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Darling

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[54] **SOFA BED CONSTRUCTION**

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[52] **U.S. Cl.** ..... **219/217;** 5/348 WB; 297/180

[51] **Int. Cl.** **H05b 1/00**

[58] **Field of Search** ..... 219/217, 313; 5/347, 348 R, 5/348 WB, 284; 128/376, 377; 297/180

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[57] **ABSTRACT**

A sofa bed construction wherein a sofa frame is provided which includes a liquid tank fixedly attached within the frame. A liquid fillable mattress, which is stored in a collapsed position within a storage compartment within the sofa frame, is to be fillable with liquid from the tank. When filled, the mattress is located on a supporting surface adjacent the sofa frame. The liquid filled mattress is to include a peripheral air frame for providing lateral support for the liquid filled mattress.

9 Claims, 5 Drawing Figures

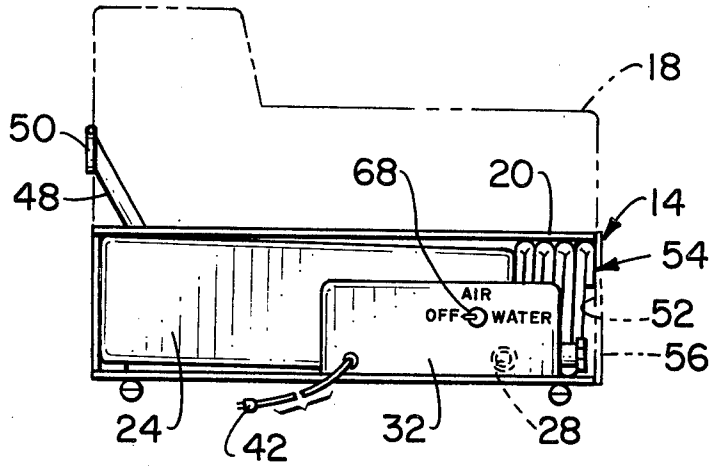


Fig. 1.

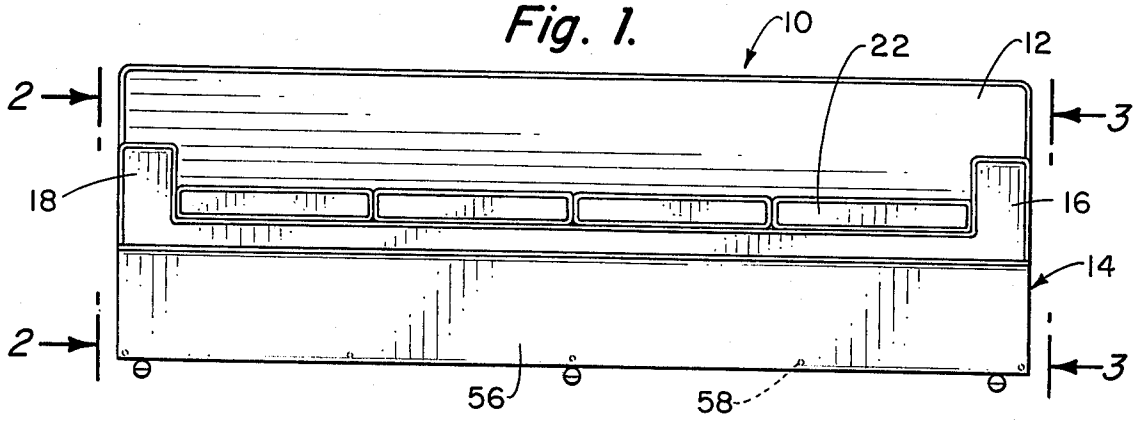


Fig. 2.

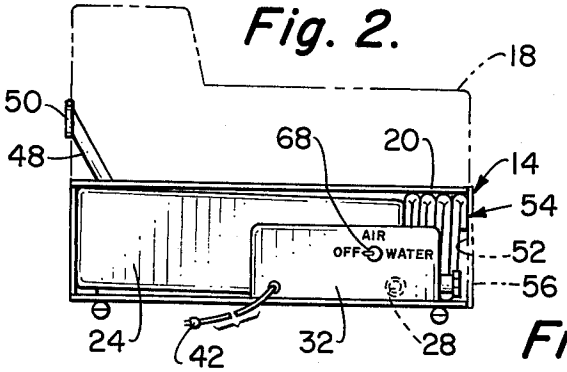


Fig. 3.

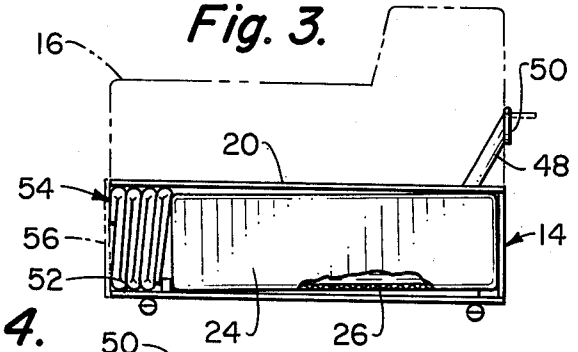


Fig. 4.

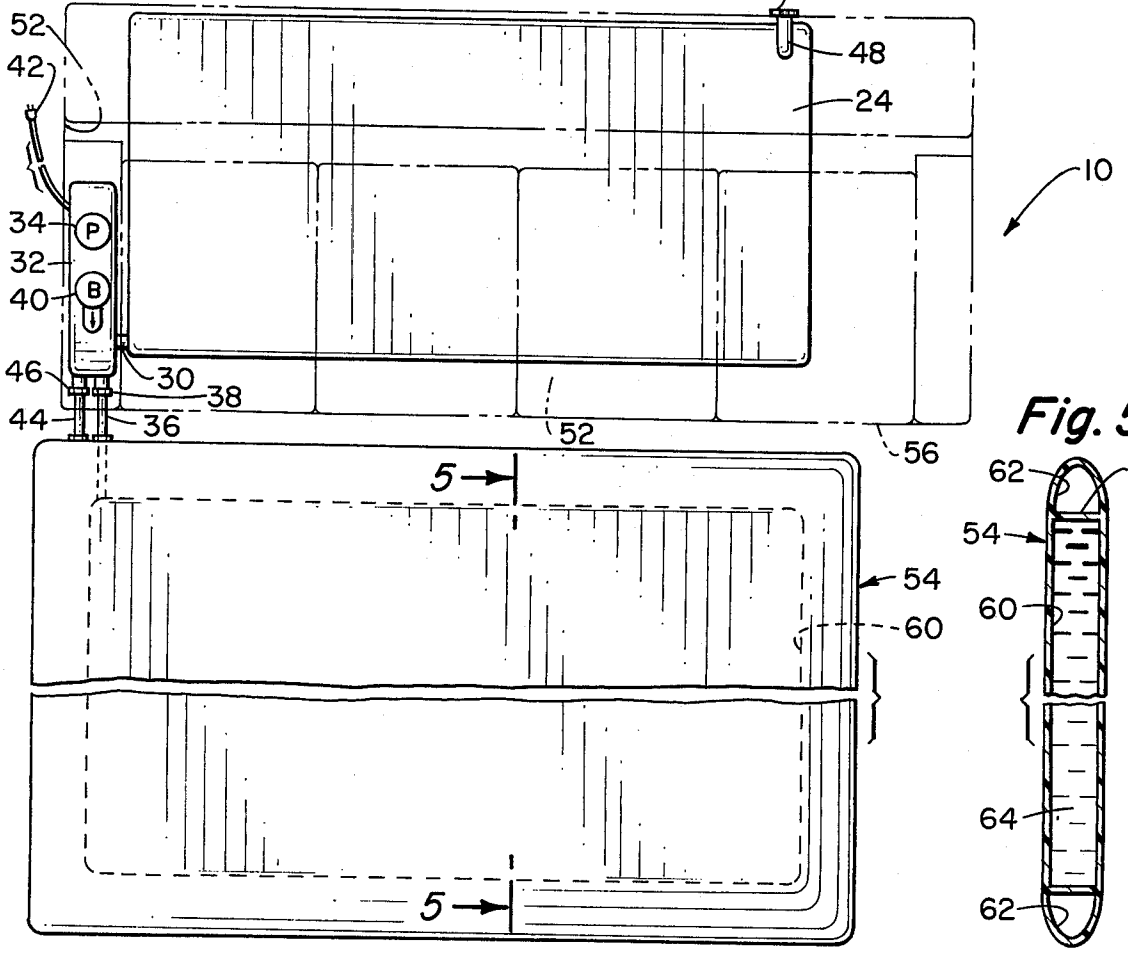


Fig. 5.

SOFA BED CONSTRUCTION

BACKGROUND OF THE INVENTION

The use of sofas or davenports which can be made into a bed have been well known for a substantial period of time. The normal type of sofa bed relates to a foldable mattress which is mounted upon a foldable frame. The frame is to be foldable into the sofa and when such is accomplished, the sofa bed almost precisely resembles a conventional sofa. Upon extraction of the mattress into the extended position, the mattress is then used as a conventional bed.

The use of a liquid filled mattress, or as it is commonly known a water bed, has also been known for a substantial period of time. Such water beds are proving to be a desirable form of bedding to a significant number of people. However, it has not been known previously to satisfactorily incorporate a water bed into a sofa bed.

The summary of this invention is believed to be clearly described in the abstract of the disclosure and reference is to be had thereto.

The primary advantage of the structure of this invention is to incorporate a water bed and a sofa into a single unit. Such a sofa construction would be a desirable feature in cramped quarter situations such as apartments or the like.

The sofa of this invention is of simple construction which therefore facilitates ease and economy of manufacturing.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a front view of the sofa bed construction of this invention;

FIG. **2** is a left side view of the sofa bed construction of this invention taken along line **2—2** of FIG. **1** showing the sofa in phantom construction in order to see the interior portion of the sofa frame;

FIG. **3** is a view similar to FIG. **2**, but of the right side of the sofa bed construction of this invention taken along **3—3** of FIG. **1**;

FIG. **4** is a plan view of the sofa bed construction of this invention with the liquid filled mattress in an extended position showing the sofa in phantom position; and

FIG. **5** is a cross-sectional view through the liquid filled mattress incorporated within the sofa bed construction of this invention taken along line **5—5** of FIG. **4**.

DETAILED DESCRIPTION OF THE SHOWN EMBODIMENT

Referring particularly to the drawing, there is shown in FIG. **1** a sofa bed construction **10** of this invention which includes a sofa frame which is formed into a sofa back **12**, sofa base **14**, arm rests **16** and **18**. The upper surface of the sofa base **14** is formed into a seat base **20**. Upon the seat base **20** is to be placed appropriate cushioning material including pillow cushions **22**.

Fixedly mounted within the sofa base **14** is a liquid receiving tank **24**. The tank **24** is to be formed of a thin walled, rigid material such as metal, but more than likely will be formed of a plastic material or a fiberglass material. Included within the tank **24** there maybe provided an appropriate electrical heating coils **26**. The coils **26** may be mounted exteriorly of the tank **24** if desired.

The aft end of the tank **24** is shown displaced at a higher position than the front end of the tank **24** so that the tank **24** is slightly inclined toward the front. The reason for this is that there is a liquid access opening **28** located adjacent the front end of the tank **24**. A conduit **30** is connected to the opening **28**. The free end of the conduit **30** extends within a housing **32** which is also mounted within the sofa frame adjacent the tank **24**. Included within the housing **32** is to be a conventional, electrically activated liquid pump **34**. The pump **34** connects with conduit **30** and also connects with a second conduit **36** through a fitting **38**.

Also included within the housing **32** is an air blower **40**. The air blower **40** as well as the pump **34** and the heating coils **26** are to be activated from an appropriate electrical source by means of plug **42**. The air blower **40** connects with third conduit **44** through a fitting **46**.

Connected into the tank **32** at the back end of the tank (at the highest point of the tank) is a ventilation conduit **48**. The conduit **48** is to supply air into the tank **24** when the liquid in the tank is being removed. During refilling of the tank **24** the air would be naturally expelled from the tank. The ventilation conduit **48** is conducted to the back end of the sofa to the sofa frame. A flat cover **50** is adapted to close over the ventilation conduit **48**. The flat cover **50** may be moved to the dotted line position shown in FIG. **3** in order to facilitate the insertion of chlorine tablets or other types of tablets in order to keep the water contained within the tank **24** at a purified state. In other words, the ventilation conduit **48** functions not only as an air vent, but also as a means to permit access of purifying substances.

A storage compartment **52** is formed within the sofa frame forward of the tank **24** and interiorly of the base **14**. The size of the storage compartment **52** is to be such as to facilitate storage of a liquid fillable mattress **54** when the mattress is empty. An access cover **56** is hingedly mounted to the front of the sofa frame. The cover **56** may include a series of snaps **58** to hold the cover **56** in a closed position.

The mattress **54** includes a center liquid fillable chamber **60**. Laterally surrounding the periphery of the chamber **60** is an air (or gas) chamber **62**. Conduit **36** cooperates with chamber **60** and with conduit **44** cooperating with chamber **62**. In other words, the pump **34** is to remove the liquid from the tank **24** and supply such into the chamber **60** and it is also capable of being reversed to return the liquid **64** from the chamber **60** back into the tank **24** when it is desired not to use the mattress **54**. The air blower **40** is to facilitate a supply of air into the air chamber **62**. The air chamber **62** is inflated sufficiently so as to provide lateral support for the water chamber **60**. A common wall **66** separates the air chamber **62** from the water chamber **60**.

The use of the air chamber **62** greatly enhances the feasibility of use of this invention. It has been found that by using an air chamber **62** that a substantially less amount of liquid **64** can be employed while still achieving the satisfactory results of a water bed. The pressurized air within the chamber **62** functions to relieve the lateral pressure of the water within the chamber **60** which as a result provides an unrestrained top membrane of the water bed **54** so that in essence the person feels as though he is supported directly upon the water. Therefore, the person feels that he is obtaining maximum comfort from the water bed **54**.

By using of the air chamber **62,** a substantially less amount of water need be used. Previously, with a conventional water bed construction, the amount of water used would prohibit the use of combining a water bed into a convertible type of sofa. However, it is estimated that the quantity of water used within the mattress **54** will be approximately 135 gallons which can be readily stored within the tank **24** which need only be 3 feet deep, 6 feet long, and 1 foot high.

It is to be understood that appropriate switching means **68** is to be provided so as to activate the blower **40** or the pump **34.** The switching means **68** should have convenient access exteriorly of the sofa bed frame.

The structure of this invention can readily incorporate certain additional features. For example, a colored liquid may be employed in order to fill up the mattress **54** in order to creat a desirable appearance. Numerous other features could be employed in combination with the structure of this invention without departing from the scope thereof.

What is claimed is:

1. A sofa bed construction comprising:

a sofa frame;

a liquid tank included within said sofa frame, said tank adapted to retain a quantity of liquid;

a liquid fillable mattress connected to said sofa frame having a valve for supplying liquid into said mattress, said mattress being spaced from said tank, a conduit interconnecting said tank and said mattress, said conduit to conduct liquid between said tank and said mattress; and

pump means connectable between said tank and said mattress, said pump means to remove the liquid from said tank and supply such into said mattress through said conduit, said pump means also to effect return of said liquid from said mattress into said tank.

2. The sofa bed construction as defined in claim **1** wherein:

said tank being positioned adjacent the bottom of said sofa frame between the bottom of said sofa frame and the seating area of said sofa.

3. The sofa bed construction as defined in claim **1** wherein:

electrical heating means connected to said tank, whereby the temperature of the liquid contained within said tank can be raised to a desirable temperature prior to being supplied into said liquid fillable mattress.

4. A sofa bed construction comprising:

a sofa frame;

a liquid tank included within said sofa frame, said tank adapted to retain a quantity of liquid;

a liquid fillable mattress having a valve for supplying liquid into said mattress;

pump means connectable between said tank and said mattress, said pump means to remove the liquid from said tank and supply such into said mattress, said pump means also to effect return of said liquid from said mattress into said tank; and

a storage compartment located interiorly of said sofa frame and located adjacent the lower front of said sofa frame, an access cover provided into said storage compartment, when said liquid fillable mattress does not contain any liquid said mattress is capable of being folded and compactly stored in said storage compartment.

5. A sofa bed construction comprising:

a sofa frame;

a liquid tank included within said sofa frame, said tank adapted to retain a quantity of liquid;

a liquid fillable mattress having a valve for supplying liquid into said mattress;

pump means connectable between said tank and said mattress, said pump means to remove the liquid from said tank and supply such into said mattress, said pump means also to effect return of said liquid from said mattress into said tank; and

an air ventilation tube extending within said tank at a high point of said tank, said air ventilation tube also providing access of water purification tablets into said tank.

6. A sofa bed construction comprising:

a sofa frame;

a liquid tank included within said sofa frame, said tank adapted to retain a quantity of liquid;

a liquid fillable mattress having a valve for supplying liquid into said mattress;

pump means connectable between said tank and said mattress, said pump means to remove the liquid from said tank and supply such into said mattress, said pump means also to effect return of said liquid from said mattress into said tank; and

said tank being inclined with respect to said sofa, whereby when said sofa frame is supported upon a horizontal surface the back end of said tank is displaced higher than the front end of said tank to facilitate substantially complete removal of the liquid from said tank.

7. A sofa bed construction comprising:

a sofa frame;

a liquid tank included within said sofa frame, said tank adapted to retain a quantity of liquid;

a liquid fillable mattress having a valve for supplying liquid into said mattress;

pump means connectable between said tank and said mattress, said pump means to remove the liquid from said tank and supply such into said mattress, said pump means also to effect return of said liquid from said mattress into said tank; and

a gas chamber laterally surrounding said mattress, blower means communicating with said gas chamber for inflating said gas chamber, said gas chamber providing lateral support for said liquid fillable mattress.

8. The sofa bed construction as defined in claim **6** wherein:

said blower means and said pump means being mounted within said sofa frame.

9. The sofa bed construction as defined in claim **7** wherein:

said gas chamber and said liquid fillable mattress having a common membrane wall.

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