July 24, 1934. H. W. SHERMAN 1,967,726

APPARATUS FOR THE TREATMENT OF TOILET PAPER

Filed April 20, 1931

Fig. 1.

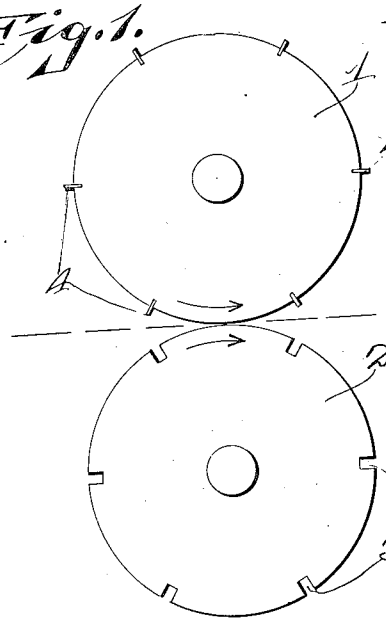


Fig. 2.

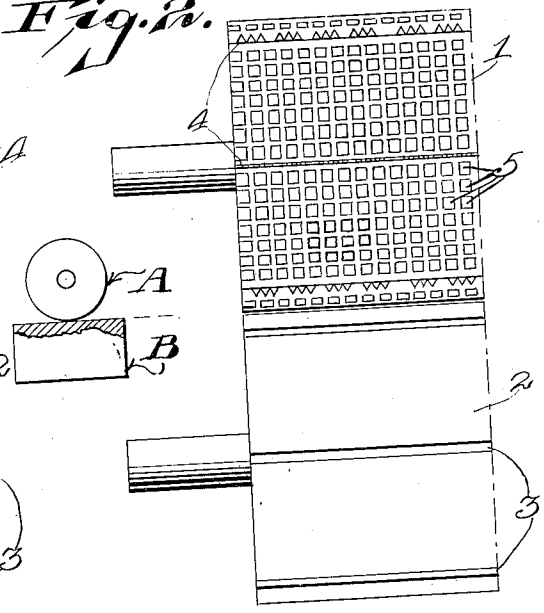


Fig. 3.

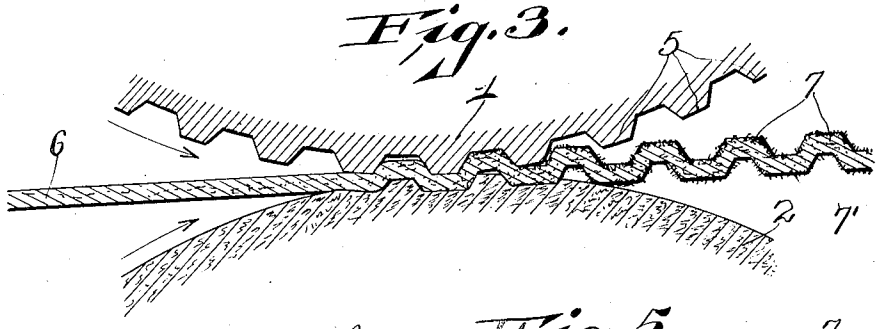


Fig. 4.

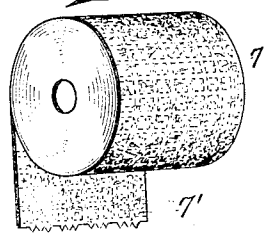
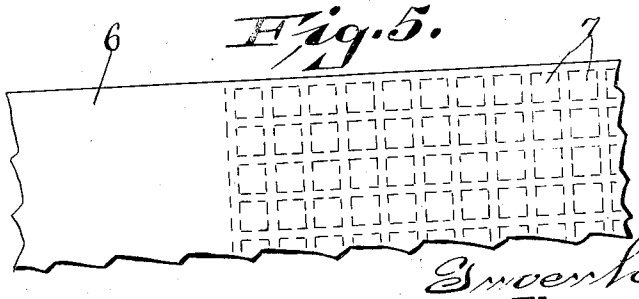


Fig. 5.



Inventor
H. W. Sherman
By Young & Young
Attorneys.

Patented July 24, 1934 1,967,726

UNITED STATES PATENT OFFICE

1,967,726

APPARATUS FOR THE TREATMENT OF TOILET PAPER

Harold W. Sherman, Green Bay, Wis., assignor to Northern Paper Mills, Green Bay, Wis.

Application April 20, 1931, Serial No. 531,403

2 Claims. (Cl. 154—30)

This invention relates to an improved method and apparatus for the treatment of toilet paper.

One of the objects of the present invention is the provision of an improved method and apparatus for the treatment of tissue paper, such as toilet paper and the like, for increasing the grade value of the paper, wherein a lower grade of paper is converted into a higher grade of paper at a minimum cost.

Another object of the present invention is the provision of an improved method and apparatus for the treatment of toilet paper, wherein the surface of the paper is broken up and cut at predetermined distances simultaneously with the treatment of the surface, whereby a comparatively low grade toilet paper, through this treatment, can be converted into a higher grade of paper with very little additional cost.

A further object of the present invention is the provision of a new method and apparatus for the treatment of toilet paper, whereby a coarse grade of paper with a comparatively smooth, hard surface is treated for producing a soft, flexible tissue which, when rolled up will produce a larger roll increasing its attractiveness to the buying public and, at the same time, produce a comparatively fine grade of paper with absorbing qualities, as well as increasing the flexibility of the paper and rendering the same soft and pliable.

A still further object of the present invention is the provision of an improved apparatus for the treatment of toilet papers, wherein the paper is simultaneously treated and cut into sheets of predetermined size to not only increase the quality of the paper, but to increase the selling qualities, as well as the absorbent qualities.

With the above and other objects in view, the invention consists in the novel features of construction, the combination and arrangement of parts hereinafter more fully set forth, pointed out in the claims and shown in the accompanying drawing wherein:

Figure 1 is an end elevation of the cutting and breaking rolls between which the paper is passed;

Figure 2 is a side elevation of the rolls;

Figure 3 is a highly magnified view, showing the paper passing between the rolls;

Figure 4 is a detailed perspective view of a finished roll of paper; and,

Figure 5 is a magnified detailed plan view, illustrating one portion treated and the other portion untreated.

As a general rule, the cheap grade of toilet paper placed on the market is comparatively stiff and provided with a glazed surface, while the higher qualities are very flexible with a slightly roughened surface and possess greater absorbing qualities.

It is, therefore, my intention to provide a treatment for the lower quality paper which will not only increase the absorbing qualities and flexibility of the paper, but will produce a larger roll of the same number of sheets as the untreated paper, and thus increase the attractiveness of the paper to the buying public.

With the above in view, the cheaper grade of paper is passed between two opposed rolls 1 and 2, the roll 2 being formed of pressed paper pulp to provide a yieldable surface and at frequent intervals, around the circumference of the roll 2, transverse recesses 3 are provided and equally spaced around the circumference of the roll 1 are provided the perforating knives 4 which cooperate with the recesses 3 for perforating the paper in predetermined sized sheets.

The outer surface of the roll 1, between the cutting knives 4, is provided with a plurality of raised portions 5 which, upon engaging the outer surface of the roll 2, will have a tendency to embed themselves in the material of the roll 2. Therefore, as the paper indicated at 6 is passed between the two rolls 1 and 2, the raised portions on the roll 1 will have a tendency to form a plurality of oppositely disposed raised portions 7 and 7′ on the faces of the paper.

Attention is directed to Figure 3, which is a highly magnified view in order to bring out clearly the effect of the raised portions 5 on the roll 1 on the paper 6, and in this view, it will be noted that as the raised portions 5 engage the paper they have a tendency to press raised portions 7′ into the surface of the roll, while the raised portions 7 on the paper, are formed by forcing portions of the paper into the spaces between the raised portions 5, thus providing a plurality of raised portions on both sides of the paper.

By treating the paper in this manner, it will be noted that the paper shown at the left about to pass between two rolls, has a comparatively smooth surface, while at the right it is shown after being passed between the rolls, where it will be noted that the surface of the paper is entirely broken up and the small fibres, of which the paper is formed, have a tendency to be

broken up and project outwardly, thus entirely breaking up the glazed or smooth surface of the paper rendering the same soft and pliable, as well as highly absorbent.

The paper can be treated in this manner and simultaneously perforated transversely into predetermined sized sheets, as well as cut longitudinally to form rolls of different sizes. By cutting the paper longitudinally, perforating the same transversely and treating the same simultaneously, it will produce considerable saving in the manufacture of a comparatively high grade toilet paper.

In Figure 4, I have illustrated a perspective view of a portion of a roll of paper after being treated and in this view, the result of the treatment is somewhat magnified in order to bring out clearly the fact that after treating a comparatively coarse paper with a smooth surface, the paper is provided with a roughened surface of great flexibility and the fibres which are broken up through the treatment are of a very fine nature, so that the roughened ends of the paper is comparatively soft to the touch.

In Figure 5 I have illustrated in detailed plan view magnified, to illustrate the offset raised portions formed by the raised portions 5, while at the left of Figure 5, the paper is shown prior to treatment.

In treating this type of paper, it is preferred to treat the same when in a dry condition. However, if the paper is steamed or dampened, the raised portions 7 and 7' will be more readily formed, but the smooth glazed surface will not be broken up as fully as treating when dry.

By using a pulp fibre roll for the roll 2, attention is directed to the fact that when this roll becomes dry and the outer surface unfit for use in the production of a high grade of paper, the roll can be wet or moistened so that the pulp fibre will expand to such an extent that the outer surface will bear tightly against the roll 1 during the rotation of the two rolls, as shown in Figure 3.

From the above it will be readily apparent that I have provided an improved method and apparatus for the treatment of toilet papers, wherein a comparatively coarse low grade of paper can be readily converted into a fine high grade paper with a minimum of additional expense.

Attention is also directed to the fact that the low grade paper with a glazed surface, when rolled, forms a comparatively small roll for marketable purposes. However, the same number of sheets of treated paper rolled up will form a larger roll and increase the attractiveness of the paper to the buying public, as well as increasing the absorbing qualities of the paper.

It will be apparent from the foregoing description that I have provided an improved method for the treatment of toilet paper, wherein a finished tissue paper is treated for the purpose of producing a super-finished paper by breaking up and mutilating the surface of the paper to increase the flexibility of the paper and the absorbing qualities thereof.

While I have described and illustrated the use of contacting rolls for carrying out this method, it will be apparent that pressure plates or the like may be used if found desirable.

Referring to Figure 1 of the drawing, I have illustrated a slitting roll A, operating in conjunction with an anvil B, whereby paper passing between the roughened roll and bed roll may be slit into predetermined widths.

While I have shown and described the preferred embodiment of my invention, it will be apparent from the foregoing that slight changes may be made in the construction when putting the invention into practice without departing from the spirit of the same or the scope of the appended claims.

I claim:

1. As a new article of manufacture a pressure roll for treatment of toilet paper comprising a cylindrical body, radially extending equi-distantly spaced perforating knives carried by the body, the exterior surface of the body between the perforating knives having roughened faces for indenting the paper, the knives projecting beyond the roughened faces.

2. A device for use in the manufacture of toilet paper comprising a rotatable bed roll and a rotatable pressure roll arranged in contact therewith, the periphery of the bed roll being yieldable and provided with spaced transversely extending rows of slits, and a plurality of radially projecting equi-distantly spaced transversely extending perforating knives carried by the pressure roll for reception in the slits in the bed roll, the portions of the faces of the pressure roll between the knives being provided with roughened surfaces for depressing the yieldable faces of the bed roll, the knives projecting beyond the roughened faces.

HAROLD W. SHERMAN.