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(54) **UNDERCUP INSERT MEMBER**

**BÜGEL FÜR BÜSTENHALTER**

**PIECE RAPPORTEE DE TYPE BALEINE**

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## Description

**[0001]** This invention relates to undercup insert members. More particularly, but not exclusively, the invention relates to undercup insert members for brassieres.

**[0002]** Brassieres are made with undercup wire inserts to maintain the shape of the cups. Also, the inserts provide support for the breast. The inserts have the disadvantage that the painting or paint coating can wear away and the insert can rust causing unsightly stains.

**[0003]** FR 1 283 336 discloses a symmetric undercup insert member made of a plastics material. The undercup insert member has an essentially uniform cross-sectional profile along the length thereof.

**[0004]** US 5,730,640 discloses a steel undercup insert member having an hour glass shaped cross-sectional profile along the length thereof.

**[0005]** According to a first aspect of the invention there is provided an undercup insert member according to Claim 1.

**[0006]** Preferably the undercup insert member includes further features as defined in dependent Claims 2 to 20.

**[0007]** According to a second aspect of the invention there is provided a breast support arrangement according to Claim 21.

**[0008]** Preferably the breast support arrangement includes further features as defined in dependent Claims 22 to 24.

**[0009]** An embodiment of the invention will now be described by way of example only, in reference to the accompanying drawings, in which:-

Fig. 1 is a front view of an undercup insert member;

Fig. 1A is an end view of the undercup insert member shown in Fig. 1;

Fig. 2 is a perspective view of part of the undercup insert member shown in Fig. 1;

Fig. 3 is a front view of a further undercup insert member;

Fig. 3A is an end view of the undercup insert member shown in Fig. 3.

Fig. 3B is a view along the lines B-B in Fig. 3;

Fig. 4 is a front view of an undercup insert member according to a first embodiment of the invention;

Fig. 5 is a view along the lines V-V in Fig. 4;

Fig. 6 is a view along the lines VI-VI in Fig. 4;

Fig. 7 is a side view of the undercup insert member shown in Fig. 4; and

Fig. 8 is a top view of the undercup insert member shown in Fig. 4.

**[0010]** Referring to Figs. 1 and 2 of the drawings, there is shown an undercup insert member 10 for a brassiere. The undercup insert member 10 is in the form of an underwire for a cup of a brassiere. The insert member 10 comprises an elongate curved main portion 12 formed of a plastics material, and is curved to conform to the size and shape of the breast to be supported. The insert member 10 is sewn into a hem underneath the cups of the brassiere to provide support for the breast.

**[0011]** The main portion 12 is formed by moulding and has a profile of a generally oval configuration. In some arrangements, the profile may be of a kidney shape. The main portion 12 has opposite ends 14, 16 which are rounded.

**[0012]** The provision in the arrangements of the main portion 12 having a generally oval profile and having rounded ends provide the advantage that there is a reduced risk of the insert member 10 piercing the brassiere.

**[0013]** The undercup insert member 10 is formed of a suitable plastics material which combines sufficient rigidity to provide support to the breast, and also sufficient flexibility to allow bending and twisting of the insert member 10 during use and washing so that it will return to its original configuration. A suitable such material is an acetal homopolymer resin, for example as sold under the trade mark Delrin, a registered trade mark of E.I. du Pont de Nemours and Company.

**[0014]** Another arrangement is shown in Figs. 3, 3A and 3B which is generally similar to the embodiment shown in Figs. 1 and 2, and comprises the same features. These features have been labelled with the same reference numerals. In addition to the features shown in Figs. 1 and 2, the arrangement shown in Fig. 3 also includes flange members 18, 20 provided at the ends 14, 16 of the main portion 12. The flange members may be formed of the same material as the main portion 12. Alternatively, the flange members can be formed of a rubberised material, which may be a rubberised version of the material from which the main portion 12 is formed. The flange members 18, 20 allow the insert member to be sewn into the brassiere. As can be seen from Fig. 3A and 3B, the profile of the main portion 12 is generally kidney shaped.

**[0015]** In some arrangements, the flange members 18, 20 extend substantially the whole length of the main portion 12, as shown in broken lines in Fig. 3, and designated by the numeral 22, to allow stitching along the length of the main portion 12. This would be particularly suitable for use in sports brassieres, and allows the insert member to be stitched into the brassiere substantially along the whole of the length of the main portion 12.

**[0016]** An undercup insert member according to an embodiment of the invention is shown in Figs. 4 to 8. This embodiment is generally similar to the arrangements shown in Figs. 1 to 3B, and comprises many of the same features. These features have been labelled with the

same reference numerals.

[0017] The embodiment shown in Figs. 4 to 8 differs from those shown in Figs. 1 to 3B in that the main portion 12 comprises two regions, a first or outer region 30, and a second or inner region 32. The insert member 10 shown in Figs 4 to 7 is sewn into the brassiere such that the outer region 30 is arranged adjacent the outer region of the breast, and the inner region 32 arranged adjacent the inner region of the breast.

[0018] The outer region 30 has a profile shown in Fig. 6 which comprises first and second opposite elongate support elements 34, 36 which are connected to each other by a connecting element 38. The connecting element 38 is of a narrower width than the support element 34, 36 such that the profile of the outer region 30 is generally of an hour glass shape, as shown.

[0019] The provision of the outer region 30 having a profile of an hour glass shape provides the advantage that it allows the outer part to twist when the brassiere is put on and therefore provides improved aesthetics and is more comfortable for the wearer.

[0020] As shown in Fig. 5, the inner region 32 of the main portion 12 has a profile which is generally oval in shape.

[0021] There is thus described several arrangements of an insert for a brassiere which is formed of a plastics material and which have an oval profile and rounded ends. Thus, these arrangements have the advantage that they will not rust or otherwise corrode but also, they have the advantage of overcoming a problem with prior art insert members, whereby if the coating is worn away after continuous use to reveal bare metal, there is danger of piercing the body of the wearer. Also, a disadvantage of prior art insert members is that they can be detected by metal detecting machines, for example at airports causing embarrassment to the wearer. The provision of an undercup insert member formed of a plastics materials overcome such problems.

[0022] Various modifications can be made without departing from the scope of the invention, for example the main portion could have a generally circular profile. In addition, the insert member could be used in other forms of breast supporting underwear, or in swimsuits.

[0023] It will be appreciated that the dimensions and sized of the insert member will vary depending upon the size of the breast to be supported by the brassiere.

[0024] Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance it should be understood that the Applicant claims protection in respect of any patentable feature or combination of features hereinbefore referred to and/or shown in the drawings whether or not particular emphasis has been placed thereon.

## Claims

1. An undercup insert member for a breast support ar-

angement, the insert member comprising an elongate curved main portion (12) shaped to conform generally to the breast to be supported, the insert member being formed of a plastics material and including an inner region (32) having a first profile and an outer region (30) having a second profile defined by first and second support elements (34, 36), and a narrower connecting element (38) extending between the support elements, the undercup insert member being **characterised in that** the first and second profiles differ from one another.

2. An undercup insert member according to Claim 1 wherein the second profile has a shape which is generally an hour glass shape.
3. An undercup insert member according to Claim 1 or 2 wherein the first profile is of a generally oval configuration.
4. An undercup insert member according to any preceding claim wherein the main portion (12) is sufficiently flexible and resilient to allow deformation, such that the insert member can return to its original shape after deformation thereof.
5. An undercup insert member according to any preceding claim, wherein the plastics material is an acetal polymer.
6. An undercup insert member according to Claim 5 wherein the plastics material is an acetal homopolymer.
7. An undercup insert member according to Claim 5 wherein the plastics material is an acetal copolymer.
8. An undercup insert member according to any preceding claim wherein the plastics material comprises a resin.
9. An undercup insert member according to any of Claims 1 to 3 wherein the plastics material is a thermoplastic polyester, a thermoplastic polyester elastomer, and/or a liquid crystal polymer.
10. An undercup insert member according to any preceding claim wherein plastics material comprises a filler or reinforcement which comprises up to approximately 30% w/w of the plastics material.
11. An undercup insert member according to Claim 10 wherein the filler or reinforcement comprises up to approximately 20% w/w of the plastics material.
12. An undercup insert member according to Claim 10 or 11 wherein the filler or reinforcement comprises substantially 10% w/w of the plastics material.

13. An undercup insert member according to any preceding claim wherein the elongate main portion (12) has rounded edges, and the opposite ends (14, 16) of the main portion (12) are rounded.
14. An undercup insert member according to any preceding claim wherein the main portion is provided with a lug member (18, 20) to allow the insert member to be sewn into the breast support arrangement.
15. An undercup insert member according to Claim 14 wherein each lug member (18, 20) comprises a generally flat portion extending outwardly from the main portion.
16. An undercup insert member according to Claim 14 or 15 wherein the lug member extends from opposite sides of the main portion.
17. An undercup insert member according to Claim 14, 15 or 16 wherein the lug member extends from at least one end of the main portion.
18. An undercup insert member according to Claim 17 wherein the lug member extends from both ends of the main portion.
19. An undercup insert member according to Claim 17 or 18 wherein the lug member is generally circular in configuration.
20. An undercup insert member according to Claim 14, 15 or 16 wherein the lug member extends substantially the length of the main portion.
21. A breast support arrangement incorporating an undercup insert member as claimed in any preceding claim.
22. A breast support arrangement according to Claim 21 in the form of an article of clothing.
23. A breast support arrangement according to Claim 20 or 21 in the form of an article of breast supporting underwear.
24. A breast support arrangement according to Claim 21, 22 or 23 in the form of a brassiere.

#### Patentansprüche

1. Ein Undercup-Einsatzelement für eine Büstenhalteranordnung, wobei das Einsatzelement einen länglichen, gekrümmten Hauptkörper (12) aufweist, der so geformt ist, dass er sich in der Form allgemein der zu haltenden Brust anpasst, wobei das Einsatzelement aus einem Kunststoffmaterial gebildet ist

und einen Innenbereich (32) mit einem ersten Profil und einen Außenbereich (30) mit einem zweiten Profil, die durch erste und zweite Halterungselemente (34,36) definiert sind, und ein schmäleres Verbindungselement (38), das sich zwischen den Halterungselementen erstreckt, aufweist, wobei das Undercup-Einsatzelement **dadurch gekennzeichnet ist, dass** die ersten und zweiten Profile sich voneinander unterscheiden.

2. Undercup-Einsatzelement nach Anspruch 1, wobei das zweite Profil eine Form aufweist, die allgemein eine Sanduhrform ist.
3. Undercup-Einsatzelement nach Anspruch 1 oder 2, wobei das erste Profil eine allgemein ovale Konfiguration hat.
4. Undercup-Einsatzelement nach einem der vorangehenden Ansprüche, wobei der Hauptabschnitt (12) ausreichend flexibel und elastisch ist, um eine Verformung zu ermöglichen, so dass das Einsatzelement nach seiner Verformung in seine Ursprungsform zurückkehren kann.
5. Undercup-Einsatzelement nach einem der vorangehenden Ansprüche, wobei das Kunststoffmaterial ein Acetalpolymer ist.
6. Undercup-Einsatzelement nach Anspruch 5, wobei das Kunststoffmaterial ein Acetalhomopolymer ist.
7. Undercup-Einsatzelement nach Anspruch 5, wobei das Kunststoffmaterial ein Acetalcopolymer ist.
8. Undercup-Einsatzelement nach einem der vorangehenden Ansprüche, wobei das Kunststoffmaterial ein Harz aufweist.
9. Undercup-Einsatzelement nach einem der Ansprüche 1 bis 3, wobei das Kunststoffmaterial ein thermoplastischer Polyester, ein thermoplastisches Polyester-Elastomer und/oder ein Flüssigkristallpolymer ist.
10. Undercup-Einsatzelement nach einem der vorangehenden Ansprüche, wobei das Kunststoffmaterial einen Füllstoff oder eine Verstärkung umfasst, die bis zu etwa 30 Gew.-% des Kunststoffmaterials aufweist.
11. Undercup-Einsatzelement nach Anspruch 10, wobei der Füllstoff oder die Verstärkung bis zu etwa 20 Gew.-% des Kunststoffmaterials aufweist.
12. Undercup-Einsatzelement nach Anspruch 10 oder 11, wobei der Füllstoff oder die Verstärkung im wesentlichen 10 Gew.-% des Kunststoffmaterials aufweist.

weist.

13. Undercup-Einsatzelement nach einem der vorangehenden Ansprüche, wobei der längliche Hauptabschnitt (12) abgerundete Ränder hat und die gegenüberliegenden Enden (14,16) des Hauptabschnitts (12) abgerundet sind. 5
14. Undercup-Einsatzelement nach einem der vorangehenden Ansprüche, wobei der Hauptabschnitt mit einem Laschenelement (18,20) versehen ist, um ein Einnähen des Einsatzelements in die Büstenhalteranordnung zu ermöglichen. 10
15. Undercup-Einsatzelement nach Anspruch 14, wobei jedes Laschenelement (18,20) einen allgemein flachen Abschnitt aufweist, der sich vom Hauptabschnitt nach außen erstreckt. 15
16. Undercup-Einsatzelement nach Anspruch 14 oder 15, wobei das Laschenelement sich von gegenüberliegenden Seiten des Hauptabschnitts erstreckt. 20
17. Undercup-Einsatzelement nach Anspruch 14, 15 oder 16, wobei das Laschenelement sich von mindestens einem Ende des Hauptabschnitts erstreckt. 25
18. Undercup-Einsatzelement nach Anspruch 17, wobei das Laschenelement sich von beiden Enden des Hauptabschnitts erstreckt. 30
19. Undercup-Einsatzelement nach Anspruch 17 oder 18, wobei das Laschenelement eine allgemein kreisförmige Konfiguration besitzt. 35
20. Undercup-Einsatzelement nach Anspruch 14, 15 oder 16, wobei das Laschenelement sich im wesentlichen entlang der Länge des Hauptabschnitts erstreckt. 40
21. Büstenhalteranordnung mit einem Undercup-Einsatzelement, wie es in den vorangehenden Ansprüchen beansprucht wird. 45
22. Büstenhalteranordnung nach Anspruch 21 in der Form eines Kleidungsartikels. 50
23. Büstenhalteranordnung nach Anspruch 20 oder 21 in der Form eines Artikels von bruststützender Unterwäsche. 55
24. Büstenhalteranordnung nach Anspruch 21, 22 oder 23 in der Form eines Büstenhalters.

## Revendications

1. Pièce rapportée de type baleine pour un agence-

ment de support de poitrine, la pièce rapportée comprenant une partie principale incurvée allongée (12) formée pour se conformer généralement à la poitrine à maintenir, la pièce rapportée étant formée avec une matière plastique et comprenant une région interne (32) ayant un premier profil et une région externe (30), ayant un second profil défini par des premier et second éléments de maintien (34, 36) et un élément de raccordement plus étroit (38) s'étendant entre les éléments de maintien, la pièce rapportée de type baleine étant **caractérisée en ce que** les premier et second profils sont différents l'un de l'autre.

2. Pièce rapportée de type baleine selon la revendication 1, dans laquelle le second profil a une forme qui est généralement en forme de sablier.
3. Pièce rapportée de type baleine selon la revendication 1 ou 2, dans laquelle le premier profil a une configuration généralement ovale.
4. Pièce rapportée de type baleine selon l'une quelconque des revendications précédentes, dans laquelle la partie principale (12) est suffisamment flexible et élastique pour permettre la déformation, de sorte que la pièce rapportée peut revenir à sa forme d'origine après sa déformation.
5. Pièce rapportée de type baleine selon l'une quelconque des revendications précédentes, dans laquelle la matière plastique est un polymère d'acétal.
6. Pièce rapportée de type baleine selon la revendication 5, dans laquelle la matière plastique est un homopolymère d'acétal.
7. Pièce rapportée de type baleine selon la revendication 5, dans laquelle la matière plastique est un copolymère d'acétal.
8. Pièce rapportée de type baleine selon l'une quelconque des revendications précédentes, dans laquelle la matière plastique comprend une résine.
9. Pièce rapportée de type baleine selon l'une quelconque des revendications 1 à 3, dans laquelle la matière plastique est un polyester thermoplastique, un élastomère de polyester thermoplastique, et/ou un polymère de cristaux liquides.
10. Pièce rapportée de type baleine selon l'une quelconque des revendications précédentes, dans laquelle la matière plastique comprend une matière de remplissage ou un renforcement qui comprend jusqu'à approximativement 30 % en poids de matière plastique.

11. Pièce rapportée de type baleine selon la revendication 10, dans laquelle la matière de remplissage ou le renforcement comprend jusqu'à approximativement 20 % en poids de matière plastique.
12. Pièce rapportée de type baleine selon la revendication 10 ou 11, dans laquelle la matière de remplissage ou le renforcement comprend sensiblement 10 % en poids de matière plastique.
13. Pièce rapportée de type baleine selon l'une quelconque des revendications précédentes, dans laquelle la partie principale allongée (12) a des bords arrondis, et les extrémités opposées (14, 16) de la partie principale (12) sont arrondies.
14. Pièce rapportée de type baleine selon l'une quelconque des revendications précédentes, dans laquelle la partie principale est dotée d'un élément de patte (18, 20) pour permettre à la pièce rapportée d'être cousue dans l'agencement de support de poitrine.
15. Pièce rapportée de type baleine selon la revendication 14, dans laquelle chaque élément de patte (18, 20) comprend une partie généralement plate s'étendant vers l'extérieur à partir de la partie principale.
16. Pièce rapportée de type baleine selon la revendication 14 ou 15, dans laquelle l'élément de patte s'étend à partir des côtés opposés de la partie principale.
17. Pièce rapportée de type baleine selon la revendication 14, 15 ou 16, dans laquelle l'élément de patte s'étend à partir d'au moins une extrémité de la partie principale.
18. Pièce rapportée de type baleine selon la revendication 17, dans laquelle l'élément de patte s'étend à partir des deux extrémités de la partie principale.
19. Pièce rapportée de type baleine selon la revendication 17 ou 18, dans laquelle l'élément de patte a une configuration généralement circulaire.
20. Pièce rapportée de type baleine selon la revendication 14, 15 ou 16, dans laquelle l'élément de patte s'étend sensiblement sur la longueur de la partie principale.
21. Agencement de support de poitrine comprenant une pièce rapportée de type baleine selon l'une quelconque des revendications précédentes.
22. Agencement de support de poitrine selon la revendication 21, se présentant sous la forme d'un article de vêtement.
23. Agencement de support de poitrine selon la revendication 20 ou 21, se présentant sous la forme d'un article de sous-vêtement supportant la poitrine.
24. Agencement de support de poitrine selon la revendication 21, 22 ou 23, se présentant sous la forme d'un soutien-gorge.

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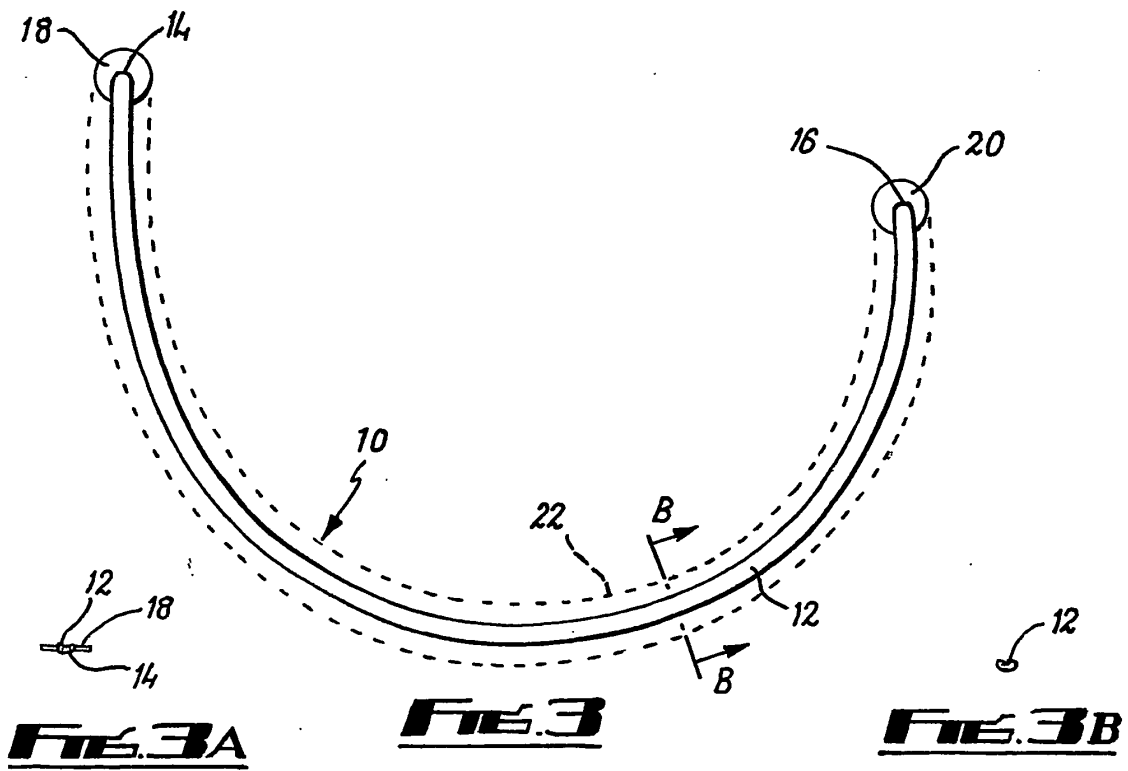
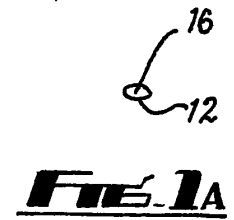
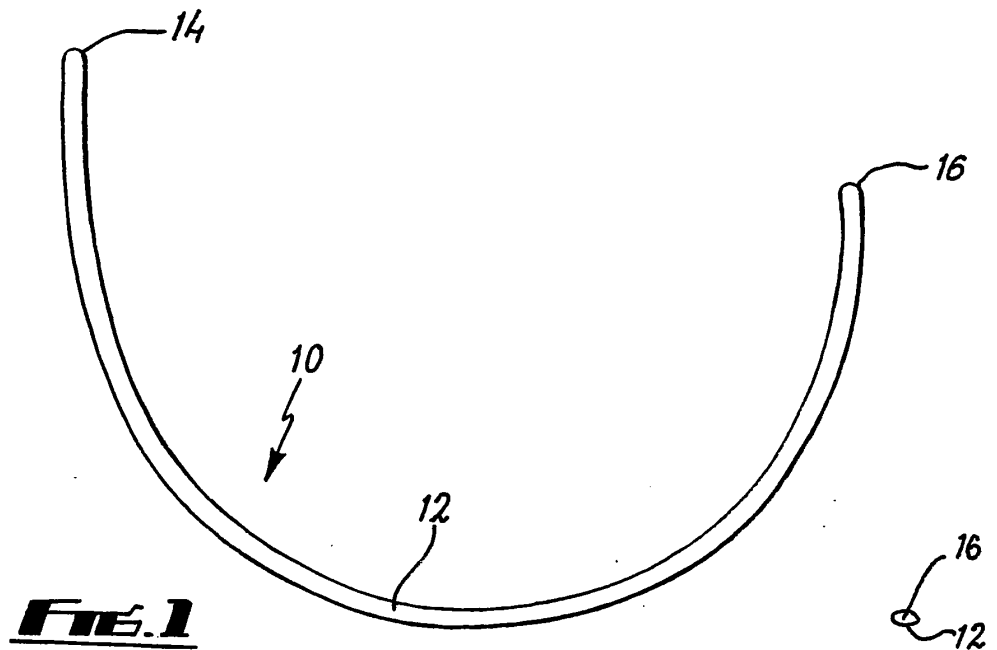
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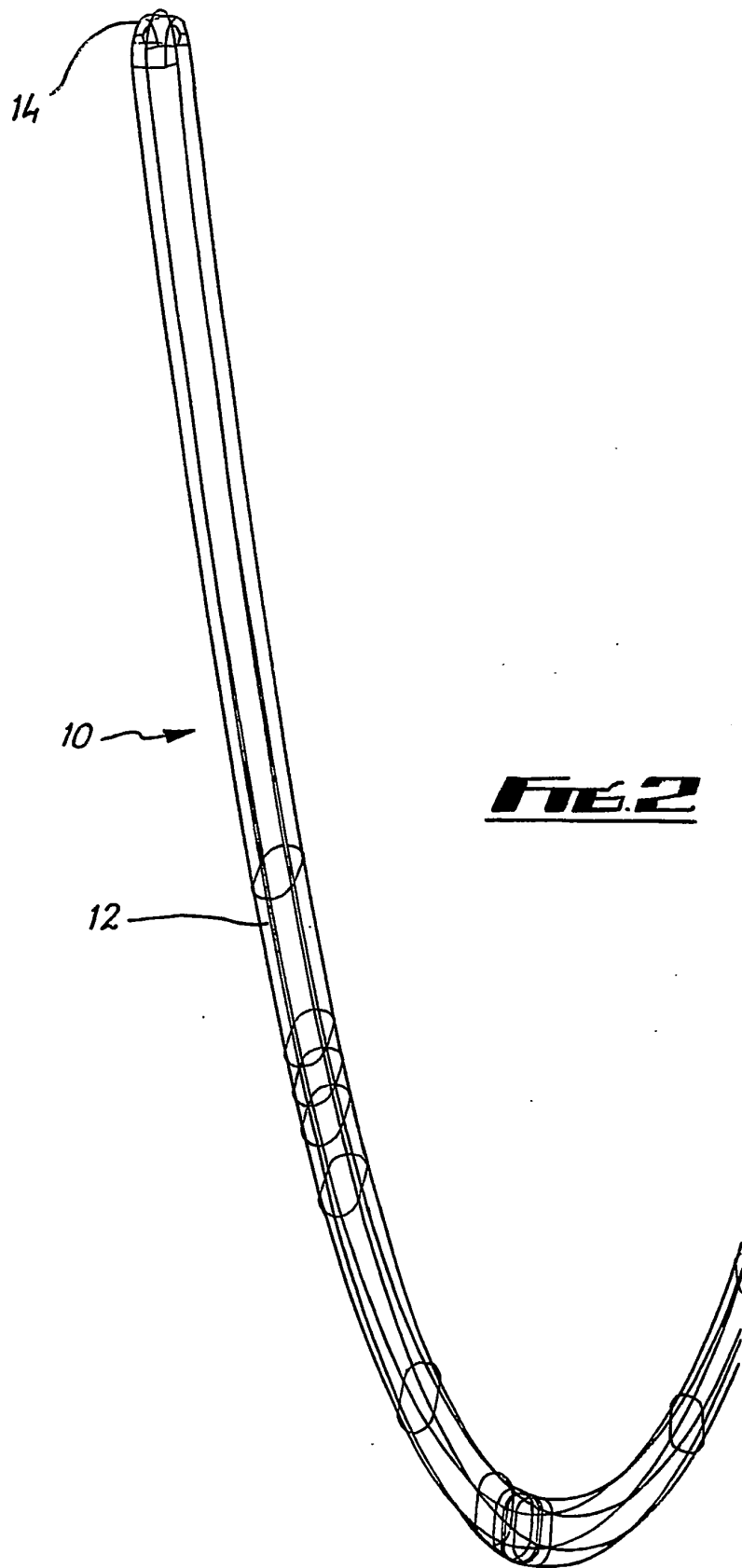
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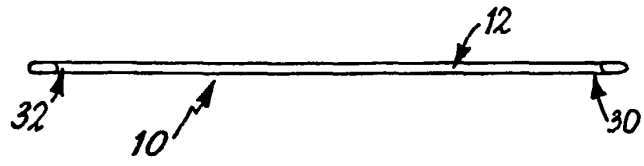
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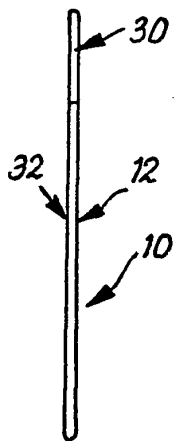




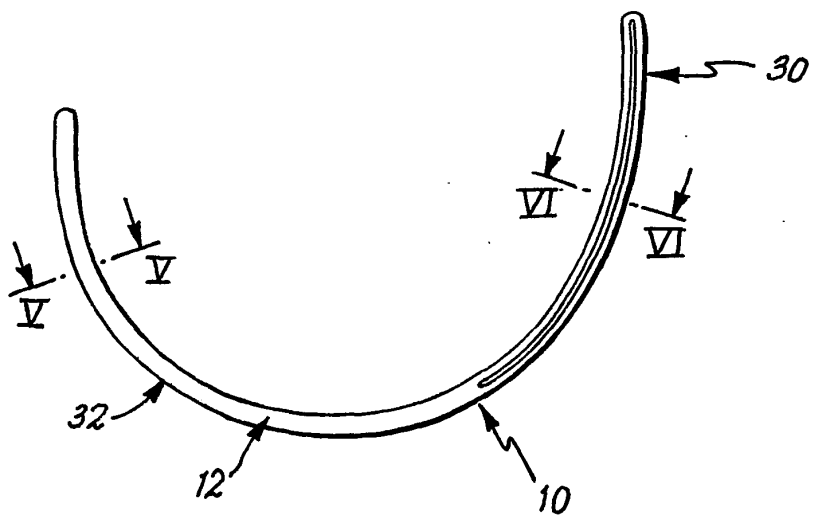




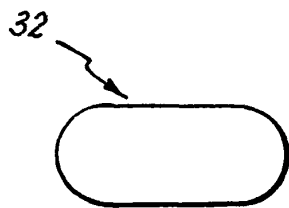
**Fig. 8**



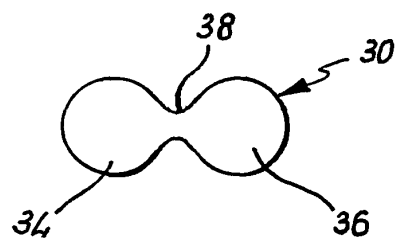
**Fig. 7**



**Fig. 9**



**Fig. 5**



**Fig. 6**

**REFERENCES CITED IN THE DESCRIPTION**

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