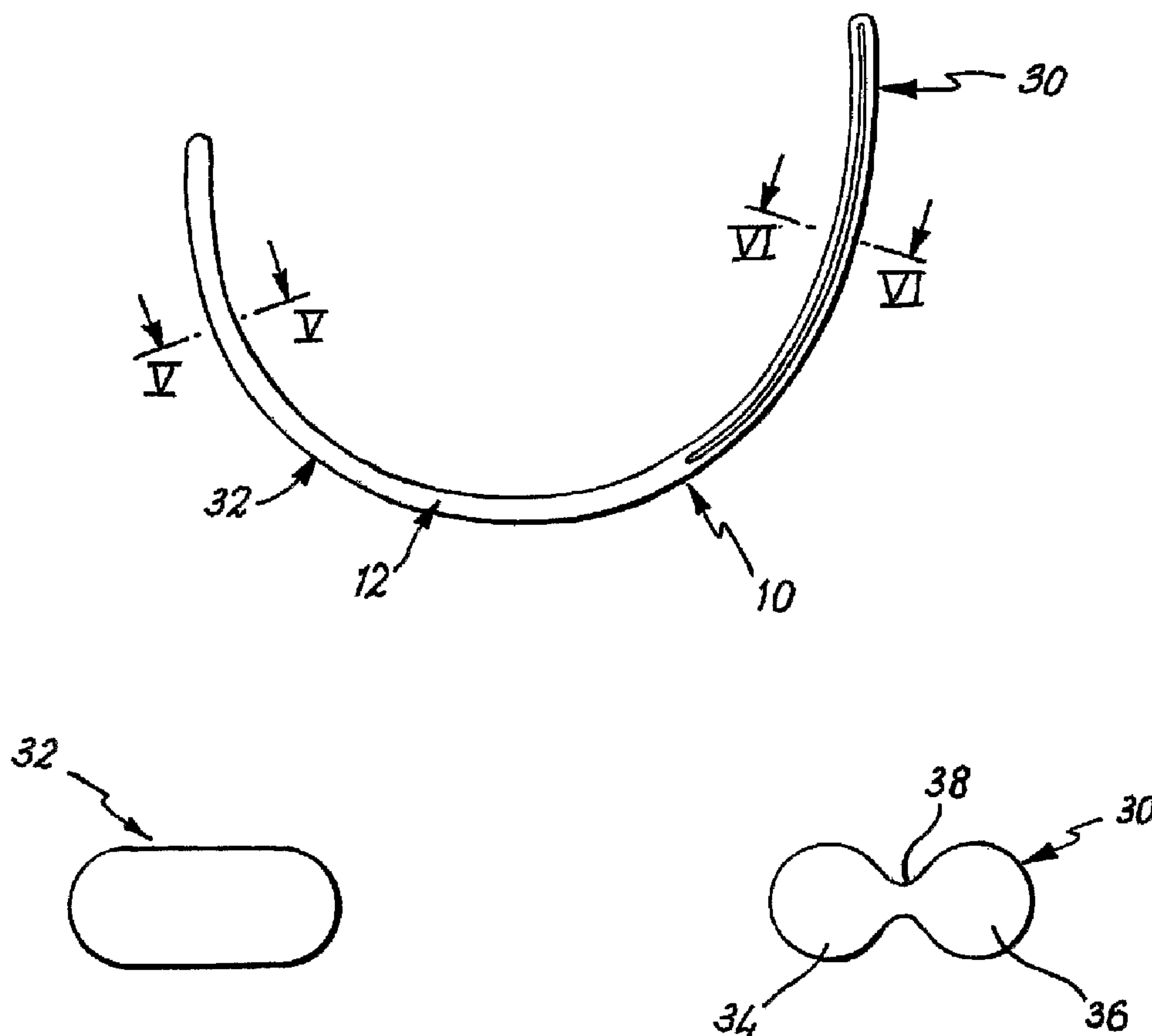




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 (72) Inventeur/Inventor:  
 GILL, KANWALJIT SINGH, GB  
 (73) Propriétaire/Owner:  
 COURTAULDS TEXTILES (HOLDINGS) LIMITED, GB  
 (74) Agent: BORDEN LADNER GERVAIS LLP

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 (54) Title: **UNDERCUP INSERT MEMBER**



(57) **Abrégé/Abstract:**

An undercup insert member (10) for a breast support arrangement, for example a brassiere is disclosed. The undercup insert member (10) comprises an elongate curved main portion (12) shaped to conform generally to the shape of the breast to be supported. The undercup insert member (10) is formed of a plastics material.

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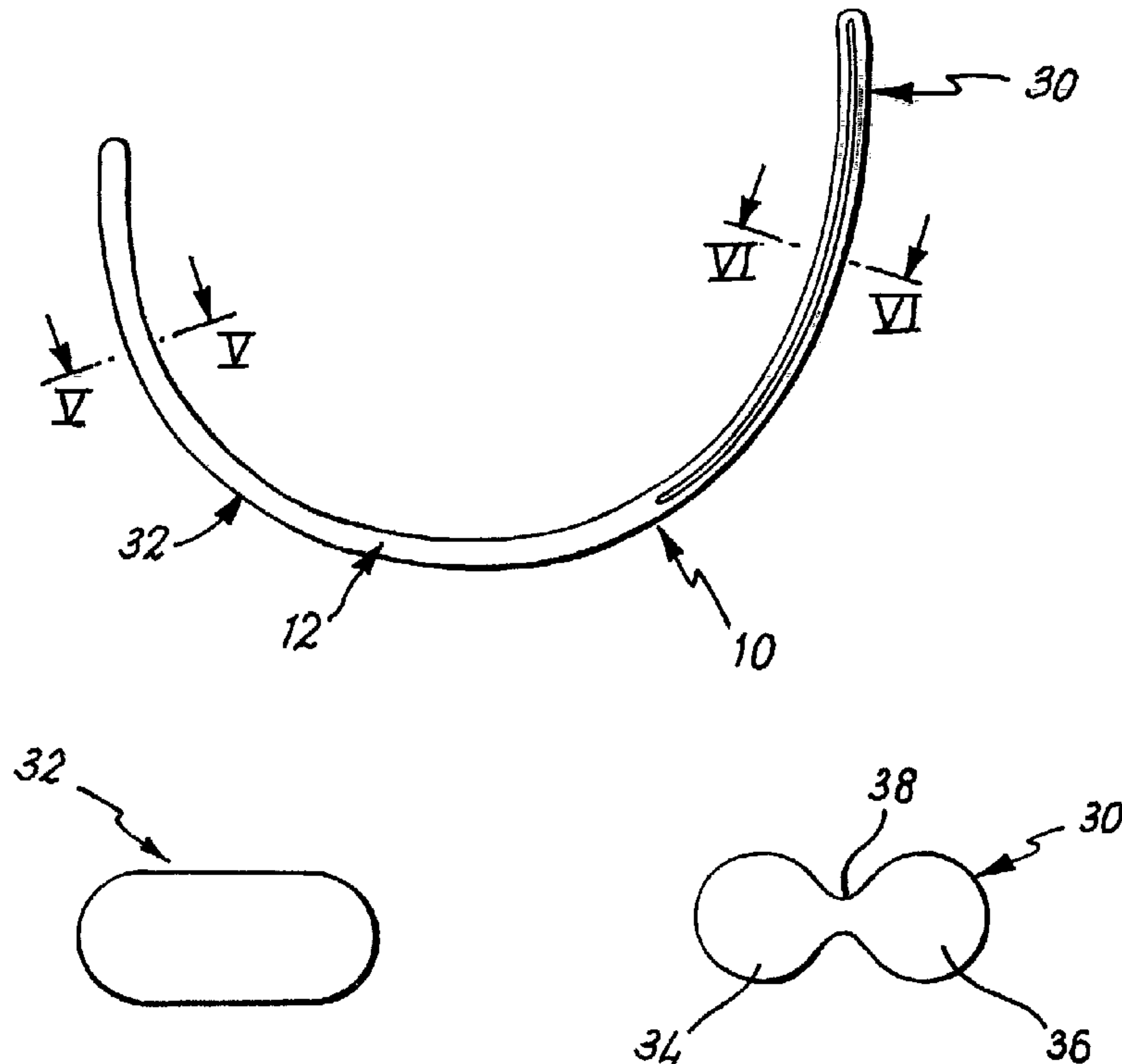
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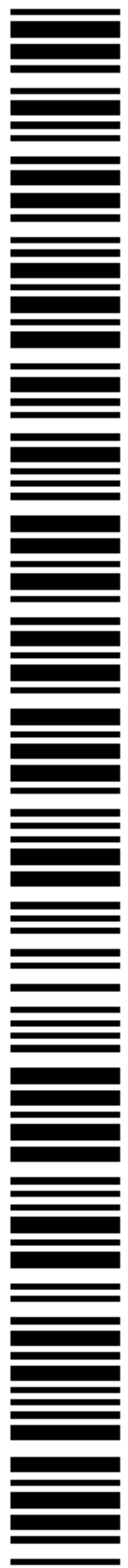
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- (71) Applicant (for all designated States except US): **BG TECHNOLOGIES UK LIMITED** [GB/GB]; 146 Station Road, Beeston, Nottingham NG9 2AY (GB).
- (72) Inventor; and  
(75) Inventor/Applicant (for US only): **GILL, Kanwaljit, Singh** [GB/GB]; BG Technologies (UK) Limited, 146 Station Road, Beeston, Nottingham NG9 2AY (GB).
- (74) Agent: **LOCK, Howard, John**; Swindell & Pearson, 48 Friar Gate, Derby DE1 1GY (GB).
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(54) Title: UNDERCUP INSERT MEMBER



(57) Abstract: An undercup insert member (10) for a breast support arrangement, for example a brassiere is disclosed. The undercup insert member (10) comprises an elongate curved main portion (12) shaped to conform generally to the shape of the breast to be supported. The undercup insert member (10) is formed of a plastics material.



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5

Undercup Insert Member

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

10

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.

15

According to one aspect of this invention, there is provided an undercup insert member for a breast support arrangement, the insert member comprising an elongate curved main portion shaped to conform generally to the breast to be supported, the insert member being formed of a plastics material.

20

Preferably, the breast support arrangement is an article of breast supporting underwear, for example, a brassiere, although it may be another article of breast supporting clothing, such as part of a swimsuit, for example a bikini top.

25

Preferably, the plastics material is capable of providing support to the breast and to hold the arrangement open. Preferably, the undercup insert member is arrangeable under a cup of the breast support arrangement, and may be constructed to hold the cup open.

30

The main portion preferably comprises a wire, suitably an underwire.

35

Preferably, the main portion is sufficiently flexible to allow deformation, for example when being washed, such that the insert member can return to its original shape.

Desirably, the plastics material is a polymeric material. Preferably the

5

plastics material is an acetal polymer, advantageously an acetal homopolymer.

Alternatively, the plastics material is an acetal copolymer. The plastics material may be a resin. A suitable plastics material is sold under the trade mark  
10 Delrin, which is a registered trade mark of E.I. du Pont de Nemours and Company.

The plastics material may be a flexible and/or resilient material. The plastics material may be a thermoplastic polyester, a thermoplastic polyester  
15 elastomer, and/or a liquid crystal polymer. The plastics material may comprise a filler or reinforcement, which may be in the form of glass. The filler or reinforcement may comprise approximately 10% w/w of the plastics material, up to approximately 20% w/w of the plastics material or up to approximately 30% w/w of the plastics material. Suitable plastics materials may be sold under the  
20 trade marks VECTRA, CELANEX and RITEFLEX by a company Ticona.

The elongated main portion preferably has rounded edges, and may in one embodiment have a profile which is generally oval in configuration. In other  
25 embodiments, the main portion may have a profile which is of any other suitable shape. The opposite ends of the main portion may be rounded.

In one embodiment, at least one end, and preferably both opposite ends, are provided with a lug member to allow the insert member to be sewn into the  
30 breast support arrangement. Each lug member may comprise a generally flat portion extending outwardly from the main portion. The flat portion may be generally circular. Preferably, the lug member extends from opposite sides of the main portion.

In another embodiment, the main portion may comprise an outer  
35 region having a profile having first and second support element, and a narrower connecting element extending between the support elements. Preferably the outer region comprises a profile having an hour glass shape.

Preferably, the main portion includes an inner region, which may extend from the outer region. The inner region may be of a generally oval configuration.

The main portion may comprise the outer region as described above and the, or each, lug member as described above.

5           Alternatively, the lug member may extend substantially the length of the main portion.

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

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

10           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;

15           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;

20           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.

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.

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.

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.

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.

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 labeled 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.

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.

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 labeled with the same reference numerals.

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.

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.

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.

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

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.

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.

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

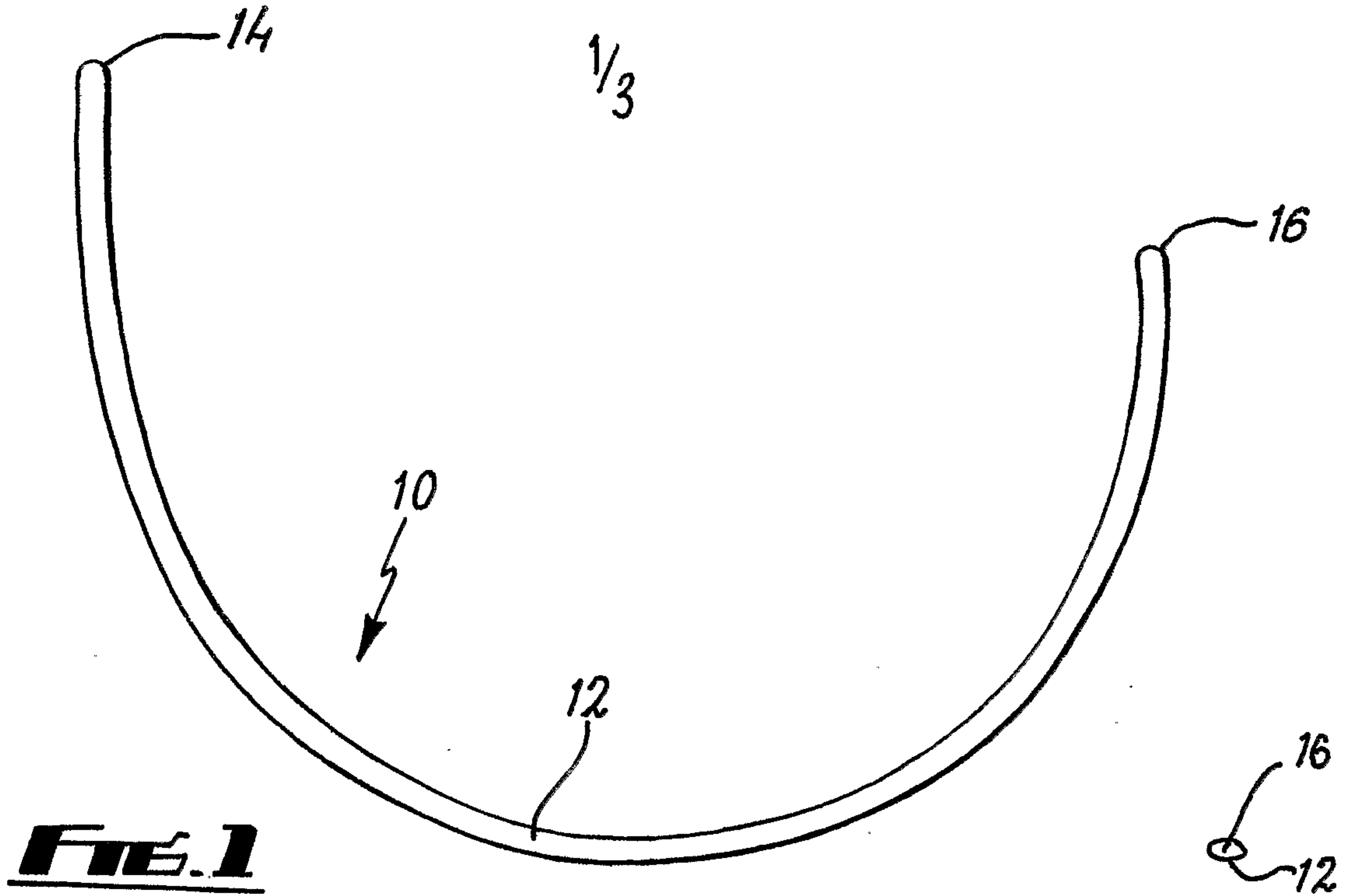
Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance it should be understood that the Applicant claims protection in respect of any patentable feature or combination of features hereinbefore referred to and/or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

**THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:**

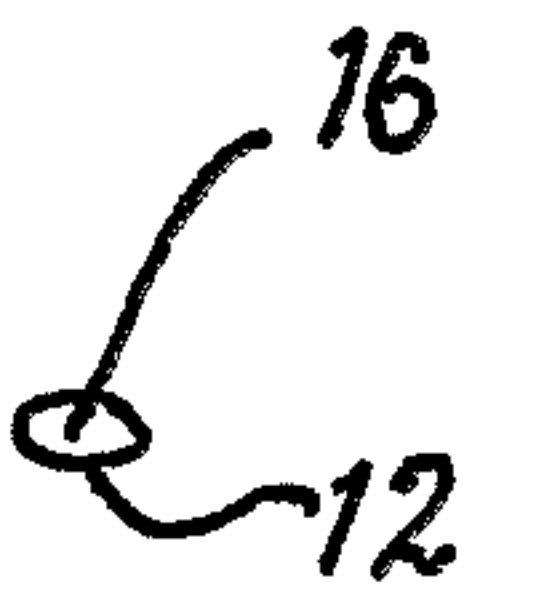
1. An undercup insert member for a breast support arrangement, the insert member comprising an elongate curved main portion shaped to conform generally to the breast to be supported, the insert member being formed of a plastics material and including an inner region having a first profile and an outer region having a second profile defined by first and second support elements, and a narrower connecting element extending between the support elements, the undercup insert being characterized 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 one of claims 1 to 3, wherein the main portion 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 one of claims 1 to 4, 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. Any undercup insert member according to any one of claims 1 to 7, wherein the plastics material comprises a resin.
9. An undercup insert member according to any one of claims 1 to 4, 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 one of claims 1 to 9, 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 one of claims 1 to 12, wherein the elongated main portion has rounded edges, the opposite ends of the main portion are rounded.
14. An undercup insert member according to any one of claims 1 to 13, wherein the main portion is provided with a lug member 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 comprises a generally flat portion extending outwardly from the main portion.

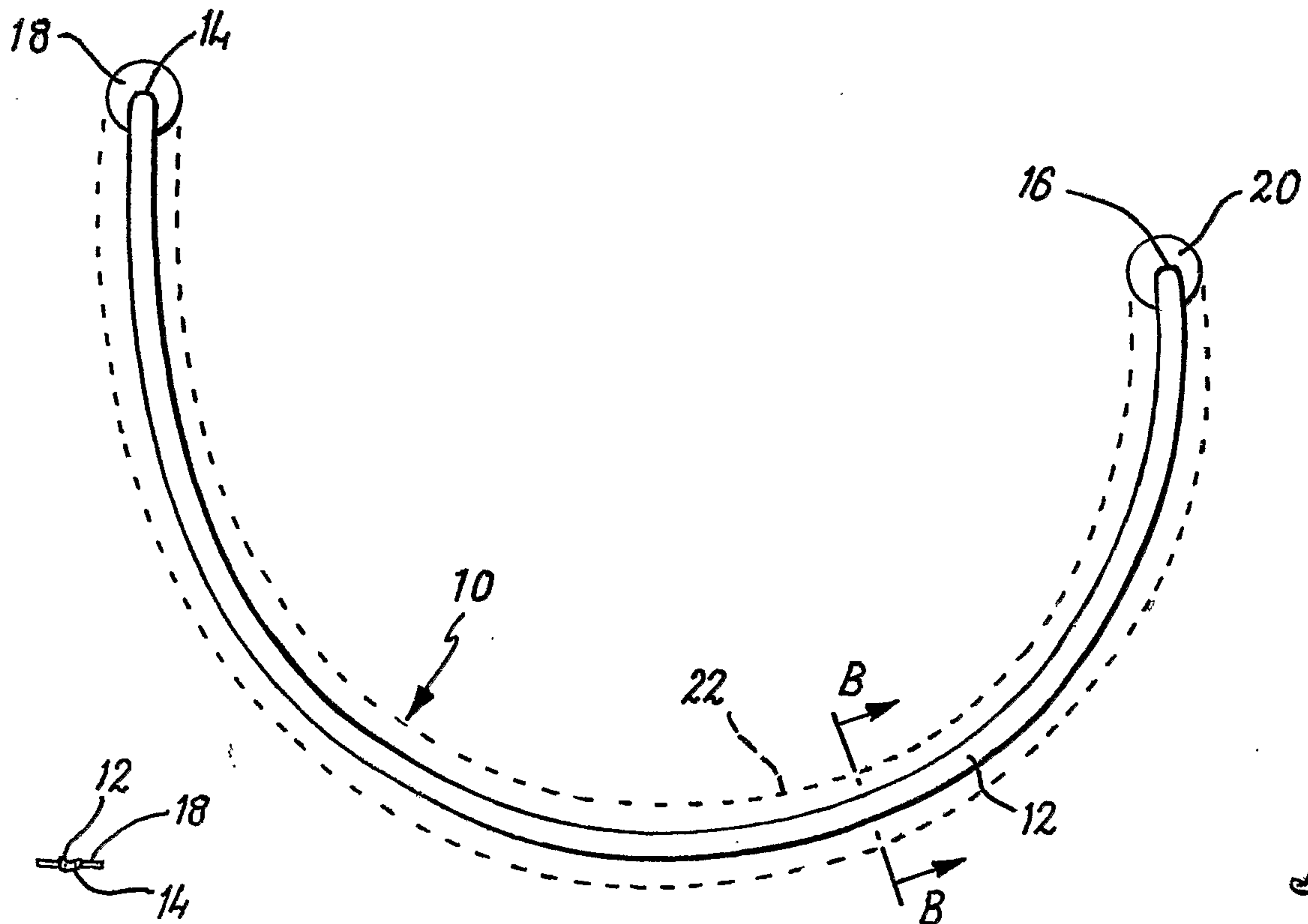
16. An undercup insert member according to claim 14 or 15, wherein the lug member extends from opposite sides of the main portion.
17. An undercup insert member according to claim 14, 15 or 16, wherein the lug member extends from at least one end of the main portion.
- 5 18. An undercup insert member 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  
10 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 one of claims 1 to 20.
22. A breast support arrangement according to claim 21, in the form of an article of clothing.
- 15 23. A breast support arrangement according to claim 21 or 22, 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.



**FIG. 1**



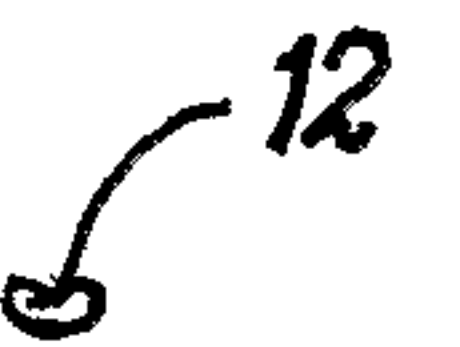
**FIG. 1A**

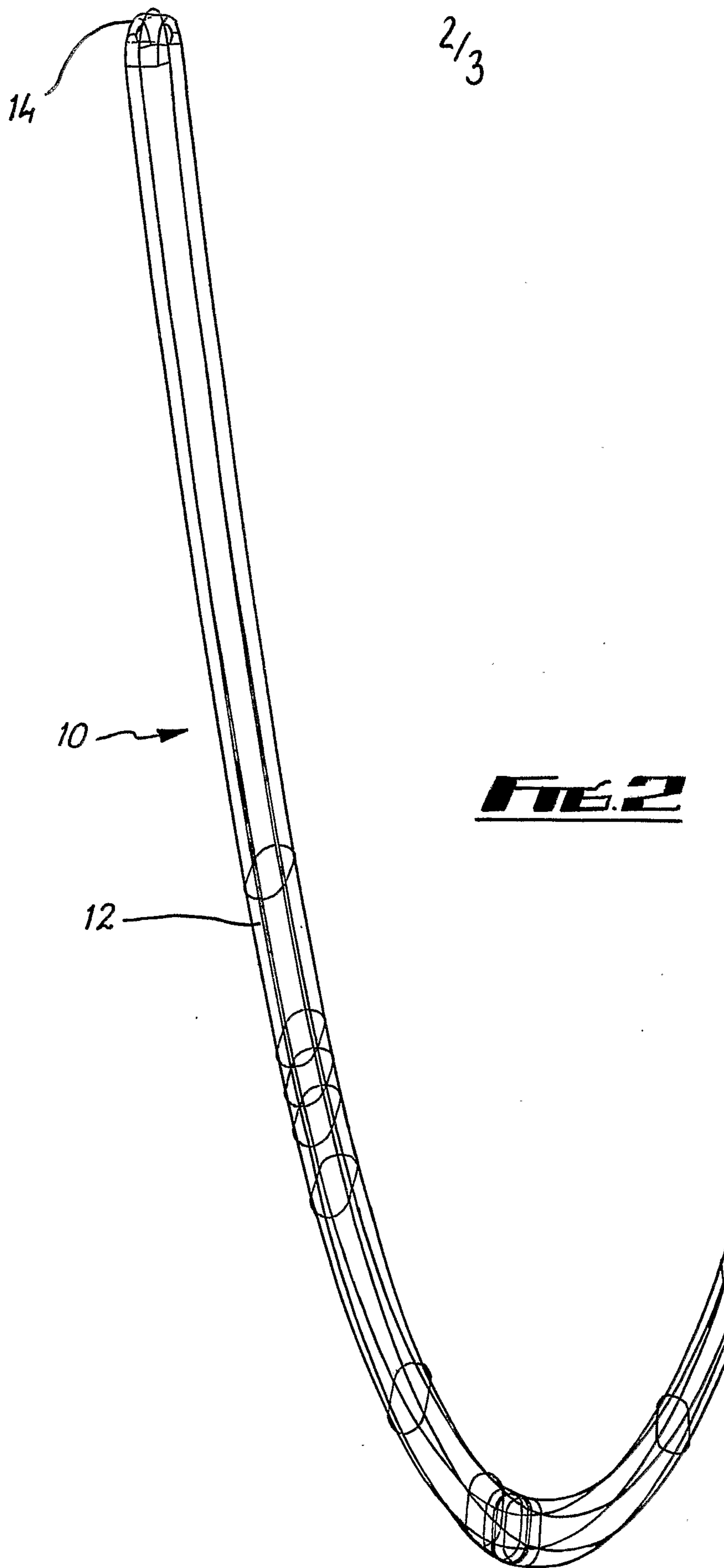


**FIG. 3A**

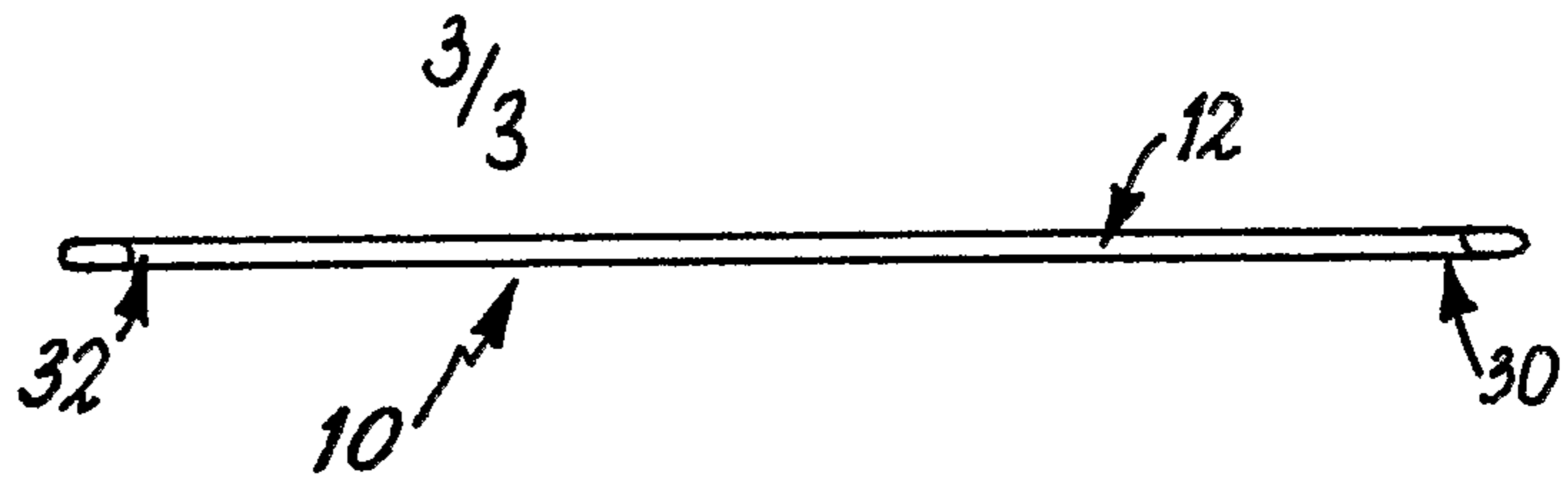
**FIG. 3**

**FIG. 3B**

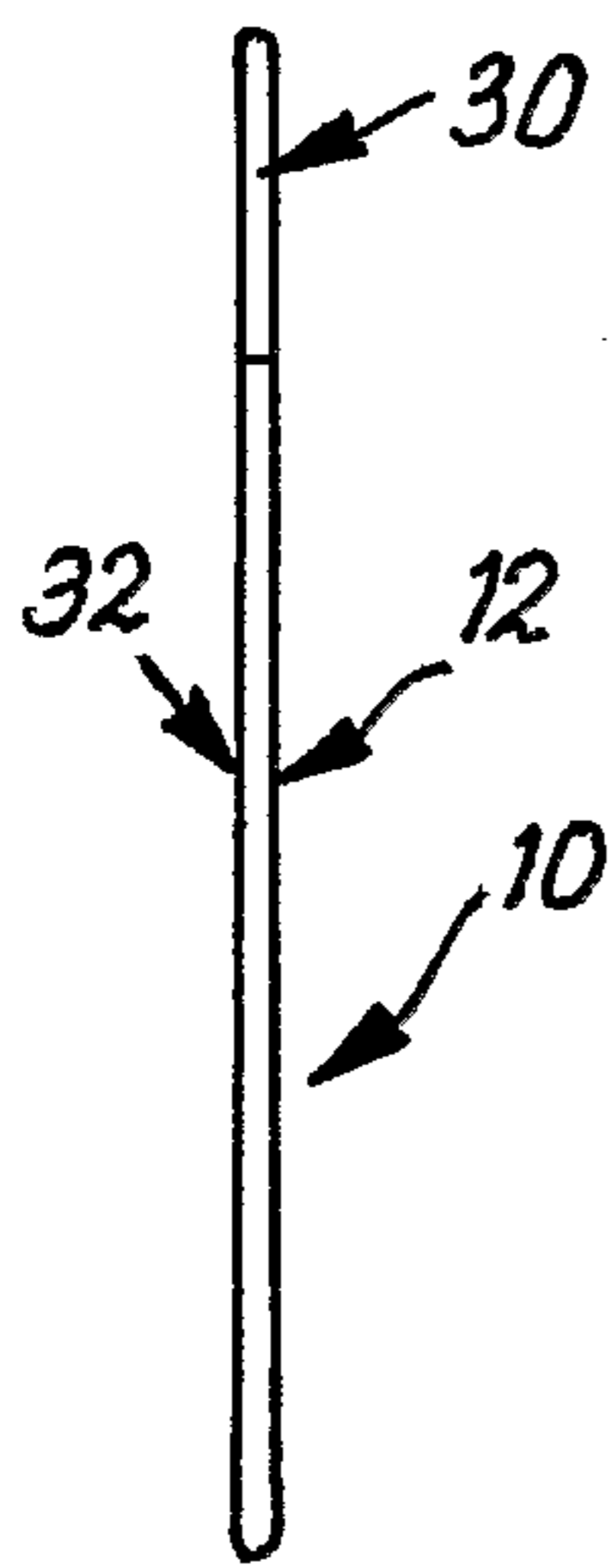




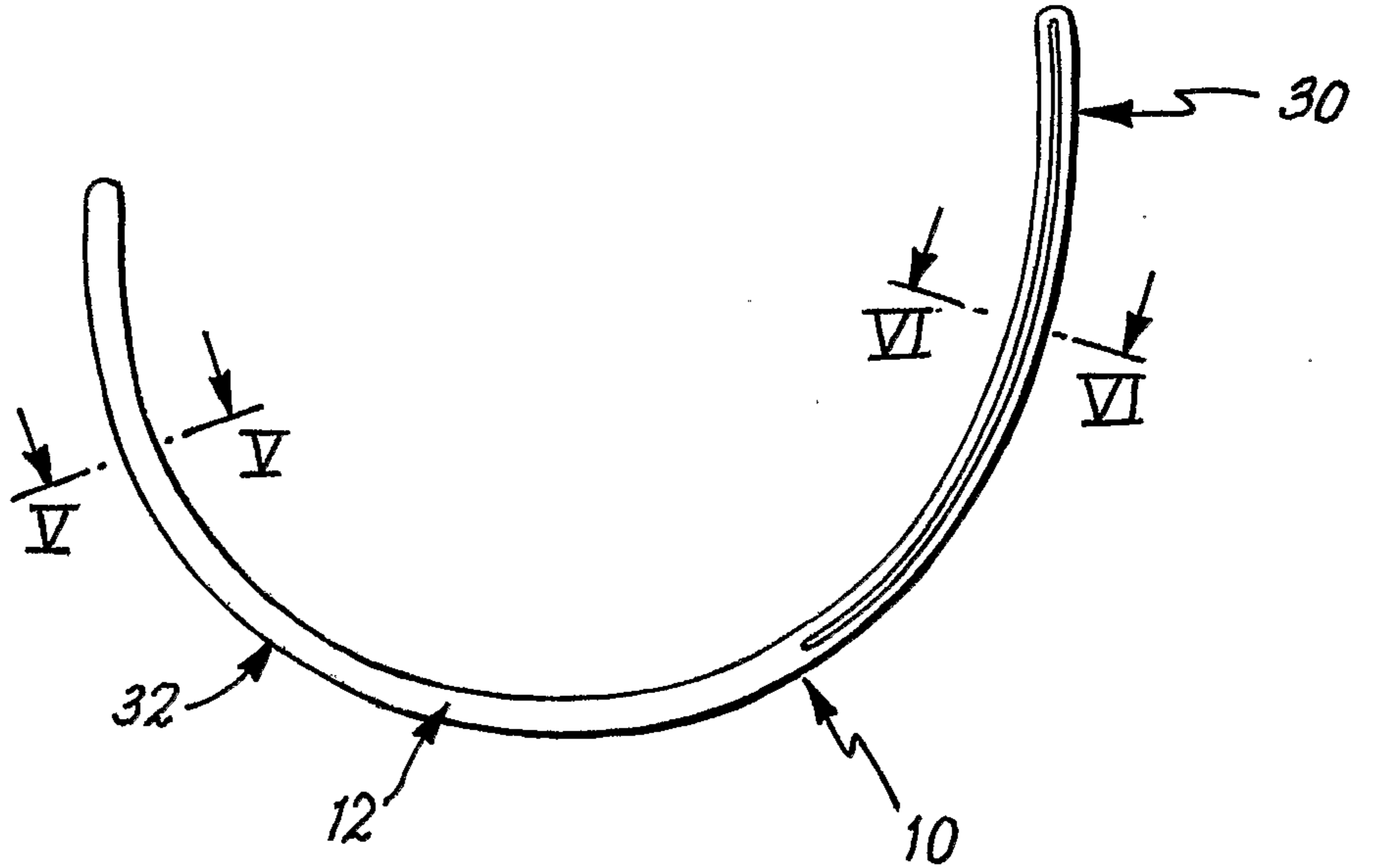
**FIG. 2**



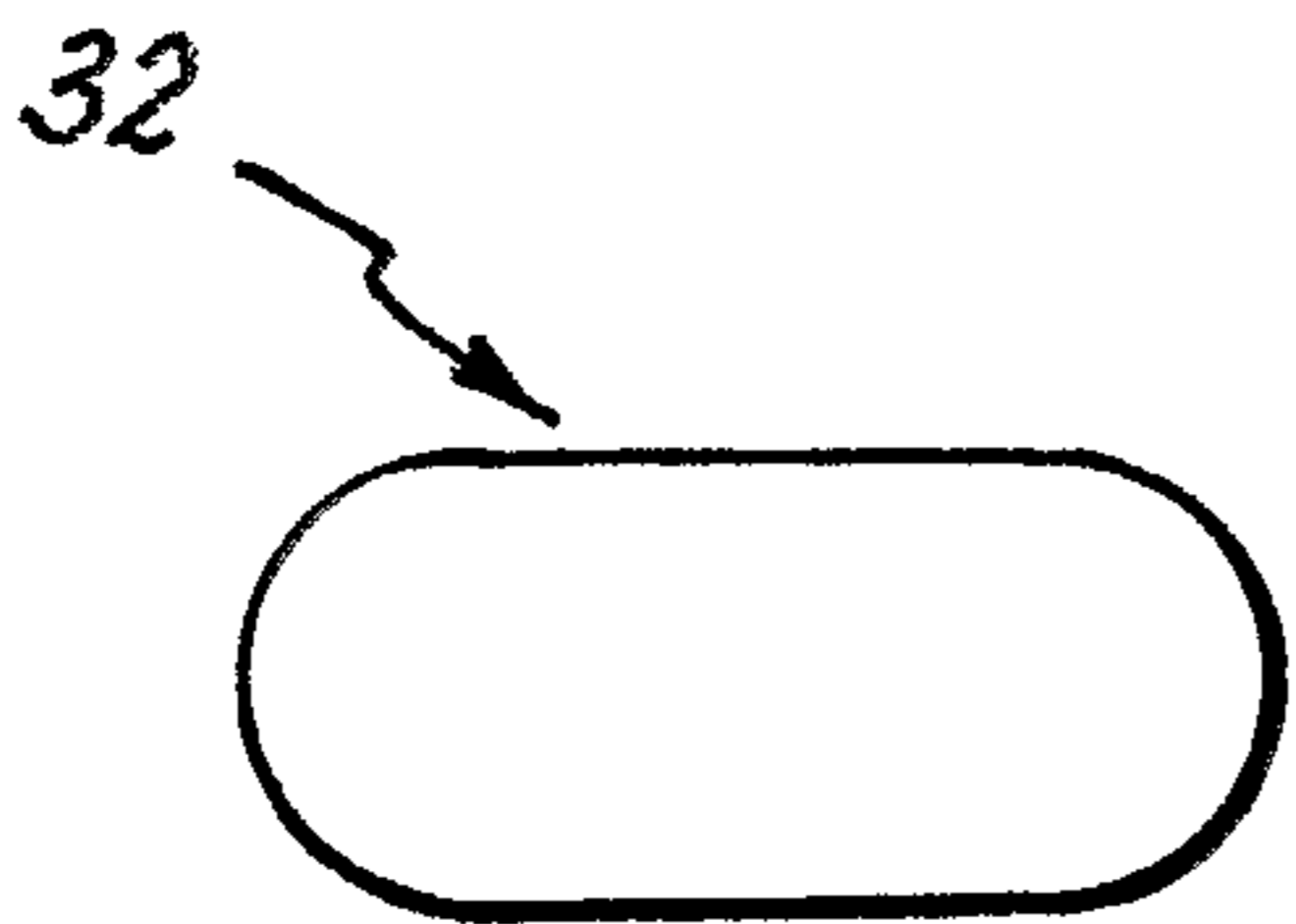
**FIG. 8**



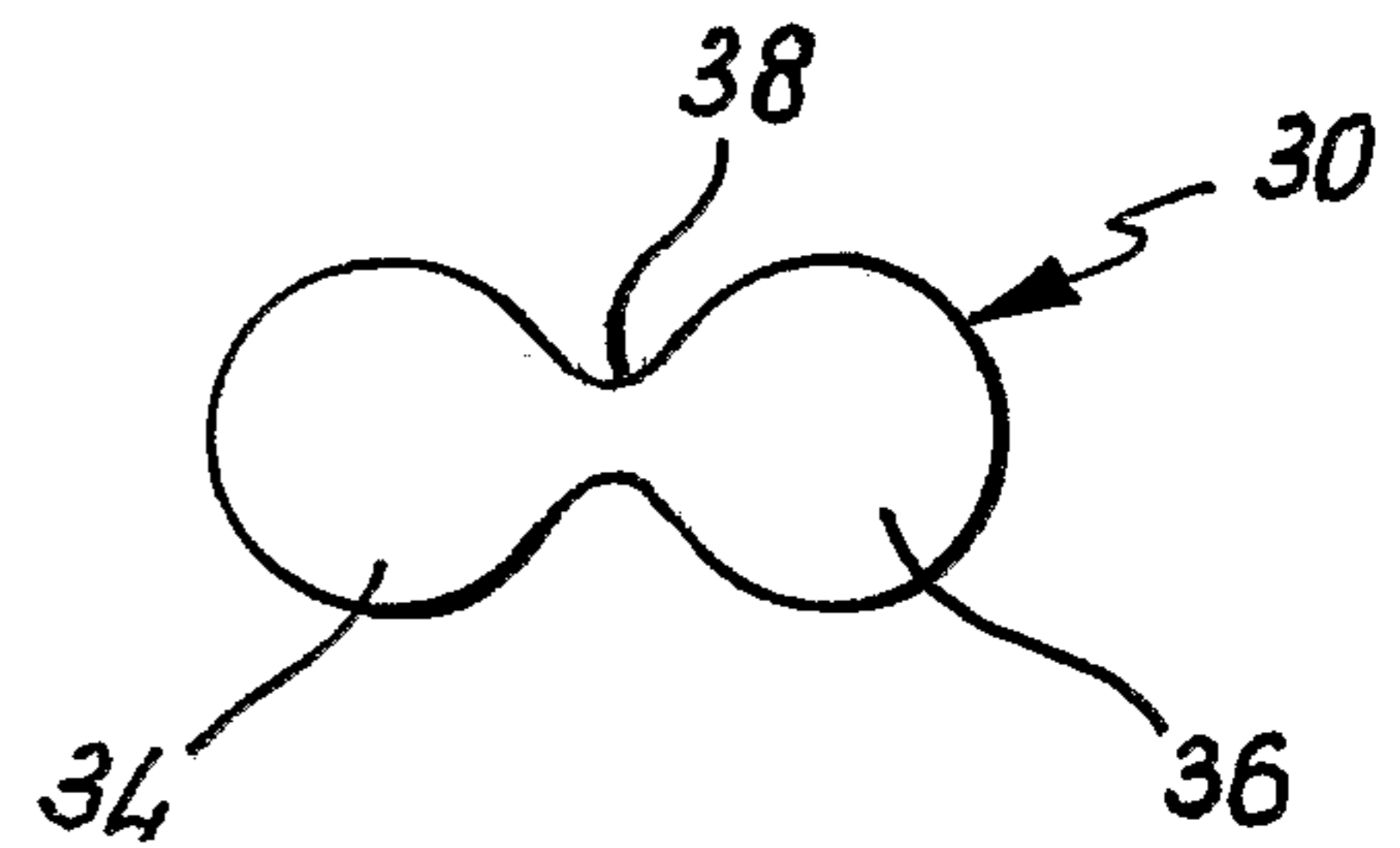
**FIG. 7**



**FIG. 9**



**FIG. 5**



**FIG. 6**

