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[54] **BED-MAKING AND TEMPERATURE-CHANGING DEVICE**
16 Claims, 2 Drawing Figs.

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[50] **Field of Search** 5/3, 83–85, 284, 317, 319, 321, 323, 362

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ABSTRACT: The device comprises a canopy coextensive with a bed which canopy is supported by a vertically movable member adapted to raise it from, and lower it onto, the bed. The upper surface of the canopy carries a fabric material which covers the bed when the canopy is in the lowered position. The lower surface of the canopy may be provided with heating or cooling means for warming or cooling the bed surface.

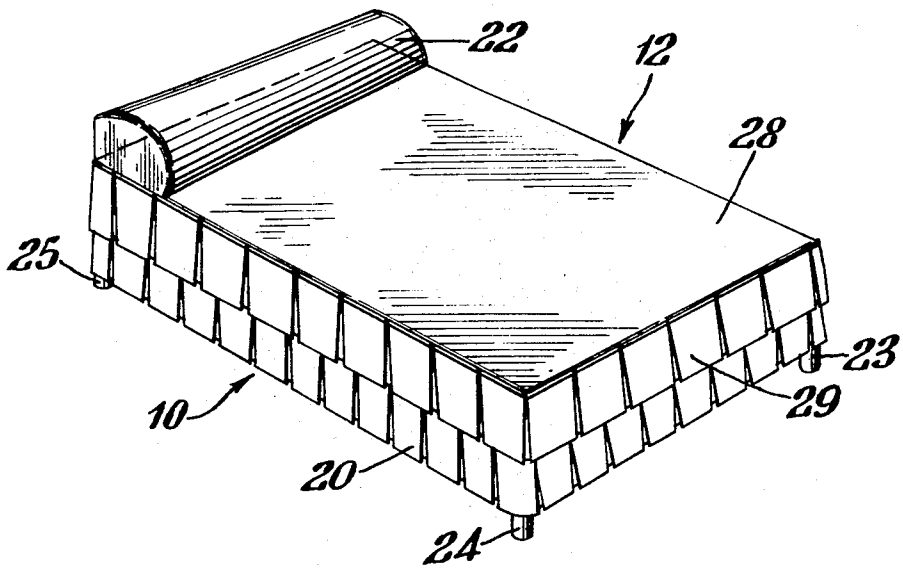


Fig. 1

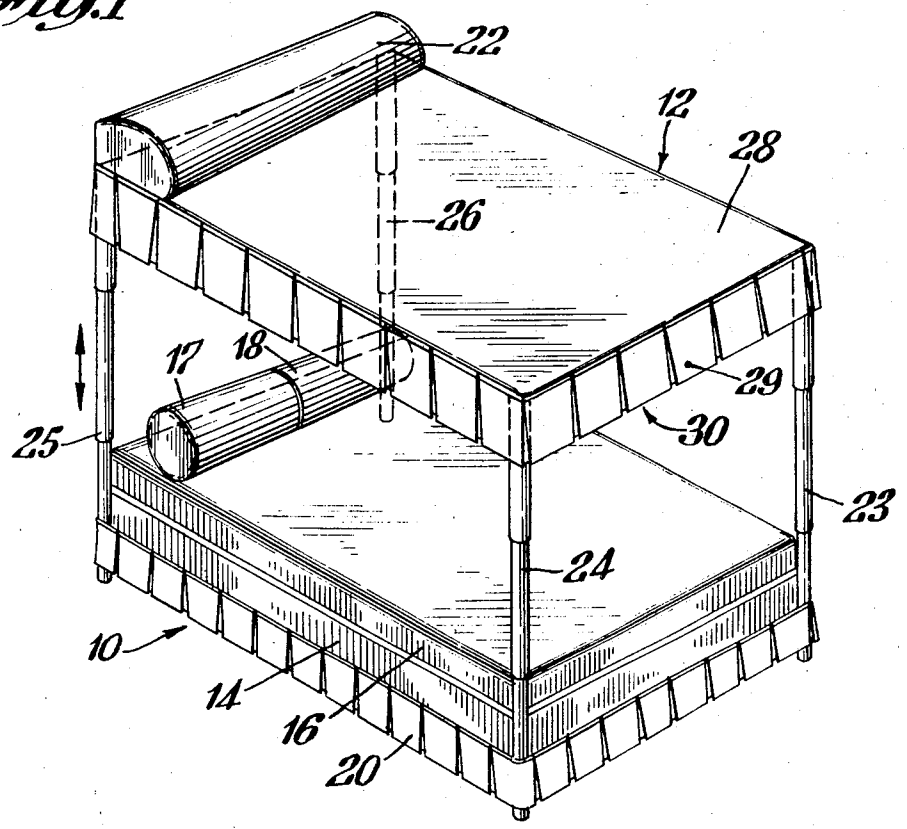
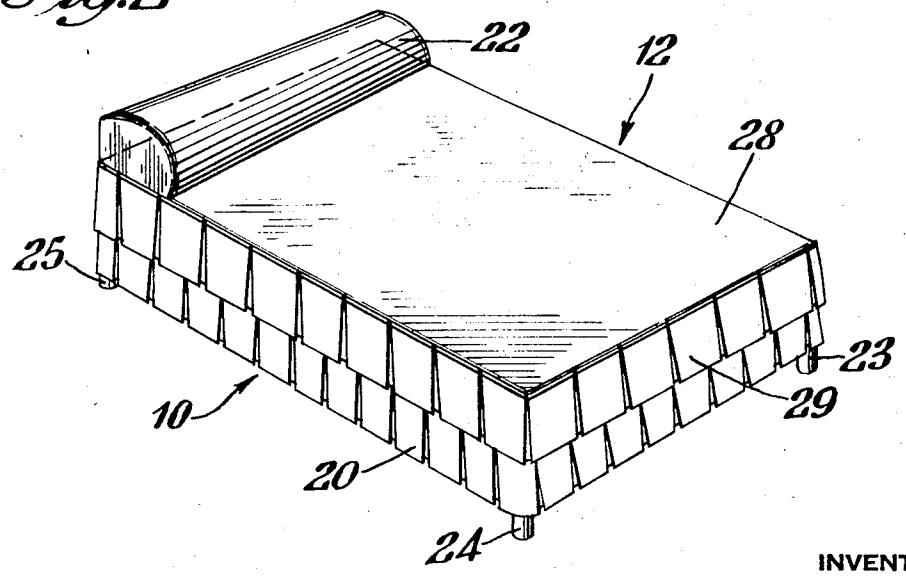


Fig. 2



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BED-MAKING AND TEMPERATURE-CHANGING DEVICE

This invention relates to a device for simplifying bed making and for warming and/or cooling the bed surface and a person sleeping or simply lying on the bed thereby improving the physical comfort of the person.

Over the years, equipment to provide physical comfort including warmth for sleeping has evolved to a high art but still involves relatively heavy covering which restricts motion and has no provision to keep the sleeper's head warm. In addition, daily efforts are necessary on the part of the housewife to keep the bed neat when not in use. This implies "making the bed," and later, removing the bedspread in order to have an aesthetically acceptable unit during the day and a functional unit for sleeping.

Accordingly, it is an object of the invention to provide a device which eliminates several of the steps heretofore necessary when making a bed, while insuring the desired aesthetic appearance of the bed.

It is another object of the invention to provide a means for warming and/or cooling the surface of the bed and the user of the bed in such a manner that blankets and, if desired, even top sheet may be eliminated.

The invention by means of which these objects are achieved will be described with reference to the accompanying drawing wherein:

FIG. 1 is a perspective view of a bed provided with a preferred embodiment of the device of the invention, said bed being ready for use by a sleeper; and

FIG. 2 is a perspective view of the same bed when not in use.

The device of the invention comprises a canopy extending over a bed and substantially coextensive with a mattress for said bed. The canopy preferably includes a flat sheet which extends in a plane substantially horizontal and parallel to the mattress. The canopy is supported by at least one movable member or transmission means adapted to raise the canopy from the bed and to lower said canopy onto said bed. The canopy has a lower face which is in contact with the mattress on the bed when the canopy is in the lowered position, and an opposite upper face which forms the top surface of the bed when the canopy is in the lowered position.

The upper face of the canopy is preferably covered with a fabric material such as conventionally used for making bed spreads, for example, the fabric material extending beyond the edges of the canopy to cover at least the mattress on the bed and, if desired, to also cover a box spring supporting the mattress. In this manner, when the canopy is in the lowered position, the bed appears covered with a wrinkle-free, neatly disposed bed spread.

When the bed is to be used for sleeping, the canopy is raised, as will be later described in detail, to a desired height, generally at least sufficient to permit sitting on the bed. The now exposed lower face of the canopy may, if desired, be covered with a fabric material for decorative purposes. But, in a preferred embodiment of the invention, the lower face of the canopy carries an electrical heating element providing heat, preferably radiant heat. The lower face of the canopy thus performs a function which achieves the purpose of an electric blanket, but in an improved manner since the sleeper on the bed and the surface of the bed around him are radiated at a predetermined or automatically controlled degree and thus the parts of the sleeper's body, which would not normally be covered by an electric blanket, are warmed in the same manner and at the same degree as the rest of his body. A further advantage of the heating surface of the canopy is that it eliminates the need of a blanket on the bed, permitting a sleeper unrestrained motion. Only a bottom sheet and, if particularly desired, a top sheet are necessary and the bed making operation is, therefore, highly simplified.

Alternatively, the radiant, lower face of the canopy may be employed for cooling, by radiation, by the use of reverse thermocouple refrigeration.

When a pillow and/or bolster are used, the canopy, instead of having an entirely flat surface, may be so shaped as to engage and cover the pillow and/or bolster.

Referring now to the drawing, there is shown in FIG. 1 a bed generally indicated at **10** and provided with a canopy **12** according to a preferred embodiment of the invention. The bed **10** conventionally comprises a box spring **14** and a mattress **16** resting thereon. A pair of pillows **17** and **18** is placed at the head of the bed. The box spring **14** is shown conventionally provided with a pleated skirt **20** of a fabric material. The canopy **12** is in the raised position and the bed is ready for use. The canopy **12** has a hollow, bolster-shaped portion **22** to mate with the head portion of the mattress with the pillows **17** and **18** thereon. The canopy **12** is movably supported by four vertical posts **23**, **24**, **25** and **26**, respectively, placed at the four corners of the bed. The posts are extensible and retractable and are preferably in the form of telescopic tubes. They may be automatically actuated in a manner similar to that employed with extensible and retractable automobile antennae. The necessary electrical motor, wiring and pneumatic connections, not shown, may conveniently be mounted under the bed. The posts may be actuated by a control with pushbuttons (not shown) at the end of a cable extending to a bedside table or the like.

The upper face **28** of the flat sheet portion of the canopy **12** is covered with a fabric material terminating into a pleated skirt **29** matching the skirt **20** of the box spring. As shown in FIGS. 1–2 the horizontal sheet is substantially imperforate. Many modifications will be apparent to those skilled in the art. For example, the box spring need not have a skirt at all and the skirt **29** is then made longer to cover both the mattress and the box spring when the canopy is in the lowered position. The lower face **30** of the canopy carries controlled electric heating and/or cooling elements to provide radiant heating or cooling in a manner well known to those skilled in the art. The necessary electrical connections and controls for the radiant heating and/or cooling elements are not shown, but may also run by cable to a bedside table or the like. The electric heating and/or cooling elements may either be disposed on the lower face **30** at the exclusion of the bolster-shaped part of the canopy or be disposed also on the bolster part of said lower face.

In FIG. 2, the bed **10** is shown with the canopy **12** in the lowered position. The telescopic tubes **23**, **24**, **25** and **26** have been retracted. The canopy **12** rests on the mattress and entirely covers said mattress and the pillows. The bed presents a neat, impeccable appearance. If desired, a layer of resilient material, such as an elastomer foam, for example, may be placed between the fabric cover **28** and the heating and/or cooling elements of the canopy, to act as cushioning means so that one may lie comfortably on the made bed.

In an alternative embodiment of the invention (not shown), the front posts **23** and **24** may be eliminated. The canopy **12** is attached to the posts **25** and **26** at the head of the bed and cantilevered from these posts. Other mechanical devices may also be used to vertically displace the canopy, such as a single much larger telescopic tube located preferably behind a headboard for the bed, or a single, folding X-member with two legs, the lower end of each leg sliding in a track disposed along the head end of the bed, the upper end of each leg sliding in a track disposed along the head end of the canopy, and suitable cantilevering of the canopy from the X-member. A similar multiple X-member may also be used. Still another suitable mechanical device may comprise a rigid nontelescopic post mounted vertically at the center of the head of the bed, with a collar slidably disposed around the post and means such as cables and an electric motor-actuated drum and electric motor-driven pinions to raise and lower the collar, the canopy being suitably attached to said collar at the center of the corresponding end of the canopy. If desired, suitable fabric

drapes may cover or hide the fixed post when the canopy is in the lowered position.

A further embodiment of the invention provides for curtains along the sides and/or the ends of the canopy (not shown). These curtains may, if desired, be in several sections. They may be disposed on conventional shade rollers mounted along the periphery of the canopy. By lowering or raising one or another, or all, of such curtains, the user of the bed may adjust air circulation produced by drafts, fans or otherwise.

What is claimed is:

1. In combination therewith, a bed, a mattress on said bed, said mattress having an upper surface, a flat sheet disposed over said upper surface of said mattress, said flat sheet being of substantially the same size and shape as said upper surface of said mattress, motion transmission means connected to said sheet for selectively lowering said sheet into contact with said upper surface of said mattress and raising said sheet directly above said mattress and spaced therefrom, said sheet-comprising bedspread means for substantially covering said upper surface of said mattress when said sheet is lowered into contact with said upper surface to obviate the need for other external bed coverings for said mattress, and said sheet-comprising canopy means when said sheet is raised away from said mattress and spaced therefrom to obviate the need for storing said sheet remote from said bed during use of said bed.

2. A combination as claimed in claim 1, in which said transmission means comprises one or more vertically extensible and retractable posts disposed at the periphery of said bed.

3. A combination as claimed in claim 2, in which said posts are telescopic tubes disposed at the four corners of said bed.

4. A combination as claimed in claim 2, in which said posts comprise a pair of telescopic tubes disposed at one end of said bed, said sheet being cantilevered from said posts.

5. A combination as claimed in claim 1, in which said transmission means is a vertically movable member supporting said sheet and having a collar slidably disposed around a vertical post fixedly mounted at one end of said bed.

6. A combination as claimed in claim 1, in which an end portion of said sheet is shaped to engage and cover a pillow placed onto a corresponding end portion of said bed.

7. A combination as claimed in claim 1, in which at least one curtain extending downwardly from the periphery of said sheet to said bed when said sheet is in the raised position, and position adjusting means for lowering and raising said curtain.

8. A combination as claimed in claim 1 wherein said sheet has a depending skirt about a portion of its periphery of sufficient length to cover the sides of said mattress.

9. A combination as set forth in claim 8 in which said skirt is longer than said sides of said mattress but sufficiently short so as not to be draped on the floor when said sheet is in contact with said mattress.

10. A combination as claimed in claim 8 in which said sheet is substantially imperforate, and said skirt being pleated.

11. A combination as claimed in claim 7 in which said position adjusting means include shade-type rollers mounted along the periphery of said sheet.

12. A combination as claimed in claim 1 in which said sheet incorporates temperature control means.

13. A combination as claimed in claim 12, in which the lower face of said sheet is provided with electrically energized heating means to comprise said temperature control means.

14. A combination as claimed in claim 12, in which the lower face of said sheet is provided with electrically energized cooling means to comprise said temperature control means.

15. A combination as claimed in claim 12 in which said sheet includes cushioning means disposed above said temperature control means for permitting a user to comfortably sit on said sheet above said temperature control means when said sheet is lowered into contact with said mattress.

16. A bedspread canopy device for use in selectively covering the mattress of a bed and acting as a canopy therefor comprising, a flat sheet, motion transmission means connected to said sheet for selectively lowering said sheet and raising said sheet, securing means for mounting said motion transmission means to a bed in such a manner that said sheet may be lowered into contact with the upper surface of the mattress and may be raised directly above the mattress and spaced therefrom, said sheet-comprising bedspread means for substantially covering the upper surface of the mattress when said sheet is lowered into contact with the upper surface to obviate the need for external bed coverings for the mattress, and said sheet-comprising canopy means when said sheet is raised away from the mattress and spaced therefrom to obviate the need for storing the sheet remote from the bed during use of the bed.