June 20, 1967 G. R. NEUREITHER ETAL 3,326,365

NAPKINS OR SIMILAR ARTICLES AND METHOD OF MANUFACTURING SAME

Filed April 24, 1964

FIG. 1

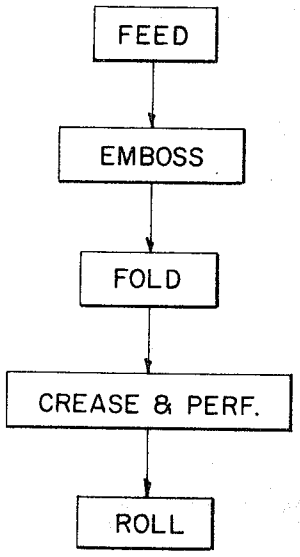

FIG. 2

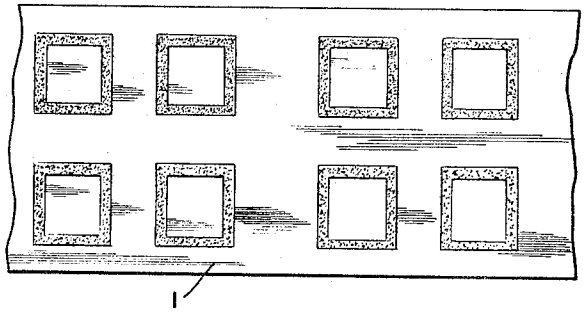

FIG. 3

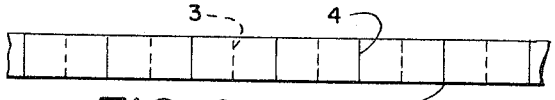

FIG. 4a

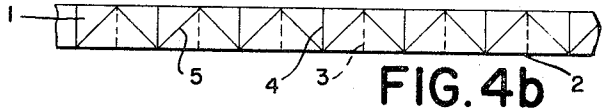

FIG. 4b

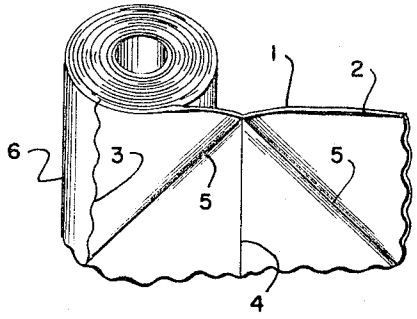

FIG. 5

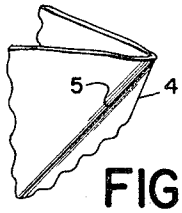

FIG. 6

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NAPKINS OR SIMILAR ARTICLES AND METHOD OF MANUFACTURING SAME

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This invention relates to paper manufactures generally and more particularly to the production of paper napkins or similar articles made of pliable, absorbent or non-permeable materials.

Table napkins, place mats and similar articles are presently manufactured as individual items, folded and packaged for the commercial market. In the production of such folded paper products, the folding and packaging steps add much expense to the production of these products. The raw stock material occurs in the easily manipulatable form of a continuous roll, and if the end product could be produced in such form, it would eliminate the costly steps of cutting, folding, packaging and handling of individual sheet members. The appeal of paper napkins, however, as opposed to paper towels, for example, lies precisely in the folded nature of the finished product which has more eye appeal and is a compact unit which may be unfolded when used.

Heretofore there has been no way of combining the best features of continuous sheet manufacturing with a folded discrete end product.

Accordingly, it is an object of this invention to provide folded paper products such as napkins, place mats or the like which may be packaged in a roll.

It is another object of this invention to provide a method for producing folded paper products such as napkins, place mats or the like in roll form.

These and other objects will be apparent from the following description with reference to the drawings wherein:

FIG. 1 is a flow diagram of the process of the invention;

FIG. 2 is a view of a segment of the paper or other material web as it emerges from step 1 of FIG. 1;

FIG. 3 is a view of a segment of the paper or other material web as it emerges from step 2 of FIG. 1;

FIGS. 4*a* and 4*b* are views of two modifications of a segment of the paper or other material web as it emerges from step 3 of FIG. 1;

FIG. 5 is a view of the folded paper or other material web in roll form as produced by the last step of FIG. 1; and

FIG. 6 is a view of a modification of the invention showing one unit as it appears after being removed from the roll.

In accordance with the present invention, table napkins, place mats and similar articles are produced by embossing, stamping, perforating, printing, or transfer printing designs or indicia in spaced patterns on a continuous web of material, the material is then folded on itself longitudinally, creased and perforated transversely at predetermined intervals and wound into a roll. The materials employed are pliable, may be absorbent or non-permeable natural or synthetic materials and include paper, cellulosic materials, natural or synthetic plastics, natural or synthetic fibers bonded by natural or synthetic adhesives to form a continuous web.

In referring now to FIG. 1 a stock of material suitable for use as a napkin, place mat or similar article is provided, the width of the web 1 being twice the width of the desired article. This web 1 may be supplied from a roll of such width or a plurality of articles can be made from a roll of greater width, individual widths being cut from the roll and fed to separate machines by which the

method and article of the invention is produced. The method and articles produced by the method of the invention can be carried out by equipment presently available for providing designs, creasing and perforating.

The web 1 is fed from a roll of the stock to equipment which is capable of imparting a desired design to the web 1 such as embossing rollers or printing, stamping or perforating machines. The web 1 now has a desired design as it emerges from step 1 of the method. From this step the web 1 is folded in half along its length, for example, by passing through a guide which doubles the web over on itself and then through a set of rollers to press the fold firmly into the web. The web now has the configuration shown in FIG. 3, the fold being shown at 2.

The web is then fed through a set of creasing and perforating rollers which produce the perforations 3 and main crease 4. If it is intended that the napkins be folded to form only a square, the main crease 4 is formed or imparted to the web material transversely of the length thereof. If it is desired to provide napkins or similar articles which fold into a square and then into other shapes such as triangular, secondary creases 5, as shown in FIG. 4*b*, at an angle to the longitudinal dimension of the web are formed or imparted to the web material following the imparting of the main crease normal to the length of the web material. Diagonal creases may be formed in the web material by rollers placed above and below the web material so that the diagonal creases 5 are generally in a V-configuration with the indentation of one crease facing downward and one facing upward. Separate rollers may be used or the perforating and creasing rollers may be used to also produce the diagonal crease.

It is also possible to form folded configurations other than triangular in a similar manner. A product which first folds into a square and then into a rectangle can be obtained by providing secondary creases normal to the web between the main creases with the indentation of the secondary creases facing opposite directions.

The web is then formed in a conventional manner into a roll of suitable length containing the desired number of articles such as napkins and is ready to be placed, for example, in a plastic or other material bag for the commercial market. Since the width of a napkin is comparatively small as opposed to a paper towel, it is possible to package several rolls of the instant napkins on a common spindle. In such a way the user could have a choice of colors or patterns provided from a common source.

In use, the purchaser merely unrolls a length of the roll and tears one unit off at the perforations 3. The crease 4 permits the unit torn from the roll to fold upon itself lengthwise, or if the diagonal creases 5 have also been imparted to the web material, the unit may further fold into a triangular shape without any effort or dexterity upon the part of the user.

The method and article of this invention permits a reduction in cost of production by eliminating the need for a box for the napkins but the consumer receives a product which for all purposes is the equivalent of the conventional boxed paper napkin, place mat or similar article.

Several variations in the method of production are of course possible without departing from the scope of the invention. For example, the web stock may be pre-embossed or no pattern at all may be desired on the finished article. Also, if a pattern is desired, the rollers that produce the perforations and crease may also be used to emboss the pattern. In addition, the edge of the web as shown in FIG. 6 opposite the longitudinal fold may be scalloped, pinked or cut in any suitable pattern and the perforations made in a pattern corresponding thereto. This not only enhances the decorative effect, but also tends to camouflage any slight irregularities produced when tearing the perforations. The perforations should be as

complete as possible without causing the web to break in the manufacturing process. In this manner any roughness produced when the napkin is torn from the roll is kept to a minimum.

The perforations and main crease alternate with each other and since the general shape of a napkin is square, the space between each successive perforation and main crease should be equal to the width of the folded web. However, variations for esthetic purposes are within the scope of this invention.

The method and article can be produced with conventional equipment and although rollers and guides have been disclosed as means for producing the pattern, fold, perforations and creases, the invention is not limited to such apparatus but may be used with any apparatus that produces the desired result.

We claim:

1. A process for producing a napkin or similar article comprising the steps of:

(a) providing a continuous web of substantially uniform width material;

(b) folding said continuous web of material upon itself continuously longitudinally along a median line;

(c) forming perforations and main creases in alternating sequence in said folded continuous web transversely thereof at predetermined mutually spaced intervals; and

(d) forming said folded, perforated and creased web into a roll.

2. A process for producing a napkin or similar article comprising the steps of:

(a) providing a continuous web of substantially uniform width material;

(b) imparting a pattern to said continuous web of material;

(c) folding said continuous web of material upon itself continuously longitudinally along a median line;

(d) forming perforations and main creases in alternating sequence in said folded continuous web transversely thereof at predetermined mutually spaced intervals; and

(e) forming said patterned, folded, perforated and creased web into a roll.

3. The process of claim **2** including the step of forming the creases in a direction normal to the length of the continuous web.

4. The process of claim **2** including the steps of forming a main crease in alternating sequence in said web normal to the length thereof and forming secondary divergent creases on either side of said main crease, said divergent creases substantially meeting said main crease at one end thereof and having their indentations oppositely directed.

5. A process for producing a napkin or similar article comprising the steps of:

(a) providing a continuous web of substantially uniform width material;

(b) imparting a series of patterns to said continuous web at spaced predetermined intervals thereon;

(c) folding said continuous web upon itself continuously longitudinally along a median line;

(d) forming perforations and main creases in alternating sequence in said folded continuous web transversely thereof at predetermined mutually spaced intervals, said perforations located between said series of patterns; and

(c) forming said patterned, folded, perforated and creased web into a roll.

6. A roll of material comprising:

(a) a web having a series of patterns longitudinally thereof;

(b) said web folded upon itself longitudinally;

(c) perforations and main creases alternately, equally relatively spaced longitudinally of said web;

(d) said perforations extending transversely of the length of the web and located between adjacent ones of said patterns; and

(e) said creases extending transversely of the length of said web and located between said perforations.

7. A roll of material as recited in claim **6** further including secondary diagonally extending creases forming a V-configuration, said diagonally extending creases substantially meeting said transversely extending main creases at one end thereof and having their indentations oppositely directed.

8. A roll of material as in claim **6** further including secondary creases extending transversely of the length of said web and located between the perforations and the main creases, each successive secondary crease having its indentation directed oppositely from the preceding secondary crease.

9. A continuous sheet of absorbent material comprising a substantially contiguous surface defined by substantially parallel longitudinally extending opposite edges, said sheet being folded only along a longitudinally extending crease line with said opposite edges being superposed and in substantial alignment whereby first and second layers are formed, alternate crease lines and perforations extending transversely across said folded web substantially perpendicular to said longitudinal crease line, said crease lines and perforations in said first and second layers being superposed whereby tearing of said web along said perforations results in substantial alignment of the torn edges of said first and second layers.

10. The sheet of claim **9** wherein said sheet is rolled along its length.

11. The continuous sheet of claim **9** wherein said alternate crease lines and perforations are equally relatively spaced longitudinally of said folded web.

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