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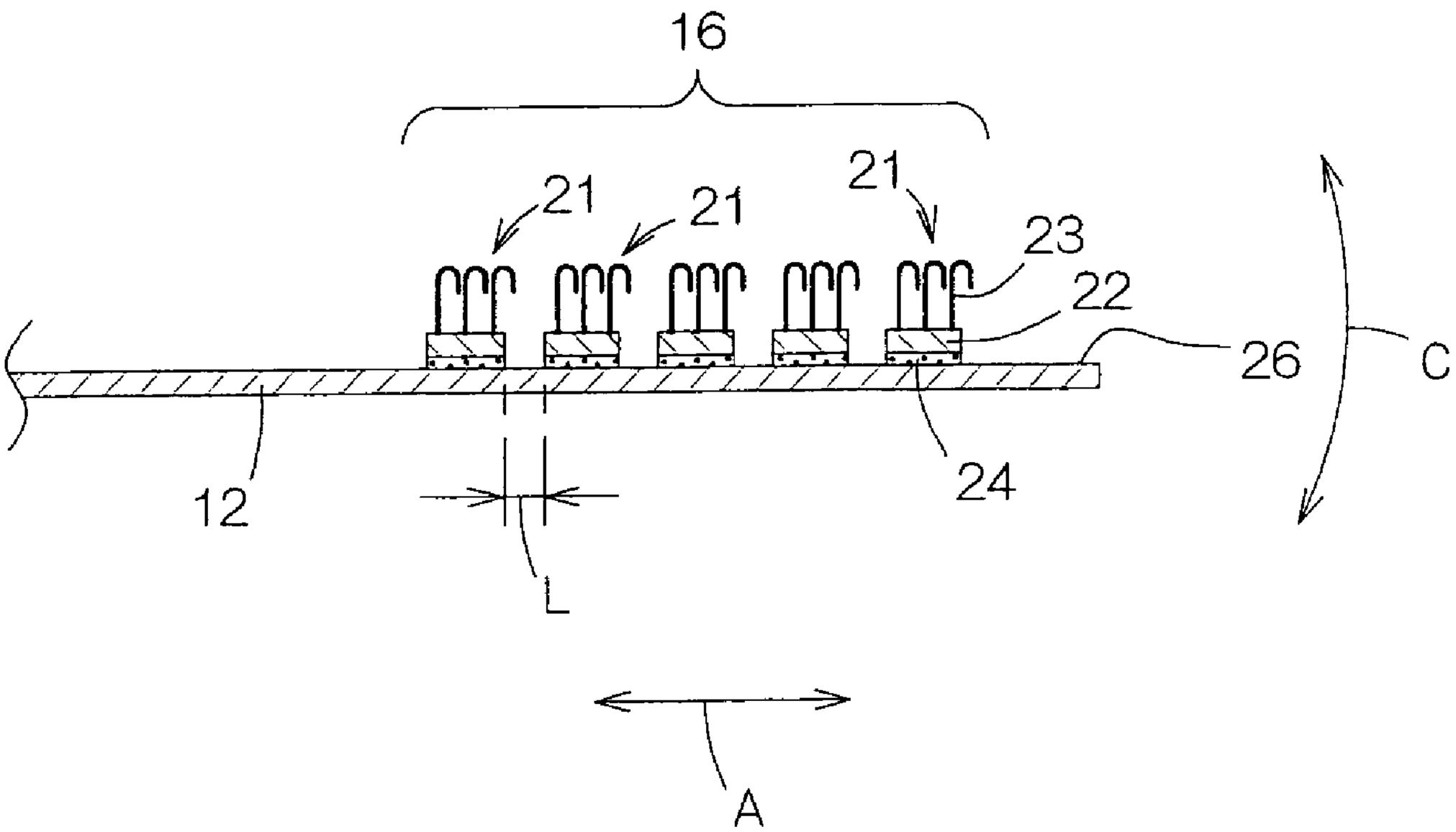


(57) Abrégé/Abstract:
The present invention aims to provide a wearing article so improved to eliminate a possibility that desired stretchability and flexibility of the wearing article might be deteriorated due to the presence of the hook member making one component of the mechanical fastener attached to the wearing article. A wearing article such as a disposable diaper is provided in predetermined regions of the article with hook members (16) . These predetermined regions are elastically stretchable at least in one direction. Each of the hook members (16) comprises a plurality of hook assemblies (21) which are, in turn, attached to each of the predetermined regions so as to be spaced apart one from another in the one direction.

A B S T R A C T

The present invention aims to provide a wearing article so improved to eliminate a possibility that desired stretchability and flexibility of the wearing article might be deteriorated due to the presence of the hook member making one component of the mechanical fastener attached to the wearing article.

A wearing article such as a disposable diaper is provided in predetermined regions of the article with hook members (16). These predetermined regions are elastically stretchable at least in one direction. Each of the hook members (16) comprises a plurality of hook assemblies (21) which are, in turn, attached to each of the predetermined regions so as to be spaced apart one from another in the one direction.

S P E C I F I C A T I O N

WEARING ARTICLE

TECHNICAL FIELD OF THE INVENTION

[0001]

The present invention relates to wearing articles such as disposable diapers, disposable gowns used in medical field or bandages and particularly to such wearing articles utilizing a mechanical fastener.

BACKGROUND ART OF THE INVENTION

[0002]

Disposable wearing articles utilizing a mechanical fastener is well known in the art. For example, a disposable diaper disclosed in Japanese Patent Publication No. 2977501 (Citation 1) utilizes a pair of Y-shaped tape fasteners extending outward from respective wings of a rear waist region in a transverse direction of the diaper. Each of these tape fasteners is provided on the inner surface at its distal end portion with a hook member of the tape fastener serving to cooperate with a loop member to form an entirety of the tape fastener.

Citation 1: Japanese Patent Publication No. 2977501

DISCLOSURE OF THE INVENTION

PROBLEM TO BE SOLVED BY THE INVENTION

[0003]

In the diaper disclosed in the foregoing Citation, respective proximal end portions of the Y-shaped tape fasteners are bonded to inner and outer surfaces of the respective wings. Such manner of bonding ensures that the tape fasteners can be permanently bonded to the wings, on one hand, but this locally stiffens the wings in zones thereof in which the tape fasteners are bonded thereto, on the other hand. For the diaper in which the wings should have elastic stretchability, this stretchability is deteriorated by the tape fasteners. In addition, the distal end portions of the tape fasteners already have a relatively high stiffness due to the presence of the hook member attached thereto and, in zones of the wings in which the respective hook members come in engagement with the loop member, the wings have a further higher stiffness which deteriorates stretchability and flexibility of the diaper.

[0004]

In view of the problem as has been described above, it is an object of the present invention to provide wearing articles such as disposable diapers so improved to eliminate a possibility that desired stretchability and flexibility of the wearing article might be deteriorated due to the presence

of the hook member making one component of the mechanical fastener.

MEASURE TO SOLVE THE PROBLEM

[0005]

According to the present invention, there is provided a wearing article comprising first and second surfaces opposed to each other when worn, the first and second surfaces releasably connected to each other by means of a mechanical fastener which comprises a hook member and a loop member.

[0006]

The first surface is provided in a predetermined region with the hook member and the second surface is provided in a predetermined region with the loop member; the first surface is elastically stretchable at least in one direction in the predetermined region and in a vicinity thereof; the hook member comprises a plurality of hook assemblies each comprising a relatively stiff base sheet and one or more hooks rising from the base sheet; and the plurality of hook assemblies are attached to the first surface in the predetermined region so that the hook assemblies are spaced apart one from another in the one direction.

[0007]

The present invention may include the following

preferable embodiments.

(1) The plurality of hook assemblies attached to the first surface are spaced apart one from another not only in the one direction but also in a direction crossing the one direction.

(2) The plurality of hook assemblies are provided on a non-stretchable carrier sheet interposed between the assemblies and the predetermined region, the carrier sheet being, in turn, attached to the first surface in the predetermined region; and the carrier sheet is torn off between each pair of the hook assemblies being adjacent in the one direction as the carrier sheet is pulled together with the predetermined region in the one direction, allowing the predetermined region to be elastically stretched.

(3) The wearing article is an open type diaper in which the first surface corresponds to an inner surface of the diaper, the predetermined region corresponds to each of wings formed in the diaper and the one direction corresponds to a transverse direction of the diaper in the wings.

(4) The second surface corresponds to an outer surface of the diaper.

(5) The first surface and the second surface correspond to inner surface and outer surface of the wings of the diaper formed from an elastically stretchable nonwoven fabric serving also

as the loop member.

(6) The base sheet of the hook assembly is attached to the first surface over an area in a range of 2 to 200 mm^2.

(7) The plurality of hook assemblies are spaced one from another by a distance in a range of 1 to 5 mm in the one direction.

EFFECT OF THE INVENTION

[0008]

The wearing article according to the present invention is primarily characterized in that the hook member as one part of the mechanical fastener comprises a plurality of hook assemblies attached to the article in the region which is elastically stretchable at least one direction so that these assemblies are spaced apart one from another in this one direction. Such an arrangement prevents the elastic stretchability desired for this region from being deteriorated due to the presence of the hook member.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009]

[FIG. 1] Fig. 1 is a partially cutaway plan view showing a diaper, a first embodiment of the invention.

[FIG. 2] Fig. 2 is a sectional view taken along the line II-II in Fig. 1.

[FIG. 3] Fig. 3 is a partial view showing a diaper

according to a second embodiment of the invention similar to the diaper 1 of Fig. 1.

[FIG. 4] Fig. 4 is a view similar to Fig. 1 partially showing a third embodiment of the invention.

[FIG. 5] Fig. 5 is a sectional view taken along the line V-V in Fig. 4 in a non-stretched state (A) and in a stretched state (B).

IDENTIFICATION OF REFERENCE NUMERALS USED IN THE DRAWINGS

[0010]

1 wearing article (diaper)

2 first surface (topsheet)

3 second surface (backsheet)

12 wing region (rear wings)

16 hook member

21 hook assembly

22 base sheet

23 individual hook

31 carrier sheet

DESCRIPTION OF THE BEST MODE FOR WORKING OF THE INVENTION

[0011]

Details of a wearing article according to the present invention will be more fully understood from the description of a disposable diaper as one embodiment of the invention given

hereunder with reference to the accompanying drawings.

[0012]

A disposable diaper 1 as a first embodiment of the invention shown in Fig. 1 in a partially cutaway plan view is the so-called open-type diaper generally hourglass-shaped. The diaper 1 includes a region 5 lying in a middle as viewed in a transverse direction indicated by a double-headed arrow A and this middle region 5 comprises a liquid-pervious topsheet 2, a liquid-impervious backsheet 3 and a body fluid absorbent core 4 interposed between these two sheets 2, 3. In this middle region 5, portions of these top- and backsheets 2, 3 extending outward belong a peripheral edge of the core 4 are overlapped and bonded together by means of hot melt adhesives (not shown). As viewed in a longitudinal direction indicated by a double-headed arrow B, the diaper 1 has a front waist region 6, a rear waist region 7 and a crotch region 8 extending between these two regions. The front and rear waist regions 6, 7 are respectively provided with a pair of front wings 11 and a pair of rear wings 12 both pairs extending outward from the middle region 5 of the diaper 1 in the transverse direction A. These wings 11, 12 have their proximal end portions bonded to the outer surface of the backsheet 3 by means of hot melt adhesives (not shown). Of these wings 11, 12, at least the rear wings 12 are

elastically stretchable at least in the transverse direction A. The rear wings 12 are respectively provided on inner surfaces thereof with a hook member 16 serving as a fastening means to connect the front and rear waist regions 6, 7 with each other. The backsheet 3 defining the front waist region 6 in the middle region 5 of the diaper 1 is provided on its outer surface with a loop member 17 with which the hook members 16 are releasably engaged.

[0013]

Fig. 2 is a sectional view taken along the line II-II in Fig. 1. As illustrated, the hook member 16 provided on the inner surface of each of the rear wings 12 comprises a plurality of independent hook assemblies 21. Each of the assemblies 21 has a stiffness higher than that of the rear wing 12 and comprises a non-stretchable base sheet 22 and at least a single hook 23 rising up on the base sheet 22. The base sheet 22 is attached to the rear wing 12 by a suitable bonding means such as adhesives 24. Each pair of the hook assemblies 21 being adjacent in the transverse direction A are spaced apart from each other by a distance L. The rear wing 12 carrying the hook assemblies in this manner is elastically stretched as it is pulled in the transverse direction A with its outer side edges 26 held by a wearer's fingers. Thereupon, each pair of the adjacent hook

assemblies 21 of the hook member 16 are spaced apart from each other by a stretched distance L and, in this state, come in engagement with the loop member 17. In Fig. 2, an area over which each of the hook assemblies 21 is attached to the rear wing 12 is in a range of 2 to 200 mm^2 and the distance L is in a range of 1 to 5 mm in order to avoid an anxiety that the hook member 16 might deteriorate the desired stretchability and flexibility of the rear wing 12. Preferably at least three hook assemblies 21 are arranged in the transverse direction A so that the front and rear waist regions 6, 7 may be firmly connected together when the diaper 1 is worn. A plurality of the hook assemblies 21 spaced apart one from another by the distance L allows the respective rear wings 12 to be smoothly curved in a wearer's waist surrounding direction indicated by a double-headed arrow C in Fig. 2 substantially without an affection by the hook members 16 provided on the respective rear wings 12. In addition, the hook members 16 are engaged with the loop member 17 as the rear wings 12 are being stretched in the transverse direction A and therefore each pair of the adjacent hook assemblies 21 can be further spaced apart from each other by the distance L enough to protect the flexibility of the rear wings 12 from be affected by the hook members 16.

[0014]

Fig. 3 is a partial view showing a diaper 1 according to a second embodiment of the invention similar to the first embodiment of the invention in Fig. 1. In this diaper 1, each of the hook assemblies 21 constituting the hook member 16 includes the base sheet 22 having a circular planar shape. One or more hooks 23 rise up on this base sheet 22. A plurality of the hook assemblies 21 are spaced apart one from another not only in the transverse direction A but also in the longitudinal direction B. It is unlikely that these hook assemblies 21 might deteriorate the elastic stretchability in the transverse direction as well as in the longitudinal direction, which is desired for the rear wings 12.

[0015]

Figs. 4 and 5 illustrate a third embodiment of the invention wherein Fig. 4 partially shows a diaper similar to that of Fig. 1 and Fig. 5 is a sectional view taken along the line V-V in Fig. 4. Fig. 5 illustrates the rear wing 12 in its non-stretched state (A) and in its stretched state (B). In the hook member 16 provided on the rear wing 12 of this diaper 1, the individual base sheets 22 carrying thereon the individual hook assemblies 21 are spaced apart one from another in the transverse direction and, in this state, bonded to the carrier sheet 31 by means of adhesives 32. The carrier sheet 31 is,

in turn, bonded to the rear wing 12 by means of adhesives 24 applied on this carrier sheet 31 at its zones immediately underlying the respective hook assemblies 21. The carrier sheet 31 is non-stretchable and not bonded to the rear wing 12 between each pair of the adjacent hook assemblies 21, 21. Between each pair of the adjacent hook assemblies 21, 21, the carrier sheet 31 is provided with tear-off lines 33 extending in the longitudinal direction B. The torn-off lines 33 may be provided in the form of perforations or slits along which the carrier sheet 31 can be easily torn off as the rear wing 12 is pulled in the transverse direction A. The carrier sheet 31 torn off along the respective torn-off lines 33 is shown in Fig. 5 (B). The hook member 16 shown in Fig. 5 (A) not only provides the same effect as the hook member 16 shown in Figs. 1 through 3 but also allows the diaper 1 to be manufactured in a sequence such that the individual hook assemblies 21 are previously bonded to the carrier sheet 31 and then this carrier sheet 31 is bonded to the rear wing 12. Such sequence facilitates the hook assemblies 21 to be bonded to the rear wing 12 even if these assemblies 21 are relatively small.

[0016]

In the diaper 1 illustrated herein, the respective members such as the topsheet 2, the backsheet 3 and the core

4 may be formed using stock materials well known to those skilled in the art. The outermost layer of the backsheet 3 may be formed by nonwoven fabrics, more preferably by relatively bulky nonwoven fabrics to eliminate the loop member 17 as found in Fig. 1 because the hooks of the hook member 16 can be releasably engaged with such nonwoven fabrics. If the front wings 11 are formed by such nonwoven fabrics, the hooks 23 can be releasably engaged also with the front wings 11. The rear wings 12 may be formed, for example, using nonwoven fabrics containing therein elastic fibers or films made of plastic elastomers. The carrier sheet 31 may be formed, for example, using materials of plastic film, fabric or paper in which a molecular chain or fiber is oriented in the longitudinal direction B. In this case, the torn-off lines 33 may be eliminated.

[0017]

The present invention having been described with respect to the disposable diaper as the embodiments is applicable also to the other various wearing articles such as disposable gowns used in medical site and bandages.

CLAIMS:

1. A wearing article comprising first and second surfaces opposed to each other when worn, said first and second surfaces releasably being connected to each other by means of a mechanical fastener which comprises a hook member and a loop member, said article being characterized in that:

said first surface is provided in a predetermined region with said hook member and said second surface is provided in a predetermined region with said loop member;

said first surface is elastically stretchable at least in one direction in said predetermined region and in a vicinity thereof;

said hook member comprises a plurality of hook assemblies each comprising a relatively stiff base sheet and at least one hook rising up from said base sheet; and

said plurality of hook assemblies are attached to said first surface in said predetermined region so that said hook assemblies are spaced apart one from another in said one direction, said plurality of hook assemblies being provided on a non-stretchable carrier sheet which is attached to said first surface in said predetermined region, said carrier sheet being tearable between adjacent hook assemblies in said one direction as said carrier sheet is pulled in said one direction.

2. The wearing article according to Claim 1, wherein said plurality of hook assemblies attached to said first surface are spaced one from another also in a second direction crossing said one direction.

3. The wearing article according to any one of Claims 1 through 2, wherein said wearing article is an open type diaper in which said first surface corresponds to an inner surface of said diaper, said predetermined region corresponds to each of the wings formed in said diaper and said one direction corresponds to a transverse direction of said diaper in said wings.

4. The wearing article according to any one of Claims 1 through 3, wherein said second surface corresponds to an outer surface of said wearing article.

5. The wearing article according to Claim 3 or 4, wherein said first surface and said second surface correspond to inner surface and outer surface of the wings of said wearing article formed from an elastically stretchable nonwoven fabric serving also as said loop member.

6. The wearing article according to any one of Claims 1 through 5, wherein said base sheet of said hook assembly is attached to said first surface over an area in a range of 2 to 200 mm^2.

7. The wearing article according to any one of Claims 1 through 6, wherein said plurality of hook assemblies are spaced apart one from another by a distance in a range of 1 to 5 mm in said one direction.

FIG.1

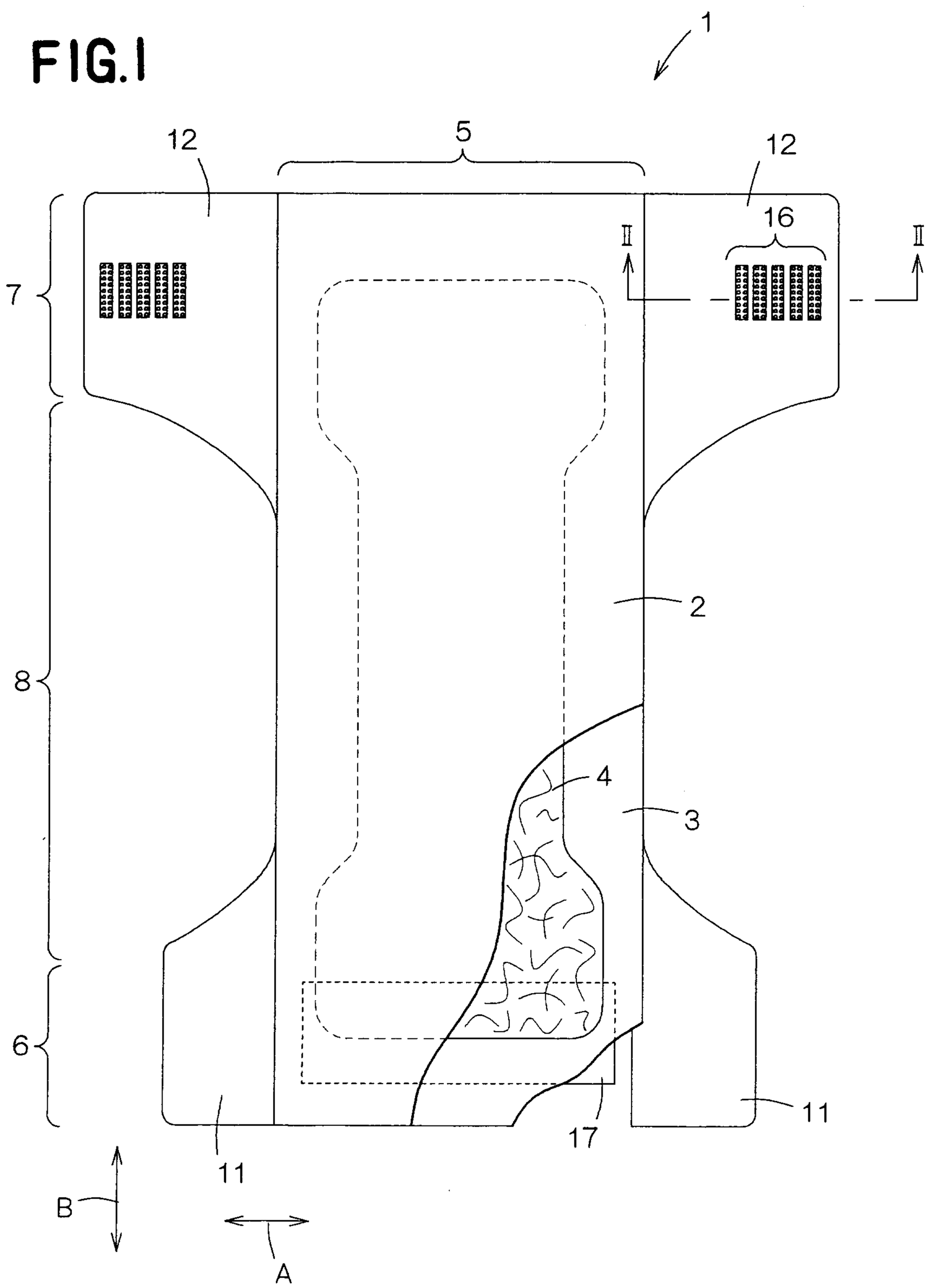


FIG.2

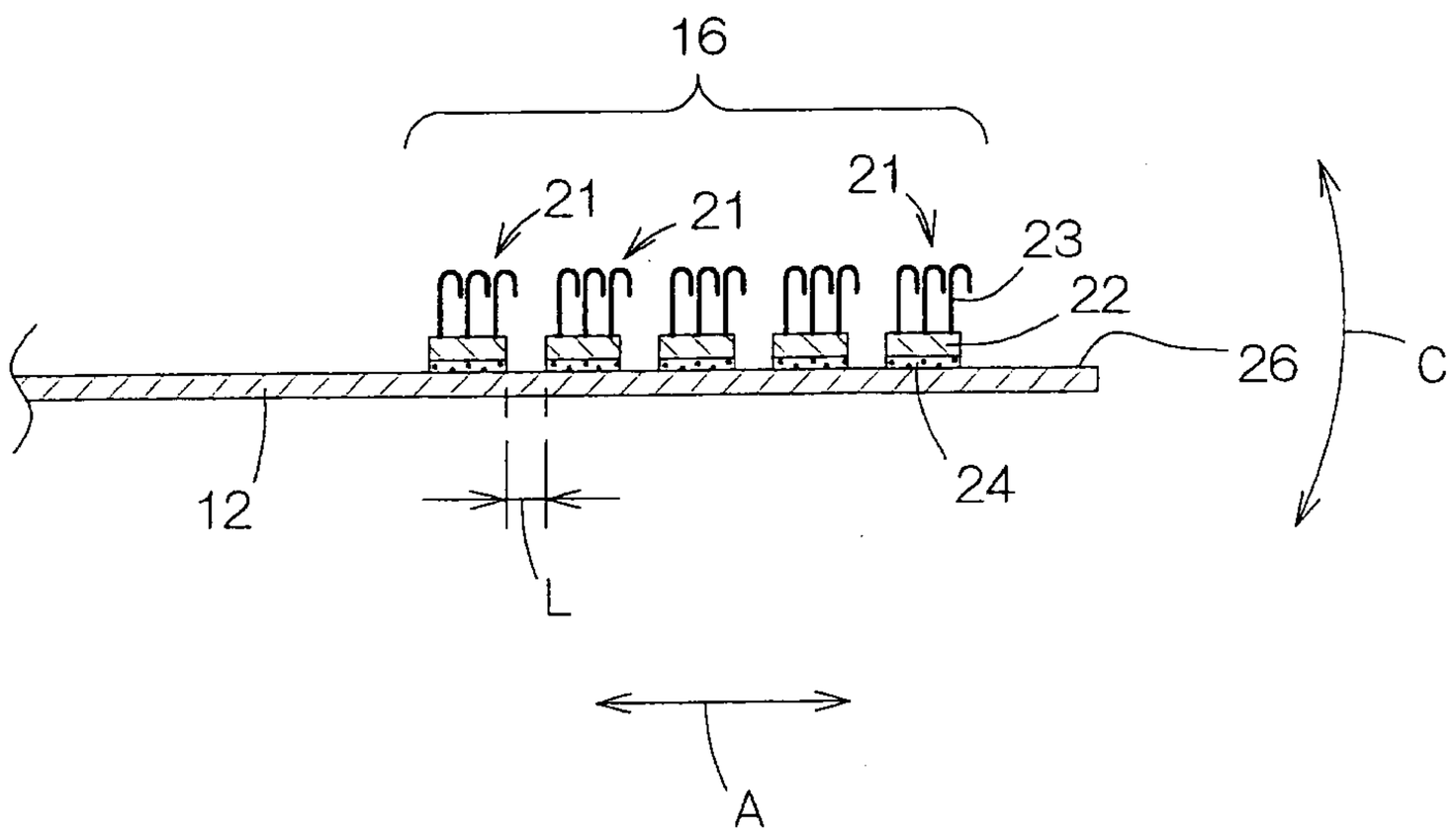


FIG.3

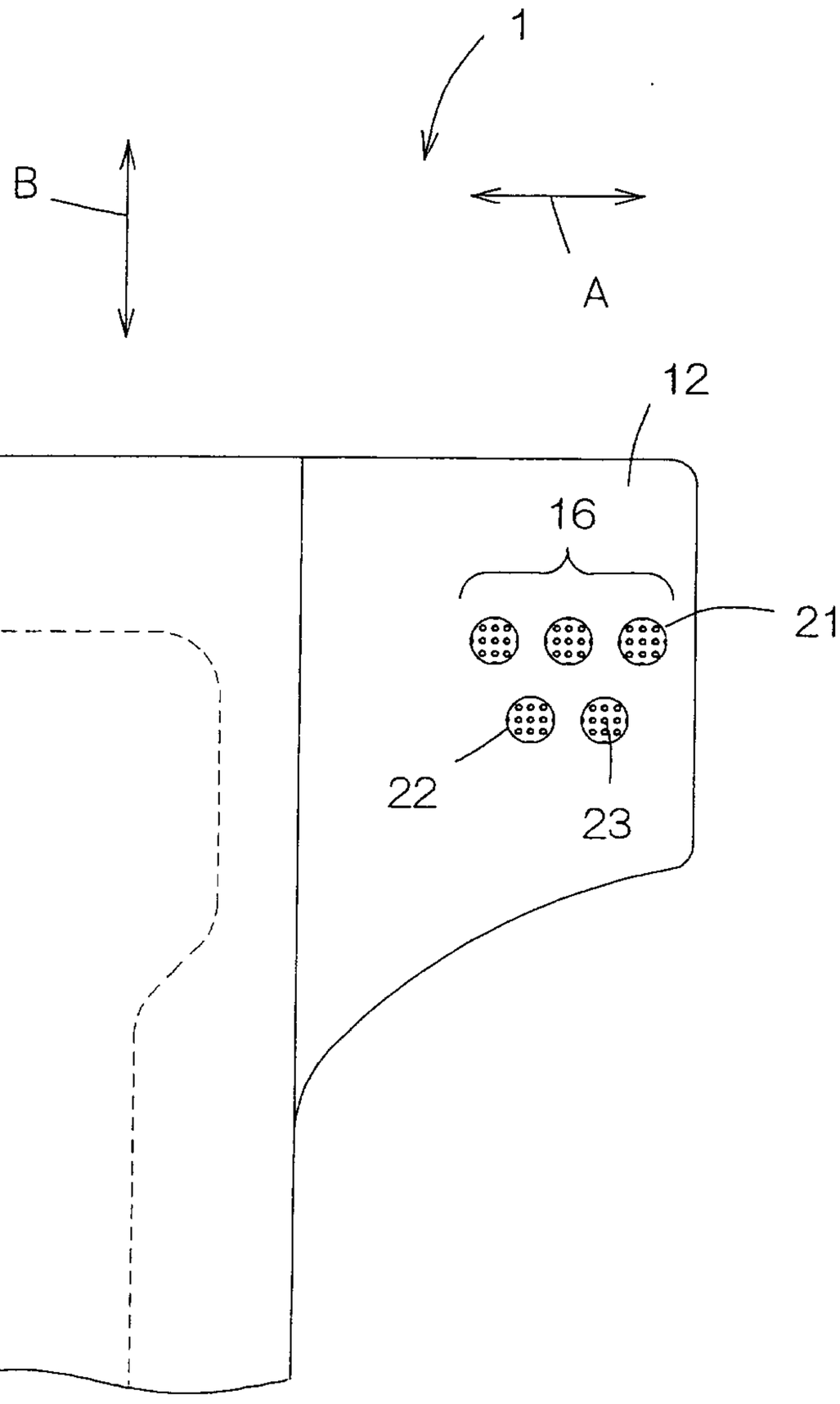


FIG.4

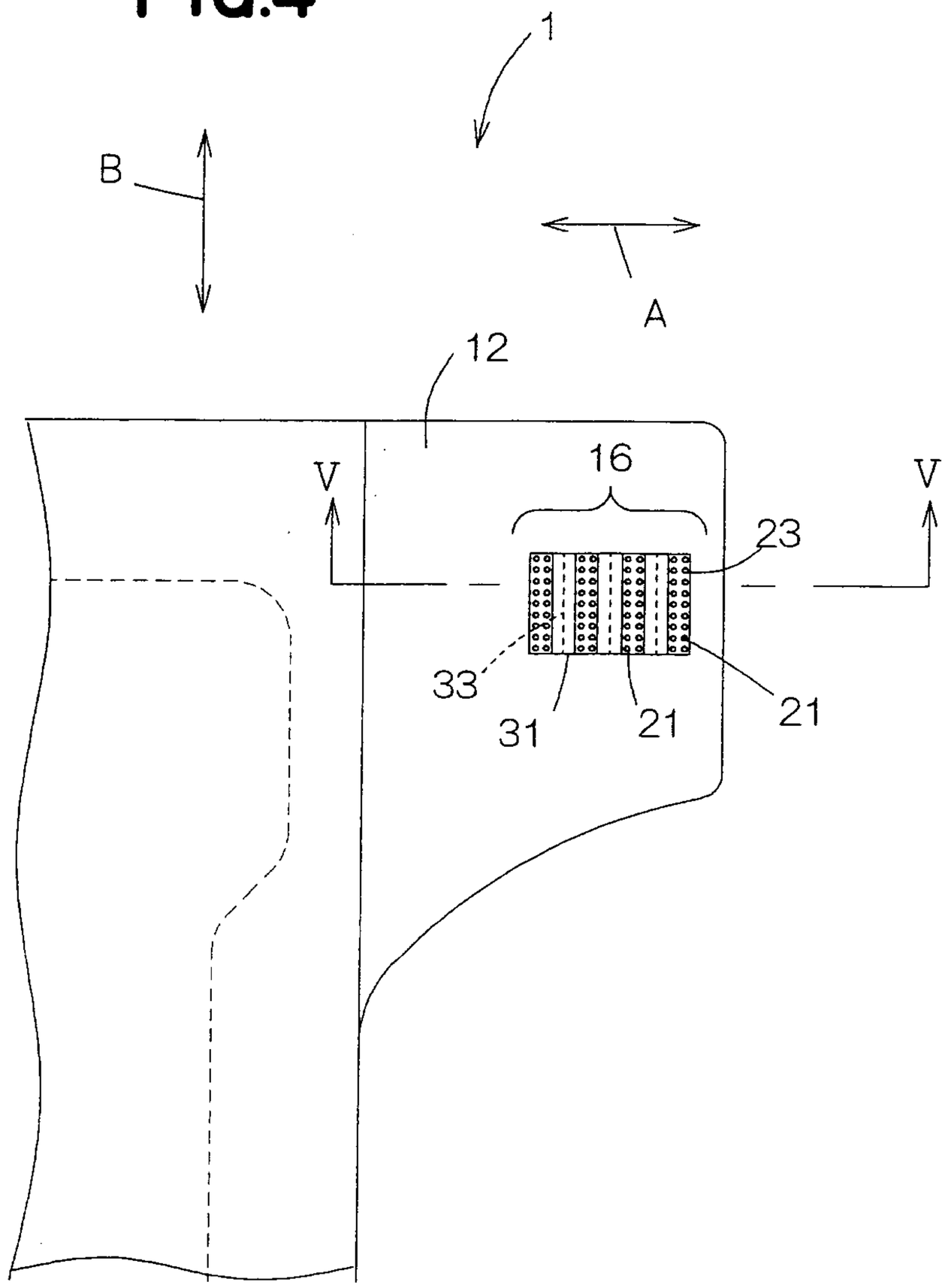


FIG.5A

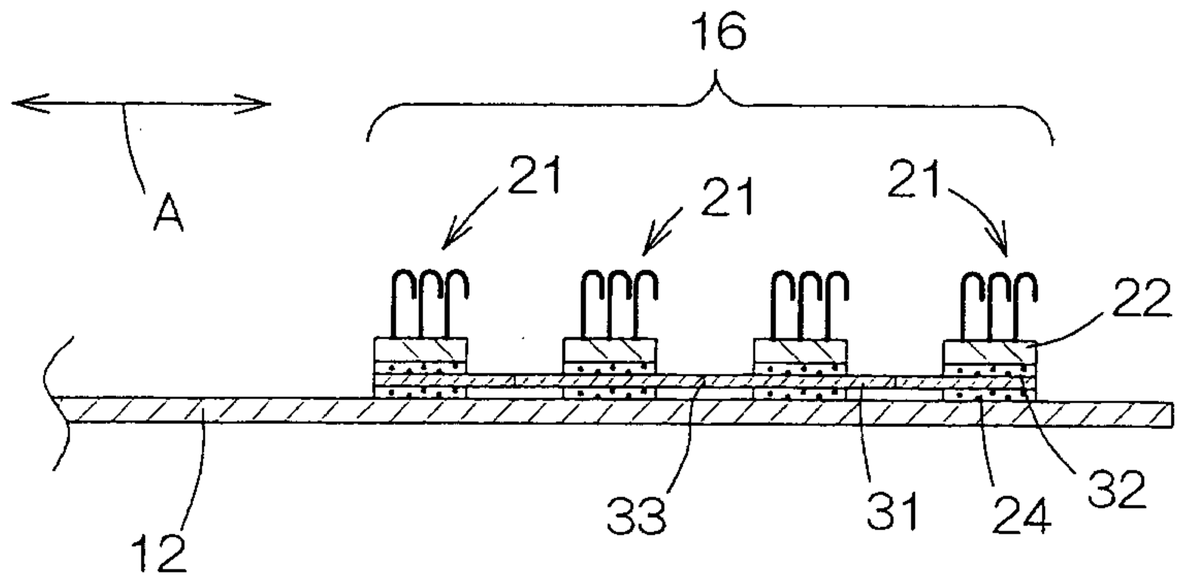
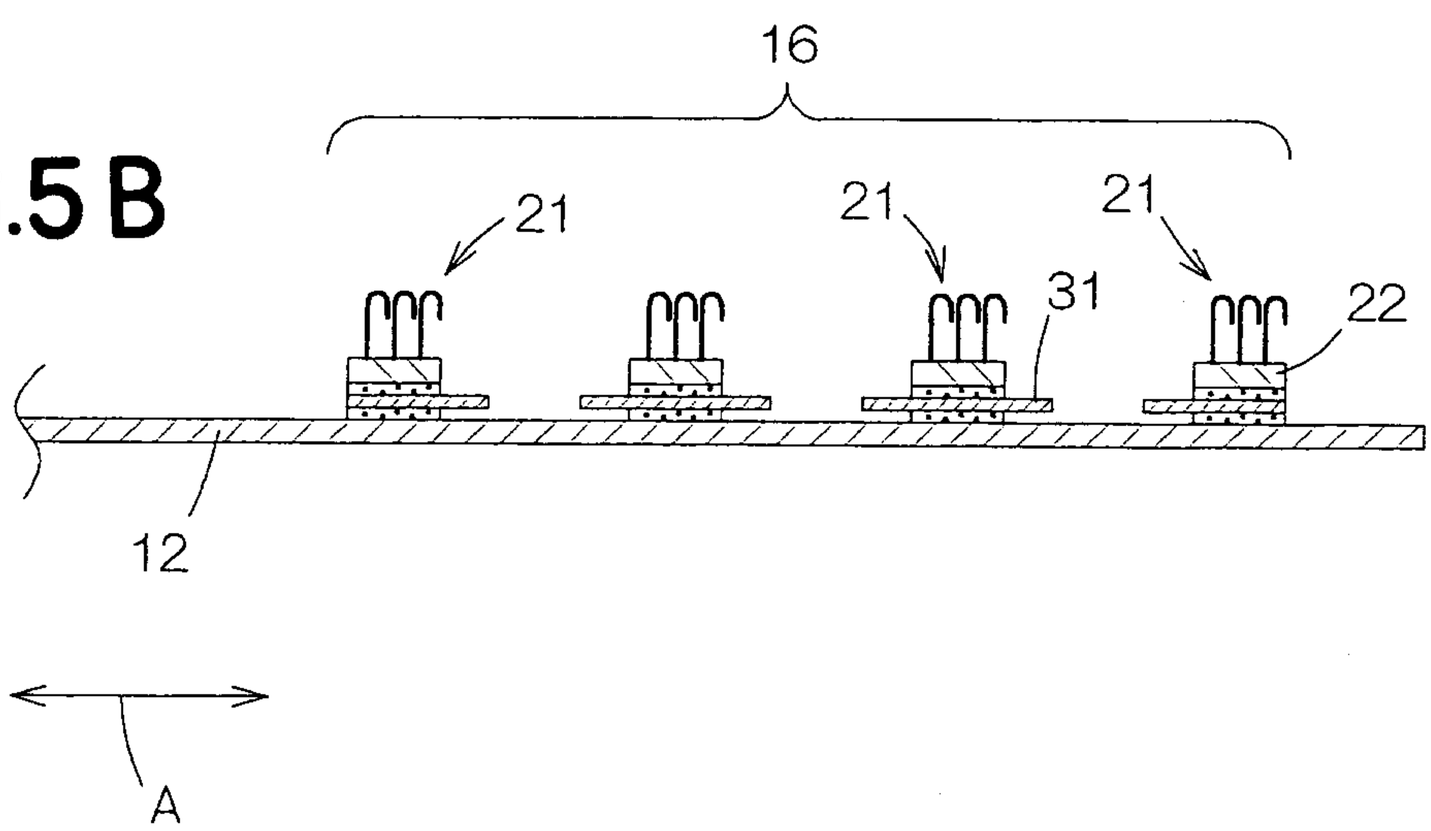
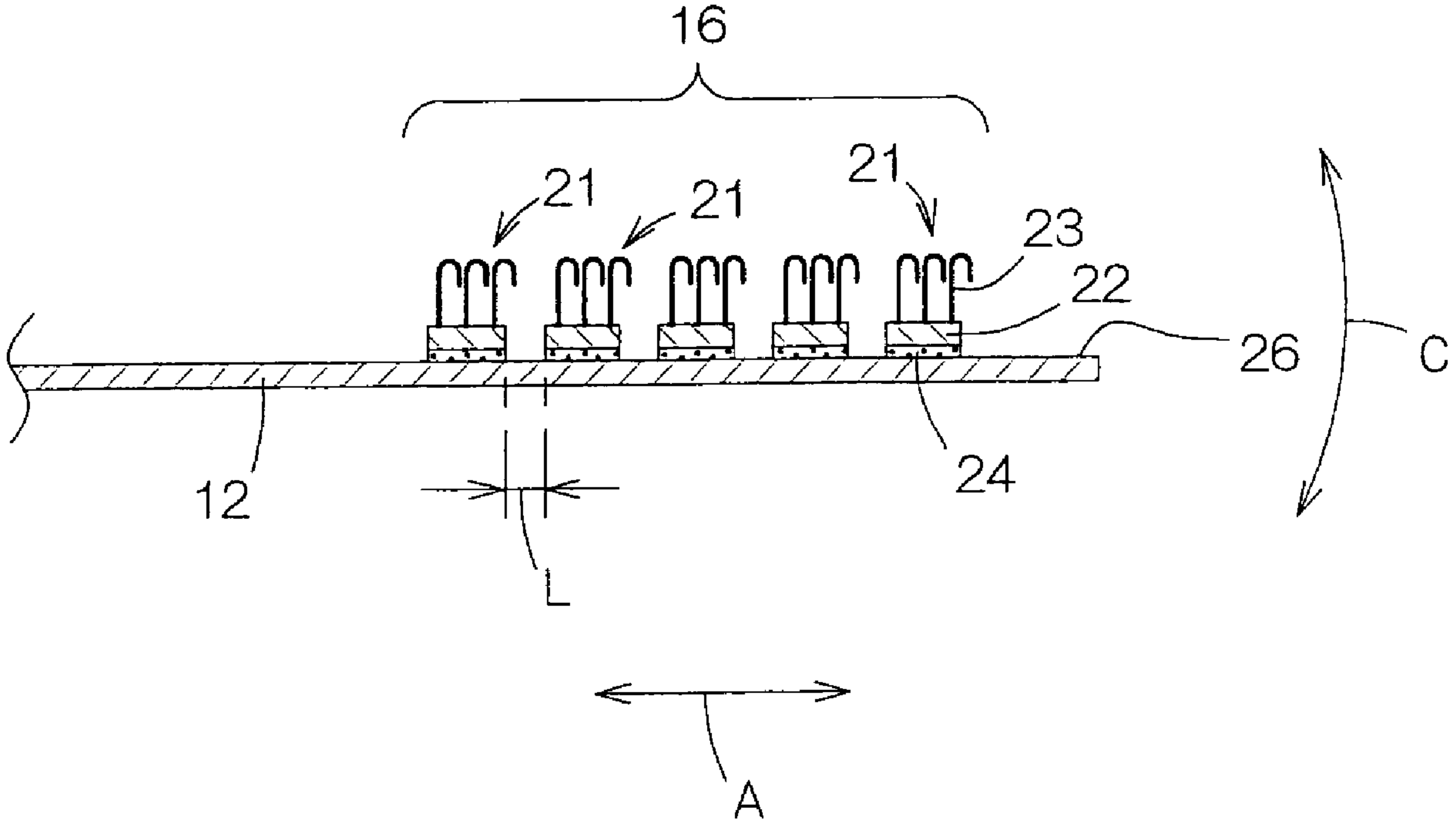


FIG.5B

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