June 24, 1969 J. G. WHITELEY 3,451,071

MEANS FOR REMOVING PRESSURE FROM PRESSURE SORES

Filed Aug. 3, 1967

FIG. 7.

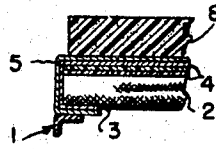


FIG. 1.

FIG. 8.

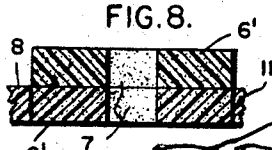


FIG. 2.

FIG. 3.

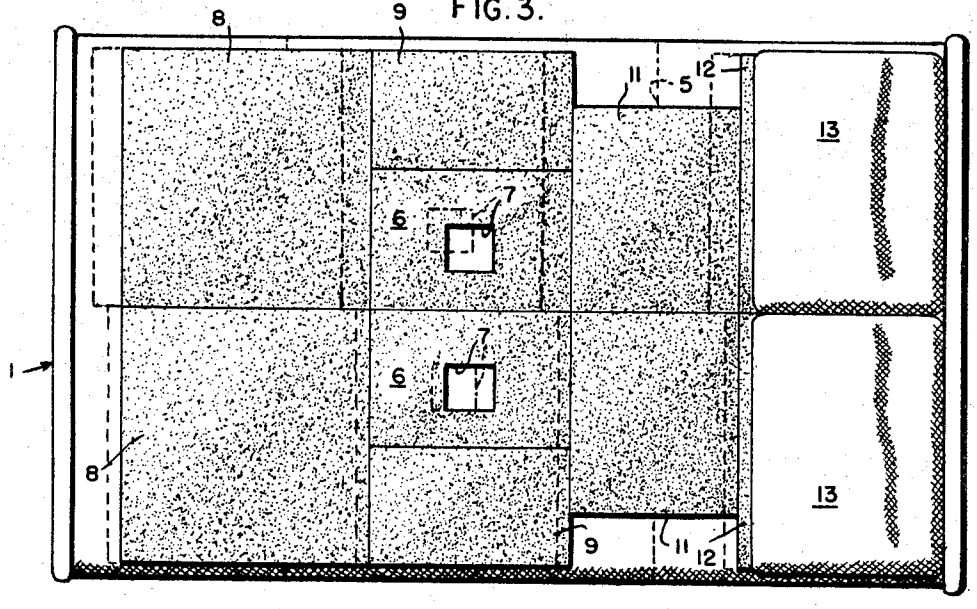


FIG. 5.

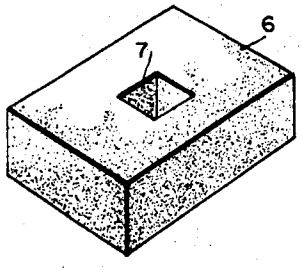


FIG. 6.

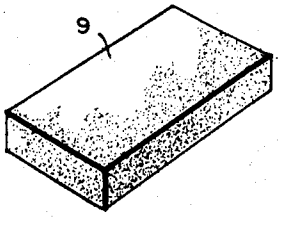
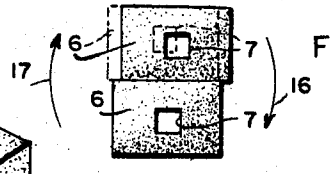


FIG. 4.



INVENTOR

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United States Patent Office 3,451,071
Patented June 24, 1969

3,451,071

MEANS FOR REMOVING PRESSURE FROM PRESSURE SORES

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Filed Aug. 3, 1967, Ser. No. 658,198
Int. Cl. A47c 27/00; A61g 7/04
U.S. Cl. 5—91 4 Claims

ABSTRACT OF THE DISCLOSURE

An invalid bed pad for a person having a trochanteric pressure sore on each hip and comprising two mutually abutting sections independently movable longitudinally, each section comprising a decubitus pad with an aperture therein slightly larger than the respective pressure sore and a plurality of closely spaced ancillary pads sufficient to substantially cover the bed when the sections and decubitus pads thereof are mutually abutting, the thickness of each decubitus pad being sufficient to prevent contact of the pressure sore with the bed when the person is reposing in either side position with the sore aligned with the respective aperture, all pads being composed of porous hypoalergenic resilient material such as polyurethane foam or the like.

This invention relates to an improvement in a resilient invalid pad and more particularly to a multi-section invalid pad for the removal of external pressure causing decubitus ulcers in the trochanteric area of an invalid's body when the pad is arranged between the invalid and the surface of the bed upon which the invalid is disposed.

As is well known, bedridden persons who are obliged to lie on the side of the body, hereinafter referred to as a side position, for relatively long periods of time frequently become afflicted with decubitus ulcers, commonly referred to as bed sores. This condition is caused by prolonged external pressure on the tissues covering rigid bony structures which compromises the blood supply to these areas. A sustained reduction of blood to these tissues causes local necrosis within the pressure area and the formation of pressure sores which are localized areas of dead tissues occurring over bony prominences.

This condition is aggravated in the case of a thin person or a bedridden invalid who has become immobile and more or less emaciated by reason of the loss of normal fatty and muscle tissue covering the bony prominences.

In the case of a person who has become bedridden as the result of a disease, physical injury, severe burns, Pakinson's disease, stroke, or from other causes and is required to remain in a particular prostrate position on the bed such, for example, as in a position which is defined herein as a side position, until turned over at intervals to the other side, by a nurse or other attendant, or both, it has been found that with each turning cycle of the patient, the patient is moved slightly longitudinally toward the foot of the bed and, if the patient has two trochanteric sores, each disposed respectivey in similar positions on each of the hips, the pressure area between the patient's hip and the bed is somewhat nearer the foot of the bed each time the patient is turned over. The manner in which this endwise movement of the patient is compensated for by a dual sectional arrangement comprising at least two decubitus pads according to the teaching of the present invention will become more clearly apparent as the description proceeds.

One of the objects of the present invention is the provision of a new and improved means for the removal of external pressure causing decubitus ulcers.

Another object is to provide a new and improved porous invalid pad for the removal of pressure causing decubitus ulcers in the trochanteric area of a bedridden person.

Still another object is to provide a new and improved dual sectional invalid pad arrangement including at least one decubitus pad having an aperture therein which maintains the body of a bedridden person in a normal level position when the aperture of the decubitus pad is placed between the affected trochanteric area and the surface of a bed immediately adjacent thereto.

A further object is the provision of a dual invalid pad comprising two mutually abutting sectionalized porous resilient invalid pad sections each including a porous resilient decubital pad having an aperture therein somewhat larger than the size of each of the trochanteric sores on the hips of a bedridden patient adapted for placement on the draw sheet of a firm mattress of an invalid bed, each invalid pad section being so arranged that the decubital pad thereof abuts the decubital pad of the other invalid pad section and the invalid pad sections are movable longitudinally with respect to each other to insure proper alignment of both trochanteric sores with the apertures in the decubital pads respectively as the patient is rolled over from a position of repose on one invalid pad section to a similar position of repose on the other invalid pad section.

A still further object is the provision of a new and improved multi-section invalid pad comprising at least one decubitus pad and a plurality of ancillary pads which is economical to manufacture, re-usable, easy to clean, and which possesses all the desirable qualities of ruggedness and effectiveness in service.

Still other objects, advantages and improvements will be apparent from the following description, taken in connection with the accompanying drawings, of which:

FIG. 1 is a view in elevation and partially in section of a preferred invalid pad arrangement on a bed with the patient removed therefrom;

FIG. 2 is a view similar to FIG. 1 with the patient disposed on the invalid pad;

FIG. 3 is a diagrammatic plan view of one of the invalid pad sections of FIG. 2 with a second invalid pad section shown in dashed outline forming a dual pad arrangement;

FIG. 4 is a diagrammatic view of the decubitus pad arrangement of FIG. 3 illustrating the relative positions of the decubitus pads as the patient is turned from the original side position of FIG. 2 to a second moved side position and thereafter reversely to the original side position;

FIG. 5 is a view in perspective of a resilient porous decubitus pad suitable for use with the present invention;

FIG. 6 is a view in perspective of one of the porous ancillary pads employed with the arrangement of FIG. 3;

FIG. 7 is a fragmentary view in section of an ancillary pad arranged in position on the mattress of a bed taken along the line 7—7 of FIG. 1; and

FIG. 8 is a sectional view of a decubitus pad disposed between two ancillary pads in abutting relation therewith according to an alternative form of the invention.

Referring now to the drawing on which like numerals of reference are employed to designate like parts throughout the several views and more particularly to FIG. 1 thereof for a more complete understanding of the present invention, there is shown thereon a bed designated generally by the numeral 1 upon which is placed a mattress 2 preferably of the type known as a firm or somewhat hard mattress, covering substantially the entire bed area. The mattress may, if desired, be covered by the usual mattress cover 3, and a sheet 4 of plastic or other water-

proof material suitable for the purpose is inserted between the upper surface of the mattress and the mattress cover, FIG. 7. A second sheet 4 of plastic, or other waterproof material suitable for the purpose, may be placed on the upper surface of the mattress cover, and a draw sheet 5 composed of material having a somewhat roughened surface, the purpose of which will be more clearly apparent as the description proceeds, is disposed on the upper surface of the last named plastic, or other waterproof, sheet.

Whereas the foregoing arrangement has been found satisfactory in service for facilitating the maintenance of the mattress in a sanitary condition over a prolonged period of time with a bedridden decubitus ulcer patient occupying the bed, it is not deemed necessary to the practice of the present invention as, if desired, a draw sheet placed directly on the mattress may be employed without departing from the present invention, it being merely sufficient that the sheet covering the mattress possess a somewhat rough textured surface for frictional engagement with the invalid pads sufficient to prevent fortuitous shifting of the pads as the result of slight movement of the patient. In practice, it has been found satisfactory to employ a draw sheet composed of outing flannel, cotton sheet blanket material, or the like having a rough surface sufficient to maintain stability of the invalid pad placed thereon when employed with an immobilized patient resting thereon.

The pad 6, hereinafter referred to as a decubitus pad, is porous and preferably of rectangular outer configuration and provided with an aperture 7 slightly larger than the sore on the patient and which may be substantially square extending through a central portion thereof. The decubitus pad may be composed of hypoallergenic plastic material having the desired degree of resilience and porosity to maintain the bed sore free from contact with the surface of the draw sheet or mattress, as the case may be, when placed between the patient and the bed with the sore in alignment with the aperture therein and to provide continuous ventilation to the sore and the surrounding area of the patient's body in contact with the pad.

A porous material composed of polyurethane, for example, and known in the trade as "Serofoam," a product of Sears, Roebuck and Company may be advantageously employed with the present invention to provide an invalid pad having a thickness of substantially four or more inches as determined by the size and weight distribution of the patient nuch that the trochanteric ulcer on the patient is about one inch from the draw sheet when the patient is resting thereon. This material not only possesses the desired qualities of porosity and resilience both of which are essential to the practice of the present invention but possesses the additional advantage that it may be easily cut to a particular desired shape by a scissors, saw blade or knife, as desired. The decubitus pad 6 when employed with an invalid weighing about 150 pounds, FIG. 2, and having a bed sore in the trochanteric area on both hips of about three inches in diameter, is configured preferably substantially rectangular from a sheet of porous resilient polyurethane foam material having preferably a length of 18 inches and a breadth of 13 inches and provided with an aperture 7 extending therethrough of four inch lateral dimension. The optimum thickness of the decubitus pad 6 is preferably in the ratio of 7:4 with respect to the thickness of the ancillary pads. The aperture is preferably centered midway between the opposite lateral surfaces comprising the ends of the pad and somewhat nearer to one of the longitudinal surfaces comprising a side portion of the pad than to the opposite longitudinal surface of the other side portion. By arranging the aperture 7 at a distance of one inch nearer one of the lateral surfaces than the distance from the opposite lateral surface, the aperture 7 can be moved, if desired, substantially two inches toward one side of the bed, FIG. 3, when both decubitus pads are in mutual abutting relation as the patient is rolled over from the side position of FIG. 2 to the opposite side position or vice versa, the decubitus pad to which the patient is moved being merely reversed before placing the patient thereon to effect this lateral displacement of the aperture.

The dual invalid pad arrangement, comprising two invalid pad sections of the present invention, includes at least one porous resilient decubitus pad 6 upon which the hip of the invalid reposes and a plurality of additional or ancillary porous resilient pads of somewhat less thickness than the decubitus pad 6 and preferably composed of material having the same characteristic of resiliency and porosity as the pad 6. These ancillary pads may conveniently comprise a pair of mutually abutting pads 8 arranged to cover a substantial portion of the mattress 2 at the foot portion of the bed. These pads 8 are individual to each of the invalid pad sections and somewhat shorter than the distance between the patient's feet and the lower end of the mattress 2 but of sufficient length to permit the patient's feet to rest comfortably thereon whereby the patien may be moved through several turning cycles from one of the invalid pad sections to the other section without moving the patient bodily longitudinally toward the head end of the bed to effect a next succeeding turning cycle.

On FIG. 6 is shown in perspective one of the ancillary pads 9 which is preferably of substantially the same length and breadth as the decubitus pad 6 and of the same thickness as the pads 8. There is also provided a pair of mutually abutting ancillary pads 11 abutting pads 6 and 9 preferably of the same thickness as the pads 6 and 9 for supporting the torso of the patient and another pair of ancillary pads 12 respectively supporting a pair of pillows 13 upon which the head of the patient 14 reposes respectively in each of the turned or side positions. All of the pads 8–12 may be composed of the same porous resilient material as the pad 6 and each of the pair of pads 8–12 is included in one of the invalid pad sections.

Whereas the decubitus pads 6 are preferably used in service without coverings or casings, the ancillary pads 8–12 may, if desired, be fitted with suitable casings of a type which would not seriously impair the resilience thereof or the ventilation afforded thereby.

The arrangement of FIG. 8 illustrates a pair of decubitus pads 6' placed one above the other to effect a pad of greater than that of a single decubitus pad 6 as may be required to prevent the trochanteric sore from being brought into contact with the sheet or mattress, as the case may be, of a bed when the invalid is reposing thereon. Although in the illustrated arrangement of FIG. 8, both decubitus pads 6' are of the same thickness, the thickness of one or both of the pads may be varied at will to achieve the desired result.

The invention will best be understood by a consideration of a specific example. Let it be assumed, by way of example, that a male patient indicated generally by the numeral 14 having a pair of trochanteric sores 15 has been afflicted with a paralyzing condition known in the medical art as Parkinson's disease and, in addition thereto, has suffered one or more strokes sufficient to render the patient bedridden and immobile. Let it be further assumed that the patient has been sufficiently incapacitated as a result of this condition that he can lie only in a position on one or the other of his hips, in what is termed herein as a side position, and furthermore that, as a result of this position of repose, despite skilled and careful nursing, he has developed a trochanteric bedsore 15 on each of his hips. Desipte this expert nursing care and frequent turning of the patient from one side position to the other side position and the employment of various resilient devices both pneumatic and motor actuated over a protracted period, these trochanteric bed sores have increased in size to a diameter of approximately two by four inches each comprising a lesion of about eight square inches on each hip.

The patient was placed on a porous resilient decubitus pad **6** in a side position as shown in FIG. 2 with a trochanteric sore on the right hip in alignment with aperture **7** of the decubitus pad of one of the invalid pad sections and thereafter turned over on his back after a two-hour interval to the other side position on the other invalid pad section with the other trochanteric sore on the left hip aligned with the aperture **7** of a second decubitus pad **6**.

The turning cycles of the patient in accordance with the described example of the invention are illustrated in FIG. **4** in which the movement of the patient during each turning cycle thereof is illustrated diagrammatically by the curved arrows **16–17** at the right and left of the figure respectively. The decubitus pad **6** under the original position of the patient, FIG. 2, is shown at the upper side of the figure, the second decubitus pad **6** is shown directly below in abutting relation with the first pad **6** and in a position slightly nearer the foot of the bed than the first pad, a longitudinal displacement of the second pad of about one-half inch, in the assumed example, having been found to be satisfactory to position the sore **15** on the left hip of the patient into alignment with aperture **7** of the second decubitus pad as the patient is rolled over to the opposite side position. This direction of rolling movement of the patient is illustrated graphically by the curved arrow **16**.

In the illustrated example let it further be assumed that no change in the lateral displacement of the aperture **7** of the second pad is desired during this first turning cycle of the patient. The second pad, therefore, is positioned initially as illustrated on FIG. 4 with the aperture thereof in the same position with respect to the line of mutual abutment of the pads as the aperture of the first pad.

The patient is now reposing in a left side position on the second pad **6** as shown in the lower part of the figure with the aperture thereof aligned with the trochanteric ulcer on his left hip. The terms *upper* and *lower* as employed herein may be defined as the upper and lower portions of FIG. 4 as viewed in the drawing.

The invalid pad section comprising the pads **6** and **8–12** covering the other half of the bed is moved downwardly toward the foot of the bed such that the decubitus pad **6** thereof shown in dashed outline at the upper portion of the figure is approximately one-half of an inch nearer the foot of the bed, for example, than the second pad **6** on which the patient is now reposing and, furthermore, that the decubitus pad shown in dashed outline at the upper part of the figure is reversed from its initial position with the aperture **7** thereof in greater spaced relation with respect to the aperture of the second pad than the initial distance of aperture **7** therefrom.

After a proper interval of time such, for example, as two hours the patient is rolled over in the direction of curved arrow **17** until the decubitus ulcer on his right hip engages the aperture of the decubitus pad **6** shown in the upper dashed position of the figure. By employing a decubitus pad having an aperture somewhat offset from the longitudinal center line thereof an arrangement is thus provided in which the lateral distance between the apertures of mutually abutting decubitus pads of the two sections may be varied at will by merely reversing the end-to-end position of the second pad on which the patient is to be disposed without undue movement of the patient during a turning cycle.

The decubitus pads **6** are employed together with the ancillary pads **8–12** in an arrangement best shown on FIG. 3 of the drawing primarily to remove all external pressure from the trochanteric area and to compensate for the reduced skeletal abutment support normally supplied by the trochanter when the patient is lying on either side and to accomplish these objectives with no discomfort to the patient. With this arrangement the body of the patient is maintained substantially level and the trochanteric sores together with the adjacent portions of the patent's body are at all times ventilated, and the sores are free from external pressure.

After a period of a few weeks of use of the present invention the trochanteric sores were substantially reduced in size. This improvement continued steadily until complete healing was effected after several months of treatment according to the invention herein disclosed.

Although the invention has been disclosed with reference to a patient having a trochanteric sore on each hip it is also well suited for use with other types of bed sores such, for example, as pressure sores which lie over the sacrum.

Furthermore, if desired, the size and thickness as well as the external configuration of the decubitus pads employed with the present invention may be varied and the arrangement of the ancillary pads may also be varied without departing from the invention herein disclosed.

Although the invention has been disclosed with particular reference to a preferred embodiment which gives satisfactory results, it is not so limited as it will be understood by those skilled in the art to which the invention relates, after understanding the invention, that various changes and modifications may be made and various instrumentalities may be employed without departing from the spirit and scope of the invention and it is my intention, therefore, in the appended claims, to cover all such changes, modifications and instrumentalities.

What I claim as new and desire to be secured by Letter Patent of the United States is:

1. A multi-section resilient porous invalid pad section for the removal of pressure causing a decubitus ulcer in the trochanteric area of a patient, comprising

(1) a decubitus pad composed of resilient hypoallergenic and porous material of a generally rectangular outer configuration and having an aperture approximately in the central portion thereof and extending therethrough of sufficient size to remove the external pressure on the affected part when interposed between a hip of the patient and a mattress on a bed with the aperture in alignment with the trochanteric ulcer and,

(2) a plurality of ancillary pads composed of the same material as said decubitus pad disposed in end butted relation to said decubitus pad beneath portions of the body of the patient beyond the decubitus pad and of sufficient thickness to compensatingly support and maintain the patient in a substantially level position when the patient is disposed thereon.

2. An arrangement according to claim **1** in which the resistance and thickness of the decubitus pad is greater than the resistance and thickness of each of the ancillary pads and provides sufficient support to the body of a patient to compensate for the loss of skeletal support by the trochanter at the thigh bone of a reclining body while the patient is disposed thereon.

3. A dual decubitus pad arrangement for a bedridden person having a pair of trochanteric sores disposed resepectively on the hips thereof comprising

(1) a first elongated invalid pad section comprising a decubitus pad and a plurality of ancillary pads all closely spaced and of resilient hypoallergenic and porous material sufficient to cover about one longitudinal half of an invalid bed,

(2) said decubitus pad having an aperture therethrough sufficient to encircle one of said trochanteric sores and prevent contact thereof with the bed when the person is placed thereon,

(3) said ancillary pads being thinner than the decubitus pad to provide support to the body to compensate for the loss of pressure on the trochanteric area caused by said aperture in the decubitus pad,

(4) a second elongated invalid pad section comprising a decubitus pad and a plurality of ancillary pads as defined in the first invalid pad section, each of said sections being placed in mutually abutting relation

along a longitudinal medial portion of the bed and movable longitudinally and independently of the other section, and

(5) each of said decubitus pads having a longitudinal surface abutting a corresponding longitudinal surface of the other decubitus pad when the sections are placed in side-by-side mutually abutting relation on the bed.

4. A dual decubitus pad arrangement according to claim 3 in which the apertures within the decubitus pads are so arranged that the trochanteric sores of the bed-ridden person will be aligned respectively therewith when the sections are mutually abutting and the person is turned over from one side position on one of the invalid sections to the other side position on the other of said invalid sections.

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U.S. Cl. X.R.

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