Feb. 22, 1966 W. M. EMERY 3,235,892

BACK RESTS AND AQUA CHAISES

Filed Sept. 10, 1965 3 Sheets-Sheet 1

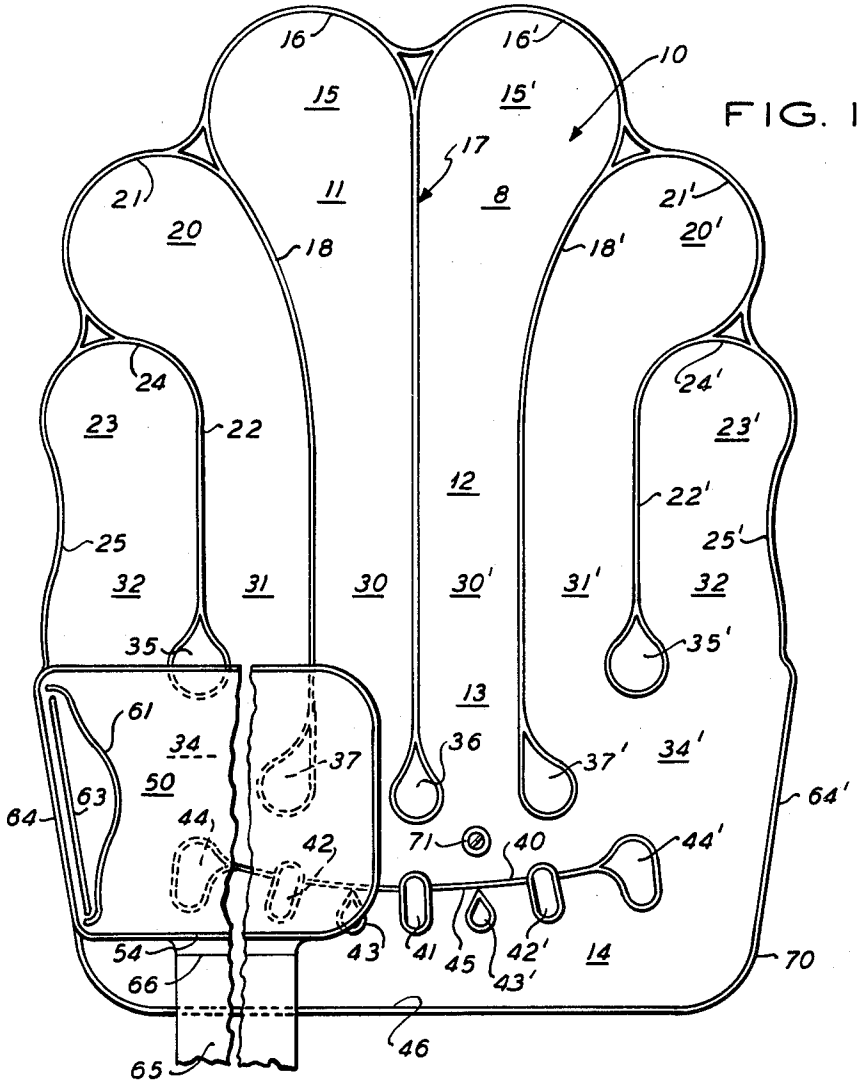


FIG. 1

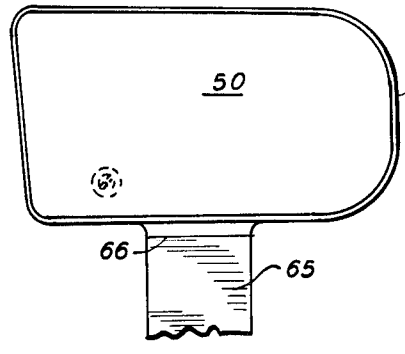


FIG. 4

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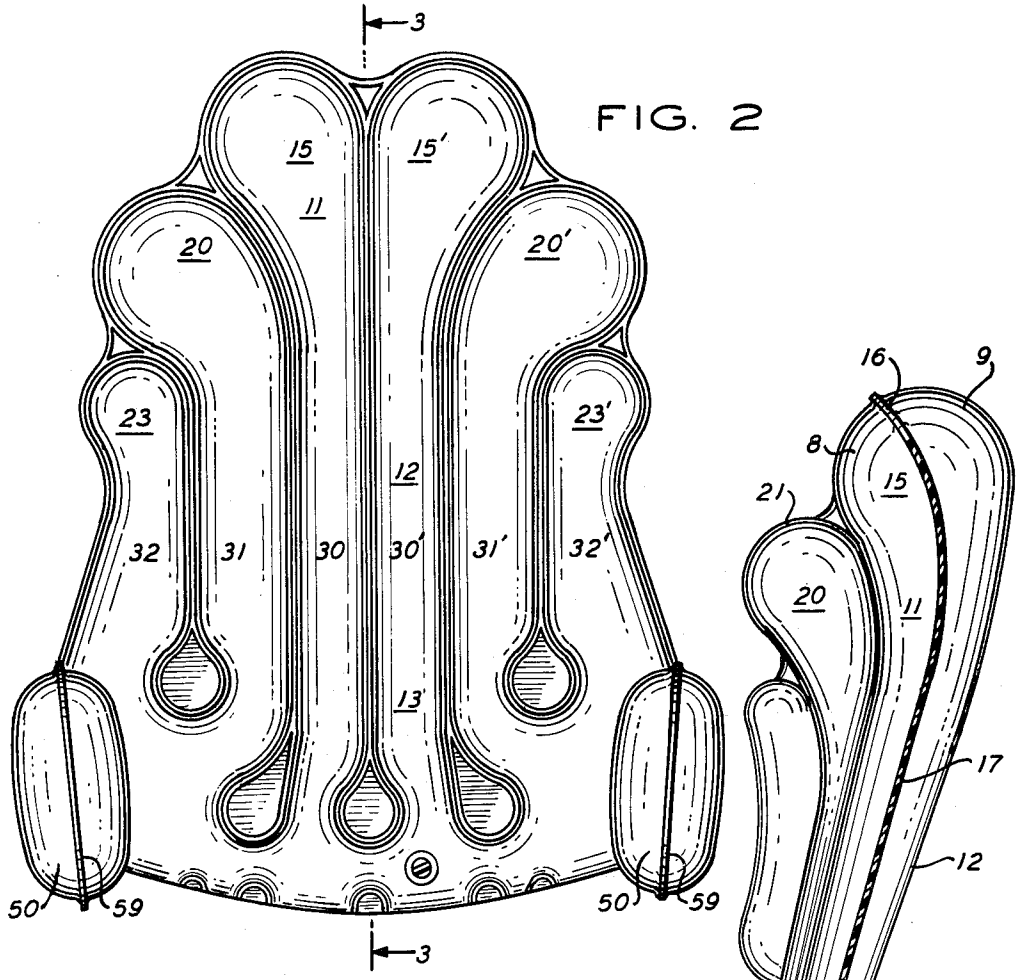


FIG. 2

FIG. 3

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FIG. 5

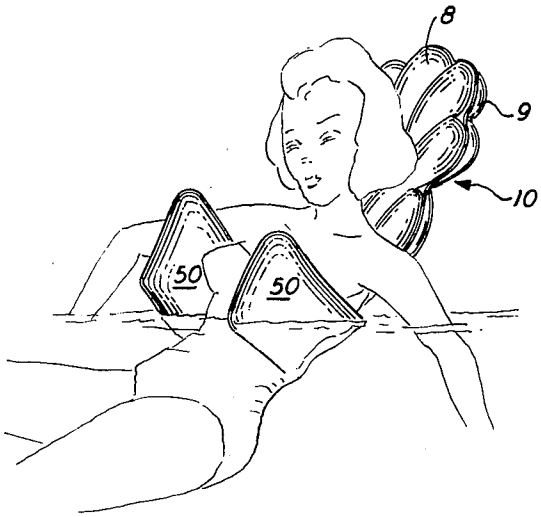


FIG. 6

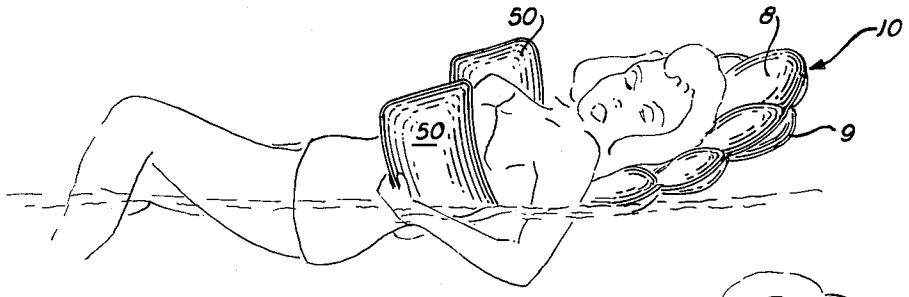
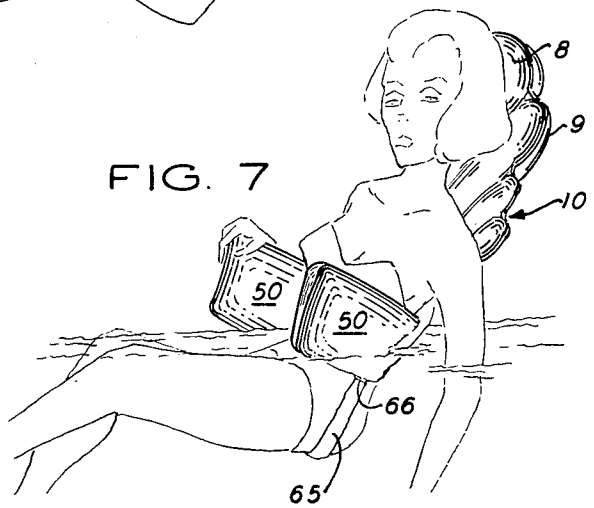


FIG. 7



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United States Patent Office 3,235,892 Patented Feb. 22, 1966

3,235,892

BACK RESTS AND AQUA CHAISES

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Filed Sept. 10, 1965, Ser. No. 487,651
11 Claims. (Cl. 9—312)

My present invention successfully fulfills two diverse purposes, both as a boudoir back rest and an aqua chaise or a one-person float. As used in bed for reading, relaxing or watching TV, it is placed against the head board of a bed with possibly a conventional pillow positioned horizontally at the mattress level for added inclination. The height, comparative thinness and unique shell shape of the boudoir chaise is such as to provide a resilient and forwardly angled head rest, as well as a "bucket shaped" support for the body and arm rests. When used as an aqua chaise, the arms of the chaise are usually placed under or below the arms of the user with the fluted body of the chaise at the back of the user, although the preferred position can be reversed with the stomach of the user on the chaise.

In the preferred position, the body of the user is supported in the water optionally vertically, diagonally or horizontally and in all these positions the buoyancy of the aqua chaise is so disposed as to support the user in quite stable equilibrium, due to the cooperative function of the back, arms and hinged tail piece resisting lateral rolling or nosing forward. A seat loop optionally provides additional variety of positions. Stable equilibrium requires that the point of suspension (or the resultant of the combined buoyancy) be above the center of gravity of the object. Most small floats, when placed under the body, result in unstable or neutral equilibrium and accordingly require constant balancing or vigilance by the user to avoid turning over.

Objects of my present invention include the creation of a multi-purpose back and arm support for use either in a bed or for stable buoyancy in water. Another object is the creation of a shell-shaped "bucket back" that is normally concave on its vertical axis having a top portion that also curves forward on a horizontal axis in a shell-like fashion to resiliently support the back of the head of the user more especially while reading or floating. Accordingly another object is to provide a fluted back support that closely follows and normally holds itself to a shape similar to and hugging the curvature of the back, shoulders and neck of the user. Another object is to provide an inflatable back support which, because of multiple and unique fluting which forms a plurality of columns, requires a minimum amount of air for inflation. Another object is to provide a chaise with arms fully sealed in the flat and attached to the back portion in a manner that their major center plane is perpendicular thereto when inflated and tends to extend therefrom at an angle normal to the plane of the back and is resiliently resistant to deviation therefrom. Another object is to provide arms attached to a back portion, which by itself would be unstable, in such a manner and design as to support the user in water in stable equilibrium whether the user is substantially vertical, diagonal or horizontal, resisting any tendency to turn over accidentally sidewise or to nose over frontwards. Another object is to provide a chair-like support in water which allows abundant limb freedom of the user for limited locomotion and a feeling of swimming yet providing complete effortless relaxation and bathing without exertion particularly enjoyable when the water is warm. Another object is to provide a most helpful aid for cardiac and partially paralyzed convalescents where hydro therapy is desirable with minimal exertion allowing restful sun bathing in the water

instead of climbing out of the pool as soon as fatigued.

Other objects and the successful attainment of all objects will be obvious from the following specifications and drawings in which:

FIG. 1 is a plan view of my invention after heat sealing but before inflation with one arm attached and shown partly broken away,

FIG. 2 is a front elevation of my invention shown inflated,

FIG. 3 is a sectional view taken along line 3—3 of FIG. 2,

FIG. 4 is a plan view of one arm with the seat loop partly broken away.

FIG. 5 shows my aqua chaise in use without the seat loop.

FIG. 6 shows it in use horizontally, and

FIG. 7 shows it in use vertically like FIG. 5, but with the seat loop in use.

As shown in FIGS. 1, 2 and 3, my invention is made from two flat pieces of sheet vinyl **8** and **9** electronically heat sealed together in the flat and for descriptive purposes may be subdivided into a back portion **10** having a top portion **11**, a mid portion **12**, a lower portion **13** and a tail portion **14**. Likewise two similar arms **50** sealed in the flat and sealed to the back **10** in the flat.

The top **11** includes two symmetrical center bulbous portions **15** and **15'** defined by arcuate seals **16** and **16'** and a centerline flute seal **17** and flute seals **18** and **18'** converging down toward center flute **17** or diverging up from the mid portion **12**. Other bulbous portions **20** and **20'** are defined by arcuate seals **21** and **21'** and arcuately converging flute or bar seals **18** and **18'** and **22** and **22'** respectively. Other bulbous portions **23** and **23'** are defined by arcuate seals **24** and **24'** and flute seals **22** and **22'** together with peripheral seals **25** and **25'**. Technically seals such as **16** are beaded tear seals and flute seals such as **18** are called bar seals which may be continuous or intermittent, such as a series of dashes, dots or circles in alignment.

Whereas bulbous portions **15** and **15'** are larger than **20–20'** and **23–23'** are the smallest, when the flutes converge into mid portion **12**, flutes **17** and **18–18'** are the closest together defining columns **30** and **30'**, flutes **18–18'** and **22–22'** are more separated and define wider columns **31** and **31'**, and flutes **22–22'** and peripheral seals **25–25'** are the most separated and define the widest columns **32** and **32'**. So the mid portion **12** may be said to consist of six columns of symmetrical and increasingly graduated sizes **30** to **32** and **30'** to **32'** and top portion **11** consists of six bulbous portions symmetrically graduated in size in the opposite order from **23**, **20** to **15** and **23'**, **20'** to **15'**.

In the lower portion **13** of the back **10**, flutes **22** and **22'** terminate in islands **35** and **35'** and columns **31** and **32** and also **31'** and **32'** merge into larger and stiffer columns **34** and **34'** respectively. Flute **17** and flutes **18–18'** extend further terminating in inflated or uninflated islands **36**, **37** and **37'** respectively.

Partly separating the lower portion of the back **13** from the tail portion **14** is a long radius arcuate seal **40** having its center in or near top **11**. Superimposed on seal **40** are islands **41**, **42** and **42'** which being quite close to islands **36**, **37** and **37'** respectively tend to produce a ripple or partial fold in the vinyl sheet **8** to continue a hinging action or line of easy bending that occurs along flutes **17**, **18** and **18'** without interfering with the inflation and passage of air along the transverse connecting column **39** which terminates the lower back portion **13** and is purposely made flexible rather than stiff by the said rippling or partial folding to encourage concavity in portions **12** and **13**.

Islands **41**, **42** and **42'** also extend more deeply into the tail portion **14** and together with islands **43–43'** and **44–**

44', which latter terminate arcuate seal **40**, have the effect after the inflation of portion **14** of making the arcuate length of side **45** of tail portion **14** shorter than the adjacent portion of the bottom edge **46** which gives the tail portion bodily an arcuate shape which together with arc **40** tends, in conjunction with other means, to effect in the lower portion **13** and the mid portion **12**, a concave "bucket seat" effect when said tail portion is hinged, bent or angled backwards about 45° or more along the long radius arc **40** as shown in FIG. 3.

Inflated columns such as **30** to **32** possess a stiffness that resiliently resists bending and bar seals, such as flutes **17**, **18**, **22** and **40** act as hinges and tend to encourage bending or folding, particularly when they are substantially straight or of long radius. Short radius seals such as **62** resist bending.

When this "bucket seat" effect occurs in the mid portion **12** and the lower portion **13**, then because of the relative sizes of the bulbous portions **23**, **20**, **15**, **15'**, **20'** and **23'** and their adjoining columns and the manner in which flutes **23**, **18**, **18'** and **24'** diverge sidewise or laterally away from their relatively parallel relationship in midsection **12**, the top **11** curves forward in a shell-like manner as shown in FIG. 3 to provide head support for the user which is further emphasized by the bulbous portions being of larger diameter than the columns.

While the applicant's Patent D. 197,397 of January 28, 1964 appears to be somewhat similar to the top **11**, and he has made many thousand such pillows, he has never noticed any tendency for them to assume or even maintain of themselves a concave shape on their vertical axis or for the top to tend to curve forward on a horizontal axis.

Accordingly, it appears that in order to produce a concave curving back, that in conjunction with other factors, at least five symmetrical vertical columns and four flute seals and at least five bulbous ends, some of which diverge from the vertical columns at angles approaching the horizontal, are a minimum necessity.

The tail portion **14** also has an additional function when used in water by adding extra buoyancy when the bather is horizontal, in which case the tail assumes a flat position instead of the 45° position. When the bather is in a vertical position, the tail portion **14** assumes a 45° or 90° position thus encouraging stability of buoyancy suitable for the position in use.

The design of the identical arms **50** with their complete peripheral seal **59** is shown in FIG. 4. Seal **59** can be made on three sides only if the sheet of vinyl is folded on the fourth side. The arm as shown is particularly suitable for water use, not only because of its length and buoyancy but because its center plane is substantially vertical.

When the mid portion **12** of back **10** is inflated it draws together in such a manner that it becomes of lesser width than top portion **11** or bottom portion **13** or tail portion **14**. This no doubt also aids the "bucket seat" effect, but also it changes the side angles **64–64'** of the lower portion **13** so that angles **64** and **64'** become substantially vertical. All these characteristics of the arms **50** provide a stable buoyancy which resists side rolling or nosing forward by the user. This stability would not be provided by the back **10** alone which would by itself be unstable.

As shown in FIG. 1, each arm is heat sealed to and through sheets **8** and **9** of the lower back **13** and **61** is a curved or V or U shaped line which when inflated causes the arms to resiliently extend diagonally or at an angle substantially normal (more or less at right angles) to the lower back portion and not to tend to flop sidewise, but rather to embrace the user aided by the concavity or "bucket seat" effect of **12**, **13** and **14**. If seal **62** were a straight line, then it would act as a simple hinge and arms **50** would flop outward. Being curved as shown, inflation of arms and columns **32**, **34** and **40** pushes arms **50** outward about 90° and at the same time resiliently bends a section of **32** and **34** backwards which resiliently resists further separation of arms **50**. The seal **61** of arms **50** to the lower back **13** is completed by bar seal **63**. Seals **61** and **63** each seal or fuse four thicknesses of flat vinyl sheets together including **8** and **9** and the two sheets forming each arm.

A seat loop or sling **65** which may or may not be inflated and which is considerably longer than the distance between the arms **50** is fastened by its ends to each arm at **66**. The extra length of the seat loop **65** has two functions. First it allows it to be pushed aside and not used, as shown in FIG. 4 or secondly, as shown in FIG. 7 the user may sit on it so that arms **50** do not press directly on the under arms of the user in which case my invention functions more as a conventional chair. If the length of loop **65** was similar to the distance between arms **50**, the user would be positioned so high relative to back **10** and arms **50** that the inherent stability of my aqua chaise might be unreliable or considerably reduced.

The peripheral seal **70** joins with the arcuate seals **24–24'**, **21–21'** and **16–16'** and also peripheral seals **25–25'** to completely seal the periphery of the back **10**, and valve **71** is provided in either vinyl sheet **8** or **9** to inflate only back **10**. A separate but similar valve is provided in each arm **60** for inflation.

Dimensional and other modifications possible without departing from the teachings and objects of my invention are anticipated and included in my invention.

Accordingly I claim:

1. An inflatable device comprising two layers of plastic sheet peripherally heat sealed flat together, a plurality of longitudinal and substantially spaced flute forming seals diverging toward one end of said plastic sheet, two separately inflatable arms, one end of each arm being heat sealed flat at and to each side edge of said sheet near the other end of said sheet while positioned flat thereon and transversely across said plastic sheet, being heat sealed thereto in such a manner that when layers of plastic sheet and the arms are inflated, the arms shall extend themselves from the plane of the layers of the plastic sheet.

2. An inflatable device comprising a resilient fluted back, arm rests positioned at the side edges and near one end of said back and a loop-shaped seal joining one end of each arm rest to said back while said arms are superimposed transversely across said back and effective after inflation to extend and resiliently position said arms away from the plane of said back.

3. A float comprising an inflatable back portion fluted longitudinally, buoyant arm rests positioned at the sides of said back portion near one end thereof and extending substantially at right angles to the plane of said back portion and a seat loop suitable for optional use and materially longer than the distance between said arm rests, each end of said loop being attached to one of said arms.

4. A float comprising an inflatable back portion fluted longitudinally, two buoyant arm rests joined thereto at the sides of said back portion near one end thereof and extending, when back and arms are inflated, substantially perpendicular in all directions to the plane of said back portion.

5. A multi-purpose inflatable device suitable as a back rest in bed, comprising an inflatable back portion, fluted to form columns for longitudinal stiffness, arm rests positioned at the side edges of said back portion near one end thereof attached thereto for resilient extension therefrom, with the center plane of the arms substantially at right angles to the plane of said back portion and said arms being proportioned and positioned to provide when inflated combined buoyancies in the water in conjunction with the back which will support a user in stable equilibrium with said arms are positioned under the arms of the user.

6. In an inflated device having a back-supporting portion comprising at least five integral, adjacent and vertical columns and an equal number of bulbous members of

larger cross section than said columns diverging upward and symmetrically laterally therefrom to terminate each of said columns and effective to make said back-supporting portion normally concave.

7. In an inflated device having a back-supporting portion comprising at least five integral, adjacent and air-filled columns, and an equal number of bulbous members of materially larger cross section than said columns diverging upward and laterally therefrom to terminate said columns to make said back-supporting portion normally concave in both horizontal and vertical axis.

8. In an inflated device having a back-supporting portion comprising at least five integral, adjacent and air-filled columns, an equal number of bulbous members of materially larger cross section than said columns diverging upward and laterally therefrom to terminate said columns at one end and a terminal horizontal member joined to said back by a long radius seal with its center near the center line of said back-supporting portion at the other end thereof and acting to make said back-supporting portion concave when said terminal member is hinged or bent along said long radius seal diagonally away from the plane of said columns.

9. In an inflatable device having a back-supporting portion comprising a plurality of symmetrically arranged, integral and adjacent air-filled vertical columns, an equal number of bulbous members of materially larger cross section than said columns diverging upward and laterally therefrom to terminate the upper ends of said columns and a horizontal column at the lower end of said vertical columns and joined to said back-supporting portion by a long radius seal with its center near the top of the center line thereof and a plurality of heat seals along said long radius seal substantially at right angles thereto to effect a shortening of the adjacent side of said horizontal column in comparison with its opposite side, thereby effecting a concavity of said back as said horizontal column is bent or hinged along said long radius seal.

10. In an inflatable device having a back-supporting portion comprising a plurality of symmetrically arranged, integral, adjacent and air-filled columns and a transverse column interconnecting said symmetrically arranged columns, a second transverse column hinged adjacent to said first mentioned transverse column and means to effect shortening of the side of the second transverse column adjacent to the first transverse column to produce a concavity of the symmetrical arrangement of the first mentioned columns when the second transverse column is hinged rearward.

11. An inflatable back rest or aqua chaise comprising a relatively large back portion peripherally heat sealed for inflation, and two relatively smaller arm rests peripherally heat sealed for inflation and curved loop-like seals positioned within said peripheral seals, when said arms are superimposed on said back portion, to join said arms to said back portion in such a manner that inflation will cause said arms to extend at a substantial angle from the plane of said back portion and to resiliently resist outward or inward deviation therefrom.

No references cited.

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