



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**19.08.2009 Bulletin 2009/34**

(51) Int Cl.:  
**E06B 9/262 (2006.01)**

(21) Application number: **09250352.3**

(22) Date of filing: **12.02.2009**

(84) Designated Contracting States:  
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK TR**  
Designated Extension States:  
**AL BA RS**

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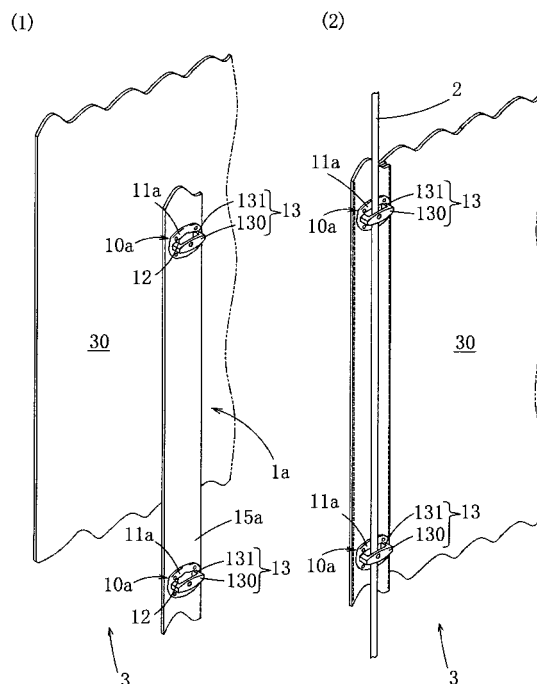
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(54) **Guide-ring tape, curtain employing the tape, and structure for attaching guide-ring tape to curtain fabric**

(57) A guide-ring tape (1a) has guide-ring units (10a) which are injection molded onto tape through-holes (150) aligned along a tape substrate (15a). Each of the guide-ring units (10a) has a base (11a) and a guide ring (13) that is integrated with a front surface of the base. The tape substrate (15a) is attached to a curtain (30) and a pull cord (2) passes through the guide rings (13).

The guide ring tape (1a) is highly durable, easily manufacturable, and inexpensive and entanglement of the guide-ring units (10a) with the pull cord (2) is prevented when the curtain (30) is to be cleaned. The guide-ring units (10a) can be attached in a simple manner to the cleaned curtain (30), and the external appearance can be properly preserved.

Fig.1



## Description

### Technical Field

[0001] The present invention relates to a guide-ring tape in which guide rings for guiding a pull cord of a curtain are aligned on a tape substrate; a curtain (such as a roman-shade-type curtain provided with a pull cord) provided with the guide-ring tape; and a structure for attaching the guide-ring tape to a curtain fabric, the structure being provided with the guide rings, which are a means for guiding the pull cord that acts as an opening and closing means of the curtain.

### Background Art

[0002] As is well-known, a roman-shade-type curtain is raised and opened by pulling a cord. Snap fasteners equipped with guide rings are aligned on, e.g., the lateral edge parts of the curtain in order to allow the pull cord to move smoothly. Currently some of the snap fasteners equipped with guide rings are attached directly to the curtain, but since this operation requires labor, a so-called snap tape is also employed. In the snap tape, snap buttons are aligned at fixed intervals on a long tape.

[0003] A well-known example of the aforementioned snap tape is a tape in which rings are provided in contoured fashion at the required intervals to one side of a tape assembly, wherein the curtain-raising auxiliary tape is **characterized in that** mating parts for attaching the tape assembly to ring attachments are provided as molded plastic articles to the ring, the ring attachments on the tape assembly are made into plastic-molded female mating parts that correspond with male mating parts and are formed on the tape assembly by molding, and an engagement mechanism that can be forcibly disengaged is provided to the fitting surfaces of the two types of mating parts (see, e.g., Patent Document 1).

[0004] Patent Document 1: Japanese Utility Model Application Publication No. 63-27185

[0005] The invention according to Patent Document 1 is configured so that female snap fasteners made of a synthetic resin are arranged on a tape, and pull-cord guide rings are formed on male snap fasteners for engaging with the female snap fasteners, and this configuration continues to enjoy wide use. In the configuration according to Patent Document 1, the female snap fasteners are arranged on the tape, and all of the pull-cord guide rings engaged with the female snap fasteners must be unfastened from the female snap fasteners when the curtain fabric is to be cleaned or at other times.

[0006] The pull-cord guide rings removed from the female snap fasteners are prevented by pull-cord retainers from being separated from the pull cord, but the rings fall along the pull cord to the lowest end of the pull cord, and the pull-cord guide rings are gathered together haphazardly. The pull-cord guide rings gathered together at the lowest end of the pull cord must therefore be individually

pulled up from the lowest end of the pull cord and then painstakingly attached to the female snap fasteners in order to reattach the male connectors of the pull-cord guide rings to the female snap fasteners attached to the curtain fabric.

### Summary of the Invention

[0007] There is a need for a highly durable, easily manufacturable, and inexpensive guide-ring tape in which the pull cord and the curtain fabric can be detached in a simple manner and entanglement of the pull-cord guide rings with the pull cord can be prevented when the curtain fabric is to be cleaned, in which the pull-cord guide rings can be attached in a simple manner to the cleaned curtain, and in which the external appearance can be properly preserved. There is also a need for a curtain provided with the guide-ring tape, and a structure for attaching the guide-ring tape to a curtain fabric.

[0008] According to a first aspect, the present invention provides a guide-ring tape **characterized in that** guide-ring units are formed by injection molding on tape through-holes aligned on a tape substrate, each of the guide-ring units being provided with a base and a guide ring that is integrated with a front surface of the base; and a basal through-hole is formed in the base.

[0009] A stepped coupler may be formed on at least a part of an inner wall surface of the basal through-hole.

[0010] The tape substrate may be a clear mesh material.

[0011] According to a second aspect, the present invention provides a curtain characterized in having a configuration wherein a guide-ring tape in accordance with the first aspect of the present invention is attached to a curtain fabric; and a pull cord is passed through the guide rings of the guide-ring tape.

[0012] According to a third aspect, the present invention provides a curtain **characterized in that** a snap tape provided with male connectors for engaging with the basal through-holes of a guide-ring tape in accordance with the first aspect of the present invention is attached to a curtain fabric; and the basal through-holes of the guide-ring tape and the male connectors of the snap tape are provided to be capable of attachment and detachment, a pull cord being passed through the guide rings of the guide-ring tape.

[0013] According to a fourth aspect, the present invention provides a curtain **characterized in that** snap buttons provided with male connectors for engaging with the basal through-holes of a guide-ring tape in accordance with the first aspect of the present invention are (directly) attached to a curtain fabric; and the basal through-holes of the guide-ring tape and the male connectors of the snap buttons are provided to be capable of attachment and detachment, a pull cord being passed through the guide rings of the guide-ring tape.

[0014] According to a fifth aspect, the present invention provides a structure for attaching a guide-ring tape to a

curtain fabric, **characterized in that** a back-surface side of the tape substrate of a guide-ring tape in accordance with the first aspect of the present invention is a side contacting the curtain fabric; and the tape substrate is attached to the curtain fabric.

**[0015]** According to a sixth aspect, the present invention provides a structure for attaching a guide-ring tape to a curtain fabric, characterized in comprising a guide-ring tape in accordance with the first aspect of the present invention, and a snap tape in which snap buttons having male connectors for engaging with the basal through-holes of the guide-ring tape are aligned on a curtain-side tape substrate, wherein the snap tape is attached to the curtain fabric; and the basal through-holes of the guide-ring tape through which the pull cord passes are capable of engaging and disengaging with the male connectors of the snap tape, whereby the pull cord can be attached to and detached from the curtain fabric.

**[0016]** According to a seventh aspect, the present invention provides a structure for attaching a guide-ring tape to a curtain fabric, characterized in comprising a guide-ring tape in accordance with the first aspect of the present invention, and snap buttons having male connectors for engaging with the basal through-holes of the guide-ring tape, wherein the snap buttons are attached to the curtain fabric; and the basal through-holes of the guide-ring tape through which the pull cord passes are capable of engaging and disengaging with the male connectors of the snap buttons attached to the curtain fabric, whereby the pull cord can be attached to and detached from the curtain fabric.

### Effects of the Invention

**[0017]** According to the invention as cited in claim 1, there is provided a guide-ring tape **characterized in that** guide-ring units are formed by injection molding on tape through-holes aligned on a tape substrate, each of the guide-ring units being provided with a base and a guide ring that is integrated with a front surface of the base; and a basal through-hole is formed in the base, allowing the guide rings to be formed on the front side of the base extremely easily and inexpensively.

**[0018]** The guide-ring tape is attached directly to the curtain, whereby the curtain can be cleaned in a simple manner merely by pulling out the pull cord passed through the guide rings. Attaching the tape to the curtain is very convenient because the pull cord need only be passed through the guide-ring units without the units falling down.

**[0019]** The basal through-holes formed along with the formation of the guide rings can be made to function as female engagement holes of the snap buttons, and can be applied to the configuration disclosed in claim 6, 7, 9, or 10.

**[0020]** According to the invention as cited in claim 2, there is provided a stepped coupler formed on at least a part of an inner wall surface of the basal through-holes

in the configuration according to the invention as cited in claim 1, whereby the part that interlocks with the corresponding male connector thereby acts as the stepped coupler when the basal through-holes function as female engagement holes, allowing a configuration to be obtained in which the tips of the male connectors do not protrude into the holes of the guide rings through which the pull cord passes, and allowing the pull cord to be inserted in a simple manner. The pull cord and the tips of the male connectors do not rub against each other, and the durability of the pull cord is therefore not reduced by engagement with the male connectors.

**[0021]** According to the invention as cited in claims 3 and 4, another aspect, which is that the tape substrate is a clear mesh material, is added to the configuration of claim 2, for which reason the curtain can be viewed through the tape substrate when the substrate is attached to the curtain, and the tape substrate is therefore made very inconspicuous and provides for improved aesthetic appeal. This effect can be further enhanced by using a lace-stitched curtain.

**[0022]** According to the invention as cited in claims 5 and 8, there is provided a configuration in which the guide-ring tape of the invention as cited in claim 1, 2, 3, or 4 is attached to the curtain fabric, and the pull cord is passed through the guide rings of the guide-ring tape, whereby the curtain can be cleaned in a simple manner merely by pulling out the pull cord passed through the guide rings when the curtain fabric is to be cleaned. The cleaned curtain fabric can also be attached in a simple manner merely by passing the cord through the guide rings without performing the cumbersome operation of individually pulling up each conventional pull-cord guide ring gathered at the lowest end of the pull cord from the lowest end of the pull cord and then attaching the rings to female snap fasteners.

**[0023]** According to the invention as cited in claims 6 and 9, there is provided a configuration in which a snap tape provided with male connectors for engaging with the basal through-holes of the guide-ring tape according to claim 1, 2, 3, or 4 is attached to a curtain fabric, and the basal through-holes of the guide-ring tape and the male connectors of the snap tape are provided to be capable of attachment and detachment, a pull cord being passed through the guide rings of the guide-ring tape, whereby the male connectors of the snap tape attached to the curtain fabric can be detached from the basal through-holes of the guide-ring tape merely by using the fingers to grasp and pull apart the tape substrate of the guide-ring tape and the tape substrate of the snap tape when the curtain fabric is to be cleaned, allowing the curtain fabric to be detached using an extremely simple operation.

**[0024]** When the curtain fabric is attached after cleaning, the guide rings of the guide-ring tape are fixed to the tape substrate and are therefore constantly maintained in the form of a guide-ring tape without being allowed to fall along the pull cord to the lowest end of the pull cord.

Accordingly, when the basal through-holes of the guide-ring tape and the male connectors of the snap tape attached to the curtain are fastened together in one place, the basal through-holes of the guide-ring tape and the male connectors of the snap tape in other locations are held in overlapping (corresponding) positions and can be fastened in a simple manner.

**[0025]** According to the invention as cited in claims 7 and 10, there is provided a configuration in which snap buttons provided with male connectors for engaging with the basal through-holes of the guide-ring tape according to claim 1, 2, 3, or 4 are directly attached to a curtain fabric, and the basal through-holes of the guide-ring tape and the male connectors of the snap buttons are provided to be capable of attachment and detachment, a pull cord being passed through the guide rings of the guide-ring tape, whereby the male connectors of the snap buttons attached to the curtain can be detached from the basal through-holes of the guide-ring tape merely by using the fingers to grasp and pull apart the curtain fabric and the tape substrate of the guide-ring tape when the curtain fabric is to be cleaned, allowing the curtain fabric to be detached using an extremely simple operation.

**[0026]** When the curtain fabric is attached after cleaning, the guide rings of the guide-ring tape are fixed to the tape substrate and are therefore constantly maintained in the form of a guide-ring tape without being allowed to fall along the pull cord to the lowest end of the pull cord. Accordingly, when the basal through-holes of the guide-ring tape and the male connectors of the snap buttons attached to the curtain are fastened together in one place, the basal through-holes of the guide-ring tape and the male connectors of the snap buttons in other locations are held in overlapping (corresponding) positions and can be fastened in a simple manner.

### Brief Description of the Drawings

#### **[0027]**

FIG. 1 is (1) a perspective view showing the state before fastening and (2) a perspective view showing the state after fastening for the curtain fabric of and the guide-ring tape of a curtain according to Example 1 of the present invention;

FIG. 2 is (1) a front view and (2) a rear view showing the guide-ring tape according to Example 1 of the present invention;

FIG. 3 is (1) a plan view and (2) a right-side view showing the guide-ring tape according to Example 1 of the present invention;

FIG. 4 is (1) a cross-sectional view along line A-A and (2) a cross-sectional view along line B-B in FIG. 2(1) showing the guide-ring tape according to Example 1 of the present invention;

FIG. 5 is (1) an enlarged front view and (2) an enlarged rear view showing a guide-ring unit of the guide-ring tape according to Example 1 of the

present invention;

FIG. 6 is (1) an enlarged plan view and (2) an enlarged right-side view showing a guide-ring unit of the guide-ring tape according to Example 1 of the present invention;

FIG. 7 is (1) a C-C cross-sectional view and (2) a D-D cross-sectional view in FIG. 5(1) showing a guide-ring unit of the guide-ring tape according to Example 1 of the present invention;

FIG. 8 is (1) a perspective view showing the state before fastening and (2) a perspective view showing the state after fastening for a curtain, and a structure for attachment to a curtain fabric using a guide-ring tape, according to Example 2 of the present invention;

FIG. 9 is a diagram showing a curtain, and the back surface of the curtain having a structure for attaching the guide-ring tape to a curtain fabric, according to Example 2 of the present invention;

FIG. 10 is a partial enlarged cross-sectional view showing the curtain, and the structure for attaching the guide-ring tape to a curtain fabric, according to Example 2 of the present invention;

FIG. 11 is (1) a front view and (2) a rear view showing the fastened state of the guide-ring tape and the snap tape of the curtain according to Example 2 of the present invention;

FIG. 12 is (1) a plan view (the bottom view is symmetrical with the plan view and is omitted) and (2) a right-side view (the left-side view is symmetrical with the right-side view and is omitted) showing the fastened state of the guide-ring tape and the snap tape according to Example 2 of the present invention;

FIG. 13 is (1) an E-E cross-sectional view and (2) an F-F cross-sectional view in FIG. 11(1) showing the fastened state of the guide-ring tape and the snap tape according to Example 2 of the present invention;

FIG. 14 is (1) a front view and (2) a rear view showing the guide-ring tape according to Example 2 of the present invention;

FIG. 15 is (1) a plan view (the bottom view is symmetrical with the plan view and is omitted) and (2) a right-side view (the left-side view is symmetrical with the right-side view and is omitted) showing the guide-ring tape according to Example 2 of the present invention;

FIG. 16 is (1) a G-G cross-sectional view and (2) an H-H cross-sectional view in FIG. 14(1) showing the guide-ring tape according to Example 2 of the present invention;

FIG. 17 is (1) an enlarged front view and (2) an enlarged rear view showing the fastened state of a guide-ring unit of the guide-ring tape and a snap button of the snap tape according to Example 2 of the present invention;

FIG. 18 is (1) an enlarged plan view (the enlarged bottom view is symmetrical with the enlarged plan view and is omitted) and (2) an enlarged right-side

view (the enlarged left-side view is symmetrical with the enlarged right-side view and is omitted) showing the fastened state of a guide-ring unit of the guide-ring tape and a snap button of the snap tape according to Example 2 of the present invention;

FIG. 19 is (1) an enlarged J-J cross-sectional view and (2) an enlarged K-K cross-sectional view in FIG. 17(1) showing the fastened state of a guide-ring unit of the guide-ring tape and a snap button of the snap tape according to Example 2 of the present invention; FIG. 20 is (1) an enlarged front view and (2) an enlarged rear view showing a snap button of the snap tape according to Example 2 of the present invention; FIG. 21 is (1) an enlarged plan view (the enlarged bottom view is symmetrical with the enlarged plan view and is omitted) and (2) an enlarged right-side view (the enlarged left-side view is symmetrical with the enlarged right-side view and is omitted) showing a snap button of the snap tape according to Example 2 of the present invention;

FIG. 22 is (1) an enlarged L-L cross-sectional view and (2) an enlarged M-M cross-sectional view in FIG. 20(1) showing a snap button of the snap tape according to Example 2 of the present invention; and FIG. 23 is (1) a perspective view showing the state before fastening and (2) a perspective view showing the state after fastening for a curtain, as well as for the snap fasteners on the curtain side and the guide-ring tape, which constitute a structure for attaching the guide-ring tape to a curtain fabric, according to Example 3 of the present invention.

### Embodiments of the Invention

**[0028]** According to the present invention there is implemented a guide-ring tape in which bases are injection molded from front and back surfaces on tape through-holes aligned on a tape substrate composed of a clear mesh material, at which time basal through-holes are formed passing through the center of each of the bases from the back-surface side, and guide rings are formed integrally on the front side of the bases, whereby manufacture can be made extremely simple and inexpensive, and the curtain fabric can be easily attached or removed by withdrawing the pull cord from the guide rings or using snap buttons having male connectors corresponding to the basal through-holes formed in the bases of the guide-ring tape. The guide-ring tape is made very inconspicuous when attached to the curtain, aesthetic appeal can be improved, and excellent durability over long periods of time can also be obtained.

**[0029]** According to the present invention, there is also implemented a curtain configured so that the guide-ring tape is attached to the curtain fabric, and the pull cord is passed through the guide rings of the guide-ring tape, whereby the curtain can be cleaned in a simple manner merely by untying the bottom end of the pull cord passed through the guide rings and pulling out the pull cord when

the curtain fabric is to be cleaned, and the cleaned curtain fabric can also be attached in a simple manner merely by passing the cord through the guide rings and tying the cord to the guide ring on the bottom end without performing the cumbersome operation of individually pulling up each conventional pull-cord guide ring gathered at the lowest end of the pull cord from the bottom end of the pull cord and attaching the rings to female snap fasteners.

**[0030]** According to the present invention, there is further implemented a curtain and a structure for attaching a guide-ring tape to a curtain fabric in which snap buttons provided with male connectors for engaging with the basal through-holes of the aforescribed guide-ring tape are attached to the curtain fabric, and the basal through-holes of the guide-ring tape and the male connectors of the snap buttons are provided to be capable of attachment and detachment, a pull cord being passed through the guide rings of the guide-ring tape. This configuration is advantageous in that the male connectors of the snap buttons attached to the curtain fabric can be detached from the basal through-holes of the guide-ring tape merely by using the fingers to grasp and pull apart the tape substrate of the snap tape or the curtain fabric and the tape substrate of the guide-ring tape, allowing the curtain fabric to be detached using an extremely simple operation when the curtain fabric is to be cleaned. When the curtain fabric is attached after cleaning, the guide rings of the guide-ring tape are fixed to the tape substrate and are therefore constantly maintained in the form of a guide-ring tape without being allowed to fall along the pull cord to the lowest end of the pull cord. Accordingly, when the basal through-holes of the guide-ring tape and the male connectors of the snap tape attached to the curtain are fastened together in one place, the basal through-holes of the guide-ring tape and the male connectors of the snap tape in other locations are held in overlapping (corresponding) positions and can be fastened in a simple manner.

**[0031]** FIG. 1 is (1) a perspective view showing the state before fastening and (2) a perspective view showing the state after fastening for the curtain fabric of and the guide-ring tape of a curtain according to Example 1 of the present invention. FIG. 2 is (1) a front view and (2) a rear view showing the guide-ring tape according to Example 1 of the same. FIG. 3 is (1) a plan view and (2) a right-side view showing the guide-ring tape according to Example 1 of the same (the left-side view is symmetrical and is omitted). FIG. 4 is (1) an A-A cross-sectional view and (2) a B-B cross-sectional view in FIG. 2(1). FIG. 5 is (1) an enlarged front view and (2) an enlarged rear view showing a guide-ring unit of the guide-ring tape according to Example 1 of the present invention. FIG. 6 is (1) an enlarged plan view and (2) an enlarged right-side view showing a guide-ring unit of the guide-ring tape according to Example 1 of the same. FIG. 7 is (1) a C-C cross-sectional view and (2) a D-D cross-sectional view in FIG. 5(1).

FIG. 8 is (1) a perspective view showing the state before

fastening and (2) a perspective view showing the state after fastening for a curtain, and a structure for attachment to a curtain fabric using a guide-ring tape, according to Example 2 of the present invention. FIG. 9 is a diagram showing a curtain, and the back surface of the curtain having a structure for attaching the guide-ring tape to a curtain fabric, according to Example 2 of the present invention. FIG. 10 is a partial enlarged cross-sectional view showing the curtain, and the structure for attaching the guide-ring tape to a curtain fabric, according to Example 2 of the same.

FIG. 11 is (1) a front view and (2) a rear view showing the fastened state of the guide-ring tape and the snap tape of the curtain according to Example 2. FIG. 12 is (1) a plan view (the bottom view is symmetrical with the plan view and is omitted) and (2) a right-side view (the left-side view is symmetrical with the right-side view and is omitted) showing the fastened state of the guide-ring tape and the snap tape according to Example 2 of the same. FIG. 13 is (1) an E-E cross-sectional view and (2) an F-F cross-sectional view in FIG. 11(1) showing the fastened state of the guide-ring tape and the snap tape according to Example 2 of the present invention. FIG. 14 is (1) a front view and (2) a rear view showing the guide-ring tape according to Example 2 of the same. FIG. 15 is (1) a plan view (the bottom view is symmetrical with the plan view and is omitted) and (2) a right-side view (the left-side view is symmetrical with the right-side view and is omitted) showing the guide-ring tape according to Example 2 of the same. FIG. 16 is (1) a G-G cross-sectional view and (2) an H-H cross-sectional view in FIG. 14(1) showing the guide-ring tape according to Example 2 of the present invention. FIG. 17 is (1) an enlarged front view and (2) an enlarged rear view showing the fastened state of a guide-ring unit of the guide-ring tape and a snap button of the snap tape according to Example 2 of the present invention. FIG. 18 is (1) an enlarged plan view (the enlarged bottom view is symmetrical with the enlarged plan view and is omitted) and (2) an enlarged right-side view (the enlarged left-side view is symmetrical with the enlarged right-side view and is omitted) showing the fastened state of a guide-ring unit of the guide-ring tape and a snap button of the snap tape according to Example 2 of the present invention. FIG. 19 is (1) an enlarged J-J cross-sectional view and (2) an enlarged K-K cross-sectional view in FIG. 17(1) showing the fastened state of a guide-ring unit of the guide-ring tape and a snap button of the snap tape according to Example 2 of the present invention.

FIG. 20 is (1) an enlarged front view and (2) an enlarged rear view showing a snap button of the snap tape according to Example 2 of the present invention. FIG. 21 is (1) an enlarged plan view (the enlarged bottom view is symmetrical with the enlarged plan view and is omitted) and (2) an enlarged right-side view (the enlarged left-side view is symmetrical with the enlarged right-side view and is omitted) showing a snap button of the snap tape according to Example 2 of the same. FIG. 22 is (1) an en-

larged L-L cross-sectional view and (2) an enlarged M-M cross-sectional view in FIG. 20(1) showing a snap button of the snap tape according to Example 2 of the same. FIG. 23 is (1) a perspective view showing the state before fastening and (2) a perspective view showing the state after fastening for a curtain, as well as for the snap fasteners on the curtain side and the guide-ring tape, which constitute a structure for attaching the guide-ring tape to a curtain fabric, according to Example 3 of the present invention.

**[0032]** The inventions according to the examples below are all configured so that a plurality of guide-ring units 10a are positioned in a vertical arrangement on a general roman-shade curtain 3. In each of the guide-ring units 10a, a guide ring is provided to a base. All of the examples are characterized by a guide-ring tape 1a and an attachment structure for the tape, as well as a curtain having the attachment structure. Well-known means are employed in all the examples below for the method of opening and closing in which a pull cord 2 is passed through aligned guide rings.

**[0033]** Among the examples given below, a guide-ring tape is attached directly to the curtain fabric in the curtain of the present invention in Example 1. Example 2 demonstrates a configuration in which snap buttons 10b indirectly attached to a curtain fabric 30, as well as guide-ring units 10a of a guide-ring tape 1a, can be freely fastened together or unfastened from each other on the curtain 3 of the present invention. Example 3 demonstrates a configuration in which the snap buttons 10b directly attached to the curtain 3, as well as the guide-ring units 10a of the guide-ring tape 1a can be freely fastened together or unfastened from each other.

**[0034]** The examples will be described in sequence below. The curtain provided by the present invention may be any curtain other than a roman-shade curtain as long as the curtain has a pull cord. In the notation used in the descriptions, items designated by a number followed by the letter "a" relate to the guide-ring tape 1a, and items designated by a number followed by the letter "b" relate to a snap tape 1b or to a snap button 10b attached on the curtain side.

(Example 1)

**[0035]** In a curtain according to Example 1 and in a structure for attaching the guide-ring units 10a to a curtain fabric according to Example 1 of the present invention, the guide-ring tape 1a is sewn directly to the curtain fabric 30, as shown in FIGS. 1 through 6.

**[0036]** The guide-ring tape according to Example 1 of the present invention has a configuration in which the guide-ring units 10a are aligned on a tape substrate 15a. More specifically, positioning holes 150, which are through holes, are formed at intervals of 10 cm on the long tape substrate 15a, which is composed of a mesh sheet of colorless, clear, heat-resistant synthetic fiber. Snap-molding dies (not shown) are fixed to the rims of

the positioning holes on the front and back surfaces of the tape substrate 15a using six front and six rear fixing pins. The guide-ring units 10a are formed by injection molding in the snap-molding dies. In the process, the resin that forms the guide-ring units 10a is melted into the narrow openings of the mesh sheet of the tape substrate 15a formed from the heat-resistant synthetic fiber, and the guide-ring units 10a are formed tightly attached to the tape substrate 15a.

**[0037]** Each of the guide-ring units 10a of the guide-ring tape 1a is composed of a base 11a and a guide ring 13 formed integrally on a base 11a. The base 11a has a width of about 10.5 mm, a depth of about 9 mm, and a thickness of about 2 mm, and is provided with a basal through-hole 12 in the center, as shown in FIGS. 1 through 6.

The guide ring 13 formed on the upper surface of the base 11a is composed of two legs 131, which rise to a height of about 3.2 mm facing each other on both sides of the basal through-hole 12, and a bridge 130 formed between the top ends of the legs 131. A stepped coupler 120 is formed in a location 1.05 mm from the bottom end of the base 11a on the inner wall of the basal through-hole 12. The stepped coupler 120 does not extend along the entire circumference of the inner wall, but is formed over a part of the circumference of the inner wall, as shown in FIGS. 7(1) and (2).

**[0038]** This configuration of the stepped coupler 120 is not used in Example 1, but is used as a part shared with the curtain according to Example 2, which is described hereinafter. However, the basal through-hole 12 has the configuration necessary for forming the guide ring 13 according to Example 1. To cause the basal through-hole 12 to continue uninterrupted from the back surface by the use of the die and to form the guide ring 13, the structure is designed to maintain the size sufficient to form the cord hole of the guide ring 13 and to allow the basal through-hole 12 to function as a female connector.

**[0039]** The pull cord 2 is passed through the guide-ring units 10a of the guide-ring tape 1a in Example 1, and the bottom end of the pull cord 2 is tied to the guide-ring unit 10a positioned at the lowest end of the guide-ring tape 1a. A configuration is adopted in which a plurality of the pull cords 2 are passed continuously through the guide rings 13 of the guide-ring units 10a, are led to guide rollers 4 positioned above the curtain 3 and through a hoisting lock mechanism (not shown), and are finally tied into a single cord. In this state, the other ends of the cords are attached to a pull tab 5.

**[0040]** The guide rings in Example 1 can be formed extremely easily and inexpensively on the front of the base by injection molding. A curtain provided with the guide-ring tape 1a can be cleaned in a simple manner merely by untying the pull cord tied to the lowest guide-ring unit 10a, and pulling out the pull cord passed through the guide rings. Attaching the tape to the curtain is very convenient because the pull cord need only be passed

through the guide-ring units without the units falling down.

(Example 2)

**[0041]** A curtain according to Example 2 and a structure for attaching the guide-ring units 10a to a curtain fabric according to Example 2 of the present invention are configured using a curtain-side snap tape 1b, which is sewn to the curtain fabric 30, and the guide-ring tape 1a, which is not sewn to the curtain fabric 30 and to which the pull cord 2 is attached, as shown in FIGS. 8 through 10.

**[0042]** The snap tape 1b has positioning holes formed at intervals of 10 cm in a long tape substrate 15b composed of a mesh sheet of colorless, clear, heat resistant fiber, as shown in FIGS. 14 through 16. Snap buttons 10b having male connectors are formed by the injection molding of the front and back surfaces of the rims of the positioning holes. The resin that forms the snap buttons 10b is therefore melted into the narrow openings in the mesh sheet of the tape substrate 15b formed from the heat-resistant synthetic fiber, and the snap buttons 10b are formed strongly attached to the tape substrates 15b.

**[0043]** The snap buttons 10b having male connectors are each provided with a male connector 14 in the center of a snap-button base 11b that has a width of about 10.5 mm, a depth of about 9 mm, and a thickness of about 3 mm, as shown in FIGS. 20 through 22. The male connector has a height of 2 mm from the top end of the snap-button base 11b. An expanded-diameter head part 140 is formed on the tip of the male connector 14. The expanded-diameter head part has a wider diameter than a column-shaped base part 141 that extends from the basal end to the tip. The bottom end of the diameter-expanded head part 140 is positioned 1.05 mm from the top end of the snap-button base 11b (the bottom end of the male connector 14).

**[0044]** In the configuration of the guide-ring tape 1a itself, the pull cord 2 is passed through the guide-ring units 10a of the guide-ring tape 1a, and the bottom end of the pull cord 2 is tied to the guide-ring unit 10a positioned at the lowest end of the guide-ring tape 1a. A configuration is adopted in which a plurality of the pull cords 2 are passed continuously through the guide rings 13 of the guide-ring units 10a, are led to the guide rollers 4 positioned above the curtain 3 and through a hoisting lock mechanism (not shown), and are finally tied into a single cord. In this state, the other ends of the cords are attached to the pull tab 5.

**[0045]** The pull cord 2 is mounted on the curtain 3 when the connectors of the snap tape 1b and the guide-ring tape 1a are fastened together. The configuration is such that the curtain 3 to which the tape substrates 15b of the snap tape 1b are sewn is removed from the pull cord 2 when the connectors of the snap tape 1b and the guide-ring tape 1a are unfastened from each other.

**[0046]** The guide-ring tape 1a used in Example 2 has the same configuration as the guide-ring tape according

to the aforescribed Example 1. Accordingly, each of the guide-ring units 10a of the guide-ring tape 1a is also the same as in Example 1, and the stepped coupler 120 is therefore formed at a position 1.05 mm from the bottom end of the base 11a on a part of the circumference of the inner wall of the basal through-hole 12. The other details of the configuration are also the same as the guide-ring tape 1a of Example 1.

**[0047]** Specifically, the same dimension is used for the height h of the male connectors 14 of the snap buttons 10b and the thickness dimension d of the snap-button bases 11a of the guide-ring units 10a (see FIG. 19(1)) in Example 2. The components of this structure are interlocked when the male connectors 14 are fit into the basal through-holes 12. Therefore, when the snap buttons 10b of the snap tape 1b and the snap-button bases 11a in the guide-ring units 10a of the guide-ring tape 1a are engaged, the top ends of the male connectors 14 of the snap buttons 10b are positioned on the same plane (i.e., are coplanar) with the top ends of the snap-button bases 11a of the guide-ring units 10a. This configuration can prevent the male connectors from interfering with the pull cord passed through the guide-ring units 10a, and ensure that the function of the guide-ring units 10a to guide the pull cord 2 is performed smoothly.

**[0048]** The above-described configuration dispenses with the need to untie and remove the cord during when the curtain according to Example 2 is to be cleaned. The curtain fabric 30 to which the snap tape 1b is sewn can be removed from the guide-ring tape 1a solely by separating the male connectors 14 of the snap buttons 10b and the basal through-holes 12 that function as female engagement holes of the guide-ring units 10a.

**[0049]** The guide-ring tape can be attached to the curtain fabric 30 by fastening the male connectors 14 of the snap buttons 10b aligned on the snap tape 1b, and the basal through-holes 12 of the guide-ring units 10a aligned on the guide-ring tape 1a. The guide-ring units do not fall down along the pull cord, and can therefore be attached in a very simple manner.

(Example 3)

**[0050]** A curtain according to Example 3 and a structure for attaching the guide-ring units 10a to the curtain fabric according to Example 3 are described below. The attachment structure of the guide-ring units 10a according to Example 3 is the same as in Examples 1 and 2 as concerns the guide-ring tape 1a, which is the primary element of the configuration.

**[0051]** The snap tape 1b of Example 2 is not employed in the curtain according to Example 3 or the attachment structure of the guide-ring units 10a according to Example 3, as shown in FIG. 23. The snap buttons 10b are instead sewn directly to the curtain. The snap buttons 10b have the same shape as do the snap buttons 10b of the snap tape 1b of Example 2. However, the tape is not injection molded as in Example 2, and the snap buttons

10b that are used are molded in advance using well-known means.

**[0052]** Because the snap buttons 10b are directly attached to the curtain in this configuration, more time is needed to process the curtain during manufacture, but advantages are presented in that once the snap buttons 10b are attached to the curtain, the pull cord 2 need not be removed from the guide-ring units 10a when the curtain is to be cleaned, as in Example 2, and can be attached to the cleaned curtain in a very simple manner.

**[0053]** The present invention is not limited to the aforescribed Examples 1 through 3 and, for example, the following can be freely set according to the size, thickness, pattern, or other characteristics of the curtain in question in the structure for attaching the guide-ring units 10a to the curtain 3 and in the snap tape used therein according to the present invention: the shape of the narrow part and the size of the snap buttons 10b and the guide-ring units 10a; the intervals of the snap buttons 10b and the guide-ring units 10a; the thickness, width, and length of the tape substrates 15a, 15b; and the like.

**[0054]** The snap tape 1b was attached to the curtain fabric 30 by sewing in the present examples, but the tape may also be attached using bonding, welding, or the like instead of sewing.

**[0055]** The tape substrates 15a, 15b of the present invention were colorless and clear in the examples, but may also be colored and clear. A color tone that matches the color pattern of the curtain can be appropriately selected, whereby the tape substrates 15a, 15b can be made visually inconspicuous by the use of the clear mesh sheet having the same color as the color tone of the curtain and the color pattern of the curtain transmitted through the openings in the mesh sheet.

**[0056]** The shape of the basal through-holes and the shape of the male connectors are also not limited to the aforescribed examples. Configurations are also possible in which, e.g., the basal through-holes lack the stepped coupler, the male connectors provided with the expanded-diameter head parts pass through the basal through-holes, and surface-side edge portions of the basal through-holes and the expanded-diameter head parts of the male connectors are engaged; and in which the elements can be detached from each other due to elastic deformation of the basal through-holes or male connectors.

#### (DESCRIPTION OF SYMBOLS)

**[0057]**

1a	Guide-ring tape
1b	Snap tape
10a	Guide-ring unit
10b	Snap button
11a	Base
11b	Snap-button base
12	Basal through-hole



120 Stepped coupler  
 13 Guide ring  
 130 Bridge  
 131 Leg  
 14 Male connector  
 140 Expanded-diameter head part  
 141 Base part  
 15a Tape substrate  
 150 Positioning hole  
 15b Tape substrate  
 2 Pull cord  
 3 Curtain  
 30 Curtain fabric  
 4 Guide roller  
 5 Pull tab  
 d Thickness dimension (thickness of base)  
 h Height (height of male connector)

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# 7. A curtain wherein:

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according to claim 1, 2, 3, or 4;  
 the basal through-holes of the guide-ring tape  
 and the male connectors of the snap tape are  
 capable of attachment and detachment; and  
 a pull cord passes through the guide rings of the  
 guide-ring tape.

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snap buttons are directly attached to a curtain  
 fabric and are provided with male connectors for  
 engaging with the basal through-holes of a  
 guide-ring tape according to claim 1, 2, 3, or 4;  
 the basal through-holes of the guide-ring tape  
 and the male connectors of the snap buttons are  
 capable of attachment and detachment; and  
 a pull cord passes through the guide rings of the  
 guide-ring tape.

## Claims

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# 8. A structure for attaching a guide-ring tape to a curtain fabric, wherein:

## 1. A guide-ring tape, comprising:

a tape substrate; and  
 guide-ring units formed by injection molding on  
 tape through-holes aligned on the tape sub-  
 strate;

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a back-surface side of the tape substrate of the  
 guide-ring tape according to claim 1, 2, 3, or 4  
 is a side contacting the curtain fabric; and  
 the tape substrate is attached to the curtain fab-  
 ric.

wherein each of the guide-ring units is provided with  
 a base and a guide ring that is integrated with a front  
 surface of the base, and a basal through-hole is  
 formed in the base.

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# 9. A structure for attaching a guide-ring tape to a curtain fabric, comprising:

## 2. A guide-ring tape according to Claim 1, wherein:

a stepped coupler is formed on at least a part of  
 an inner wall surface of the basal through-hole.

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a guide-ring tape according to claim 1, 2, 3, or  
 4; and

## 3. A guide-ring tape according to Claim 1, wherein:

the tape substrate is a clear mesh material.

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a snap tape in which snap buttons having male  
 connectors for engaging with the basal through-  
 holes of the guide-ring tape are aligned on a  
 curtain-side of the tape substrate, wherein  
 the snap tape is attachable to the curtain fabric;  
 and

## 4. A guide-ring tape according to Claim 2, wherein:

the tape substrate is a clear mesh material.

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the basal through-holes of the guide-ring tape  
 through which a pull cord passes are capable of  
 engaging with and disengaging from the male  
 connectors of the snap tape, whereby the pull  
 cord can be attached to and detached from the  
 curtain fabric.

## 5. A curtain wherein:

a guide-ring tape according to claim 1, 2, 3, or  
 4 is attached to a curtain fabric; and  
 a pull cord passes through the guide rings of the  
 guide-ring tape.

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# 10. A structure for attaching a guide-ring tape to a curtain fabric, comprising:

## 6. A curtain wherein:

a snap tape is attached to a curtain fabric and  
 is provided with male connectors for engaging  
 with the basal through-holes of a guide-ring tape

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a guide-ring tape according to claim 1, 2, 3, or  
 4; and  
 snap buttons having male connectors for engag-  
 ing with the basal through-holes of the guide-  
 ring tape, wherein  
 the snap buttons are attachable to the curtain  
 fabric; and  
 the basal through-holes of the guide-ring tape  
 through which a pull cord passes are capable of

engaging with and disengaging from the male connectors of the snap buttons, whereby the pull cord can be attached to and detached from the curtain fabric.

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Fig.1

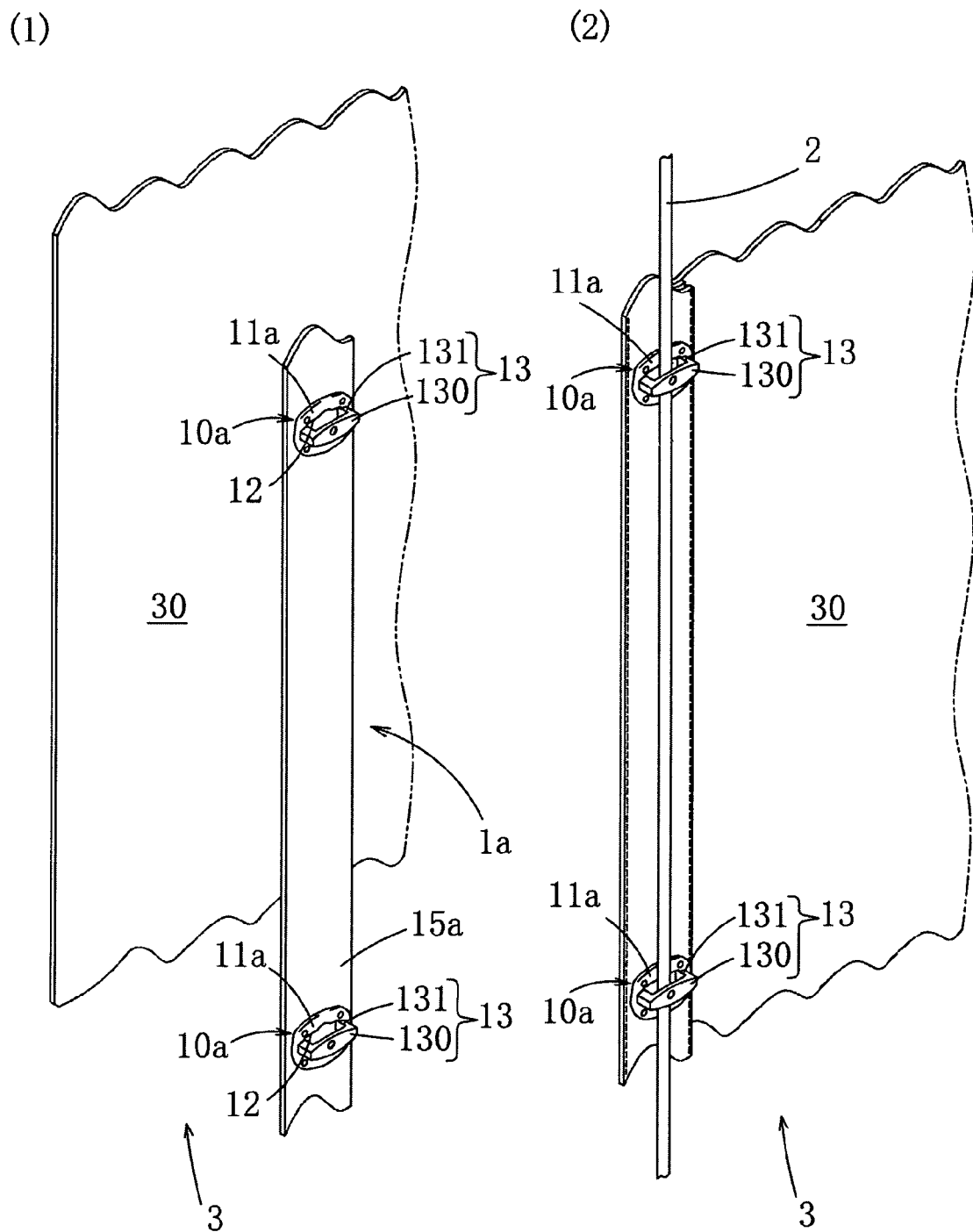
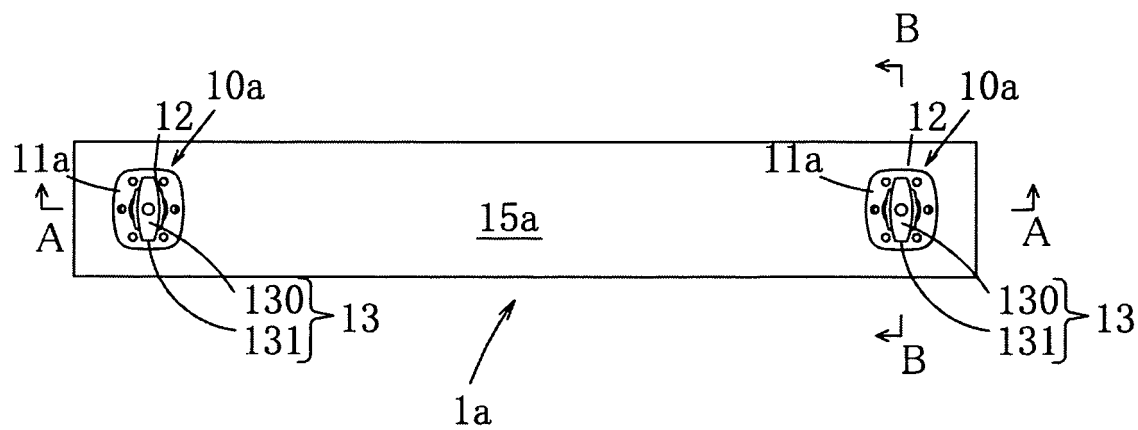


Fig.2

(1)



(2)

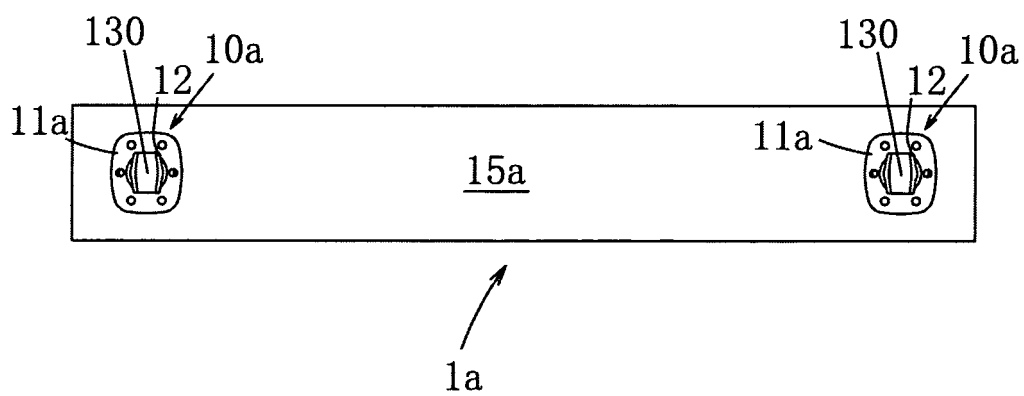
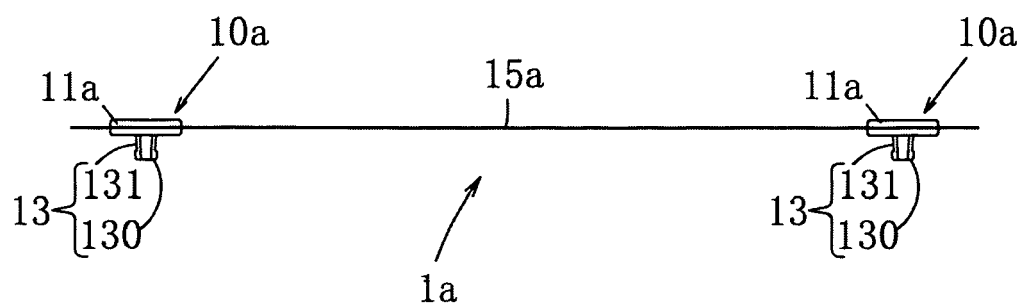


Fig.3

(1)



(2)

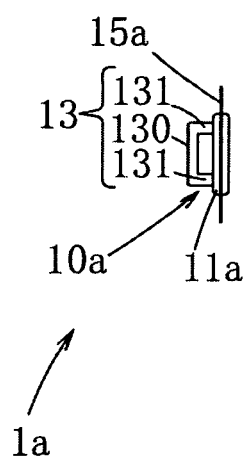
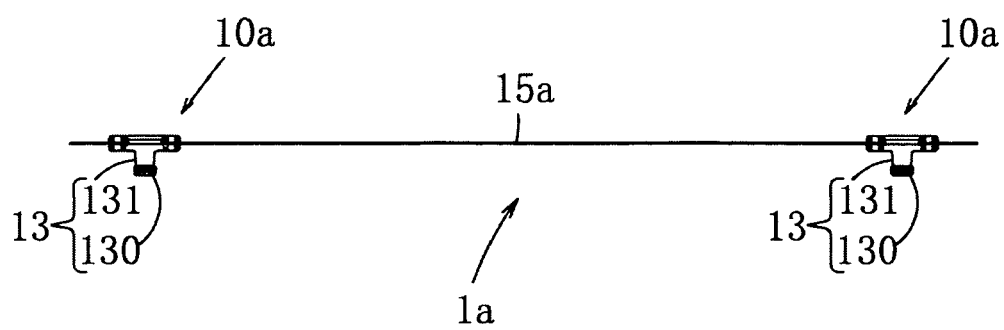


Fig.4

(1)  
A-A



(2)  
B-B

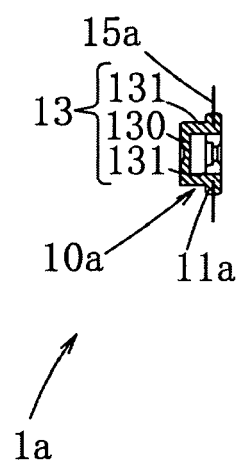
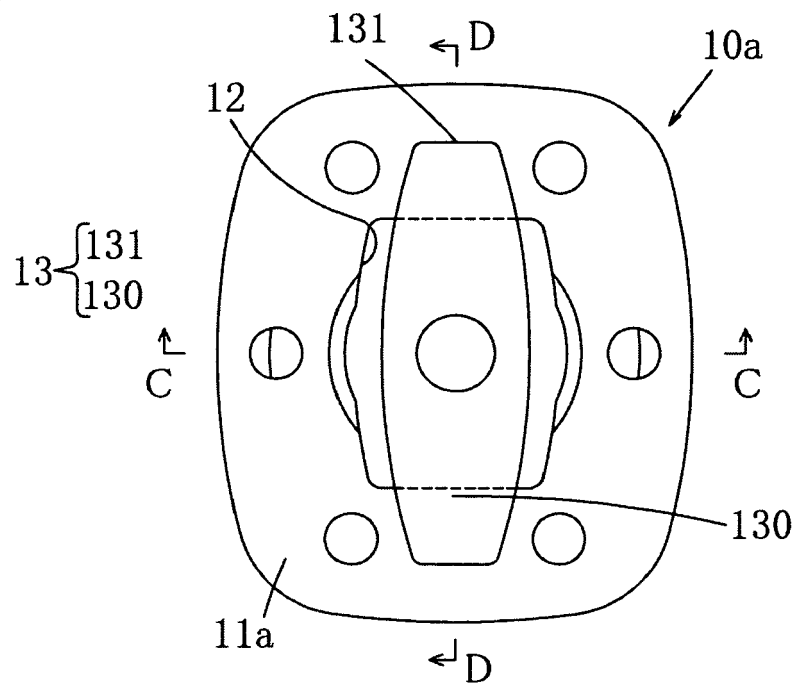


Fig.5  
(1)



(2)

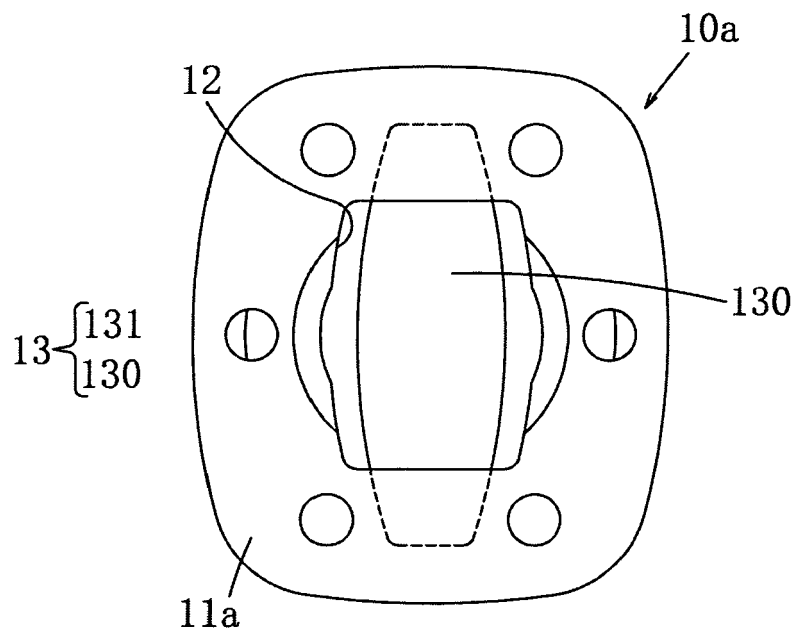
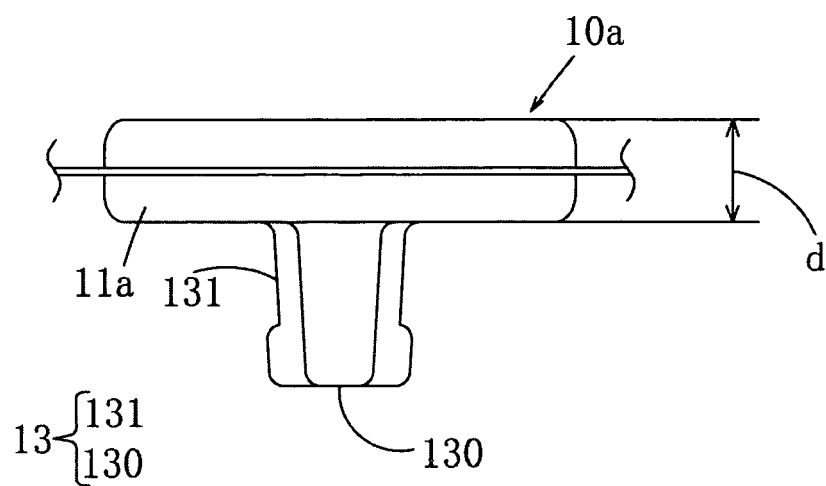


Fig.6  
(1)



(2)

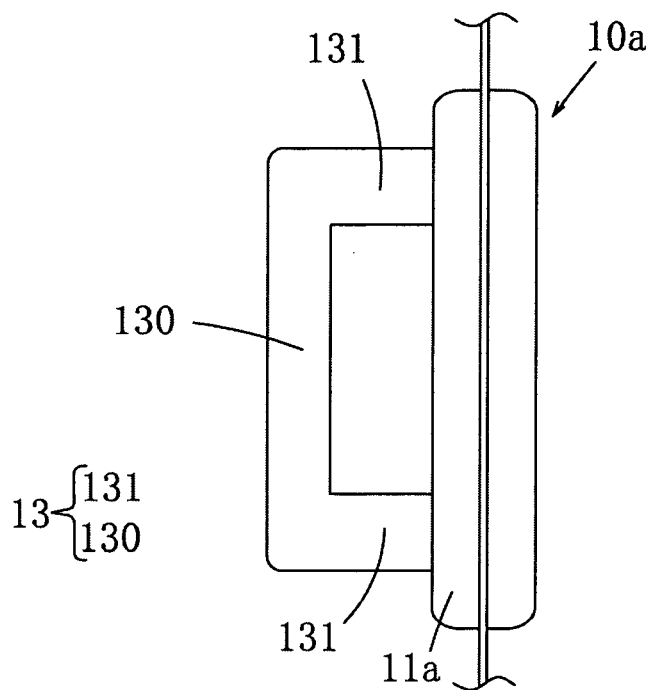
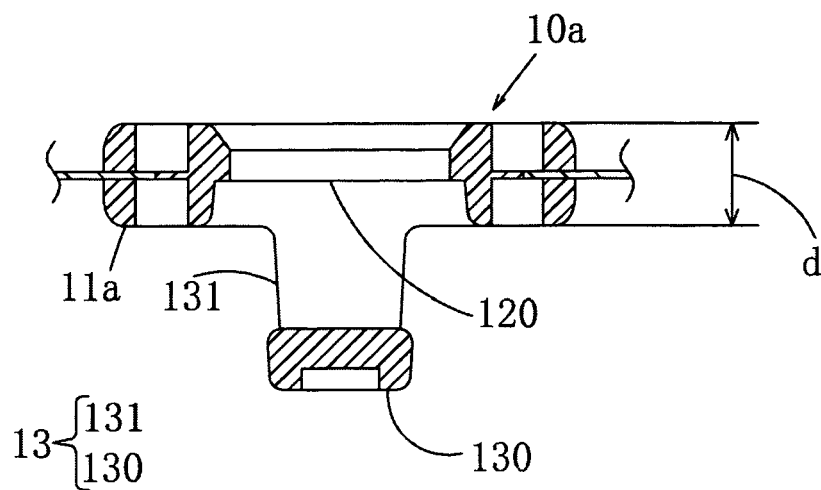




Fig.7

(1)

C-C



(2)

D-D

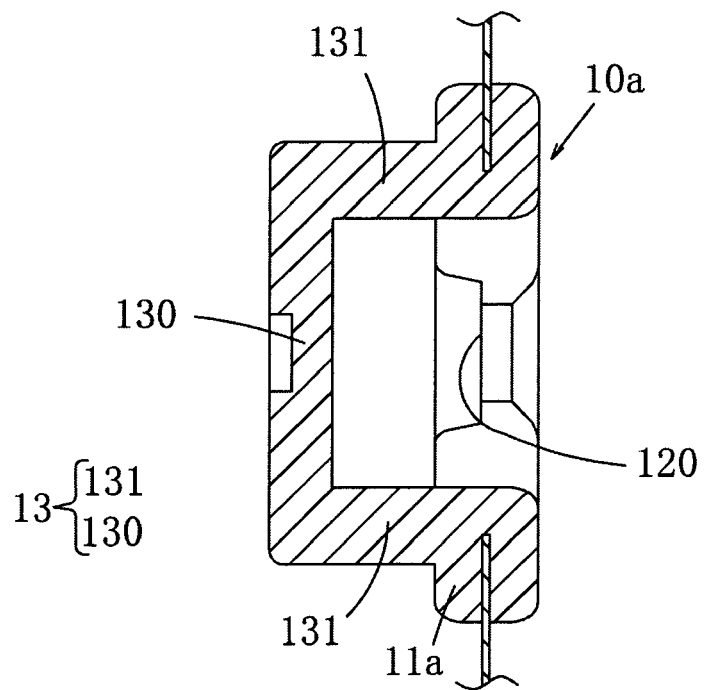


Fig.8

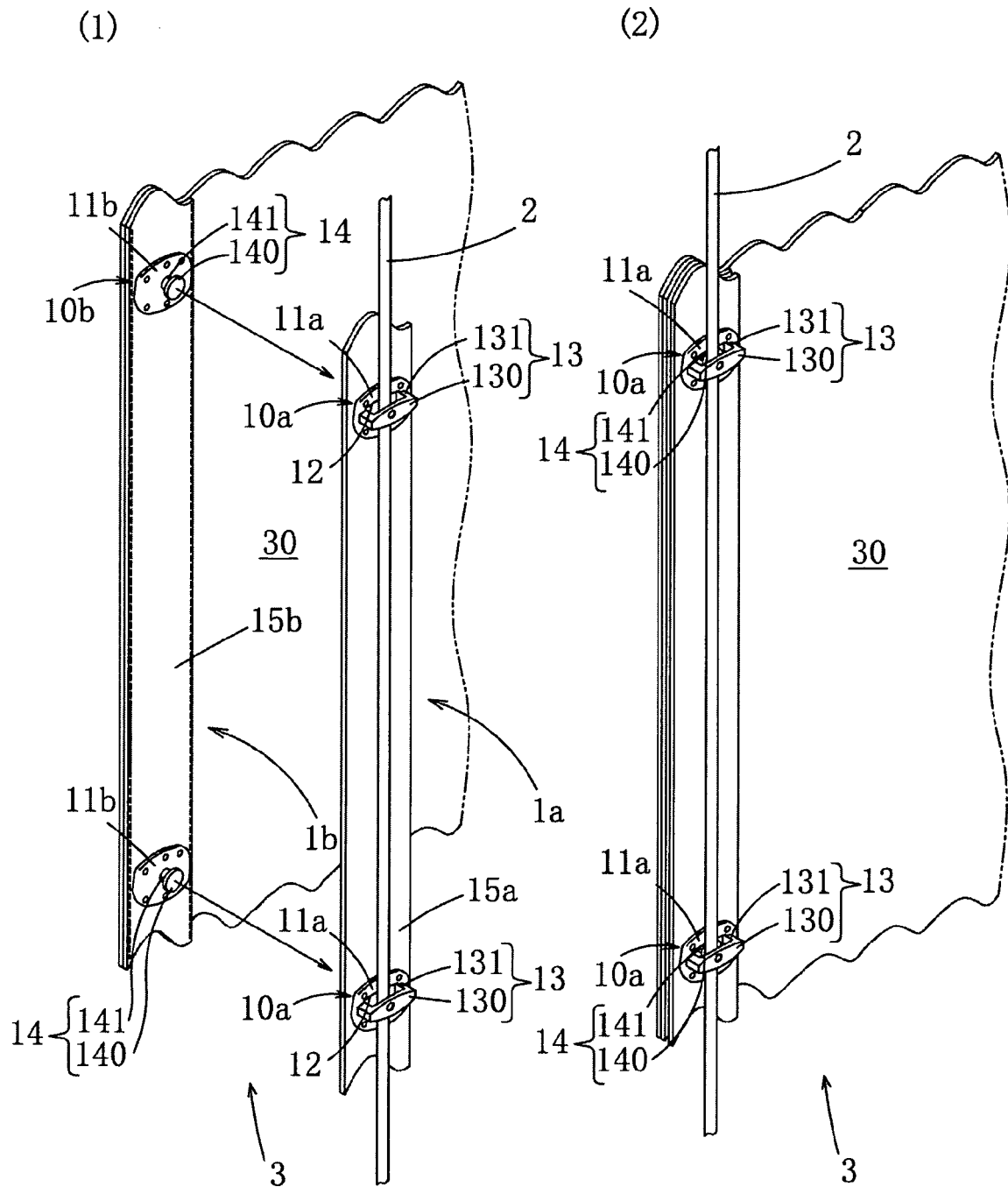


Fig.9

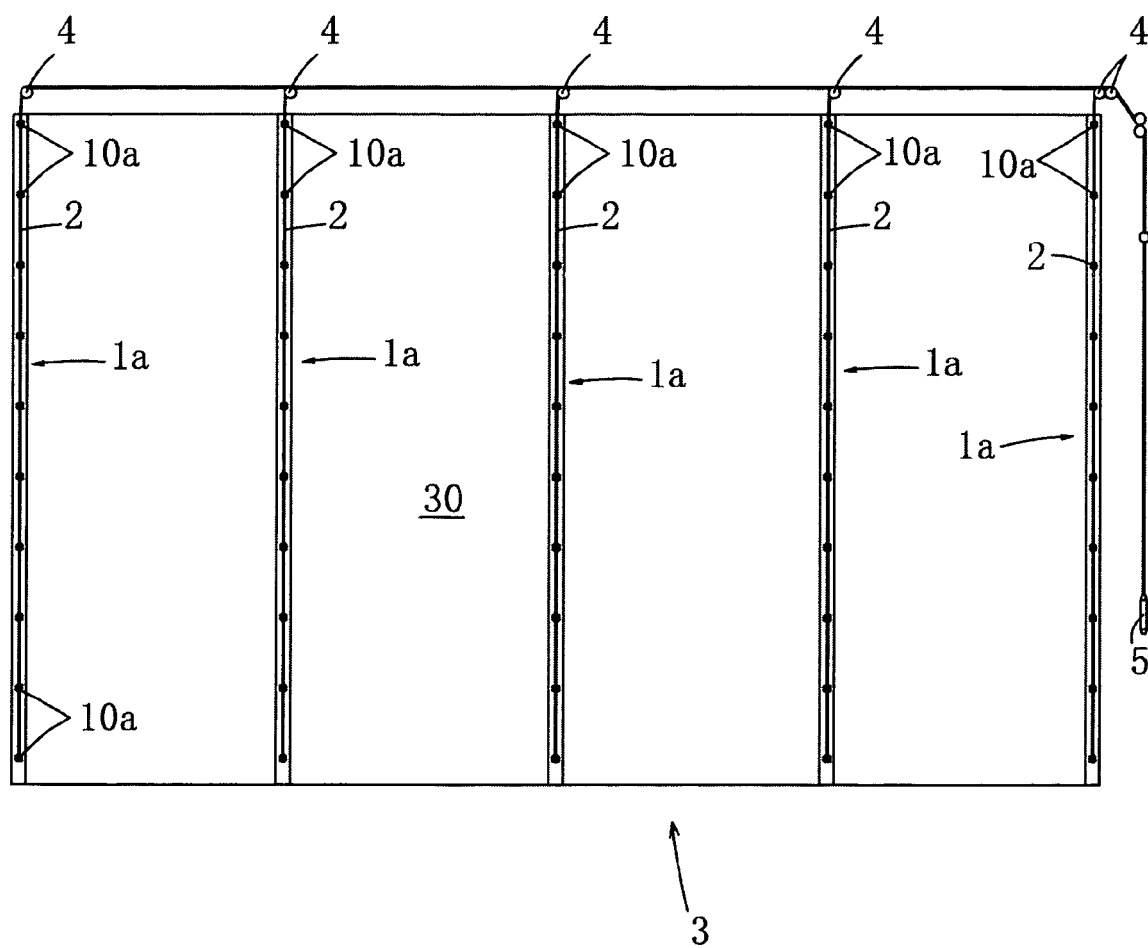


Fig.10

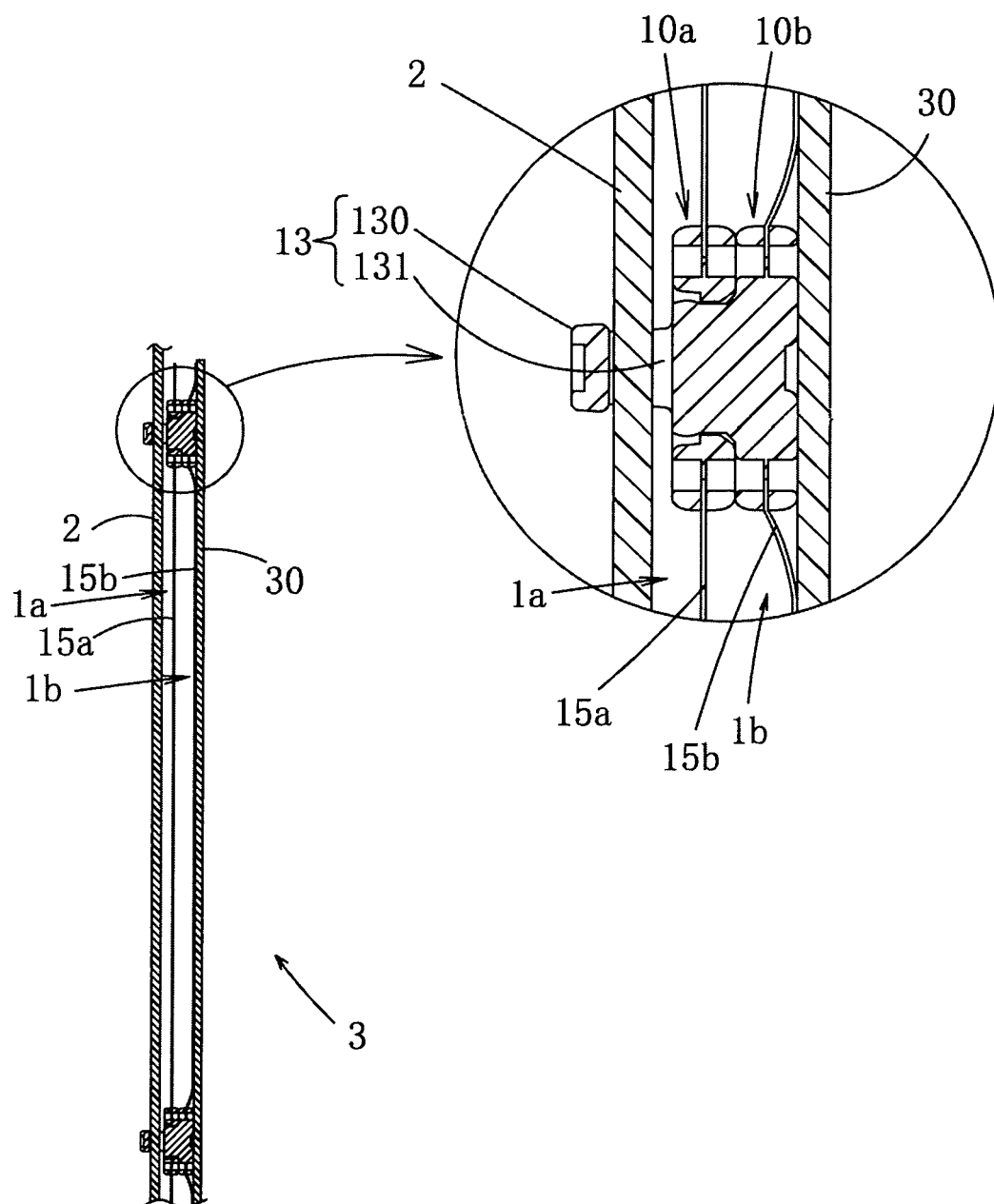
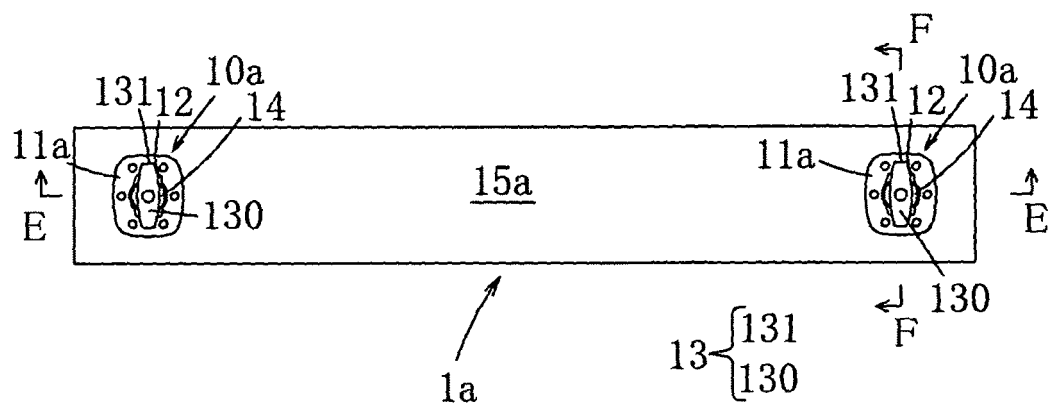


Fig.11

(1)



(2)

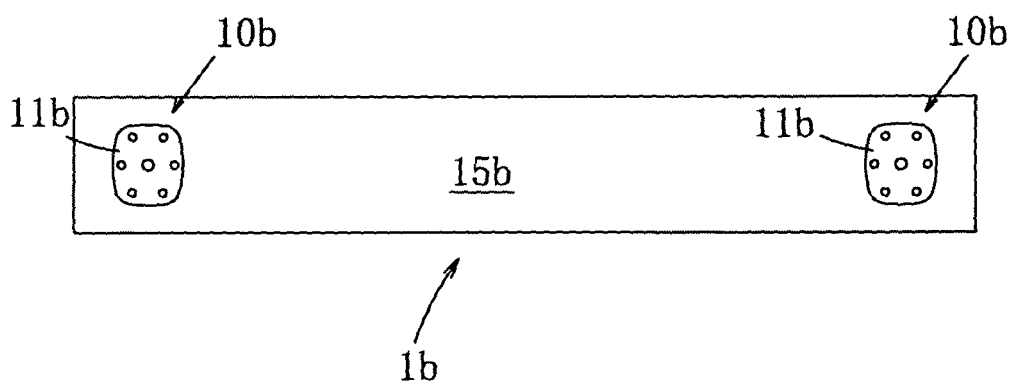
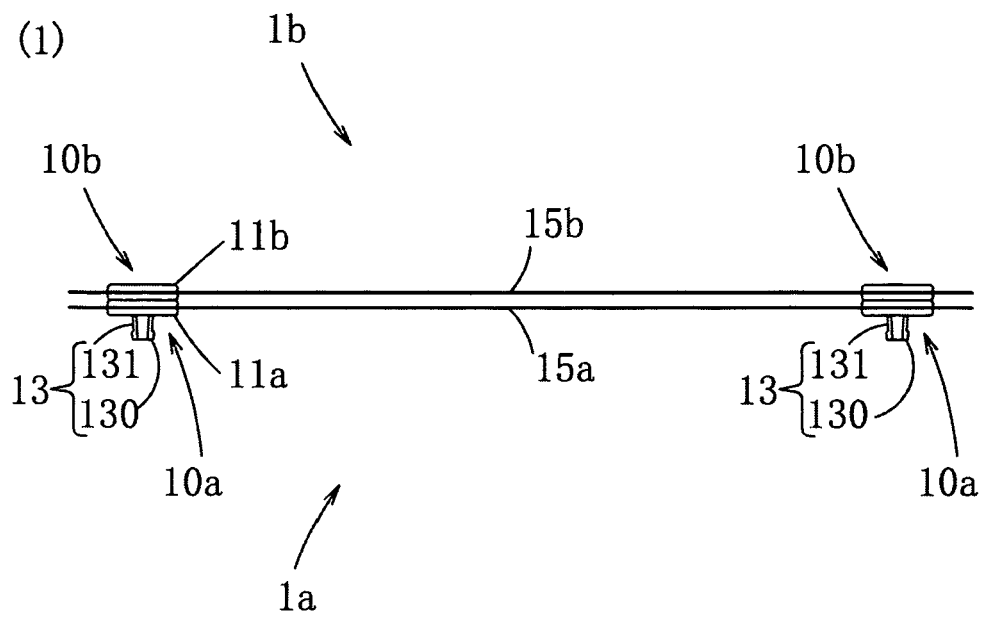


Fig.12



(2)

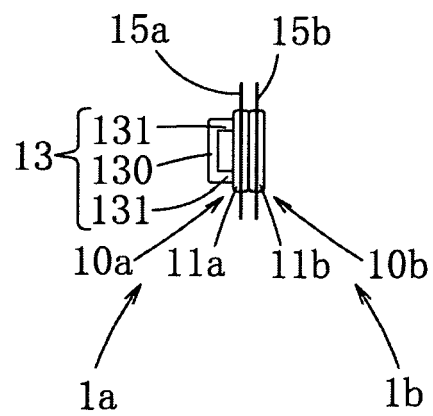
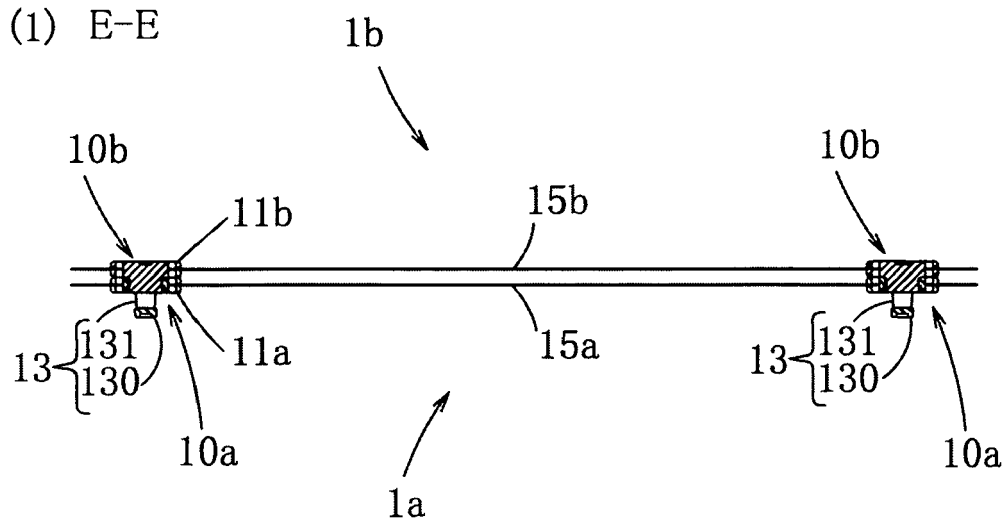


Fig.13

(1) E-E



(2) F-F

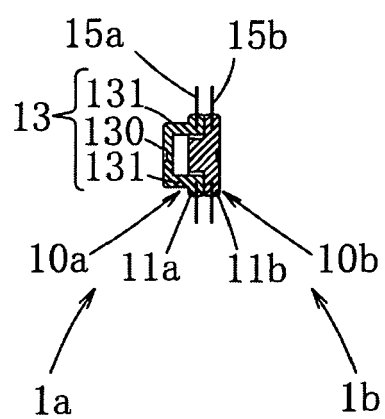
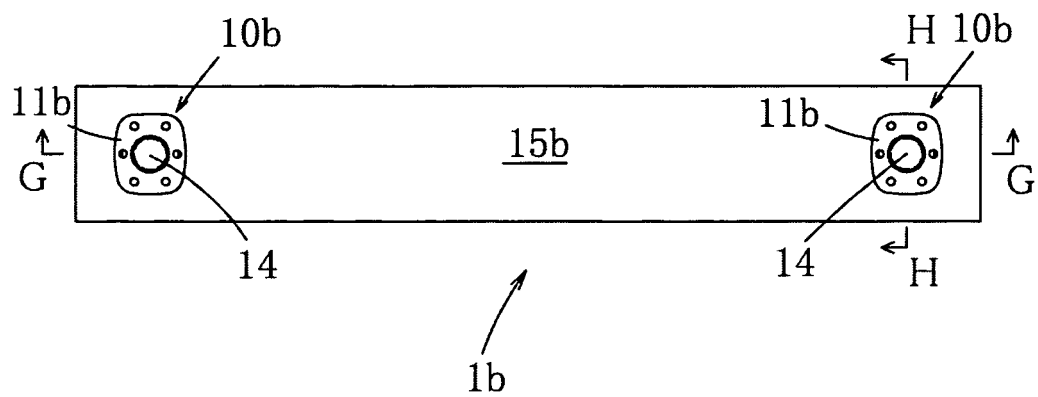


Fig.14

(1)



(2)

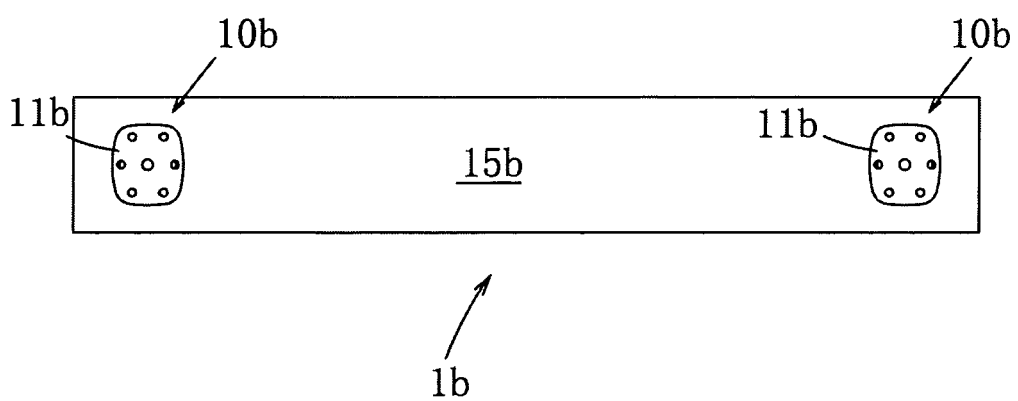
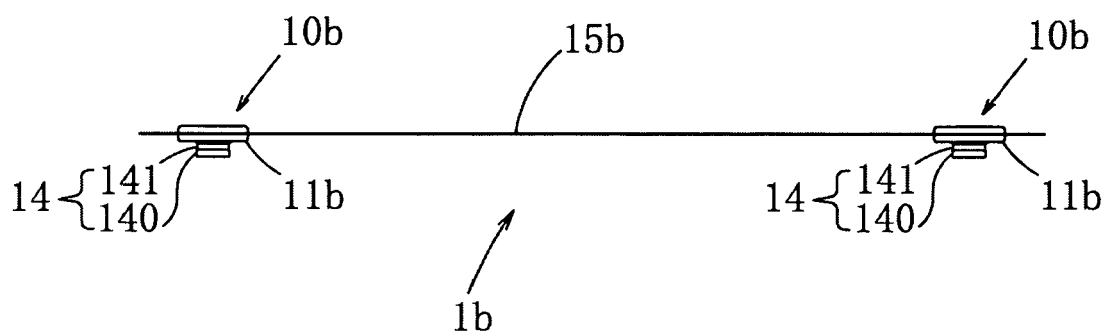




Fig.15

(1)



(2)

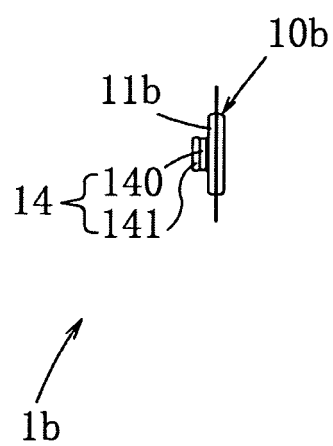
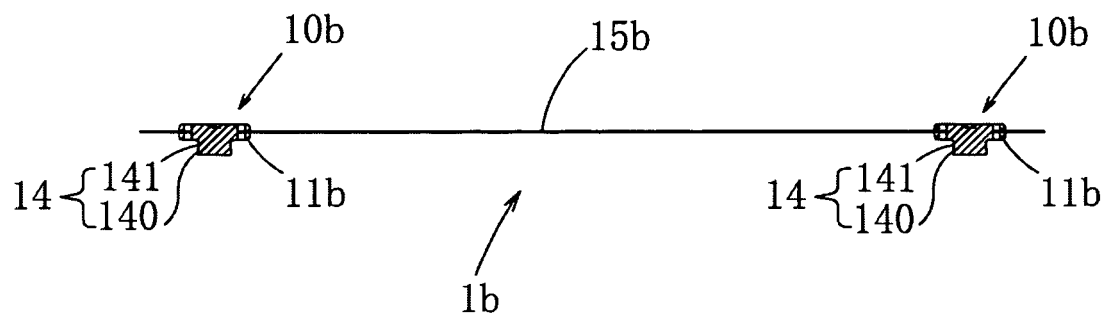


Fig.16

(1)

G-G



(2)

H-H

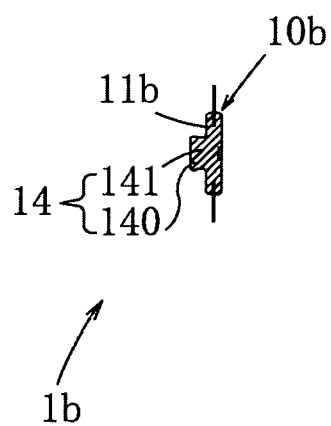
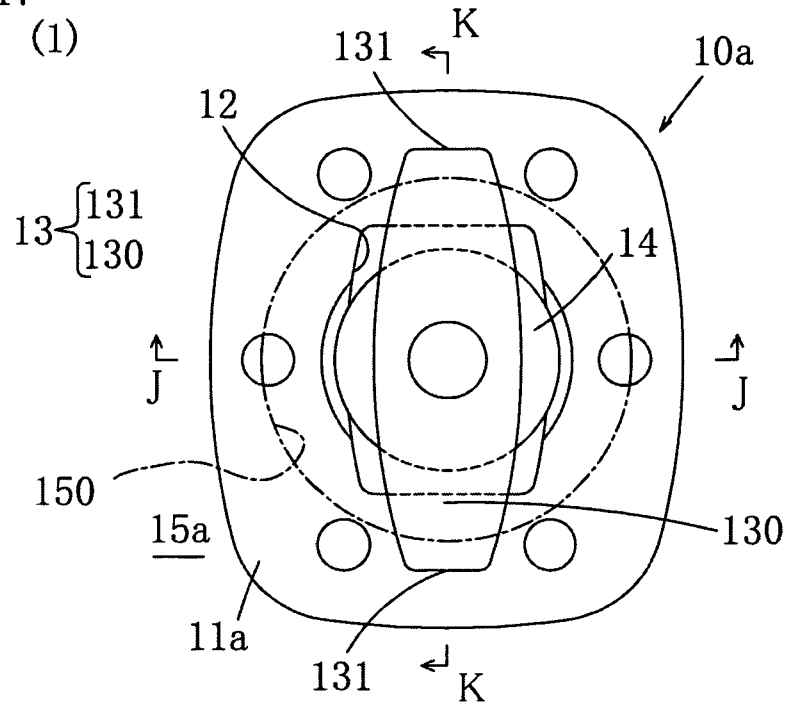


Fig.17



(2)

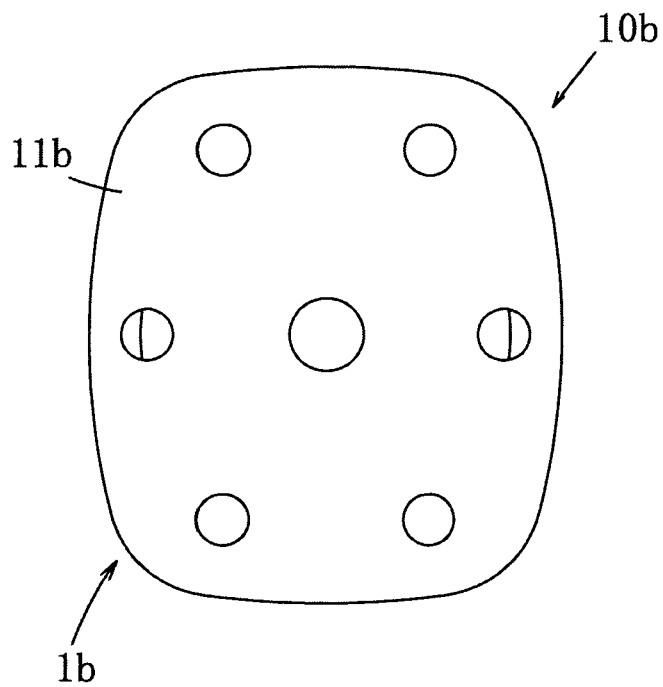
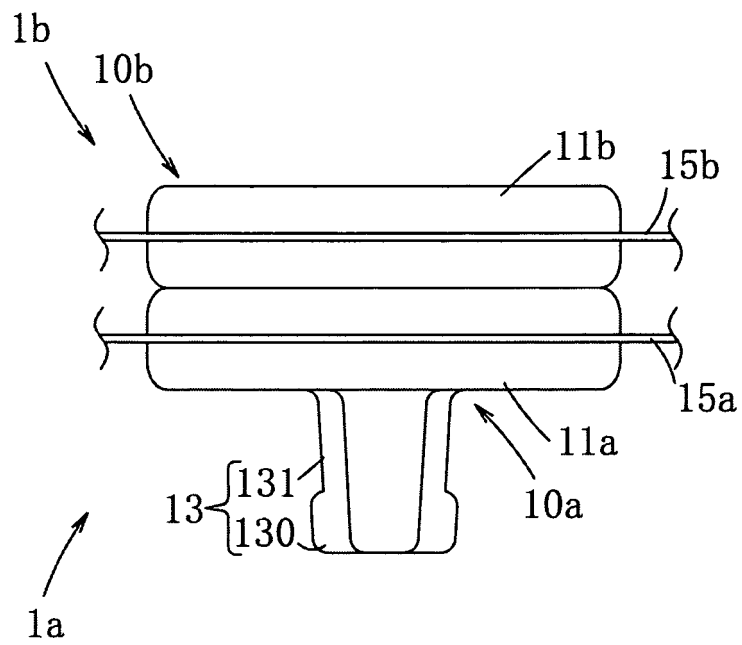


Fig.18  
(1)



(2)

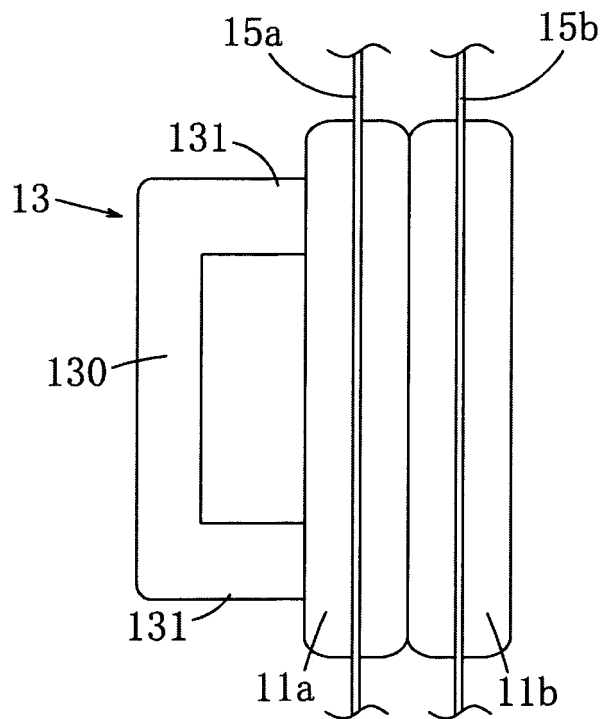
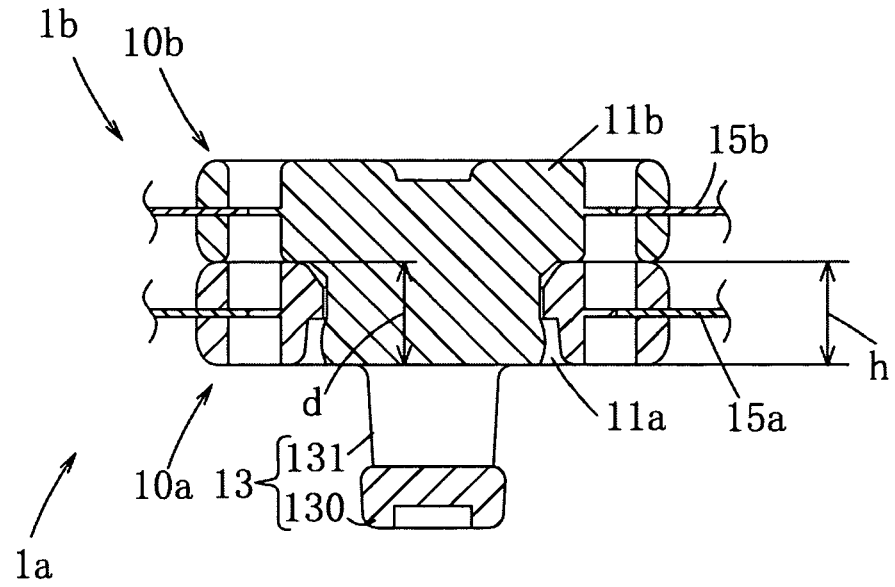


Fig.19

(1)

J-J



(2)

K-K

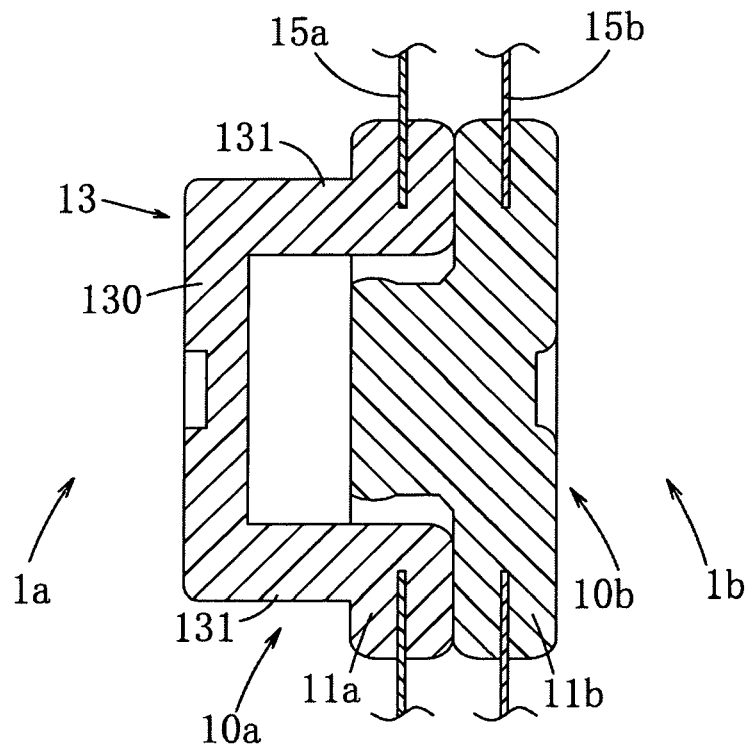
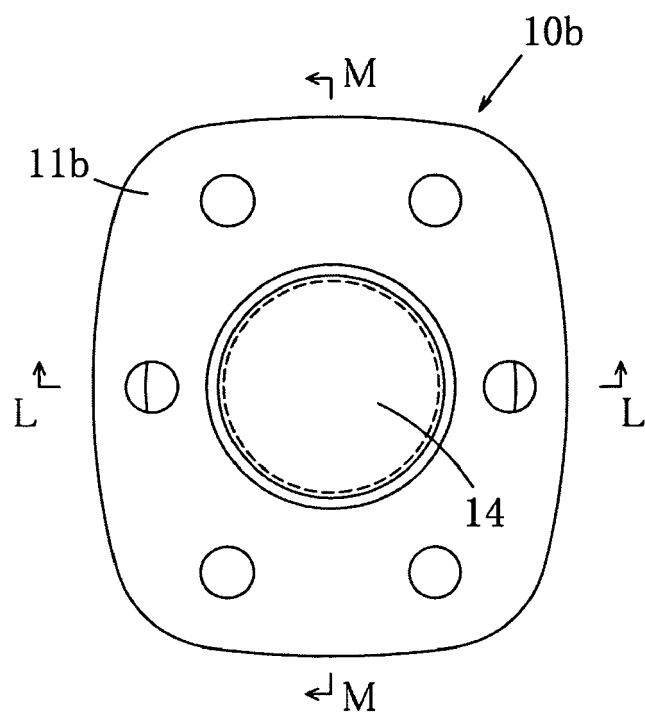


Fig.20  
(1)



(2)

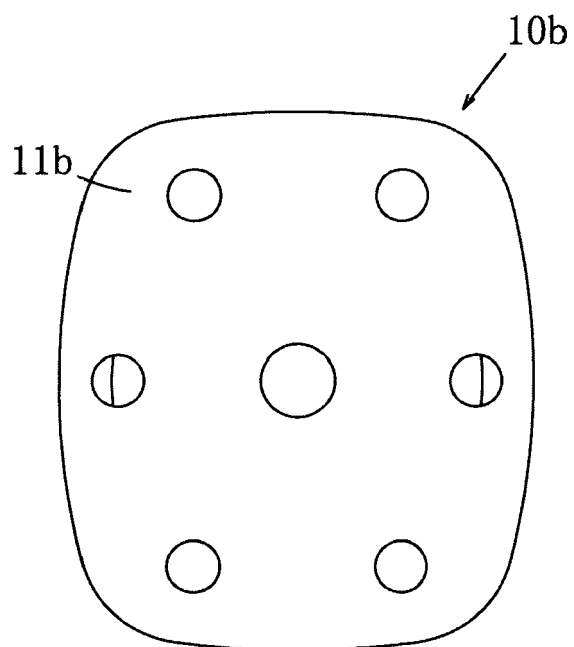
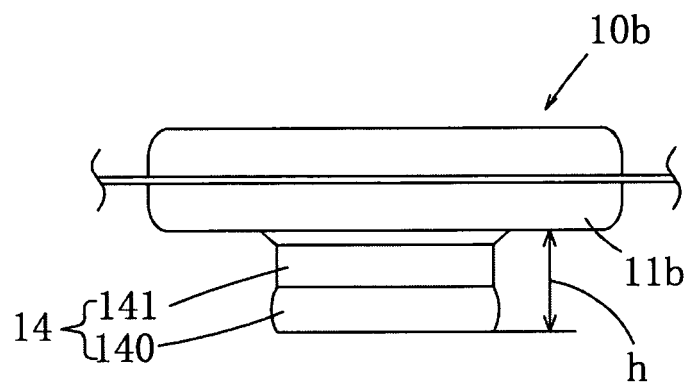


Fig.21  
(1)



(2)

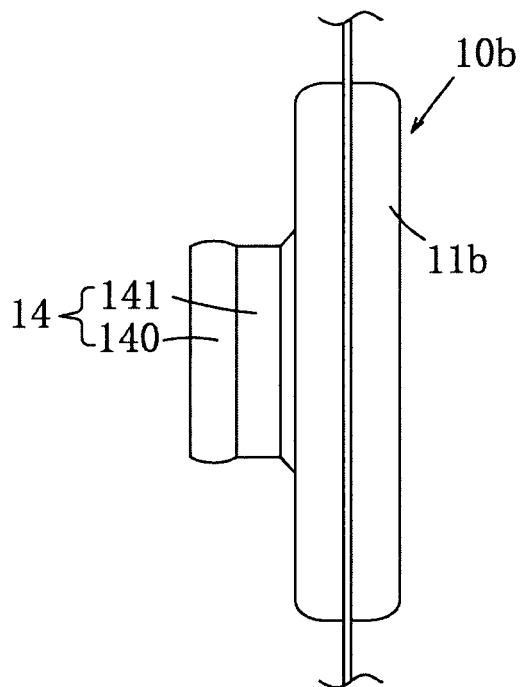
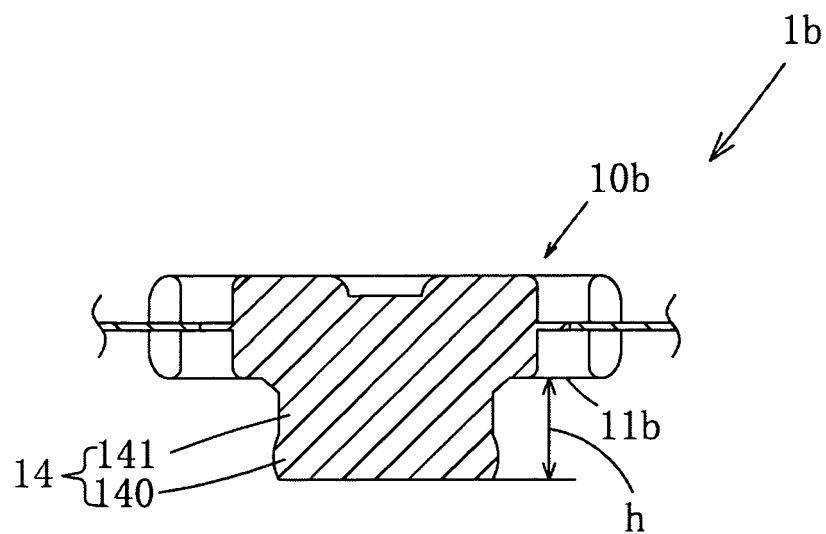


Fig.22

(1)

L-L



(2)

M-M

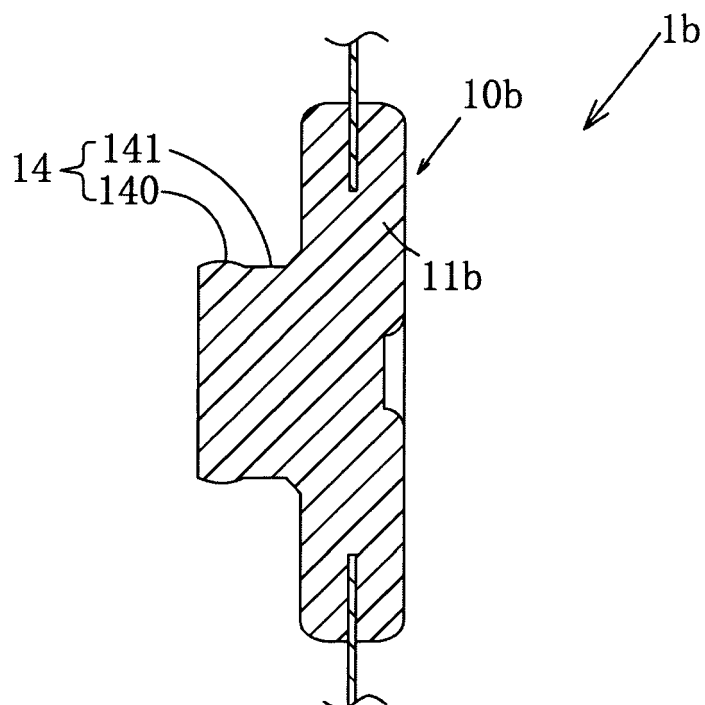
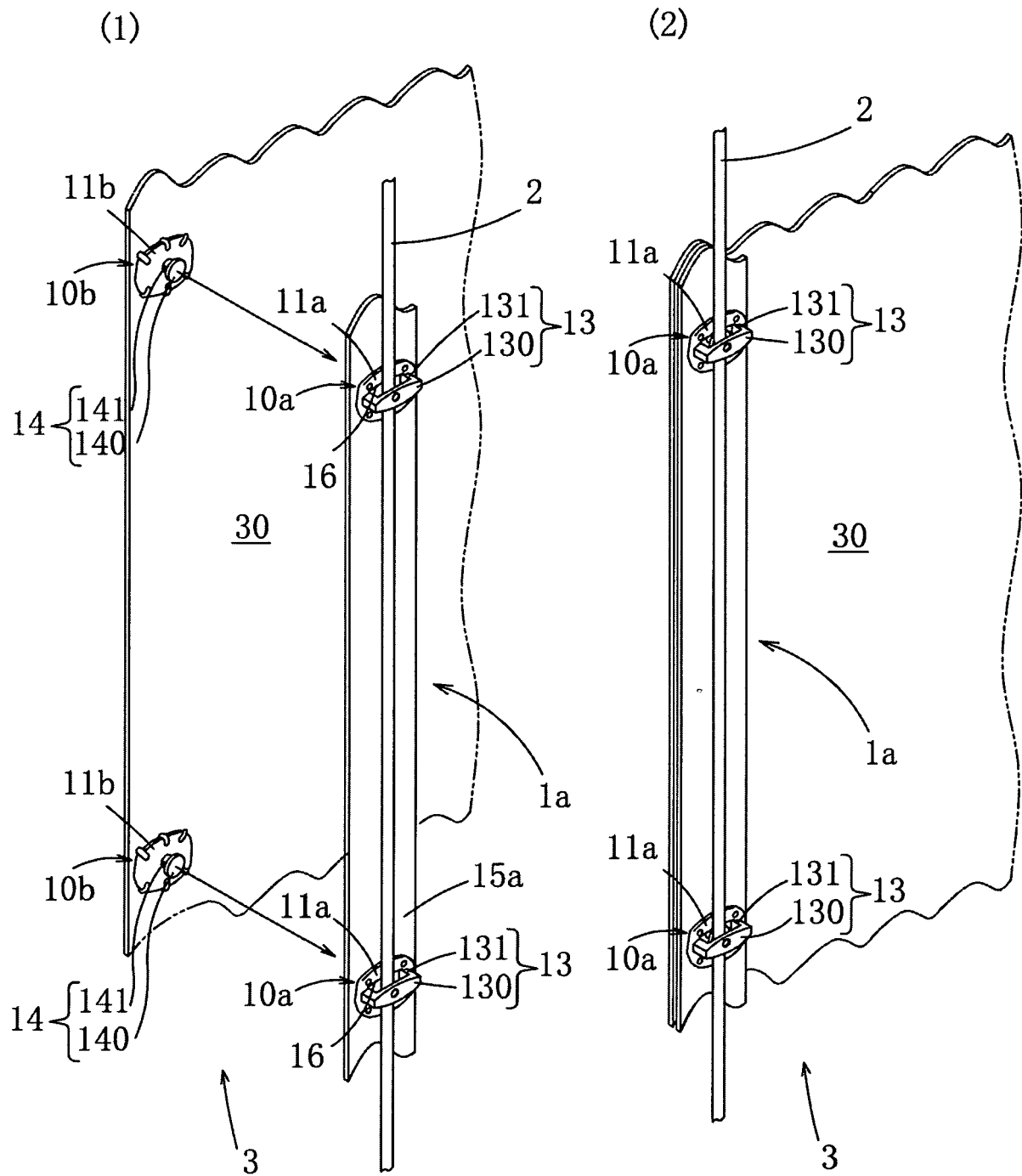




Fig.23





## EUROPEAN SEARCH REPORT

Application Number  
EP 09 25 0352

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 1 084 642 A (MORITO & CO LTD [JP]) 21 March 2001 (2001-03-21) * abstract *	1-4	INV. E06B9/262
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			TECHNICAL FIELDS SEARCHED (IPC)
			A47H E06B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		25 May 2009	Zuurveld, Gerben
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

 2  
EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 09 25 0352

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25-05-2009

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