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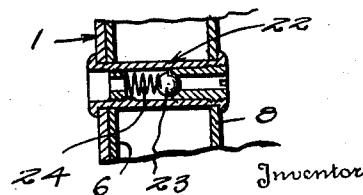
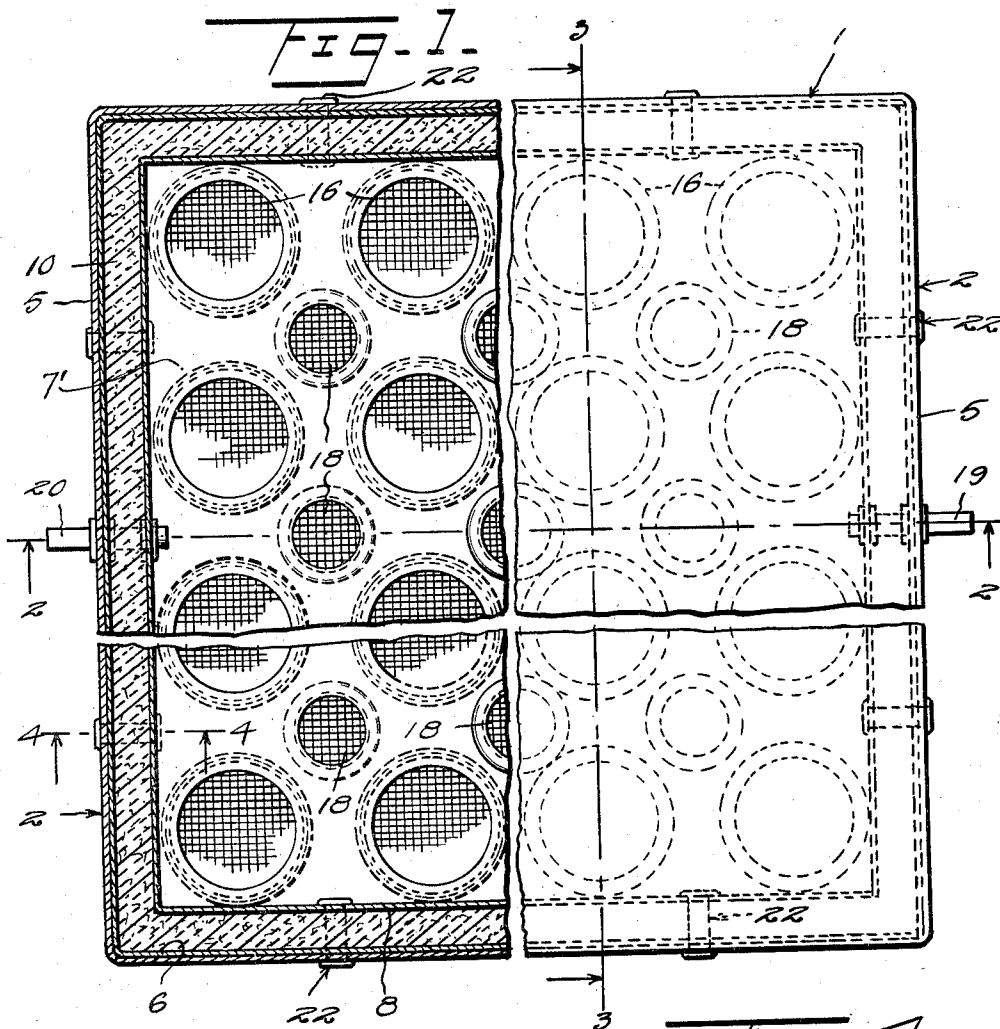
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AIR CONDITIONED CUSHION

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2 Sheets-Sheet 1



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AIR CONDITIONED CUSHION

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6 Claims. (Cl. 5-347)

This invention relates to improvements in cushions, mattresses or similar articles and pertains particularly to an article of this character which may be cooled or warmed, as required.

5 The primary object of the present invention is to provide a resilient padded body suitable for use as a bed mattress, upholstery for the seats and/or backs for automobiles, theatre chairs, public conveyance seats or the like, which is designed to receive air into its interior for permeating certain substances of the structure for the purpose of warming or cooling the body of the person occupying the same.

Another object of this invention is to provide 15 a structure of the above described character which is constructed in a novel manner to insure the proper circulation of air through the pervious substance which forms a part of the structure and upon which the body of the person thereon contacts.

20 The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawings but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings:—

25 Figure 1 is a view partly in top plan and partly in horizontal section of the mattress constructed in accordance with the present invention, the line on which the sectioned portion is cut being indicated by the section line 1—1 of Figure 2.

Figure 2 is a sectional view taken on the line 2—2 of Figure 1.

30 Figure 3 is a sectional view taken on the line 3—3 of Figure 1.

Figure 4 is a detail section taken on the line 4—4 of Figure 1.

Referring to the drawings wherein like numerals of reference designate corresponding parts throughout the several views, the numeral 1 represents a body constructed in accordance with the present invention and may represent particularly 50 a bed mattress or the bottom or back portion of the upholstery for a chair or seat. This body comprises an outer casing 2 of any suitable yieldable material such as heavy woven fabric having the top, bottom and side walls 3, 4 and 5, respectively. Covering the interior surface of this casing 2 over each of the walls mentioned is a sheet

or layer of air-tight material 6, which may be in the nature of rubber or the like.

Lying beneath the top wall 3 of the body 1 and extending throughout this area into contact with the side walls, is a relatively thick body of padded 5 or felted material 7, which is pervious to air. This represents the main padding of the mattress or upholstery body upon which the occupant of the body rests and has its underside covered by a fabric sheet or layer 7' so that it is enclosed between this layer and the top and parts of the sides 10 of the material 6. Disposed inwardly of each of the side walls 5 in spaced relation therewith and in spaced relation with the bottom wall 4 and the sheet of material 6 covering the same is a 15 second sheet or inner layer 8 of air-tight material such as rubber or oil cloth which at its top edge turns outwardly beneath the air pervious body 7 toward the adjacent wall where it contacts with the sheet 6, as indicated at 9. There is thus 20 formed between the air-tight bodies or sheets 6 and 8 an area which is filled with a suitable insulating substance such as felt, hair, wool, etc., which is indicated generally by the numeral 10. The air pervious body 7 rests upon the top edge 25 of this body of insulation material 10, as is clearly illustrated in Figures 2 and 3.

Within the area lying between the body 7 and the inner sheet of air-tight material 8, is a horizontal partition 11 of air impervious material 30 such as rubber or the like which divides this area into upper and lower air chambers 12 and 13, respectively. The partition 11 is provided with a plurality of apertures 14 in each of which is secured an end of a circular body or cylinder 15, 35 which is open at both ends, as illustrated in Figure 3 and which may be formed of the same material as the part 11. The upper end of each of these cylinders is covered by a screen 16, which is set adjacent an opening in the covering 7' 40 which overlies the underside of the body 7. This construction is shown in Figure 3. It will thus be seen that the lower end of each of the cylinders 15 opens into the lower air chamber 13 while the upper end opens through the screen 16 against 45 the padded or felted material 7.

The partition wall 11 and the cylinders 15 may be formed of any suitable resilient or yielding material such as rubber which will permit a general yielding of the entire structure when weight 50 is applied thereon. While it is contemplated to employ air pressure within the chambers 12 and 13, in some instances, to prevent or resist the collapse of the structure when a weight is placed thereon, it is also contemplated to employ 55

springs 21, if desirable, to maintain the top and bottom portions of the structure in spaced relation, and such springs are illustrated as extending through the cylinders 15, bearing at their upper ends against the screen disks 16 which are secured adjacent the air pervious body 7 and at their lower ends against the inner air-tight covering 8. These springs may be used or left out to suit the conditions under which the structure is to be used.

Between the cylinders 15, the covering 7' for the underside of the body 7, is provided with screened vents 18 by which communication is established between the area above the partition 11 and the interior of the padded body 7.

Extending through a side wall of the structure is a tube or pipe 19 which at its inner end opens into the lower air chamber 13, and extending through another side wall, preferably that opposite the wall through which the tube 19 extends, is a second tube which is indicated by the numeral 20 and which opens at its inner end into the upper chamber 12, the tubes 19 and 20 constituting air inlet and outlet means, respectively, with which suitable air conducting pipes may be attached for discharging into and out of the chambers of the body air of any desired degree of temperature.

It will be apparent from the foregoing that air introduced under pressure through the tube 19 will be distributed throughout the chamber 13 and will pass therefrom up through the cylinders 15 and through the screens 16 into the air pervious body 7. The air will be distributed through the material of the body 7 and will escape through the screened vents 18 into the chamber 12, from which it will pass after circulating about the cylinders 15 through the outlet 20. By maintaining the air under a suitable pressure, it is possible to do away with the springs 21, the top of the structure being supported entirely by the air.

In order that any unusual or excessive pressure which may be developed within the chambers of the body may not cause damage, the side walls may be provided with escape valves such as is shown in Figure 4 and indicated generally by the numeral 22. Each of these valves may comprise a spring pressed ball 23 maintained upon its seat by a spring 24 of suitable pressure to keep the valve closed under normal conditions of air pressure within the body. Should the pressure become excessive, however, the ball 23 would be unseated against the tension of the spring 24 so as to allow some of the air to escape.

From the foregoing, it will be readily apparent that a structure of the character herein described may be used as a bed mattress, for the seat or back, or both, of a chair or bench, and by reason of its construction, air of a controlled temperature may be brought into close contact with the body of the person occupying the structure so that the body temperature may be controlled to a certain degree.

While the specification sets forth rubber or oil cloth as an example of the air-tight or air-impervious material used, it is to be understood that where "air-impervious material" is used in the specification and claims, this does not necessarily mean a material through which no air whatever will pass but is intended to include tightly woven material or fabric of similar nature which will so effectively resist the passage of air under normal conditions as to make the air

pass through the cylinders and the pervious material as described.

What is claimed is:—

1. A structure of the character described, comprising a casing of yieldable air impervious material, means heat insulating the bottom and portions of the sides of the inside surface of the casing, an air pervious body overlying the inner surface of the top of the casing and connecting with the insulation means at the sides thereof, the central part of the structure being formed to provide a chamber of which the air pervious body and insulating means form walls, means by which air may be introduced into and removed from said chamber, and means within the chamber for causing the introduced air to circulate through the air pervious material before passing out through the air removing means.

2. A body of the character described, comprising an air impervious casing having top, bottom and side walls, means forming a heat insulating covering over the bottom and portions of the side walls, an air pervious body covering the inner side of the top wall of the casing, the central part of the body between the air pervious material and insulating means being formed to provide a chamber, air impervious partition means dividing said central chamber into upper and lower air chambers, an inlet tube leading through a side wall into the lower air chamber, an outlet tube leading through a side wall from the upper air chamber, and means constructed and arranged whereby air will be circulated from the lower air chamber through the upper air chamber to and through the air pervious body of material and the air discharged from the body of pervious material into the upper air chamber.

3. A body of the character described, comprising an air impervious casing having top, bottom and side walls, a lining of heat insulating material covering the inner surface of the bottom wall and portions of the side walls, a layer of air pervious material over the inner side of the top wall, there being a chamber centrally of the body of which the said layer forms the top wall, a lining over the top wall of the chamber, a lining of air impervious material covering the side and bottom walls of the chamber, an air impervious partition dividing the chamber horizontally between the said top and bottom walls to form upper and lower air chambers, a tube extending through a wall into the lower chamber, a tube extending from the upper air chamber through a wall of the body structure, a tubular air conducting body of air impervious material leading from said partition to the body of air pervious material and opening at one end through the partition wall into the lower air chamber, the other end of the tubular body opening through said chamber top wall lining against the body of pervious material, and said chamber top wall lining having openings whereby air discharged into the air pervious body may flow back into the upper air chamber.

4. A body of the character described, comprising an air impervious casing having top, bottom and side walls, a heat insulating and air impervious liner material covering the inner surface of the bottom wall and portions of the side walls, a layer of air pervious material over the inner side of the top wall, the said walls enclosing an area forming a chamber centrally of the body, a horizontal air impervious partition dividing the chamber between the liner of the bottom wall and the air pervious material to form upper and

lower air chambers, a covering over the inner side of the top wall of the first chamber, a tube extending through a wall into the lower air chamber, a tube leading from the upper air chamber through a wall of the body structure, a tubular air conducting body leading from said partition to and through the said covering of the said top wall to the body of air pervious material and opening at one end through the partition wall into the lower air chamber, and a spring extending through the air conducting body and at one end engaging means adjacent the body of pervious material and at its other end engaging the insulation material of the bottom wall.

5. A body structure of the character described, comprising a casing having top, bottom and side walls, a lining of air-tight material covering the inner surfaces of said walls, a body of heat insulating material covering the inner surface of said liner at the bottom and over portions of the side walls, a relatively thick body of air pervious material covering the liner over the inner surface of the top wall and abutting the side walls, there being a chamber in the center of the structure, an air impervious partition dividing the chamber to form upper and lower air compartments, an air impervious lining covering the interior surfaces of the bottom and side walls of the chamber, an air pervious lining covering the top wall of the chamber, a plurality of cylinders open at both ends, each of said cylinders opening at one end through the top lining of

the chamber and communicating with the body of pervious material and opening at its other end through an aperture in the partition wall, a tube leading through a side wall into the lower air chamber, a tube leading through a side wall from the upper air chamber, and an excess pressure relief valve leading from the upper chamber through a side wall to the exterior of the structure.

6. A structure of the character described, comprising a centrally chambered body having bottom and side walls of heat insulating material, said walls having means to prevent passage of air therethrough, a top wall of air pervious material, material covering the inner surface of said top wall and separating the same from the side walls, means preventing the escape of air through the top wall to the exterior of the body, a yieldable partition dividing the chamber of the body into upper and lower air compartments, flexible air conducting tubes connected at one end with and opening through the partition and connected at their other ends with and opening through the top wall covering material against the top wall, said top wall covering having air openings leading from the side of the top wall into said upper air compartment, an air tube leading through a wall into the upper air compartment, and an air tube leading through a wall into the lower air compartment.

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