J. M. W. KITCHEN.

TOILET PAPER.

APPLICATION FILED FEB. 25, 1916.

1,224,650. Patented May 1, 1917.

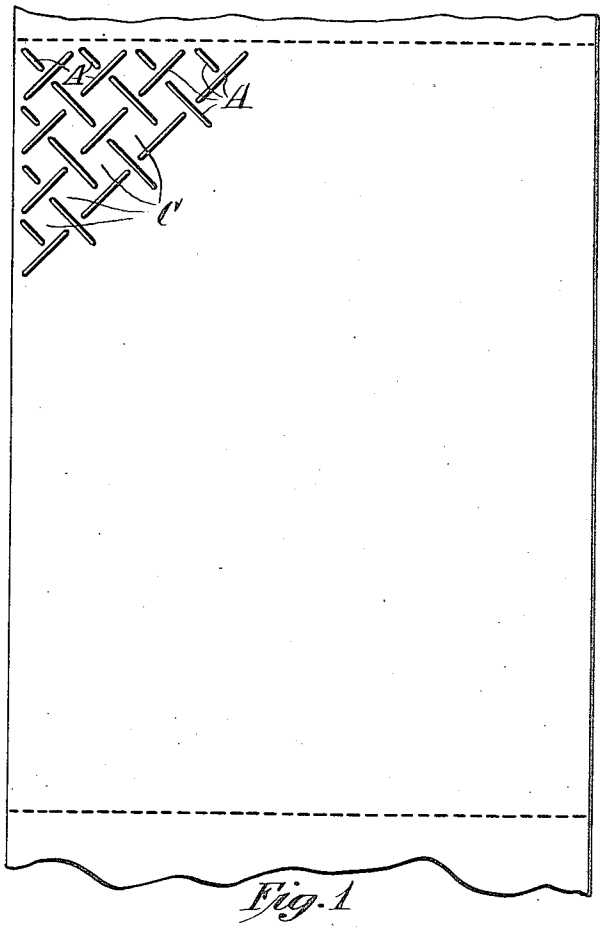


Fig. 1

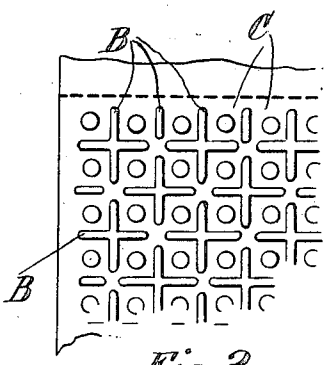


Fig. 2.

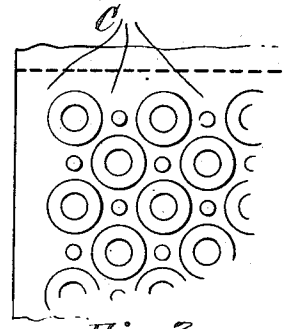


Fig. 3.

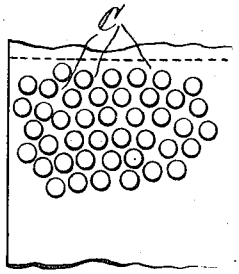


Fig. 4.

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UNITED STATES PATENT OFFICE.

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TOILET-PAPER.

1,224,650. Specification of Letters Patent. Patented May 1, 1917.

Application filed February 25, 1916. Serial No. 80,352.

To all whom it may concern:

Be it known that I, JOSEPH MOSES WARD KITCHEN, a citizen of the United States, residing in the city of East Orange, county of Essex, and State of New Jersey, have invented an Improvement in Toilet-Papers, of which the following is a specification.

The object of this invention is to provide a more efficient cleaning surface for toilet papers. This is accomplished by having irregularities of particular character in the surface of the paper, in the form of scraping ridges or dams produced by corrugations, embossings or indentations in the surface of the paper. These are preferably formed during the making of the paper, though such surfaces may be given the paper after its making. The basic web which I embody in the improved paper is preferably, a flat, thin, smooth, flexible, unglazed paper, of moderately absorptive character, but of considerable substance. In ordinary papers of this kind, the removal of excrementary matters is mostly accomplished through the sticky adhesion of such matters to the surface of the paper, and through a wiping and scraping, effected by bunching several sheets of thin paper.

In the present invention the cleansing performance is facilitated by having such irregularities of surface in the paper as will act as receptacles for and for damming or intercepting, scraping and holding the removable matters; the performance being thus more quickly and thoroughly effected with less of a smearing of adjacent anal skin surfaces, and with a lesser amount of paper used. In the referred to cleansing action, the invention also materially prevents spreading of fecal matter over unnecessary areas of the paper. The peculiar forms of surface I prefer, give an increased flexibility to the paper, but do not entirely destroy the tensile strength of the general surface of the paper through rupture and stretching of the fibrous texture of the paper. So long as the forms of surface used embody the novel ideas of the invention, I do not confine myself to any particular form of corrugations, indentation, embossing or other irregularities of surface, though I prefer ridges or bars; nor do I restrict myself to the size of the surface forms used. I prefer, many closely, contiguously placed, small sized irregularities of shallow depth. Such surfaced papers may be packaged in sheet packages, or rolls, and for such packages the indentations or embossing are preferably projected from one side of the flat web surface of the paper; but may be from both sides. Some forms of surface irregularities are to be preferred. In the old makes of crimped papers, in which the crimps are more or less in parallel lines, rupture of the paper's fibers is prevented; but not only is the paper stretchable in one direction, but also, such paper does not provide ridges or dams across the lines followed by the crimp-indentations. If present, such cross ridges or dams help in intercepting and removing fecal matters. I am cognizant of various patents for forming irregularities of surface in paper, especially that of U. S. patent of Chase No. 391,582, but none of these patents show the novel ideas that are embodied in this invention. The forms of surface irregularities preferred, are those in which, while the indentations, dams, etc. formed, will intercept and hold the fecal matters, there will be retained a part of the original flat smooth and unindented web of the paper in such unbroken, unstretched or disrupted form and lines as will materially resist stretching strains from any direction in which the paper may be drawn in its use, and which in a drawing action, will through interposed elongated ridges or dams or indentations, scrape, intercept and retain the fecal matters transferred to the paper. It will be obvious that many forms of corrugations, indentations and embossings, as well as other formations of surface on one side or on both sides of the paper may be given to the paper that will fulfil the specific purpose of the invention. It is here admitted, that provisions for meeting the stress of pull on paper, that include compression of the paper's substance, or impregnations of the paper by strengthening compositions, exist; but they do not pertain to the present invention. The basic paper I preferably use in making my new surface has a smooth flat surface, and is a thin paper rather than the thick papers such as are used to absorb much moisture, as for example, the paper towels used in place of cloth towels, in which indentations are provided in the thick substance of the web. The thickness of the paper is equably maintained in all parts of the irregularities of the paper surface, and is devoid of hardened compressed parts.

The inequalities of surface may be given to the paper through any known procedure; but I prefer processes in which the floating moist paper pulp fiber is drawn downward on a receiving web by an induced action transmitted through the receiving web. In this way there is a more uniform surface and undisrupted and unbroken thickness given to all parts of the paper than would be if the indentations are impressed on a smooth sheet of dry finished paper.

In particular, the invention provides for such an inter-arrangement of obstacle-dams on the surface of the paper, that their presence will secure a more efficient cleansing effect than is secured by other surface forms. The accompanying drawings illustrate in plan view, several of the formed irregularities of surface that may be used, as well as their placing in relation to the other forms of irregularities in the surface of the paper. In Figure 1, A represents elongated dam embossings or indentations formed upon the surface of one face of the paper, and C represents flat film interspaces between the special scraping and intercepting dams. Other irregularities of surface may be formed on the reverse face of the paper. In Fig. 2, is shown a special form of irregularity of surface in which the projections or processes B act as scraping ridges or dams. These are so elongated and so placed that a straight line cannot be drawn entirely across the surface of the paper on the original flat web surface of the paper between the irregularities formed on the paper surface. Fig. 3 shows a form in which the principle of interposing dams of a circular form is carried out; the dams and indentations being embodied in two forms and placed in a way to intercept a straight line drawn in any direction across the flat interspace surface of the paper between the indentations, Fig. 4 representing a pebbled form irregularly placed on the paper. In all these figures, C indicates the unindented flat web surface of the paper. It will be seen that in such surface formation, the receiving and interceptive holding of excrementary matters will be facilitated; and while the inequalities of the surface make the paper more flexible; by leaving part of the paper flat, and with unbroken or unstretched surface, and limiting the indentations or other formations to other parts of the surface, it will be seen that the entire sheet surface does not have the expansible stretchable character of a crimped paper in any direction; and that the unchanged flat part counteracts a pulling stress in any direction. This not only acts advantageously in using the paper, but also allows the paper to be rolled somewhat tightly in packaging it in rolls, and thus avoids stretching the paper surface and pulling the paper out of its given form of surface. This paper surface, for toilet purposes, has an advantage over other paper surfaces in which hardened lines of resistance to pulling stress is given the paper by compression or by impregnation with water resisting, or other strengthening materials. As a further aid in strengthening the sheets of paper having the herein described special arrangement of surface, I leave preferably a band of unchanged flat paper surface around the peripheral edges of the sheets.

What I claim is:

1. In a toilet paper, irregularities of surface combining indented or projected dams for intercepting and holding effete matters, and flat interspace lines for resisting a pulling stress of the surface of the paper that would result in the stretching of the surface of the paper, the entire surface being unbroken and having its fibers intact and being moderately absorptive to moisture equably over the entire surface, the interspace lines for resisting pulling stress of the general surface having a flat smooth unindented or unprojected surface, the said interspace lines and dams being devoid of broken or stretched fibers such as would be produced by indenting a smooth flat surface of dry paper.

2. In a toilet paper, roughened or other irregularities of surface, and smooth flat interspace lines free from unroughened or irregularities of surface, for resisting pulling stress, said roughened or other irregularities of surface being in form and so arranged as to position, to place ridges or dams on the surface of the paper across all the lines of smooth flat surface for resisting pulling stress of the paper while in use, said ridges or dams having for purpose the interception and holding of excrementary matters.

3. In a toilet paper, embossings or irregularities of surface adapted by form and by position in relation to adjacent irregularities of surface, to intercept, scrape and hold effete matters, and flat smooth unembossed unindented or embossed interspaces for preventing stretching of the general area surface of the paper by a pulling stress, said irregularities of surface having projections or processes extending into the general surface of the flat smooth interlines or interspaces, said projections and processes intercepting effete matter, and said interspaces preventing stretching of the general flat surface of the paper.

4. In a toilet paper, irregularities of form on the flat surface of the paper, and interspaces of unindented or embossed flat surfaces, said irregularities having projecting processes so placed in relation to processes of adjoining irregularities of form as to prevent a straight line being drawn com-

pletely across the surface of the paper in any direction in the interspaces of the flat surface of the paper between the processes of said irregularities of surface.

5. In a toilet paper, packaged into sheets, said sheets being partly divided by incisions, said sheets having irregularities of form on the surface of the paper and smooth flat interspaces between the irregularities of form, said surface interspaces being projected and running in at least two directions across the surface of the paper, and a marginal smooth flat surface surrounding each of the sheets of the package for maintaining strength in the edges of the sheets of paper.

6. In a toilet paper, embossed or indented irregularities of surface interspaced with flat unindented, unhardened and uncompressed surface areas of the paper, said interspaces being interposed between the indentations or embossings to resist a pulling stress in at least two directions, but said interspaces having irregularities of surface acting as dams centrally in the direct line of each pulling stress resisting interspace.

7. In a toilet paper, surface indentations, and flat smooth unindented surface interspaces, said indentations occupying more of the surface web of the paper than the unindented surface interspaces, said provision of size of said indentations allowing for an interposition of dams in any straight line of any surface interspace between said indentations.

8. In a toilet paper, a flat surface having thereon indentations or corrugations for the interception and holding of effete matter, and unindented flat interspace lines, the indentations or corrugations being formed and arranged approximately to and in juxtaposition with the interspace lines, said lines having a flat smooth unindented surface adapted to resist stretching of the paper under a pulling stress, said indentations or corrugations being so placed as to be partly interposed in the lines of the interspaces, the surface of said paper comprising dams or obstacles in the lines of said interspaces other than the first named indentations or corrugations, the entire surface of the paper including said interspaces and the indentations or corrugations of surface being unhardened and having equal absorptive capacity for moisture in the various parts of said surface.

9. In a toilet paper, a surface having interceptive dams and smooth flat stress resisting interspace lines, such surface having been formed while the fiber of the paper has been in a moistened condition, said surface having its fibrous tissue unbroken or unstretched after the deposition of the fibers during the making of the paper.

10. In a toilet paper, elongated projected ridges or bars acting as dams and facing in at least four directions, and smooth flat interspaces between the projecting bars or dams.

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Witnesses:
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