

# United States Patent

Morane

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## [54] SANITARY NAPKIN

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### [30] Foreign Application Priority Data

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[58] Field of Search ..... 128/284, 287, 286, 290, 296

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Primary Examiner—Charles F. Rosenbaum

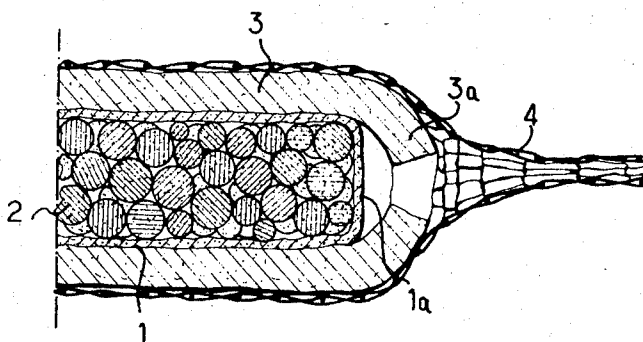
Attorney—Holcombe, Wetherill & Brisebois

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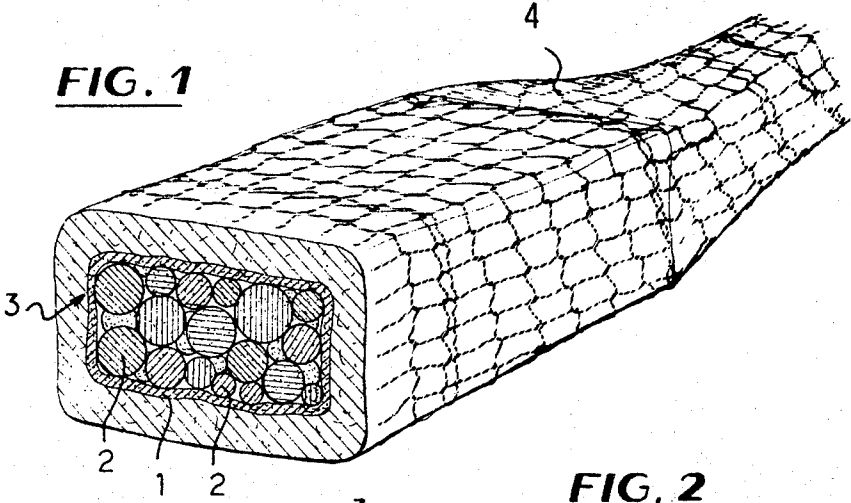
### ABSTRACT

Sanitary napkin comprising a plurality of balls of absorbent material which are movable with respect to each other so that the shape of the napkin may conform to the configuration of the body of the user.

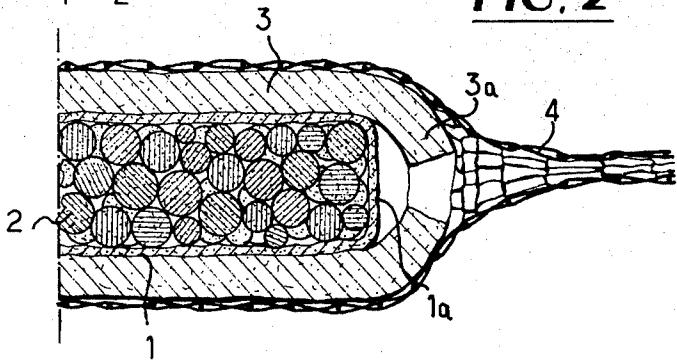
8 Claims, 4 Drawing Figures



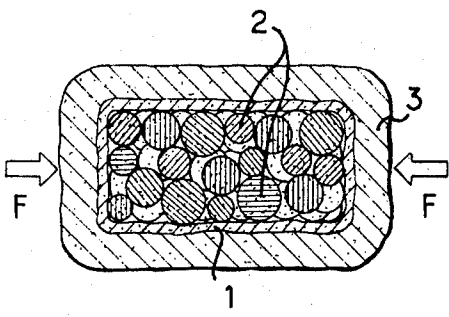
**FIG. 1**



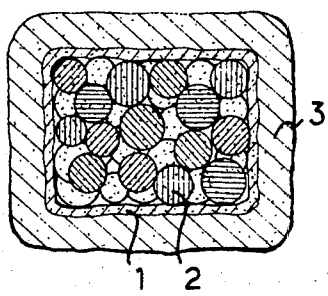
**FIG. 2**



**FIG. 3**



**FIG. 4**



## SANITARY NAPKIN

## SUMMARY OF THE INVENTION

This invention relates to a novel sanitary napkin which is capable of automatically adapting itself to conform to the body of the person using it.

Conventional sanitary napkins consist of a mass of absorbent material such, for example, as cotton fibers or cellulose pulp, in the form of a parallelopiped about 5 cm thick. This absorbent napkin has, because of its structure, definite dimensions which cannot be modified except by substantially compressing the materials forming the absorbent material.

This has the disadvantage that, while conventional sanitary napkins fit most women, they can be most advantageously used only by a limited number of them, because of anatomical differences between them.

It is the object of the present invention to overcome this disadvantage and provide sanitary napkins which have the same absorptive qualities as conventional napkins, but which may also adapt themselves to the bodies of all users, which makes it possible to use them most effectively in all cases, with a maximum of comfort.

The present invention is directed to the new article of manufacture which consists of a sanitary napkin made of absorbent material which is characterized by the fact that it comprises a plurality of balls of absorbent material which are movable with respect to each other, so that they may be displaced to change the shape of the article, said balls being preferably contained within a deformable bag which is itself made of an absorbent material.

In one particular embodiment of the invention, the bag containing the absorbent balls is itself encircled by a layer of absorbent material, for example a layer of cotton fibers. The absorbent mass formed in this manner may also be placed in a net in a conventional manner.

The balls may be made from all sorts of absorbent material. They may, for example, comprise wood fibers or viscose fibers, cellulose wadding or cotton wadding.

In accordance with a preferred embodiment of the invention, the balls have a substantially uniform diameter, so as to improve their mobility within the bag which contains them, and to permit the napkin to adapt itself to the body of the person using it.

By way of example, the balls may have a diameter of the order of 3 to 4 mm.

It must be appreciated that, when speaking of balls in the present description, it is not intended to refer exclusively to masses having a perfectly spherical surface, but only to masses of fibers having a rounded aspect. The balls may thus be generally cylindrical. The essential point is that these balls of absorbent material be adapted to change position easily with respect to each other so as to permit the napkin to automatically conform to the contours of the body.

In accordance with the invention, all the absorbent material may be placed inside a bag made of a flexible material, which is itself absorbent, or which is permeable to the liquid which must be absorbed by the balls.

The balls may thus be placed inside a bag of woven or knitted fabric or a non-woven web. Alternatively, the balls may be positioned inside a bag of fine mesh net material.

The nature of the material of which the bag containing the balls is made is not very important, except to the extent that this material must permit a change in the shape of the mass of balls and the passage of liquid which is to be absorbed by the balls.

In order that the invention may be better understood, a preferred embodiment thereof will now be described, purely by way of illustration and example, with reference to the accompanying drawing on which:

FIG. 1 is a perspective view of a napkin according to the invention, showing one end cut off;

FIG. 2 is a longitudinal section through the sanitary napkin shown in FIG. 1; and

FIGS. 3 and 4 are transverse cross-sections showing two different possible shapes for the napkins of FIGS. 1 and 2.

FIGS. 1 and 2 show in a schematic manner a napkin one end of which has been cut off.

These figures show a bag 1 containing balls 2 of absorbent material. This bag is made for example of woven cotton cloth or of a non-woven web of cotton or some other suitable material. It may also be made in the form of a net having meshes sufficiently fine to prevent the balls 2 contained therein from falling out.

The balls may be made, for example, of wood fibers. They have, in a particular embodiment of the invention, diameters of from 3 to 6 mm.

The quantity of balls inside the bag 1 is such that the balls are not compressed inside the bag and have a certain mobility with respect to each other.

In the embodiment illustrated, the bag 1 containing the balls 2 is surrounded by a sheet 3 of absorbent material, for example, a sheet of cotton fibers.

In an improved embodiment of the invention it is possible to line the inner surface and the lateral surfaces of the absorbent sheet 3 with a layer of water repellent cotton which prevents the liquid impregnating the napkin from passing through its lower and lateral surfaces.

Finally the napkin is inserted in a conventional manner inside a net 4 by means of which it is attached.

The absorbent sheet 3 has been shown with its ends 3a bent slightly inward at the end 1a of the bag. This configuration is not essential, and it is possible to terminate the sheet 3 substantially in alignment with the end 1a of the bag which contains the balls.

A napkin made in this manner has a certain capacity for deformation due to the fact that its center consists of the balls 2 which may easily be displaced with respect to each other. Thus, if the sides of the napkin are squeezed, there is a displacement of the balls which produces a configuration such that the napkin becomes thicker in one direction and thinner in the other.

This phenomenon is schematically illustrated in FIGS. 3 and 4 which show the bag 1, the balls 2, and the absorbent sheet 3.

If the napkin of FIG. 3 is squeezed in the direction of the arrows F, which tends to laterally depress the napkin, the balls 2 are displaced so that the napkin assumes a configuration like that shown in FIG. 4, having a greater thickness in one direction and a smaller thickness in the other direction.

In practice it suffices to manufacture napkins having the size which corresponds to the body shape which is most common. During use of the napkin by persons requiring thinner napkins, the pressure spontaneously exerted on the lateral sides of the napkin as it is worn results in changing its shape to the one shown on FIG. 4. This configuration corresponds to the optimum configuration for the user under consideration.

It will thus be seen that the napkins according to the invention have the characteristic of having a transverse section of an indeterminate shape, the width and thickness of which may be varied to adapt it automatically to the needs of the user.

It will also be noted that, contrary to what takes place in the case of napkins heretofore known, a reduction in one dimension of the napkin during use does not result in compression of the absorbent material, but merely in a change in the cross-section of the napkin, with the absorbent material distributing itself to increase another dimension.

It follows that the napkins according to the invention have excellent absorptive and comfort qualities regardless of the shape of the body of the user.

It will of course be appreciated that the embodiment which has just been described has been given purely by way of illustration and example and may be modified as to detail without thereby departing from the basic principles of the invention, as defined by the following claims.

What is claimed is:

1. Sanitary napkin comprising a plurality of rounded balls of absorbent material enclosed in a textile bag, said balls having a

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diameter so small that they form several layers in all directions and are movable with respect to each other inside said bag so that the shape of the napkin may conform to the configuration of the body of the user.

2. Napkin as claimed in claim 1, in which the balls are contained in a deformable bag.

3. Napkin as claimed in claim 2, in which the deformable bag is made of an absorbent material.

4. Napkin as claimed in claim 2 in which the deformable bag is made of a net having meshes sufficiently small to prevent the passage of said balls therethrough.

5. Napkin as claimed in claim 1, in which the balls are made of a material selected from the group consisting of wood fibers, viscose fibers, cellulose wadding and cotton wadding.

6. Napkin as claimed in claim 1, in which the balls are of substantially the same dimensions.

7. Napkin as claimed in Claim 1, in which the balls have a diameter of the order of 3 to 4 mm.

8. Napkin as claimed in claim 2, in which the central part of the bag containing the balls is encircled by a layer of absorbent material.

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