United States Patent

[11] 3,586,000

[72] Inventor **Irving S. Ness**
Princeton, N.J.

[21] Appl. No. **776,055**
[22] Filed **Nov. 15, 1968**
[45] Patented **June 22, 1971**
[73] Assignee **Johnson & Johnson**

[54] **DISPOSABLE DIAPER**
2 Claims, 3 Drawing Figs.

[52] **U.S. Cl.** **128/287**
[51] **Int. Cl.** **A61f 13/16**
[50] **Field of Search** 128/284, 287, 290, 296

[56] **References Cited**

UNITED STATES PATENTS

2,696,819	12/1954	Lovekin	128/284
2,788,003	4/1957	Morin	128/284
3,065,751	11/1962	Gobbo, Sr. et al.	128/287
3,195,874	7/1965	Hrubecky	128/287
3,294,090	12/1966	Younger	128/290
3,295,526	1/1967	Sabee	128/287
3,402,715	9/1968	Liloia et al.	128/287
3,406.688	10/1968	Cubitt	128/290

Primary Examiner—Charles F. Rosenbaum
Attorneys—Alexander T. Kardos and Robert L. Minier

ABSTRACT: A substantially rectangular disposable diaper having a waterproof backing sheet and an absorbent permeable facing sheet with the backing and facing sheets being substantially coextensive. The backing and facing sheets are adhered or secured together along their longitudinal edges. Between the sheets is a layer of fluffy absorbent material encased in tissue and extending the full length of the sheets but only partially across the width of said sheets.

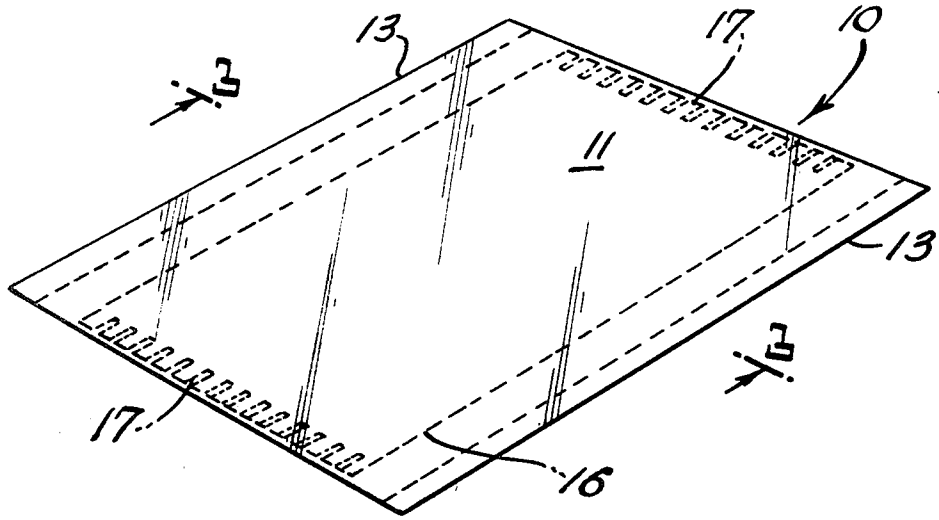


Fig. 1.

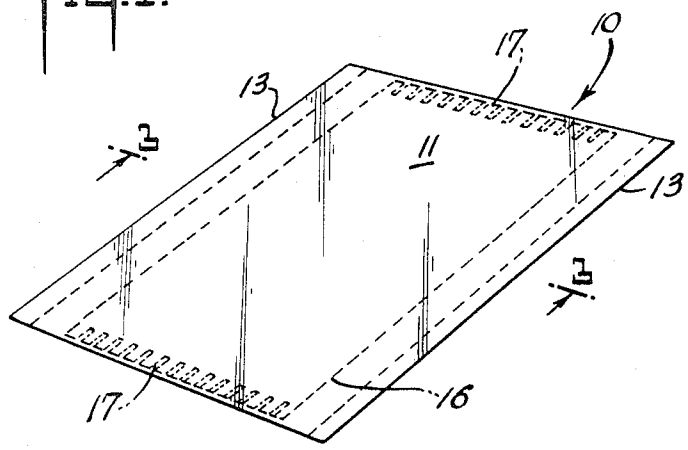
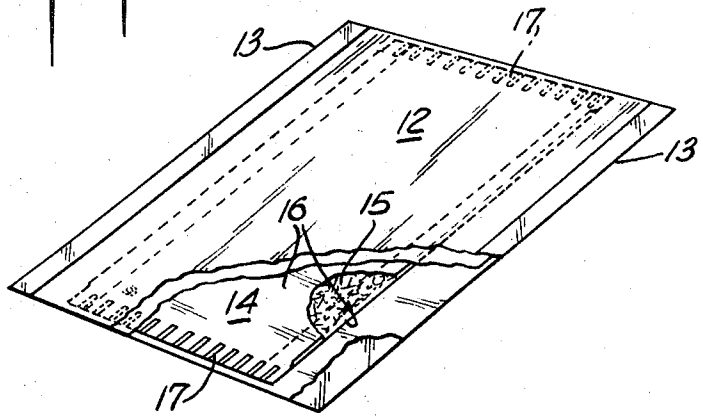


Fig. 2.



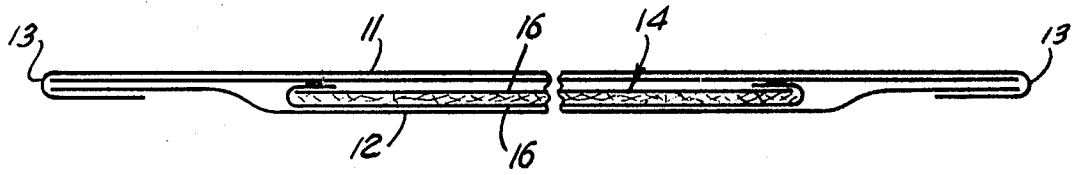


Fig. 3.

INVENTOR
IRVING S. NESS
BY Robert L. Minier
ATTORNEY

DISPOSABLE DIAPER

Disposable diapers have been known for a considerable period of time. Generally these diapers comprise a waterproof backing sheet and a permeable facing sheet and disposed between these two sheets is an absorbent media. The absorbent media may be in the form of layers of creped tissue or fluffed woodpulp or similar absorbent material. An example of such a diaper which incorporates the fluffed woodpulp absorbent media is shown in U.S. Pat. No. 2,788,003 to G. V. N. Morin.

The advantages of using woodpulp as the absorbent media are numerous, e.g., economics, flexibility, softness, and absorptive capacity based on weight. One problem with utilizing fluffed woodpulp as the absorbent media is that it must be encased in some material so that it will not lint or dust when handled. Woodpulp is extremely light and is readily disrupted by any type of handling or air currents, etc. Generally the fluffed woodpulp absorbent filler is encased in wet strength tissue or similar porous material. A layer of such tissue is placed on both the front and the back of the woodpulp and the layers secured together by embossing or adhesive means or similar techniques along their entire outer edges. Such encased woodpulp core makes an excellent absorbent media for most absorbent dressings or pads.

A rectangular diaper, when in use, has its widthwise ends encircling the baby's waist and pinned together at each side. The encircling of the baby's waist places stress on the diaper in the direction of its width. This stress causes no problems with the waterproof backing or absorbent facing; however, the wet strength tissue utilized to encase the woodpulp is extremely weak and this stress will tear the tissue along its edges. The tears allow the fine woodpulp to dust out and lint and get into the atmosphere and onto the baby's skin.

I have now discovered a new diaper construction which unexpectedly readily overcomes this problem with the prior art woodpulp filled diapers. My new diaper may be placed on an infant and pinned about the waist without the difficulties of tearing or ripping the tissue and my new construction eliminates the problem of dusting of woodpulp.

My new diaper has a waterproof backing sheet and an absorbent facing sheet. The sheets are substantially coextensive and are secured along their longitudinal edges. In between these sheets and extending the full length of the sheets is my absorbent media. The absorbent media comprises woodpulp encased in absorbent porous tissue. My absorbent pulp core encased in tissue extends across only a portion of the width of the diaper and does not extend to either longitudinal edge of the waterproof backing sheet or the absorbent facing. The absorbent core is situated approximately in the middle of the width of the facing and backing sheets. When in use all of the tension required to place the diaper about the baby's waist is absorbed by the waterproof backing sheet and the absorbent facing sheet and little, if any, tension is placed upon the absorbent core. Hence, the encasing tissue is not torn during use and the problem of dusting or linting of woodpulp is eliminated.

The invention will be more fully described in the following description taken together with the accompanying drawings wherein:

FIG. 1 is a face view in perspective of the back of my new diaper;

FIG. 2 is a partially cut away plan view of the reverse side of the diaper as shown in FIG. 1;

FIG. 3 is an enlarged schematic cross-sectional view taken along line 3–3 of FIG. 1.

Referring to the drawings there is shown a diaper **10** comprising a waterproof backing sheet **11** and an absorbent facing sheet **12**. The two sheets are substantially coextensive and the waterproof backing sheet overlaps the longitudinal edges **13** of the facing sheet and is secured thereto by means of adhesive. Disposed between the facing and backing sheets is the absorbent core **14**. The absorbent core comprises a layer of woodpulp fibers **15** completely encased in wet strength tissue **16**. The upper and lower layers of tissue are secured together

at all open edges to make a completely enclosed woodpulp core. As shown in the drawings the edges **17** of the tissue may be embossed to secure them together and encase the woodpulp. The core extends substantially the entire length of the diaper and is spaced substantially in the center of the facing and backing sheets. In use, the center portion of the longitudinal edges fits between the legs of the baby and the upper and lower ends of the diaper encircle the waist of the baby and are pinned together at the waist. The ends of the diaper may be tightly pinned together and considerable tension placed on the waist encircling portions without disrupting or tearing the tissue which encases the woodpulp and hence, eliminate any problems of dusting or linting of woodpulp onto the baby's skin.

The facing sheet may be any soft, moisture permeable material such as a nonwoven fabric either intermittently or overall bonded, a wet strength tissue paper, or similar material. The backing sheet may be any of the waterproof materials and is usually a thin film of polyethylene or polypropylene, or similar material. The longitudinal edges of the facing and backing sheets may be secured together either by overlapping the facing sheet on the backing sheet or the backing sheet on the facing sheet as desired or, in fact, making them absolutely coextensive and then securing them along their longitudinal edges by any means known in the art, i.e., sewing, adhesives, heat-sealing etc.

The absorbent media is fluffed woodpulp and is encased in any of the various tissue papers preferably those which have wet strength. The tissue is sealed along all of its open edges to encase the woodpulp by gluing, embossing, etc. If desired, the absorbent media may be backed by a wet strength tissue which extends the full width of the diaper and adds to the absorptive capacity of the diaper. If desired, the absorbent media may be secured to the backing by adhesive or glue, or other means well known in the art.

Many modifications of the above invention may be used and it is not intended to hereby limit it to the particular embodiment shown and described. The terms used to describe the invention are used in their descriptive sense and not as terms of limitations, it being intended that all equivalents thereof be included within the scope of the appended claims.

I claim:

1. A substantially rectangular disposable diaper comprising a thin, waterproof backing sheet and a thin, moisture permeable facing sheet, said backing sheet and said facing sheet being substantially coextensive and being secured together along their longitudinal edges, and an absorbent core disposed between said facing and said backing sheets extending the entire length of said sheets but only across a portion of the width of said sheets, said absorbent core comprising a center layer of fluffed woodpulp fibers encased in outer layers of tissue said outer layers being secured together at all open edges, said waterproof backing sheet being a polyolefin film and said facing sheet being a nonwoven fabric and wherein said film overlies said nonwoven fabric along the longitudinal edges thereof and is secured thereto and wherein the center layer of woodpulp fibers is encased in wet strength tissue which is embossed along its open edges.

2. A substantially rectangular disposable diaper comprising: a thin, waterproof polyolefin backing sheet; a thin, absorbent, moisture permeable nonwoven fabric facing sheet, said backing sheet overlapping the longitudinal edges of said facing sheet, with said backing sheet and said facing sheet having the same length and being substantially coextensive and being adhesively secured together along their overlapped longitudinal edges; and an absorbent core disposed between and in direct contact with said facing and said backing sheets extending the entire length of said sheets but only across a portion of the width of said sheets, said absorbent core comprising a center layer of fluffed woodpulp fibers completely encased in outer layers of wet strength tissue paper, said outer layers of wet strength tissue paper being secured together at all open edges to completely encase the layer of woodpulp fibers, said layers

of wet strength tissue paper extending the entire length of said facing and backing sheets but only across a portion of the width of said sheets, whereby means to attach the diaper about the waist of an infant do not contact the wet strength tissue paper to tear or rip the same and expose the layer of woodpulp fibers.

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,586,000 Dated June 22, 1971

Inventor(s) Irving S. Ness

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

On the cover sheet [56] line 3, "3,195,874" should read -- 3,196,874 --.

Signed and sealed this 16th day of May 1972.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents

USCOMM-DC 60376-P69
* U.S. GOVERNMENT PRINTING OFFICE : 1969 O—366-334