

May 4, 1965

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3,181,179

FITTED BED SHEET AND METHOD FOR MAKING SAME

Filed April 3, 1962

5 Sheets-Sheet 1

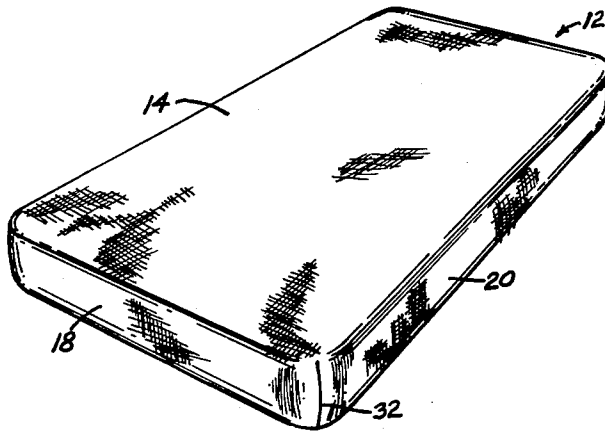


FIG. 1

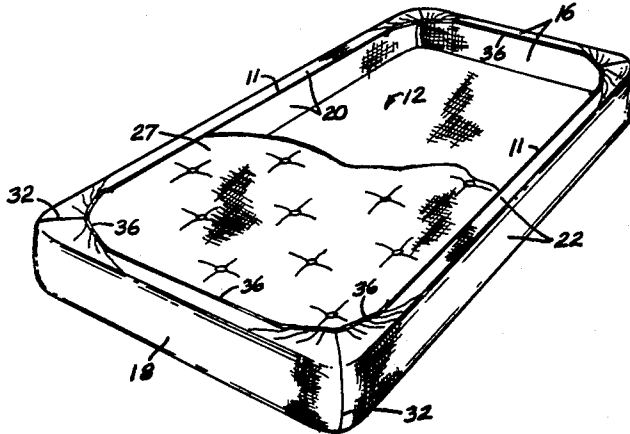


FIG. 2

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5 Sheets-Sheet 2

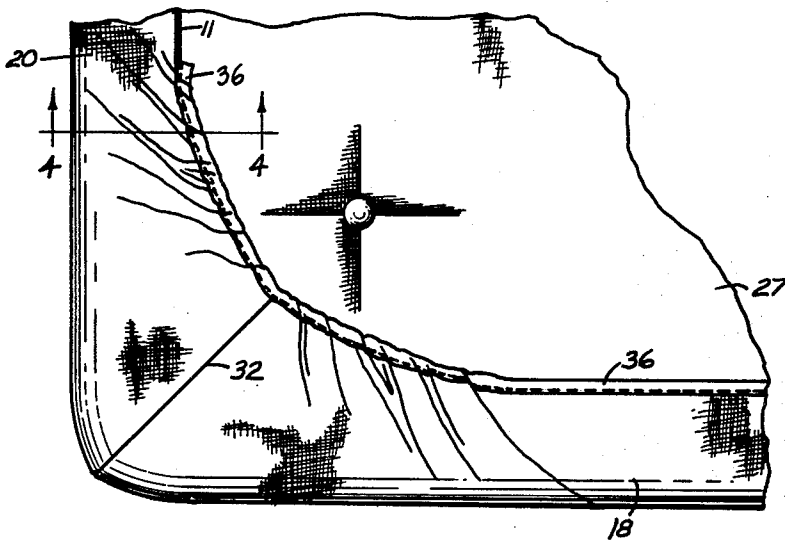


FIG. 3

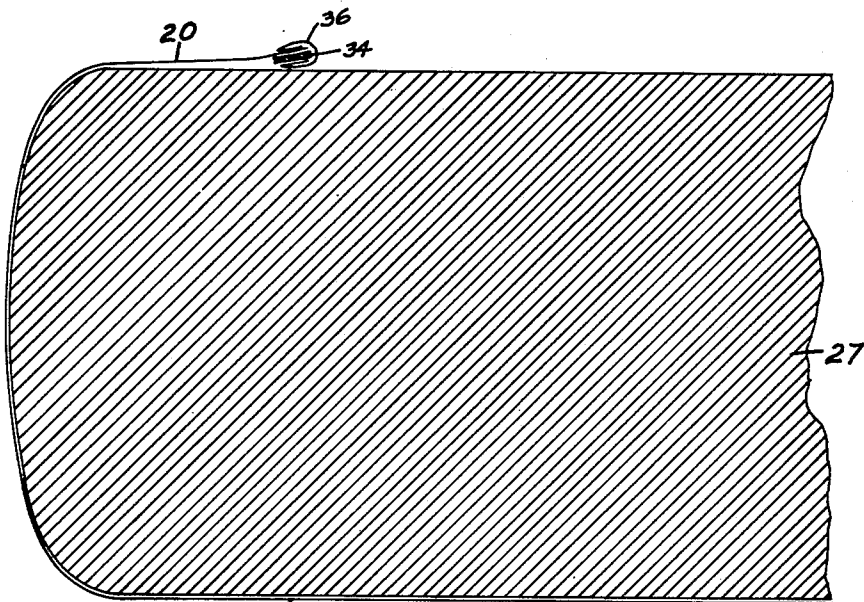


FIG. 4

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5 Sheets-Sheet 3

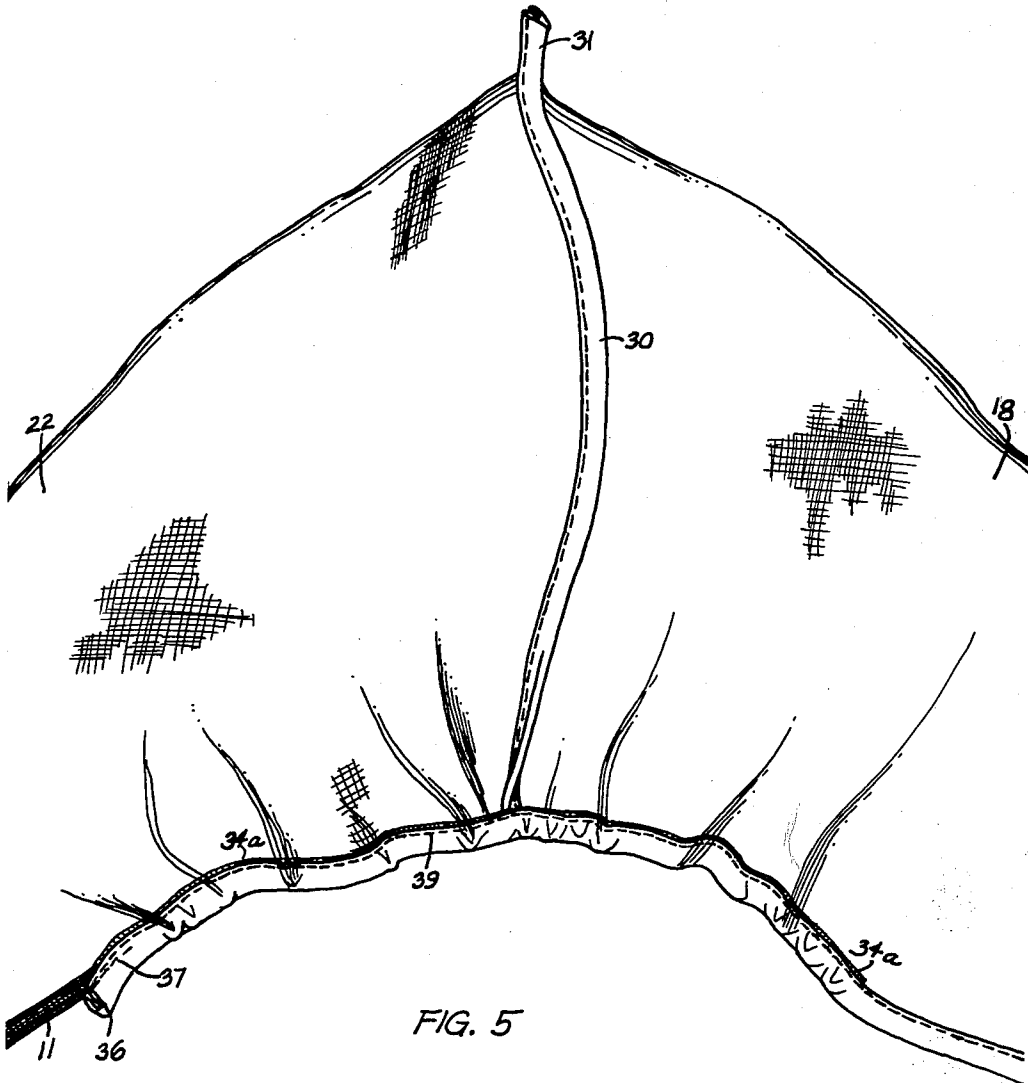


FIG. 5

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5 Sheets-Sheet 4

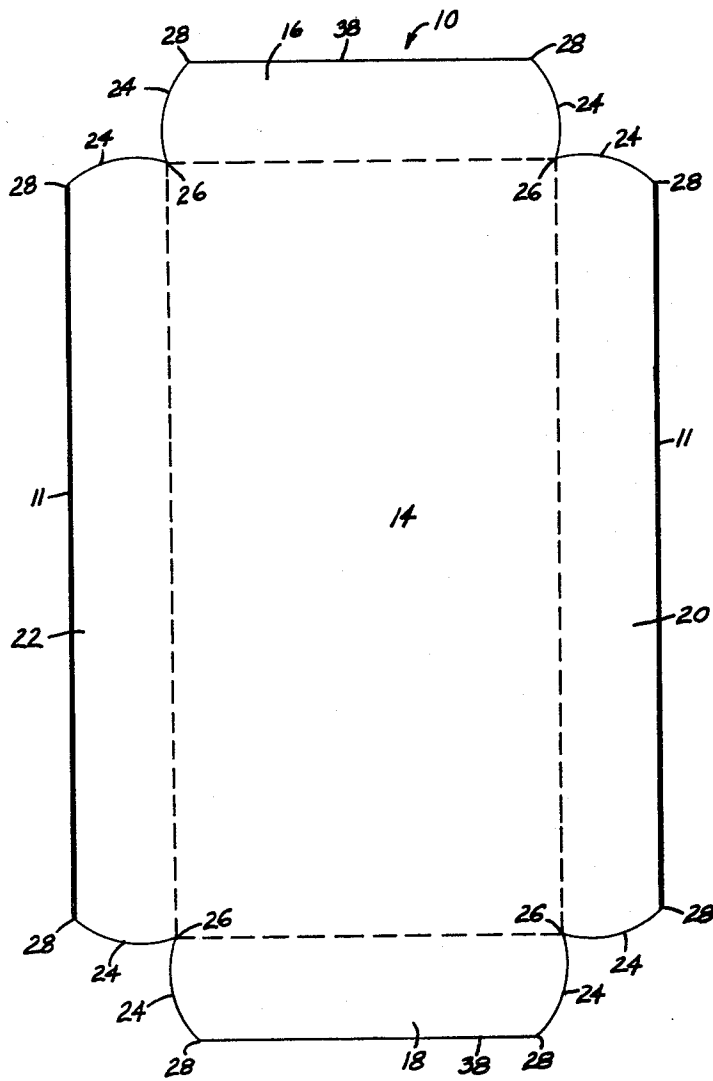


FIG. 6

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FITTED BED SHEET AND METHOD FOR MAKING SAME

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5 Sheets-Sheet 5

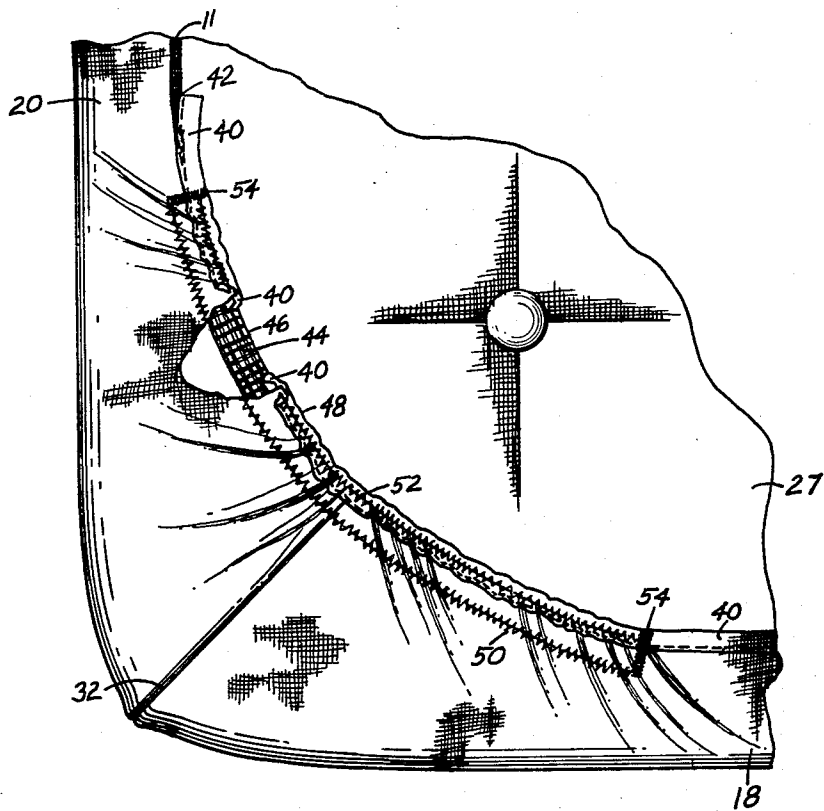


FIG. 7

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3,181,179
**FITTED BED SHEET AND METHOD
 FOR MAKING SAME**

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 Filed Apr. 3, 1962, Ser. No. 184,758
 2 Claims. (Cl. 5—334)

The present invention relates to a textile fabric bed sheet, and more particularly to an improved fitted bed sheet and to the method for making same.

The improved sheet of the present invention is particularly characterized in that it provides for the first time a fitted sheet that fit snugly and uniformly over mattresses of varying sizes and degrees of flexibility, and is easily and conveniently placed over and removed from the mattress without placing strain on the corners of the sheet.

There have been a number of prior proposals for fitted sheets, but few have gone into commercial production because of one problem or another.

The most popular prior art fitted sheets, which are currently in production, will be discussed below in connection with their disadvantages and limitations.

One form of prior art fitted sheet comprises a sheet having uniform fabric pockets sewn at each of the four corners of the sheet, said pockets being adapted to receive the corners of a mattress. One disadvantage with this type of sheet is that it is difficult to fit over the mattress and undue tension and strain must be placed on the sheet when the fourth or last pocket is placed over the mattress in bed-making, causing breakage of textile fibers in the sheet, shortened life of the sheet, and sometimes tearing. Other disadvantages are that the pockets must be large enough not only to receive the mattress corners but to pull down over the corners, so that the fit of the sheet is not snug, and the side and end extremities of the sheet hang down or flop away from the mattress rather than fitting against the underside edges of the mattress, thus permitting the sheet to slide about on the bed during normal use. Finally, and very importantly, the sheet does not have adjustable characteristics and thus does not provide a snug fit on mattresses of varying sizes and degrees of flexibility. For example, the so-called standard twin-bed mattresses vary in flexibility from very soft to extra-rigid orthopaedic mattresses; also they vary in length, width, and thickness by several inches, and a standard fitted, twin-bed sheet of the above type cannot be fitted snugly to these varying types and sizes of mattresses.

Another prior art fitted sheet comprises a sheet having fabric pockets at three corners of the sheet and a roughly triangular shaped elastic gusset in the fourth corner. Some of the disadvantages of this type of sheet are that it does not fit snugly over mattresses of varying sizes and degrees of flexibility; the corner of the sheet having the elastic gusset must be the last one placed over the mattress and the first one removed from the mattress, causing a search for corners during bed making; and it is more expensive to produce than other types of fitted sheets as an additional employee must be used in the production line to fold the sheet blanks, which must be cut in open width. In the production of fitted sheets having identical corners, a mechanical spreader is used to fold a continuous length of sheeting back and forth upon itself, leaving folds at each end. Thereafter, the cutter cuts the blank from which the sheet is to be formed while the fabric is in folded form or width, and the folded blanks are taken directly to the sewing machine for conveniently sewing together the superposed cut edges of the folded fabric. When one corner of a fitted sheet differs from the others, as in the case of a sheet having three fabric pockets and one elastic gusset, the fabric must be cut in

open width rather than folded form, and the sheets must thereafter be folded by hand prior to being transported to the sewing machine, thus an expensive hand folding operation is required.

5 A third prior art form of fitted sheet comprises three closed fabric pockets and a partially closed fabric pocket having bias binding straps extending from the side and end extremities of the partially closed pocket, said bias binding straps being adapted for tying together into a bow to close the pocket after the sheet has been placed over the mattress. Some of the disadvantages and limitations of this type of fitted sheet are as follows: the bed-maker must inconveniently take the step of tying and untying the straps during bed making, and moreover, the bed-maker must reach under the mattress to tie and unite the straps; the sheet corner having the tie straps must be the last one placed over the mattress and the first one removed from the mattress during bed making, causing searching for the sheet corner having the straps and excess walking and mattress lifting; the sheet does not fit snugly over mattresses of varying sizes and degrees of flexibility; the point of intersection between the tie strap and the perpendicular edge of the sheet is a weak point which is subjected to a great deal of wear and pressure in tying and untying the straps, causing fraying, tearing, and strap disconnection at this point prior to wearing of the remainder of the sheet; and the bias binding strap is more stretchable than the thread used to close the bias binding so that the pulling on the bias binding strap during tying and untying causes rupture of the stitches and opening-up and fraying of the bias binding.

The fitted sheet of the present invention has overcome the disadvantages and limitations of the prior art, and has provided additional advantages as follows.

35 Generally speaking, the fitted sheet of the present invention comprises an all fabric sheet having four corner fabric pockets, each one adapted for receiving a mattress corner, and each pocket having a short elastic band disposed at and along its lower extremity. Each elastic band extends for a short distance along the side of the sheet and for a short distance along the end of the sheet, thus providing evenly distributed retractive forces along both sides and both ends of the sheet, which pull the edges of the sheet up snugly under the mattress, thus eliminating flopping and hanging down of the sheet edges and preventing the sheet from sliding about over the top of the mattress, and causing the sheet to fit snugly over so-called standard size mattresses, which in fact vary in size and in degree of flexibility. Inasmuch as all four corners of the sheet are identical, it is unnecessary to search for a corner having a tie string or gusset in bed-making. Also, the sheets may be cut in folded width, rendering it unnecessary to carry out an expensive hand folding operation following the cutting operation and prior to sewing. Finally, inasmuch as drooping from the sides and ends has been eliminated, the fabric utilized in making the sheet may be two to three inches less in length and width than the fabric utilized in making conventional fitted sheets, as it is not necessary to provide excess fabric for tucking under the mattress.

The sheet and method of the present invention will be described in detail with reference to the accompanying drawings in which:

65 FIG. 1 is a perspective view showing the fitted sheet of the present invention applied to a mattress;

70 FIG. 2 is a perspective view showing the sheet of the present invention applied to a mattress, part of the mattress being omitted, and both the mattress and sheet being inverted;

FIG. 3 is an enlarged bottom plan view of one corner

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of the sheet of the present invention applied to a mattress;

FIG. 4 is an enlarged sectional view taken along line 4—4 of FIG. 3;

FIG. 5 is a pictorial view showing one corner of the underside of the sheet of the present invention;

FIG. 6 is a plan view of a cut piece of fabric (blank) from which the sheet of the present invention is made; and

FIG. 7 is an enlarged bottom plan view, with parts broken away, showing one corner of a variation of the sheet shown in FIG. 3 applied to a mattress.

The following are illustrative and non-limiting examples of methods for making the sheet of the present invention.

Example I

A continuous length of conventional, woven, combed cotton, percale sheeting 55" wide is folded by means of a mechanical spreader into lengths of 90¾". The sheeting is cut while in folded width into the form of a blank 10 from which the fitted sheet 12 is subsequently made. The resulting blank 10, which will be made into a fitted sheet for a twin-bed, is 55" wide and 90¾" long. The blank 10 has selvages 11, a center panel 14, comprising the area within the broken lines of FIG. 6, which will form the portion of the sheet for covering the top of the mattress end panels 16 and 18, and side panels 20 and 22. Each side panel and end panel has two curved shoulders 24, and a shoulder may be defined as that portion of the blank extending from the adjacent corner 26 of the center panel 14 to the edge 28 of the side panel or end panel.

The blank 10 is taken to the sewing machine in folded form, that is with end panel 18 superposed on end panel 16. Each shoulder 24 of each of the end panels 16 and 18 is joined to the adjacent shoulder 24 of each of the side panels 20 and 22 by superposing the two adjacent shoulders and sewing together the shoulders from corner 26 to edge 28 with a strip of cotton bias binding 30 by means of a conventional "binder" sewing machine attachment. For convenience, the bias binding 30 may be 1¼" wide when it is in open width form, prior to being run through the binder. The binding at edge 28 may be reinforced by backstitching in the conventional manner. Also, a tab 31 of sewed and folded bias binding, about ½" long, and not having therebetween any sheeting, may be allowed to extend from each shoulder beyond each corner 26. This prevents raveling of the binding and does not detract from the appearance of the sheet, as the bias binding is on the inside of the sheet, e.g. the side of the sheet placed against the mattress 27 when the bed is made, thus all that is exposed on the bed is mitre line 32. The mitre line may be defined as the line which is formed when two shoulders 24 from corner 26 to edge 28 are joined. Pockets for receiving the mattress corners are thus formed.

A short strip of elastic 34 is then sewed into the lower extremity of each pocket as follows. Excellent results have been obtained by using an elastic with a heat resistant rubber filler covered with cotton yarns. The strip of elastic for each pocket is preferably ⅜" wide and 9" long when relaxed, and 17" long when extended. It will be understood that different types of elastic may be used and that the elastic may be of a different size. Cotton biased binding 36, which is 1¼" in open width form, is fed through a binder sewing machine attachment and sewed on the selvedge 11 of each side panel, beginning at a point about 10" from the mitre line 32. Reinforcing stitches are made at the point the binding 36 is begun. After about 1½" of binding has been sewed onto the selvedge 11, the elastic strip 34, while in extended condition, is placed under the bias binding 36 and on the inside of the sheet, and the sewing of the bias binding 36 and elastic strip 34 is continued, along the selvedge 11, over the top of the lower portion of bias binding 30, past the lower extremity of the mitre line 32, along the cut edge

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38 of the end panel for about 8½" beyond the mitre line 32, where the elastic strip 34 terminates, the elastic having been held in extended condition during the time it was being attached to the sheet by means of the bias binding 36. It will be noted that bias binding 36 almost completely covers elastic 34 to provide the sheet 12 with a finished appearance, only about a ¼" portion 34a of the elastic 34 extending beyond the bias binding 36, and this being on the inside portion of the sheet. Sewing of the bias binding 36 is continued along the cut edge 38 of the end panel, to cover the cut edge, until a point on the cut edge about 8½" prior to reaching the next mitre line is reached, at which point another extended elastic strip 34 is placed along the cut edge 38 of the end panel, on the inside of the sheet (side having bias binding 30 exposed), and as previously the bias binding 36 covers the elastic strip 34 and the cut edge 38 of the end panel, and sewing is continued, only one line of lock stitches 39 being required to secure the bias binding 36 and the elastic strip 34 to the sheet. The sewing is continued along the cut edge 38 of the end panel, over the top of the lower portion of the next piece of bias binding 30, past the lower extremity of the next mitre line 32, along the selvedge 11 of the other side panel to a point about 8½" beyond the previous mitre line 32, where the elastic strip 34 terminates. Sewing of the bias binding 36 is continued for about 1½" further along the selvedge 11, at which point the bias binding 36 is terminated and reinforced with back-stitches 37. Thus, the elastic strips 34, covered with bias binding 36, have been placed around two pockets of the sheet and bias binding 36 has been used to cover the cut edge 38 of one end panel. The identical operation is performed on the remaining two pockets and the remaining cut edge 38 of the other end panel, and the sheet is completed.

Example II

This is an example of a slight variation of the fitted sheet described in Example I above, the sheet of the present example being shown in FIG. 7.

In making the sheet of the present example, the same steps are taken as in Example I down through sewing together the adjacent shoulders 24 of the blank 10 with bias binding 30. Thereafter, a strip of bias binding 40, which is 1¼" wide in open width form, is passed through a binder attachment and sewed along the edge of the sheet, beginning at a point 42 on the selvedge 11 of the side panel, which point 42 is about 7¼" from the mitre line 32, and continuing along the selvedge, past the mitre line 32, all the way along the cut edge 38 of the end panel, past the next mitre line 32, and along the selvedge 11 of the other side panel to a point about 7¼" beyond the mitre line. Bias binding 40 is placed in the opposite end of the sheet in the same manner. Following this, a strip of elastic 44 is attached to each corner of the sheet. Each elastic strip 44 may be ⅝" wide and 6" long when relaxed, and 10⅝" long when extended. The elastic strip 44 may be formed from heat resistant rubber filler covered with cotton yarns. The elastic strip 44 is held in extended condition and is placed on the inside of the sheet adjacent to the binding 40, the lower edge 46 of the elastic strip 44 being aligned with the lower edge 48 of the bias binding 40, equal lengths of the elastic strip 44 being on each side of the mitre line 32. Sewing is accomplished with a double needle zig-zag machine, one edge of the elastic strip 44 being attached to the sheet by stitches 50 and the other edge of the elastic strip 44 being attached to the bias binding 40 by means of stitches 52. The ends of the elastic may be secured with a bar tack 54, or zig-zag stitches or any other convenient reinforcing means. Although the elastic strip 44 is exposed to view in this variation, it will be noted that the exposed strip 44 is on the inside of the sheet and therefore faces the mattress 27 during use of the sheet. Of course, the exposed portion of elastic strip 44 may be covered with fabric if one chooses, but it is not required.

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While the present invention has been described primarily in relation to woven, cotton, percale sheets for twin-beds, it will be understood that the fitted sheets of the present invention work equally well when made for beds of other sizes, such as double beds, and that any woven sheeting may be utilized.

The present invention is not limited, other than as defined in the appended claims.

What is claimed is:

1. A woven fitted bedsheet comprising a top center portion for covering the top of a mattress, end panel portions integral with and extending from said top center portion and having shoulder portions at each end of said end panel portions, side panel portions integral with and extending from said top center portion and having shoulder portions at each end of said side panel portions, each of said shoulder portions of said side panel portions being secured to the adjacent shoulder portions of each of said end panel portions to form four pockets having open edge lower extremities, an elastic strip and a separate binding strip substantially enclosing said elastic strip secured to each other and to said lower extremities of the four pockets

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in the extended condition of said elastic strip in such a manner that the open edges of the lower extremities are completely encased and are gathered in the relaxed condition of said elastic strip.

2. A woven fitted bedsheet as defined in claim 1 in which a single row of stitches is used to secure said elastic strip and binding strip to said lower extremities of the four pockets.

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