

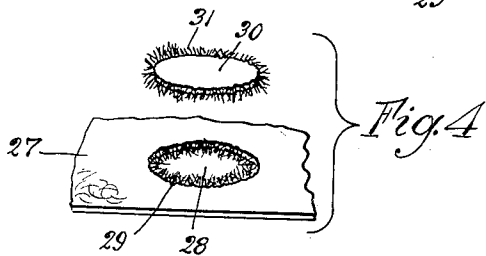
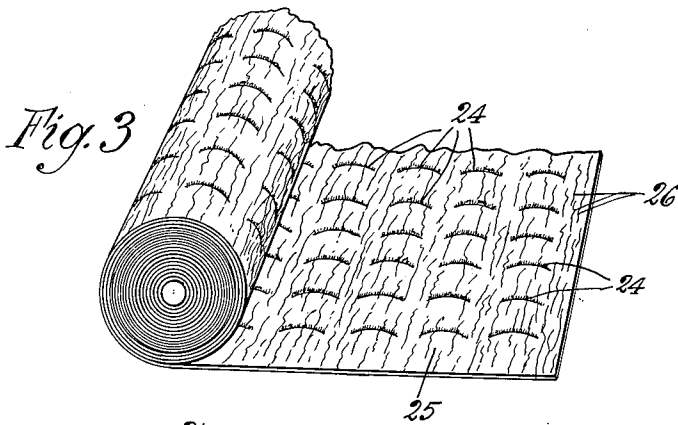
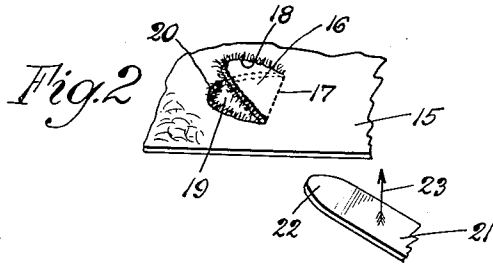
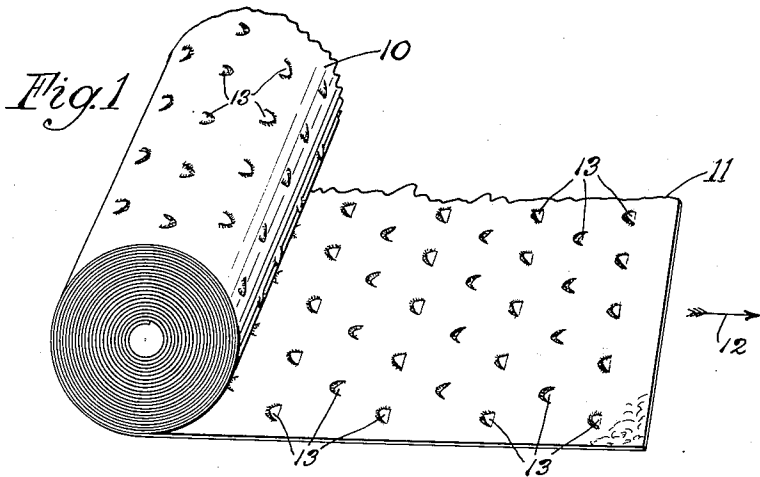
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PAPER TOWEL

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PAPER TOWEL

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1 Claim. (Cl. 92-68)

The present invention relates to absorbent paper sheets, such as paper towels.

Paper towels as commonly used, are felted sheets of fibers which have high absorbency. Many are creped or otherwise deformed from a flat sheet. Like all felted sheets of cellulose or wood fibers, the fiber ends are smoothed down or held inside of, or close to, the surface of the sheet. This is an inherent result of the felting and drying operations.

It is an object of the present invention to treat such felted sheets in a "tearing" manner so as to expose many fibers and fiber ends individually, thereby to increase the absorbency of the sheet.

It is an object of the invention to form tears in the sheet, so that the tear provides a perforation defined by feathery edges of fibers and fiber ends.

It is also an object to arrange the tears in respect to the direction of rolling, so as not to weaken the paper or subject it to tearing not desired.

In the accompanying drawing there are shown several embodiments of the invention in which: Fig. 1 represents a roll of toweling with one form of tear therein providing a tongue pointing into the roll as the web unrolls.

Fig. 2 is a detailed view of a piece of paper with such a tongue as shown in Fig. 1.

Fig. 3 is another form of tear in a roll of creped paper.

Fig. 4 is a form with a torn hole or void in the sheet.

The invention is not to be considered as limited to or by the forms specifically shown as will appear hereinafter.

Toweling is provided in both folded forms and in rolls, and these are often mounted in dispensing devices. Where the sheets have a continuous surface there is no necessity for considering the direction of the web with respect to discharge from a device, but where the surface is broken as in this invention, such consideration may be necessary.

For example, a roll of paper 10 unrolls to present web 11 movable in the direction of arrow 12 where the roll 10 is fixed on its axis. The web 11 is provided with a plurality of loose tongues 13 with a V-shaped edge, the V pointing to the roll. Thus, the moving web tends to prevent the tongues being caught when out of the plane of the web, and being torn beyond the normal form. These tongues may be otherwise shaped and it is preferred to arrange them in two similar sets,

each being punched down from different faces of the sheet.

The tongues 13 are better illustrated in Fig. 2, where a sheet 15 of felted fibers has a tongue 16 generally V-shaped and foldable into and out of the sheet on the dotted line 17. Tongue 16 has a feathery edge 18, and the hole 19 from which the tongue material is taken has a feathery edge 20. Such a hole or tongue is not cut, but it is formed by a tearing-like operation, resulting in tear by over-straining the paper locally where the tear is desired. This causes the fibers to pull out of their felted relation, and it leaves feathery edges. One suitable way is to press a blade such as shown at 21, with a V-shaped end 22, in the direction of arrow 23 against web 15, until it breaks. A pocket knife and any sheet of paper will readily illustrate the act. However, the degree of feathering in this test will depend greatly upon the sheet of paper. A bond paper will give little, a newsprint will give more, but any standard toweling will exhibit it to high degree. Such papers are made to give less bonding of fiber to fiber, and hence the fibers readily pull out of felted relation.

In Fig. 3 another form of tear is shown. This is a substantially straight-line tear 24 in rolled sheet 25, which has creplings 26 at right angles to the tears. The tears can be arranged in any order, but preferably they are parallel as shown, and if the web is rolled, they are parallel to the direction of rolling. Thus the new tears do not weaken the web for unrolling.

The invention may also be carried out by removing a small piece of the web by a tearing action so as to leave a hole with feathered periphery. For example in Fig. 4, sheet 27 has hole 28 with feathery edge 29, caused by removal of a piece of web 30. It will be noted that piece 30 also has a feathery edge 31, and that this absorbent area is lost to the user when the piece of web 30 is completely severed from the web 27. Hence the preferred form of the invention has a tear and a hole without loss of web material. The tearing frays a large number of the fibers which otherwise would be hidden inside the sheet, thus increasing the surface absorbency, the quick action of the sheet, and the efficiency of the sheet.

While it is recognized that toweling is perforated to facilitate its tearing into individual towels, it is to be understood that the present invention is applied in addition to and in distinction from such line of perforations. It is to be noted that in Fig. 3, for example, the web may be perforated for tearing without the line of

perforation being lead at right angles into one or more of the feathered cuts. This results from the particular arrangement of the cuts so as to leave spaced linear areas free from cuts. The perforations for tearing provide a towel which may have a feathery edge, but the usable area of the towel is not altered at all by such perforations for tearing. The present invention specifies that the tears for increasing absorbency are distributed over the area of the sheet as distinguished from a line of perforations for tearing.

It is to be understood that the tears may be

made in plain paper, creped paper, or paper otherwise deformed.

I claim:

Paper toweling comprising a sheet of felted fibers provided with holes therein and corresponding tongues integral with the sheet and torn from the area of the holes, the tongues and holes having the edges feathered with fibers, all the tongues extending in one general direction along the sheet, whereby the sheet may be readily dispensed without danger of tearing.

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