

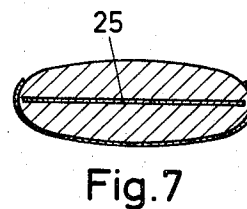
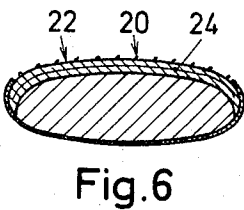
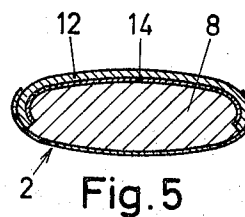
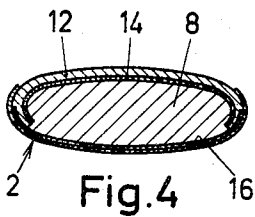
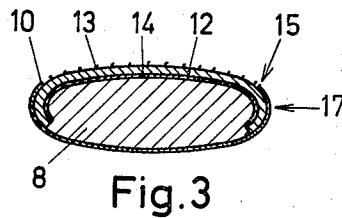
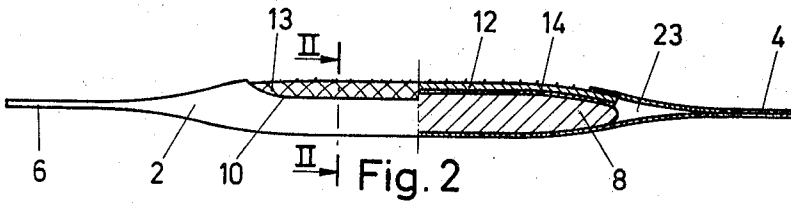
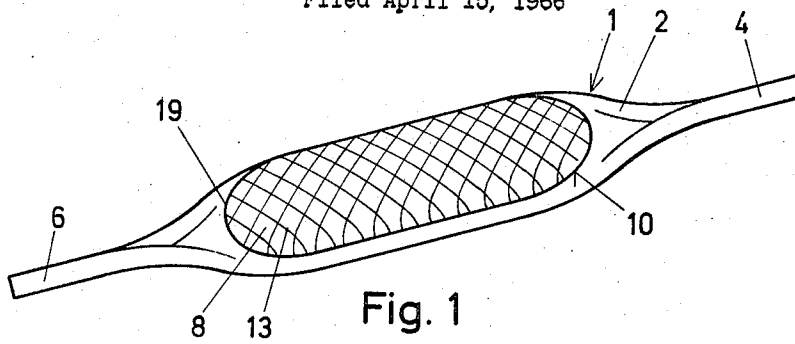
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3,424,163

SANITARY NAPKIN

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3,424,163

## SANITARY NAPKIN

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8 Claims

Int. Cl. A21f 13/16, 13/20; A611 15/00

### ABSTRACT OF THE DISCLOSURE

A disposable sanitary napkin wherein an elongated wrapper which is an integral part of the napkin has an oblong, pad-like absorbent compress positioned therein. The wrapper is made from relatively non-elastic material having extensions at both ends which are designed to be secured to the belt of a user. At one side the wrapper has an opening with a configuration defined by the adjacent area on one side of the absorbent compress. A relatively thick porous layer of a material which is very soft, comfortable, and liquid-pervious covers the opening. The wrapper may be made from a woven or non-woven material and may also be treated to prevent liquid penetration. The compress may also be treated to prevent excessive piling during use.

The present invention relates to a sanitary napkin and more especially a new embodiment for a disposable sanitary napkin of the kind comprising an absorbent, elongated compress or pad encompassed in a wrapper having extensions in both ends adapted to be attached to a wearer's belt or the like.

The compress comprises an absorbent core, consisting of for instance cellulose or cellulose wad, which core is wrapped into and supported by a liquid pervious wrapper or a net. Subsequent to one use only such sanitary napkins are discarded or thrown away.

There exist two general types of such disposable sanitary napkins. One type is usually called "non-woven" napkins, because the wrapper consists of a "non-woven" material, i.e. a paper-like non-elastic material made from cellulose treated in different manners in order to make it suitably liquid pervious and also providing it with a soft and skin comfortable surface.

The main advantage of this type of napkins resides in the fact that the napkin during use to a large degree will keep its original shape, mainly because the wrapper material has a relatively low modulus of elasticity. This type of sanitary napkin renders itself also well for mass production.

The main disadvantage of "non-woven" sanitary napkins is that the wrapper material, in spite of treatment, will not attain a so soft and skin comfortable surface as is desirable.

The other general type of disposable sanitary napkins is the so-called "napkins with net", i.e. napkins wherein the absorbent compress core is encompassed in a per example knitted coarse meshed net. In order to make the napkin as soft as possible the absorbent core is frequently surrounded by a thin layer of cotton or cotton-like material. The main advantage with this type of napkin compared with the before mentioned "non-woven" napkin is that due to its outstanding soft surface it will offer excellent wearing comfort.

Sanitary napkins with net possess, however, the disadvantage that they during the wearing will be substantially deformed in a manner such that they attain an elongated deformed shape due to the great elasticity of the supporting net.

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Both types of napkins as above described are hampered by the disadvantage that the liquid has a tendency to penetrate the napkin entirely resulting in the well known harms arising therefrom. Therefore such napkins frequently are provided with a less liquid pervious layer in the center portion of the core, the purpose of which is to accumulate and distribute incoming liquid in lateral and longitudinal directions of the napkin, thus preventing the moisture from penetrating the napkin in crosswise direction. Furthermore a liquid repellent or liquid impervious film, for instance a film or foil of plastic or the like, can be positioned adjacent inside of the outer wrapper wall, i.e. the wrapper wall positioned farthestmost from the body of the wearer. Such a film has, however, not proved to be any ideal solution, among other reasons because the napkin, in spite of having suitable markings, for instance coloured marks or the like, very easily is positioned in the wrong direction i.e. outside in, having as a result that the sanitary napkin is not absorbing any liquid at all.

The main objective of the invention is to provide an improved sanitary napkin, which supplementary to possessing the main advantage of the napkins as above described, also possesses further advantages without being hampered by their drawbacks.

In accordance with the invention there is provided a disposable sanitary napkin comprising an oblong, pad-like absorbent compress positioned in an elongated wrapper constituting an integral part of the napkin, said wrapper being made from a relatively non-elastic material and provided with extensions at both ends which shall be secured to a belt by the wearer, the wrapper on one side being provided with an opening, the boundary and configuration of which is defined by the adjacent face area of one side of the absorbent compress.

In a preferred embodiment of the invention the missing wrapper material over the opening area is replaced by a layer of particularly soft, skin comfortable and liquid pervious material, per example cotton or cotton-like material, on top of which is placed a coarse meshed net in order to prevent piling during use. The net as well as said layer of skin comfortable material can be attached to the wrapper along the underside of the opening edge and thus form an integral part of the wrapper.

The soft and skin comfortable material can also be provided with a top layer of the core proper or simply by the exposed surface of the core, provided the core is made from material which is suitable. In any case the invention is generally characterized in that the wrapper has an opening which exposes a liquid pervious surface which is softer and more skin comfortable than the wrapper material itself.

Some preferred embodiments of the invention shall be described in the following in connection with the accompanying drawings, wherein:

FIGURE 1 is a perspective view showing a sanitary napkin in accordance with the invention.

FIGURE 2 is a side view of the napkin shown in FIGURE 1, the right half of the napkin being removed along the center line of the napkin.

FIGURE 3 is a cross-sectional view of the napkin as shown on the line II-II in FIGURE 2.

FIGURE 4 is a cross-sectional view similar to FIGURE 3 of a modification of a sanitary napkin in accordance with the invention.

FIGURE 5 is a cross-sectional view similar to FIGURE 3 of a further embodiment of a sanitary napkin in accordance with the invention.

FIGURE 6 is a cross-sectional view similar to those shown in FIGURES 3-5 and showing another realization

of the invention, whereby the core itself is exposed over the opening area in the wrapper.

FIGURE 7 is a cross-sectional view similar to FIGURE 6 of a further embodiment of the invention.

As appears from FIGURES 1, 2 and 3 the sanitary napkin 1 consists of a wrapper 2 which suitably is tube-shaped, which wrapper envelops a compress or core. The end portions 4 and 6 of the wrapper are preferably folded together as shown, in order to keep the core of the napkin in position, and also to facilitate the attachment to a wearer's belt which is not shown. As shown the napkin is made in the form of an elongated or oblong, relatively flat pad. On the side of the napkin which shall face the body of the wearer the wrapper is in accordance with the invention provided with an opening having a continuous opening edge 10 extending around this side of the napkin.

The core of the napkin comprises a preferably profiled liquid absorbent compress or pad 8 of cellulose, cotton, or similar material, and on top of the core across the wrapper opening is as shown in the embodiments shown in FIGURES 2-5 positioned a separate or distinct liquid pervious layer 12 of an especially soft and skin comfortable material, for instance cotton or a cotton-like material. On top of this cotton or cotton-like material is suitably positioned a thin coarse meshed net 13 in order to prevent or reduce surface piling. The layer 12 and the net 13 are suitably attached to the wrapper on the underside of the opening margin 10, for instance by means of an adherent.

In the embodiments of the invention as shown in FIGURES 3-5 is further, between the core 8 and the outer layer 12, positioned a thin layer 14, for instance made from cellulose wad, the purpose of which is to strengthen the napkin, but chiefly to provide that the liquid, which is passing through the outer layer 12, is distributed also laterally across the layer 14 before penetrating into the absorbent core 8.

The opening margin 10 should, with regard to a correct adjusting against the wearer's body and in order to make the opening area as large as possible, be arranged along the transition zone 15 between the top face of the napkin and side face along the sides of the napkin having a somewhat oval shaped cross-section as shown, such that the core, which here is covered by the soft outer layer 12, protrudes somewhat longer outwards or higher than the wrapper opening edge 10 itself. It would, thus be no objection to locate the opening edge 10 somewhat lower than shown in the figures, for instance with the opening edge running along level 17, as shown in FIGURE 3 and at each end following a well rounded semicircular course 19 across the napkin as shown in FIGURE 1. The important feature is that the side edges or lateral walls of the wrapper extend upwardly along and surround the side faces of the core so that the wrapper constitutes a bowl shaped container for the core. As shown the end portions of the wrapper have closed pockets 23.

The wrapper is preferably made from a liquid repellent material or a material which is treated with a liquid repellent. Hereby is obtained that liquid which is received by the core through the outer layer 12 and partly crosswise, partly along the distribution layer 14 is thereafter absorbed by the core, but the moisture and the liquid cannot protrude through the other outer side or through the side faces of the napkin.

One can, however, as shown in FIGURE 4, alternatively locate a separate liquid impermeable sheet of film or foil 16, for instance a thin plastic sheet or a plastic laminated cellulose wad, between the core and the wrapper, so that said layer surrounds the core from the closed side of the wrapper. This layer is then of course given such size and shape that it extends upwardly along the side edges of the core.

FIGURE 5 shows a cross-sectional view similar to FIGURE 3 of a further embodiment of a sanitary napkin in accordance with the invention and wherein the layer 12

is supposed to be treated with a composition preventing piling, whereby a net as shown in FIGURES 1 and 2 can be cancelled.

FIGURES 6 and 7 illustrate further realizations of sanitary napkins in accordance with the invention and which distinguish themselves from those shown in FIGURES 3 to 5 in that the layer of soft and skin comfortable material does not constitute a distinct separate part or a part of the wrapper, but instead constitutes a part of the core. In this embodiment of the invention it is a prerequisite that at least the upper layer of the material in the core is of such quality that it further to being soft and skin comfortable also has the quality that it does not pile during use. In order to prevent piling, the face and the upper layer 24 of the material in the core can be treated with a suitable constituent such that the binding of the material is increased without substantially reducing its liquid perviousness or the skin comfort. Additionally can be positioned on top of the core a coarse meshed net 20. Alternatively, the core can be made having several layers, the outer layer 22 being of a particularly soft and skin comfortable material.

In FIGURE 7 is shown a napkin having a core of one single type of material and in the center zone of which is positioned a liquid distributing and core strengthening layer 25. The core material is here presupposed to be of non-piling type.

When the soft and skin comfortable material does not constitute any integral part of the wrapper, but instead of the core, the upper side of same should preferably be attached to the underside of the opening margins of the wrapper, for instance by means of gluing or welding, such that the opening edge is not incidentally folded outwardly during use, causing discomfort for the wearer.

It will be understood that a sanitary napkin in accordance with the invention can be given many different embodiments without leaving the spirit of the invention, namely to provide a wrapper which serves as well as a supporting element for the core as a moisture and liquid receiving pocket for moisture and liquid which penetrates into the core, the outside of which is exposed to the liquid in that the wrapper is provided with an opening, the exposed surface consisting of a particularly soft and skin comfortable material.

What is claimed is:

1. Disposable, irreversible, sanitary napkin consisting of an elongated wrapper forming an integral part of said napkin, an oblong, pad-like absorbent compress positioned in said wrapper, said wrapper being made from a relatively non-elastic material having extensions at both ends to be secured to the belt of a user, said wrapper having on one side an opening whose boundary and configuration is defined by the adjacent face area on one side of said absorbent compress, and a relatively thick porous layer of skin comfortable, very soft, and liquid previous material covering said wrapper opening.

2. Sanitary napkin in accordance with claim 1, wherein said wrapper is treated to prevent liquid penetration.

3. Sanitary napkin in accordance with claim 1, in which said wrapper is made from a woven material.

4. Sanitary napkin in accordance with claim 1, in which said wrapper is made from a non-woven material.

5. Sanitary napkin as set forth in claim 1, wherein said layer consists of cotton having its outer face treated to prevent excessive piling of said layer during use, and said layer is covered by a coarse meshed thin threaded net.

6. Sanitary napkin as set forth in claim 1, wherein said layer consists of rayon fibers.

7. Sanitary napkin as set forth in claim 1, wherein said layer is cotton and said absorbent compress and layer form a single integral unit positioned in said wrapper.

8. Sanitary napkin as set forth in claim 1, wherein said layer is cotton and said wrapper and layer form an

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integral unit wherein is positioned said absorbent compress.

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