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SANITARY NAPKIN AND METHOD OF MAKING IT

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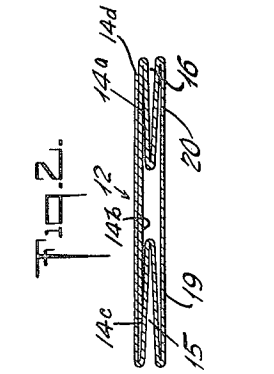


Fig. 2.

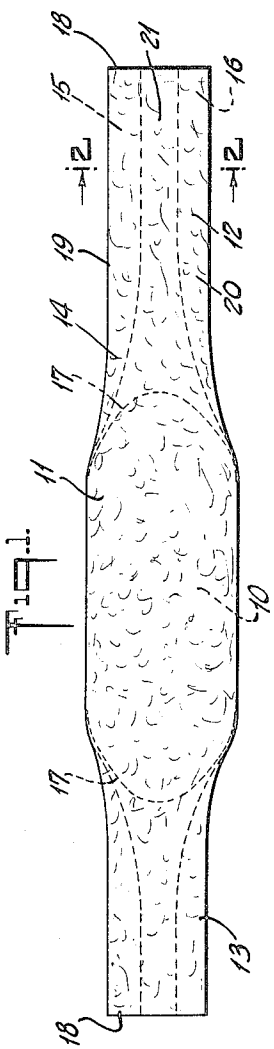


Fig. 1.

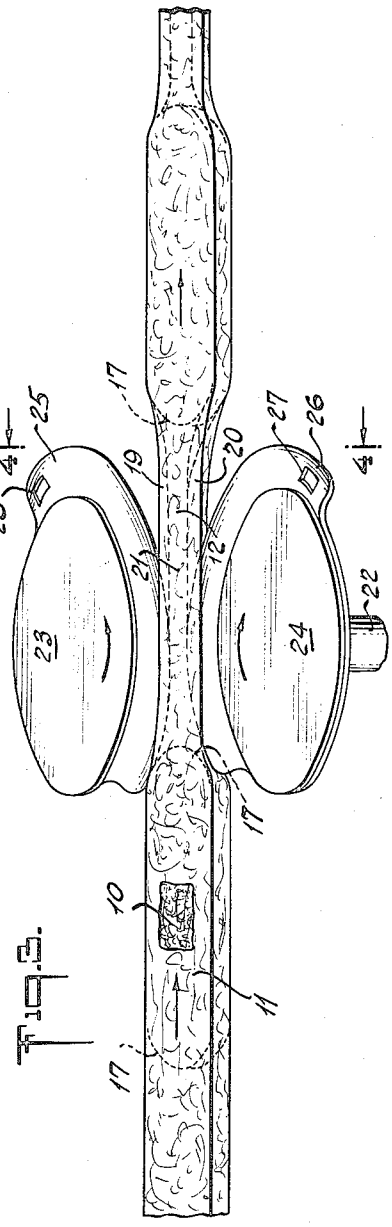


Fig. 3.

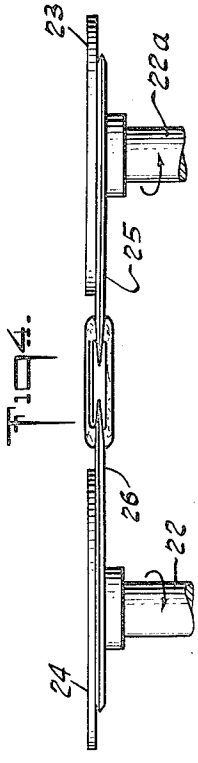


Fig. 4.

INVENTORS.
PAIGE D. L'HOMMEDIEU
NORMAN A. HARRISON.
BY
Norman St. Landau
ATTORNEY.

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SANITARY NAPKIN AND METHOD OF MAKING IT

Paige Drake L'Hommedieu, New Brunswick, and Norman Albert Harrison, Old Bridge, N.J., assignors to Personal Products Corporation, a corporation of New Jersey

Continuation of application Serial No. 264,466, January 2, 1952. This application August 25, 1954, Serial No. 452,114

8 Claims. (Cl. 128—290)

This invention relates to sanitary products and more particularly to sanitary napkins. While not limited thereto, it has particular relation to sanitary napkins of the type having a central absorbent pad structure surrounded by a supporting cover, the extensions of which, beyond the central pad, form flexible tab portions, used to handle and attach the sanitary napkin. This is a continuation of our copending application Serial No. 264,466, filed January 2, 1952, and now abandoned.

Sanitary napkins of the type referred to above are preferred by the large majority of consumers and are in very wide use. They cover the affected area of the body well and usually have sufficient bulk and absorptive capacity to receive large amounts of the menstrual flow without requiring too frequent changes. In addition these products are well adapted to efficient and accurate high speed manufacturing operations at costs bringing the product into the economic reach of the overwhelming majority of consumers.

A remaining major difficulty in handling these products involves the relation of strength and bulkiness of the tab portions of the supporting cover. Traditionally these tab portions are quite wide to permit easy handling giving the napkins uniform folded widths over their entire lengths including the tab portions. As the strength of the cover fabric is spread over a large area, a relatively strong and accordingly often unduly stiff and coarse fabric need be used. Experience shows, moreover, that wide end portions do not conform readily to body contours, require manual compression by many users to connect them with attachment clasps or belts and are considered objectionable by many of these users.

Efforts to conform the napkin in the past have centered on the pad itself rather than the cover tabs and to date have failed mainly for three reasons:

(1) Napkins of conformed shape require special skill in application;

(2) They are not adapted readily to high speed economical manufacturing processes; and

(3) Due to substantial variations in pelvic shapes and contours each specific conformed napkin is suitable only for a fraction of napkin users.

Accordingly, it is an object of the invention to provide new and improved sanitary napkins. It is a further object of the invention to provide sanitary napkins having improved covers and attachment means. A further object of the invention is the povision of sanitary napkin covers the ends of which have a more satisfactory relationship of strength, stiffness, width and bulkiness than is found in the prior art. Yet an additional object of the invention is the provision of sanitary napkins of the traditional type having many of the advantages of the conformed type without the disadvantages of this latter type. An additional object of the invention is to provide a method and machine for making the improved napkins of the invention.

Many other objects and advantages of the invention will

be obvious from the following specification particularly when it is considered with reference to the attached drawing wherein similar numerals refer to similar parts throughout the several views shown, and wherein:

Fig. 1 is a top plan view of an improved sanitary napkin in accordance with the invention;

Fig. 2 is a vertical cross sectional view through line 2—2 of Fig. 1;

Fig. 3 is a perspective view of a device for making the napkin of the invention showing sanitary napkins undergoing therein the forming process of the invention; and

Fig. 4 is a horizontal sectional view through line 4—4 of Fig. 3.

In accordance with the invention a sanitary napkin is conformed by compressing the bulk of at least one of the cover tabs progressively in the direction toward its end to provide a narrow area of bulk near the ends while leaving the width of the ends substantially unimpaired and substantially without compressing the absorbent pad itself.

The drawing shows a sanitary napkin comprising an oblong absorbent pad **10** within a cover **11** of a width greater than the width of the absorbent pad **10** and enclosing said pad completely. The portions of the cover that protrude beyond the pad area form two tab portions **12** and **13**, these tab portions being of either the same or somewhat different lengths. To insure safe enclosure of the absorbent pad **10** a wall member **14***a* of the cover preferably overlaps a wall member **14***b* of the cover as shown in Figs. 2 and 4. The overlapped wall member **14***b* has an edge **14***c* which extends the length of the cover, this edge also, of course, being overlapped by wall member **14***a*. Likewise, wall member **14***a* has an exposed edge **14***d* which extends the length of the cover.

In accordance with the invention the tab portions **12** and **13** are provided with lengthwise inward folds **15** and **16** on both sides starting with the shoulders **17** of the absorbent pad and progressively deepening toward the ends **18** of cover **11**. Inward folds **15** and **16** provide fold areas **19** and **20** of the cover which have extra layers of fabric and are thus reinforced compared with the intermediate center area **21**. It will be noted that the overlapped longitudinal cover edge **14***c* is located between one of the folds **15** and the overlapping wall member **14***a*, thus further insuring safe enclosure of the absorbent pad **10**. The fold areas **19** and **20** are of considerable advantage for users who insert pins through the tab portions as convenient portions of the tab area are thus equipped to resist the tearing action of the pins during wear. Another advantage for the many users who use such clasps to attach the napkins resides in the fact that conforming the tab portions or handles provides definite lines along which they may be folded and thus eliminates the bulky and difficult folds on napkins of the prior art.

No matter in what manner the napkin is used, conforming the tab portions or handles provides added strength, less bulk and more regular outlines as well as easier handling than has been found in napkins of the prior art.

A method and machine for conforming the tab portions of sanitary napkins according to the present invention are illustrated particularly in Figs. 3 and 4. These figures disclose complementary shafts **22** and **22***a* revolving in directions opposed from each other at substantially equal speeds and carrying rigidly mounted disks **23** and **24**, respectively, of substantially identical shape and size. Mounted on these disks **23** and **24**, which may be of relatively rigid material, are folding tools or blades **25** and **26**, respectively, which are built in the nature of cams and are preferably of somewhat flexible material such as a heavy layer of vulcanized rubber. Each

folding tool may have one or more small openings 27 and 28, respectively, near its forward end so as to increase flexibility of this location for smaller folding, or it may be softened in some other manner in this vicinity, or it may even be somewhat rigid so as to produce a less smooth fold. It will be noted that the folding tools or blades project radially from the disks and each blade extends about a portion of the circumference of the disk from which it projects. Thus, the folding tools or blades are arcuate in shape.

The sizes of the disks 23 and 24, of the folding tools or blades 25 and 26, and the location of shafts 22 and 22*a* are so chosen that the two folding tools move in synchronism to come opposite each other periodically and narrow the free space between the edgewise located disks. Thus, it can be observed from Figs. 3 and 4 that the two folding tools penetrate simultaneously into the sides of the portion of the cover which extends between an adjacent pair of pads, this being the part of the cover which forms the tab portions of the sanitary napkins, and folds or pleats the cover portion sides inwardly as the sides move past and between the folding tools or blades. While the blades do fold the sides inwardly in the manner described, the blades do not actually meet each other and thus leave a center space undisturbed. The arcuate length of the folding tools or blades 25 and 26 is preferably slightly less than the length of the cover portion which extends between an adjacent pair of pads or, expressed in another manner, slightly less than the total length of two tab or handle portions.

In operation, the elongated cover 11 containing the absorbent pads 10 which are spaced apart lengthwise within the cover passes between the edgewise opposed spaced apart rotary disks 23 and 24 as shown in Figs. 3 and 4. The movement of the cover, and the pads contained therein, is so correlated to the periodic movement of the folding tools or blades that the folding tools engage the longitudinally extending sides 11*a* of the cover portion extending between an adjacent pair of pads so as to produce an inward fold or pleat in this cover portion. However, the blades are out of the way when the pads pass between the disks. A smooth and even fold, suitable for the purpose of the invention, is obtained in this manner. It is apparent that the synchronized movement of folding tools or blades 25 and 26 and the speed of movement of the cover of the elongated cover 11 are such that each following cover portion extending between an adjacent pair of pads is folded or pleated in the manner described whereby a plurality of sanitary napkins having tab portions in accordance with the teaching of the present invention may be efficiently mass produced.

While we have illustrated and described embodiments of our invention we wish it to be understood that we do ot intend to be restricted solely thereto but that we do intend to cover all modifications thereof which would be apparent to one skilled in the art and which come within the spirit and scope of our invention.

What we claim as our invention is:

1. A sanitary napkin comprising an absorbent pad and an elongated cover of foldable material enclosing said pad and extending longitudinally beyond the ends of said pad to provide tab portions for holding the napkin at each end, said cover including one wall member having an edge extending the length of the cover, said edge being overlapped by another cover wall member likewise having an edge extending the length of the cover, each tab portion having an inward fold, beginning at the end of said pad and extending along each lateral edge of the tab portion, said overlapped longitudinal cover edge being located between one of said folds and the overlapping cover wall member in each tab portion.

2. A sanitary napkin comprising an elongated absorbent pad and an elongated cover of foldable material enclosing said pad, one portion of said cover being folded over another portion of said cover to provide an overlapped longitudinal cover edge and an exposed longitudinal cover edge, said cover extending beyond the ends of said absorbent pad to provide tab portions for holding the napkin at each end, each tab portion having a fold, beginning at the end of said pad and extending inwardly with respect to each longitudinal edge of said cover and extending lengthwise of said tab, the overlapped longitudinal edge of said cover being located between one of said inward folds and the overlapping portion of said cover in each tab portion.

3. The method of making sanitary napkins comprising enclosing a plurality of absorbent pads within an elongated cover of liquid pervious foldable material having spaced apart longitudinally extending sides, said pads being spaced apart lengthwise within said cover, then folding a longitudinally extending side of the portion of said cover extending between an adjacent pair of pads inwardly to produce an inward fold adjacent a longitudinal edge of said cover portion, and then severing said cover portion between said adjacent pair of pads to form attachment tabs for the napkins.

4. The method of making sanitary napkins comprising enclosing a plurality of absorbent pads within an elongated cover of liquid pervious foldable material having spaced apart longitudinally extending sides, said pads being spaced apart lengthwise within said cover, then folding a longitudinally extending side of the portion of said cover extending between an adjacent pair of pads inwardly to produce an inward fold adjacent a longitudinal edge of said cover portion, then severing said cover portion between said adjacent pair of pads, and then repeating said folding and severing for each successive cover portion extending between an adjacent pair of pads to form attachment tabs for the napkins.

5. The method of making sanitary napkins comprising enclosing a plurality of absorbent pads within an elongated cover of liquid pervious foldable material having spaced apart longitudinally extending sides, said pads being spaced apart lengthwise within said cover, then simultaneously folding each side of the portion of said cover extending between an adjacent pair of pads inwardly to produce an inward fold adjacent each longitudinal edge of said cover portion, and then severing said cover portion between said adjacent pair of pads to form attachment tabs for the napkins.

6. The method of making sanitary napkins comprising enclosing a plurality of absorbent pads within an elongated cover of liquid pervious foldable material having spaced apart longitudinally extending sides, said pads being spaced apart lengthwise within said cover, then simultaneously folding each side of the portion of said cover extending between an adjacent pair of pads inwardly to produce an inward fold extending lengthwise between said adjacent pads and inwardly with respect to each longitudinal edge of the cover portion extending between said adjacent pair of pads, each inward fold being tapered adjacent an absorbent pad of said pair of pads and being deeper substantially midway between said pads, and then severing said cover portion between said adjacent pair of pads to form attachment tabs for the napkins.

7. The method of making sanitary napkins comprising enclosing a plurality of absorbent pads within an elongated cover of liquid pervious foldable material having spaced apart longitudinally extending sides, said pads being spaced apart lengthwise within said cover, then simultaneously folding each longitudinally extending side of the portion of said cover extending between an adjacent pair of pads inwardly to produce a fold extending inwardly with respect to each longitudinal edge of said cover portion, then severing said cover portion between said adjacent pair of pads, and then repeating said folding and severing for each successive cover portion extending between an adjacent pair of pads to form attachment tabs for the napkins.

8. The method of making sanitary napkins comprising enclosing a pair of absorbent pads within an elongated cover of liquid pervious foldable material having spaced apart longitudinally extending sides, said pads being spaced apart lengthwise within said cover, then simultaneously folding each longitudinally extending side of the portion of said cover extending between said pair of pads inwardly to produce a fold extending lengthwise with respect to and inwardly of each longitudinal edge of said cover portion, and then severing said cover portion between said pair of pads to form attachment tabs for the napkins.

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