

[54] **DISPOSABLE DIAPER WITH HOLES OR WELLS**

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[57] **ABSTRACT**

A disposable diaper comprising an absorbent body and a water impervious backing sheet wherein the absorbent body is provided with a multiplicity of fluid passages extending through the absorbent body, whereby fluid may flow, in one portion of the diaper, directly through the absorbent body for flow along the backing sheet so as to be absorbed in remote portions of the absorbent body. The passages also serve to reduce the bulk of the absorbent body in the crotch region and thereby improve the fit and comfort of the diaper.

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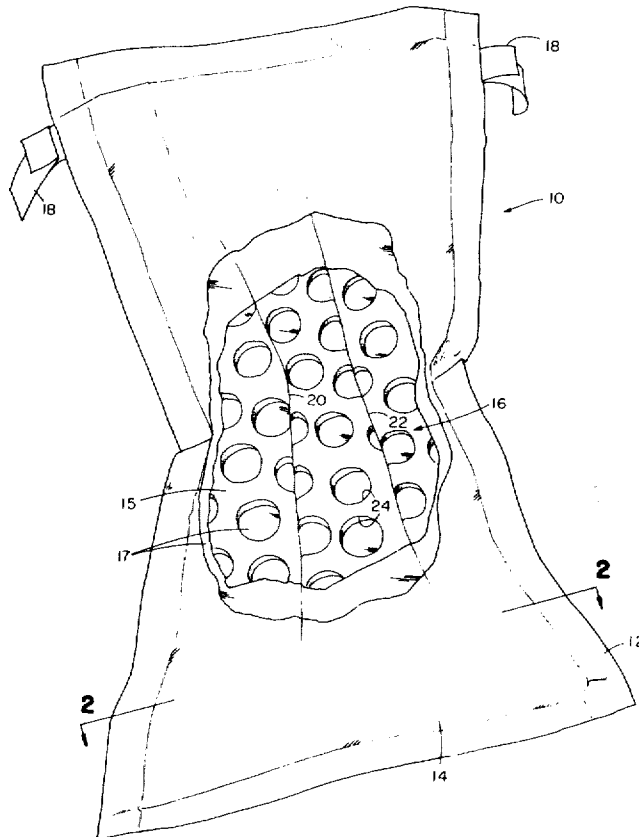
[58] Field of Search 128/287, 288, 290, 292, 128/284, 286, 296; 5/91; 161/109

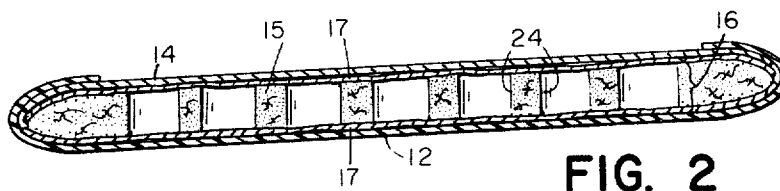
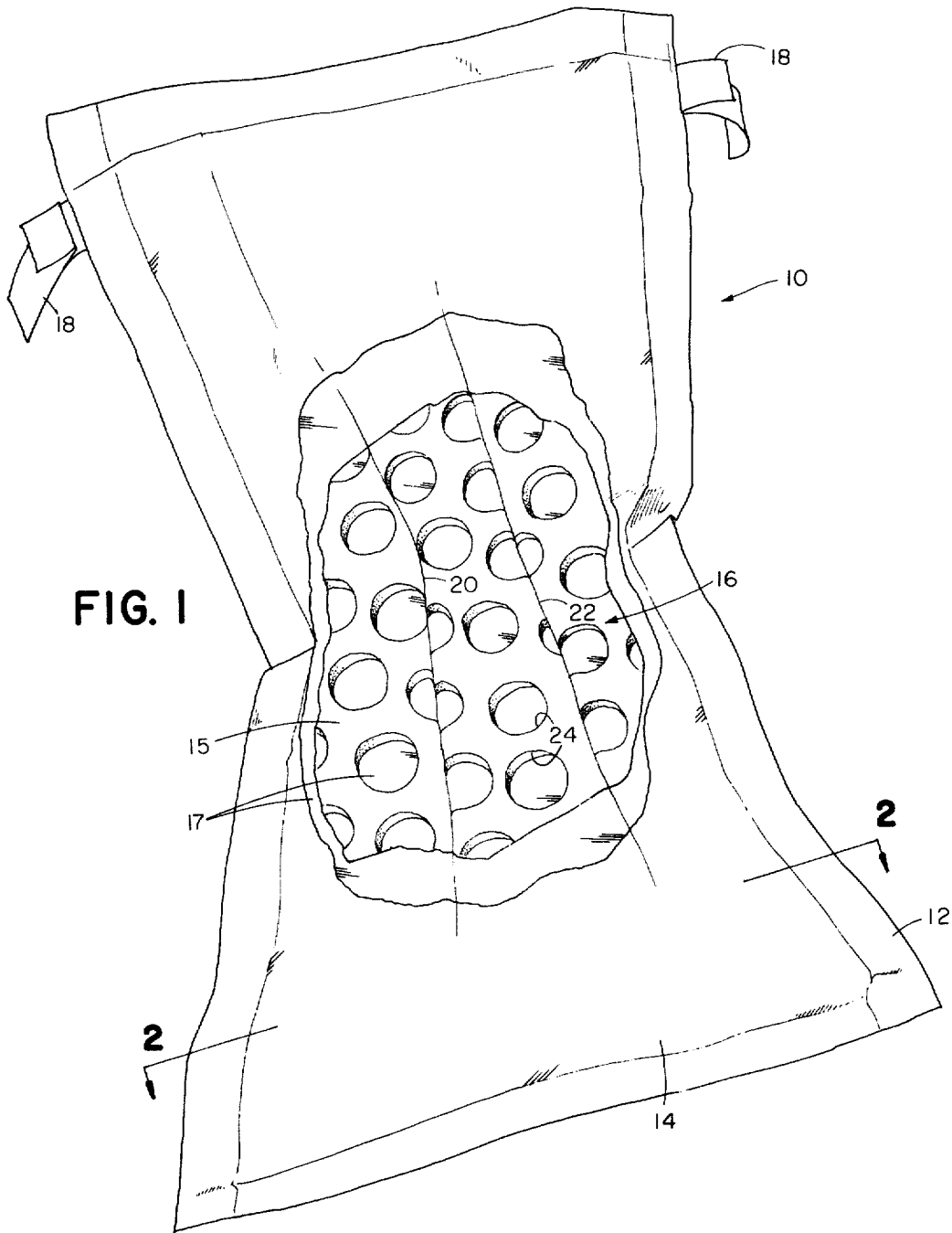
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4 Claims, 2 Drawing Figures





DISPOSABLE DIAPER WITH HOLES OR WELLS**BACKGROUND OF THE INVENTION**

This invention relates to disposable diapers.

SUMMARY OF THE INVENTION

Objects of the present invention include the provision of a disposable diaper which has improved ability to accept a surge of fluid, which is less bulky in the diaper crotch region, and which is relatively inexpensive to manufacture.

According to the present invention it has been discovered that these and other objects can be achieved by the provision of a multiplicity of fluid passages in the diaper absorbent body extending through that body. A flexible, water impervious backing sheet is disposed adjacent the outer surface of the absorbent body and co-operates with the passages to provide a flow route from the absorbent pad's inner surface in the diaper crotch region, through the fluid passages in that region, then transversely along the water impervious backing sheet for ultimate absorption by the absorbent body portions remote from the location where the fluid was initially received. In preferred embodiments of the invention the fluid passages are cylindrical having a diameter of from about 1/4 to about 1 inch and the passages are provided throughout the full extent of the absorbent body, thereby simplifying the manufacture of the absorbent body and rendering still less raw material necessary for its manufacture. Also, the absorbent body may include water pervious inner and outer sheets which encase the actual absorbent mass which is provided with the fluid passages.

BRIEF DESCRIPTION OF THE DRAWING

Other objects, features, and advantages of the invention will appear from the following description of a particular preferred embodiment, taken together with the accompanying drawing. In the drawing:

FIG. 1 is a partially broken away perspective view of a disposable diaper constructed according to the present invention; and

FIG. 2 is a view taken at 2—2 of FIG. 1.

DETAILED DESCRIPTION OF A PARTICULAR PREFERRED EMBODIMENT

Referring to the drawing, there is shown a diaper 10 comprising a water-impervious, flexible, plastic backing sheet 12, an inner liner 14 (typically a thin non-woven material), and an absorbent body 16 sandwiched between the backing sheet 12 and the liner 14. Tape units 18 may be provided for securing the diaper to an infant. The diaper, preferably, has a box pleat configuration, at least in the crotch portion of the diaper. This is indicated in FIG. 1 where the absorbent body 16 is doubled over upon itself along fold lines 20 and 22. The absorbent body 16 may comprise a mass of absorbent material 15 having a substantial thickness

and inner and outer water pervious sheets 17 secured thereto.

According to the present invention, the absorbent body portion 15 is provided with a multiplicity of fluid passage-defining openings 24 which extend from the inner surface of the portion 15 to the outer surface thereof. The openings are circular in shape and have a diameter of between about 1/4 and 1 inch.

In operation, the provision of the openings 24 in the absorbent body portion 15, as well as the location of the water-impervious backing sheet 12 adjacent the outer surface of the absorbent body 16, provides a structure in which fluid can pass directly from the inner surface of the body 16 to its outer surface in one portion of the diaper (the fluid being substantially unimpeded by sheets 17) and then, flowing along the inner surface of the backing sheet 12 can be absorbed by remote portions of the absorbent body 16 thereby more fully utilizing the absorbent capacity of the entirety of the absorbent body 16. Furthermore, the provision of openings of the general size described reduces the bulk of the diaper in the crotch region without rendering the absorbent body so flimsy as to lose structural integrity upon wetting. The bulk reduction in the crotch region also improves the fit and comfort of the diaper. The provision of openings 24 reduces the amount of raw materials required for the body 16 and, thus, the manufacturing cost.

While a particular preferred embodiment of the present invention has been illustrated in the accompanying drawing and described in detail herein, other embodiments are within the scope of the invention and the following claims:

1. A disposable diaper comprising an absorbent body and a flexible water impervious backing sheet, said absorbent body comprising a continuous integral mass of fibers formed into a sheet having an inner surface and having an outer surface disposed adjacent said backing sheet, said absorbent body having a multiplicity of openings therein extending therethrough defining fluid passages from said inner surface to said outer surface, whereby fluid may flow from said inner to said outer surface through said openings, said absorbent body being free of the backing sheet throughout a sufficient area intermediate the openings to permit unimpeded flow of fluid along a surface of the backing sheet to regions of the absorbent body remote the openings and absorption therein.

2. A diaper as claimed in claim 1 wherein said passages are distributed substantially uniformly over the full extent of said absorbent body.

3. A diaper as claimed in claim 1 wherein said passages are cylindrical and have a diameter of between about 1/4 and 1 inch.

4. A diaper as claimed in claim 1 wherein said absorbent body further comprises a water pervious sheet on each side of said mass of fibers.

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