

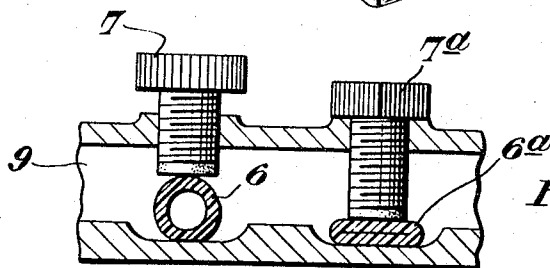
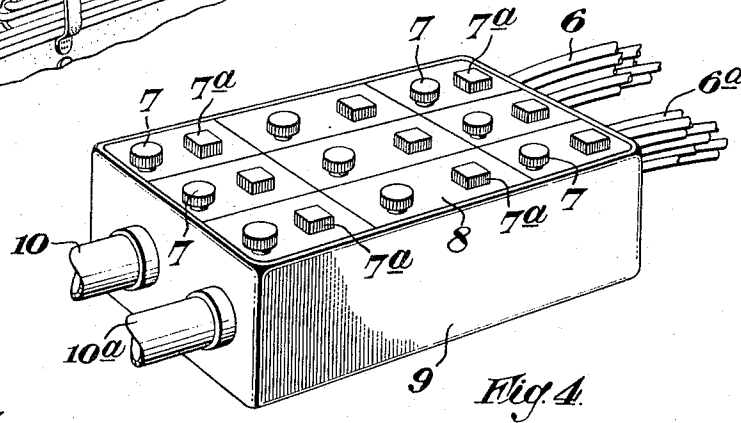
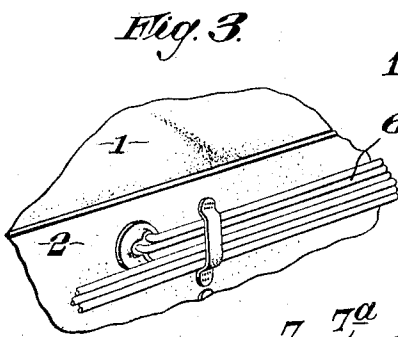
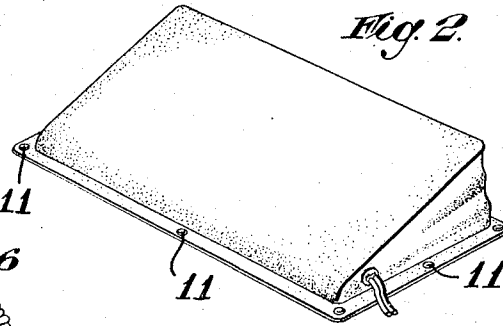
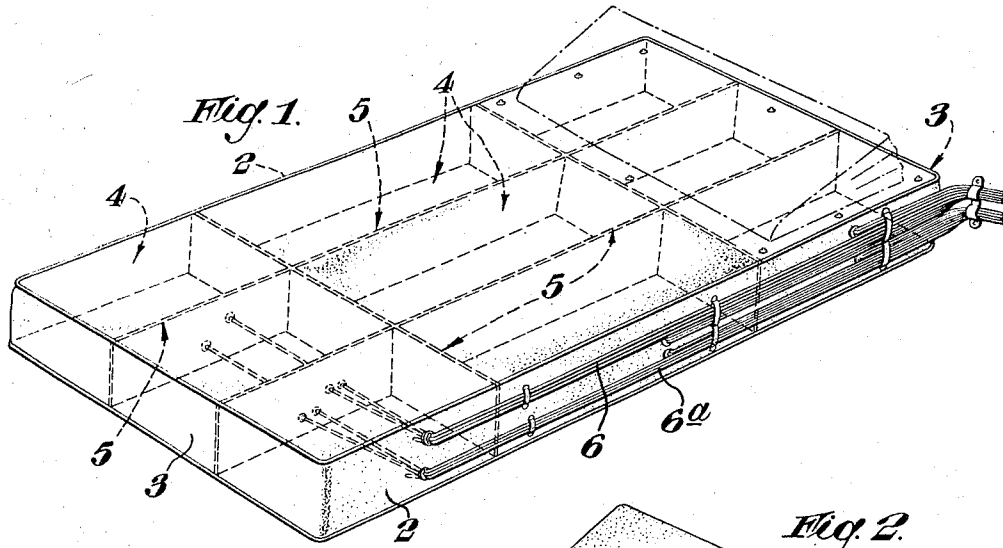
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INFLATABLE MATTRESSES, PILLOWS AND CUSHIONS

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3,303,518  
INFLATABLE MATTRESSES, PILLOWS  
AND CUSHIONS

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1 Claim. (Cl. 5-349)

This invention has reference to inflatable supporting members for the human body such as mattresses, pillows and cushions, particularly inflatable hospital mattresses, and has for its primary object to provide a construction wherein different pressures may be given to various parts of the supporting member whereby the load-bearing area can be divided into separate sections capable of independent adjustment as to degree of softness to suit individual requirements. Invalids who are forced to lie in bed for long periods, and who are unable to move easily from one position to another, suffer considerable discomfort, and by means of the invention the pressures at selected areas of the mattress may be relieved or increased to minimize this discomfort. The same considerations apply to smaller body or body-part supports such as pillows, or cushions for limbs.

According to the said invention an inflatable supporting member for the human body (particularly a mattress) is made of flexible airtight material and is divided interiorly by airtight webs extending between its upper and lower walls into a plurality of individually inflatable compartments, each compartment being provided with a pair of separate tubes respectively for inflation and deflation.

In order that the said invention may be readily understood some embodiments thereof will be described, by way of example, with the aid of the accompanying drawings wherein:

FIGURE 1 is a perspective view of a mattress according to the invention;

FIGURE 2 is a perspective view of a pillow according to the invention, also shown in position (dot-and-dash lines) in FIGURE 1;

FIGURE 3 is an enlarged fragmentary view of the side of the mattress so as to show more clearly the arrangement of air tubes;

FIGURE 4 is a perspective view of an inflation and deflation control box used in conjunction with the mattress seen in FIGURE 1; and

FIGURE 5 is a sectional detail to an enlarged scale showing one way in which the control buttons, which appears in FIGURE 4, operate to strangle the flow of air through the respective air tubes.

Referring to FIGURE 1 a mattress of oblong form and requisite size is constructed of an airtight plastics material with a top 1 spaced from a similar bottom, sides 2 and ends 3. It is divided interiorly into a suitable number, e.g. nine, compartments 4. These compartments 4 are of box-like form made by airtight webs 5 extending between the top wall 1 and bottom wall of the mattress, and in criss-cross disposition. It is advantageous to make the three compartments which lie in the transverse middle somewhat longer than the others. Each compartment is capable of being individually inflated and deflated, and for this purpose is connected by air tubes 6, 6a or other suitable ducts to a device such as a combined air compressor and vacuum pump, the tubes 6 communicating with the compressor and the tubes 6a to the pump. The tubes are neatly bundled together and fixed to the mattress along one side 2, and led through the side wall to their various compartments (as shown for example by the broken lines in the three compartments at the foot of the mattress in FIGURE 1).

The compressor/pump is not shown and is remotely

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using the mattress, and the remote control means is so designed as to permit each compartment of the mattress to be inflated or deflated to any degree required by the occupant of the mattress.

5 Thus the control device such as the control box 9 shown in FIGURE 4 includes a panel 8 having two sets of operating buttons 7 and 7a in pairs corresponding to the mattress compartments, one set being for inflation and the other for deflation. The sets are advantageously distinguished by shape so that they may be selected by the sense of touch, e.g. round buttons 7 for inflation and square buttons 7a for deflation, the buttons operating switches for electrically starting the pump, and opening respective valves in the air ducts, or, as illustrated in 10 FIGURE 5, they may be screws, preferably quick thread, for strangling or opening the tubes 6, 6a in the interior of the control box 9. The latter would have main pressure and exhaust chambers constituting manifolds for feeding the respective tubes, and such manifolds would be connected to the compressor/pump by the tubes 10, 10a.

In a simple form the air tubes or the like from the compartments terminate in inflation valves for manual inflation or deflation by a nurse or other attendant.

It will be seen that in a mattress according to the invention it will be a simple matter to adjust the mattress to the requirements of the occupant's body at any given point.

In the case of particular sensitivity of a part of the body, it will be possible by deflating almost completely an appropriate compartment, to remove altogether bodily contact with the mattress and allow the part to "bridge" itself between inflated compartments.

In cases where only a limb is to be served by the invention, a smaller inflatable supporting member may be constructed as a cushion of appropriate shape, e.g. an elongated cushion with a reduced number of individually inflatable and deflatable compartments, and, as illustrated in FIGURES 1 and 2 a pillow could equally well be divided into compartments capable of individual inflation and deflation. The pillow could be attachable to the mattress by complementary press stud parts 11.

I claim:

A mattress for supporting a body, comprising an airtight envelope having an upper wall and a lower wall united by a peripheral wall, the walls being of flexible impervious material, internal transverse webs of flexible impervious material extending between, and joined in an airtight manner to, the walls to divide the interior of the mattress into a plurality of isolated compartments, a plurality of pairs of flexible tubes grouped together and secured to the exterior of the peripheral wall, the number of pairs corresponding to the number of compartments and extending in an air-tight manner through the flexible impervious material to open at their inner ends into the compartments with one pair opening into each compartment, each pair of tubes comprising an inflating tube and a deflating tube, the outer ends of the inflating tubes and deflating tubes being coupled, by a control box, to a common main air pressure inlet tube and a common air extraction tube respectively, and manually operable means on the control box for selectively opening and closing the passage between each inflating and deflating tube and the respective air inlet and air extraction tube.

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