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(54) **Support cushion and inflatable pad therefor**

Aufblasbare Matratze oder - Kissen

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Description

[0001] This invention relates to a support cushion particularly for relieving pressure for bed-ridden or chair-bound patents.

[0002] Support cushions of this kind usually comprise pads of for example foamed or cellular synthetic material, and/or an inflatable air cushion, contained within hard wearing washable covers for example of polyurethane-coated textiles.

[0003] A problem encountered with prior art cushions or support pads is that air cushions, because they have to be air tight, are not breathable and as they comprise two panels of flexible material joined only by a seam around the periphery of the panels, tend to bulge to form a convex surfaced body rather than a flat surfaced panel suitable for rectangular cushions.

[0004] A prior art document corresponding to the preamble of appended claim 1 is GB-A-2 228 193.

[0005] It is an object of the invention to provide a support cushion and an inflatable pad for a support cushion which enable a fully breathable cushion to be obtained with an inflatable pad as its core, and also enable control of the geometry of the fully inflated pad to be achieved.

[0006] From a first aspect, the invention provides an inflatable pad for a support cushion, the pad comprising an airtight outer membrane providing upper and lower surfaces of the pad, and an array of tubes extending through the pad between said upper and lower surfaces, and providing air passages passing through the pad, characterised in that the tubes are each provided with a flange at each end, each said flange engaging with a respective outer face of the air-tight membrane in contact with the upper and lower surfaces and in that each tube is associated with a respective tension spring which extends between said upper and lower surfaces so that the spring tends to draw the upper and lower surfaces towards each other.

[0007] Each tube means is associated with a respective tension spring means between said upper and lower surfaces, whereby the spring means tends to draw the upper and lower surfaces towards each other, thereby countering the pressure of air within the pad to prevent bulging of the pad when inflated.

[0008] The tension spring means may be concentrically disposed about respective tube means. The springs may be welded polyurethane discs.

[0009] The invention also provides, from a second aspect, a support cushion including an inflatable pad according to the first aspect of the invention as part of the internal structure of the cushion.

[0010] The support cushion may additionally comprise one or more pads of foamed or expanded plastics material, e.g. polyurethane, and one or more thereof may be shaped to provide a recess or recesses to accommodate the inflatable pad.

[0011] The support cushion may be covered with a cover of polyurethane coated fabric, such as a jersey

knit. This may comprise two parts, such as a flat base, and a shallow pouch, which can be separated for removal for washing or replacement.

[0012] The cover preferably has a nozzle formed therewith to accommodate an inflation tube for the inflatable cushion.

[0013] A preferred embodiment of inflatable pad for a support cushion, according to the invention, and of a cushion according to the invention incorporating the pad, will now be described by way of example with reference to the accompanying drawings, wherein:-

Figure 1 is an exploded perspective view of a support cushion according to the invention;

Figure 2 is a perspective view of the cushion of figure 1 assembled;

Figure 3 is a perspective view of an inflatable pad according to the invention forming part of the support cushion of Figures 1 and 2,

Figure 4 is a cross-section of the pad of Figure 3 taken parallel to the major surfaces of the pad,

Figure 4a is a detailed cross section of part of the pad, and

Figure 5 is a cross-section of the pad of figures 3 and 4 taken on line V-V of figure 4.

[0014] Referring first to figures 1 and 2, a support cushion 10, which is especially suitable for providing long term support and comfort to bed - and chair - ridden, patients to help to prevent pressure ulcers and facilitate healing of injuries or operation scars, comprises an outer cover consisting of a pouch-shaped upper part 11 with a top, and four side walls, and a square base part 12 which can be joined to and separated from the upper part 11 so that the cover can be removed for washing or replacement. The cushion 10 provides an overall shallow square box shape.

[0015] The cushion 10 also has a tubular spigot 13 projecting from one face thereof, to accommodate the inflation tube of an inflatable pad within the cushion as described below.

[0016] As shown in figure 1, the interior of the cushion 10 comprises a lower pad 14 of expanded polyurethane foam, formed with a hollow to accommodate an inflatable pad 15, and an upper cover pad 16 also of polyurethane foam. The inflatable pad 15 has an inflation tube 17 which extends out through the cover via the spigot 13.

[0017] The inflatable pad is as shown in more detail in figures 3, 4, 4a and 5. The pad comprises an airtight skin 20, having an upper web providing an upper surface 21 and a lower web providing a lower surface 22. The inflation tube 17 communicates with the interior of the pad 15 for inflation and deflation of the pad.

[0018] The upper web 21 of the airtight skin 20 provides for a micro climate between the foam pad 16 and the upper part 11 of the outer cover, This assists the circulation of air within the cushion enabled by the use of the foam pads 14 and 16 and the inflatable pad 15.

[0019] The pad 15 has a plurality of tube means 23 which pass through the pad between the upper and lower surfaces of the pad, so that air can pass through the pad, and the pad be rendered 'breathable'.

[0020] The tube means 23 are arranged in an array of 4 x 4 (sixteen in total) in the embodiment shown, and each consist of a tubular member which is open at each end, and is provided at each end with a respective flange 24 which is sealed e.g. by thermal welding to the skin 20 around the edges of the aperture. The number and distribution thereof may be varied as required by the shape and size of the cushion.

[0021] The tube means 23 are each surrounded by a respective tension spring 25 in the form of a welded polyurethane disc which acts to bias the respective opposed surfaces 21 and 22 together against the expansive force of air under pressure introduced from the inflation tube 17. This acts to prevent bulging of the pad 15, so that even when fully inflated it can fit within the geometry of the core of the cushion 10.

[0022] The springs 25 are distributed so that they each are associated with a respirative tube means 23, 20.

[0023] The cover 11 and 12 of the cushion 10 is a polyurethane coated jersey knit which has good washability properties, and is effectively impervious thereby preventing soiling of the core of the cushion, in particular the polyurethane foam pads 14, 16 and the inflatable pad 15.

[0024] A cushion of the kind described, in accordance with the invention provides good support and comfort for bed-ridden or chair bound patients and will help to prevent or limit pressure sores and ulcers when and facilitate the healing of injuries and operation scars, and the cushion will preferably be manufactured to suit specific bedding users and domestic furniture (such as chairs, settees etc as part of the upholstery, and for wheel chairs).

Claims

1. An inflatable pad for a support cushion, the pad comprising an airtight outer membrane providing upper and lower surfaces (21, 22) of the pad, and an array of tubes (23) extending through the pad between said upper and lower surfaces, and providing air passages passing through the pad, **characterised in that** the tubes (23) are each provided with a flange (24) at each end, each said flange engaging with a respective outer face of the air-tight membrane in contact with the upper and lower surfaces (21, 22) and **in that** each tube (23) is associated with a respective tension spring (25) which extends between said upper and lower surfaces so that the spring (25) tends to draw the upper and lower surfaces (21, 22) towards each other.
2. A pad according to Claim 1, wherein the springs are each concentrically disposed about respective tube means.

3. A pad according to Claim 1 or 2, wherein the springs each comprise a welded polyurethane disc.
4. A support cushion, **characterised in that** it includes an inflatable pad according to any one of Claims 1 to 3.
5. A support cushion according to Claim 4, which additionally comprises one or more pads of foamed or expanded plastics material.
6. A support cushion according to Claim 5, wherein one or more of said further pads is shaped to provide a recess or recesses to accommodate the inflatable pad.
7. A support cushion according to any one of Claims 4 to 6 wherein the support cushion is covered with a cover of polyurethane coated fabric.
8. A support cushion according to Claim 7, wherein the cover comprises two parts, a flat base and a shallow pouch which can be separated.
9. A support cushion according to claim 7 or 8 wherein the cover has a nozzle formed therewith to accommodate an inflatable tube for the inflatable cushion.

Patentansprüche

1. Aufblasbares Polster für ein Stützkissen, wobei das Polster eine luftdichte Außenmembran umfasst, die eine obere und eine untere Fläche (21, 22) des Polsters vorsieht, und eine Anordnung von Schläuchen (23), die sich zwischen der oberen und der unteren Fläche durch das Polster erstrecken und durch das Polster verlaufende Luftdurchgänge vorsehen, **dadurch gekennzeichnet, dass** die Schläuche (23) jeweils mit einem Flansch (24) an jedem Ende ausgestattet sind, wobei jeder Flansch in eine jeweilige Außenfläche der luftdichten Membran in Berührung mit der oberen und der unteren Fläche (21, 22) eingreift, und dadurch, dass jeder Schlauch (23) mit einer jeweiligen Spannfeder (25) assoziiert ist, welche sich zwischen der oberen und der unteren Fläche erstreckt, so dass die Feder (25) dazu tendiert, die obere und die untere Fläche (21, 22) zueinander hin zu ziehen.
2. Polster gemäß Anspruch 1, wobei die Federn jeweils konzentrisch um jeweilige Schlauchmittel herum angeordnet sind.
3. Polster gemäß Anspruch 1 oder 2, wobei die Federn jeweils eine geschweißte Polyurethanscheibe umfassen.

4. Stützkissen, **dadurch gekennzeichnet, dass** es ein aufblasbares Polster gemäß einem der Ansprüche 1 bis 3 enthält.
5. Stützkissen gemäß Anspruch 4, das ferner ein oder mehrere Polster aus geschäumtem oder expandiertem Kunststoffmaterial umfasst. 5
6. Stützkissen gemäß Anspruch 5, wobei ein oder mehrere der weiteren Polster so geformt sind, dass sie eine Vertiefung oder Vertiefungen zur Aufnahme des aufblasbaren Polsters bilden. 10
7. Stützkissen gemäß einem der Ansprüche 4 bis 6, wobei das Stützkissen mit einem Bezug aus einem polyurethanbeschichteten Stoff bedeckt ist. 15
8. Stützkissen gemäß Anspruch 7, wobei der Bezug zwei Teile umfasst, eine flache Basis und einen platten Beutel, die voneinander getrennt werden können. 20
9. Stützkissen gemäß Anspruch 7 oder 8, wobei der Bezug eine Düse aufweist, die damit gebildet wird, um einen aufblasbaren Schlauch für das aufblasbare Kissen aufzunehmen. 25
- le des revendications 1 à 3.
5. Un coussin de soutien selon la revendication 4, qui comporte de surcroît un ou plusieurs coussinet(s) en matière de mousse plastique ou plastique expansé.
6. Un coussin de soutien selon la revendication 5, où un ou plusieurs desdits coussinets supplémentaires est/sont profilé(s) pour fournir un creux ou des creux afin de loger le coussinet gonflable.
7. Un coussin de soutien selon n'importe laquelle des revendications 4 à 6 où le coussin de soutien est recouvert d'une protection d'étoffe enduite de polyuréthane.
8. Un coussin de soutien selon la revendication 7, où la protection comporte deux parties, une base plate et une poche mince qui peuvent être séparées.
9. Un coussin de soutien selon la revendication 7 ou 8 où la protection a une buse formée avec elle pour loger un tube gonflable pour le coussin gonflable.

Revendications

1. Un coussinet gonflable pour un coussin de soutien, le coussinet comportant une membrane externe hermétique fournissant des surfaces supérieure et inférieure (21, 22) du coussinet, et un ensemble de tubes (23) s'étendant à travers le coussinet entre lesdites surfaces supérieure et inférieure, et fournissant des passages d'air passant à travers le coussinet, **caractérisé en ce que** les tubes (23) sont chacun munis d'une bride (24) à chaque extrémité, chaque dite bride entrant en engagement avec une face externe respective de la membrane hermétique en contact avec les surfaces supérieure et inférieure (21, 22) et **en ce que** chaque tube (23) est associé à un ressort de tension respectif (25) qui s'étend entre lesdites surfaces supérieure et inférieure de sorte que le ressort (25) ait tendance à tirer les surfaces supérieure et inférieure (21, 22) l'une vers l'autre. 30 35 40 45
2. Un coussinet selon la revendication 1, où les ressorts sont chacun disposés de façon concentrique autour des moyens de tube respectifs. 50
3. Un coussinet selon la revendication 1 ou 2, où les ressorts comportent chacun un disque de polyuréthane soudé. 55
4. Un coussin de soutien, **caractérisé en ce qu'il** comprend un coussinet gonflable selon n'importe laquelle

Fig. 1

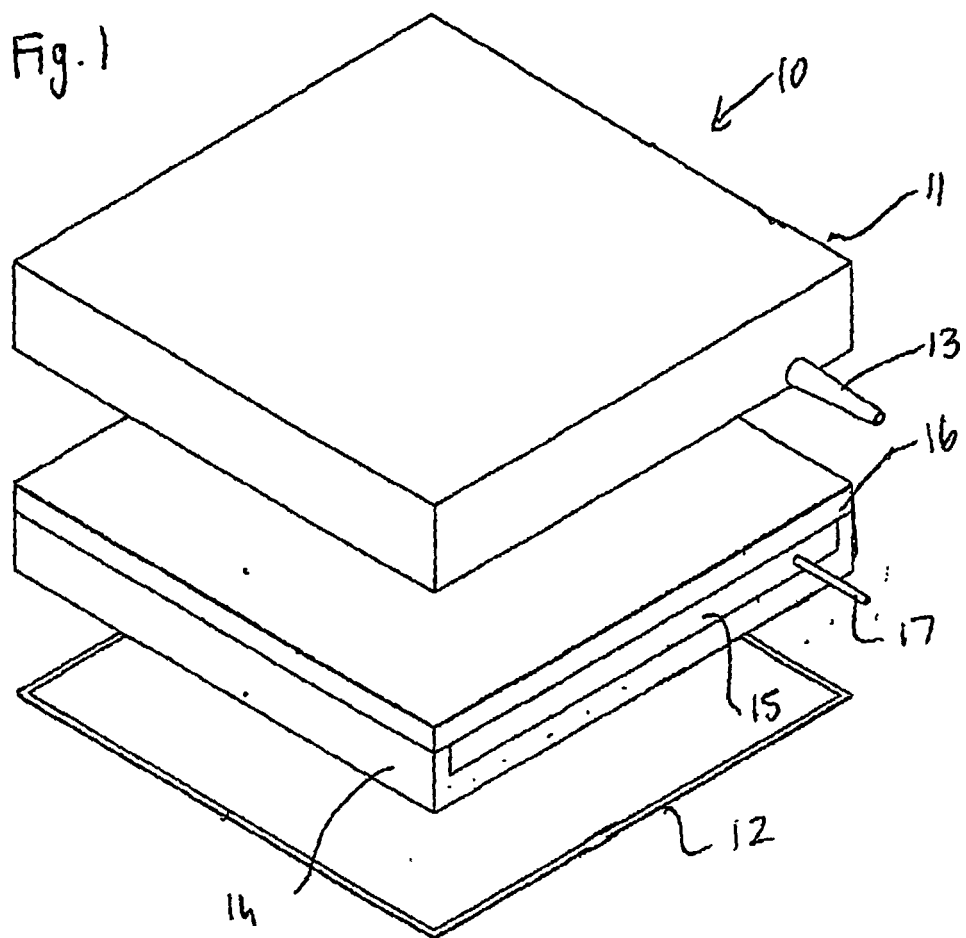
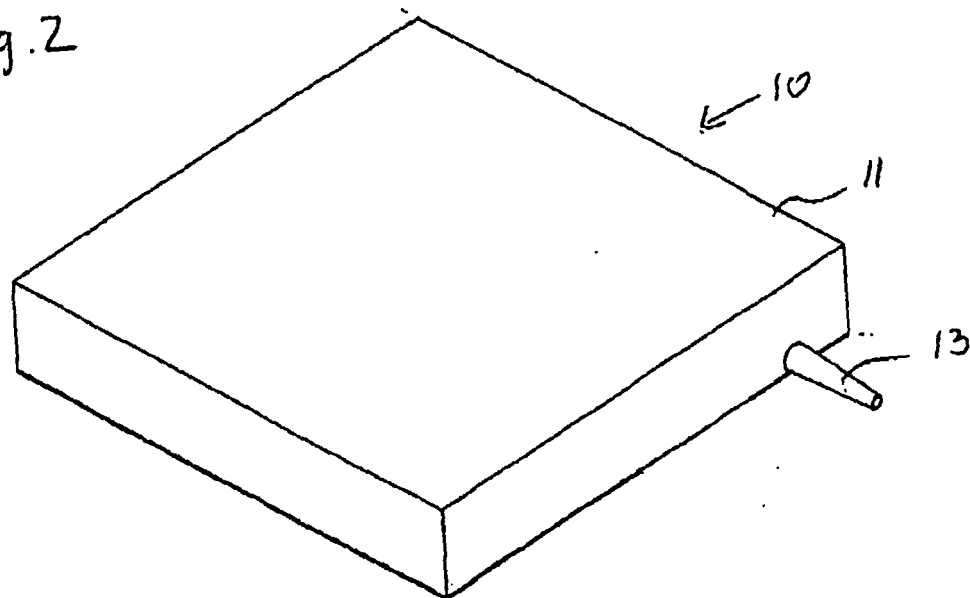
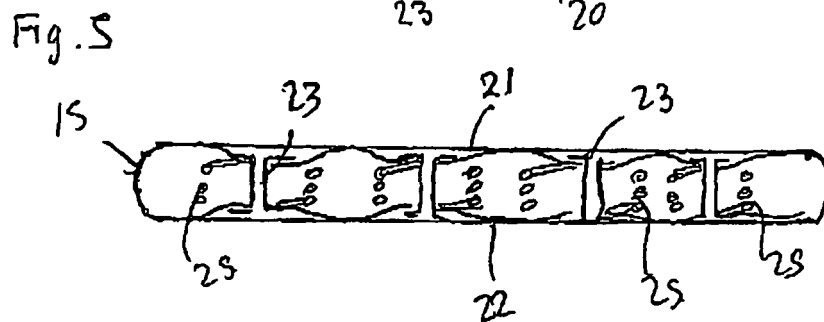
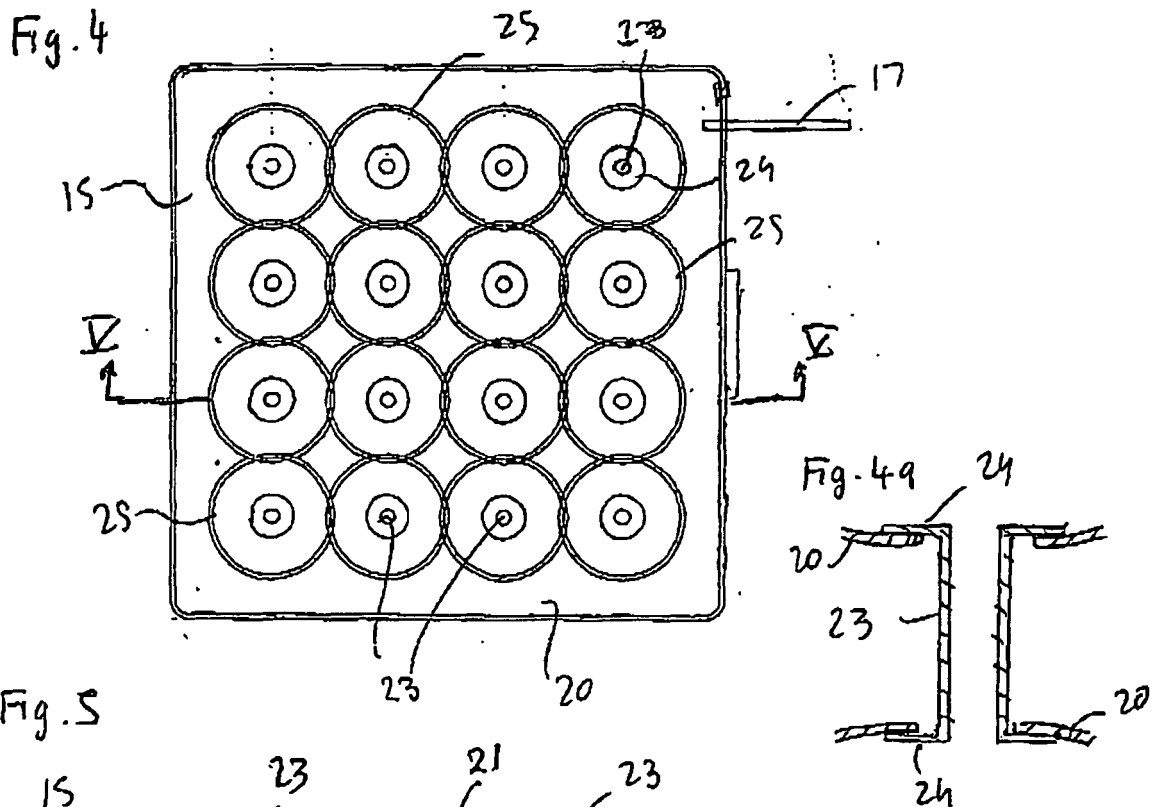
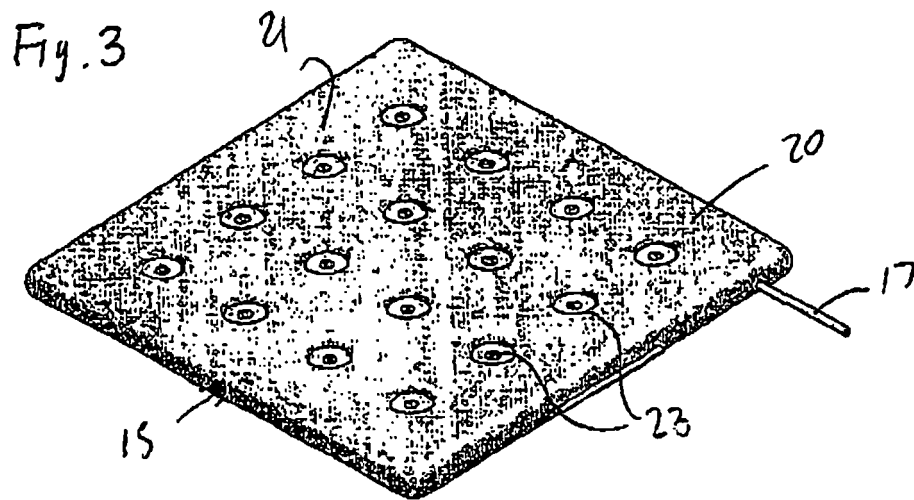


Fig. 2





REFERENCES CITED IN THE DESCRIPTION

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