United States Patent [19]

Dodd

[11] **3,903,554**

[45] **Sept. 9, 1975**

[54] **SEATING UNIT WITH REMOVABLE LIFE PRESERVER SECTION**

[75] Inventor: **Malcolm J. Dodd**, Litchfield, Conn.

[73] Assignee: **Universal Oil Products Company**, Des Plaines, Ill.

[22] Filed: **Dec. 19, 1973**

[21] Appl. No.: **428,647**

[52] **U.S. Cl.** **9/7**; 297/193

[51] **Int. Cl.**[2] **B63B 29/04**

[58] **Field of Search** ..... 9/7, 12, 312; 244/122 R; 5/355; 297/192, 193, 335

[56] **References Cited**

UNITED STATES PATENTS

878,267	2/1908	Baker	297/193
1,368,397	2/1921	Hussander	297/193
3,152,343	10/1964	Brown	9/312
3,154,345	10/1964	Lambrecht	9/12
3,516,098	6/1970	O'Link	9/12

Primary Examiner—Trygve M. Blix
Assistant Examiner—Stuart M. Goldstein
Attorney, Agent, or Firm—James R. Hoatson, Jr.; Philip T. Liggett; William H. Page, II

[57] **ABSTRACT**

A removable closed-cell foam life preserver with relatively flat surfaces is used as a portion of the seat cushion base material in a seating unit. Additional closed-cell foam pieces are used in and around the removable life preserver to provide a complete seat base portion of uniform thickness and resiliency and to define a space for the placement and storage of the life preserver section. These additional foam base pieces may be attached to a seat base or support pan or, alternatively, they may be attached at least in part to a liftable seat cover section. Preferably, the latter will incorporate a layer of open-cell foam so as to give seating comfort over the less deformable closed-cell foam life preserver and the other base pieces in the seating unit.

4 Claims, 5 Drawing Figures

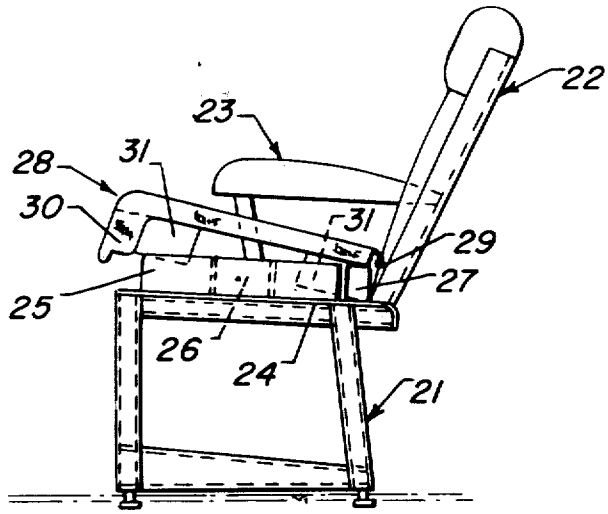


Figure 1

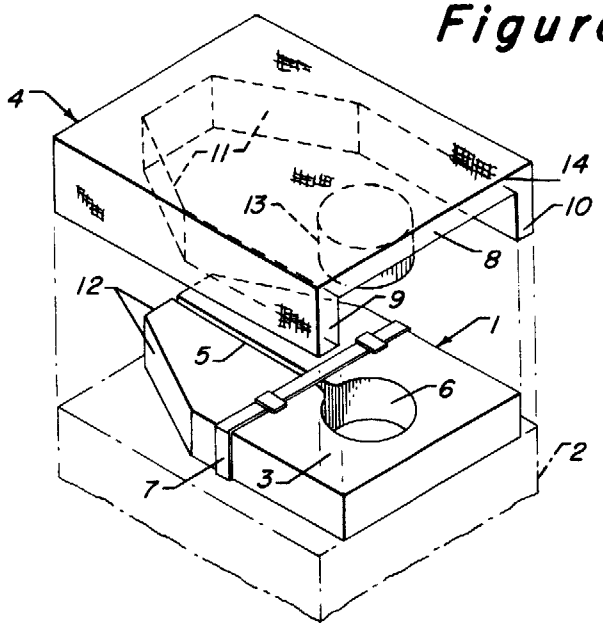


Figure 2

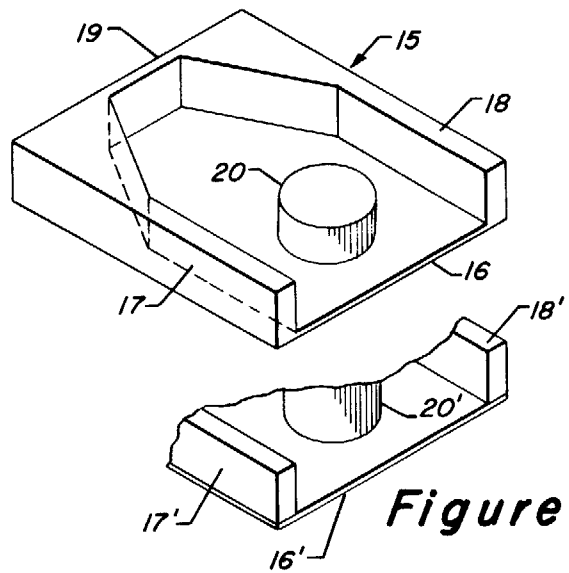


Figure 2A

Figure 3

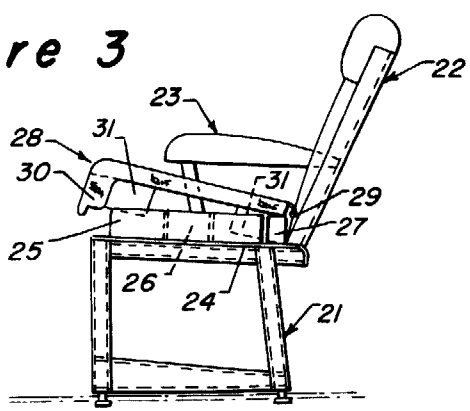
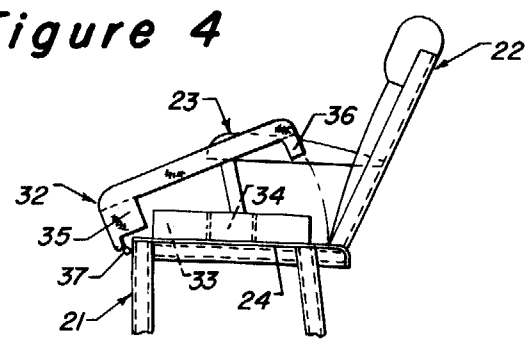


Figure 4



SEATING UNIT WITH REMOVABLE LIFE PRESERVER SECTION

This invention relates to a seating unit which utilizes a removable closed-cell foam life preserver as a part of the seat base portion and, in addition, has a liftable seat covering portion which will be positioned over and in part supported by the life preserver section.

More particularly, there is a defined space provided in the base portion of a seating unit such that a life preserver section may be readily lifted and replaced within the seat and, preferably, the life preserver will have generally flat surfaces such that it can rest on a seating unit support pan, or whatever, and will also provide an even surface for the underside of a liftable seat covering section.

As is now generally known, it is customary, or required, that aircraft flying over water, as well as passenger carrying water-craft, shall make provisions for supplying a life preserver or some auxiliary floatation device for each passenger or seat of the carrier. Even for small pleasure boats, it is generally required that each passenger shall carry a life preserver or floatable seat cushion as a safety measure.

With respect to the present invention and in its simplest embodiment, the seating unit may be made up in a manner to be a portable seat cushion unit, without a back, which in turn carries a removable closed-cell foam life preserver; however, in a more general aspect the seating unit may comprise the seating portion of an airplane seat, a hydrofoil seat, or of any other type of passenger carrying boat or vehicle where it is deemed desirable to have life preservers for each seat. It is, of course, not novel to utilize closed-cell foam for life preservers or floatation members. For example, U.S. Pat. Nos. **3,268,926** and **3,369,262** set forth different ways to provide floatation cushions that are composites of opencell and closed-cell foam which may be lifted out and taken with the seat occupant as an emergency life preserver. Also sufficient closed-cell foam will be used to satisfy governmental standards in providing auxiliary floatation equipment. However, composite seat cushions with both opencell and closed-cell foam materials are rather large and bulky and obviously not of an ideal shape to be carried and strapped onto a person as a life preserver.

Thus, it is a principal object of the present invention to have a seating unit that provides for both the use of, and the storage of, a removable life preserver section that can be entirely of closed-cell foam except for the necessary strap and buckling means for the attachment of the life preserver to the person. The use of a separate removable life preserver section of all closed-cell foam further permits having a more conventional shape and size for the life preserver with the generally desired opening to place around the neck of the wearer, as well as the greater buoyancy.

As heretofore set forth, it is also an object of the present invention to make use of the thickness of the closed-cell foam of the life preserver to serve as a resilient portion of the base for the overall seating unit, while additional surrounding and/or interiorly positioned closed-cell foam sections can provide the rest of the base of the unit in a manner to have about the same compression characteristics and supporting for a top covering section so as to, in turn, provide for passenger comfort.

In a broad embodiment, the present invention provides a seating unit incorporating a separate life preserver member as a part of the seat cushion base material, which comprises, a removable, closed-cell foam life preserver section sized and shaped to lay within the boundary of the seat cushion portion of the seating unit, said section thereby serving as a part of a resilient seat cushion base, additional closed-cell foam sections sized to fill in void portions of said life preserver section to provide substantially uniform thickness and resiliency for a resulting complete closed-cell foam seat cushion base of the seating unit, a liftable seat cushion covering portion for said seating unit adapted to be positioned over and supported by said life preserver section and said additional closed-cell foam sections, and means holding at least a portion of such additional sections in proper placement in said seating unit to thereby provide a defined space for said life preserver section.

Where desired, the life preserver may be of a generally rectangular form with a partially split portion and an opening to go around the neck of the wearer such that it may be worn in the manner of a yoke and, also, the overall dimensions of the preserver may be sufficiently large to provide most of the closed-cell foam base portion of the seating unit. However, generally the life preserver can be of somewhat smaller dimensions than the area of the seat cushion or the base for the seat cushion, and it will be of a non-rectangular, yoke-like configuration such that additional pieces of closed-cell foam will be required to fit around at least a portion of the exterior of the life preserver section, as well as to have an additional portion to fit within any neck opening. As a result, the life preserver section will generally be fitted within a space at least partially encompassed by one or more pieces of base support material.

It may also be pointed out that the additional pieces within or partially surrounding the life preserver section should be of the same general thickness as such section and of the same type of material so as to provide uniform support and resiliency characteristics for the entire resulting base portion of the seating unit. The additional pieces within and/or around the life preserver section may be attached to a lower pan section of a seating structure or they may be molded and formed to comprise a part of a unitary section such that there is a void space which will be filled with the removable life preserver section. In still another arrangement, the additional closed-cell pieces may be attached to the upper, liftable seat covering section and thus liftable therewith separate and apart from the life preserver section which will be lifted separately from the seating unit or from a seat support member. In a preferred construction, the top cover section will embody a layer of open-cell material so as to give greater seating comfort to an occupant and the additional pieces that may be attached thereto will be of closed-cell foam. Attachment may be by an adhesive, thermal bonding, or by suitable fabric covering, strap means, or other attachment means. Also, where the additional closed-cell pieces which are utilized in or around the life preserver section are attached to a support pan or base section, then such pieces may be sewn, strapped, fastened with adhesive, or otherwise attached to the particular seat support piece. In any event, in connection with any of the various embodiments that may be utilized for the present improved form of seating unit, the additional pieces used to complete the formation of

a seat base portion along with the life preserver section will be arranged to define a suitable space for the storing of the removable life preserver section whereby the latter can be readily lifted out and accessible for use by the mere lifting of the top cover section.

In order that a top cover section will not be totally displaced and lost from a seating unit, the cover section may be in effect hingedly attached to one edge of the seating unit whereby the hinged lifting of the cover section will provide access to the life preserver section. For example, the fabric covering for the top cover section may have one or more points of attachment along the rear portion of the seating unit, along a front edge, or even along one side portion of the seating unit such that the covering portion may be lifted in the manner of a hinged box top to provide access to the life preserver section. Also, as heretofore set forth, a preferred arrangement or design will provide relatively flat surfaces for the life preserver section so that it will, in turn, provide uniform even support for the top cover section as well as effect a relatively flat fitting within the bottom of the seating unit.

The closed-cell foam comprising the separate removable life preserver section, as well as the encompassing cushion base sections, may be made of closed-cell vinyl chloride polymer foams, or equivalent materials and the open-cell foam material which is preferably used within a liftable cover section may comprise any of the flexible resilient open-cell materials such as polyurethane foam, latex foam rubber, and the like. With respect to the terminology used, it may be further noted that open-cell foam materials will not necessarily have **100** percent interconnecting cells in that suitable resilient open-cell materials may have about **75** percent of the cells interconnecting and still provide an acceptable cushioning material. On the other hand, the closed-cell material will not necessarily have **100** percent closed-cell but will have a substantially preponderance of at least about **75** percent of the cells being closed and still provide suitable buoyant material suitable for life preserving characteristics.

Reference to the accompanying drawing and the following description thereof will serve to illustrate the present improved seating unit which incorporates a removable life preserver section, as well as assist in setting forth variations and advantages which may be obtained in the present improved type of construction.

FIG. **1** of the drawing is a diagrammatic isometric view indicating a removable life preserver section as a major portion of the seat base material and a removable cover section with projecting sections to fit in and encompass the life preserver section so as to provide a complete seating unit.

FIGS. **2** and **2A** indicate diagrammatically modified base sections for the seating unit where separate base support pieces define a space for the removable life preserver section.

FIG. **3** of the drawing indicates diagrammatically how the liftable seat cover portion may be hinged along a rear edge of the seating unit to open in a hinged lid fashion.

FIG. **4** of the drawing indicates diagrammatically how the liftable seat cover section may be hingedly attached along a front edge portion of the seating unit to provide access to the removable life preserver section.

Referring now particularly to FIG. **1** of the drawing, there is indicated a life preserver section **1** which is provided with relatively flat upper and lower faces such that it may be readily laid upon a suitable support base **2** and in addition provide a top face **3** suitable to provide a relatively even uniform support for a removable or liftable cover section **4**. The life preserver section **1** is also indicated to have a yoke-like shape with a longitudinal split at **5** and an opening at **6** such that the life preserver may be pulled apart and slipped around the neck of the person desiring to use the life preserver. In addition, the life preserver section **1** will have strap means **7** and buckle means (not shown) which can be utilized to strap the life preserver to a wearer and prevent the loss of the life preserver while the person may be struggling in a body of water.

It is not intended to limit the life preserver **1** to any one predetermined shape or size although typically it will have sufficient length, width and depth of the particular closed-cell foam material to provide the required buoyancy to satisfy any governmental regulations. Typically, the life preserver section can have a thickness of **3** to **4** inches and dimensions which will be somewhat smaller than the length and width of a particular seat such that additional closed-cell foam base pieces will be required to complement the life preserver section **1**, i.e. to fill in the voids within and around the life preserver section so as to provide a complete seat cushion base of uniform thickness and resiliency to, in turn, support the upper layer of liftable covering **4**.

Typically, the liftable top cover portion **4** of the seating unit will embody at least some open-cell material as a layer over the seat cushion base material and may for example comprise a layer such as portion **8** which will extend from front to back over the entire unit and over all the closed-cell base material. In accordance with the embodiment of FIG. **1**, cover section **4** will also have depending closed-cell sections such as **9** and **10** that can fit around and encompass the front and back edge portions of life preserver section **1**, as well as have angular pieces at **11** to fit around the tapered end portions at **12** on life preserver **1**. In addition, a generally circular piece **13** depends from the central portion of cover section **4** in a position to fit into the opening **6** of life preserver **1** so as to fill in the void caused by such hole. The depending portions **9**, **10**, **11** and **13** may be attached to the open-cell foam layer **8** by suitable adhesives, glues, stitching, thermal bonding, or whatever, or alternatively may be held in place by a suitable covering fabric or the like.

In the present embodiment, there is indicated diagrammatically the placement of a top cover fabric **14**, or other suitable covering material, which will extend at least around the top front and back edge portions of the liftable cover section **4**. Also, where desired, an encasement fabric or other type of encasement material can encompass the entire liftable cover section **4**.

Referring now particularly to FIG. **2** of the drawing, there is indicated a modified design where the seating unit may have a molded one-piece section **15** which, in turn, provides a relatively thin bottom section **16**, front and rear wall sections **17** and **18**, end portion **19** and a centrally disposed circular section **20**. In this type of construction and arrangement, each of the upwardly projecting pieces or sections will comprise closed-cell foam material of substantially the same height as the removable life preserver section which will fit into the void space provided in the central portion of the

molded unit such that a uniform thickness and uniform resiliency will result from the entire complete base portion for the seating unit and be suitable to have a liftable cover section positioned thereover. In this instance, the liftable cover section would not have any depending pieces required to serve as cushion base pieces although suitable depending edge pieces may be provided around all or a part of the periphery of a cover section such that it may be lifted and removed in the manner of a box top to provide access to the removable life preserver section.

In FIG. 2A of the drawing, there is indicated a modification of the design and construction of FIG. 2 in that a seat base member 16' may be provided of different material than the closed-cell foam pieces filling the void around a life preserver section. In other words, the additional pieces such as 17', 18', 20' etc., will be glued or otherwise attached to the separate pan section 16'.

In FIG. 3 of the drawing, there is indicated diagrammatically a passenger vehicle type of seating unit with a lower support section 21 and a back portion 22, which may be moved for recline positioning, arm means 23, and a seat pan section 24. Such seating unit may, for example, comprise a passenger seat such as may be used in aircraft, a water ferry-boat, hydrofoil or jetfoil craft, and so forth. In connection with this FIG. 3, there is indicated diagrammatically the placement of a removable life preserver section 25 on the seat pan section 24 at a defined position as may be designated by the placement and attachment of an interior circular member 26 to seat pan 24 as well as the placement of a rear member 27. The members 26 and 27 will be of closed-cell foam to complement and fill in void portions around the life preserver 25 in the seat cushion base portion for the overall seating unit. There is also indicated diagrammatically the utilization of a liftable cover section 28 which is hingedly attached at 29 along a rear edge portion thereof to the back of the seat structure such that the entire cover section may be lifted in a hinged lid manner. There is also indicated the utilization of depending closed-cell foam pieces at 30 and 31 from cover section 28 such that additional void areas around removable life preserver section 25 will be filled in to complete the cushion support portion of the seating unit. An entire upper layer of open-cell foam and suitable fabric means may be provided as a part of cover section 28 to fit over the entire seat cushion base material and the life preserver section 25 such that there is uniform support as well as resilient seating comfort for a seat occupant.

In FIG. 4 of the drawing, there is another modification with respect to design and configuration in having a front attachment for a hinged cover section 32 to fit over a removable life preserver section 33. In this instance, the latter may be held in place initially by a suitable interiorly positioned circular piece 34 extending from and attached to seat pan section 24 while remaining portions closed-cell foam pieces filling voids around the life preserver are attached to liftable cover section 32. In other wordsk, the words, is provided with front and rear closed-cell portions at 35 and 36 to provide front and rear pieces to complement life preserver 33 in effecting the completion of cushion base material. In some instances, it may be determined that a front piece 35 could be of open-cell foam. In FIG. 4, there is also an indication that the liftable cover section 32 will be hinged at 37 along the front edge portion of seat support means 21 such that there is a front hinging for the cover section to obtain access to the removable life preserver section 33. The hinging at 37 may be accomplished through the attachment of fabric or other material placed over the cover section 32 or it may be accomplished by separate strap means stitched or otherwise attached between the seat cover 32 and the seat supporting structure. In other words, it is not intended to limit the present invention to any one method of effecting the hinged attachment between a cover section and a seat support structure as relating to the present improved seating unit. Although not shown in the drawing, additional cushion base sections may be provided along sides or end portions of the life preserver section 33 to fill in any voids of the seat cushion base, as well as to define the space within base portion for the life preserver.

It is to be realized that the shape of the life preserver shown in the various figures of the present drawing is merely diagrammatic and that various configurations may well be utilized in sizing and shaping such section. It is, however, a particular feature of the present invention that the life preserver section will comprise at least a major portion of the cushion base material and will be formed of closed-cell foam such that there is buoyancy available for use as a life preserver device as well as some resiliency in serving as cushion support material. There may also be variations in the overall thickness of the seating unit with varying depths, or thicknesses, for the closed-cell material as well as for open-cell material as part of the liftable cover section of the unit. Although the material forming the covering layer of the liftable cover section may be other than of open-cell foam and may be of relatively shallow depth, it is to be recognized that the less depth the greater sacrifice in comfort to a seat occupant.

In another aspect, various types of strapping and buckling arrangements may also be utilized in combination with the removable life preserver section and it is not intended to limit the present invention to any one type of buckling system or strap arrangement. The strap shown in the drawing is merely diagrammatic to indicate that strap means can be, or should be, provided in combination with the life preserver section.

I claim as my invention:

1. In combination with a vehicle seat structure having a seat base section, a seating unit incorporating a separate removable life preserver member as a part of the seat cushion base material to be supported from the seat base section which comprises, a removable, closed-cell foam life preserver section sized and shaped to be of smaller dimensions than the boundary of the seat cushion portion of the seating unit, additional closed-cell foam sections being of a size to fill in void portions of said life preserver section with respect to said boundary of said seat cushion portion of the seating unit, said closed-cell sections being of substantially uniform thickness, and providing resiliency for a resulting complete closed-cell foam seat cushion base of said seating unit, with said additional closed-cell foam sections on said seat base section bounding and forming an upwardly facing opening complementary in size to said life preserver section, and providing for its non-attached placement therein on the seat base section, and a liftably attached seat cushion covering portion for said seating unit positioned over said additional closed-cell foam sections and said life preserver section

and being non-attached to the latter, said liftable seat cushion covering portion having a layer of open-cell foam to provide improved seating comfort and being provided with a hinged attachment in interconnection with said seat to provide a resulting hingedly-movable cover portion over the life preserver section resting on said seat base section, whereby said life preserver section is readily liftable from its defined stored positioning on said seat base section.

2. The seating unit of claim **1** further characterized in that said liftable cushion covering portion has attachment means in association therewith as the means holding at least a portion of the additional closed-cell foam sections that fit in and around said life preserver section.

3. The seating unit of claim **1** still further characterized in that said liftable covering portion is removably attached at the rear thereof.

4. The seating unit of claim **1** still further characterized in that said liftable covering portion is removably attached at the front thereof.

* * * * *