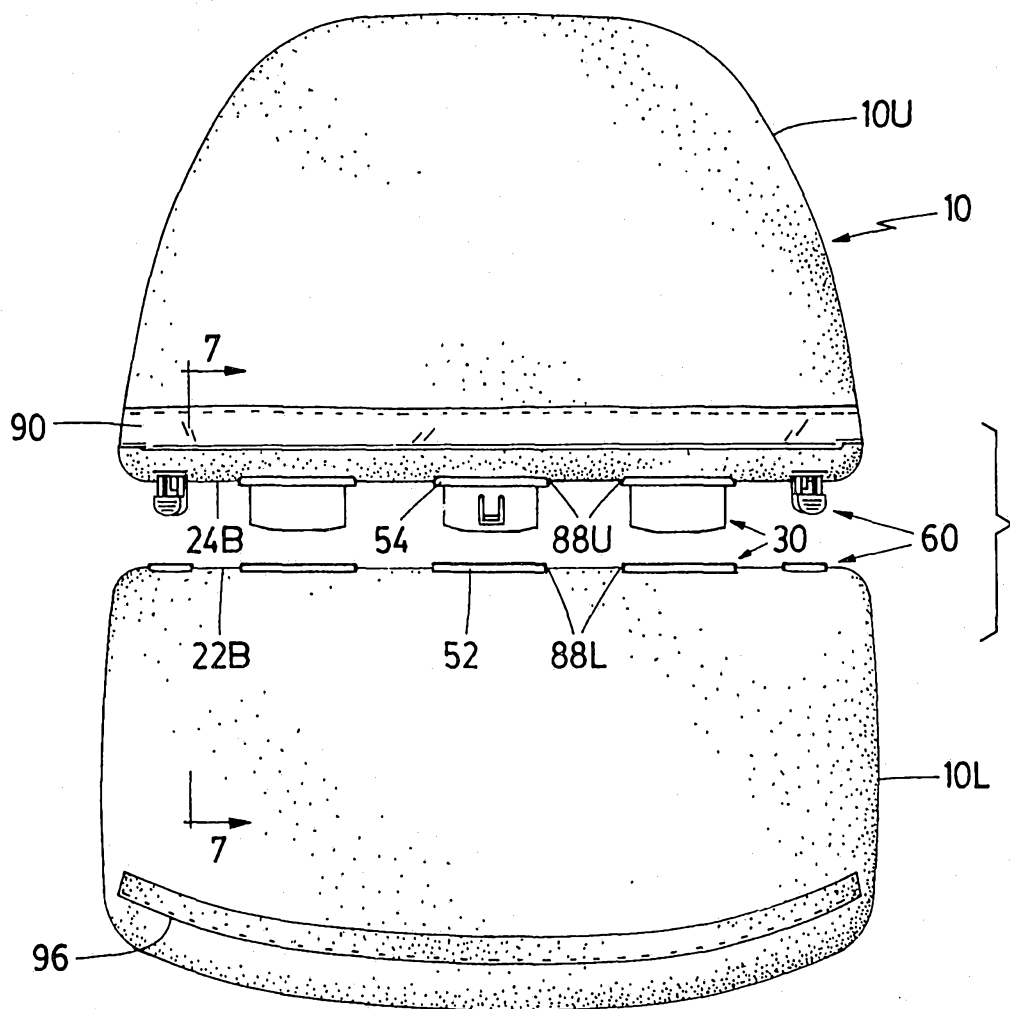


FIG. 3

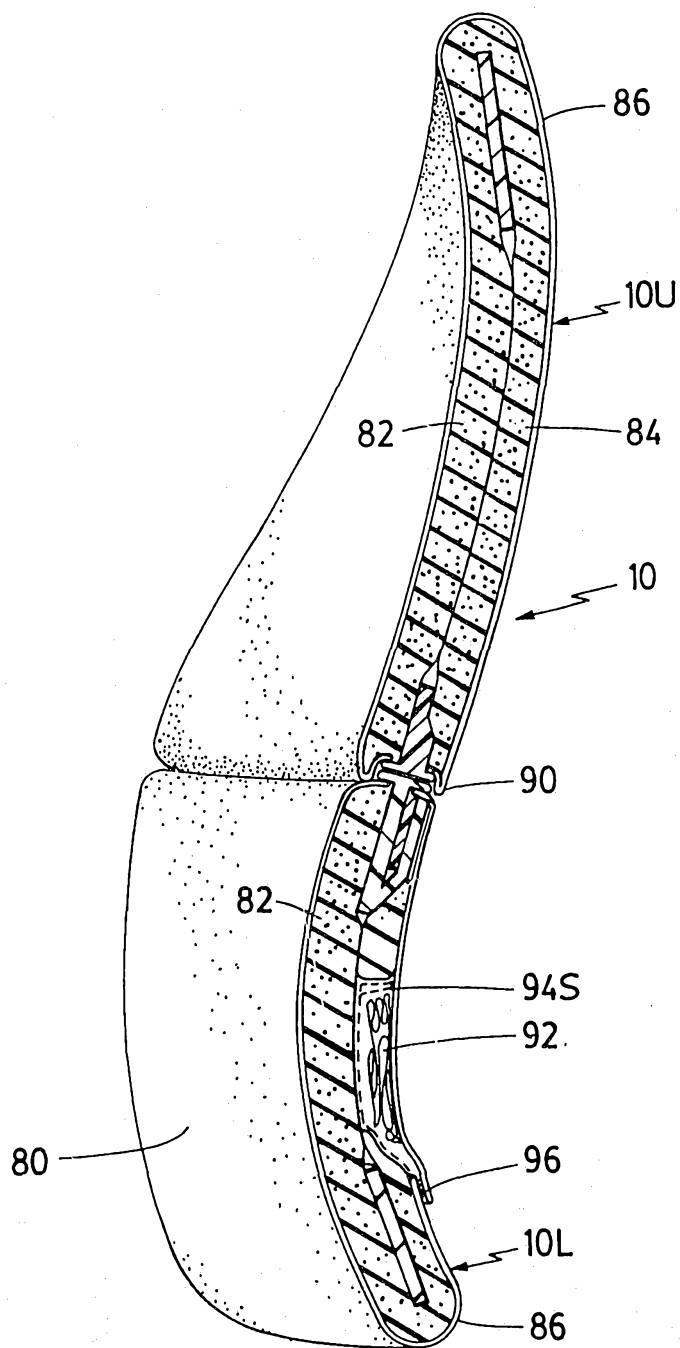


FIG. 4

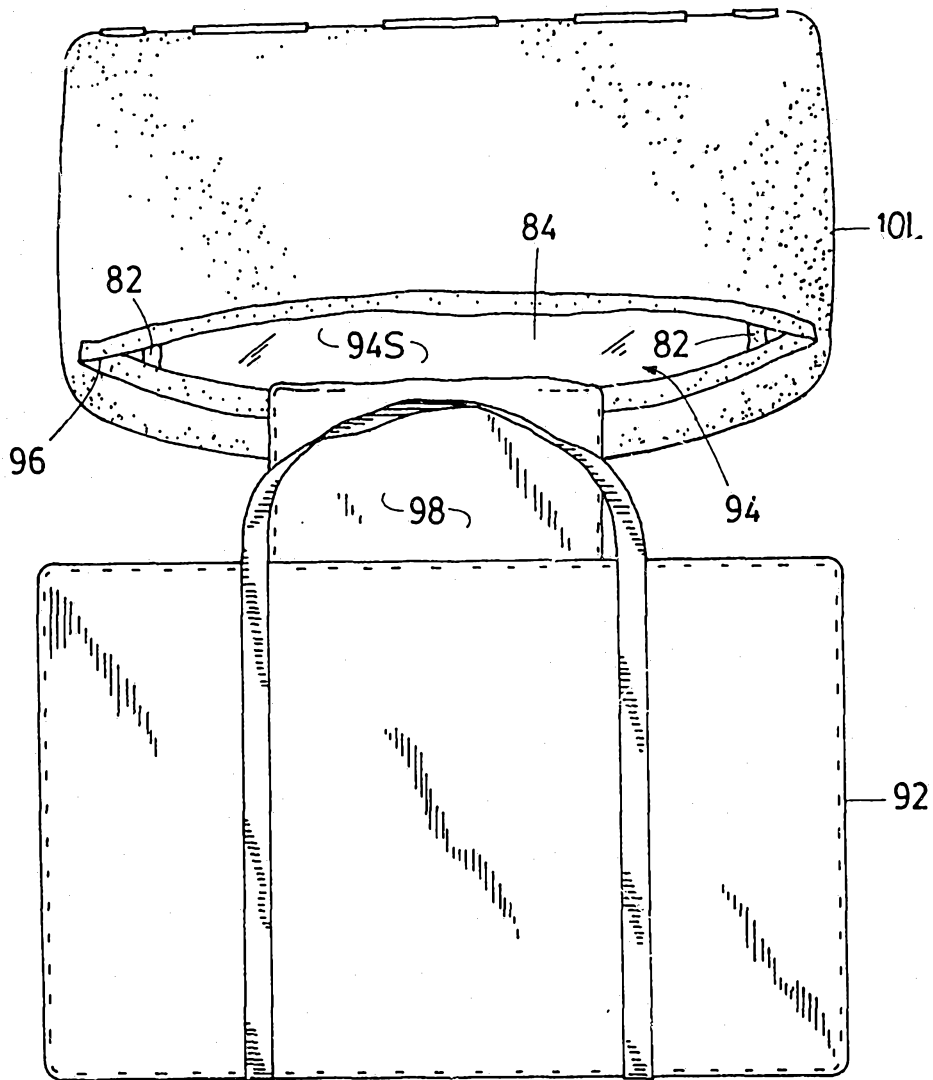


FIG. 5

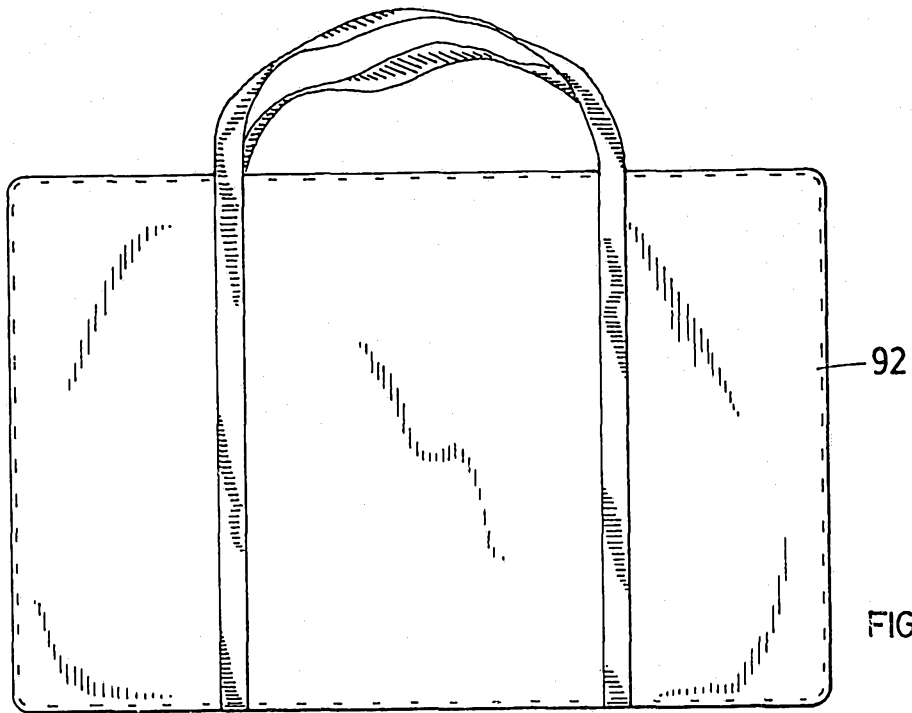


FIG. 6

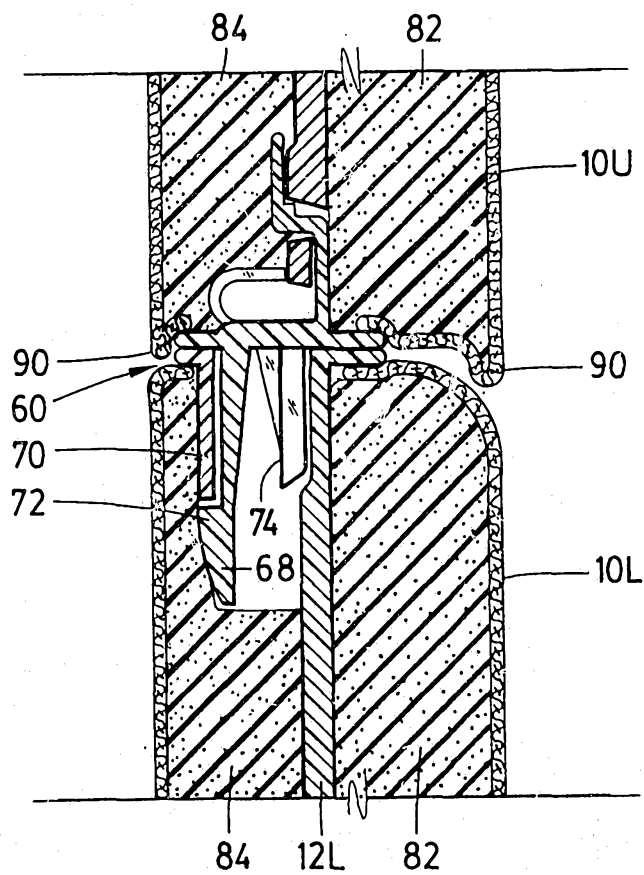


FIG. 7

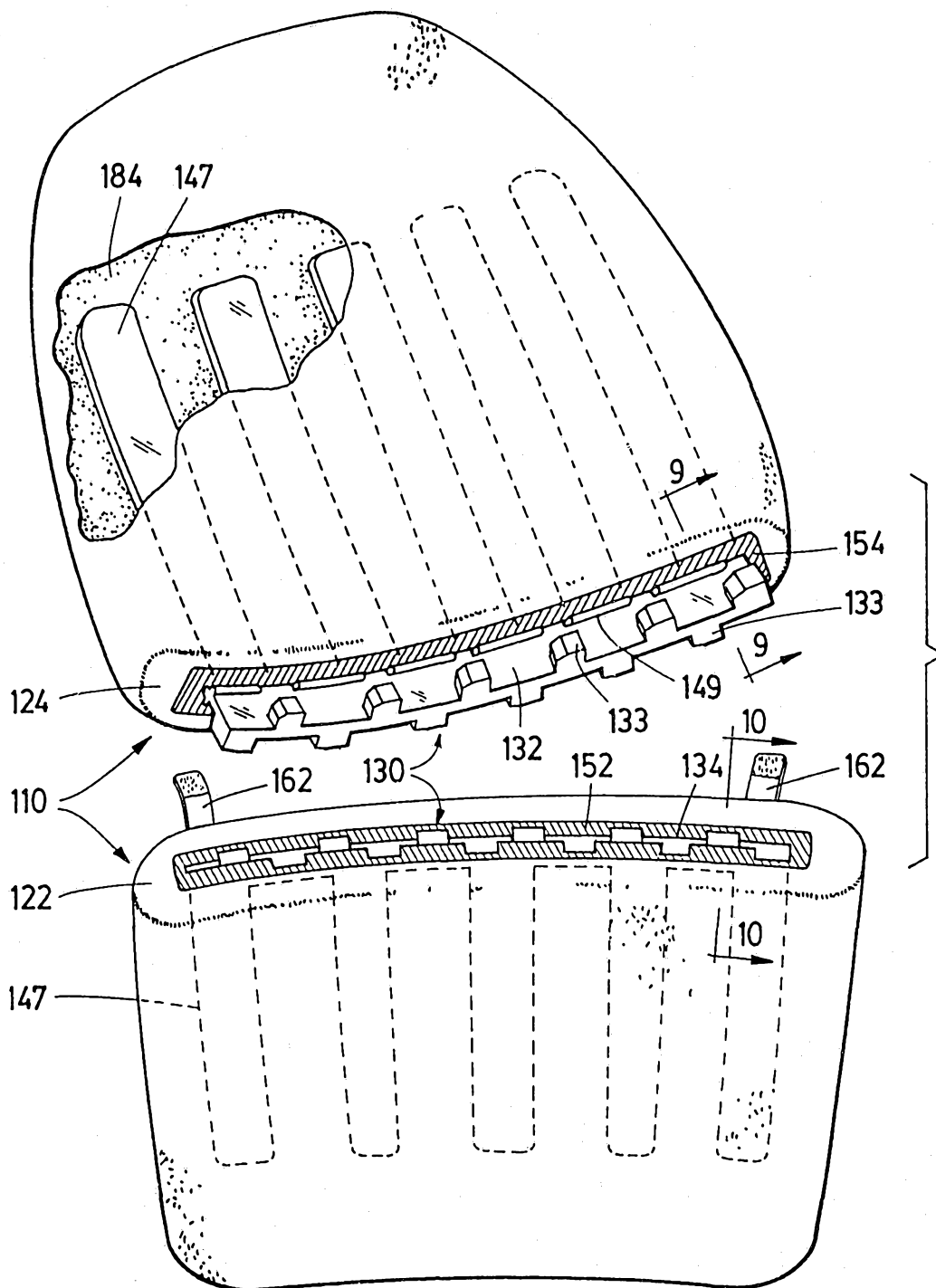


FIG. 8

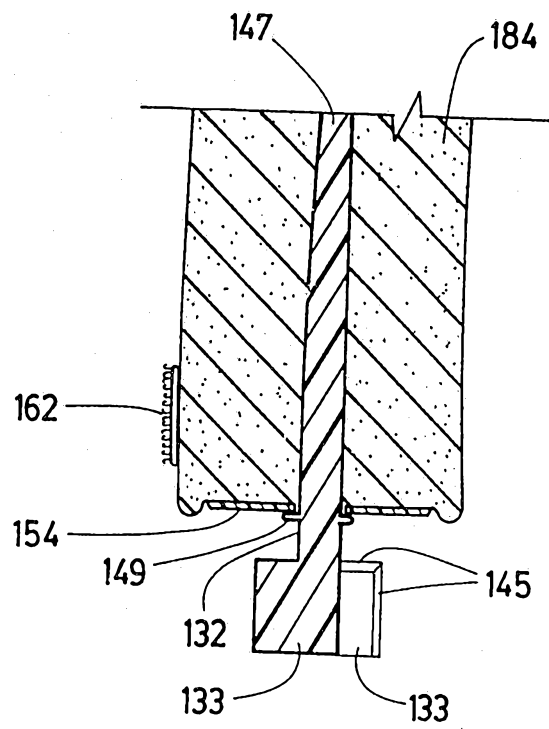


FIG. 9

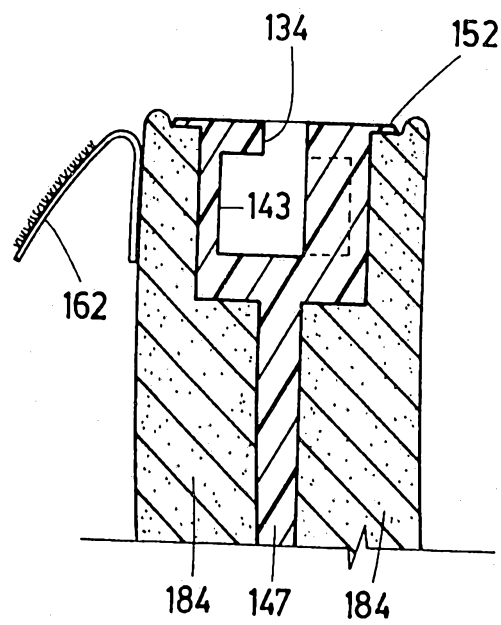


FIG. 10

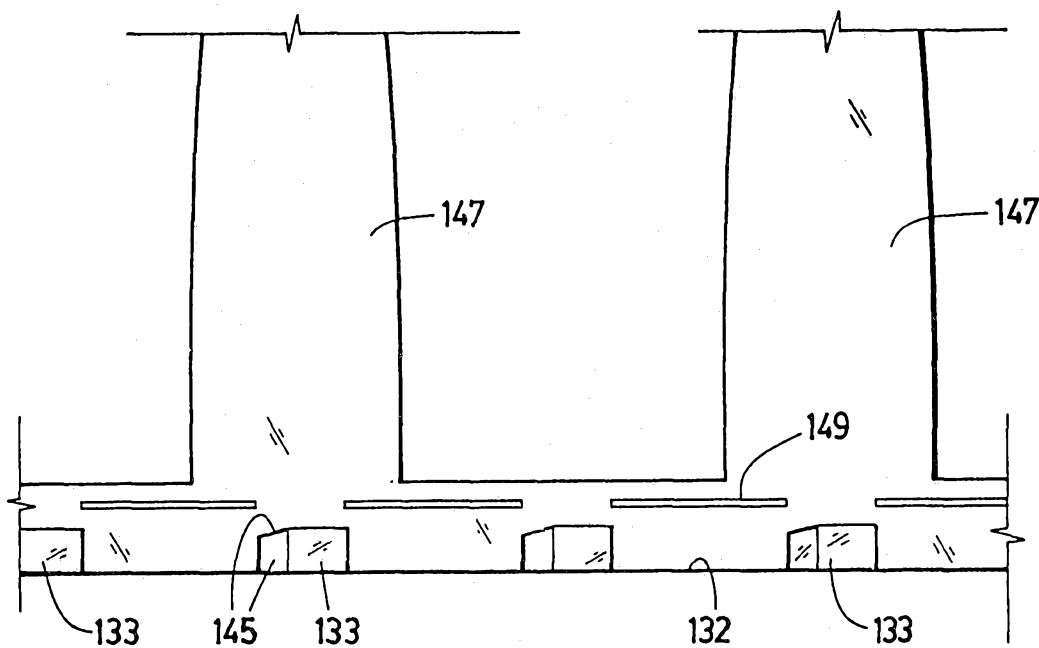


FIG. 11

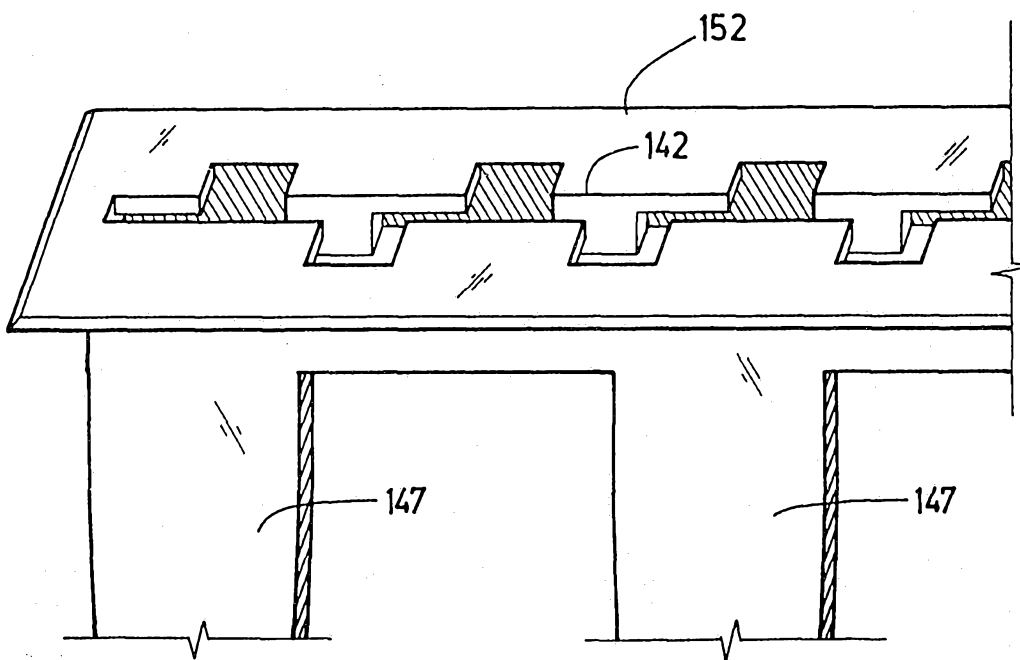


FIG. 12