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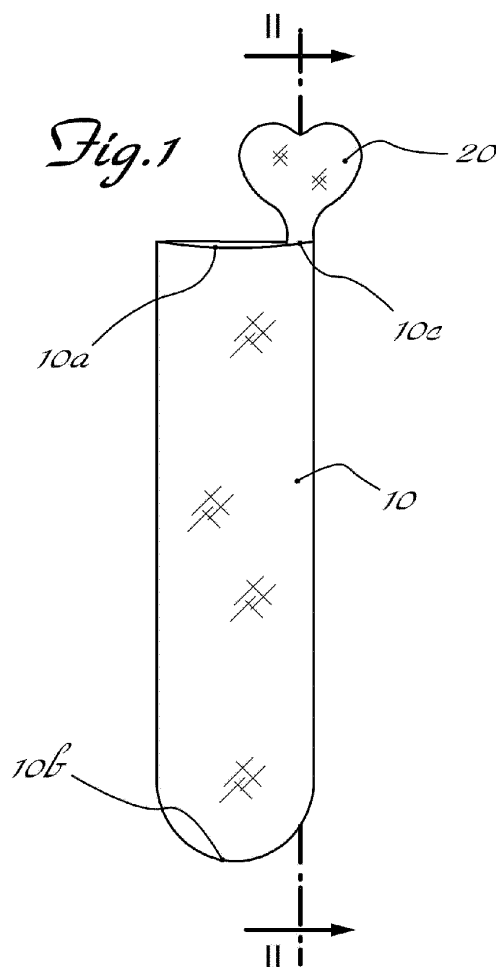
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(54) **Self-supporting stocking with multilayer support element having a silicone inner layer lined with a biocompatible adhesive for attaching to the user's skin.**

(57) Self-supporting stocking comprising a body (10) made of elastic fabric and deformable both in a lengthwise longitudinal direction X-X and in a widthwise transverse direction Y-Y and with at least one top end (10a) which is open and at least one support element (20) for attaching to the user's body, wherein said at least one support element (20) has a multilayer form with a very small thickness and comprises an outer layer (21) and an inner layer (22) of silicone material which in turn has an inner surface lined with a biocompatible adhesive layer (23) for attaching to the user's skin.



## Description

**[0001]** The present invention relates to a self-supporting stocking with multilayer support element having an inner layer of silicone material lined with a biocompatible adhesive layer for attaching to the user's skin.

**[0002]** In the female and male hosiery sector different techniques for supporting different products designed to facilitate wearability are known.

**[0003]** Among these, the most widespread techniques envisage the introduction into the product of elastic elements which, as a result of their tension, widen when the products are put on and contract gripping the associated parts of the body, typically the legs or the abdomen; the most common examples of these products are male stockings and female tights.

**[0004]** Other means for supporting products to be worn consist of external accessories, such as garters or suspender belts, which, when detached from the stocking article, are formed by clips joined to an elastic element which is arranged in position above the free edge of the stocking and supports it by means of friction against the leg.

**[0005]** Also known are self-supporting stockings provided with stitched fabric trimming bands which have silicone components applied to them internally in various ways so as to prevent the stocking from slipping by means of friction with the skin.

**[0006]** It is known that these techniques, based on an elastic structure, result in the products being uncomfortable; in addition, the support in some cases proves to be of limited effectiveness, in particular in the case of self-supporting stockings which use fabric trimming bands to which the silicone strips are applied; since the trimming bands are rigid, they work well only for a small minority of women which have a specific thigh circumference to leg length ratio.

**[0007]** The technical problem which is posed therefore is to provide self-supporting stockings which are able to overcome the drawbacks arising from the use of these known techniques, so as to obtain comfortable products with a highly efficient supporting action.

**[0008]** In connection with this problem it is also required that the stocking should be aesthetically pleasing, without parts which when in contact with clothing are prominent and hence visible externally, being at the same time easy and inexpensive to produce and assemble and also able to be used by end users in a simple and intuitive manner without the need for specific operations.

**[0009]** These results are achieved according to the present invention by a self-supporting stocking according to the characteristic features of Claim 1.

**[0010]** Further details may be obtained from the following description of a non-limiting example of embodiment of the subject of the present invention, provided with reference to the accompanying drawings, in which:

stocking according to the present invention;

**Figure 2:** shows a schematic cross-section along the plane indicated by II-II in Fig. 1;

**Figure 3:** shows a side view of stockings according to Fig. 1 when worn on the legs of a user;

**Figure 4:** shows a front view similar to that of Fig. 3;

**Figure 5:** shows a rear view similar to that of Fig. 3; and

**Figure 6:** shows a side view of a further example of a self-supporting stocking according to the invention when worn on the legs of a user.

**[0011]** As shown in Fig. 1 a pair of reference directions, i.e. longitudinal direction X-X, corresponding to the length of the stocking, and transverse direction Y-Y, corresponding to the width of the stocking, as well as a conventionally inner part directed towards the inside of the stocking and towards the skin of the user and outer part opposite thereto, are assumed solely for the sake of easier description and without a limiting meaning.

**[0012]** Based on these reference directions a self-supporting stocking according to the invention comprises essentially a body 10 made of elastic material, which is deformable both lengthwise in the longitudinal direction X-X and widthwise in the transverse direction Y-Y; the elastic body 10 has an open top end 10a and, in the example shown, a bottom end 10b which is closed so as to fit over also the foot of the user.

**[0013]** According to the invention it is envisaged that the body 10 of the stocking has fixed thereto at least one support element 20 which is fastened to the body 10 at one end 10c of the open top edge 10a. Preferably, the support element 20 has a very small and therefore substantially flat thickness and comprises (Fig. 2) an outer layer 21 made of material similar to that of the body 10 of the stocking and an inner layer 22 of silicone material which in turn has an inner surface lined with a biocompatible adhesive layer 23.

**[0014]** The support element 20 therefore has a multilayer structure with the various layers 21,22,23 which are bonded together by means of the known hot-gluing techniques or the like.

**[0015]** Preferably the adhesive inner layer 23 has a coefficient of adhesion in contact with the skin which is less than that in contact with the outer layer 21 so as to allow repeated application/separation without an unpleasant sensation of pain when detached from the skin. According to alternative forms of application the support element 20 may also be attached to the body 10 of the stocking by means of irreversible fasteners such as stitches 24 (Fig. 2) or by means of reversible fastenings such as Velcro connections, automatic buttons or hooks which are able to allow removal and replacement of the support element in the event of a reduction in the adhesion coefficient, without having to eliminate also the entire stocking which may be still used.

**[0016]** As shown in Figs. 3-5, according to a particular embodiment of the elastic body 110 of the stocking its

**Figure 1:** shows a front view of a self-supporting

open top end 110a is shaped so as to have the outer part 111 which is longer than the inner part 112 so that, when the stocking is worn, the outer part 111 with the support element 20 is positioned higher up on the side 1a of the user 1 where the support element 20 is attached, while the inner part remains lower, at the height of the groin on the inner leg.

[0017] Fig. 6 shows instead a further embodiment of the stocking 210 according to the invention which, in this case, has a conventional length as far as the thigh and has its free end which encircles the thigh uniformly.

[0018] Although shown in an embodiment for a woman's self-supporting stocking, it is envisaged that the stocking body may also have a smaller length corresponding to that of man's stocking or knee-high sock (not shown).

[0019] It is also envisaged that the bottom end 10b of the stocking may be open instead of being closed in a foot shape, for forms where the length of the stocking body is limited to the calf or the ankle. It is therefore clear how the self-supporting stocking according to the invention offers numerous advantages compared to the prior art since the elimination of the elastic elements results in stockings able to be individually supported simply and safely as well as adapted in a comfortable manner to any user independently of the proportions of the user's legs.

[0020] In addition, the flat support element does not show up under the outer clothing and hence cannot be noticed externally, resulting in an aesthetically pleasing finish.

[0021] Owing to the interchangeability of the support element it is moreover possible to use the same stocking also in the event of a reduction in the coefficient of adhesion to the skin.

[0022] It is also envisaged that the support element 20 may be designed with suitable dimensions depending on the different sizes and proportions of the user.

[0023] Although described in connection with a number of embodiments and a number of preferred examples of embodiment of the invention, it is understood that the scope of protection of the present patent is determined solely by the claims below.

## Claims

1. Self-supporting stocking comprising a body (10) made of elastic fabric and deformable both in a lengthwise longitudinal direction X-X and in a widthwise transverse direction Y-Y and with at least one top end (10a) which is open and at least one support element (20) for attaching to the user's body, **characterized in that** said at least one support element (20) has a multilayer form with a very small thickness and comprises an outer layer (21) and an inner layer (22) of silicone material which in turn has an inner surface lined with a biocompatible adhesive layer (23) for attaching to the user's skin.

2. Self-supporting stocking according to Claim 1, **characterized in that** the various layers (21,22,23) of the support element (20) are fixed together by means of gluing.

3. Self-supporting stocking according to Claim 1, **characterized in that** the various layers (21,22,23) of the support element (20) are fixed together by means of stitching.

4. Self-supporting stocking according to Claim 2, **characterized in that** the adhesive inner layer (23) has a coefficient of adhesion in contact with the skin less than that in contact with the outer layer (21).

5. Self-supporting stocking according to Claim 1, **characterized in that** the support element (20) is attached to the body (10) of the stocking by means of irreversible fastening means such as stitches (24) and the like.

6. Self-supporting stocking according to Claim 1, **characterized in that** the support element (20) is attached to the body (10) of the stocking by means of reversible fastening means such as Velcro fasteners, automatic buttons or hooks.

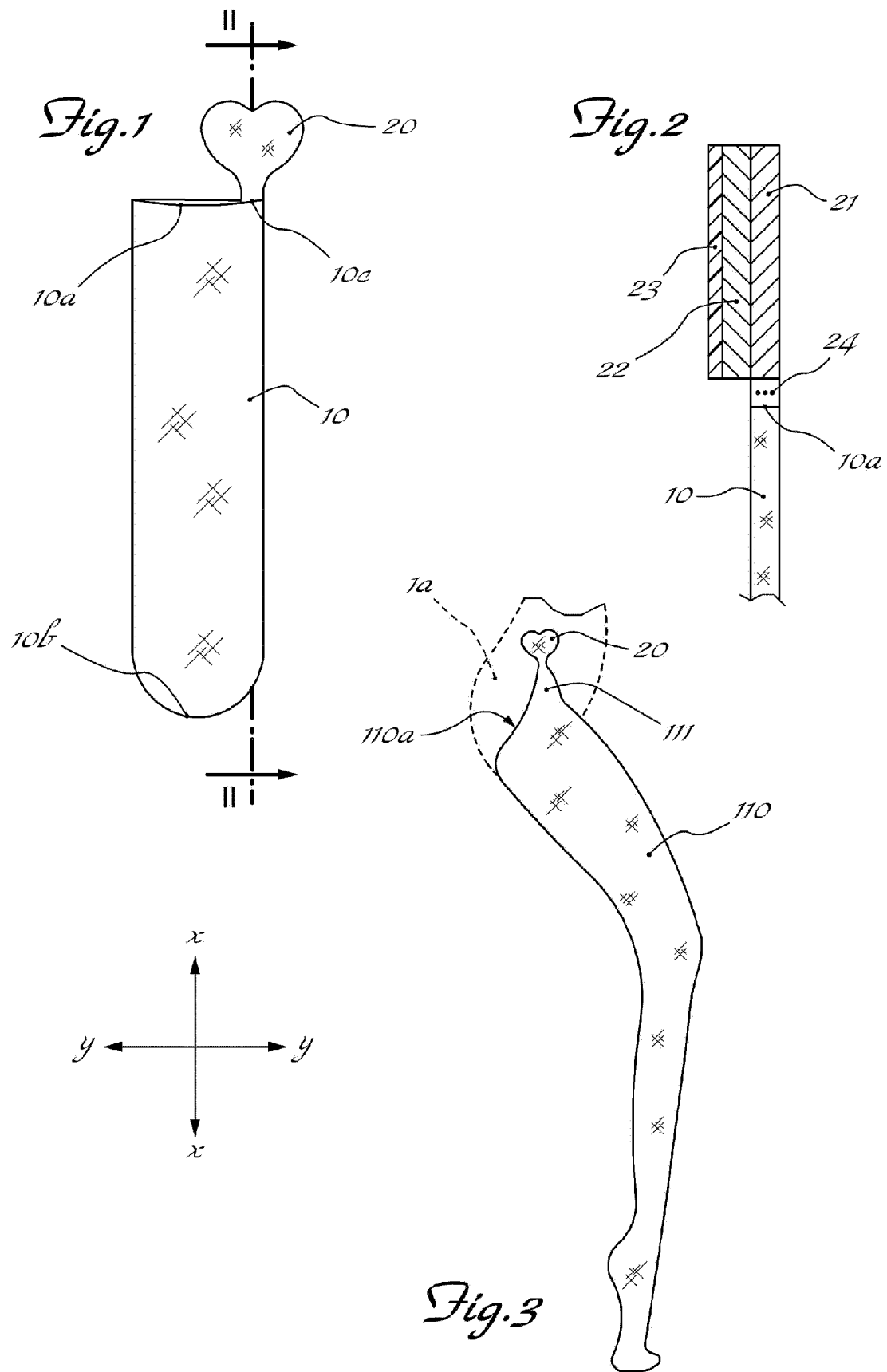
7. Self-supporting stocking according to Claim 1, **characterized in that** its open top end (110a) has an outer part which is longer than the inner part.

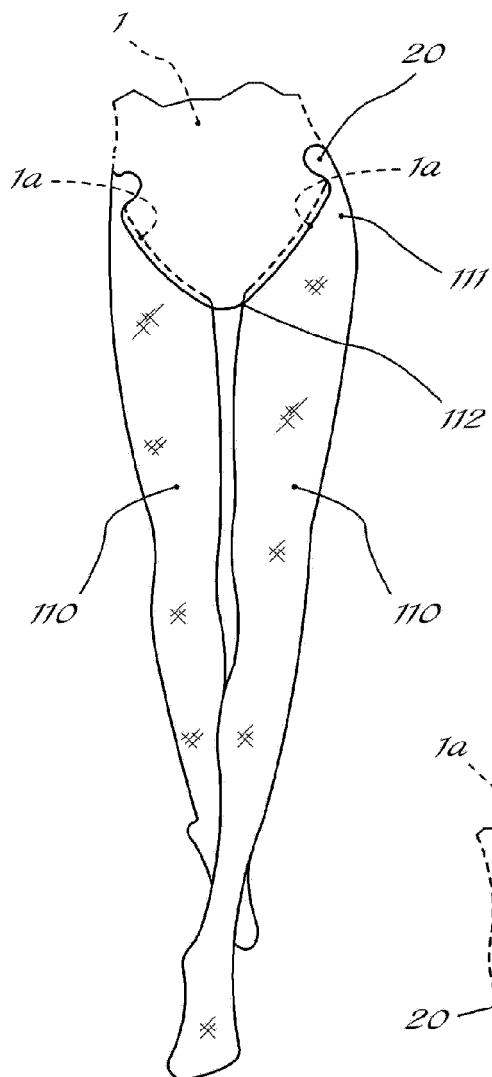
8. Self-supporting stocking according to Claim 7, **characterized in that** the inner part of its open top end (110a) is arranged in the region of the groin on the inner thigh.

9. Self-supporting stocking according to Claim 7, **characterized in that** the outer part of its open top end (110a) is longer so that the support element (20) is positioned on the side (1a) of the user (1).

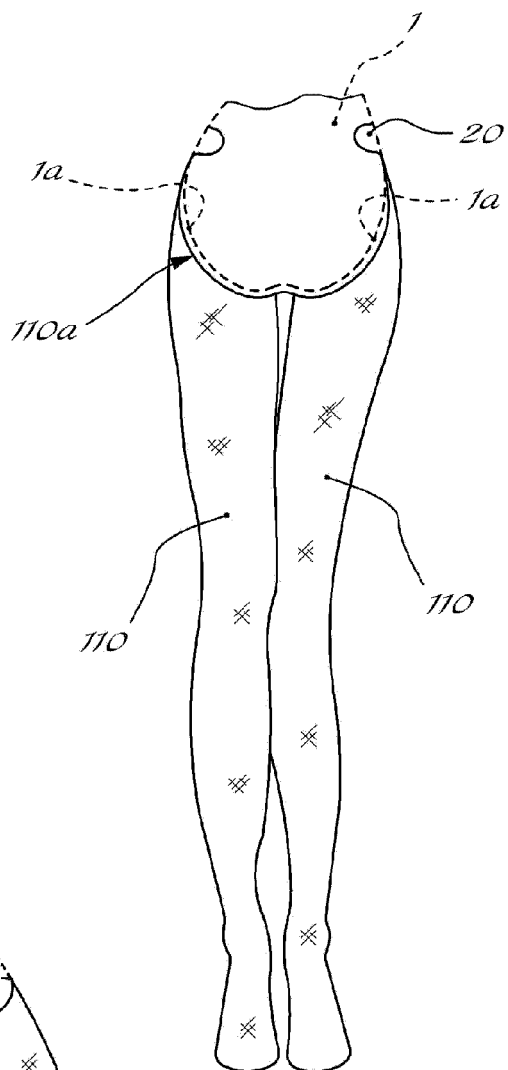
10. Self-supporting stocking according to Claim 1, **characterized in that** the body (10) has a shorter length corresponding to a men's stocking or knee-high sock.

11. Self-supporting stocking according to Claim 1, **characterized in that** the body (10) of the stocking has the bottom end (10b) closed in a foot shape or open for forms where the length of the body (10) extends to the calf or ankle of the user.

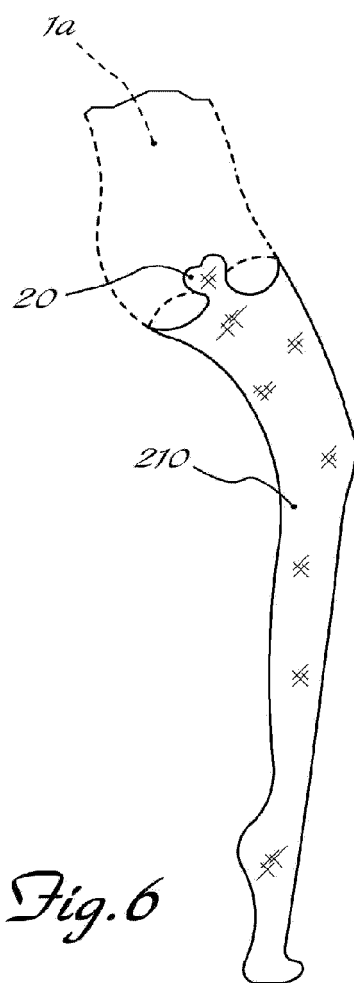




*Fig. 4*



*Fig. 5*



*Fig. 6*