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(54) Flexible element for forming a piece of cutlery

(57) A flexible element (2) for forming a piece of disposable cutlery, especially a spoon, comprises an elongated body (4) made from thin, bendable material comprising a handle portion (6) and an acting portion (8), wherein the body (4) widens towards the free end (10) of the acting portion (8) and wherein at least a first bending line (14) extends in the longitudinal direction of the body (4) from the area of the free end (16) of handle portion (6) towards the acting portion (8), such that the body (4) may be bent and in the bent position the handle portion (6) has a substantially V-shaped or U-shaped cross section. The flexible element (2) according to the invention may be manufactured very easily at very low costs. Due to its flexibility in the unbent position the flexible element (2) may be bundled, packaged and sold with various products so that together with the product always a piece of cutlery is available.

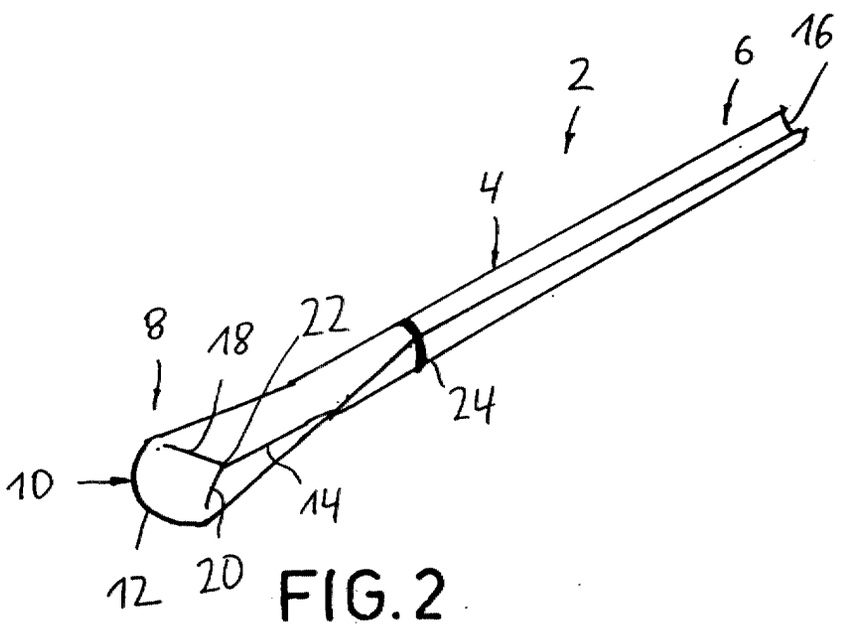

FIG. 2

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Description

[0001] The invention relates to a flexible element for forming a piece of disposable cutlery, especially a spoon.

[0002] Disposable cutlery is e. g. known from European Patent EP 0 725 586 B1. The cutlery in the form of a spoon, a fork or a knife is made from thin-walled rigid plastics material and is especially used for catering purposes and with food packaging. The known cutlery may be manufactured easily at low costs.

[0003] It is an object of the present invention to provide disposable cutlery which may be manufactured at even lower costs than the known disposable cutlery.

[0004] This object is achieved by the teaching given in claim 1.

[0005] The invention is based on the idea that disposable cutlery may be formed in a surprisingly easy manner by using a flexible element the body of which is shaped such that in a bent position a handling portion and an acting portion of the piece of cutlery is formed. According to the invention the flexible element comprises an elongated body made from thin, bendable material comprising a handle portion and an acting portion wherein the body widens towards the free end of the acting portion. At least a first bending line extends in the longitudinal direction of the body from the area of the free end of the handle portion towards the acting portion such that the body may be bent and in the bent position the handle has a substantially V- or U-shaped cross section. In its bent position the flexible element is rigid enough to be used as a piece of cutlery, especially a spoon.

[0006] The flexible element according to the invention may be manufactured very easily at very low costs.

[0007] Due to its flexibility in the unbent position the flexible element may be bundled, packaged and sold with various products so that together with the product always a piece of cutlery is available. E. g. the flexible element may be bundled, packaged and sold together with a yogurt cup so that for the user there is no longer the need to carry a spoon with him. In order to eat the yogurt, the user may simply separate the flexible element from the yogurt cup, bring the flexible element in its bent position for forming a spoon and may then eat the yogurt. After use the flexible element may be disposed. Of course, it is possible to reuse the flexible element.

[0008] The flexible element according to the invention furthermore may be used for catering purposes in general and food packaging in general.

[0009] Due to the flatness of its body in the unbent position the flexible element according to the invention may be stored easily and may be used easily in dispensers. It may be provided on a roll of a plurality of flexible elements, in bulk or separate.

[0010] In the unbent position the flexible element may be packaged with small food containers while in its bent position it forms e.g. a normal size spoon.

[0011] Basically, the flexible element according to the invention is suitable for forming a spoon, a fork or a knife. However, it is especially suitable for forming a spoon. When the element forms a knife its body is provided with a serrated edge.

[0012] Basically, it is sufficient that only one bending line is provided. However, in a preferred embodiment in the area of the handle portion a second and a third bending line extend from the area of the first bending line towards the free end of the acting portion. The additional bending lines make it easier to bend the flexible element, e. g. for forming a spoon. The pattern of the bending lines depends on the desired shape of the acting portion, e.g. to form a deep spoon or a shallow spoon.

[0013] According to a further embodiment the second and third bending lines diverge from each other towards the free end of the acting portion. In this embodiment in the bent position the shape of the acting portion is more similar to the shape of a conventional spoon.

[0014] According to the respective requirements the second and third bending lines may make an acute angle with the first bending line as provided by a further embodiment.

[0015] According to another embodiment, the first, second and third bending lines meet at the same point. This embodiment makes it easier to bend the flexible element.

[0016] According to yet another embodiment the first bending line extends towards the free end of the acting portion beyond the point at which the second and third bending lines meet.

[0017] In a further preferred embodiment two first bending lines extend substantially in parallel to each other. In this embodiment in the bent position the handle portion of the flexible element has a substantially U-shaped cross section.

[0018] In a further preferred embodiment the free rim of the acting portion is rounded inwardly or outwardly. When the flexible element forms a spoon in this embodiment the shape of the acting portion is even more similar to the shape of the acting portion of a conventional spoon.

[0019] Further preferred embodiments provide that at least one bending line, especially the first bending line, is a straight line and/or that at least one bending line, especially the second or third bending line is a curved line.

[0020] In order to make it easier to bring the flexible element into its bent position the material of the body may be weakened along the bending line or bending lines as it is provided by a further preferred embodiment.

[0021] In the before mentioned embodiment it is preferred that the material of the body is weakened along the bending line or bending lines by scratching or cutting it on the surface along a continuous line or a series of short consecutive lines or by preforming the bending line or bending lines when manufacturing the body, espe-

cially by injection moulding. In this embodiment a very simple tool may be used for weakening the material of the body thereby reducing manufacturing costs.

[0022] Basically, it is sufficient that the user brings the flexible element into its bent position and retains it in the bent position by his hand. However, in an extraordinarily advantegeous embodiment retaining means for retaining the body in its bent position are provided. In this embodiment it is no longer necessary for the user to retain the flexible element in its bent position by his hand so that handling the flexible element is simplified.

[0023] For retaining the body in its bent position any suitable retaining means may be provided. In a preferred embodiment the retaining means comprises a strip, a ring or a clamp. In this embodiment the retaining means may be manufactured easily at low costs.

[0024] For storage purposes or for use in a dispenser the retaining means may be fixed detachably to the body of the flexible element, e.g. by means of a piece of adhesive tape. When packaged with a food container the flexible element may be received in its unbent position in indent or a cavity of the container's lid or base.

[0025] Basically, in the bent position of the body the retaining means may be positioned in the area of the acting portion. However, it is preferred that the retaining means is positioned around the handle portion in the bent position of the body.

[0026] In the embodiment with the ring forming the retaining means it is preferred that the ring is a ring preferrably made from rubber to be pushed over the handle portion in the bent position of the body. In this embodiment, the retaining means may be handled very easily by the user.

[0027] The body of the flexible element may be made from any suitable material, e. g. from a thin sheet of aluminium. However, it is preferred that the body is made from synthetic material, especially Polypropylene. Synthetic material is available at very low costs and is in the bent position of the flexible element rigid enough to form a piece of cutlery.

[0028] According to further embodiments the body is transparent, coloured or translucent.

[0029] Basically, the retaining means may be formed by a separate means as mentioned above. However, in an especially preferred embodiment the retaining means is formed integrally with the body. In this embodiment no separate retaining means is required. Therefore handling the flexible element is simplified for the user. Furthermore, in this embodiment the flexible element may be manufactured even more easily at even lower costs.

[0030] According to one embodiment the retaining means comprises a retaining element which in the bent position of the body is held in a force-locking and/or form-fitting manner in a recess or an opening in the body thereby retaining the body in its bent position. This embodiment may be manufactured very easily and handled by the user very easily.

[0031] According to a further embodiment the retaining element comprises a flexible tongue formed integrally with one web of the V-shaped or U-shaped cross-section of the body in its bent position, wherein the tongue comprises at least one lateral projection, wherein the second web of the cross-section comprises a slit or the like and wherein the tongue may be flexed for insertion into the slit in the bent position of the body, such that the tongue flexes back after insertion into the slit thereby engaging the outer wall of the second web with its at least one lateral projection thereby retaining the body in its bent position. In this embodiment the retaining element may be handled very easily by the user. In its retaining position the retaining element retains the body safely in its bent position.

[0032] According to another embodiment the retaining element comprises at least one projection projecting from the plane of the body in the unbent position of the body wherein in the bent position of the body the projection is held in a force-locking and/or form/fitting manner in a recess or an opening of the body shaped substantially complementary to the projection thereby retaining in its bent position.

[0033] According to yet a further embodiment the projection projecting from the plane of the body in the unbent position of the body is formed on a tongue formed integrally with the body.

[0034] According to yet a further embodiment the retaining means comprise snapping means for snapping into a recess or an opening in the body in the bent position of the body thereby retaining the body in its bent position.

[0035] The invention is described in more detail below in relation to embodiments shown in the attached drawings in which

- Fig. 1 shows a schematic top plan view to a first embodiment of a flexible element according to the invention in its unbent position together with a retaining means in form of a small circular rubber ring,
- Fig. 2 shows a schematic perspective view of the embodiment of fig. 1 in its bent position in a smaller scale than figure 1,
- Fig. 3 shows a schematic top plan view to the embodiment of fig. 1 in its bent position in a smaller scale than fig. 1,
- Fig. 4 shows the cross section of the handle portion of the embodiment of fig. 1 in its bent position,
- Fig. 5 shows a schematic top plan view to a second embodiment of a flexible element according to the invention in its unbent position,
- Fig. 6 shows a schematic top plan view to a third embodiment of a flexible element according to the invention in its unbent position,
- Fig. 7 shows a cross-section of the handle portion of the embodiment of fig. 6 in its bent posi-

tion,

Fig. 8 shows a side view of a yogurt cup bundled and packaged with the embodiment of fig. 5,

Fig. 9 shows a top plan view to a fourth embodiment of a flexible element according to the invention in its unbent position,

Fig. 10 shows a partial top plan view to the embodiment of fig. 9 in its bent position,

Fig. 11 shows a fifth embodiment of a flexible element according to the invention in its unbent position,

Fig. 12 shows a section along a line A-A- in fig. 11,

Fig. 13 shows a section of the handle portion of the embodiment of fig. 11 in its bent position and

Fig. 14 shows a sectional view of an alternative retaining means similar to the retaining means of the embodiment of fig. 11.

[0036] In the drawings reference numeral 2 generally designates a flexible element for forming a piece of disposable cutlery, especially a spoon. The flexible element comprises a elongated, substantially recangular body 4 made from thin, bendable or flexible synthetic material, e. g. Polypropylene. The body 4 comprises a handle portion 6 and an acting portion 8. As can be seen from fig. 1 the body 4 widens towards the free end 10 of the acting portion 8 with the free rim 12 of the acting portion 8 being rounded outwardly.

[0037] In the embodiment of fig. 1 a first bending line 14 extends from the free rim 16 of the handle portion 6 towards the acting portion 8 such that the body 4 may be bent and in the bent position the handle portion 6 has a substantially V-shaped cross section as will be explained in more detail below with reference to figures 2 to 4.

[0038] In the area of the acting portion 8 a second bending line 18 and a third bending line 20 extend from the area of the first bending line 14 towards the free end 10 of the acting portion 8 wherein the second and third bending lines 18, 20 diverge from each other towards the free end 10 of the acting portion 8 forming an acute angle with the first bending line 14. In the embodiment of fig. 1 the first, second and third bending line 14, 18 and 20 meet at the same point 22 and the bending lines 14, 18 and 20 are straight lines. In order to make it easier for the user to bend the body 4 the material of the body 4 is weakened by scratching or cutting it on its surface along the bending lines 14, 18, 20. As an alternative, the bending lines 14, 18, 20 may be preformed, e.g. when the body 4 is injection-moulded.

[0039] In fig. 1 on the left a retaining means for retaining the flexible element 2 in its bent position is shown. The retaining means has the form of a small, circular rubber ring 24.

[0040] In order to bring the flexible element in its bent position for forming a spoon, the user bends body 4 of the flexible element 2 along the bending line 14 such that in the bent position the handle portion 6 has a substantially V-shaped cross section as can be seen from fig. 4. Due to the second and third bending lines 18, 20 in the bent position of the flexible element 2 the acting portion 8 has a shape very similar to the shape of a conventional spoon forming a small depression. In order to retain the body 4 in its bent position the user pushes the small rubber ring 24 over the free end 16 of the handle portion 6 and along the handle portion 6.

[0041] Fig. 2 shows the flexible element 2 in its bent position with the rubber ring 24 in its retaining position. Since the flexible element 2 is retained in its bent position handling of the spoon formed by the flexible element 2 is very easy.

[0042] In result the flexible element 2 according to the invention provides a piece of cutlery in a very simple manner at very low costs. Due to its flexibility in its unbent position it may be bundled and packaged in various manners with various products. In its bent position the flexible element 2 according to fig. 1 is rigid enough in order to be used in almost all cases in which a conventional metal or plastic spoon could be used.

[0043] Fig. 3 shows a top plan view to the flexible element of fig. 2 in its bent position.

[0044] As can be seen from fig. 4 the rubber ring 24 is sized such that in the bent position of the flexible element 2 it fits tightly around the handle portion 6 thereby retaining the flexible element 2 in a bent position.

[0045] Fig. 5 shows a second embodiment of the flexible element 2 according to the invention which differs from the embodiment of fig. 1 in that the second and third bending lines 18, 20 are curved lines and that the first bending line 14 extends towards the free end 10 of the acting portion 8 beyond the point 26 at which the second and third bending lines 18, 20 meet.

[0046] Fig. 6 shows a third embodiment of the flexible element 2 according to the invention which differs from the embodiment of fig. 5 in that two first bending lines 14' and 14'' are provided wherein first bending line 14' forms a continuous line with third bending line 20 and further first bending line 14'' forms a continuous line with second bending line 18.

[0047] As can be taken from fig. 7 in its bent position the body 4 is bent along bending lines 14', 14'' such that handle portion 6 has a substantially U-shaped cross section wherein body 4 is retained in its bent position by rubber ring 24.

[0048] Fig. 8 shows a side view of a container for receiving food in the form of a disposable yoghurt cup bundled and packaged together with the embodiment of fig. 5. For packaging the flexible element 2 together with the yoghurt cup 28 the flexible element 2 is positioned around the outer wall 30 of the yoghurt cup 28. In order to fix the flexible element 2 on the outer wall 30 a piece of adhesive tape 32 is used wherein the rubber ring 24 is positioned between the adhesive tape 32 and the acting portion 8 of the flexible element 2.

[0049] In order to eat the yoghurt the user may simple tear off the adhesive tape 32, bring the flexible element

2 in its bent position and fix it in its bent position by means of rubber ring 24 as shown in fig. 2. Thereby the user obtains in a very simple manner a spoon for eating the yoghurt so that it is no longer necessary for the user to carry a spoon with him. After use the flexible element 2 may be reused or disposed.

[0050] As an alternative, the flexible element 2 may be received in its unbent position in a cavity of the yoghurt cup 28 e.g. positioned along the inner wall of the yoghurt cup 28 beyond the lid of the yoghurt cup.

[0051] Fig. 9 shows a forth embodiment of a flexible element according to the invention. In this embodiment the retaining means is formed integrally with the first web 33 the body 4 and comprises a tongue 34 which is bendable along a bending line 36 relative to the body 4. The tongue 34 comprises a narrowing 38 and two lateral projections 40, 42. Opposite to the tongue 34 the other web 35 of the body 4 comprises a slit 44 which is substantially perpendicular to the longitudinal axis of the body 4. The slit 44 is sized such that in the bent position of the body 4 the tongue 34 may be flexed by about 90° and inserted into the slit 44. After insertion of the tongue 34 into the slit 44 the tongue 34 flexes back by about 90° such that the narrowing 38 is received in the slit 44 and the lateral projections 40, 42 engage the outer wall 46 of the web 35 as can be seen from fig. 10. Thereby the body 4 is retained in a safe and easy manner in its bent position.

[0052] Fig. 11 shows a fifth embodiment of a flexible element 2 according to the invention. In this embodiment the retaining means are formed integrally with the body 4 and comprise a series of projections in the form of circular knubs 48, 50, 52 which are formed on the web 33 and extend from the plane of the body 4 in its unbent position.

[0053] In the bent position of the body the projections 48, 50, 52 are inserted into and fit into substantially complementary shaped ciruclar openings 54, 56, 58 formed in the web 35.

[0054] From fig. 12 which shows a section along a line A-A in fig. 11 it can be seen that the projection 52 is shaped substantially complementary to the opening 58. In the bent position of the body 4 the projection 52 fits closely into the opening 58 as can be seen from fig. 13 thereby retaining the body 4 safely in its bent position.

[0055] Fig. 14 shows an alternative retaining means which is similar to the retaining means of the embodiment of fig. 11. In this embodiment the knubs 48, 50, 52, have an undercut 60 such that the knubs 48, 50, 52 snap into the corresponding openings 54, 56, 58 in a push-button-like manner such that the retaining means form snapping means.

Claims

1. Flexible element (2) for forming a piece of disposable cutlery, especially a spoon,

   comprising an elongated body (4) made from thin, bendable material comprising a handle portion (6) and an acting portion (8),

   wherein the body (4) widens towards the free end (10) of the acting portion (8) and

   wherein at least a first bending line (14) extends in the longitudinal direction of the body (4) from the area of the free end (16) of the handle portion (6) towards the acting portion (8), such that the body (4) may be bent and in the bent position the handle portion (6) has a substantially V-shaped or U-shaped cross section.

2. Flexible element according to claim 1, **characterised in that** in the area of the acting portion (8) a second (18) and a third bending line (20) extend from the area of the first bending line (14) towards the free end (10) of the acting portion (8).

3. Flexible element according to claim 2, **characterised in that** the second and third bending lines (18, 20) diverge from each other towards the free end (10) of the acting portion (8).

4. Flexible element according to claim 2, **characterised in that** the second and third bending lines (18, 20) make an acute angle with the first bending line.

5. Flexible element according to claim 2, **characterised in that** the first, second and third bending lines (14, 18, 20) meet at the same point (22).

6. Flexible element according to claim 2, **characterised in that** the first bending line (14) extends towards the free end (10) of the acting portion (8) beyond a point (26) at which the second and third bending lines (18, 20) meet.

7. Flexible element according to claim 1, **characterised in that** two first bending lines (14', 14'') extend substantially in parallel to each other.

8. Flexible element according to claim 1, **characterised in that** the free rim (12) of the acting portion (8) is rounded inwardly or outwardly.

9. Flexible element according to claim 1 or 2, **characterised in that** at least one bending line, especially the first bending line (14), is a straight line.

10. Flexible element according to claim 1 or 2, **characterised in that** at least one bending line, especially the second or third bending line (18, 20) is a curved line.

11. Flexible element according to claim 1 or 2, **charac-**

terised in that the material of the body (4) is weakened along the bending line or bending lines (14, 18, 20).

12. Flexible element according to claim 11, **characterised in that** the material of the body is weakened along the bending line or bending lines (12, 14, 18) by scratching or cutting it on the surface along a continuous line or a series of short consecutive lines.

13. Flexible element according to claim 1, **characterised by** retaining means for retaining the body (4) in its bent position.

14. Flexible element according to claim 13, **characterised in that** the retaining means comprises a strip, a ring or a clamp.

15. Flexible element according to claim 13, **characterised in that** the retaining means is positioned around the handle portion (6) in the bent position of the body (4).

16. Flexible element according to claim 14, **characterised in that** the ring is a ring (24) preferrably made from rubber to be pushed over the handle portion (6) in the bent position of the body (4).

17. Flexible element according to claim 1, **characterised in that** the body (4) is made from synthetic material, especially Polypropylene.

18. Flexible element according to claim 1 **characterised in that** the body (4) is transparent, coloured or translucent.

19. Flexible element according to claim 13 **characterised in that** the retaining means is formed integrally with the body (4).

20. Flexible element according to claim 19 **characterised in that** the retaining means comprises a retaining element which in the bent position of the body (4) is held in a force-locking and/or form-fitting manner in a recess or an opening (44) in the body (4) thereby retaining the body (4) in its bent position.

21. Flexible element according to claim 20 **characterized in that** the retaining element comprises a flexible tongue (34) formed integrally with one web of the V-shaped or U-shaped cross-section of the body (4) in its bent position,

wherein the tongue (34) comprises a least one lateral projection (40, 42), wherein the other web of the cross-section comprises a slit (44) or the like,

wherein the tongue (34) may be flexed for insertion into the slit in the bent position of the body, such that the tongue flexes back after insertion into the slit (44) thereby engaging the outer wall of the second web with its a least one lateral projection (40, 42) thereby retaining the body (4) in its bent position.

22. Flexible element according to claim 20 **characterised in that** the retaining element comprises at least one projection (48, 50, 52) projecting from the plane of the body (4) in the unbent position of the body (4), wherein in the bent position of the body (4) the projection (48, 50, 52) is held in a force-locking and/or form-fitting manner in a recess or an opening (54, 56, 58) of the body (4) shaped substantially complementary to the projection (48, 50, 52), thereby retaining the body (4) in its bent position.

23. Flexible element according to claim 22 **characterised in that** the projection (48, 50, 52) projecting from the plane of the body (4) in the unbent position of the body (4) is formed on a tongue formed integrally with the body (4).

24. Flexible element according to claim 13 **characterised in that** the retaining means comprise snapping means for snapping into a recess or an opening in the body in the bent position of the body thereby retaining the body in its bent position.

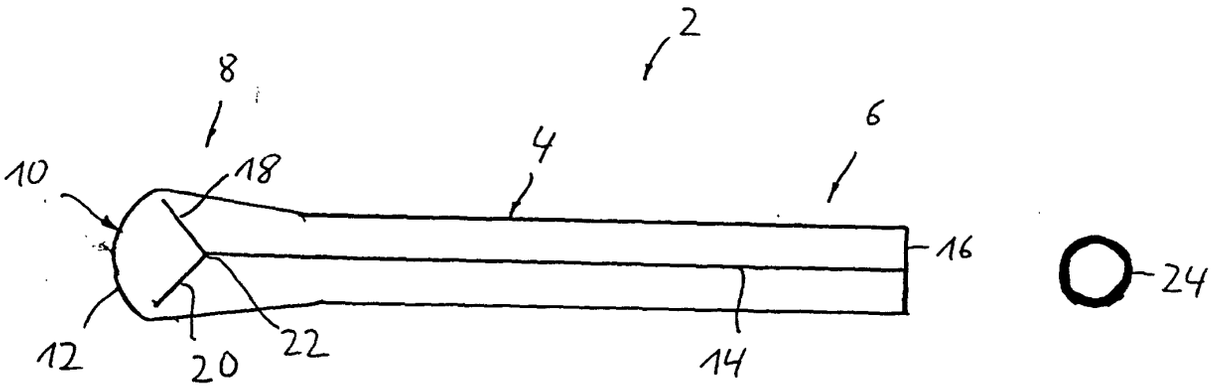

FIG. 1

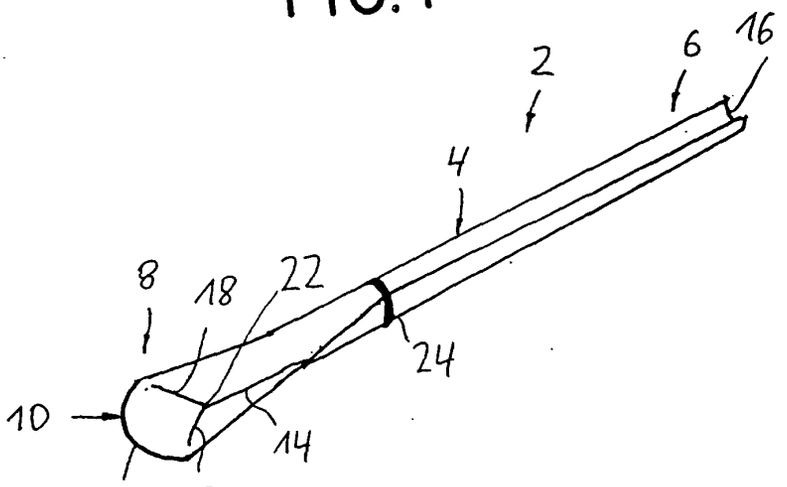

FIG. 2

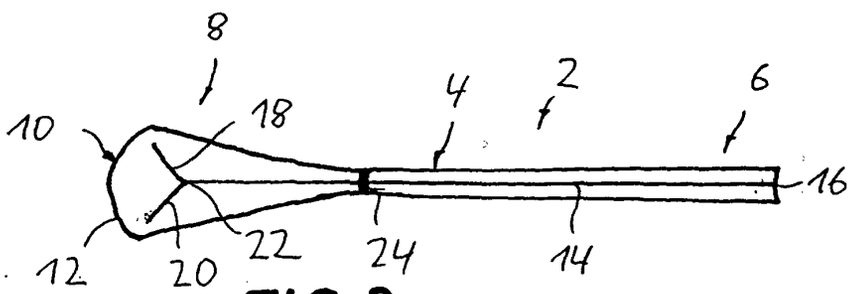

FIG. 3

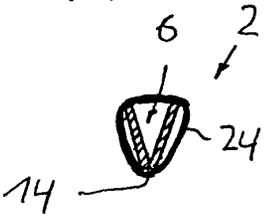

FIG. 4

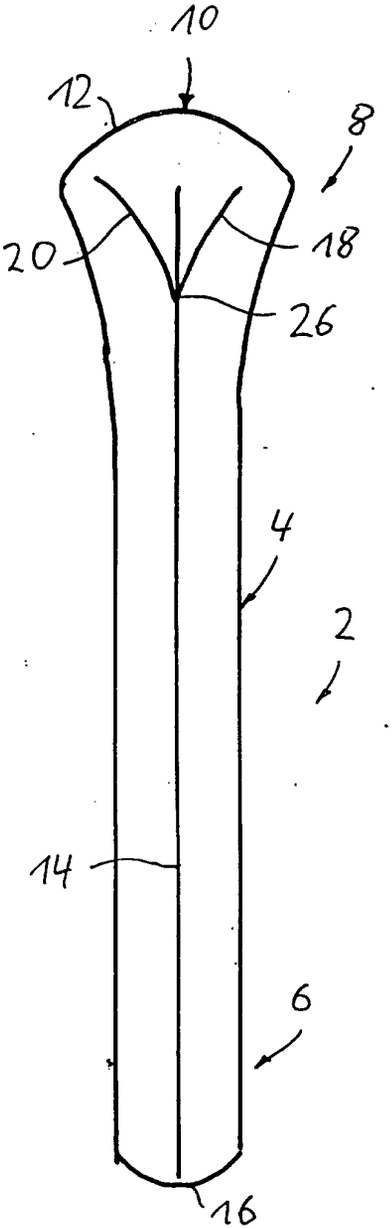

FIG. 5

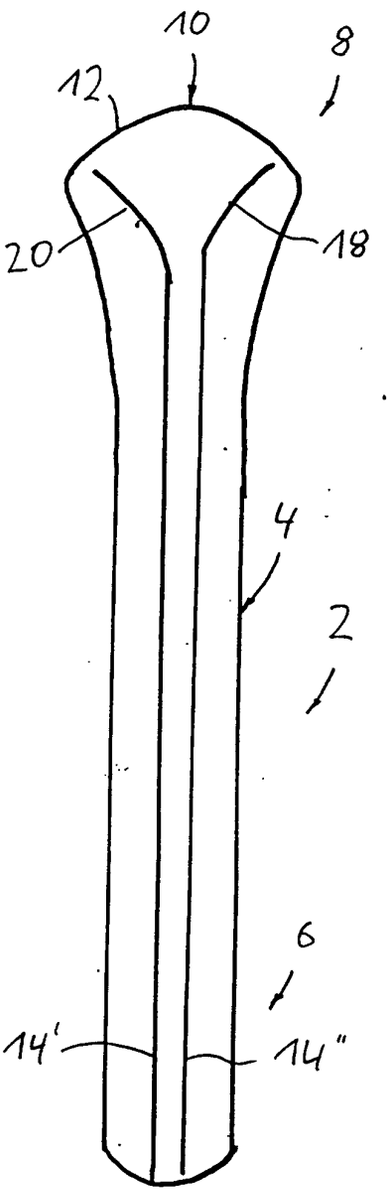

FIG. 6

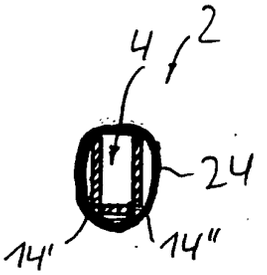

FIG. 7

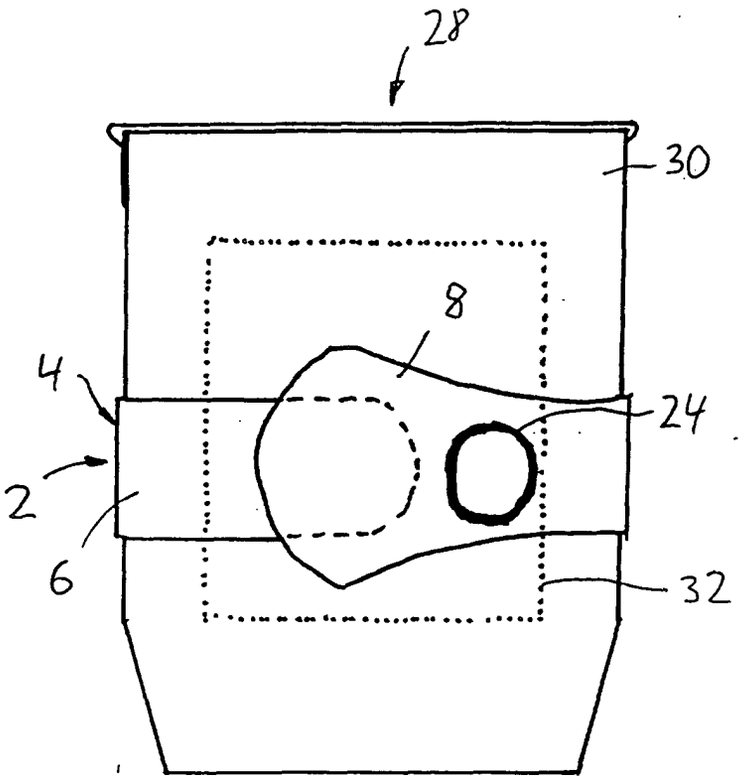

FIG. 8

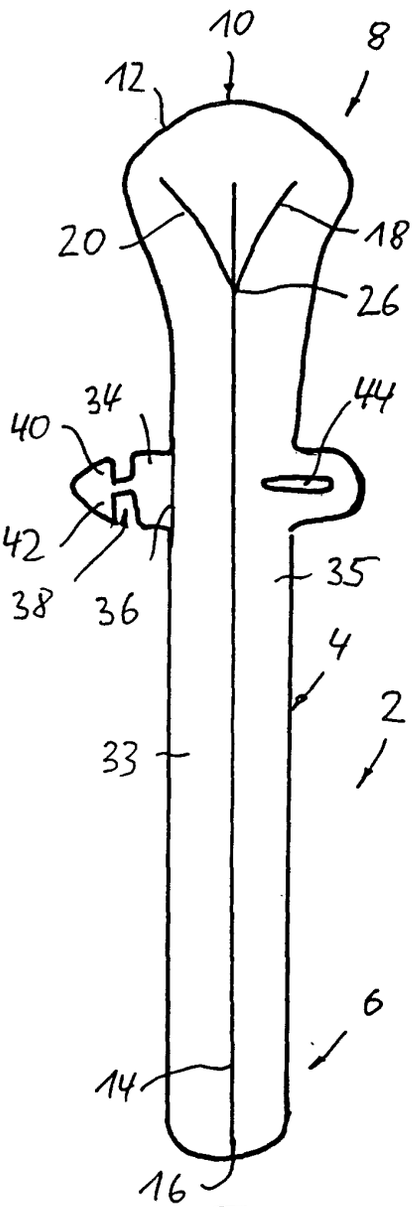

FIG.9

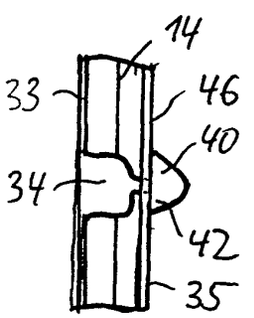

FIG.10

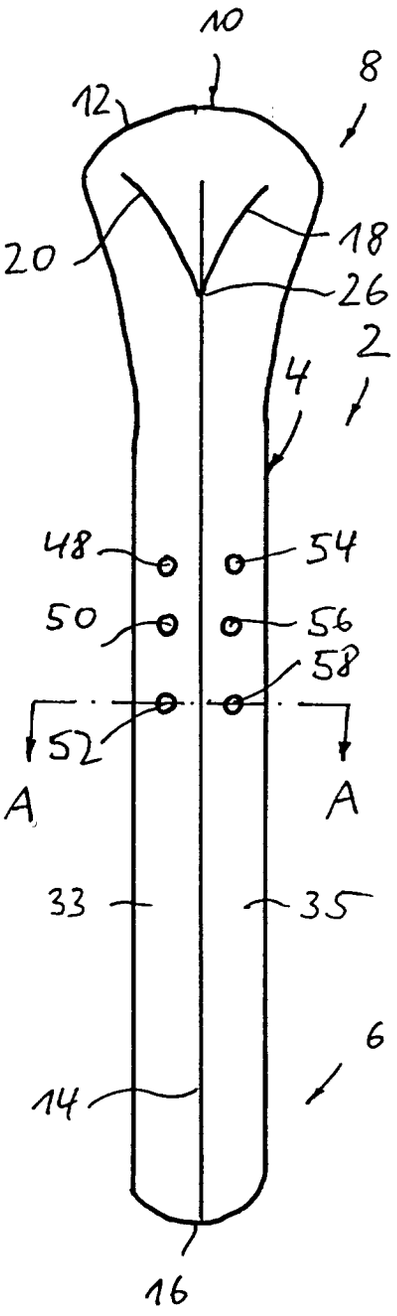

FIG.11

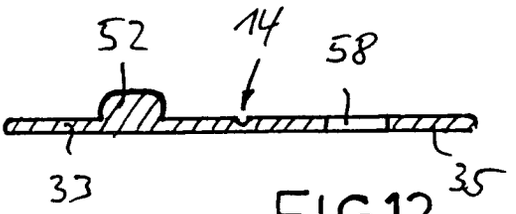

FIG.12

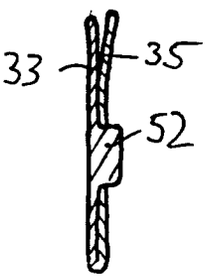

FIG.13

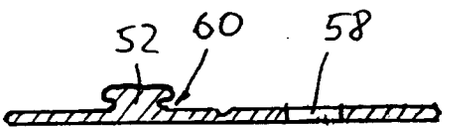

FIG.14

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EUROPEAN SEARCH REPORT

Application Number
EP 00 10 7235

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Place of search	Date of completion of the search	Examiner
THE HAGUE	23 August 2000	Vistisen, L

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