

UNITED STATES PATENT OFFICE

KURT WANDEL, OF NEW YORK, N. Y., ASSIGNOR TO CELLULOSE PRODUCTS, INC., OF SHAMOKIN, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA

PAPER ARTICLE AND PROCESS OF PRODUCING THE SAME

Application filed January 28, 1930. Serial No. 424,112.

My invention relates to a paper article simulating for example, a handkerchief or a towel or the like, and a process of producing the same. This application is in part a continuation of my previous application No. 367,441, filed May 31, 1929.

Paper handkerchiefs for example, have been produced heretofore but they are relatively harsh and "scratchy" and have neither the appearance nor the softness of a used fabric handkerchief. One of my objects is to produce a handkerchief which not only closely simulates the appearance, but in particular has the soft "feel", of a linen or cotton handkerchief which has been used and laundered several times.

A further object of the invention is to provide a high degree of absorbency in the article by using for the individual layers cellulose tissue of such light and flimsy construction that moisture is readily absorbed through the interstices of the fibre construction and also through adhesion between the layers. It is also possible by my process closely to simulate other fabric articles such as napkins, towels, tablecloths and rolls of cloth for toilet use.

I am aware that my invention may be embodied in various forms, but for the purpose of illustration merely I have herein shown and described the production of a paper handkerchief as one embodiment of the invention.

In the drawings—

Fig. 1 represents a view of one of my handkerchiefs;

Fig. 2 an enlarged corner.

Fig. 3 a still further enlarged section on the line 3—3 of Fig. 2; and

Fig. 4 is a diagrammatic representation of a machine which may be utilized to carry out my process.

My handkerchief consists essentially of a plurality of superposed sheets of soft absorbent cellulose tissue, such for example, as "facial tissue" used extensively for the application to and removal from the skin of various cosmetics such as cold cream, rouge and the like. It is of course fibrous and soft, but in the single sheet has neither the

strength, appearance, absorbent qualities nor "feel" of a used fabric handkerchief. Of course there may be as many superposed sheets as desired. In the embodiment illustrated in the drawings I have shown three such sheets 1, 2 and 3.

They are fastened together by pressure exerted over a narrow strip at each margin as indicated at 4 and 11, the pressure being sufficient to somewhat interlace the fibres. They may be relatively dry when pressed, or may be dampened if desired. No adhesive need be used, as the pressure alone will cause the sheets to adhere sufficiently. This simulates the appearance and feel of the hem of a handkerchief.

In order more closely to simulate the appearance of a cloth handkerchief and to obtain a further mechanical advantage I prefer to form lines of indentations along the inner margins of each of the pressed areas, as indicated at 5, 8, 12 and 10. These indentations preferably perforate the sheets as indicated at 6 in Fig. 3. They not only simulate lines of stitching but also serve additionally to fasten the sheets together as the material of one sheet is carried through the other sheets.

The portions of the sheets within the pressed areas or the lines of indentations are not fastened together but are left so that they may move slightly one upon the other to give the soft feel of a well-used fabric handkerchief. I prefer to emboss the sheets substantially throughout at least the entire area bounded by the compressed portions, such as by slightly creping the material as indicated by the wavy lines in Fig. 3 of the two outer sheets 1, 2. This is particularly an advantage because it increases the stretchability and heightens the soft feeling, for when pressed between the fingers the layers yield somewhat with relation to each other. Of course instead of creping, other forms of embossing may be used such for example as embossing to simulate the appearance of a woven fabric or of damask linen. It is also easy to simulate an embroidered initial or monogram by suitably embossing only one of the outer sheets if desired. In fact the appearance of the article

may be varied in many ways by suitably embossing so as not only to increase the soft "feel", but also to simulate closely the appearance of any fabric desired.

5 The sheets should be movable upon one another to a slight extent. In some cases it is desirable to have the two outer sheets 1, 2 creped and the inner one or ones substantially plain-faced as indicated at 3 in Fig. 3.

10 Of course the different sheets forming the handkerchief may be cut out in the size of the finished handkerchief and suitably pressed and indented, all in one operation. It is however desirable to manufacture them by a continuous process in which they are produced
15 first in the form of a continuous endless strip which then may be severed or broken into the individual articles. This is particularly desirable if one wishes to obtain the same softness, absorbent qualities and appearance of fabric in a continuous strip of imitation
20 towelling for example.

Fig. 4 represents diagrammatically a machine which may be used to carry out my
25 process. 1^a, 2^a and 3^a indicate three rolls of paper strips 1, 2 and 3 of the character above specified, 1 and 2 being creped (although not so shown in this figure) transversely of the strip, while 3 represents a substantially flat-
30 faced sheet, as indicated in Fig. 3, of substantially moisture-proof paper. These strips may be superposed by passing them over a roller 13. The edges are then heavily pressed in any suitable way, such for example,
35 as by passing them between a pair of rollers 14, 15 at each side, the roller 14 preferably being covered with soft rubber. The three sheets will therefore be fastened together at their edges by the pressure.

40 The strip is then at the desired intervals pressed transversely across in any suitable way such as by a segmental roller 16 which presses the strip between it and the roller 17 so as to form a transverse compressed area
45 as indicated at 18. In case square handkerchiefs are to be formed this transverse pressed area would be twice the width of the "hem" 7 of Fig. 1. The lines of indentations 5, 12 along the inner margins of the compressed
50 areas 4, 11 at the sides of the sheet may be formed by suitable indenting wheels such as indicated at 19, 20. The transverse lines of indentations 8, 10 may be formed by a segmental roller 21 provided with a double row
55 of pins 22, 23. 24, 25 represent rotary trimming knives.

60 The strip is thus formed into a series of handkerchief-like portions which are still integrally joined. If it is desired to separate them into individual handkerchiefs, the strip may be cut across each transverse compressed portion, as for example, on the line indicated
by *xx*, by means of a suitable knife.

65 If, however, it is desired to use the strip in the manner toilet paper is used, or for towel-

ing at washstands, it may be made up into a roll from which each individual square or section may be torn off at the desire of the user. The transverse pressure or indentations of course form, or may be made to form, lines
70 of weakness by which one section or handkerchief portion may be easily torn off from the next one.

I am aware that my invention may be embodied in various forms and may be produced
75 by mechanism which differs widely from that of the embodiment shown in Fig. 4. I therefore do not intend to limit myself to the particular article or mechanism or steps of the process herein disclosed, as these are merely
80 illustrative examples of my invention.

What I claim is:

1. A plurality of superposed sheets of soft cellulose tissue compressed together in a narrow strip entirely around the edges so as to
85 cause the sheets to adhere at those portions but elsewhere to be movable one on the other.

2. A plurality of superposed sheets of soft cellulose tissue compressed together in a narrow strip entirely around the edges so as to
90 cause the sheets to adhere at those portions but elsewhere to be movable one on the other, together with lines of indentations along the inner margins of the pressed areas.

3. A plurality of superposed sheets of soft cellulose tissue of soft and flimsy construction such as facial tissue compressed together
95 in a narrow strip entirely around the edges so as to cause the sheets to adhere at those portions but elsewhere to be movable one on the other, at least one exterior sheet being
100 embossed substantially throughout the area bounded by the portions so compressed.

4. A plurality of superposed sheets of soft cellulose tissue compressed together in a narrow strip entirely around the edges so as
105 to cause the sheets to adhere at those portions but elsewhere to be movable one on the other, the exterior sheets being creped substantially throughout the area bounded by
110 the portions so compressed.

5. A continuous strip of paper comprising a plurality of superposed strips of soft tissue paper pressed together along their
115 edges but movable on each other within the areas bounded by the portions so pressed, and having a weakened line across the strip at intervals which also fastens the sheets together
along that line.

6. A process which comprises superposing continuous strips of soft tissue paper and
120 pressing them along their edges and also transversely across the strips at intervals, causing the strips to adhere along the pressed portions but allowing the same elsewhere to
125 move on each other.

7. A process which comprises superposing continuous strips of soft tissue paper and
pressing them along their edges and also transversely across the strips at intervals, 130

causing the strips to adhere along the pressed portions but allowing the same elsewhere to move on each other, and forming lines of indentation along the inner margins of each area so compressed.

5 Signed at New York, N. Y. this 27th day of December, 1929.

KURT WANDEL.

10

15

20

25

30

35

40

45

50

55

60

65