

[54] **BED PAD AND METHOD OF USE TO SUPPORT AN INVALID**

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[51] Int. Cl.....**A47c 27/12**

[58] Field of Search. **5/347, 355, 361; 161/76, 82-85, 161/150, 155-157, 159**

[56] **References Cited**

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[57] **ABSTRACT**

An inexpensive throw-away, soft, resilient, ventilated sanitary pad formed of polyester fibers bonded together for use beneath a patient having impaired circulation and a method of utilizing the same alone or in combination with a moisture collecting pad to protect bed clothing and to aid the patient's comfort. The patient-contacting pad is treated with fungicidal and bactericidal material withstanding a limited number of cleansing cycles readily carried out near bedside for immediate return of the pad to the same patient. The pad may be used in combination with a moisture collecting pad without interfering with the ventilating function of the former.

3 Claims, 3 Drawing Figures

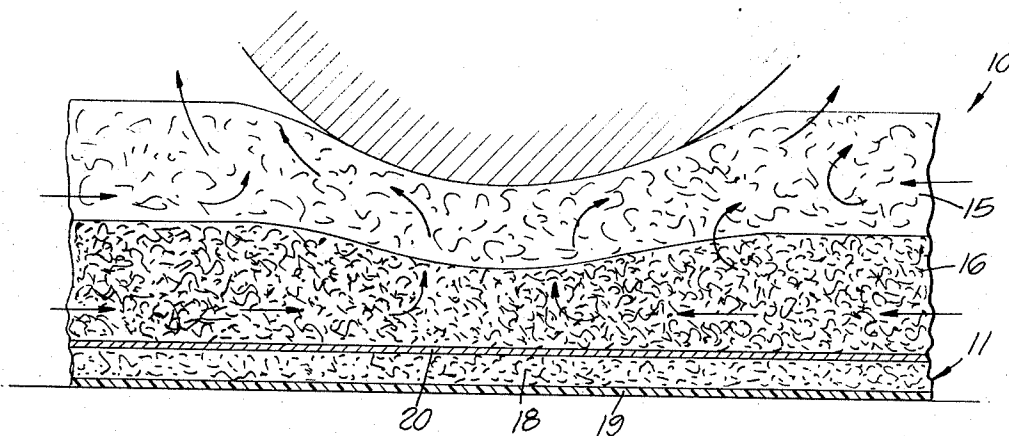


FIG. 1.

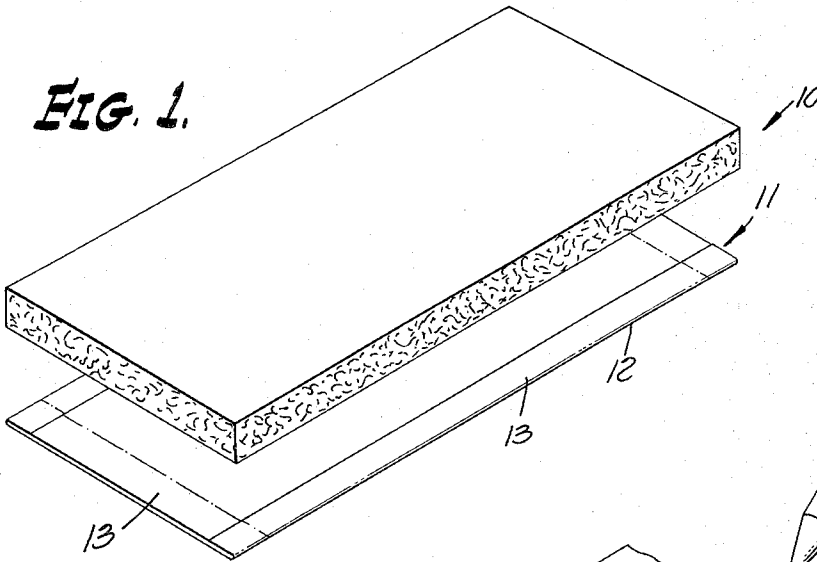


FIG. 2.

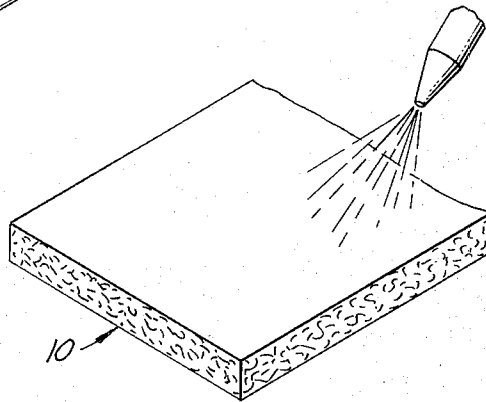
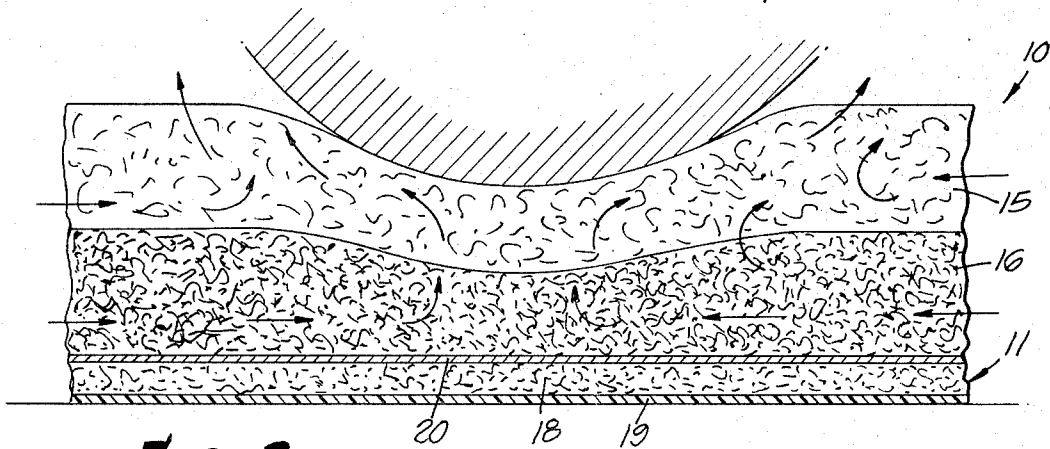

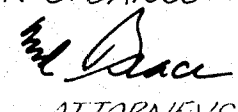


FIG. 3.



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BED PAD AND METHOD OF USE TO SUPPORT AN INVALID

Troublesome problems arise in connection with the care of bed-ridden patients and those having impaired blood circulation. In consequence, serious infections can develop which are not only highly uncomfortable but difficult to alleviate or cure.

Various expedients and proposals have been made heretofore to safe-guard against sores and infections arising from prolonged contact and pressure with bedding. However, these expedients leave much to be desired and are subject to shortcomings sought to be avoided by the present invention.

In general, it has been the practice to support a part of the body subject to impaired pressure using thick, soft material, as for example, by sheepskin with its fleece attached. It has also been proposed to use a pad formed by closely spaced synthetic flocking or pile having the base ends attached to an impervious backing. Although these and the like pads do provide the patient with relief and some degree of greater comfort, they are objectionably expensive and particularly troublesome and costly to launder. The laundering operation is not only time consuming but requires special equipment and expertise. Particularly objectionable is the fact that such pads are attractive articles subject to a high incidence of pilferage. Furthermore, it is costly and time consuming to take the necessary steps to assure return of the pad to a particular patient in hospitals, sanitariums and the like institutions. Additionally it is difficult to sterilize these prior art pads and to provide adequate safeguards against spreading infection from one patient to another.

To avoid the foregoing and other serious disadvantages of prior bed pads and methods of supporting bed-ridden patients, there is provided by this invention a unique bed pad and method of utilizing the same. This pad is so simple and readily fabricated from inexpensive materials that it can be discarded after a single use, or alternatively, it may be so easily and effectively laundered near the patient's bedside as to be reused a number of times. The invention pad is desirably fabricated from two thick layers of different density non-absorbent synthetic fibers permanently bonded together at points of crossover and treated with a bactericide and a fungicide sufficiently non-soluble to withstand repeated cleaning cycles. Under conditions in which drainage, urine or other fluids may come in contact with the supporting pad, the latter is superimposed on an inexpensive single use absorbent pad. The latter comprises a thick layer of absorbent material enclosed on its lower side and edges by an impervious plastic layer effective to protect the underlying bedding. The collecting pad is replaced by a fresh one as needed but the synthetic fiber supporting and ventilating pad may be cleansed and reused several times. The lower density side of the support pad has larger voids and provides greater ventilation whereas the higher density side of the pad is somewhat softer and provides slightly less ventilation in proximity to the patient's body. Either layer may be placed uppermost at the user's option. Since the support pad has no other apparent utility, it is not an attractive item of pilferage. The synthetic fibers of which it is made being non-absorbent, the pad can be easily cleansed beneath a water faucet or in a bowl of water near the patient's bedside

and quickly dried by squeezing, wringing or vigorous shaking for immediate return to use beneath the patient. Accordingly, there is no need for record keeping to assure the return of the pad to a particular patient nor does the cleansing of the pad entail the long delays and handling necessarily involved in sending the pad to a central laundry facility as has been mandatory with the pads heretofore available.

Accordingly, it is a primary object of the present invention to provide a new and improved article of manufacture and mode of supporting bed-ridden patients in greater comfort and greatly improved conditions of sanitation and well being.

Another object of the invention is the provision of a simple, inexpensive, disposable bed pad for patients, treated with bactericide and fungicide capable of withstanding a limited number of cleaning cycles.

Another object of the invention is the provision of a patient supporting pad formed of non-absorbing synthetic fibers providing ventilation beneath areas in contact with the patient.

Another object of the invention is the provision of an improved method of supporting portions of a bed-ridden patient while protecting the bed clothing by utilizing a throw-away ventilated, soft, resilient pad in contact with the patient's body and supported on an absorbent pad provided with a waterproof base and perimeter.

These and other more specific objects will appear upon reading the following specification and claims and upon considering in connection therewith the attached drawing to which they relate.

Referring now to the drawing in which a preferred embodiment of the invention is illustrated:

FIG. 1 is an exploded view in perspective of the invention disposable resilient pad overlying a disposable absorbent pad;

FIG. 2 is a fragmentary perspective view of the resilient pad being treated with a biocide; and

FIG. 3 is a fragmentary vertical sectional view through the two pads supporting part of a patient's body.

Referring to FIG. 1, there is shown an illustrative embodiment of the invention bed pad, designated generally 10. In use this pad is preferably supported on an underlying absorbent pad 11 constructed to retain a reasonable quantity of fluids by the aid of a waterproof bottom sheet 12 having its edges 13 overturned about the edges of the absorbent material. The soft resilient bed pad 10 is preferably one to three inches thick and sized to underly the immobilized portion of the patient. As shown, pad 10 is formed in two layers 15, 16 of quite different density, weight supporting ability and softness. Each layer comprises polyester fibers available in the marketplace under the trade name Kodel, manufactured by Eastman Kodak Company, Rochester, New York. This synthetic fiber is a long chain polymer composed of at least 85 percent by weight of an ester of a dihydric alcohol and terephthalic acid ($p\text{-HOOC-C}_6\text{H}_4\text{-COOH}$). This fiber possesses high strength and resistance and crisp resilience.

The polyester fibers are deposited randomly and uniformly in successive layers to a desired thickness and density and then spray-coated with a suitable chemical binder effective to lock the fibers together at

their points of cross-over and to withstand laundering and cleaning. A particularly satisfactory binder is available under the trade name Rhoplex HA-16 manufactured by Rohm and Haas Company, Philadelphia, Pennsylvania. This binder is a fully-saturated self cross-linking acrylic non-ionic dispersion of milky appearance having a pH of 2.3 to 3.5, a specific gravity of 1.06 and a density (pounds per gallon) of 8.8. This binder is preferably applied to the loosely arrayed layers of fibers admixed with a suitable biocide effective in the control of micro-organisms including both bacteria and fungus.

A particularly effective and suitable biocide of high potency is obtainable under the trade name SOCCI No. 6618 from Scientific Chemicals Incorporated, Chicago, Illinois. The biocide contains as active ingredients 10 percent of 2,2 methylenebis (3, 4, 6, - trichlorophenol) (Hexachlorophene) and 10 percent of orthohydroxybiphenyl, the resulting mixture having a pH of 5.5 to 5.8.

The described biocide is mixed with the self cross-linking acrylic binder and approximately an equal quantity of water and sprayed onto the fibers.

A second example of a suitable binder for the polyester fibers comprises a polyvinyl acetate cross-linking polymer resin obtainable from National Starch and Chemical Company, Los Angeles, California and designated as 2802F by that supplier. This binder has a pH of 4.7, a density of 9.0 pounds per gallon. It likewise can be advantageously spray-applied to the fibers along with the above described biocide. For ease of application, the binder and biocide are preferably mixed with approximately an equal volume of water and applied in an evenly distributed film to the polyester fibers and then dried. The resulting film is found to be tough and highly effective in holding the fibers firmly joined at points of crossover as well as in holding the biocide efficiently distributed.

Although it is simpler and more expedient to apply the binder and the biocide simultaneously and while intermixed, it is feasible to apply each in separate operations with the biocide application last.

After the binder has cured the pad is ready for use. Both the low and high density layers 15,16 have large voids through which air readily circulates providing highly desirable ventilation and cooling, as is indicated by the arrows in FIG. 3, as well as a means of carrying away vapor. Both layers readily support the weight of the patient's body immediately overlying the pad with only partial compaction of the fibers, since only individual fibers are in contact with the skin leaving the relatively large intervening areas between fibers exposed to ventilation and circulation of air and free of pressure from the pad fibers. Accordingly, owing to the very small area of actual contact between the patient's skin and the pad, together with the absence of actual pressure on a large proportion of the body in juxtaposition to the pad surface, the patient enjoys a marked sense of comfort and well being.

Absorbent pad 11 usually employed in combination with the polyester fiber pad is best shown in FIG. 3 as comprising a thick layer of absorbent material 18 sandwiched between a bottom film of impervious thermoplastic or the like waterproof material 19 and a

highly porous retainer film 20. The lateral edges of the waterproof layer 19 are over turned against the retainer film 20 in the manner illustrated in FIG. 1 and held in place by suitable adhesive or heat sealing. Accordingly, pad 11 will be understood as having considerable retaining capability for fluids such as perspiration, drainage fluids or urine and safeguards against these materials coming in contact with the bedding. Pad 11 is very inexpensive and is replaced frequently with a new pad or whenever it becomes contaminated with fluids of any kind.

Bed pad 10 is completely non-absorbent and is readily cleansed of any foreign materials with which it may come into contact by water and a detergent. Cleaning is readily accomplished in the patient's bathroom or in a bowl of water without need for removing it from the patient's room or a washroom adjacent thereto. Owing to its non-absorbent character water does not cling to the fibers and is readily dried by wringing or abrupt shaking with the result that it is returnable almost immediately to its place of use beneath the patient. If the pad should become contaminated or difficult to clean for any reason, it is so inexpensive that it is merely replaced with a fresh one. Otherwise, pad 10 will withstand several washings without risk of losing the effectiveness of the bactericide or fungicide.

While the particular bed pad and method of use to support an invalid herein shown and disclosed in detail is fully capable of attaining the objects and providing the advantages hereinbefore stated, it is to be understood that it is merely illustrative of the presently preferred embodiment of the invention, and that no limitations are intended to the details of construction or design herein shown other than as defined in the appended claims.

I claim:

1. A disposable bed pad for use in providing a soft ventilated support for a patient confined to bed, said pad comprising a thick mat free of a fabric binder and formed of a multiplicity of layers of impervious resilient fibers lying generally parallel to the pad surface, said fibers being in random array and bonded together only at points of crossover and cooperating to provide a multiplicity of large area voids therebetween effective to provide for relatively unrestricted air flow transversely of the thickness of said mat, said mat of resilient fibers being of the order of 2 inches thick and coated with a film effective to inhibit fungus and bacteria and said fibers cooperating to provide a soft ventilated support for a part of the patient's body with minimum interference with blood circulation through areas of the body adjacent said pad.

2. A disposable bed pad as defined in claim 1 characterized in that said pad comprises layers of fiber of different density on the opposite faces thereof, load supporting ability and ventilating capability and either of which layers may be placed uppermost in supporting contact with the patient.

3. A disposable bed pad as defined in claim 1 characterized in that said film of fungus and bacteria growth inhibiting material is substantially insoluble in water and capable of withstanding washing and retaining the fungicidal and bactericidal properties thereof.

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