March 31, 1970 J. R. MEINWIESER 3,503,084

INFLATABLE CUSHION

Filed Oct. 18, 1968

FIG. 1

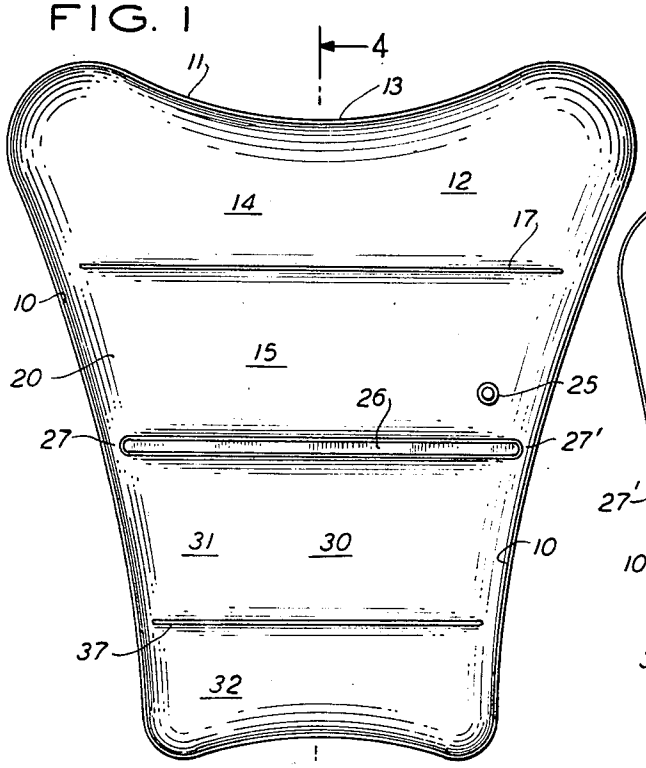


FIG. 2

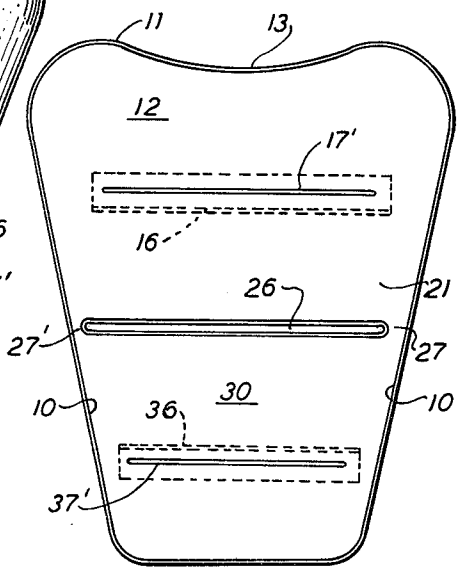


FIG. 3

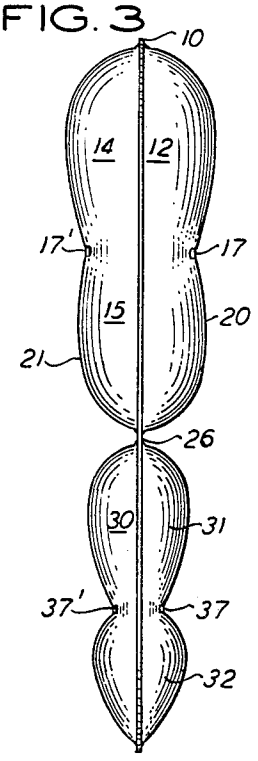


FIG. 4

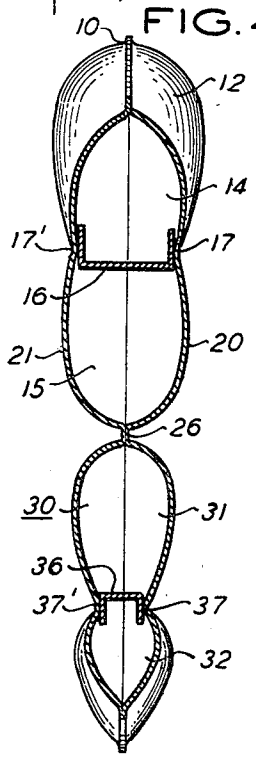
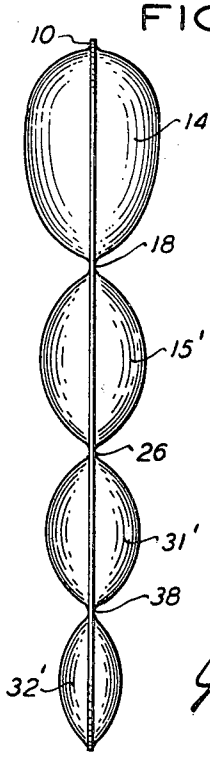


FIG. 5



INVENTOR

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United States Patent Office 3,503,084 Patented Mar. 31, 1970

3,503,084

INFLATABLE CUSHION

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Filed Oct. 18, 1968, Ser. No. 779,293
Int. Cl. A61g 7/06
U.S. Cl. 5—349 4 Claims

ABSTRACT OF THE DISCLOSURE

A generally wedge shaped inflated cushion relatively proportioned and graduated in size so that the part designed to carry the greatest body weight will support said weight higher than the part designed to carry the lesser body weight, although said parts are pneumatically interconnected to allow partial inflating and deflating or shifting of the content of said parts in response to a rocking action of the supported weight and also providing self-conforming of the cushion to the curvature of the body portion supported. The cushion is also characterized by a plurality of generally cylindrical inflated bulges of graduated diameters and/or lengths substantially parallel, normal and symmetrical to the longitudinal centerline of the cushion.

While the principles set forth have wide applications the illustration is that of a marital cushion.

Reference is made to patents: 3,235,892, Wm. M. Emery, Feb. 26, 1966; D. 197,397, Wm. M. Emery, Jan. 28, 1964; application No. 629,118, Wm. M. Emery; 3,115,647, Wm. M. Emery, Dec. 31, 1963; 3,276,047, Wm. M. Emery, Oct. 4, 1966.

BACKGROUND OF INVENTION

Inflatable mattresses customarily have their parallel cylindrical lobes disposed longitudinally and are uniform in size regardless of the probable disposition of the weight of various members of the user. They are rectangular and of uniform thickness. Up to now, the bulges in inflatable cushions have been made to fit the body or raise the head for comfort, etc., and those that actually supported the body like a seat cushion were relatively flat, such as 3,276,047.

In the first three examples cited, the inflatables do not support the full weight nor usually any weight of the contacting anatomy of the user because the cushions are not designed for horizontal use. No. 3,235,892 is generally rectangular in plan but has a slight bulge at the top largely for appearance. It is a float not designed as a cushion to support the body weight as a result of air compression since the body almost floats when immersed. D. 197,397 is tapered in plan but is made for vertical use as a bath pillow. The upper thicker part cushions the head, the lower part contacts the shoulders so that the thicker wide portion supports the lesser weight assuming it supports any weight at all. Only 3,115,647 is designed for horizontal use. Here the thicker more bulged ends of the inflated cones support the lower head and the thinner end supports the heavier shoulders. In all these examples the bulges which are of various shapes, tend to align with the longitudinal centerline in contradistinction to my present invention.

SUMMARY OF INVENTION

According to the laws of physics in an air chamber, regardless of its shape, pressure is theoretically transmitted equally in all directions, so that one would assume that in a flexible, pneumatically interconnected inflatable the greatest weight would sink in the deepest,

assuming equal areas of said weights and that the lifting power of the cushion would vary directly as the area supporting it. In general, this may be true except that in an inflatable I have discovered that possibly because of the tension on the vinyl sheeting or restriction by it, greater lifting power results from a large diameter bulge than from a series of smaller diameter bulges totalling the same plan areas as the large bulge, and more lifting power results from two cylindrical bulges divided only by a gusset than two cylinders directly sealed of similar area.

In my present invention, I undertook to do the opposite or apparently the impossible, that is to provide inflatable means with its members pneumatically interconnected to raise the greater weight of the hips when combined with the weight of the flexed legs, to a height such as five inches and the lesser weight of the lower back to a graduated lesser height terminating at a minimal height where the middle of the back might rest directly on the mattress.

Said pneumatic interconnection was required to provide automatic variation of contour to conform with the shape of the hips and back and to allow for and follow the rocking motion of the hips resulting from an alternate straightening and curving of the back.

I uniquely met these conditions with a plurality of generally cylindrical inflated bulges disposed parallel to each other and normal to the longitudinal centerline of the cushion and then varying either the diameters and/or the length of said cylinders from end to end and/or side to side of the cushion resulting in a pneumatic cushion uniquely tapered in plan and/or in cross-section. The wider and/or thicker end of the cushion elevating the heavier hips and the narrower and/or thinner and supporting the back of the user.

My particular structure for the accomplishment of the solution of these problems constitute objects of my invention obvious from the structure specifically set forth in the following description, claims and drawings wherein:

FIG. 1 is a plan view of my inflated cushion;

FIG. 2 is a similar view but uninflated and taken from the bottom (non-valve) side;

FIG. 3 is a side view of FIG. 1;

FIG. 4 is a section taken on line **4—4** which is the longitudinal centerline of the cushion; and

FIG. 5 is a view similar to FIG. 3 of a modified construction.

FIGS. 1 and 2 show a peripheral seal **10** of general trapezoidal shape in plan except the large end **11** recedes to form a distinctive notch **13** so the pillow will not interfere with the proximity of the knees of the male.

The large end **12** is divided into two semi-oval or partially oval and somewhat cylindrical bulges **14** and **15** separated by a gusset **16** sealed at **17** and **17'**. The buttock of the user is cradled in the valley formed by gusset **16**.

In FIG. 5 a direct seal **18** between a top sheet of plastic **20** and a bottom sheet **21**, is substituted for gusset **16** and seals **17** and **17'**.

FIG. 1 shows a valve **25** through which the cushion may be inflated.

Double bar seal **26** joins directly sheets **21** and **20** and divides the cushion into two sections, the large section **12** which supports the hips or buttocks and the smaller thinner section **30** which primarily supports the lower back. Spaces **27** and **27'** between ends of seal **26** and the peripheral seal **10** allows pneumatically interconnection of large section **12** and small section **30** and allows air to pass therebetween when the back of the user undulates.

As shown particularly in FIG. 3, end **30** is divided into two ovals semi-oval or partially oval and somewhat cylindrical parallel and symmetrical bulges **31** and **32** by a gusset **36** sealed at **37** and **37'**.

In FIG. 5 a direct seal **38** of sheets **20** and **21** is substituted for gusset **36**. Air passages equivalent to **27** and **27'** between the ends of gussets **16** and **36** and seals **18** and **37**, and the peripheral seal **10** are provided.

It will be noted that the sides of peripheral seal **10** taper symmetrically from the big end **12** toward the small end **30** as shown in FIGS. 1 and 2, also bulge **14** is of greater thickness or diameter than bulge **32** and the intermediate bulges **15** and **31** tend to graduate in size therebetween. Without departing from the spirit of my invention gussets **16** and **36** may be varied in height and relative position which would modify the relative thickness or diameters of the adjoining bulges.

The parallel cylindrical bulges **14, 15, 31** and **32** or their equivalents in FIG. 5 are normal or right angle to the longitudinal centerline **4—4** and provide a limited rolling action or resiliency which is at times advantageous, and does not seem to interfere with a rotary motion when the cushion is inflated soft.

Inflated bulges formed by heat sealing two sheets of plastic together tend to be either semi-oval, semi-spherical or substantially cylindrical. In the latter case the ends of the cylinders tend to be semi-spherical and the cylinders tend to be flattened on opposite sides. Where I refer to cylindrical, I include the foregoing and also the somewhat cylindrical shape that results when a gusset is used, the latter being the best all inclusive term I can find.

Equivalent bulges in FIG. 5 are indicated by numbers used in other views with a prime added.

Without departing from the spirit or intended structural scope of my invention, seals **18, 26,** and **38** may extend to contact the peripheral seal **11** thereby forming four separate somewhat cylindrical bulges each having an air valve of its own.

Accordingly, I claim:

1. An inflatable cushion of heat sealed vinyl sheets, an intermediate transverse seal separating said cushion into two distinct sections and forming a higher end to maintain the elevation of the greater weight of the hips and to act substantially as a height adjustable fulcrum therefor, and a lower end section of lesser weight supporting capacity for the back, gusset means extending between said sheets of at least one section to limit the separation of said sheets when the cushion is inflated, and pneumatic interconnection between said sections so air may pass from one to the other, facilitating a rocking action of the user's back and the hips because of size differential and the interchange of pneumatic forces therebetween.

2. A cushion as set forth in claim **1** wherein said transverse heat seal is a direct contact linear seal between the two sheets.

3. A cushion as set forth in claim **1** wherein said cushion is trapezoidal in plan with the width of its longest parallel end less than the distance between its ends, said end also being adjacent to said highest section and the lower section adjacent to the shorter parallel end.

4. A cushion as set forth in claim **2** wherein said cushion is trapezoidal in plan and the width of its longest parallel end is less than the distance between its ends, said end also being adjacent to said highest section and the lower section adjacent to the shorter parallel end.

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U.S. Cl. X.R.

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