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Cantillo et al.

[11] **3,918,110**

[45] **Nov. 11, 1975**

[54] **WATER BEDS AND METHOD OF MAKING THE SAME**

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[52] **U.S. Cl.** ..... **5/348 WB;** 128/376

[51] **Int. Cl.**[2] **A67C 27/08;** B31F 7/00

[58] **Field of Search** ..... 5/60, 348 WB, 350; 297/DIG. 3; 128/376; 4/177, 177 IW

[56] **References Cited**

UNITED STATES PATENTS

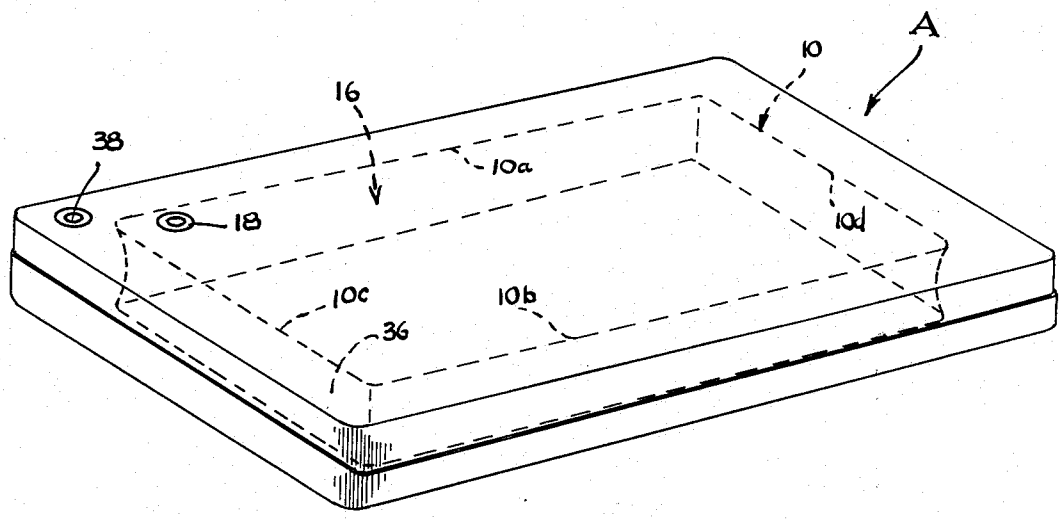
3,753,823	8/1973	Kuss	156/145
3,778,852	12/1973	Penn et al.	5/348 WB
3,787,907	1/1974	Pennington et al.	5/348 WB

Primary Examiner—Casmir A. Nunberg
Attorney, Agent, or Firm—Robert J. Schaap

[57] **ABSTRACT**

A water bed for supporting a body thereon and which comprises upper and lower flat plastic sheets. A first rectangularly shaped continuous peripheral wall extends between and is sealed to the upper and lower sheets to form a water chamber therebetween. The first continuous wall is formed by adjoining four endwise connected segments along four rectangularly spaced corner margin. Each corner margin is formed by heat sealing two adjacent wall segments in the form of an arcuate shape with a reinforcing strip disposed over the corner margin and lap sealed to the two adjacent wall segments. The upper and lower walls extend beyond the first continuous peripheral wall and have flaps which extend in a vertically disposed direction to form a second continuous peripheral wall. These flaps are also lap sealed to each other in order to form the second continuous peripheral wall which thereby forms an air chamber surrounding the water chamber.

18 Claims, 11 Drawing Figures



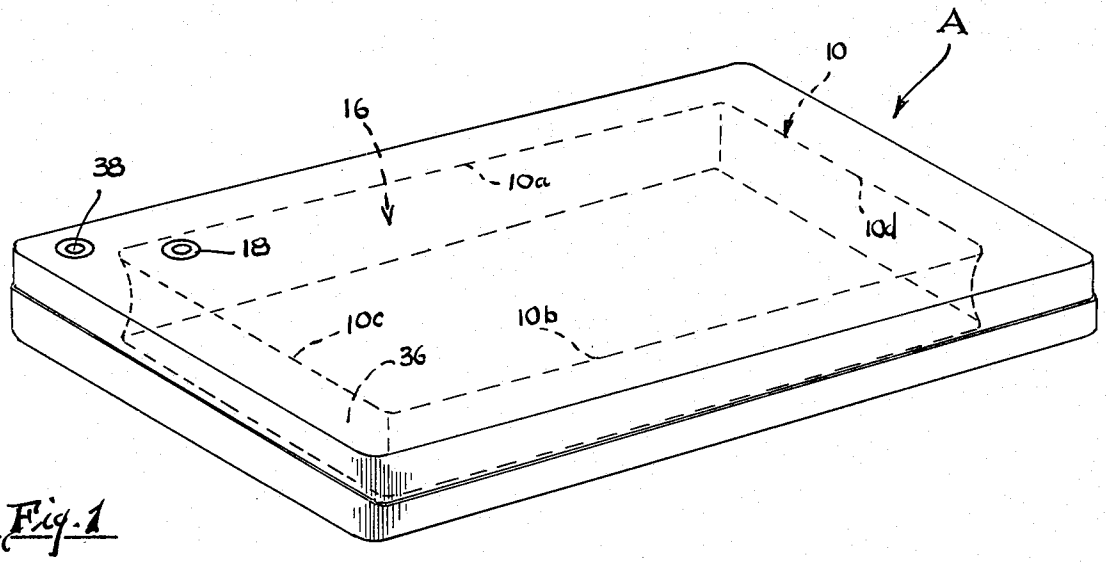


Fig. 1

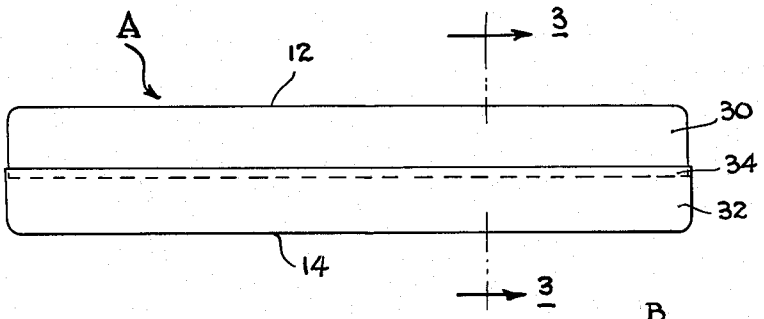


Fig. 2

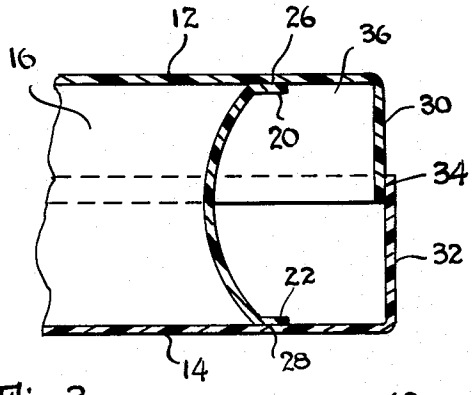


Fig. 3

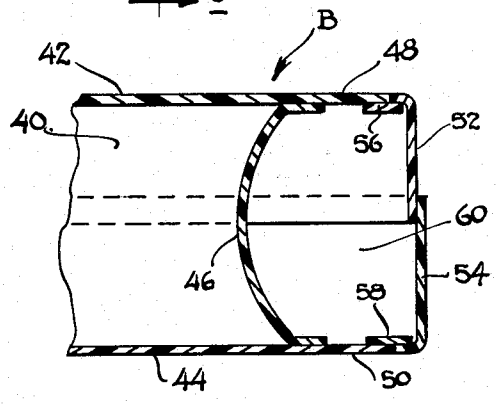


Fig. 4

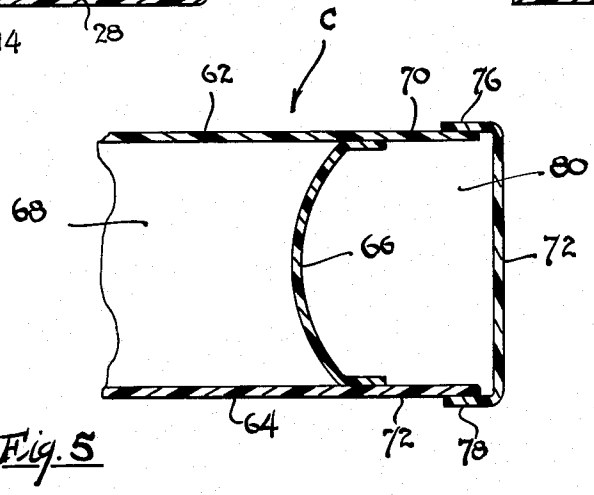


Fig. 5

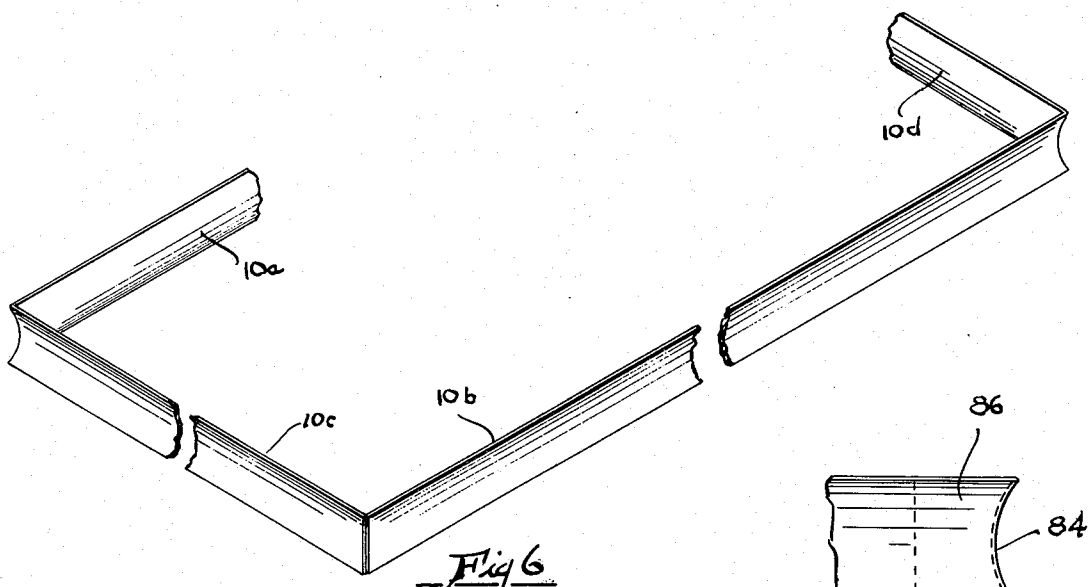


Fig. 6

Fig. 9

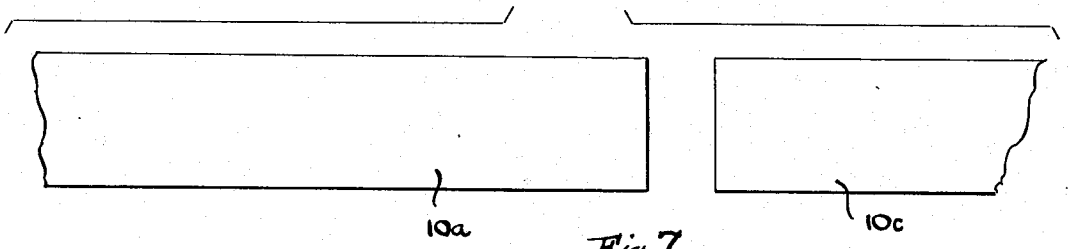


Fig. 7

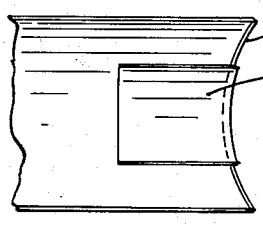


Fig. 10

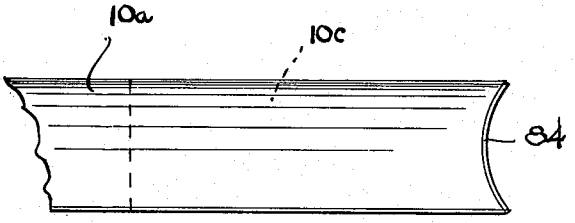


Fig. 8

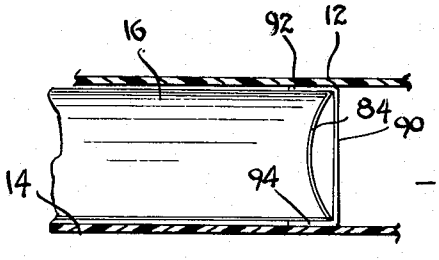


Fig. 11

WATER BEDS AND METHOD OF MAKING THE SAME

BACKGROUND OF THE INVENTION

This invention relates in general to certain new and useful improvements in water beds, and more particularly, and water beds which include an air chamber surrounding a water chamber in a water bed mattress.

In recent years, water beds have become quite popular and have received wide commercial acceptance. These water beds are relatively simple structures which include a pair of spaced apart upper and lower plastic sheets surrounded by a continuous peripheral side wall to form an inner water chamber or so-called "bladder". The bladder is generally capable of accepting several hundred gallongs of water which enables a normal human body to be supported thereon in such manner that all parts of the body which reside in contact with the mattress are supported by the same pressure. In this way, any excessive pressure is prevented from being exerted on any specific portion of the body. Moreover, water beds have been found to be less expensive than the conventional spring and mattress type bed and even more-so, these beds are more easily transported in the empty condition.

In the standardized form of construction, the water bed which essentially constitutes a water mattress, is surrounded by a frame which may be constructed of wood or other structural materials. This frame is designed to provide supporting characteristics and thereby decrease the curvature of the mattress when a body is supported thereon. In this way, a more normal level sleeping surface is provided. These frames oftentimes include a water tight liner material between the frame and the mattress, which provides additional protection for the mattress to reduce the hazard of mattress puncture or other form of rupture. The liner in this frame not only serves to prevent rupture of the mattress from the rigid support frame, but also inherently creates a safety feature in case of a leak in the water bed mattress. If the mattress material should develop a leak, the liner within the frame could contain the water ejecting from the bladder and thereby prevent serious property damage created by several hundred gallons of water.

While a rigid support frame is desirable in order to provide support for the side wall of the water bed mattress, and to enable the availability of a liner in case of water leakage, the actual rigid frame is contradictory to several advantages and purposes of the water bed mattress. One of the distinct advantages of the water bed mattress is that the mattress can be emptied of water and collapsed and folded into a small compact unit for storage and/or transport.

In order to eliminate the necessity of the rigid supporting frame, there have been several proposals to provide a water bed mattress with a surrounding air bladder. It has been proposed that the air bladder which surrounds the water bladder will provide for retention of the water bladder side wall against outward deflection under the influence of water pressure. Several forms of construction of water beds or water bed mattresses of this type have been proposed and are exemplified by U.S. Pat. No. **3,778,852** and U.S. Pat. No. **3,787,907.**

Each of the water beds proposed in the prior art, as exemplified by the abovesaid patents, also suffer several limitations which militate against their use. One of the very important features of a water bed which includes a water bladder surrounded by an air bladder is that the air bladder must be sufficiently strong to withstand the pressure exerted by the water included within the water bladder when the mattress is filled.

Each of the water bed mattresses thus far proposed are constructed of plastic sheet material components. These components are generally sealed together by means of conventional heat seal techniques. Inasmuch as the various mattress components are formed with with mating engagable flanges or flaps these seals almost inevitably become butt seals, even though a lap seal would provide far more strength and durability if constructed properly.

Notwithstanding the above, these commercially available mattresses which include both the water bladder and the air bladder are rather complex in their construction which materially adds to the cost of manufacturers and sales price thereof. As a result thereof, these latter forms of water bed mattresses which include both the water bladder and the air bladder have not received the wide commercial acceptance which would otherwise be forthcoming if they provided the required support and in addition could be manufactured at a relatively low cost.

It is, therefore, the primary object of the present invention to provide a water bed mattress which includes a water bladder surrounded by an air bladder and which does not require the employment of a rigid frame.

It is another object of the present invention to provide a water bed mattress of the type stated which does not require a rigid support frame, but which nevertheless enjoys all of the advantages provided by the employment of a rigid frame surrounding the water bed mattress.

It is also an object of the present invention to provide a water bed mattress of the type stated which avoids the necessity of a rigid frame, and which also provides for water confinement and bladder deformation which normally arise in a absence of a rigid frame.

It is an additional object of the present invention to provide a water bed mattress of the type stated including sections which are lap sealed to each other in order to create the necessary water bed mattress components and which provide increased rigidity and structural use.

It is a further object of the present invention to provide a water bed mattress of the type stated which can be manufactured at a relatively low unit cost and which nevertheless fulfills all of the characteristics of a water bed mattress which requires the employment of a rigid support frame.

It is another salient object of the present invention to provide a method of making water bed mattress which requires a minimum of manual attention and thereby substantially reduces the cost of manufacture of the water bed mattress without sacrificing the desired structural capability.

With the above and other objects in view, our invention resides in the novel features of form, construction, arrangement, and in combination of parts presently described and pointed out in the claims.

GENERAL DESCRIPTION

In general terms, the present invention relates to a water bed for supporting a body thereon. This water

bed comprises upper and lower walls. A first continuous peripheral wall extends between the upper and lower walls and forms a water chamber therebetween. A first water tight seal secures the upper wall to the upper margin of the first continuous peripheral wall continuously along the entire peripheral length thereof. A second water tight seal secures the lower wall to the lower margin of the first continuous peripheral wall continuously along the entire peripheral length thereof. The upper and lower walls extend beyond the first continuous peripheral wall. A downwardly extending flap is formed on the upper wall and an upwardly extending flap is formed on the lower wall, and is lap sealed to the downwardly extending flap to form a second continuous peripheral wall, and which is spaced outwardly from the first continuous peripheral wall. In this way, an air chamber is formed between the upper and lower walls and the first and second continuous peripheral walls surrounding said water chamber.

The water bed can be characterized in further detail in that the upper and lower walls are formed of a flexible plastic material. In addition, a first valve means is provided for communication with the water chamber to fill and exhaust water therefrom. A second valve means is provided for communication with said air chamber to fill and exhaust air therefrom.

In a preferred embodiment of the invention, the downwardly struck flap is a continuous peripheral flap surrounding the periphery of the upper wall and is integral therewith. The flap on the lower wall has an upwardly struck continuous peripheral flap surrounding the periphery of the lower wall and is integral therewith. In another embodiment of the invention, the downwardly extending flap on the lower wall is sealed thereto. In yet another embodiment of the invention, the flaps on the upper and lower walls have tabs respectively overlying the upper and lower walls and which tabs are sealed to the upper and lower walls.

The water bed of the present invention can also be described in general terms as comprising upper and lower walls with a first continuous peripheral wall extending between the upper and lower walls and forming a water chamber therebetween. A first water tight seal secures the upper wall to the upper margin of the continuous peripheral wall continuously along the entire peripheral length thereof. A second water tight seal secures the lower wall to the lower margin of the continuous peripheral wall continuously along the entire peripheral length thereof. The upper and lower walls extend beyond the first continuous peripheral wall. A second continuous peripheral wall is located outwardly of said first continuous wall and which is in spaced apart relationship therefrom. In this way, an air chamber is formed between the upper and lower walls and the first and second continuous peripheral walls surrounding said water chamber. The first peripheral wall is provided with an upstanding wall section which is permanently convex to the water chamber. In addition, the upper and lower margins are permanently spaced outwardly from the water chamber with respect to a midpoint of the upstanding wall section located between the upper and lower margins.

The water bed of the present invention can also be characterized in that the first peripheral wall comprises a plurality of wall sections which are connected by arcuately shaped corner margins. A reinforcing strip is disposed over each of the corner margins and is sealed to the wall sections at these corner margins. Preferably, the reinforcing strip is lap sealed to these wall sections at the corner margins. In yet another a preferred aspect of the present invention, the upper and lower walls are formed of a flexible plastic material.

The water bed immediately described above can be further characterized in that the first peripheral wall has a first pair of spaced apart opposed upstanding wall sections and a second pair of spaced apart opposed upstanding wall sections. A first corner margin connects one of the first pairs of upstanding wall sections with one of the second pair of upstanding wall sections. In addition, a second corner margin connects another of the first pair of upstanding wall sections with the other of the second pair of upstanding wall sections. Each of the aforesaid corner margins are arcuately shaped and convex to the water chamber and concave to the air chamber. A reinforcing strip is disposed over each of the aforementioned corner margins and is lap sealed to the wall sections at these corner margins.

In the more preferred aspect of the water bed of the present invention, the second continuous peripheral wall comprises a downwardly extending flap formed on the upper wall and an upwardly extending flap on the lower wall. These upwardly and downwardly extending flaps are then lap sealed to form the second continuous peripheral wall in the manner previously described. Moreover the downwardly struck flap and the upwardly struck flap surround the peripheries of and are integral with the upper and lower walls, respectively. However, it should also be recognized that these flaps could form the second continuous peripheral wall in any of the embodiments as previously described.

The present invention also relates to a method of making a water bed of the type described. Thus, the water bed will have a pair of spaced apart upper and lower sheets with an inner continuous peripheral wall connected thereto to form a water chamber. In addition, the water bed will also have an outer continuous peripheral wall spaced outwardly from the inner peripheral wall and connected to the upper and lower sheets forming an air chamber surrounding the water chamber. This method comprises the sealing of a first peripheral wall section to a second angularly disposed peripheral wall section forming part of the inner continuous peripheral wall. The first and second wall sections are severed at the point of sealing to present an arcuately shaped sealed edge and which sealed edge is convexly presented toward the water chamber. Thereafter, the outer continuous peripheral wall is sealed with respect to the upper and lower walls to form the air chamber.

The method of making the water bed can be characterized in further detail in that the severing operation takes place simultaneously with the sealing operation of sealing the first wall section to the second wall section. Moreover, a reinforcing strip is also disposed over the arcuately shaped sealed edge and is lap sealed to the first and second wall sections adjacent to the sealed edge.

The method of making the water bed of the present invention can also be further characterized in that the method comprises sealing a third peripheral wall section to a fourth peripheral angularly disposed wall section. The third and fourth wall sections are severed at the point of sealing to provide an arcuately shaped sealed edge which is convexly presented inwardly

toward the water chamber. The first wall section is also sealed to the third wall section and the second wall section is sealed to the sealing of the outer continuous peripheral wall with respect to the upper and lower sheets.

In this last named characteristic of the invention, the method comprises disposing a reinforcing strip over each of the arcuately shaped sealed edges for substantially the entire dimension thereof. Each of the reinforcing strips are then sealed to the wall sections forming each such sealed edge. The operation of severing the third and fourth wall sections occurs simultaneously with the sealing of the third wall section to the fourth wall section. Furthermore, the operation of severing the first and second wall sections occurs simultaneously with the sealing of the first wall section to the second wall section.

In the preferred aspect of the present invention, the outer continuous peripheral wall comprises a downwardly extending flap on the upper wall and an upwardly extending flap on the lower wall. The sealing of the outer continuous wall with respect to the upper and lower walls comprises lap sealing the upwardly and downwardly extending flaps to each other.

BRIEF DESCRIPTION OF THE DRAWINGS

Having thus described the invention in general terms, reference will now be made to the accompanying drawings in which:

FIG. **1** is a perspective view of a water bed mattress constructed in accordance with and embodying the present invention;

FIG. **2** is a side elevational view of the water bed mattress of FIG. **1**;

FIG. **3** is a fragmentary vertical sectional view taken along line **3—3** of FIG. **2**;

FIG. **4** is a fragmentary vertical sectional view, similar to FIG. **3**, and showing a modified form of a water bed mattress constructed in accordance with and embodying the present invention;

FIG.. **5** is a fragmentary vertical sectional view, similar to FIG. **3**, and showing an additional modified form of water bed mattress constructed in accordance with and embodying the present invention;

FIG. **6** is a perspective view partially broken away, showing the method of constructing a portion of the water bed mattress of the present invention by sealing four rectangularly located peripheral side wall sections thereof;

FIG. **7** is a side elevational view, partially broken away, and showing a longitudinal sidewall section and a lateral sidewall section forming part of an inner peripheral continuous wall;

FIG. **8** is a side elevational view, partially broken away, and showing the corner margin formed by attaching the two side wall sections of FIG. **7**;

FIG. **9** is a side elevational view, partially broken away, and showing a banding strap disposed over a corner margin of the two sections in FIG. **8**;

FIG. **10** is a side elevational view, partially broken away, and similar to FIG. **9**, with a modified form of banding member disposed over the corner margin; and

FIG. **11** is a vertical sectional view showing a portion of another modified form of water bed construction in accordance with the present invention.

DETAILED DESCRIPTION

Referring now in more detail and by reference characters to the drawings which illustrate practical embodiments of the present invention, A designates a water bed comprising an inner continuous peripheral side wall **10.** This side wall **10** is preferably comprised of a pair of spaced apart longitudinally extending side wall sections **10***a* and **10***b* and a pair of transversely extending side wall sections **10***c* and **10***d*, which are respectively connected to the longitudinally extending side wall sections **10***a* and **10***b*, in the manner as illustrated in FIG. **1.**

Upper and lower sheets **12** and **14** respectively extend across the upper and lower margins of the continuous peripheral side wall **10,** and thereby define an interior water chamber or so-called water "bladder" **16.** The water chamber **16** may be provided with a valve **18** provided for filling and removal of water from the interior bladder **16.** This valve is essentially conventional in its construction and one form of the valve construction which may be used is described in the aforementioned U.S. Pat. No. **3,787,907.**

Each of the side wall sections **10***a*, 10*b*, 10*c* and **10***d* which form the continuous peripheral side wall **10** are integrally provided with upper and lower outwardly extending flanges **20** and **22,** respectively. These flanges are lap-sealed to the upper and lower sheets **12** and **14** at lap-seals **26** and **28** respectively, in the manner as illustrated in FIG. **3** of the drawings.

By further reference to FIGS. **1** and **3,** it can be observed that the upper and lower sheets **12** and **14** extend beyond the inner continuous peripheral side wall **10** on all sides thereof. The upper sheet **12** is provided with an integrally formed downwardly extending flap **30.** In like manner, the lower sheet **14** is provided with an integrally formed upwardly extended flap **32** which is lap sealed with respect to the flap **30** at the seal **34.** In this way, the vertically struck flaps **30** and **32,** together with the extended portions of the sheets **12** and **14,** form an air chamber **36** or so-called "air bladder" which surrounds the water chamber **16.** The air chamber **36** may also be provided with a valve **38** for the filling and removal of air from the bladder **36.** Again, this valve **38** is conventional in its construction.

It has been found in connection with the present invention that the lap seals referred to herein are far more efficient than the butt seals which have been employed in the prior art. Furthermore, and in the same respect, the lap seals are essentially heat seals where two overlapping sections are heat sealed to each other, substantially in the manner as illustrated in FIG. **3** of the drawings.

It has also been found in connection with the present invention that the lap seal which is used herein provides a much greater degree of strength than any other form of heat seal which may be employed as discussed in the prior art. Furthermore, the lap seal provides a much greater degree of uniformity and continuity between two adjacent lap seal sections than that which was otherwise afforded by other forms of sealing, as for example, the butt seal which is taught in the prior art.

FIG. **4** illustrates a modified form of water bed which may also be constructed in accordance with and embodying the invention. The construction of the water bed B is similar in many aspects to the construction of the water bed A and includes a water chamber **40**

formed by upper and lower plastic sheets **42** and **44** and an inner continuous peripheral side wall **46.** In this respect, it can be observed that the side wall **46** is secured to the upper and lower sheets **42** and **44** in the same manner as the inner peripheral wall **10** was secured to the upper and lower sheets **12** and **14.**

The upper and lower sheets have peripheral extended portions **48** and **50.** In this case, the independent vertically disposed continuous peripheral flap **52** is heat sealed to the outer edge continuously along the periphery of the extended portion **48** of the sheet **42.** In like manner, a vertically disposed continuous peripheral flap **54** is heat sealed to the edge of the extended portion **50** of the sheet **44** along the entire periphery thereof. It should also be observed that four independent flaps in a rectangular arrangement could be heat sealed to the extended portion **48** of the upper sheet as well as four independent flaps heat sealed to the extended portion **50** of the lower sheet **44.** The seal between the extended portions **48** and **50** to the various flaps **52** and **54** may be further reinforced by means of plastic tabs **56** and **58** respectively, in the manner as illustrated in FIG. **4** of the drawings. In this way, an air chamber **60** is formed in surrounding relationship to the water chamber **40.**

FIG. **5** illustrates a further modified form of water bed C constructed in accordance with and embodying the present invention. This water bed C also comprises upper and lower sheets **62** and **64,** respectively, and which are sealed to an inner continuous peripheral wall **66** thereby forming a water chamber **68.** In this case, the sheets **62** and **64** have extended portions **70** and **72.** A continuous peripheral end wall **74** is disposed about the entire periphery of the extended portions **70** and **72** and includes horizontally struck flanges **76** and **78** on the upper and lower ends thereof. The flange **76** is heat sealed to the periphery of the extended portion **70** of the sheet **62** and in like manner, the flange **78** is heat sealed to the extended portion **72** of the sheet **64.** In this way, the inner peripheral wall **66,** the outer vertically disposed wall **72,** along with the extended portions **70** and **72** form an air chamber **80** which surrounds the water chamber **68.**

FIGS. **6–11** illustrate additional embodiments of water beds which may be constructed in accordance with the present invention and also illustrate one of the preferred forms of making the water bed of the present invention. In order to describe one of the preferred methods of making the water bed of the present invention, reference will be made to the water bed A illustrated in FIGS. **1–3** of the drawings. In this case, the four peripheral side wall sections **10***a* and **10***b*, 10*c* and **10***d* are all heat sealed together in the manner that is schematically illustrated in FIG. **6.**

By reference to FIGS. **7** and **8** can be observed that one longitudinal side wall section **10***a* and one laterally extending side wall section **10**c are heat sealed and simultaneously severed in order to form an arcuately shaped end margin **84.** In order to form this arcuately shaped end margin, the side wall section **10***c* is disposed in facewise engagement over the side wall section **10***a*. Thereafter, a suitable cutting and sealing mechanism simultaneously severes the two sheets into the arcuately shaped edge margin **84** and also seals the two wall sections together in the manner as illustrated. Moreover, when the two side wall sections **10**a and **10**c are opened up so that they are angularly disposed to each other at a **90** degree angle, the end margin **84** is convexly presented inwardly with respect to the water chamber **16** and concave with respect to the air chamber **36.** In like manner, each of the additional wall sections are also sealed together in order to form the rectangularly shaped inner peripheral wall **10,** in the manner as illustrated in FIG. **6** of the drawings.

The corner margins between the two wall sections **10***a* and **10***c* are only lightly heat sealed together. The same holds true with respect to the corner margins between the side wall sections **10***c* and **10***b* and in like manner, the corner margins between the remaining wall sections are also only lightly heat sealed to provide arcuate margins convexly presented toward the water chamber **16.** Thereafter, a reinforcing strip extending for the entire vertical dimension of the side wall sections is disposed over the corner margin and sealed to the two engaging side wall sections. Thus, for example, with reference to FIG. **9,** it can be observed that a reinforcing strip **86** is disposed over the corner margin **84** and is lap sealed to the longitudinal side wall section **10***a* and to the longitudinal side wall section **10***c*. In this way, a very strong lap seal is obtained. The amount of overlap between the reinforcing strip **86** and the side wall sections can vary, although it is preferred that the overlap between the reinforcing strip **86** and each of the side wall sections **10***a* and **10***c*, for example, be at least approximately three inches.

FIG. **10** illustrates a modified form of water bed construction which is substantially similar to that previously described, except that a reinforcing strip **88** is employed which does not extend for the full vertical dimension of the two abutting side wall sections. In this case, the seal **84** would be substantially stronger.

FIG. **11** illustrates a further modified form of water bed construction and in this case, the inner peripheral side wall **10** is provided with a restraining band **90.** In this case, it can be observed that the corner margin **84** of any two of the side wall sections of the inner peripheral side wall **10** is also arcuately shaped and convexly presented inwardly toward the water chamber **16.** However, prior to the application of the upper and lower sheets **12** and **14,** respectively, the reinforcing band **90** is disposed over the seal **84.** The reinforcing band includes a pair of horizonally struck flanges **92** and **94** which are also heat sealed to the upper and lower sheets **12** and **14,** respectively.

In each of the previously described embodiments of the water bed of the present invention, any of a number of plastic materials may be used, and include for example, various forms of vinyl sheets, polyethylene, polystyrene and polybutadiene copolymers and the like. The upper and lower sheets as well as the outer and inner peripheral side walls should preferably have a thickness of no less than **10** mls. However, the desired thickness may be predicated upon the overall size of the mattress itself.

Thus there has been illustrated and described various forms of novel water bed constructions as well as a method of making the same and which water beds can be made at a relatively low cost and used in a wide variety of applications. Consequently, the water beds described herein and the methods of making the same fulfill all the objects and advantages sought therefore. Many changes, modifications, variations and other uses in applications of water beds and the method of making the same will become apparent to those skilled in the

art after considering this specification and the accompanying drawings. All such changes, modifications, variations and other uses and applications which do not depart from the spirit and scope of the invention are deemed to be covered by the invention which is limited only by the following claims.

Having thus described our invention, what we desire to claim and secure by Letters Patent is:

1. A water bed for supporting a body thereon, said water bed comprising upper and lower walls, a first continuous peripheral wall extending between said upper and lower walls and forming a water chamber therebetween, a first projected flange extending continuously along the entire peripheral length of the upper margin of said first continuous peripheral wall and being integral therewith, a first water tight lap seal securing said upper wall to the first flange on the upper margin of said first continuous peripheral wall continuously along the outer peripheral length thereof, a second projected flange extending continuously along the entire peripheral length of the lower margin of said first continuous peripheral wall and being integral therewith, a second water tight lap seal securing said lower wall to the second flange on the lower margin of said first continuous peripheral wall continuously along the entire peripheral length thereof, said first peripheral wall having an upstanding wall section which is permanently convex to the water chamber along its entire peripheral length, said upper and lower walls extending beyond said first continuous peripheral wall, a downwardly extending flap formed on said upper wall and an upwardly extending flap on said lower wall, and each of said flaps having continuous peripherally extending end portions, each of said end portions being lap sealed to each other along their entire peripheral lengths to form a second continuous peripheral wall and being spaced outwardly from said first continuous peripheral wall, thereby forming an air chamber between said upper and lower walls and said first and second continuous peripheral walls surrounding said water chamber.

2. The water bed of claim **1** further characterized in that said upper and lower walls are formed of a flexible plastic material.

3. The water bed of claim **1** further characterized in that first valve means is provided for communication with said water chamber to fill and exhaust water therefrom and second valve means is provided for communication with said air chamber to fill and exhaust air therefrom.

4. The water bed of claim **1** further characterized in that said downwardly struck flap is a continuous peripheral flap surrounding the periphery of and integral with said upper wall, and the flap on said lower wall is an upwardly struck continuous peripheral flap surrounding the periphery of and integral with said lower wall.

5. The water bed of claim **1** further characterized in that the downwardly extending flap on said upper wall is sealed thereto and the upwardly extending flap on said lower wall is sealed thereto.

6. The water bed of claim **1** further characterized in that the flaps on said upper and lower walls are integral at said seal and have tabs respectively overlying said upper and lower walls and which tabs are sealed to said upper and lower walls.

7. A water bed for supporting a body thereon, said water bed comprising upper and lower walls, a first continuous peripheral wall extending between said upper and lower walls and forming a water chamber therebetween, a first water tight lap seal securing said upper wall to the upper margin of said first continuous peripheral wall continuously along the entire peripheral length thereof, a second water tight lap seal securing said lower wall to the lower margin of said first continuous peripheral wall continuously along the entire peripheral length thereof, said upper and lower walls extending beyond said first continuous peripheral wall, and a second continuous peripheral wall located outwardly of said first continuous wall and which is in spaced apart relationship therefrom, thereby forming an air chamber between said upper and lower walls and said first and second continuous peripheral walls surrounding said water chamber, said first peripheral wall having an upstanding wall section which is permanently convex to said water chamber along its entire peripheral length and said upper and lower margins being permanently spaced outwardly from said water chamber along their entire peripheral lengths with respect to a midpoint of said upstanding wall section located between said upper and lower margins.

8. The water bed of claim **7** further characterized in that said first peripheral wall comprises a plurality of upstanding wall sections and which wall sections are connected by arcuately shaped corner margins which are also permanently convex to said water chamber, and a reinforcing strip disposed over each of said corner margins and lap sealed to the wall sections connected at said corner margins.

9. The water bed of claim **7** further characterized in that said first peripheral wall has a first pair of spaced apart opposed upstanding wall sections and a second pair of spaced apart opposed upstanding wall sections, a first corner margin connects one of the first pairs of upstanding wall sections with one of the second pair of upstanding wall sections and a second corner margin connects another of the first pair of upstanding wall sections with another of the second pair of upstanding wall sections, each of said corner margins being arcuately shaped and convex to said water chamber and concave to said air chamber, and a reinforcing strip disposed over each of said corner margins and being lap sealed to the wall sections connected at said corner margins.

10. The water bed of claim **7** further characterized in that said upper and lower walls are formed of a flexible plastic material.

11. The water bed of claim **7** further characterized in that said second continuous peripheral wall comprises a downwardly extending flap formed on said upper wall and an upwardly extending flap on said lower wall, and being lap sealed to said downwardly extending flap to form said second continuous peripheral wall, said second continuous peripheral wall thereby forming said air chamber between said upper and lower walls and said first and second continuous peripheral walls surrounding said water chamber.

12. The water bed of claim **11** further characterized in that said downwardly struck flap is a continuous peripheral flap surrounding the periphery of and integral with said upper wall, and the flap on said lower wall is an upwardly struck continuous peripheral flap surrounding the periphery of and integral with said lower wall.

13. A water bed for supporting a body thereon, said water bed comprising upper and lower walls, a first continuous peripheral wall extending between said upper and lower walls and forming a water chamber therebetween, a first projected flange extending continuously along the entire peripheral length of the upper margin of said first continuous peripheral wall and being integral therewith, a first water tight lap seal securing said upper wall to the first flange on the upper margin of said first continuous peripheral wall continuously along the outer peripheral length thereof, a second projected flange extending continuously along the entire peripheral length of the lower margin of said first continuous peripheral wall and being integral therewith, a second wall tight lap seal securing said lower wall to the second flange on the lower margin of said first continuous peripheral wall continuously along the entire peripheral length thereof, said upper and lower walls extending beyond said first continuous peripheral wall, a downwardly extending flap formed on said upper wall and an upwardly extending flap on said lower wall, each of said flaps having continuous peripherally extending end portions, each of said end portions being lap sealed to each other along their entire peripheral lengths to form a second continuous peripheral wall and being spaced outwardly from said first continuous peripheral wall, thereby forming an air chamber between said upper and lower walls and said first and second continuous peripheral walls surrounding said water chamber.

14. A water bed for supporting a body thereon, said water bed comprising upper and lower walls, a first continuous peripheral wall extending between said upper and lower walls and forming a water chamber therebetween, a first projected flange extending continuously along the entire peripheral length of the upper margin of said first continuous peripheral wall and being integral therewith, a first water tight lap seal securing said upper wall to the first flange on the upper margin of said first continuous peripheral wall continuously along the outer peripheral length thereof, a second projected flange extending continuously along the entire peripheral length of the lower margin of said first continuous peripheral wall and being integral therewith, a second water tight lap seal securing said lower wall to the second flange on the lower margin of said first continuous peripheral wall continuously along the entire peripheral length thereof, said upper and lower walls extending beyond said first continuous peripheral wall, a downwardly extending flap formed on said upper wall and an upwardly extending flap on said lower wall, each of said flaps having continuous peripherally extending end portions, each of said end portions being lap sealed to each other along their entire peripheral lengths to form a second continuous peripheral wall and being spaced outwardly from said first continuous peripheral wall, thereby forming an air chamber between said upper and lower walls and said first and second continuous peripheral walls surrounding said water chamber, said first peripheral wall having a first pair of spaced apart opposed upstanding wall sections and a second pair of spaced apart opposed upstanding wall sections which are permanently convex to said water chamber along their entire peripheral length, said wall sections having upper and lower margins which are permanently spaced outwardly with respect to a midpoint of said wall sections located between said upper and lower margins, a first corner margin connecting one of the first pair of upstanding wall sections with one of the second pair of upstanding wall sections and a second corner margin connecting another of the first pair of upstanding wall sections, each of said corner margins being arcuately shaped and convex to said water chamber and concave to said air chamber, and a reinforcing strip disposed over each of said corner margins and being lap sealed to the wall sections connected at said corner margins.

15. The water bed of claim 14 further characterized in that first valve means is provided for communication with said water chamber to fill and exhaust water therefrom and second valve means is provided for communication with said air chamber to fill and exhaust air therefrom.

16. The water bed of claim 14 further characterized in that said downwardly struck flap is a continuous peripheral flap surrounding the periphery of and integral with said upper wall, and the flap on said lower wall is an upwardly struck continuous peripheral flap surrounding the periphery of and integral with said lower wall.

17. The water bed of claim 14 further characterized in that the downwardly extending flap on said upper wall is sealed thereto and the upwardly extending flap on said lower wall is sealed thereto.

18. The water bed of claim 14 further characterized in that the flaps on said upper and lower walls are integral at said seal and have tabs respectively overlying said upper and lower walls and which tabs are sealed to said upper and lower walls.

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