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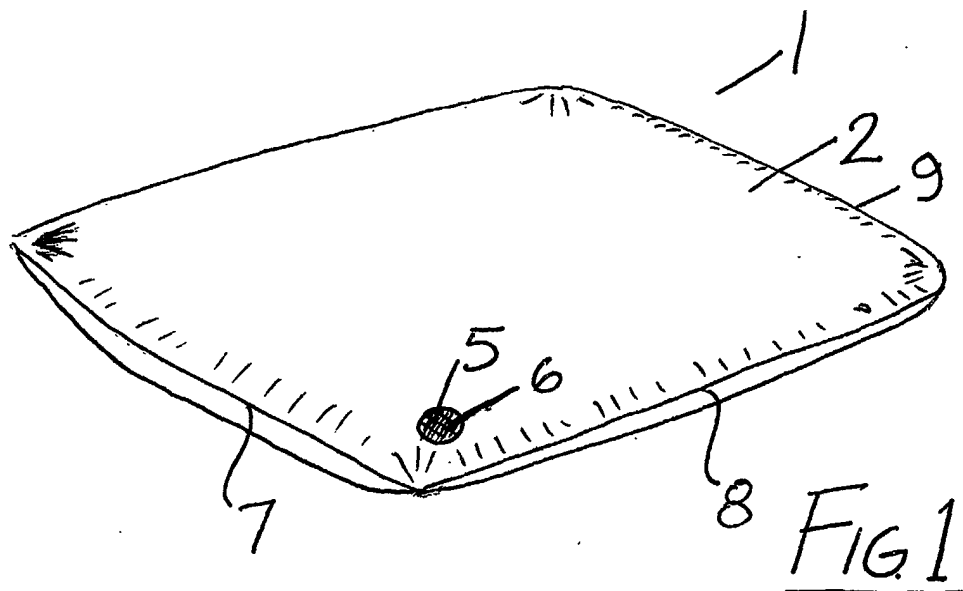
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(54) **A pillow**

(57) A pillow (1) of the invention has a sealed outer cover (2) enclosing a filling material. A vent (5) is provided in a side wall of the cover (2) communicating be-

tween an interior and an exterior of the cover (2) for through passage of air. A filter (6) is welded across the vent (5) to provide a barrier which prevents ingress of bacteria to an interior of the cover (2).



Description

[0001] This invention relates to pillows, bedding products and the like.

[0002] Infection control and cross infection present a major problem for hospitals today leading to considerable expense and inconvenience. Bacteria strains have developed which are increasingly more resistant to treatment by antibiotics. Therefore, once an infection is established in a hospital, it is often difficult to eradicate and can spread quite rapidly. The problem of strike-through - where a contaminated fluid penetrates to an interior of a product such as a pillow or duvet - is well known. An area where there is considerable risk of cross infection arises in connection with pillows which may be used by different patients. Indeed, this problem arises in any situation where there is a regular change in persons using pillows, duvets and the like, such as for example in hotels and guesthouses. Also, in the home many people with allergies and breathing disorders have problems with fungal infection and dust mites.

[0003] The present invention is directed towards overcoming these problems.

[0004] In the prior art US 4637377 discloses a surgical pillow for supporting the heart or other body organs of a patient during surgical procedures. The surgical pillow has a foam filled casing with a vent in the casing to permit release of entrapped air within the casing upon compression of the pillow during use. A pillow for dispensing medication is disclosed in US 5038431. The pillow has an outer sheet forming a pocket for reception of filling material. The pocket has a vent opening and the filling material is impregnated with a medicament. When the vent is open a person is exposed to medicament vapour which escapes through the vent opening.

Statements of Invention

[0005] According to the invention, there is provided a pillow comprising:

an outer cover,

filling material retained within the outer cover, and

a vent in the cover communicating between an interior and an exterior of the cover,

characterised in that an air filter means is mounted across the vent to provide for filtering of air passing through the vent.

[0006] In a particularly preferred embodiment the filter is a bacteriological filter. This advantageously prevents the ingress of bacteria to an interior of the cover.

[0007] Conveniently the filter is adapted to block passage of particles having a size of 0.6 micron or greater.

[0008] In another embodiment the filter is integral with the vent.

[0009] In a further embodiment the filter is welded on to the cover across the vent.

[0010] In a further embodiment the filter is formed by a layer of weldable non-woven plastics material.

5 **[0011]** In a preferred embodiment the filter comprises an outer layer of fluid-resistant material with a number of superimposed inner filter material layers attached to the outer layer. Preferably the material layers are welded together and also to the outer cover. It is preferred to use ultrasonic welding for connecting the filter layers to each other and the cover and for sealing the cover. However, it is envisaged that heat sealing or high frequency methods of attaching the various parts of the pillow together could also be used.

10 **[0012]** In another embodiment the filter material is polyester. Alternatively, and more preferably, the filter material is nylon.

[0013] Conveniently the cover may be formed from an elastic material.

20 **[0014]** In a further embodiment the cover is formed from one or more sheets of material having overlapping edges which are interconnected by welded seams to form the sealed cover. Preferably the pillow is formed from a single rectangular sheet of material folded over upon itself with overlapping side edges and end edges of the sheet being welded together.

25 **[0015]** In another embodiment the filling material comprises a resilient foam material.

30 **[0016]** In a further embodiment the filling material comprises a resilient foam core surrounded by an outer layer of hollow fibre material. The foam core conveniently gives good support to maintain the general pillow shape, whilst at the same time the hollow fibre material is very yielding and comfortable for the user.

35 **[0017]** In another embodiment the cover is liquid impermeable. If desired, the cover may be vapour impermeable. However it may be desirable in some cases that the cover be vapour permeable to allow heat and moisture vapour to permeate/dissipate through the pillow without allowing contaminated fluid or molecules in.

40 **[0018]** Preferably the cover should provide a bacteriological barrier which prevents the migration of bacterial infection to an interior of the cover. Preferably, the cover is a fungistatic material. Conveniently, the cover should be of a waterproof material to prevent absorption of fluids and to facilitate cleaning. Preferably also, the cover is manufactured from an elastic stretchable material.

45 **[0019]** In another aspect the invention provides a bedding product comprising an outer cover containing a resiliently deformable filling material, a vent in the cover communicating between an interior and an exterior of the cover, characterised in that an air filter means is mounted across the vent to provide for filtering of air passing through the vent.

50 **[0020]** In one embodiment of the invention the bedding product is a duvet.

Detailed Description of the Invention

[0021] The invention will be more clearly understood by the following description of some embodiments thereof, given by way of example only, with reference to the accompanying drawings, in which:-

Fig. 1 is a perspective view of a pillow according to the invention, and

Fig. 2 is a detail partially cut-away perspective view of the pillow.

[0022] Referring to the drawings, there is illustrated a pillow according to the invention, indicated generally by the reference numeral 1. The pillow 1 has a sealed outer cover 2 enclosing a filling material which in this case comprises a resilient foam core 3 surrounded by an outer layer of hollow fibre material 4. A vent 5 is provided in side wall of the cover 2 communicating between an interior and an exterior of the cover 2 for through passage of air. A bacteriological filter 6 is welded across the vent 5 to provide a barrier which prevents ingress of bacteria into an interior of the cover 2.

[0023] Conveniently, the cover 2 is of a fungistatic material which is an elastic stretchable waterproof material. The cover 2 is formed from a rectangular sheet of material folded over in half upon itself and has ultrasonically welded seams 7, 8, 9 to provide a sealed enclosure about the filling 4.

[0024] The filter is ideally a device comprised of an exterior layer of fluid resistant nylon with a number of superimposed inner layers of non-woven nylon filter material (typically 5 layers) attached to the back of the exterior layer preferably by ultrasonic welding. The filter can alternatively be made from other materials such as polyester or other weldable materials. The filter layers can be welded together and to the cover across the vent by ultrasonic welding. It is also envisaged that heat sealing or high frequency welding methods could also be used.

[0025] In use, the pillow 1 is typically covered in an outer cloth casing and is used in conventional fashion. It is particularly suitable for medical applications. The vent 5 allows the pillow 1 to breathe when a person lies against the pillow 1 with the filling 4 providing a comfortable support for the user. Without the vent 5, the pillow 1 would just form a balloon due to the air trapped within the cover 2 which is likely to be uncomfortable in use and will not mould to the contour of the person using the pillow. Advantageously, the filter 6 incorporated in the vent 5 prevents any migration of bacteria into the interior of the cover 2 which might otherwise form a breeding ground for the bacteria.

[0026] It will be appreciated that the invention provides a pillow or the like which is particularly advantageous for use in hospitals and other medical institutions as a safeguard against the spread of bacteria. The in-

vention can also be applied to other bedding products such as duvets for example which similarly have a sealed cover containing resiliently deformable filling material.

[0027] If desired, a protective flap may be mounted over the vent 5 to prevent ingress of moisture due to spillage and the like. An opening would be left along portion of the side edge of the flap to allow through passage of air to and from the vent 5. However preferably an exterior of the filter is liquid resistant.

[0028] It will be noted that any suitable filling material may be provided within the cover 2. Fillings such as latex, foam, foam/fibre, fibre, fossfill and the like may be found convenient.

[0029] The cover which encases the filling will preferably be formed of a weldable material which may for example be coated in polyurethane which provides a fluid resistant coating. Most preferably the seams of the cover are welded together, however it is envisaged that in some applications where there is little or no infection risk it may be acceptable to sew the seams together or join the seams by adhesive. In some applications it may be desirable that the cover be vapour permeable to allow heat and moisture vapour to permeate/dissipate through the product without allowing contaminated fluid in.

[0030] While in the embodiment described only one vent is provided on the pillow, it will be noted that any number of vents may be provided as required, each with the appropriate bacteriological filter.

[0031] It will be appreciated that the invention provides for infection control for bedding and furnishings generally. Advantageously the invention can be applied in any situation where there is a regular change-over in persons using pillows, duvets and the like to prevent cross-infection. In addition to high risk areas such as hospitals and medical institutions generally, the invention can be applied more widely in other situations where there is a regular turnover of persons using this type of bedding and furnishings, such as in hotels, guesthouses and the like. The pillow and bedding of the invention may also be used in domestic applications to avoid problems with dust mites and fungal infections. It is also envisaged that this type of pillow product could be incorporated in headrests for airline seating.

[0032] The invention is not limited to the embodiments hereinbefore described which may be varied in both construction and detail within the scope of the appended claims.

Claims

1. A pillow (1) comprising:
 - an outer cover (2),
 - filling material (3, 4) retained within the outer

cover (2), and

a vent (5) in the cover (2) communicating between an interior and an exterior of the cover (2),

characterised in that an air filter means (6) is mounted across the vent (5) to provide for filtering of air passing through the vent (5).

2. A pillow (1) as claimed in claim 1 wherein the filter (6) is a bacteriological filter.
3. A pillow (1) as claimed in claim 1 or claim 2 wherein the filter (6) is adapted to block passage of particles having a size of 0.6 micron or greater.
4. A pillow (1) as claimed in any preceding claim wherein the filter (6) is integral with the vent (5).
5. A pillow (1) as claimed in any preceding claim wherein the filter (6) is welded onto the cover (2) across the vent (5).
6. A pillow (1) as claimed in any preceding claim wherein the filter (6) is formed by one or more layers of weldable non-woven plastics material.
7. A pillow (1) as claimed in any preceding claim wherein the filter (6) comprises an outer layer of fluid-resistant material with a number of superimposed inner filter material layers attached to the outer layer.
8. A pillow (1) as claimed in claim 7 wherein the material layers are welded together.
9. A pillow (1) as claimed in claim 7 or claim 8 wherein the filter layers are welded together and to the outer cover (2) by ultrasonic welding.
10. A pillow (1) as claimed in any of claims 6 to 9 wherein the filter material is polyester.
11. A pillow (1) as claimed in any of claims 6 to 9 wherein the filter material is nylon.
12. A pillow (1) as claimed in any preceding claim wherein the cover (2) is formed from an elastic material.
13. A pillow (1) as claimed in any preceding claim wherein the cover (2) is formed from one or more sheets of material having overlapping edges which are interconnected by welded seams (7, 8, 9) to form the sealed cover (2).
14. A pillow (1) as claimed in claim 13 wherein the pillow

(1) is formed from a single rectangular sheet of material folded over upon itself with overlapping side edges (7, 9) and end edges (8) of the sheet being welded together.

15. A pillow (1) as claimed in any preceding claim wherein the filling material comprises a resilient foam material.
16. A pillow (1) as claimed in any preceding claim wherein the filling material comprises a resilient foam core (3) surrounded by an outer layer of hollow fibre material (4).
17. A pillow (1) as claimed in any preceding claim wherein the cover (2) is liquid impermeable.
18. A pillow (1) as claimed in any preceding claim wherein the cover (2) is vapour impermeable.

