



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**26.05.2010 Bulletin 2010/21**

(51) Int Cl.:  
**A61J 9/00** (2006.01) **B65D 41/17** (2006.01)  
**A61J 1/14** (2006.01) **A61J 11/00** (2006.01)

(21) Application number: **08169607.2**

(22) Date of filing: **21.11.2008**

(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 MT NL NO PL PT RO SE SI SK TR**  
Designated Extension States:  
**AL BA MK RS**

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(54) **A ring for mounting a teat to a baby feeding bottle**

(57) A ring for mounting a teat to a threaded baby bottle is disclosed. The ring comprises an annular top and a peripheral skirt depending from said annular top. The skirt has a corresponding thread to engage with the thread on the bottle to secure the ring and consequently the teat to the bottle, wherein at least a portion of the skirt

is configured so that it resiliently deforms when the ring is pushed down onto the neck of the bottle so that the corresponding screw threads engage without having to screw the ring onto the bottle. The cooperating screw threads allow for the ring to be screwed off. The invention also relates to a cap for a bottle or container.

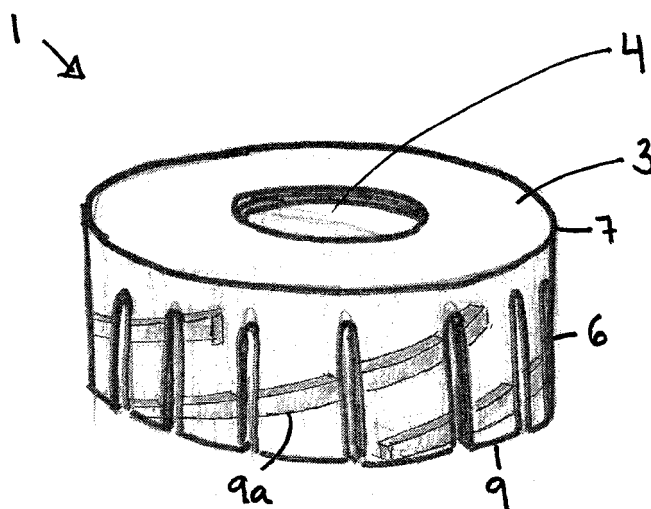


Figure 1

## Description

### FIELD OF THE INVENTION

**[0001]** The present invention relates to a ring for mounting a teat to a baby feeding bottle.

### BACKGROUND OF THE INVENTION

**[0002]** Teats are used together with bottles to provide liquid feed to infants. Typically, a teat is secured to a threaded upper end of a bottle using a screw ring that has a complimentary thread to engage the threaded upper end of the bottle. To attach the teat to the bottle, a torque is applied to the screw ring so that a flange on the teat is compressed between the upper end or lip of the bottle and a surface of the screw ring to provide a leak-proof seal. To remove the teat, a torque is applied to the screw ring in the opposite direction.

**[0003]** Due to the rotation of the screw ring in relation to the bottle, the teat has a tendency to wrinkle and is exposed to unnecessary wear. During the attachment of the teat, there is a risk of asymmetrically screwing the teat on to the bottle resulting in an inadequate seal and so leakage may occur. If leakage occurs or the teat is incorrectly attached, the caregiver may assume that the screw ring is insufficiently tightened and so they intuitively apply more torque to the ring in an attempt to stop the leakage. However, research has suggested that applying more torque to leaking and/or asymmetrically attached screw ring actually has a tendency to increase the leakage rather than prevent or reduce it. Even when the threads of the screw ring are in correct engagement with the threads of the bottle, the caregiver may still find it difficult to judge the tightness of the ring connection as the soft silicon material of the teat between the screw ring and the upper lip of the bottle tends to deform upon further tightening the screw ring.

**[0004]** Further disadvantages include the need to use two hands to attach and remove the teat to and from the bottle. In many cases a baby is carried when preparing the bottle and so only one hand is available for screwing the ring onto the bottle which may cause difficulties.

**[0005]** It is desirable to provide a device that more easily attaches a teat to a bottle and gives the caregiver an improved feedback on the fitting of the teat on the bottle.

**[0006]** US 4 717 034 discloses a cap which can be mounted onto the neck of a bottle using only one hand by pushing on and screwing off the cap. However, the cap has a rib which flexes and bends around a thread on the cap to form a shallow indentation on the rib to hold the cap in place on the bottle.

### SUMMARY OF THE INVENTION

**[0007]** The present invention seeks to provide a ring for securing a teat onto a bottle that overcomes or substantially alleviates the problems mentioned above.

**[0008]** According to the present invention, there is provided a cap for attachment to a neck of a baby bottle, the cap including a peripheral skirt having a cooperating element to engage with a corresponding cooperating element on the neck of the bottle to secure the cap to the bottle, wherein at least a portion of the skirt is configured so that it resiliently deforms when the cap is pushed down onto the neck of the bottle so that the corresponding cooperating elements engage to secure the cap on the bottle.

**[0009]** Conveniently, the at least a portion of the skirt comprises a plurality of circumferentially spaced teeth that resiliently deform when the cap is pushed down onto a neck of a bottle.

**[0010]** Preferably, the teeth comprise an inner surface, a portion of said cooperating element being formed on said inner surface each of said portions engaging the corresponding cooperating element on the bottle to cause the teeth to resiliently deform when pushing the cap onto the bottle.

**[0011]** In a preferred embodiment, the upper wall of the cap extends radially outwards beyond the skirt and a second outer skirt depends from the upper wall surrounding, and spaced from, the first skirt such that the teeth can deflect into said space.

**[0012]** The skirt may alternatively comprise ribbed portions adjacent to the teeth, each ribbed portion having radially protruding ribs contactable by a user to space their fingers away from the teeth.

**[0013]** In one embodiment the cap comprises a circumferential resilient component disposed inside the skirt, the resilient component including a cooperating element that temporarily deforms when the cap is pushed down onto the neck of the bottle.

**[0014]** Preferably, a plurality of resilient components is mounted to an inner surface of the skirt, such component deforming a portion of a cooperating element for engagement with the corresponding cooperating element on the bottle.

**[0015]** Conveniently, the inner surface of the skirt comprises at least one recess for holding at least one resilient component.

**[0016]** In one embodiment, the skirt comprises a rigid outer and a resiliently deformable inner layer.

**[0017]** Preferably, at least one portion of the outer layer of the skirt extends in and around a free edge of the inner layer, a portion of a cooperating element being formed on an inner surface of said at least one portion, said at least one portion being deflectable against the resilience of the inner layer when the cap is pushed down onto the neck of a bottle.

**[0018]** Conveniently, the cap comprises an upper wall from which the skirt depends.

**[0019]** The upper wall of the cap according to the present invention may further comprise an aperture for receiving a teat.

**[0020]** In one embodiment a teat is mounted to the peripheral skirt.

**[0021]** Preferably, at least one of the resilient components is integrated with a teat.

**[0022]** In one embodiment, at least one cooperating element comprises a thread.

**[0023]** Conveniently, one cooperating element is a thread and the other cooperating element is at least one pin that engages the thread when the cap is pushed down onto the neck of the bottle to secure the cap to the bottle without rotation of the cap relative to the bottle, the cap only being rotatable relative to the bottle to screw the cap off the bottle.

**[0024]** According to another aspect of the invention, there is provided a feeding bottle comprising a neck and a cap for attachment to the neck, the neck and the cap each having a cooperating element that engage to attach the cap to the bottle, wherein at least a portion of the cooperating element on the neck is configured so that it resiliently deforms when the cap is pushed down onto the neck of the bottle so that the corresponding cooperating elements engage to secure the cap on the bottle.

**[0025]** In this embodiment, the cooperating elements comprise corresponding threads configured such that at least the thread on the neck of bottle deforms to allow the cap to be pushed onto the bottle so that the threads engage, and such that the cap can be screwed off the bottle once the threads have engaged.

**[0026]** The threads on the neck of the bottle may be shaped so as to deform under the pressure of the threads on the cap when the cap is pushed down onto the neck of the bottle.

**[0027]** Conveniently, the cap is for use with a feeding bottle.

#### BRIEF DESCRIPTION OF THE DRAWINGS

**[0028]** Embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 shows a perspective view of a ring according to the present invention;

Figure 2 shows a cross-sectional view along a vertical plane of the ring of Figure 1 engaging with a teat and a feeding bottle;

Figure 3 shows a cross-sectional view along a vertical plane of a ring of another embodiment of the present invention engaging with a feeding bottle;

Figure 4a shows a perspective view of a ring of a different embodiment of the present invention;

Figure 4b shows a part of a cross-sectional view along a horizontal plane of the ring of Figure 4a;

Figure 5a shows a part of a view from beneath along a horizontal plane of a ring of another embodiment of the present invention;

Figure 5b shows a cross-sectional view of a part of the ring of Figure 5a;

Figure 6a shows a part of a cross-sectional view along a vertical plane of a ring of yet another em-

bodiment of the present invention;

Figure 6b shows a view from beneath of a part of the ring of Figure 6a.

#### DETAILED DESCRIPTION OF THE EMBODIMENTS

**[0029]** Referring now to the drawings, there is shown in Figure 1 and 2 a ring 1 for releasably attaching to a baby feeding bottle 2. The ring comprises an annular top 3 having an aperture 4 for receiving a teat 5 having a flange 5a that seats against the underside 3a of the top 3, and a cylindrical skirt 6 extending perpendicular from an outer edge or periphery 7 of the top 3. The skirt 6 provides means for removably securing the ring 1 onto a threaded neck 8 of the bottle 2 by the skirt 6 being divided into a plurality of equally distributed teeth 9 each comprising a portion of a screw thread 9a on their inner surface configured to engage the threaded neck 8 where attached to the bottle 2. The ring 1 is snapped onto the bottle 2 by applying unidirectional pressure to the annular top 3 (in the direction of arrow "X" in Figure 2) so that the teeth 9 temporarily deflect or resiliently deform in a radially outward direction when the screw thread portions 9a on the teeth contact the screw thread formed on the neck of the bottle 8 thereby allowing the screw thread portions 9a to ride over the screw thread 8 on the bottle 2. The cooperating screw threads thereby secure the ring 1 onto the bottle 2.

**[0030]** The ring is removed from the bottle in the conventional way by applying torque to the ring 1 so that the ring unscrews from the bottle 2.

**[0031]** An alternative embodiment of the present invention will now be described with reference to Figure 3. The ring 11 is similarly constructed to that described in the previous embodiment however it further comprises means to allow a user to grip the ring 11 without impeding the deflection of the teeth 9. Accordingly, the outer edge or periphery 12 of the annular top 13 extends radially outward and a second outer cylindrical skirt 14 depends from a second radial outer edge or periphery 15 so that a space 16 is provided between the two skirts 14, 17. The space 16 allows for pressure of a gripping hand to be exerted on the second skirt 14 as well as the annular top 13 without impeding on the radially outward deflection of the teeth of the first skirt 17 when the ring is snapped onto the threaded neck 8 of the bottle 2.

**[0032]** It will be appreciated that the second outer skirt does not necessarily have to be a continuous cylinder but may comprise parts or portions of a cylindrical skirt. The second skirt can also be provided by an outer ring being mounted on top of the inner ring.

**[0033]** In another embodiment of the present invention as illustrated in Figure 4a and 4b, there is a ring 21 similarly constructed to that of the first embodiment in that it comprises an annular top 22 having an aperture 23 for receiving a teat and a skirt 24 extending perpendicular from an outer edge or periphery 25 of the annular top 22. The skirt 24 comprises a plurality of ribbed portions 26

and teeth 28. The ribbed portions provide vertical ribs 27 on their outer surface and are distributed among the teeth 28 provided with portions of screw threads 28a on their inner surface. The portions of screw threads 28a are configured so as to form parts of a continuous helical thread for engaging with the threaded neck of the bottle during mounting and removal of the cap. The ribbed portions 26 do not deflect upon pushing the ring 21 onto the threaded neck of the bottle due to their lack of screw threads, however when a user's hand contacts the ribs 27 their fingers are spaced away from the teeth 28, thereby allowing the teeth to deflect without obstruction.

**[0034]** It will be appreciated that the depth of the ribs 27 is at least equal to the maximum extent of lateral deflection of the teeth 28 so that the teeth 28 can bend outwards freely during attachment to the threaded neck of the bottle.

**[0035]** Another embodiment of the present invention is illustrated in Figure 5a and 5b wherein a ring 31 comprises an annular top 32 having an aperture 34 for receiving a teat and a cylindrical skirt 35 extending perpendicular from an outer edge or periphery 36 of the top 32. The ring 31 is made out of a stiff material such as a plastic and its skirt 35 has an inner surface comprising recesses 37 for holding softer resilient components 38 providing portions of screw threads 39 that are configured so as to each form a part of a helical continuous thread to engage the threaded neck of the bottle. The softer components 38 are made out of silicon and can also be integrated with a teat. During attachment, the flexible nature of the silicon allows for the portions of the screw threads 39 to resiliently deform or deflect as they ride over the screw threads of the neck of the bottle and so the ring is merely snapped onto the bottle.

**[0036]** It will be appreciated that the skirt 35 of the ring may comprise an inner annular recess holding a circumferentially extending soft component having continuous screw threads. Alternatively, a circumferential or a plurality of soft components may merely be disposed on the inside of the skirt without the necessity of a recess.

**[0037]** An alternative embodiment of the present invention is shown in Figure 6a and 6b. The construction of the ring 41 is largely the same as the aforementioned embodiments in that it comprises an annular top 42 having an aperture 43 for receiving a teat and a cylindrical skirt 44 extending perpendicular from an outer edge or periphery 45 of the top 42 and so has one free edge 46 at the opposite end. The ring 41 comprises two layers, wherein the outer layer 47 is preferably made out of hard plastic and at equally distributed positions a portion 48 of the outer layer folds in and around the free edge 46 of the inner layer 49 where it assumes a threaded shape or threading 50. The threading 50 of the portions is configured so that they each form a part of a helical continuous screw thread on the inner surface of the skirt 44. The inner layer 49 acts as a spring for the portions 48 of the outer layer when the ring 41 is snapped onto the bottle. The inner layer 49 is preferably made out of silicon and

can alternatively be integrated with a teat. The advantage of this embodiment over the embodiment described above is that the silicon is not engaging with the threaded portion of the bottle during attachment and removal and so the level of friction is reduced.

**[0038]** In all the aforementioned embodiments the lower side of the screw thread is angled to assist in the ring snapping onto the bottle but preventing the ring from being snapped off. Alternatively, or additionally, the upper side of the screw thread of the neck of the bottle can be angled to assist in mounting the ring onto the bottle.

**[0039]** Although reference has been made in the aforementioned embodiments to screw threads or portions of screw threads as means for removably securing the ring onto a threaded neck of a bottle, it is envisaged that pins can be employed instead of a screw thread or portions of screw threads on the inner surface of the resilient portions of the ring so that they engage with the screw thread on the neck of the bottle. Alternatively, pins can be employed instead of the screw thread on the neck of the bottle so that the pins engage with the screw thread or portions of screw threads on the ring.

**[0040]** The deflecting means described in the different embodiments of the present invention allow for the ring to be snapped on with one hand and as there is no screwing motion during attachment the chance of asymmetrically attaching the ring is reduced and overtightening is prevented. Consequently, the caregiver is ensured that the teat is attached correctly to the bottle and that leakage is unlikely to occur. The screwing off motion of the ring is beneficial because of the confidence it gives regarding the connection between the teat and the bottle and during travelling the bottle cannot open accidentally.

**[0041]** It will be appreciated that the different embodiments of the rings may not have an aperture and can thereby act as caps to bottles or containers, although the embodiments of the invention are not limited to such a feature. It is also envisaged that the teat could be integrally formed with the ring. In the embodiments of Figures 5 and 6, the silicon layer could be formed from the teat itself or be a separate component. Alternatively or combined, the ring could comprise a peripheral skirt to which a teat is moulded or mounted so that the teat itself acts as the upper wall.

**[0042]** Although embodiments of the invention have been shown and described, it will be appreciated by those skilled in the art that variations may be made to the above exemplary embodiments that lie within the scope of the invention, as defined in the following claims. For example, instead of providing a resiliently deformable cap, it is also envisaged that the neck of the feeding bottle may be provided with resiliently deformable cooperating elements so that, when the cap is pushed down onto the neck, the cooperating elements on the neck deform so as to allow the cap to engage with the bottle. The cooperating elements may be threads or pins, as described above in relation to the cap. In this instance, the threads on the neck of the bottle may be shaped or otherwise

configured such that when the cap is pressed down, the threads on the bottle deform so that the threads on the cap can ride over them. Once the threads have engaged, the cap is then removed from the bottle in the conventional way i.e. by unscrewing it.

## Claims

1. A cap for attachment to a neck of a baby bottle, the cap including a peripheral skirt having a cooperating element to engage with a corresponding cooperating element on the neck of the bottle to secure the cap to the bottle, wherein at least a portion of the skirt is configured so that it resiliently deforms when the cap is pushed down onto the neck of the bottle so that the corresponding cooperating elements engage to secure the cap on the bottle.
2. A cap according to claim 1, wherein the at least a portion of the skirt comprises a plurality of circumferentially spaced teeth that resiliently deform when the cap is pushed down onto a neck of a bottle.
3. A cap according to claim 2, wherein the teeth comprise an inner surface, a portion of said cooperating element being formed on said inner surface each of said portions engaging the corresponding cooperating element on the bottle to cause the teeth to resiliently deform when pushing the cap onto the bottle.
4. A cap according to claim 3, wherein the upper wall of the cap extends radially outwards beyond the skirt and a second outer skirt depends from the upper wall surrounding, and spaced from, the first skirt such that the teeth can deflect into said space.
5. A cap according to claim 3, wherein the skirt comprises ribbed portions adjacent to the teeth, each ribbed portion having radially protruding ribs contactable by a user to space their fingers away from the teeth.
6. A cap according to claim 1, comprising a circumferential resilient component disposed inside the skirt, the resilient component including a cooperating element that temporarily deforms when the cap is pushed down onto the neck of the bottle.
7. A cap according to claim 1, wherein a plurality of resilient components are mounted to an inner surface of the skirt, such component deforming a portion of a cooperating element for engagement with the corresponding cooperating element on the bottle.
8. A cap according to claim 6 and claim 7, wherein the inner surface of the skirt comprises at least one recess for holding at least one resilient component.
9. A cap according to claim 1, wherein the skirt comprises a rigid outer and a resiliently deformable inner layer.
10. A cap according to claim 9, wherein at least one portion of the outer layer of the skirt extends in and around a free edge of the inner layer, a portion of a cooperating element being formed on an inner surface of said at least one portion, said at least one portion being deflectable against the resilience of the inner layer when the cap is pushed down onto the neck of a bottle.
11. A cap according to any preceding claim, wherein the cap comprises an upper wall from which the skirt depends.
12. A cap according to claim 11, wherein the upper wall of the cap comprises an aperture for receiving a teat.
13. A cap according to claim 1 to 10, wherein a teat is mounted to the peripheral skirt.
14. A cap according to claims 6 to 13, wherein at least one of the resilient components is integrated with a teat.
15. A cap according to any preceding claim, wherein at least one cooperating element comprises a thread.
16. A cap according to claim 15, wherein one cooperating element is a thread and the other cooperating element is at least one pin that engages the thread when the cap is pushed down onto the neck of the bottle to secure the cap to the bottle without rotation of the cap relative to the bottle, the cap only being rotatable relative to the bottle to screw the cap off the bottle.
17. A feeding bottle comprising a neck and a cap for attachment to the neck, the neck and the cap each having a cooperating element that engage to attach the cap to the bottle, wherein at least a portion of the cooperating element on the neck is configured so that it resiliently deforms when the cap is pushed down onto the neck of the bottle so that the corresponding cooperating elements engage to secure the cap on the bottle.
18. A feeding bottle according to claim 17, wherein the cooperating elements comprise corresponding threads configured such that at least the thread on the neck of bottle deforms to allow the cap to be pushed onto the bottle so that the threads engage, and such that the cap can be screwed off the bottle once the threads have engaged.
19. A feeding bottle according to claim 18, wherein the

threads on the neck of the bottle are shaped so as to deform under the pressure of the threads on the cap when the cap is pushed down onto the neck of the bottle.

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- 20.** A feeding bottle comprising a cap according to any preceding claim.

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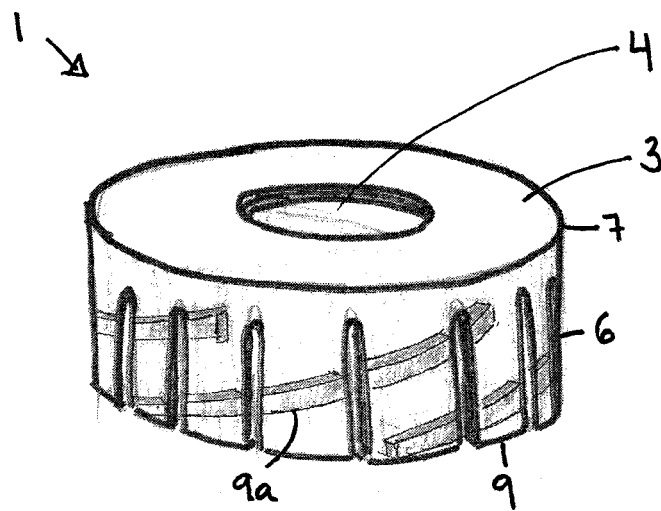


Figure 1

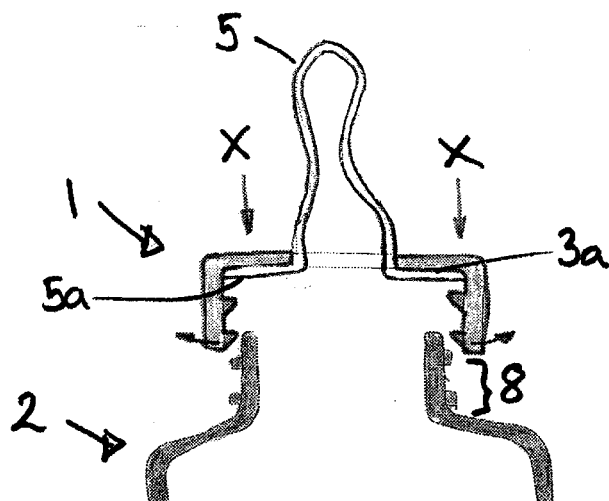


Figure 2

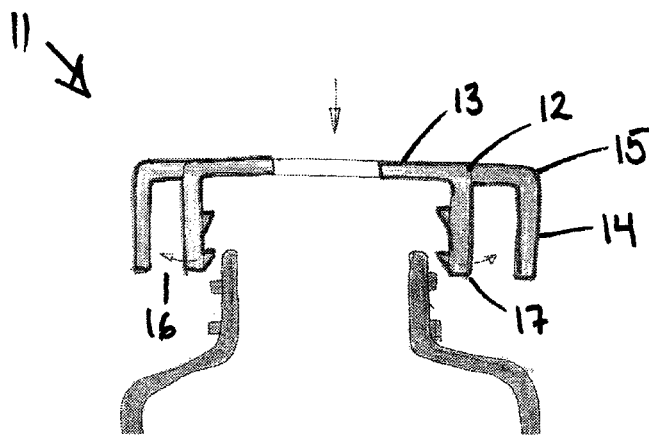


Figure 3

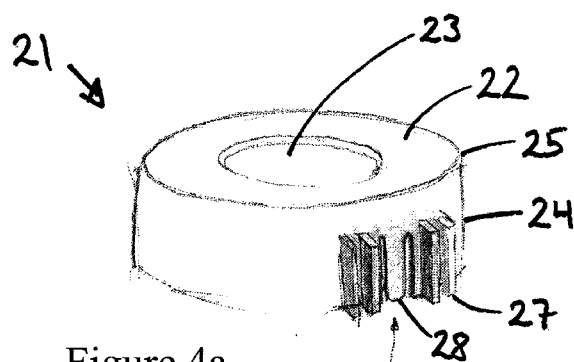


Figure 4a

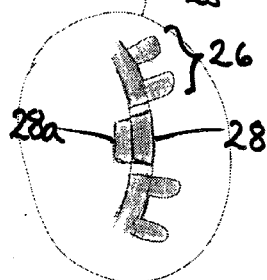


Figure 4b

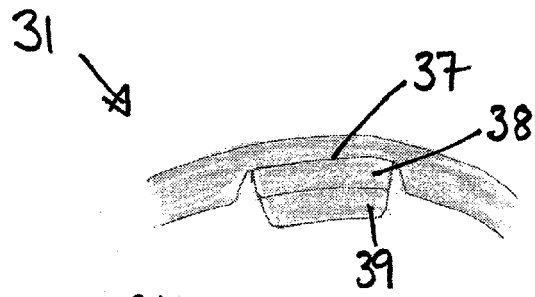


Figure 5a

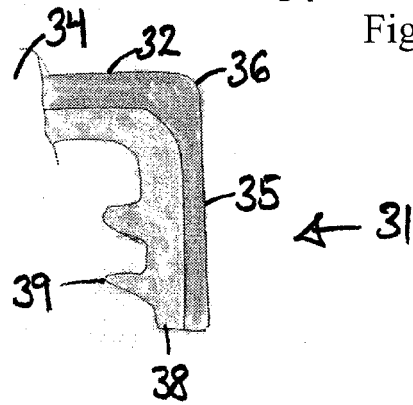


Figure 5b

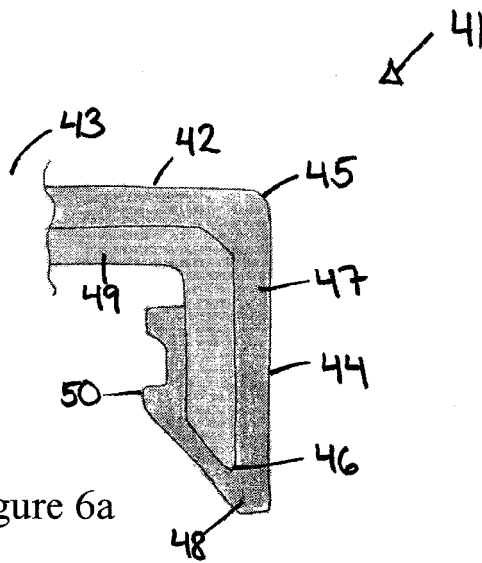


Figure 6a

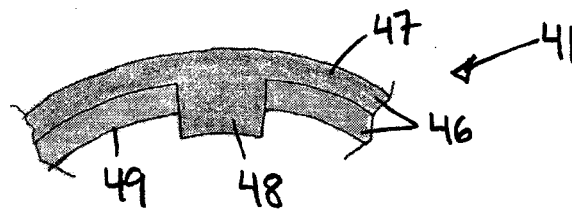


Figure 6b



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Application Number  
EP 08 16 9607

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                    |                                                                                                                                                                        |                                                                                                                                                                                                                                                                                  |                                                                    |
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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 08 16 9607

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
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23-04-2009

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