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W. H. RITTER

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SANITARY NAPKIN

Filed June 30, 1926

Fig. 1.

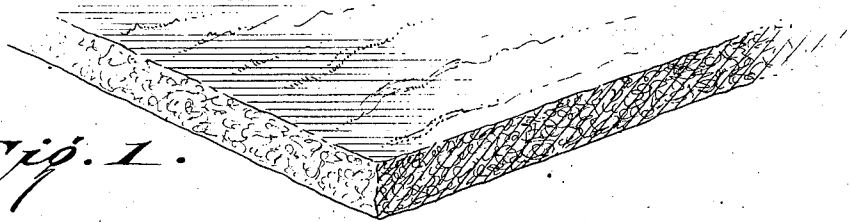


Fig. 2.

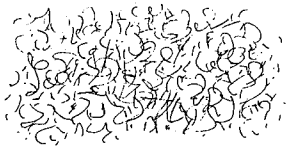


Fig. 3.

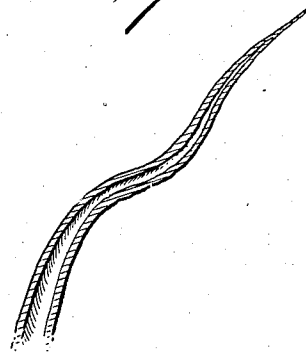


Fig. 4.

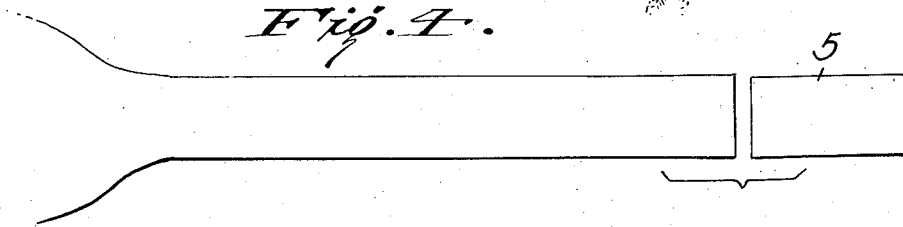


Fig. 6.

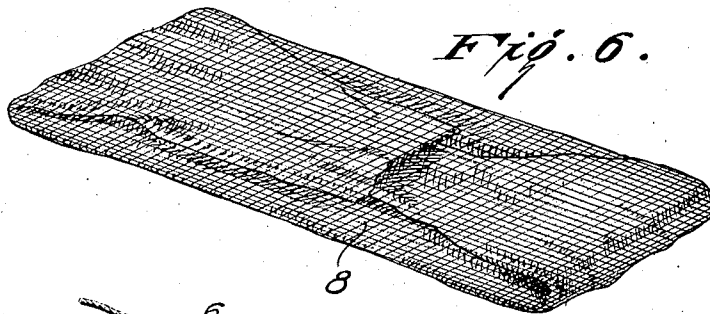
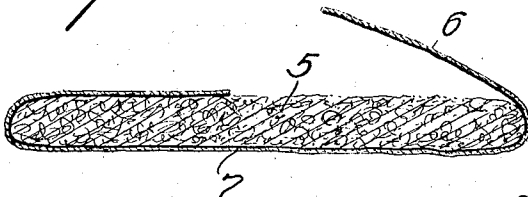


Fig. 5.



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SANITARY NAPKIN

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The present invention relates to sanitary napkins and their methods of manufacture and aims to improve the pads or fillings to the end of greater efficiency and comfort and ease of disposability.

The great advancement in matters of hygiene and sanitation has suggested that the pads or fillings for such articles be of such nature as, after use, to be capable of quick disposal via the usual sewage connections. Hence, it is now largely the practice to employ pads or fillings of cellulosic material fabricated in various ways, but generally existing in the form of laminated sheets of crepe, tissue or blotting paper. While this practice may be regarded as economical from the standpoint of the manufacturer and the user, hotels, for example, regard it as a serious problem and find it necessary regularly to employ plumbers to take care of stoppage. The difficulty is unquestionably due to the intensive absorptive properties of the pad, its propensity to mat or integrate in taking up secretions, and finally its failure or slowness to undergo disintegration in its sodden state.

It also has been proposed to provide pad or filling material composed of cellu-paper in a fiberized state, but that material suffers the disadvantage that its fibers are short and are devoid of life due to the chemical and mechanical treatment incidental to the heating, digesting, paper making, creping, cutting, and other steps necessary to its manufacture, so that while in appearance it bears some resemblance to the fibrous down of my invention, in reality it is but a counterfeit thereof for its fibers are dead or inert as is manifested by the fact that when subjected to compression and then released it remains in the compressed state due to the lack of air-enclosing properties and ultimately will condense, felt or mat, whereas the fibrous down of my invention is composed of live or active fibers in all of their inherent length, strength and elasticity so that it has great air-enclosing properties and when compressed and then released it immediately expands to its original volume and thus ensures comfort and

conformability in the use for which it is intended.

My invention is the result of extended experimentation with various raw and manufactured materials including cellu-paper and is based upon my discovery that by starting with a high grade cardboard or web of paper pulp, which I reduce mechanically to an extremely floccy or fluffy state, as distinguished from shreds or slivers, I obtain an air-laden product which has the capacity immediately to return to its regular volume after compression and release of compression and will efficiently take up secretions without packing or matting and which, in its sodden state, will rapidly disintegrate in the presence of water.

For a better understanding of the nature of my invention and the manner in which the same may be practiced, reference is had to the accompanying drawings, wherein

Figure 1 is a view of the starting product.

Fig. 2 is a view of the same in its mechanically reduced or floccy state.

Fig. 3 is a view greatly magnified of one of the filamentary components, showing its receptive capacity for trapping air and other fluids.

Fig. 4 is a view of the fugitive filaments gathered in strip or bat form and with one end severed to provide a pad.

Fig. 5 illustrates the next step of applying a medium to prevent casual dispersal of the filamentary bodies.

Fig. 6 illustrates the complete assembly or end product, including a soft gauze wrapper.

According to my invention, I start with a purified blank or web of high grade cardboard or fairly heavy paper pulp, such as indicated in Fig. 1, that is to say, a product preferably derived from pulp wood, whose fibers are possessed of all their original strength, length and elasticity and which is wholly devoid of chemical and other objectionable extractive matter and grit. Such material or product is known commercially as alpha pulp or cellu-board. By a special machine the details of which are not essential to a proper understanding of this disclosure, I reduce the stock, while in a dry

state, to practically a uniform state of filament subdivision, that is to say to a floccy or fluffy state of pure fiber as roughly indicated in Fig. 2. It may here be remarked that there is no waste, the material simply being converted from what may be termed a solid state of aggregated fibers to a state of fluffy separate or unattached filamentary fibers each of which has been opened up by the conversion process to present cells or canals capable of trapping air and other fluid.

There is just enough compression or gathering action to so order and arrange the floccy or filamentary material that it will be discharged in strip or bat form. In this state it is air-laden or capable of trapping air, which is highly desirable because the presence of air pockets prevents too rapid absorption of secretions and the usual matting or integrating of the pad. And, in disposal under water, the escaping air aids in the dispersal of the filaments in the general disintegration process. The strip or bat is severed transversely to pad length as indicated at 5.

The next operation is to apply a light textured disintegratable medium or jacket to prevent casual dispersal of the filaments. The jacket 6, Fig. 5, may be simply a strip of crepe paper with just enough holding power and just enough overlap with respect to the pad to maintain the filamentary components thereof in gathered relation, the idea being that the jacket will readily part and admit of fugitive action of the filaments when immersed in water. It further will be noted, with reference to Fig. 5, that the porous membranous structure, vest, or jacket 6 while substantially surrounding the pad or filling, nevertheless, admits of conformable behaviour of the filling. In short, as is apparent from the illustration, Fig. 5, the vest or jacket 6 is not a closed tube or form or like constricting element, it is longitudinally divided, that is to say, its proximate edges are relatively free or unattached in order not to interfere with the expansive action of the filling and, moreover, said vest or jacket is composed of light textured cellulosic or cobwebby paper. It here may be remarked that no matter how soft and conformable the pad or filling per se may be, such quality of softness and conformability utterly is lost by straight-jacketing the pad as it were (as was the practice prior to my invention) in an enclosing medium which is relatively stiff and hard and at any rate, not free to respond to conformable efforts of the pad. I maintain the softness or down-like quality of the pad by a pressure sensitive, light textured, porous membranous structure of material, preferably, manifested in the form of cobwebby paper; and I insure conformability of the pad or filling by longitudinally dividing the vest or jacket, the proximate edges

along the line of division or separation being free and unattached, so that the pad and vest assembly is wholly free of stress or constrictive effort as regards the receptacle function of the vest. The inner side of the full face 7 of the jacket may be treated in any usual way to make it fluid repellent, but that expedient is not essential it being a merit of the improved filling that it efficiently will serve its purpose without the aid of so-called fluid repellent materials. The omission of paraffins, varnishes, and other repellents makes for a softer article, and, hence, comfort.

While I prefer to employ pure cellulosic stock of the nature of alpha pulp, it will be understood that other fluffy, filamentary material may be substituted therefor and used in conjunction with the vest 6.

The final operation is the application of a soft gauze wrapper 8.

The fluffy filamentary pad of my invention is self-conforming and being air-laden or capable of trapping air absorbs secretions in such way as not to compact, mat or integrate and, when ready for disposal, rapidly disintegrates in the presence of water, the entrapped air in its efforts to escape being an important factor in the disintegrating process.

Having described my invention, I claim:—

1. A sanitary napkin, including a filling composed of a mass of fibers of fluffy characteristics, a vest of cobwebby paper covering the bottom and two sides of the filling and substantially surrounding the same and having its proximate edges relatively free so as not to interfere with the conformative behaviour of the filling, and a gauze casing.

2. A sanitary napkin, comprising a self-conforming disposable filling constituted of cellulosic stock existing as a mass of fluffy fibers, and a carrier for the filling consisting of sheeted cellulosic stock enfolding the filling and having its adjacent edges unattached so that it is free to respond to self-conforming efforts of the filling, and a gauze casing.

3. A sanitary napkin, comprising a soft, down-like, fluffy filling constituted of cellulosic stock in fiberized state and free from size and other organic matter, the fibers having marked individual air-trapping properties so that when the filling is compressed and then released from compression it will expand and resume its normal volume, means disposable along with the filling and effective normally to prevent fugitive action of the fibers without such confinement as would hamper expansive action of the filling, said means embodying a pressure-sensitive filmy porous sheet substantially surrounding the filling and having its adjacent edges relatively free, and an open mesh fabric casing.

4. A sanitary napkin, including a filling of live fiber of fugitive and fluffy character-

istics, and a carrier for the filling and disposable along with it and embodying a porous membranous structure conformable with the filling and open at its ends and divided
5 longitudinally whereby the filling is free to expand when released from compression, and a gauze casing.

5. A sanitary napkin, comprising a conformable and disintegratable absorbent
10 filling consisting of cellulosic stock in a uniform filamentary state and characterized by fluffiness which makes for bulk in contrast to weight, a carrier for the filling and embodying disintegratable sheeted material substantially surrounding the filling and having
15 its adjacent edges free to move toward and away from each other in response to conformative movement of the filling, and a gauze casing.

20 6. A sanitary napkin, including a readily disposable highly expansible absorbent pad constituted of a loose aggregate or mass of fugitive and fluffy cellulosic fibers, a shape retaining member for the filling consisting
25 of sheeted material permeable to fluids and having inherent pressure-sensitive properties, said sheeted material substantially embracing the filling but having parts relatively movable transversely thereof whereby
30 there is coordinate conforming action between the filling and sheeted material, and a gauze casing externally of the sheeted material.

35 In testimony whereof I affix my signature.
WILLIAM H. RITTER.

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