



Europäisches
Patentamt
European
Patent Office
Office européen
des brevets



(11)

EP 1 557 107 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
09.09.2009 Bulletin 2009/37

(51) Int Cl.:
A44B 1/44 (2006.01)

(21) Application number: **05250299.4**

(22) Date of filing: **21.01.2005**

(54) **Button**

Knopf

Bouton

(84) Designated Contracting States:
DE ES FR GB IT TR

- **Takamura, Yoshio**
Toyama 938-0013 (JP)
- **Oobayashi, Munemasa**
Tokyo 173-0005 (JP)

(30) Priority: **22.01.2004 JP 2004014499**

(74) Representative: **Luckhurst, Anthony Henry**
William
Marks & Clerk LLP
90 Long Acre
London
WC2E 9RA (GB)

(43) Date of publication of application:
27.07.2005 Bulletin 2005/30

(73) Proprietor: **YKK Corporation**
Chiyoda-ku,
Tokyo (JP)

(72) Inventors:

- **Hasegawa, Kenji**
Fujisawa-shi, Kanagawa 252-0814 (JP)
- **Morishita, Akira**
Saitama 333-0866 (JP)

(56) References cited:
EP-A- 0 101 065 **EP-A- 0 291 651**
EP-A- 1 110 469 **FR-A- 1 102 092**
FR-A- 2 471 154 **FR-A- 2 553 268**
GB-A- 1 491 617 **GB-A- 2 137 868**

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

BACKGROUND OF THE INVENTION

1. FIELD OF THE INVENTION

[0001] The present invention relates to a button for buttoning garments and a decorative button mainly used as decoration, specifically, a button to be attached by interposing a fabric between a button body and a fixture.

2. DESCRIPTION OF RELATED ART

[0002] Conventionally, there has been known a button attached by interposing a fabric between a button body and a fixture. Such button has a button body with a concave portion therein and a fixture with its tip end to be inserted into the concave portion.

[0003] Figs. 4A to 4D show typical examples of this type of conventional button.

[0004] Fig. 4A shows a button body 50 with a common shape, which is widely-used and called "F-bar". The button body 50 has an engaging portion 50B with a curved concave portion 50A therein, a folded portion 50C greatly folded back from an opening end of the engaging portion 50B, and a flange 50D extending from the folded portion 50C toward the outside and inclined toward the opening end.

[0005] Fig. 4B shows a button body 51 with a common shape, which is widely-used and called "E-bar". The button body 51 has a center portion 51B with a concave portion 51A having a substantially rectangular shape therein, a folded portion 51C slightly folded back from an opening end of the center portion 51B and a flange 51D extending straight from the folded portion 51C toward the outside.

[0006] Fig. 4C shows a shank type rivet 52 as a fixture to be coupled with the button bodies 50, 51. The rivet 52 has a flange 52A and a shaft 52B provided at the center of the flange 52A, a tip end of the shaft 52B having a sharp edge. Fig. 4D shows a header type rivet 53 as a fixture to be coupled with the button bodies 50, 51. The rivet 53 has a flange 53A and a shaft 53B provided at the center of the flange 53A, edges of a tip end of the shaft 53B being cut off.

[0007] In the related arts shown in Figs. 4A to 4D, a fabric is interposed between the button bodies 50, 51 and the rivets 52, 53. Here, the engaging portions 50B, 51B of the button bodies 50, 51 are so formed that parts forming the opening end project from the flanges 50D, 51D to press the fabric. Therefore, since spaces between the flanges 50D, 51D of the button bodies 50, 51 and the flanges 52A, 53A of the rivets 52, 53 are wide, thin fabrics cannot be pressed sufficiently. If the fabric is not pressed sufficiently, the button bodies 50, 51 and the rivets 52, 53 can come off from the fabric unexpectedly. In addition, there is a possibility that foreign bodies or nails of a user are caught between the fabric and the button bodies 50,

51 or the rivets 52, 53.

[0008] In order to solve these problems, forming the flange of the rivet into an inverted-conical shape without changing the shape of the button bodies 50, 51 can be 5 a possible solution, but it is difficult to process the flange into the inverted-conical shape.

[0009] With such background, there has been known a related art of buttons having button bodies and fixtures with specific shapes as shown in Figs. 5A and 5B for 10 attaching a button to a thin fabric.

[0010] Fig. 5A shows a button called "stud", which has a button body 60 with a concave portion 60A therein and a fixture 61 called "post" and molded with a thin plate.

[0011] The fixture 61 has a flange 61A and a leg 61B formed at the center of the flange 61A, and formed on a tip end of the leg 61B is a flare 61C processed to open toward the outside. The fabric is cut between the flare 61C and the concave portion 60A of the button body 60. Therefore, the concave portion 60A of the button body 20 60 is formed into a specific shape having a narrow opening end and the width being gradually widened toward the inside in order to cut the fabric with the flare 61C.

[0012] Fig. 5B shows a button having a button body 62 called "G-bar" and a fixture 63 called "post rivet".

[0013] The button body 62 has a specific shape including a front portion 62A formed with its edge folded and an engaging portion 62B with its outer edge engaged with the edge of the front portion 62A and with its inner edge forming a sharp cutting edge 62C. The fixture 63 has a flange 63A and a leg 63B formed at the center of the flange 63A, the leg 63B being provided with an inclined portion 63C to cut the fabric with the cutting edge of the engaging portion 62B.

[0014] Another related art of a button is disclosed in a 35 microfilm (Reference 1) of Japanese Utility Model Application No. 54-73456 (No. 55-173907 U).

[0015] The button disclosed in Reference 1 has a structure including a button body having a conical projection, an engaging portion with its tip end adapted to 40 bend when abutting on the conical projection and a flange for the engaging portion to be attached to the center thereof, the engaging portion being provided with a plurality of cutting edges arranged circularly to cut the fabric with the button body portion.

[0016] The related arts shown in Figs. 5A and 5B have a problem in which the attaching structure cannot be utilized for widely-used button bodies such as F-bar and E-bar due to its specific shapes.

[0017] Especially, for the button shown in Fig. 5A, the 50 shape of the concave portion fitted to the flare of the fixture 61 is determined without variation, so that button bodies of the F-bar or E-bar shown in Figs. 4A to 4B" cannot be applied to the fixture 61.

[0018] Moreover, since the flare of the fixture 61 is 55 formed to have thin tip end, when attached to a thick fabric like a denim fabric, the denim fabric cannot be cut sufficiently between the tip end of the flare and the concave portion of the button body. If the fixture 61 is forcibly

attached to the thick fabric, the tip end of the flare is deformed, which makes the attachment even more difficult.

[0019] The button disclosed in Reference 1 has a problem in which the cutting edge is deformed or broken when the fabric is thick or stiff. On the other hand, the button also has a problem when the fabric is thin or soft, in which the button cannot press the fabric sufficiently and catches the fabric in cutting so that the button cannot be attached to the fabric appropriately.

[0020] EP-A-101065, EP-A-1110469 and GB-A-2137868 show buttons in which a male member pierces the fabric. FR-A-2553268 shows another button arrangement. In EP-A-101065 and GB-A-2137868 the tip of the male member is deformed to hold the male member in place.

SUMMARY OF THE INVENTION

[0021] An object of the present invention is to provide a button that can be attached to a fabric by using a widely-used button body with common shape regardless of thickness and stiffness of the fabric.

[0022] The present invention provides a button as set forth in claim 1.

[0023] When the button body and the fixture are pressed to each other with the fabric interposed therebetween, the fabric is cut between the edge formed on the shoulder and the insertion end of the housing of the button body while being pressed by the tip end of the fixture, so that the button can be attached.

[0024] Therefore, the fabric is cut between the edge formed on the shoulder of the fixture and the insertion end of the housing of the button body. For the shoulder, the plate thickness does not have to be thinned compared with that of the flare or the edge shown in the related art, so that it does not face a problem of being damaged even when a big force is applied to the cutting portion. Moreover, its center alignment capability is not deteriorated. Therefore, in the present invention, the fabric can be easily cut without damaging the fixture regardless of the thickness of the fabric. In addition, since the button body is shaped to have the housing in the present invention, a widely-used button body can be used without making any changes by employing a common shape like F-bar, E-bar, etc.

[0025] The edge formed on the shoulder preferably has a curvature radius R of 0.5 mm or less, more preferably 0.3 mm or less.

[0026] By providing the cutting portion on the edge formed between the tip end and the tubular portion, processing of the cutting portion can be facilitated, so that the fixture can be manufactured easily.

[0027] It is preferable that the cutting portion is formed continuously or intermittently on the circumference of the shoulder.

[0028] The fabric can be appropriately and easily cut along the insertion end of the housing.

[0029] The shoulder is hardly deformed, and the dam-

age on the cutting portion can be prevented more efficiently.

[0030] Also, it is preferable that the tip end has a projection projecting from the shoulder.

[0031] The fabric is stretched and pressed by the projection projecting from the shoulder in cutting the fabric between the cutting portion of the fixture and the insertion portion of the housing of the button body, which facilitates cutting the fabric so that the fabric can be cut smoothly without damaging the cutting portion.

[0032] It is preferable that the tip end is adapted to be dented and bulged outwardly when pressed by the button body so that the bulged tip end is engaged with the housing.

[0033] Since the tip end pressed by the button body dents and bulges outwardly in attaching the button, the lateral side of the tip end pressed the lateral side of the housing sufficiently so that detaching force (separation force) of the button is increased. This prevents the button body from unexpectedly coming off from the fixture.

[0034] By making the flange of the fixture into a plate-shaped which is easy to press a thinner fabric, the edge 12F as the cutting portion of the present invention and the projection 12E can be provided even if it is processed from a plate, and thus the fabric can be cut easily. The thickness of the plate used as a material of the fixture should preferably be in the range of 0.2 mm to 1 mm, more preferably, 0.3 mm to 0.6 mm.

BRIEF DESCRIPTION OF THE DRAWINGS

[0035]

Fig. 1A is a cross section of a button according to a first embodiment of the present invention and Fig. 1B is a cross section of a button according to a second embodiment; Fig. 2A is a cross section showing a state in which the button according to the first embodiment is attached to a fabric, and Fig. 2B is a cross section showing a state in which the button according to the second embodiment is attached to a fabric; Figs. 3A and 3B are cross sections respectively showing buttons according to modifications of the present invention; Figs. 4A to 4D are illustrations respectively showing different related arts; and Figs. 5A to 5B are illustrations showing related arts different from those in the Figs. 4A to 4D.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT(S)

[0036] Embodiments of the present invention will be described below with reference to the attached drawings. The present embodiment is applied to jeans and other garments as a decorative button.

[0037] Fig. 1A is a cross section showing a first em-

bodiment.

[0038] In Fig. 1A, a button 10 has a button body 11 and a fixture 12 attached to each other with a fabric 1 interposed therebetween.

[0039] The button body 11 is called F-bar and has a structure identical to the button body shown in Fig. 4B. The button body 11 is made of aluminum, iron, stainless steel alloy, copper alloy including brass or other kind of metals or alloys by an appropriate processing such as press working.

[0040] The button body 11 has a structure in which a center portion 11B provided with a concave portion 11A as a housing, a folded portion 11C slightly folded back from an edge of an opening end as an insertion end of the center portion 11B, a flange 11D extending straight from the folded portion 11C toward the outside are integrally molded.

[0041] The center portion 11B is formed to have a cylindrical shape with a bottom face, and the inner side thereof is the concave portion 11A. The concave portion 11A has a substantially rectangular shape with its opening end 11E rounded by appropriate curvature.

[0042] The folded portion 11C is inverted from the center portion 11B, and the flange 11D extends at approximately square angle from an end of the folded portion 11C. The flange 11D is formed to have a substantially widened-ring shape.

[0043] The fixture 12, as well as the button body 11, is made of aluminum, iron, stainless steel alloy, copper alloy including brass or other kind of metals or alloys by an appropriate processing such as press working.

[0044] The fixture 12 has a structure in which a tip end 12A having a substantially disk-shaped and inserted into the concave portion 11A, a tubular portion 12B having a substantially cylindrical shape and formed continuously from the tip end 12A, a shoulder 12C formed between the tip end 12A and the tubular portion 12B and a flange 12D having a substantially widened-ring shape and formed continuously from an end of the tubular portion 12B are integrally molded.

[0045] The tip end 12A has a projection 12E at the center thereof, which has a cylindrical shape with a bottom face and projects toward the concave portion 11A. The projection 12E is adapted to be dented when pressed by the button body 11. Since the fixture 12 functions as a rivet, when the projection 12E is dented to be lower than a flat portion of the tip end 12A, the whole part of the tip end 12A bulges outwardly. Then, the bulged tip end 12A presses lateral side of the concave portion 11A to engage. (Fig. 2A)

[0046] The flange 12D is gradually inclined toward the button body 11 at the part closer to the outer periphery.

[0047] The shoulder 12C has an edge 12F formed continuously on its circumference of the outer periphery, and the edge 12F forms a cutting portion to cut the fabric 1 with the opening end 11E of the concave portion 11A of the button body 11. Here, the curvature radius R of the edge 12F is 0.5 mm or less, more preferably 0.3 mm or

less. The smaller curvature radius R is more preferable, but the present embodiment employs 0.3 mm to 0.2 mm. The outer diameter of the edge 12F is formed to be same as or little smaller relative to the inner diameter of the opening end 11E of the concave portion 11A.

[0048] The shoulder 12C has an outer periphery radially bulged relative to the tubular portion 12B.

[0049] In order to attach the button 10 of the first embodiment with the above structure to the fabric 1, the fabric 1 is interposed between the button body 11 and the fixture 12, and the tip end 12A of the fixture 12 is pressed against and inserted into the concave portion 11A of the button body 11.

[0050] The fabric 1 is cut between the edge 12F formed on the shoulder 12C and the opening end 11E of the concave portion 11A of the button body 11 while being pressed and stretched by the projection 12E of the tip end 12A of the fixture 12.

[0051] When the tip end 12A is pressed against the concave portion 11A, the projection 12E is dented to be lower than a flat portion of the tip end 12A as shown in Fig. 2A, and thus the tip end 12A and the whole part of the tubular portion 12B are bulged outwardly so that it is pressed against and engaged with the lateral side of the concave portion 11A.

[0052] Therefore, in the first embodiment, the following advantages can be obtained.

(1) The button body 11 has the concave portion 11A for the tip end 12A of the fixture 12 to be inserted therein, and the fixture 12 has the shoulder 12C between the tip end 12A and the tubular portion 12B formed continuously from the tip end 12A. The shoulder 12C has the edge 12F as a cutting portion to cut the fabric 1 with the opening end 11E of the concave portion 11A of the button body 11. Therefore, even when a big force is applied to the edge 12F, the shoulder 12C is not broken due to its sufficient thickness, so that the fabric can be cut easily regardless of the thickness of the fabric. Further, since the button body 11 has a shape with the concave portion 11A therein, F-bar type button body can be used without making any changes.

(2) Since the cutting portion is the edge 12F formed on the shoulder 12C, processing of the cutting portion can be facilitated, so that the fixture can be manufactured easily.

(3) Since the shoulder 12C has the outer periphery radially bulged relative to the tubular portion 12B, the shoulder 12C is hardly deformed, and damage on the fixture 12 can be prevented more effectively.

(4) The tip end 12A has the projection 12E projecting from the shoulder 12C. Therefore, when the fabric 1 is cut between the edge 12F of the fixture 12 and the opening end 11E of the concave portion 11A of the button body 11, the projection 12E projecting from the shoulder 12C presses and stretches the fabric 1, so that the fabric 1 can be cut easily and smoothly

without damaging the edge 12F as the cutting portion.

(5) The projection 12E is dented when pressed against the button body 11 and the tip end 12A is bulged outwardly so that the bulged tip end 12A is engaged with the concave portion 11A. With such structure, the lateral side of the tip end 12A sufficiently presses the lateral side of the concave portion 11A of the button body 11, and thus the detaching force (separation force) of the button can be improved. This prevents the button body 11 from unexpectedly coming off from the fixture 12.

(6) Since the flange of the fixture is made into a plate-shaped which is easy to press a thinner fabric, the edge 12F as the cutting portion and the projection 12E can be provided even if it is processed from a plate, and thus the fabric can be cut easily. The thickness of the plate used as a material of the fixture should preferably be in the range of 0.2 mm to 1 mm, more preferably, 0.3 mm to 0.6 mm.

[0053] Next, a second embodiment of the present invention will be described. The second embodiment only differs in the structure of a button body, and the structure of the fixture is the same with the fixture 12 of the first embodiment. In the description of the second embodiment, for the components identical to those in the first embodiment, the same numerals are attached to omit the description thereof.

[0054] The present embodiment is applied to a decorative button.

[0055] Fig. 1B shows a cross section showing a second embodiment.

[0056] In Fig. 1B, a button 20 has a button body 21 and the fixture 12 attached to each other with the fabric 1 interposed therebetween.

[0057] The button body 21 is called F-bar and has the same structure as the button body shown in Fig. 4A. The button body 21, as the button body 11 in the first embodiment, is made of aluminum, iron, stainless steel alloy, copper alloy including brass, or other kind of metals or alloys by an appropriate processing such as press working, and has a structure in which a center portion 21B provided with a concave portion 21A as a housing, a folded portion 21C slightly folded back from an opening end of the center portion 21B and the flange 21D extending from the folded portion 21C toward the outside are integrally molded.

[0058] The center portion 21B is formed to have a cylindrical shape with a bottom face, and the inner side thereof is the concave portion 21A. The concave portion 21A has a curved shape with its opening end 21E rounded by appropriate curvature.

[0059] The folded portion 21C is inverted from the center portion 21B to extend to the vicinity of the top of the center portion 21B, and the flange 21D extends at approximately square angle from an end of the folded portion 21C. The flange 21D shapes like a widened ring.

[0060] In order to attach the button 20 of the second embodiment with such structure to the fabric 1, the fabric 1 is interposed between the button body 21 and the fixture 12, and the tip end 12A of the fixture 12 is pressed against and inserted into the concave portion 21A of the button body 21 as in the first embodiment.

[0061] Then, the fabric 1 is cut between the edge 12F formed on the shoulder 12C and the opening end 21E of the concave portion 21A of the button body 21 while being pressed and stretched by the projection 12E of the tip end 12A of the fixture 12.

[0062] When the tip end 12A is pressed against the concave portion 21A, the projection 12E is dented to be lower than the flat portion of the tip end 12A, and thus the whole part of the tip end 12A is bulged outwardly so that it is pressed against and engaged with the lateral side of the concave portion 21A.

[0063] Therefore, in the second embodiment, advantages similar to (1) to (6) of the first embodiment can be obtained.

[0064] Incidentally, the scope of the present invention is not restricted to the above-described embodiments, but includes modifications and improvements as long as an object of the present invention can be achieved.

[0065] For instance, in the second embodiment, the housing is the concave portion 21A and the insertion end is the opening end 21E, but the structures of the housing and the insertion portion are not limited to the embodiment. For instance, as shown in Fig. 3A, the housing of the button body 21 may have a shape with an opening 21G formed on the top thereof. In such case, an insertion end 21H is an opening located opposite to the opening 21G. A numeral 30 denotes a button attaching tool. In the present invention, as shown in Fig. 3B, a structure in which a shell 12G is attached to the flange 12D of the fixture 12 may be employed.

[0066] In the above-described embodiments, applications for decorative buttons are exemplified. However, the present invention is for buttoning garments, and it may be applied to a button for practical use. Further, the button of the present invention may also be used for items other than garments.

[0067] In the present invention, the tubular portion 12B is not limited to a cylindrical shape, and a squared tubular portion shape may also be employed.

[0068] The cutting portion is not limited to the one formed continuously on the circumference of the shoulder 12C, but the one formed intermittently may also be employed. In such case, by perforating the fabric 1 and pressing the cutting portion against the fabric 1, the fabric 1 can be cut.

Claims

1. A button comprising: a button body (11,21); and a fixture (12), the fixture (12) being pressed and fixed with a fabric (1) interposed between the button body

(11,21) and the fixture (12), wherein the button body (11,21) has a housing (11A, 21A) for a tip end (12A) of the fixture (12) to be inserted therein, the fixture (12) has a shoulder (12C) between the tip end (12A) and a tubular portion (12B) formed continuously from the tip end (12A), the shoulder (12C) having an edge (12F) which cooperates with an insertion end (11E, 21E) of the housing (11A, 21A) of the button body (11,21) to cut the fabric (1), **characterised in that** the shoulder (12C) has an outer periphery radially bulged relative to the tubular portion (12B).

2. The button according to claim 1, wherein the edge 12(F) is formed continuously on a circumference of the shoulder (12C).

3. The button according to claim 1, wherein the edge 12(F) is formed intermittently on a circumference of the shoulder 12(c).

4. The button according to claim 1, 2 or 3, wherein the tip end (12A) has a projection (12E) projecting from the shoulder (12C).

5. The button according to any of claims 1 to 4, wherein the tip end (12A) has a projection (12E) which is dented when pressed by the button body (11, 21), so that the tip end (12A) is bulged outwardly to engage with the housing (11A, 21A).

Patentansprüche

1. Knopf, der Folgendes umfasst: einen Knopfkörper (11, 21) und eine Befestigung (12), wobei die Befestigung (12) gepresst und fixiert wird, mit einem Textilerzeugnis (1), das zwischen dem Knopfkörper (11,21) und der Befestigung (12) angeordnet ist, wobei der Knopfkörper (11, 21) eine Gehäuse (11A, 21A) hat, damit ein Spitzenende (12A) der Befestigung (12) darin eingesetzt wird, wobei die Befestigung (12) einen Absatz (12C) zwischen dem Spitzenende (12A) und einem fortlaufend von dem Spitzenende (12A) geformten röhrenförmigen Abschnitt (12B) hat, wobei der Absatz (12C) eine Kante (12F) hat, die mit einem Einsetzende (11E, 21E) des Gehäuses (11A, 21A) des Knopfkörper (11, 21) zusammenwirkt, um das Textilerzeugnis (1) zu schneiden, **dadurch gekennzeichnet, dass** der Absatz (12C) einen Außenumfang hat, der in Radialrichtung im Verhältnis zu dem röhrenförmigen Abschnitt (12B) ausgebaucht ist.

2. Knopf nach Anspruch 1, wobei die Kante (12F) fortlaufend an einem Umfang des Absatzes (12C) geformt ist.

3. Knopf nach Anspruch 1, wobei die Kante (12F) mit Unterbrechungen an einem Umfang des Absatzes (12C) geformt ist.

4. Knopf nach Anspruch 1, 2 oder 3, wobei das Spitzenende (12A) einen von dem Absatz (12C) vorspringenden Vorsprung (12E) hat.

5. Knopf nach einem der Ansprüche 1 bis 4, wobei das Spitzenende (12A) einen Vorsprung (12E) hat, der eingebaut wird, wenn er durch den Knopfkörper (11, 21) gepresst wird, so dass das Spitzenende (12A) nach außen ausgebaucht wird, um mit dem Gehäuse (11A, 21A) ineinanderzugreifen.

Revendications

1. Bouton, comprenant: un corps de bouton (11, 21); et un moyen de fixation (12), le moyen de fixation (12) étant pressé et fixé avec un tissu (1) placé entre le corps du bouton (11, 21) et le moyen de fixation (12), le corps du bouton (11, 21) comprenant un logement (11A, 21A) pour une extrémité de pointe (12A) du moyen de fixation (12), en vue d'une insertion dans celui-ci, le moyen de fixation (12) comprenant un épaulement (12C) entre l'extrémité de pointe (12A) et une partie tubulaire (12B), formée de manière continue à partir de l'extrémité de pointe (12A), l'épaulement (12C) comportant un bord (12F) coïncidant avec une extrémité d'insertion (11E, 21E) du logement (11A, 21A) du corps du bouton (11, 21) pour couper le tissu (1), **caractérisé en ce que** l'épaulement (12C) comporte une périphérie externe bombée radialement par rapport à la partie tubulaire (12B).

2. Bouton selon la revendication 1, dans lequel le bord (12F) est formé de manière continue sur une circonference de l'épaulement (12C).

3. Bouton selon la revendication 1, dans lequel le bord (12F) est formé de manière intermittente sur une circonference de l'épaulement (12C).

4. Bouton selon les revendications 1, 2 ou 3, dans lequel l'extrémité de pointe (12A) comporte une saillie (12E) débordant de l'épaulement (12C).

5. Bouton selon l'une quelconque des revendications 1 à 4, dans lequel l'extrémité de pointe (12A) comporte une saillie (12E) qui est enfoncée lors d'une pression exercée par le corps du bouton (11, 21), de sorte que l'extrémité de pointe (12A) est bombée vers l'extérieur en vue de son engagement dans le logement (11A, 21A).

FIG. 1A

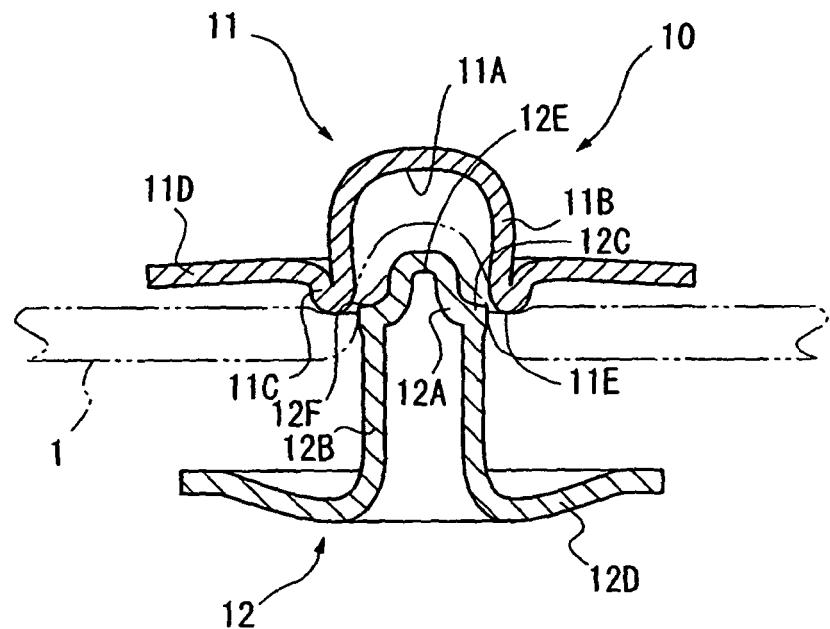


FIG. 1B

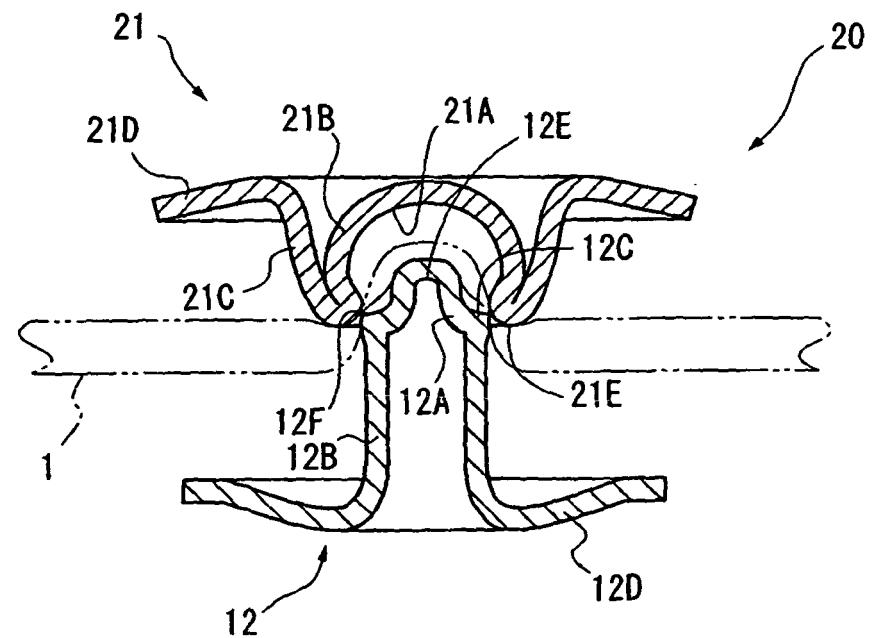


FIG. 2A

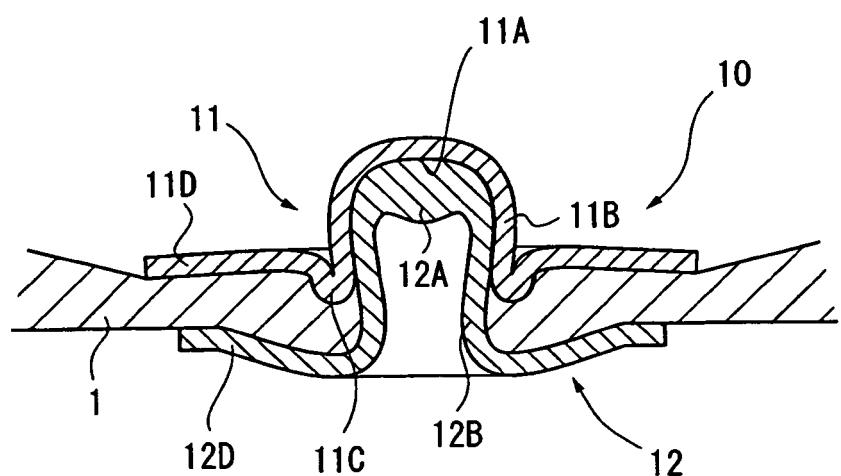


FIG. 2B

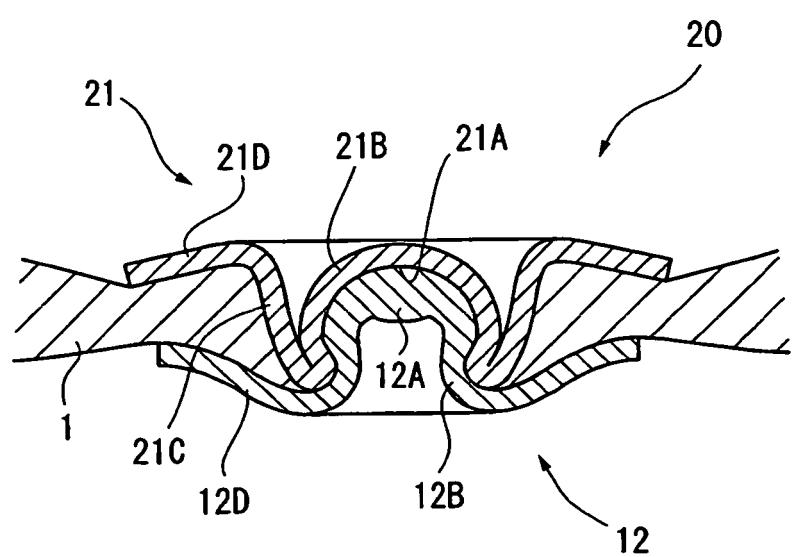


FIG. 3A

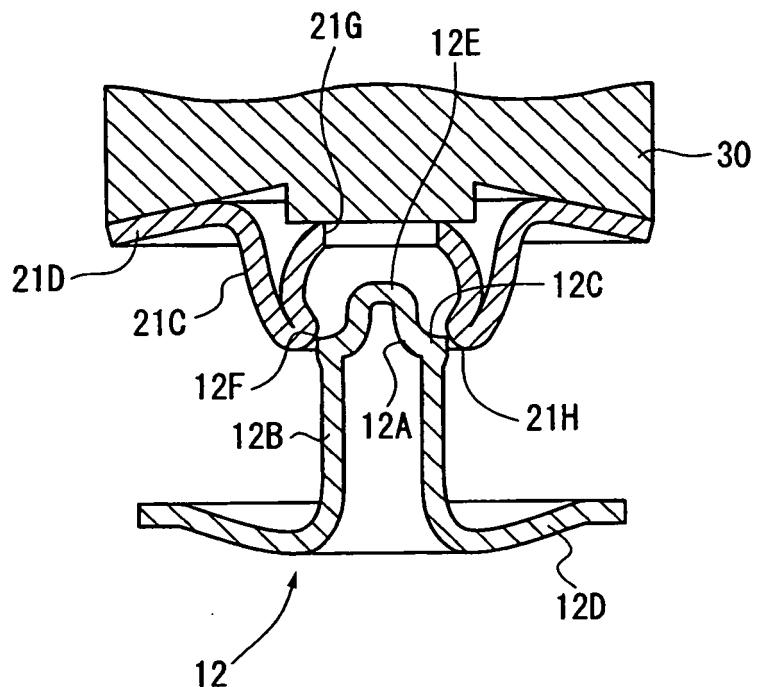


FIG. 3B

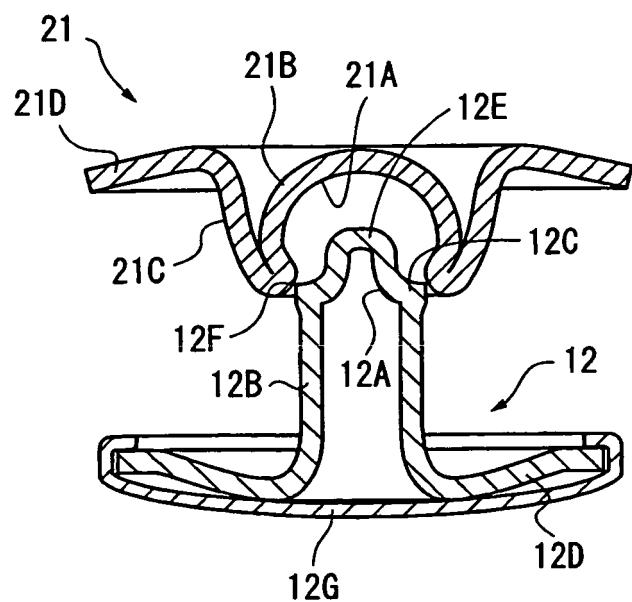


FIG. 4 A
PRIOR ART

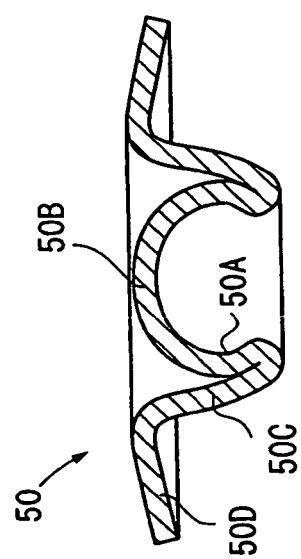


FIG. 4 B
PRIOR ART

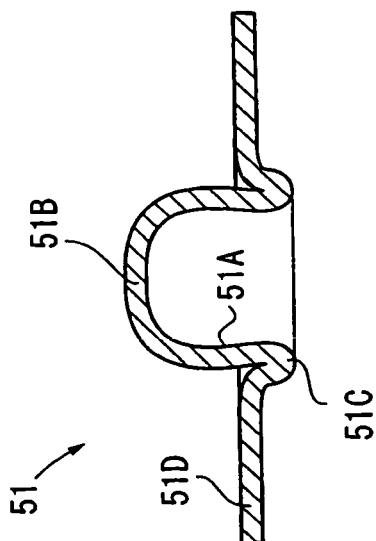


FIG. 4 C
PRIOR ART

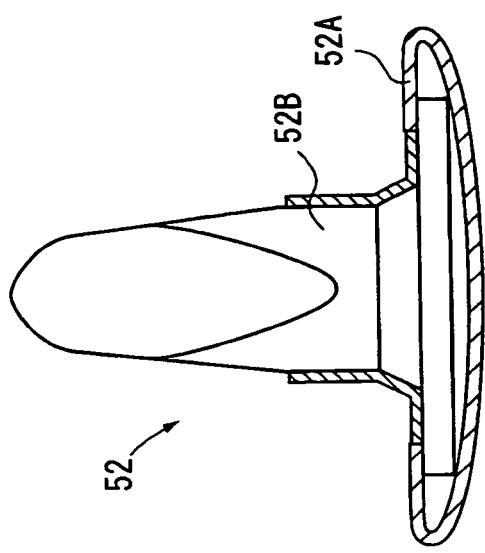


FIG. 4 D
PRIOR ART

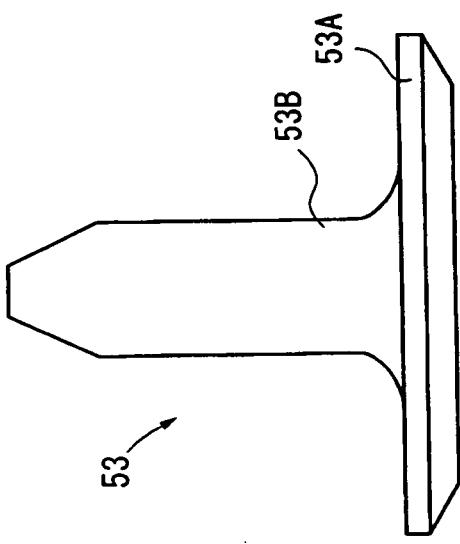


FIG. 5A
PRIOR ART

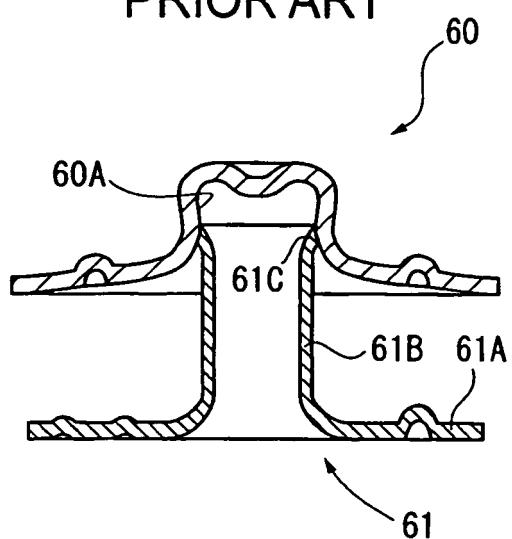
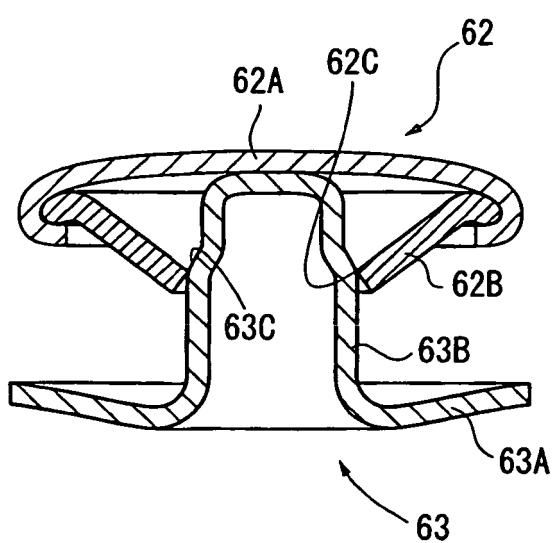


FIG. 5B
PRIOR ART



REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- JP 54073456 U [0014]
- JP 55173907 U [0014]
- EP 101065 A [0020] [0020]
- EP 1110469 A [0020]
- GB 2137868 A [0020] [0020]
- FR 2553268 A [0020]