May 30, 1967 F. J. HRUBECKY ET AL 3,321,782

SANITARY PRODUCT AND METHOD

Filed Feb. 23, 1966 2 Sheets-Sheet 1

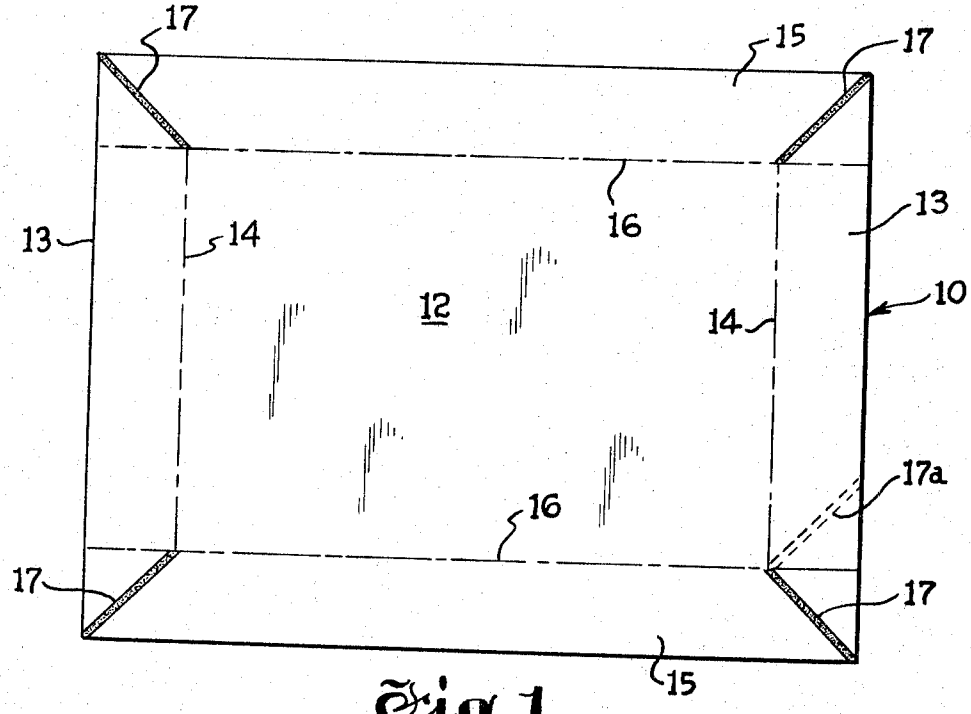


Fig. 1

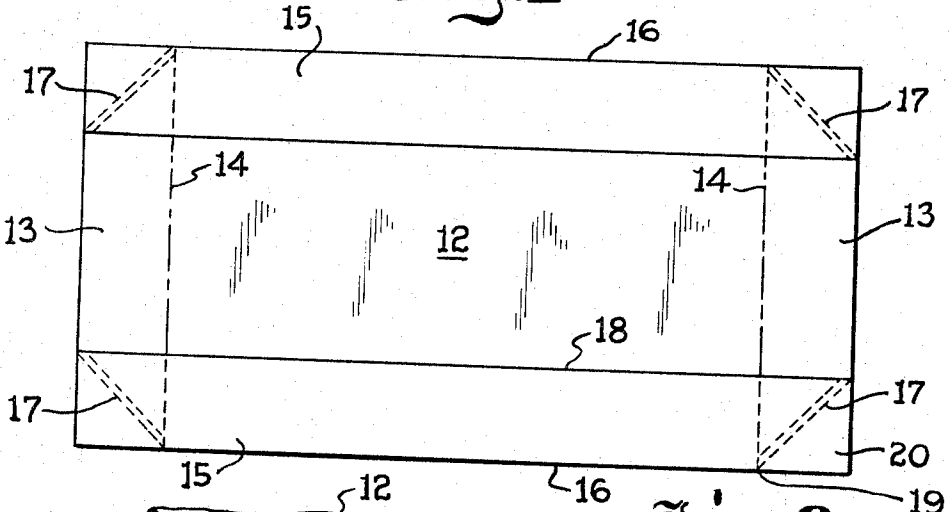


Fig. 2

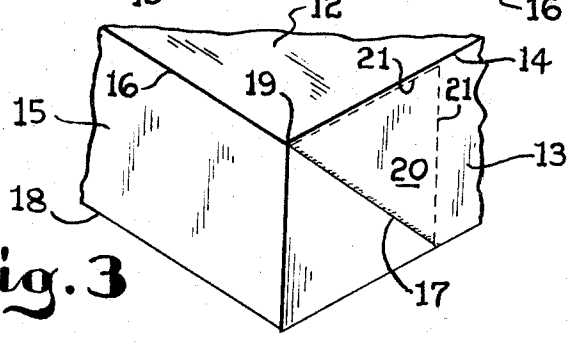


Fig. 3

May 30, 1967 F. J. HRUBECKY ET AL 3,321,782

SANITARY PRODUCT AND METHOD

Filed Feb. 23, 1966 2 Sheets-Sheet 2

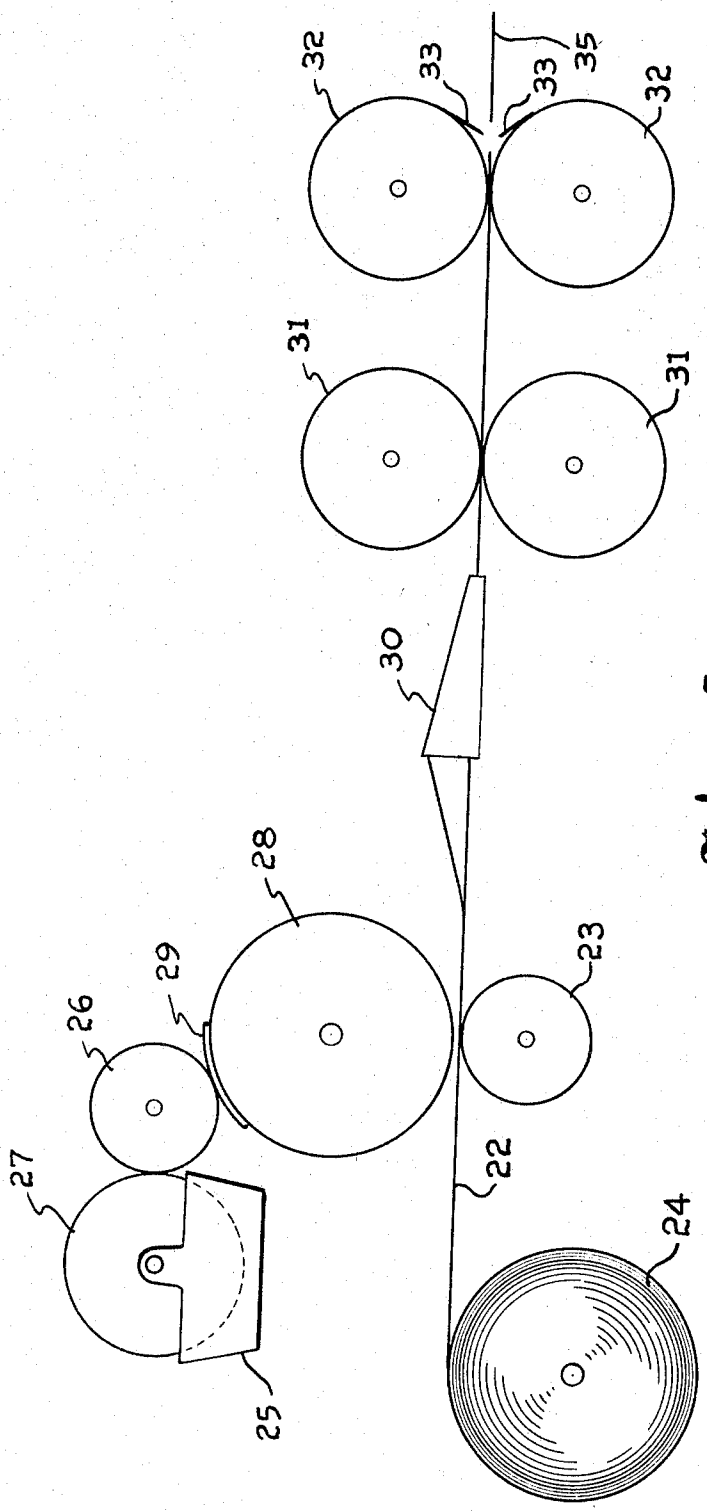


Fig. 4

United States Patent Office 3,321,782 Patented May 30, 1967

3,321,782

SANITARY PRODUCT AND METHOD

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10 Claims. (Cl. 5—334)

The present invention relates to bed sheets, and more particularly to a simplified fitted bed sheet construction and to the method for making same. The invention is especially applicable to sheets made from disposable materials but is equally useful in applications where other more permanent materials are employed.

The art is replete with prior proposals for fitted sheets, but all require complicated structures and expensive methods for production thereof. When costs are important, as in the manufacture of disposable sheets, these complicated methods are impractical. Conventional contour corners on sheets are also quite bulky and if employed on disposable materials, further complicate handling and packaging.

Accordingly, it is a primary object of this invention to provide a simplified fitted bed sheet construction.

Another object is to provide a fitted sheet structure in which the corner construction remains flat prior to use making the finished sheet readily adaptable to folding and compact packaging.

An equally important object is to provide an economical method for fabricating such fitted sheets.

Other objects and advantages will become apparent by reference to the following description and accompanying drawings in which:

FIG. 1 is a top plan view of an elongate rectangular blank of sheet material from which the fitted sheet is formed.

FIG. 2 is a plan view similar to FIG. 1 showing the finished assembly in flat form.

FIG. 3 is a fragmentary perspective view showing one corner of the sheet in place on a mattress.

FIG. 4 is an elevational view schematically illustrating an apparatus for fabricating a sheet in accordance with the invention.

In the drawings, the numeral **10** indicates a rectangular sheet of flexible material from which the fitted sheet is formed. The sheet comprises a central rectangular portion **12**, end panels **13**, and side panels **15**, outlined by broken lines **14** at each end and broken lines **16** at each side.

The central rectangular portion **12** is intended to cover the top of the mattress when in place thereon, with side panels **13** and end panels **15** extending down and covering the respective sides and ends of the mattress.

In forming the fitted sheets, adhesive lines **17** are applied to opposite corners of at least one end of sheet **10**, when the sheet is intended for use as the top sheet on a bed; or at all four corners when the sheet is intended for use as the bottom bed sheet. The latter embodiment is that shown in the drawing. The adhesive lines **17** preferably extend diagonally from each corner of the sheet material to the intersection of lines **14** and **16**. While the drawing shows the adhesive lines at an angle of 45°, which is the preferred arrangement, it can readily be seen that angles from 30° to 60° may be used without completely detracting from the intended utility. Also, while the drawing shows the adhesive as being applied to the flat sheet in a manner to extend outward to each corner from the intersection of lines **14** and **16**, it will be seen that the adhesive lines alternatively can extend from the intersection of lines **14** and **16** toward the end of the sheet in a mirror image of the line **17**, as shown by dotted area **17***a*.

After application of the adhesive, both side panels **15** are folded over onto the central portion on fold lines **16** causing the side panel **15** to be permanently adhered to end panels **13** along adhesive lines **17**.

The sheet is now ready for application to the mattress. In carrying this out, the sheet is placed on the mattress with side panels **15** facing upward and with folds **16** lying along each edge of the mattress. Edge **18** of the sheet is pulled down along the adjacent edge of the mattress and the corner area **19** is turned inside out. As best shown in FIG. 3 adhesive line **17** then forms a diagonal fold extending along the end panel **13** from corner **19** to one end of the sheet. When corner area **19** is turned inside out, triangular area **20** is folded back under end panel **13**, as shown by phantom lines **21**.

Each of the other corners are formed around the mattress in the same manner, providing the mattress with a neatly boxed covering sheet.

It will be seen that the described fabrication of the fitted sheet is simple, yet effective, and that it is adapted to economical production methods and therefore highly desirable for use in the field of disposable materials. The finished sheet remains in a flat form prior to use, having no bulky corners. It can be folded easily to form a neat package.

One method of manufacturing the sheet from a continuous roll of flexible sheet material is shown in the schematic drawing of FIG. 4. As shown therein, a continuous web **22** of flexible material is fed from supply roll **22** through an adhesive applying section comprising back-up roll **23**, printing roll **28** and adhesive metering roll **26**. Adhesive is supplied from dip pan **25** in which roll **27** rotates. In one embodiment, printing roll **28** has two raised adhesive applying areas **29** on each edge which apply V-shaped lines of adhesive at predetermined spaced intervals adjacent the side edges of the material **22**. After the adhesive is applied, a conventional folding horn **30**, or other suitable folding device, is employed to fold the material over onto the central portion, so that the edges lie on a line substantially coincident with the top ends of the V. Next, the folded web is bonded in the area where the adhesive is applied by passing the folded web through a pressure nip formed by a pair of rolls **31**. Subsequently, the folded and bonded web is transversely cut into individual sheets along a line intersecting the apex of the V's by flying knives **33** mounted on rolls **32**. The finished sheet **35** may be stored flat, or subsequently folded into a neat package, as desired.

The above-described process provides sheets having all four corners bonded. The finished product thus obtained is suitable for use as a bottom bed sheet.

The described process can be modified rather easily to also provide top sheets, which are required to have only one end provided with fitted corners.

For such purposes, the spacing between printed adhesive V's can be twice as long as for the bottom sheet, with a transverse cut being made at the apex of each V as well as along a line spaced midway between a pair of V's. The resulting products would have the corners bonded on only one end.

Other types of apparatus differing only in detail from that shown may easily be adapted to the process.

As indicated previously the process and product described is especially useful when applied to single-use disposable materials, even though more permanent multi-use materials such as woven fabrics may be employed.

Disposable flexible materials suitable for use are well-known and include such materials as laminated cellulose wadding, scrim reinforced creped tissue, non-woven webs, plastic film reinforced paper, various types of plastic film,

etc. The invention is not limited to the specific form of material used.

Any suitable adhesive may be used to bind the corners, with flexible adhesives being preferred.

What is claimed is:

1. A fitted sheet of simplified construction comprising a rectangular sheet of flexible material having a central rectangular portion, a pair of opposed side panels, and a pair of opposed end panels; said side panels and said end panels being of substantially the same width; each of said side panels being folded over in contiguous relationship with said central portion and said end panels; each of said side panels being bonded to at least one end panel by a line of adhesive extending diagonally from the outer edge of said side panel where it meets the outer edge of said end panel to a point at said fold coincident with the interior edge of said end panel.

2. The sheet of claim 1 in which each of said side panels is bonded to each of said end panels by said line of adhesive.

3. The sheet of claim 1 in which the adhesive line extends at an angle of 45° from the edge of said end panel.

4. The sheet of claim 1 in which the material comprises a non-woven disposable web.

5. The sheet of claim 1 in which the material comprises a woven web.

6. The sheet of claim 1 in which the width of said panels is equal to the depth of a mattress.

7. A method for providing fitted corners on sheet material which comprises providing a rectangular piece of flexible sheet material; applying a pair of diagonal lines of adhesive to the surface of said sheet on at least one end thereof; said lines extending diagonally inward from each of the corners at said end to points spaced a predetermined distance from said end; inwardly folding opposed edge portions of said material along lines parallel to said edges and coincident with said points into contiguous relationship with a central portion of said material; and pressing said folded portions into firm association with said adhesive to bind the folded portion to the central portion in the areas where said adhesive is applied.

8. A continuous method of fabricating sheets with fitted corners from an elongate web of flexible material which comprises applying at spaced intervals along each edge of said material adhesive lines extending inwardly in the form of a V of predetermined height; folding over the edges of said web on lines coincident with the tops of said V; pressing said folded portions into contact with said adhesive to firmly bond the overlying portions together; and transversely cutting said folded and bonded web on a line intersecting the bottom of said V.

9. The method of claim 8 in which said material is additionally cut transversely on a line spaced midway between two pars of said V's.

10. The method of claim 8 in which the height of said V's is equal to the depth of a mattress.

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