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F. G. CRANE

1,773,956

PROCESS OF MAKING SANITARY NAPKINS

Original Filed Feb. 14, 1927

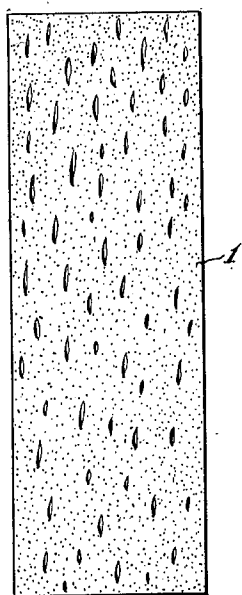


FIG. 1



FIG. 2

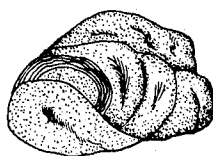


FIG. 3

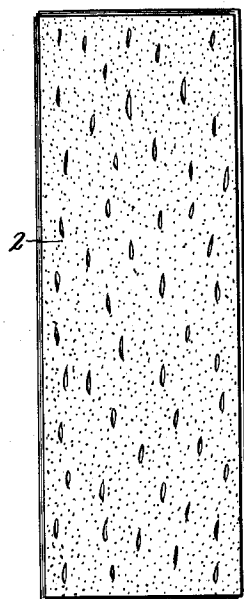


FIG. 4

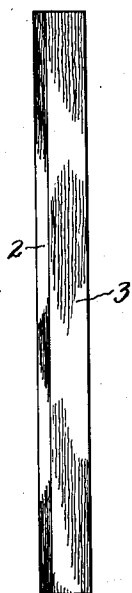


FIG. 5

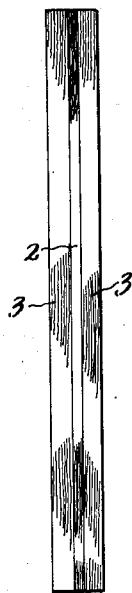


FIG. 6

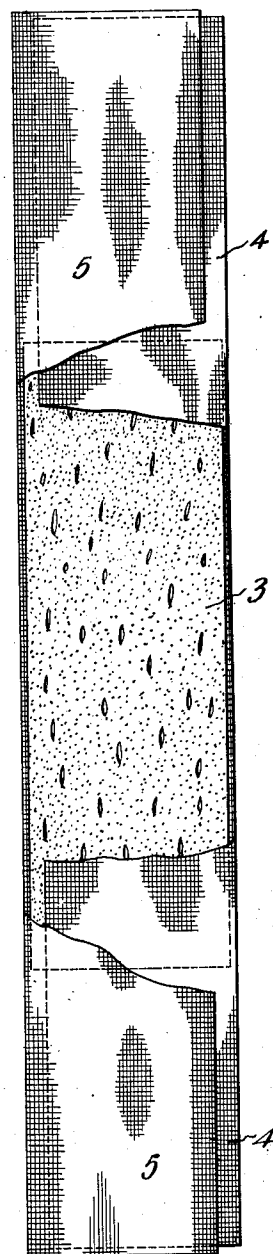


FIG. 7

INVENTOR:

FRANK G. CRANE

BY

George W. Saywell
ATTORNEY.

UNITED STATES PATENT OFFICE

FRANK G. CRANE, OF MONTAGUE, MICHIGAN, ASSIGNOR TO LOUIS E. EMSHEIMER,
OF CLEVELAND, OHIO

PROCESS OF MAKING SANITARY NAPKINS

Original application filed February 14, 1927, Serial No. 167,988. Divided and this application filed
February 13, 1929. Serial No. 339,731.

The subject matter of this application is divided out of my pending application Serial No. 167,988, filed February 14, 1927.

My invention particularly relates to improved processes of making sanitary napkins, serviettes, or the like, which are adequately absorptive for the purposes desired, but which, however, will not permit leakage of the absorbed liquid and which are comfortable to the wearer. The invention further relates to such improved processes in which a new and improved moisture-proofing composition of matter is utilized which is fully described and claimed in said application Serial No. 167,988. The improved napkin, produced by my improved process of manufacture, and when made from certain materials, for instance, wood cellulose, is disintegrable as a whole in water, and can be readily disposed of after use, in the usual toilet facilities, without any danger of clogging the plumbing systems. Furthermore, the napkin provided by my improved process includes a pad portion which is comprised in its entirety of the same material, and which in its entirety presents substantially the same appearance, flexibility, softness and disintegrability.

The annexed drawing and the following description set forth in detail certain steps comprising my improved process, and show and describe two forms of napkin product produced by such improved process, such steps constituting, however, but one of the various series of steps by which the principle of the invention may be carried out.

In said annexed drawing:

Figure 1 is a plan view of one of the film-like sheets of which the pad portion of a wood cellulose napkin, produced by my improved process, is comprised;

Figure 2 is a side elevation of a number of sheets in assembled condition;

Figure 3 is a perspective view of a rumpled mass of four or five of said sheets which have been treated to render them moisture-proof;

Figure 4 is a plan view of the sheets of Figure 3 after they have been straightened out and dried;

Figure 5 is a side elevation of the two por-

tions comprising the napkin pad, one portion assembled upon one face of the other portion;

Figure 6 is a view similar to Figure 5 in which one portion is assembled centrally of the other portion; and

Figure 7 is a plan view, partially broken away, of the napkin pad produced by my improved process and assembled in a suitable container and having suitable means for securing the same in use.

In carrying out my improved process, I impregnate a small pad of wood cellulose sheets so as to render it moisture-proof, the small pad thus impregnated being unchanged in appearance, flexibility, softness and disintegrability in water by the moisture-proofing process to which it is subjected. For this moisture-proofing step I use a suitable solvent forming a vehicle for the moisture-proofing materials proper, the solvent which I preferably utilize being carbon tetrachloride. For the moisture-proofing materials proper, I use a combination of materials, some of them being capable of almost complete absorption by the wood cellulose fibers, but not filling the interstices of the fibers, and other materials not being very absorptive by the wood cellulose fibers but clinging closer to the edges of the fiber interstices, thus insuring perfect moisture-proofing and effectively preventing moisture penetration. The moisture-proofing materials proper which I preferably use are paraffin wax of any grade and paraffin-oil. The former is very absorptive by the wood cellulose fibers and the latter much less so. Instead of the paraffin-oil, I may use lanolin. Either the paraffin-oil or the lanolin is a heavy fatty oil suitable for clinging closely to the edges of the wood cellulose tissues without penetrating the tissues to any great extent. If desired, a combination of the paraffin-oil and lanolin may be used, and in this event I term the combination by the coined word "Paralin."

The materials which I utilize for this purpose, both as a solvent and as moisture-proofing materials proper, form the claimed subject matter of my said pending application Serial No. 167,988 from which the sub-

ject matter of this application is divided out.

In moisture-proofing the small pad of wood cellulose sheets, of which the non-absorbent part of the napkin is comprised, this small pad may be moisture-proofed separately, or the small pad combined with the comparatively large absorbent pad to form the whole napkin pad, and this whole pad sprayed with the moisture-proofing material so that a few of the outer wood cellulose films forming one face of the whole pad become thus moisture-proofed.

The proportions preferably used to effect the formation of the composition with which the small wood cellulose pad is moisture-proofed consist in about 200 ounces of carbon tetrachloride to which are added 4 ounces of paraffin wax cut fine and 2 ounces of paraffin-oil or lanolin, or a combination of the latter two materials, these amounts and proportions making about one gallon of satisfactory moisture-proofing liquid. No heat is required for effecting a proper solution, complete dissolving in the solvent of the paraffin and paraffin-oil being effected in about four hours. The moisture-proofing compound is then ready for use, occasional agitation of the same being advisable. If "Paralin" is utilized, it may be found desirable first to form this by moulding the lanolin and paraffin-oil, which step will require some heat, and then dissolving the "Paralin" and paraffin wax in the carbon tetrachloride. Otherwise, all the ingredients can be mixed together and allowed to stand for at least four hours, with occasional agitation.

The paraffin-oil or the lanolin eliminates a certain stiffness from the wood cellulose which is caused by the use of paraffin wax alone.

After the sanitary napkin material has been treated with my improved composition of matter and dried, it is very impervious to moisture, but substantially identical in appearance, flexibility, softness and disintegrability with the untreated material. In fact, the dried treated cellulose films are entirely identical with the untreated films except possibly to the practiced eye of one who is engaged in the manufacture or qualified to judge them accurately and critically. Before drying, the treated films present a somewhat darker appearance than the untreated films. Although the various fibres of the films are thus rendered moisture-proof, the integrity of the same is not destroyed, and even if the treated films have become a rumpled mass, still they can be straightened out without damage and when dried present substantially the appearance of the untreated films.

Referring to the annexed drawing, I indicate by the ordinal 1 a single film of wood cellulose of which the pad portion of a napkin produced by my improved process is comprised. It is well known that this material

can be manufactured in very thin and tenuous sheets, that it is highly absorptive, that it is light and flexible, can be comfortably worn adjacent to the human body, and is very disintegrable in water. I form the pad of a multiplicity of these films 1 superposed as plainly shown in Figure 5, the whole pad being comprised of identical films. A comparatively small number of these films 1, however, are moisture-proofed.

The moisture-proofing is effected by spraying the thin pad of films with the composition, or by any other suitable method the thin pad of films is impregnated with the composition. Preferably, when using the composition described and claimed in my pending application Serial No. 167,988, the method is by spraying because the solvent evaporates very rapidly. Although the various fibers of the treated films are rendered moisture-proof, the integrity of the same is not destroyed, and the rumpled mass of the four or five light tenuous films shown in Figure 3 can be straightened out without damage and when dried present the appearance shown in Figure 4 which corresponds with the film shown in Figure 1 with the exception that the holes or perforations of the four or five said sheets in Figure 4 are covered somewhat by reason of the plurality of sheets; whereas, the holes and perforations of the single film shown in Figure 1 are evident. If desired, enough of the films 1 to form a whole napkin pad may be assembled, and then this pad sprayed with the moisture-proofing composition so as to moisture-proof a few of the outer films on one face of the pad. Although the treated tissues are effectively moisture-proofed, they are not made impervious to air.

The entire pad is comprised of a great number of untreated films, 30 to 40, assembled with the four or five treated films, as shown in Figure 5. The incorporation of the two pad portions may take the form shown either in Figure 5, in which the two portions are superposed face to face, or the form shown in Figure 6 in which the comparatively shallow impregnated non-absorbent portion 2 is positioned between the two parts of a subdivided materially thicker untreated absorbent portion 3.

The moisture-proofing to which the thin pad portion 2 is subjected does not adversely effect its disintegrability in water, so that the same is disposed of in the usual toilet facilities in the same manner and concurrently with the disposal of the untreated pad portion 3, the whole pad being washed away through the usual plumbing systems, either during or subsequent to the disintegration, depending upon the haste with which the system is flushed, the speed and volume of the rushing water, etc.

The pad comprised of the portions 2 and 3

is encased in a suitable container, the same usually consisting of a light gauze envelope 4 provided with suitable securing means for attaching the napkin in use. These securing means usually take the form of extended tail portions 5 formed upon the gauze container 4, as plainly shown in Figure 7.

In the process of manufacture of the napkin, large sheets of films similar in texture to that shown in Figure 1 are superposed until 10 a pad blank portion of 30 to 40 said large sheets is assembled, and upon or between this large pad blank is superposed or incorporated a correspondingly large pad blank of 15 four or five treated non-absorbent films, and the assembled pad blank is fed adjacent suitable cutting devices which sever therefrom pad portions of a size suitable for the desired napkins, as plainly shown in Figures 5 and 20 6. If the moisture-proofing is not effected separately, then a pad blank of sufficient film blanks to form napkin pads of the desired thickness is impregnated so as to moisture-proof a few of the film blanks upon one side 25 of the pad blank, and the pad blank dried, and then the desired napkin pads severed therefrom by suitable cutting devices. The gauze containers with the suitable securing means are incorporated with the pad portions as desired, either by assembling the pad 30 blanks in a large container blank and severing the napkins therefrom as a whole, or by assembling the separated pads in containers of a size suitable for one napkin, after the 35 several pads have been separated from the blanks.

What I claim is:

1. In a process of making absorptive non-leak sanitary napkins of laminated formation, the steps of assembling in superposed 40 relation a multiplicity of thin sheets of wood cellulose and then impregnating a comparatively small number of the sheets with a moisture-proofing material comprised of approximately 3 parts of a mixture of ingredients, of which ingredients some are capable 45 of almost complete absorption by the wood cellulose fibers but do not materially fill the interstices thereof, and the others of which 50 ingredients are not materially absorbed but cling close to the fiber interstices, combined with 100 parts of carbon tetrachloride.

2. In a process of making absorptive non-leak sanitary napkins of laminated formation, the steps of assembling in superposed 55 relation a multiplicity of thin sheets of wood cellulose and then impregnating a comparatively small number of the sheets with a moisture-proofing material comprised of approximately 3 parts of paraffin and paraffin-oil combined with 100 parts of carbon tetra- 60 chloride.

Signed by me this 9th day of February, 1929.