Dec. 10, 1963 G. C. HYDE ETAL 3,113,326

PROTECTIVE PAD

Filed Feb. 17, 1961

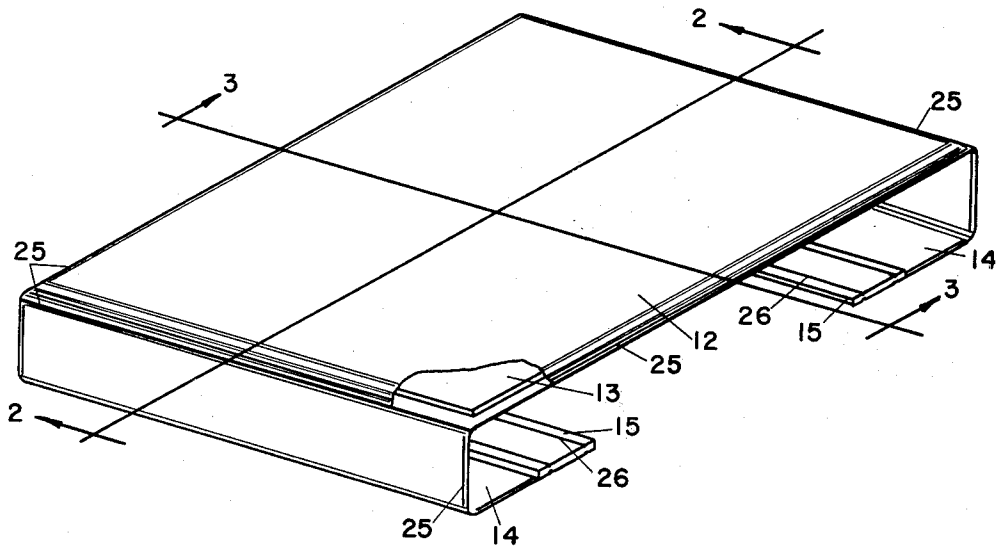


Fig. 1

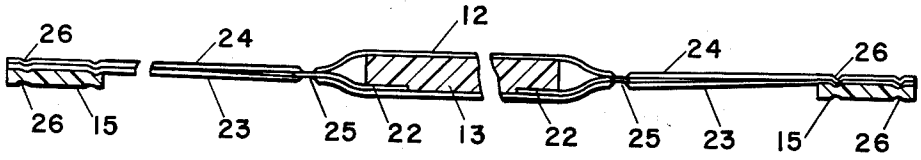


Fig. 2

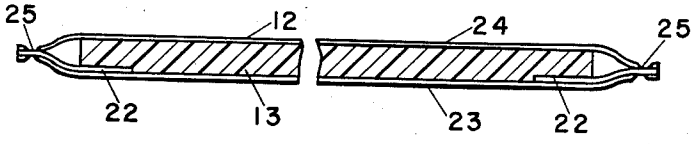


Fig. 3

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This invention relates to a protective bed pad particularly for use on hospital beds, baby cribs, and the like, and is an improvement over the rubberized sheets or sheeting heretofore used.

This application is a continuation-in-part of an earlier filed application Serial No. 820,289 on June 15, 1959, now abandoned.

Anyone who has used rubberized bed sheets is fully aware that they have a tendency to slip on the hospital bed, undergo excessive wrinkling, and cause the linen or cotton bed coverings used therewith to similarly wrinkle and form uncomfortable ridges and bunches which give great discomfort to the bed patient. Despite these disadvantages it has remained a widespread and common practice for hospitals to use rubberized sheets on patients' beds as a necessary protection for the mattresses.

It is an object of the present invention to provide a pad for a bed mattress that will add to the comfort of the person recumbent thereon, rather than to detract therefrom, and that will afford, at the same time, the maximum of protection to said mattress.

Another object of the invention is to provide a pad for a bed mattress that will complement the mattress by adding sufficient softness and resiliency to the firmness of the mattress to produce a composite of maximum comfort to the one recumbent thereon.

Another object of the present invention is to provide a protective cover for a bed mattress that will have such thickness and yieldability as to modify, but not dominate, the "feel" of the mattress.

Other objects will become apparent from the following specification, the attached drawings and the appended claims.

Reference is hereby made to the drawings, in which—

FIGURE 1 is a perspective view, partly broken away, illustrating one modification of the present invention as it would be in use;

FIGURE 2 is a vertical sectional view taken along the line 2—2 of FIGURE 1; and

FIGURE 3 is a vertical sectional view taken along the line 3—3 of FIGURE 1.

In FIGURE 1 of the drawings there is illustrated in a general way, a presently preferred modification of the invention, in which there is shown a water-tight and vapor-tight envelope 12 of elastomeric material, such as polyethylene, enclosing a sheet 13 of foamed elastomeric material, said envelope being of sufficient length to span a bed transversely and having extending portions 14 integral therewith at the ends thereof; the extending portions 14 having, at their respective free ends, slip-reducing members 15 attached thereto.

FIGURE 2 shows the sheet 13 of foamed elastomeric material, such as polyurethane foam or foamed natural or synthetic rubber, with a tab 22 extending substantially the full length of said sheet of elastomeric material and attached thereto, as by stitching, cementing or heat sealing, and also attached to one sheet 23 of the elastomeric pad-embracing envelope 12, as by heat and pressure or by cement.

FIGURE 2 also shows the lower sheet 23 of elastomeric material and the upper 24 sheet of elastomeric material joined in a water-tight and vapor-tight seal 25 formed by heat and pressure, for example; said seal extending from one edge of the envelope to the other.

The friction facings 15 of the extensions 14 are shown

in FIGURE 2 as being attached to the elastomeric sheets of the extensions by heat seals 25. However, the friction facings can be otherwise attached to the extensions; e.g. by stitching or by cementing, particularly if they are of such nature as to be not satisfactorily joinable to the elastomeric sheet material by heat and pressure; and the friction facings can be formed as integral parts of the extensions; e.g. by embossing the elastomeric sheets of the extensions to provide therein closely associated ridges and valleys or other concave and convex areas, in the whole surface of each of said extensions or in only a portion of such surface.

The friction facings 15 illustrated in the drawings are of foamed polyethylene attached by heat seals to the polyethylene sheet 23, because the foam and the sheet, both being of polyethylene, are compatible under heat and pressure. Other materials, such as woven or felted cotton or foamed polyurethane, for example, can be used for the friction facings 15 on a polyethylene sheet by joining them thereto by means of stitching or cement.

The preferred method of making the article of the present invention is as follows. The sheet of foamed elastomeric material is cut to the required length to span the width of the mattress on which it is to be used. Usually the foamed elastomeric material can be purchased in such a width as is desired for the width of the protective pad. If necessary, it can be cut to the desired width from a wider sheet. One standard size of protective pad has a length of thirty-six (36) inches and a width of thirty (30) inches. A pad of such size will afford optimum protection for the usual single bed mattress. Larger size pads of almost any dimensions can be used if desired, but less latitude is possible in decreasing the size of the pad, because the amount of protection possible with substantially smaller pads too often proves insufficient.

The term "sheet" is used herein in connection with the foamed elastomeric material to provide terminology that is compatible with the physical relationship between the thickness of the pad and its area. Foamed elastomeric material is available in standard thicknesses of a large range and this range of thicknesses can be greatly increased by resorting to non-standard thicknesses produced to specification.

Inasmuch as the pad of the present invention is intended to complement the mattress by adding a degree of yieldability that modifies but does not dominate the "feel" of said mattress, and because mattresses vary greatly in their firmness, it is obvious that the pad of the present invention can embrace a range of elastomeric foam thicknesses.

One thickness of foamed elastomeric material that has been found to be satisfactory and which is preferred for use in protective pads for use on the hospital mattresses is one-quarter (¼) of an inch. Other thicknesses of foamed elastomeric material that have been found to be satisfactory for the present invention are three-eighths (⅜) and one-half (½) of an inch. All of these thicknesses substantiate the use of the term "sheet" in connection with the foamed elastomeric material as used in the present invention.

Having provided a sheet of foamed elastomeric material of the desired length and width, said sheet is then provided with tabs attached to one face thereof at its edges and extending beyond said edges. These tabs, the purpose of which will be explained below, can be attached to the sheet of foamed elastomer by stitching or cementing or by heat and pressure if the material of the strip and that of the foamed sheet are compatible under heat and pressure.

The material of the tabs preferably should be compatible, under heat and pressure, with that of the elastomeric sheet material used for the water-tight and gas-tight envelope described below, because heat sealing is the preferred method of forming said envelope. These tabs,

however, can be of less thickness than that of the sheet material usually used for the aforesaid envelope.

Having provided a sheet of foamed elastomeric material of the desired length and width and with tabs as described above, such sheet is laid upon a strip of elastomeric sheet material of suitable thickness, width and length for the protective pad. The thickness of the elastomeric sheet material usually used is from 0.002 inch to 0.004 inch. The sheet of foamed elastomeric material is then covered with a strip of elastomeric sheet material of suitable thickness, width and length, which ordinarily will be the same as those of the aforementioned strip upon which the foamed material was placed.

The edges of the two sheets of elastomeric film and the tabs attached to the sheet of foamed elastomeric material are then brought into proper alignment, if they are not so oriented, and joined to provide a water-tight and vapor-tight envelope embracing the sheet of foamed elastomeric material and with said sheet of foamed elastomeric material held in place in said envelope by the tabs described above having been joined to the elastomeric sheet material of said envelope. Without the foamed sheet being attached to the envelope, as by the tabs, a restless patient sometimes causes the sheet of foamed material to shift in the envelope and form bulges.

If the sheet of foamed elastomeric material and the material of the envelope are compatible under heat and pressure, the tabs can be dispensed with and the foamed material can be held in place in the envelope by heat sealing the sheet of foamed material to the sheet material of the envelope.

The sequence of steps whereby the two strips of elastomeric film are formed into a water-tight and gas-tight envelope for the sheet of foamed elastomeric material, and into the two extensions of said envelope, can be varied to comply with the approved practice in such operations, but the order of steps should be such that the pressure of the air in said envelope is neither substantially increased nor decreased thereby.

As described above, the extensions 14 of the water-tight and vapor-tight envelope 12 are provided with slip-reducing means 15. The purpose of the extensions 14 is to hold

the protective pad of the present invention in place on the bed by virtue of their having been made approximately one-half (½) the length of the envelope for the sheet of foamed material to permit it to be tucked between the mattress and the springs of the bed. The slip-reducing means 15 enhances the holding power of the extensions 14 and thereby serves to more positively keep the protective pad in place on the bed.

It is intended that whereever the term "polyurethane foam" is mentioned in this specification, it shall include both the polyester type and the polyether type, it being recognized that polyurethane of the polyether type has greater resiliency than that of the polyester type.

It also is to be understood that other elastomeric sheet material can be used for the water-tight and vapor-tight envelope of the present invention.

Having thus described our invention, we claim:

1. A protective pad comprising a sheet of foamed elastomeric material encased in a vapor-tight envelope having extensions thereto at opposite ends thereof, of approximately one-half of the length of said envelope, said sheet of foamed elastomeric material being attached to said envelope at two corresponding edges thereof.

2. A protective pad as defined in claim 1 in which the sheet of foamed elastomeric material is polyurethane and the material of the envelope therefor is polyethylene.

3. A protective pad as defined in claim 1 in which the sheet of foamed elastomeric material is foamed rubber and the material of the envelope therefor is polyethylene.

4. A protective pad as defined in claim 1 in which the sheet of foamed material is polyethylene and the envelope therefor is polyethylene.

5. A protective pad as defined in claim 1 in which the extensions at the ends of the envelope have a slip-resistant surface.

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