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CATAMENIAL BANDAGE

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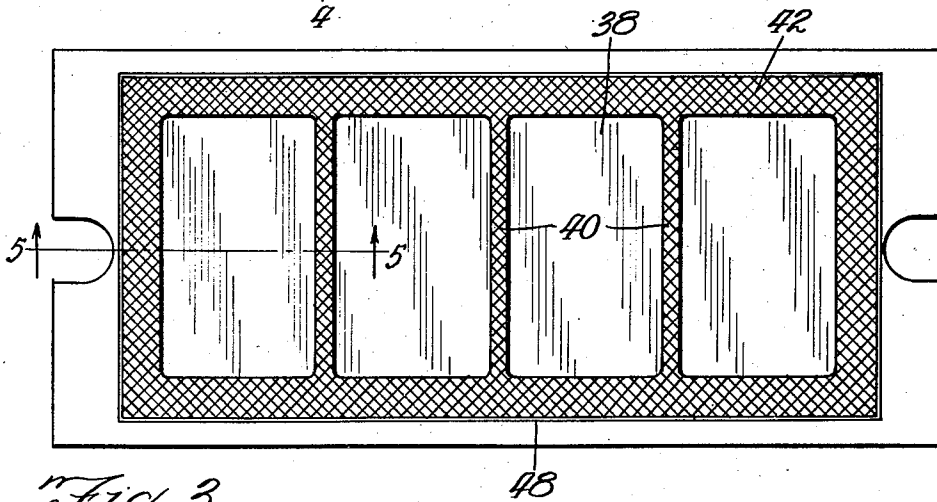
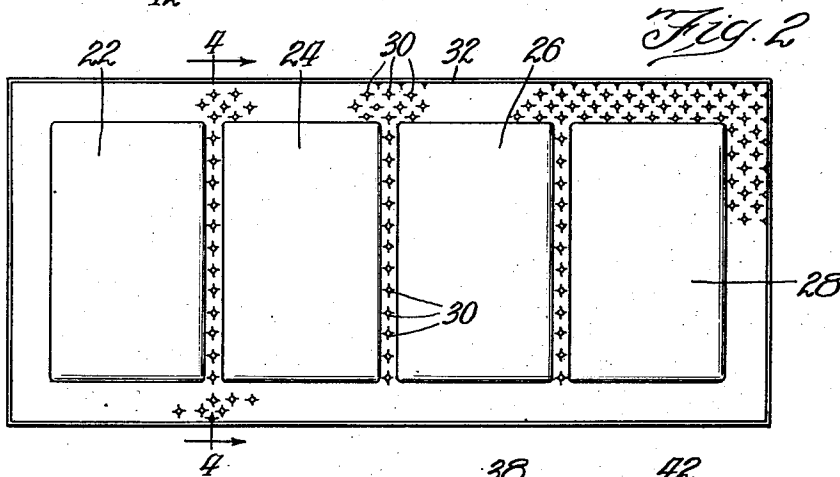
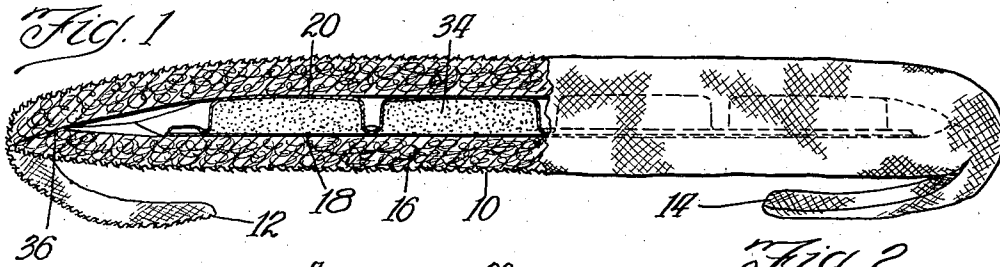


Fig. 3

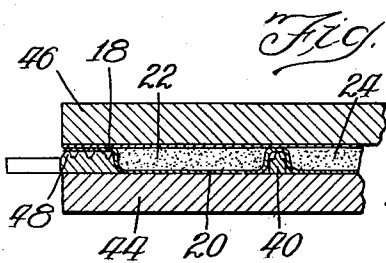


Fig. 5



Fig. 4

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CATAMENIAL BANDAGE

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1 Claim. (Cl. 128—284)

My invention relates to sanitary napkins and includes among its objects and advantages a decrease in size and bulk and a simultaneous increase in the capacity to absorb and deodorize the excretions involved.

In the accompanying drawing:

Figure 1 is a view of a complete sanitary napkin with the right end in side elevation and left end in vertical section;

Figure 2 is a plan view of the complete cartridge unit;

Figure 3 is a plan view of a die used in forming the cartridge unit;

Figure 4 is a section of the cartridge unit on line 4—4 of Figure 2; and

Figure 5 is a section of the machinery for forming the cartridge unit as on the line 5—5 of Figure 3.

In the embodiment of the invention selected for illustration, the napkin as a whole comprises the usual gauze wrapper 10 having projecting end portions 12 and 14 for fastening in place, and a fibrous absorbent filler 16 of any suitable material such as the cellulose fibre batts commonly employed for the purpose. But in this instance the batt 16 is a mere envelope housing and enclosing the cartridge unit. The cartridge unit comprises a flat cover layer 18 made up of eight thicknesses of light crepe paper of the general type commonly used for paper handkerchiefs to be discarded immediately after use. The cover layer 18 cooperates with the opposing cover layer 20 to define four pockets 22, 24, 26, and 28 of identical dimensions. Between the pockets hinges are formed by pressing the cover layer 20 down against the cover layer 18 and uniting the parts, as by a series of spot unions at 30. Around the entire periphery of the filler unit I form similar spot unions in a wider band as clearly indicated in Figure 2, and outside the band of spot unions I form a continuous union at 32 extending around the entire periphery.

Within each of the pockets 22, 24, 26, and 28 is a charge of filler 34. The filler is bentonite, preferably of the non-swelling variety, although the swelling variety can also be employed effectively. I find that the effective absorption characteristics of the bentonite charge are substantially unimpaired by variation in grain size between the approximate size of ordinary table salt and the approximate size of ordinary wheat flour.

The filler unit as a whole is enclosed in the envelope 16, and the ends of the envelope 16, as an additional precautionary measure, may be

sealed at their ends at 36 in any of the ways well known in the art. As the batt is built up by wrapping it around the filler, the end seal completes a continuous and uninterrupted enclosure for the cartridge.

In forming the cartridge of Figure 2 I employ a steel die illustrated in Figures 3 and 5 having four windows 38 corresponding to the individual pockets of the cartridge. Between the windows 38 the individual cross bars 40 are knurled, and the band of knurling at 42 encircles all the windows. The projections formed by knurling the cross bars 40 and peripheral band 42 form the spot unions 30 when the parts are pressed together as indicated in Figure 5. To perform the pressing operation, the cover 20 is laid over the die and pressed down into each of the windows. Then the charge of bentonite is placed in each of the open pockets thus formed, and the cover 18 is laid over the whole, with the die and the cartridge lying on a rigid steel support indicated at 44. A second piece of flat steel 46 is then pressed downward over the cover 18 with sufficient force to form the unions 30 and the peripheral union 32. The die has a peripheral rib 48 extending up to the same upper level as the tops of the knurled projections, to form the peripheral union 32.

The complete device may be made substantially smaller than has heretofore been customary, but the absorbing power of the bentonite 34 is so great that the smaller device has a materially larger capacity to absorb and dispose of the excretions involved.

I am aware that it has been proposed in the past to embody a filler in such a sanitary napkin, which filler has a spongelike action. Specifically, I am aware that it has been proposed to employ a filler of kieselguhr or diatomaceous earth. However, I find that a product according to the invention herein disclosed has decided advantages over an article in which the filler is kieselguhr, both with respect to the amount of body fluids that the device can retain effectively, and with respect to deodorizing power. Without definitely stating that such is the case, I believe the superiority of the device disclosed to be due to the fact that bentonite acts by molecular or quasi-molecular incorporation of the materials it retains, as by forming a hydrate in case there are water molecules in the material retained, and by similarly amalgamating itself in chemical compounds or quasi-compounds with any material that tends to approximate a liquid condition in the sense that individual molecules therein

are capable of being subjected to separate individual action. I do state the fact to be that in a device according to the invention, after use, the corpuscular content of the blood or body fluids is to be found embedded in the envelope 16, and that in the embedded condition these ingredients are possessed of relatively slight odor. And I can state the fact to be that the plasma is to be found incorporated with the bentonite charge 34. Based on these ascertained facts, I believe the fact to be that not only the plasma, but the molecules responsible for odor, being separate molecules as distinguished from the vastly larger bodies constituting the corpuscular content of the body fluids, have also passed into and been retained by the filler 34, which accounts for the relatively slight odor of the material remaining in the envelope 16. And because the corpuscular content of the fluids is a very minor percentage of the volume of the fluids, the passage of the plasma through the envelope 16 into the bentonite 34 has entrained and drawn the corpuscular material deep into the envelope 16, and to that extent avoided the accumulation of clots on the outer surface of the envelope. Accordingly, it is possible to use an envelope of relatively slight bulk, inasmuch as the processes of absorption are such as to require the envelope to absorb and retain only a very minor fraction of the volume of fluids retained by the device as a whole.

The action of the assembly on other fluids than blood, such as the lymph and glandular secretions, will naturally be similar. Considering the effluvia as a whole, molecular or quasi-molecular particles will be found in the core, and in or around the core covers 18 and 20 there will develop a mat containing the living and dead material subsisting in particles of larger size, including epithelial, bacterial, and pus cells, white and red corpuscles, casts, cysts, cilia, etc. Because this mat will be packed by the osmotic action taking place through it, it will develop a structure in which the capillary interstices are smaller than those of the envelope 16, by at least one, and probably two or three, orders of magnitude, and the capillary action of these interstices will extend the sucking action of the core out to

the outer surface of the mat. However, since the plasma is drawn into the core, the clotting or gelatinizing action of portions of the effluvia will be minimized and the capillary interstices will tend to remain open and active. Within the structure of this mat there will be a very high space concentration of all bacteria and all white corpuscles, so that bacterial mortality will be high, both because of the withdrawal of food substances in the plasma, and because of corpuscular attack.

Without further elaboration, the foregoing will so fully explain my invention that others may, by applying knowledge current at the time of application, readily adapt the same for use under various conditions of service. It will, for instance, be obvious that the die disclosed herein as one means of making the product, may be replaced by automatic filling and sealing machinery employing multiple or sectional dies.

I claim:

A sanitary napkin comprising a filler and an envelope; said filler comprising a first septum of cellulosic material, such as paper; a second septum of the same material; said first septum lying substantially all in the same plane; said second septum being united to said first septum all around its edges and along a plurality of spaced parallel lines extending from side to side of the finished filler; the remainder of said second septum being spaced from said first septum to define a plurality of pockets; granular absorbent material in said pockets; said lines of union being transverse to the longest dimension of the filler and forming hinges to increase the flexibility of the filler; said envelope being of spongy absorbent material and completely enveloping said filler on all sides; the wall thickness of said envelope being of the same order of magnitude as the thickness of said filler; said granular absorbent material being bentonite and operating chemically to retain fluids as by forming hydrates or gels with water and analogous compounds with blood plasma; said envelope retaining additional material by ordinary capillary action.

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