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(54) **CONTAINER FOR CARBONATED BEVERAGES**

BEHÄLTER FÜR KOHLENSÄUREHALTIGE GETRÄNKE

RECIPIENT POUR BOISSONS GAZEUSES

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(56) References cited:

EP-A- 0 166 667 **US-A- 4 525 396**
US-A- 5 622 308

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Description

[0001] This invention relates to a liquid container and in particular a container for carbonated beverages such as beer, sparkling wines and soft drinks such as colas and tonic.

[0002] It is known to provide containers for carbonated beverages such as aluminium or steel cans and bottles manufactured from glass or a plastic material such as PET. The beverages contain a dissolved gas such as CO₂. The CO₂ may be present in the beverages as a result of the manufacturing process such as brewing in the case of beer or may be dissolved into the liquid such as usually the case with soft drinks. Containers for such beverages must be capable of physically withstanding the pressure of the gas, that is, they must not rupture or creep under pressure and they must also contain the gas without allowing it to escape from the container. An acceptable shelf life for a beverage so contained is approximately three months. Current containers such as glass or plastic bottles and cans do provide the necessary shelf life however there are drawbacks with such existing containers.

[0003] Cans, and in particular aluminium cans, can be recycled however such recycling requires a relatively large input of energy and further requires that the containers be sorted and transported to a recycling plant. Cans, even recent aluminium cans, still require the use of several grams of metal. Another drawback of cans is that the outer surface thereof is difficult to provide printing on. Various screenprinting techniques exist, however these are somewhat limited and in many cases the graphics capable of representation on the outer wall of an aluminium can are limited to simple designs of primary colours.

[0004] In the case of bottles whether of a plastics material or glass printing directly onto the outer surface of such a container is not normally possible. A further layer must be provided in order to enable the graphics to be printed. This complicates the manufacturing process and requires a separate layer of material which may be dissimilar to the material of the main body of the container thus complicating recycling.

[0005] The present invention provides a container for carbonated beverages. These beverages may comprise beer, fizzy wine or other drinks such as soft drinks. Existing containers do provide for adequate material strength and provide a gas barrier so that any dissolved gas does not pass out of the container. Existing techniques such as providing a glass or PET material bottle do adequately contain such beverages however they do have limitations in that in order to recycle them a collection facility must be provided and such containers are relatively bulky and somewhat heavy. There is a further drawback in using PET in that recycled PET cannot be placed in contact with food so when constructing a container from recycled PET a layer of virgin PET must be provided on the internal surface which will contact the

beverage with the regrind or recycled PET providing the outer layer. Card made from plant or vegetable-based material such as using the fibres of flax, wood or hemp is readily recyclable or disposable. For example it can be composted, burnt or recycled in a standard paper or card recycling plant. Card may also be readily printed with detailed graphics. Card has a further advantage in that it is substantially opaque and beverages such as beer have been found to keep better when kept out of contact with light. As can be seen from the figures preferred forms of the present invention as shown in Figure 1 provide a full opening container, that is, when the end-cap is removed full access to the container is provided. This provides a container of beverage which is easier to drink from as opposed to current aluminium or steel cans in which a smaller, that is, less than full aperture opening is provided.

[0006] Card such as card produced from vegetable matter, for example, wood pulp, hemp or flax material does provide a matt surface which can be readily printed upon. However a single ply of card does not provide a sufficient degree of dimensional stability, that is, it creeps under pressure. Further, card does not provide for a sufficient gas barrier to contain gas present within a container manufactured therefrom. Current card containers such as the "Tetrapak Tetrapack" can be used to contain beverages which are non-carbonated. However due to the current technique of manufacturing the joints of the container are not mechanically strong enough to withstand any degree of internal pressure. The shape of the container is also not suitable for carbonated beverage containment.

[0007] A container for non-carbonated liquids is described in U.S. patent 5622308, the container walls being formed from a cardboard layer to which a barrier layer has been laminated, the barrier layer being adhered to the card over its entire surface.

[0008] In U.S. patent 4525396, there is described a container for carbonated beverages constructed from paper or card, with a gas barrier layer permanently attached to both faces of the card to form a three-ply laminated structure.

[0009] The strength of the bond between the gas barrier layer and the card is fundamental to the integrity of the finished container of in both of these prior art structures.

[0010] In European patent 0166667, there is described a container having a cardboard side or and metallic end caps crimped to the sidewall. The recycling of such a container is time-consuming, in that separation of the metallic end caps from the card sidewall is necessary.

[0011] The current invention attempts to overcome the problems of the above-mentioned known devices by providing a container primarily of a vegetable matter card or paper which provides sufficient dimensional stability and a gas barrier to provide gas impermeability to enable the container to be used to contain carbonated

beverages, the gas barrier being removable from the vegetable matter components for recycling.

[0012] Exemplary embodiments of the present invention will now be described with reference to the accompanying drawings.

[0013] Figure 1 shows a vertical cross-section through a preferred form of the present invention. The beverage container 1 provides an outer wall 2 of a card material such as card produced from vegetable matter and further includes an internal membrane 3. The internal membrane 3 is preferably of a plastic material such as nylon, polyethylene or PET. In the preferred form of the invention as shown in Figure 1 a conical end cap 4 is provided over the top of the container. There may also be present a further cap 5 which is flat-ended.

[0014] Figure 2 shows a container according to the present invention without the internal membrane. This figure shows a vertical cross-section and illustrates the structure of the outer wall of the container including the bottom endcap 6.

[0015] Figure 3 illustrates the construction of the side wall of the beverage container and shows a preferred laminated structure. In this form of the invention there are present four layers 10, 11, 12 and 13. These layers are produced from pieces of card which are arranged concentrically. The joints of the card 20, 21, 22 and 23 are most preferably butt joints, that is, the card is curved and joined end-to-end. In the preferred form of the invention which utilises four layers the joints 20, 21, 22 and 23 are offset from each other by 90°. This ensures that in this form of the invention there are three unbroken layers of card either above or below each joint.

[0016] Figure 4 shows the construction of an endcap according to a preferred form of the invention. This endcap is constructed from a series of nested cones. These cones 30, 31, 32 and 33 preferably are produced from a circular piece of card which has a sector removed. It has been found that a cone angle of approximately 120° provides for adequate strength. A series of extensions or tabs 40 are preferably provided on the uppermost cone in order to facilitate fixing of the endcap to the sidewall.

[0017] Figure 5 shows a horizontal cross-section showing the expanded layers in a preferred form of the invention. These layers include butt joints which are offset from each other by 90°.

[0018] Figure 6 shows another form of the present invention in which three layers of card are provided. The butt joints of this form are offset from each other by 120°.

[0019] Figure 7 shows another form of conical endcap, this form being produced from triangular segments.

[0020] Figure 8 shows a form of the sidewall of the present invention. This sidewall is approximately cylindrical and thus provides for ease of manufacture in that the various layers or plies of the sidewall are substantially rectangular in shape.

[0021] Figure 9 shows a perspective view of another form of sidewall. In this case the shape is substantially

frustoconical having a larger upper opening and smaller lower opening. This form of the present invention is still relatively easy to manufacture and provides a further advantage in that it approximates the shape of a traditional glass.

[0022] Figure 10 shows another form of the present invention being a frustoconical shape having a smaller upper opening and larger lower opening.

[0023] Figures 12 to 16 show various possible shapes for the sidewall of a container according to the present invention.

[0024] Figure 11 shows a horizontal cross-section through a preferred form of the invention in which the cross-section is circular.

[0025] Figure 12 shows another shape which is possible for a sidewall when viewed in cross-section, this shape being a tround. A tround shape has the advantage of providing for ease of indexing, that is, a series of containers of such a shape can be conveyed along a path or through an opening with ease.

[0026] Figure 13 shows another and less preferred form of the present invention in which a polygon, in this case a pentagon, is constructed from a series of separate sidewall pieces 60, 61, 62, 63 and 64.

[0027] Figure 14 shows a polygon shape, again a pentagon, in which the sidewall is constructed from a single piece of material. Such a construction would involve a number of plies of material similar to the construction of the circular cross-section sidewall described earlier.

[0028] Figure 15 shows another possible cross-section, in this case an octagon having unequal side lengths.

[0029] Figure 16 shows another less preferred technique of constructing the sidewall of a beverage container, in this case the material is arranged in a spiral or convolute. That is, a single piece of material is provided which is wound into an approximately circular shape.

[0030] Figure 17 shows the preferred form of the invention utilising concentric plies of material.

[0031] Figure 18 shows yet another form of the invention in which the sidewall is constructed from a helically wound piece of material 70. Such a technique is known for the construction of inner cores of, for example, toilet paper. In this form of the present invention a number of plies of material, for example four, are provided, the joints of each ply being butt-jointed to each other and the joints of each separate ply being offset from each other by approximately equal angles.

[0032] Figures 19, 20, 21 and 22 show in cross-section various forms of jointing in providing the sidewall of the present invention.

[0033] Figure 19 shows the preferred form in which a butt joint is provided and the material plies are adhered to each other by a suitable adhesive, for example, polyvinyl acetate (PVA) glue or another food-approved adhesive.

[0034] Figure 20 shows another preferred technique

in which the joints are skived, that is, the joint is similar to the butt joint however the pieces of material to be jointed to each other are angled. This technique has the advantage of providing a greater surface area for the ply to adhere to itself.

[0035] Figure 21 shows another possible form of joint in which the ply is overlapped.

[0036] Figure 22 shows a preferred jointing technique in which, similar to that illustrated in Figure 25, an overlap joint is provided however this is further sealed by a separate layer, for example tape 80.

[0037] Figure 23 shows a construction technique of a sidewall according to the present invention. This involves the layering of a ply onto a former 100. As illustrated in Figure 27 the former 100 may comprise a cylinder and the various plies making up the sidewall are simply layered onto the cylinder as it rotates. The offset of the joints between the plies or layers is achieved by starting the separate plies at points offset from the underlying joint.

[0038] Figure 24 shows a similar technique used to provide a container which is round in cross-section. In this case the former 101 is of course of a round shape. Other formers may be used to provide various sidewalls of differing shapes.

[0039] The present invention provides a container for a carbonated beverage 1 which utilises multiple layers of differing materials. One of those layers 2 comprises one and preferably multiple plies of a plant fibre-based material. Such a plant fibre-based material may comprise card produced from wood fibres according to any of the well-known card or paper-making techniques. It has been found that multiple layers of wood fibre card of approximately 90 grams per square metre in weight can provide sufficient strength to contain a carbonated beverage when such material is layered or laminated. Other suitable plant fibre-based materials such as hemp or flax fibre-based cards may also be utilised. The outer surface of the sidewall 2 provides an area onto which graphics may be printed. The use of material of a plant fibre-based nature enables a number of the known techniques for printing onto plant fibre-based materials to be utilised.

[0040] Most plant fibre-based materials are not moisture-proof to any great degree and therefore the outer surface of the sidewall 2 of the container for carbonated beverages may be coated with a waterproofing material such as a plastic material or a wax. Such a layer provides a degree of protection for the sidewall and may therefore allow for longer shelf-life.

[0041] The membrane barrier material 3 which is the internal layer of the container for a carbonated beverage may be produced from a number of suitable materials. It may comprise a laminated or multilayer material. Suitable materials have been found to include nylon or polypropylene or polyethylene or polyethylene naphthalate. Such materials may further include, for added protection, a thin layer of metal such as aluminium. Devices

according to at least preferred forms of the present invention have been found to be capable of containing pressures of up to 40-75 pounds per square inch. The containment of such pressures was stable over the intended shelf-life of typical carbonated beverages, that is, over three months. In preferred forms of the invention, for example as illustrated in Figure 1, the internal pressure of the carbonated beverage has the effect of tightening the bond of the upper endpiece 4 to the sidewall 2. This is also the case in forms of the invention where the outer edges of the topmost piece 4 are rolled together with the upper portions of the sidewall 2 or the folded skirt portion 13 of the sidewall 2. In such situations it may be beneficial to provide means for releasing the pressure contained prior to opening. For example a weakened portion may be provided on the endcap 4, the user removing the weakened portion by, for example, pushing or pulling off the weakened portion thereby releasing the pressure and therefore decreasing the bonding of the upper endcap 4 to the sidewalls 2 thus facilitating opening. In forms of the invention such a weakening may comprise the middle or upper portion of the conical endcap 4 which may be either scored, that is, perforated in such a way as to enable a central portion thereof to be removed or may comprise a separate conical subportion which can be removed.

[0042] In preferred forms of the invention the gas barrier material 3 need not provide any great degree of pressure containment of the carbonated beverage. It therefore may be relatively thin as long as it provides the necessary degree of gas impermeability. It has been found that a container for carbonated beverage constructed according to a preferred form of the invention provides a container in which the membrane 3 provides approximately 2-5% of the total mass of the container. This is an advantage in that the barrier material 3 is likely to be more expensive and in most cases much more expensive than the material of the outer wall 2.

[0043] The degree of attachment of the barrier material 3 to the sidewall 2 need not be great. To some degree the internal pressure of the carbonated beverage within the membrane 3 will push it against the sidewall 2. In preferred forms of the invention the membrane material 3 may be easily removed from the sidewall after disposal of the container. This enables the barrier material 3 to be separately processed or recycled whereas the sidewall 2 may be subject to different disposal options. For example the barrier material 3 may be floated off recycled and the outer wall or layer 2 may be otherwise disposed of for example being a plant fibre-based material it may be used in landfill, burnt or composted.

[0044] As shown in the preferred form of the invention as illustrated in Figure 1 the removal of the endcap 4 of the container for carbonated beverage provides a full aperture opening. That is the top of the container is fully open and the beverage contained therewithin can be readily consumed. However in other less preferred forms of the invention the endcap may be provided with

points of weakening or for example a tear-tab which the user can remove in order to obtain access to the beverage contained therein through an aperture which does not occupy the full end of the container.

[0045] The preferred form of the invention as shown in Figure 1 may be further provided with an additional overcap 5. Such an overcap may be simply a cylinder closed at one end which fits over the conical endcap 4. This additional overcap further protects the endcap 4. This is particularly important if the endcap 4 has as described previously a point of weakening or tear-tab to enable non-full aperture access to the beverage to be obtained. An additional use of the additional endcap 4 is to enable promotional material such as instant win tickets to be placed under the outer endcap 5. Until purchased such promotional material would not be visible, however once purchased a user would be able to remove the outer endcap 5 and view the promotional material.

[0046] The present invention provides containers for carbonated beverages which may prove attractive to beverage producers for a number of reasons as described above. Additionally such a container for carbonated beverage is less likely to cause injury if thrown at persons. This may prove an advantage.

[0047] The endcap 4 may be secured to the sidewall 2 by a number of means. In the preferred forms of the invention as illustrated the conical endcap 4 includes a skirt portion comprising a substantially cylindrical band of material extending from the outer surface of the cone. This may prove to be a preferred alternative to the form of the endcap as shown in Figure 4 which includes a number of tabs 40. It is believed that the endcap of a conical nature as shown in Figure 4 will be preferred when used as a lower occlusion as shown in Figure 1 and indicated by the reference numeral 9 whereas the form of endcap comprising a cone with an additional skirt or cylindrical wall will be preferred when used as a top endcap as shown in Figure 1. In forms of the invention the sidewall 2 may be rolled or folded outwardly to provide an upper lip 13 to the sidewall 2. The upper endcap 4 may additionally be provided with a folded or rolled internal lip 14. The metallised layer, for example the layer of aluminium, is extremely thin, up to approximately 6 microns and maybe less in thickness. The metal layer may be coated with a plastic or other polymer material. Various techniques exist in the art to which this invention relates to enable such a thin layer of metal to be bonded with a membrane such as a plastic membrane.

[0048] Such metallised layers are flexible, provide a degree of thermal insulation and may also enhance the gas impermeability of the membrane. As shown in Figure 1 the lips 13 and 14 may be sized so as to secure the endcap 4 to the sidewall 2. In other forms of the invention the skirt of the endcap 4 may be provided with points of weakening or a tear strip to enable the user to readily remove the endcap from the beverage container. In other forms of the invention the endcap 4 may be se-

cured to the sidewalls 2 by means of serrations which are provided inside the skirt of the endcap 4 and on the outside of the sidewall 2. Such serrations may be of a plastic material and provide for the endcap to click or clip onto the sidewall. Other forms of the invention may provide an endcap 4 which can be screwed or twisted off the sidewall 2. The lower endcap 9 may in less preferred forms of the invention be of a similar form to that as described in relation to the upper endcap 4. However preferably it is mounted internally in the sidewall 2. This means that the endcap 9 may be positioned such that the point of the cone may be no lower than the lower portions of the sidewall. This can provide a stable base for the beverage container. The lower endcap 9 may be adhered inside the sidewall 2 by means of the tabs 40. A suitable food-grade or food-approved adhesive such as PVA may be used.

[0049] Figure 3 shows various layers of sidewalls. In this form of the invention the layers 20, 21, 22 and 23 are separate plies of plant fibre-based material card. As shown in the figures the ends of the various plies are butted together and joined at their ends. These joints are preferably glued using a suitable food-grade or food-approved adhesive such as PVA and the joints are offset from one another, in this case as four layers are provided the offset is 90°. In forms of the invention wherein three layers are provided the joints are offset by 120°. The various plies or layers are laminated to each other using again a suitable food-grade or food-approved adhesive such as PVA.

[0050] In preferred forms of the invention the layers may comprise the same material, for example they may all comprise a wood pulp paper. In other forms of the invention differing plies or layers may be utilised. For example one layer may comprise recycled plant fibre-based card whereas other layers may comprise virgin or non-recycled fibre-based card. In other forms of the invention the orientation of the fibres may differ in the various layers. For example alternate layers may comprise plies having fibres arranged substantially vertically then horizontally. This is believed to provide a greater structural strength container. This method may also allow the outermost ply or layer to be of a different material, for example the outermost layer may comprise a material which can be readily printed upon. And as mentioned previously the outermost layer may be water or moisture-proofed using various techniques which are known to persons skilled in the art to which the invention relates.

[0051] The multilayer construction of the endcaps is shown in Figure 4. It is preferred that at least three and preferably four layers are provided in the endcap. In this case they are shown in exploded view. The various layers 30, 31, 32 and 33 comprise a set of nested cones. These cones may be most simply produced from circular pieces of material which have a sector removed to enable them to be formed into a cone. It has been found experimentally that cones having an angle of approxi-

mately 120° provide sufficient strength. Again as discussed in relation to the sidewalls the materials of the plies of the cones 30, 31, 32 and 33 may differ in order to provide additional material strength or utilise advantages of certain materials such as ease of printing.

[0052] Other less preferred endcaps are shown in Figures 7, 8 and 9. Figure 7 shows a hemispherical endcap. This endcap 42 requires a different construction technique from the conical endcap. A different technique of constructing the conical endcap is illustrated in Figure 8 wherein the cone is constructed from sectors of material. The sectors are adhered to one another using a suitable food-grade adhesive such as PVA.

[0053] Figure 9 shows an alternative method of sealing one or both ends of the container for a carbonated beverage. In this case the end is flattened and folded or crimped over 50. This technique is used in the manufacture of tubes of such substances as toothpaste etc. and the sealing may be enhanced by use of adhesive or heat sealing. A tearaway or ripaway portion may be provided in the crimped region 50 to enable users to readily obtain access to the carbonated beverage contained therein.

Claims

1. A container for a carbonated beverage, comprising:

a tubular sidewall (2); two end caps (4,6) and a gas barrier (3), wherein the sidewall (2) and end caps (4,6) are formed from a plant fibre based material, the end caps are coaxial with the sidewall, and one of the end caps (6) is fixed to the sidewall and the other end cap (4) is removable for access to the contained beverage, **characterized in that** the end caps (4,6) are conical and the gas barrier (3) is removable and lines the interior surfaces of the sidewall and end caps.

2. A container according to claim 1 wherein both the conical end caps present concave surfaces to the interior of the container.

3. A container according to claim 1 or claim 2, wherein the sidewall defines a cylindrical volume of constant cross-section.

4. A container according to any of claims 1 to 3, wherein the tubular sidewall is tapered, and the end caps are of differing diameters.

5. A container according to any preceding claim, wherein the fixed end cap is adhered to the internal surface of the sidewall.

6. A container according to any preceding claim,

wherein the gas barrier comprises a membrane of plastics material.

7. A container according to any preceding claim wherein the sidewall comprises multiple plies of the plant fibre based material.

8. A container according to any preceding claim wherein the removable end cap is fixed to the sidewall by a screw thread engagement.

9. A container of carbonated beverage, comprising a container according to any preceding claim with a carbonated beverage contained therewithin.

10. A method of manufacturing a container for a carbonated beverage, comprising:

providing a tubular sidewall of a plant fibre based material;
attaching a conical end cap to one end of the tubular sidewall;
releaseably attaching a second conical end cap to the other end of the tubular sidewall;
providing a removable gas barrier layer on the internal surfaces of the sidewall and the end caps.

Patentansprüche

1. Behälter für ein mit Kohlendioxid gesättigtes Getränk, mit einer rohrförmigen Seitenwand (2), zwei Endabdeckungen (4, 6) und einer Gassperre (3), wobei die Seitenwand (2) und die Endabdeckungen (4, 6) aus einem Material auf Pflanzenfaserbasis gebildet sind, die Endabdeckungen coaxial zur Seitenwand stehen, und eine der Endabdeckungen (6) an der Seitenwand befestigt ist und die andere Endabdeckung (4) für den Zugang zum enthaltenen Getränk abnehmbar ist, **dadurch gekennzeichnet, daß** die Endabdeckungen (4, 6) konisch sind, und die Gassperre (3) abnehmbar ist und die Innenflächen der Seitenwand und der Endabdeckungen auskleidet.

2. Behälter nach Anspruch 1, wobei beide konischen Endabdeckungen konkave Flächen zum Behälterinneren aufweisen.

3. Behälter nach Anspruch 1 oder 2, wobei die Seitenwand ein Zylindervolumen mit konstantem Querschnitt definiert.

4. Behälter nach einem der Ansprüche 1 bis 3, wobei sich die rohrförmige Seitenwand verjüngt, und die Endabdeckungen verschiedene Durchmesser aufweisen.

5. Behälter nach einem der vorstehenden Ansprüche, wobei die feste Endabdeckung an die Innenfläche der Seitenwand angeklebt ist.
6. Behälter nach einem der vorstehenden Ansprüche, wobei die Gassperre eine Membran aus Kunststoff aufweist.
7. Behälter nach einem der vorstehenden Ansprüche, wobei die Seitenwand mehrfache Lagen des Materials auf Pflanzenfaserbasis aufweist.
8. Behälter nach einem der vorstehenden Ansprüche, wobei die abnehmbare Endabdeckung an der Seitenwand durch Schraubeingriff befestigt ist.
9. Behälter für ein mit Kohlendioxid gesättigtes Getränk, mit einem Behälter nach einem der vorstehenden Ansprüche und einem darin enthaltenen, mit Kohlendioxid gesättigten Getränk.
10. Verfahren zum Herstellen eines Behälters für ein mit Kohlendioxid gesättigtes Getränk, wobei:
 - eine rohrförmige Seitenwand aus einem Material auf Pflanzenfaserbasis vorgesehen wird;
 - eine konische Endabdeckung an einem Ende der rohrförmigen Seitenwand angebracht wird;
 - eine zweite konische Endabdeckung an dem anderen Ende der rohrförmigen Seitenwand lösbar angebracht wird; und
 - eine abnehmbare Gassperrschicht an den Innenflächen der Seitenwand und der Endabdeckungen vorgesehen wird.
2. Un récipient selon la revendication 1, dans lequel les deux capuchons d'extrémité coniques présentent des surfaces concaves à l'intérieur du récipient.
3. Un récipient selon la revendication 1 ou la revendication 2, dans lequel la paroi latérale définit un volume cylindrique à section transversale constante.
4. Un récipient selon l'une quelconque des revendications 1 à 3, dans lequel la paroi latérale tubulaire est conique, et les capuchons d'extrémité présentent des diamètres différents.
5. Un récipient selon l'une quelconque des revendications précédentes, dans lequel le capuchon d'extrémité fixe est rendu adhérent à la surface interne de la paroi latérale.
6. Un récipient selon l'une quelconque des revendications précédentes, dans lequel la barrière aux gaz comprend une membrane en matière plastique.
7. Un récipient selon l'une quelconque des revendications précédentes, dans lequel la paroi latérale comprend des couches multiples du matériau à base de fibres végétales.
8. Un récipient selon l'une quelconque des revendications précédentes, dans lequel le capuchon d'extrémité amovible est fixé à la paroi latérale par un montage fileté.
9. Un récipient pour boisson gazeuse comprenant un récipient selon l'une quelconque des revendications précédentes, avec une boisson gazeuse contenue à l'intérieur.
10. Un procédé de fabrication d'un récipient pour une boisson gazeuse, comprenant les étapes consistant :
 - à prévoir une paroi latérale tubulaire en un matériau à base de fibres végétales ;
 - à fixer un capuchon d'extrémité conique à une extrémité de la paroi latérale tubulaire ;
 - à fixer de façon amovible un deuxième capuchon d'extrémité conique à l'autre extrémité de la paroi latérale tubulaire ;
 - à prévoir une couche amovible de barrière aux gaz sur les surfaces internes de la paroi latérale et des capuchons d'extrémité.

Revendications

1. Un récipient pour une boisson gazeuse, comprenant :
 - une paroi latérale tubulaire (2) ;
 - deux capuchons d'extrémité (4, 6) ; et
 - une barrière aux gaz (3),
 dans lequel la paroi latérale (2) et les capuchons d'extrémité (4, 6) sont formés à partir d'un matériau à base de fibres végétales, les capuchons d'extrémité sont coaxiaux à la paroi latérale, et l'un (6) des capuchons d'extrémité est fixé à la paroi latérale et l'autre (4) capuchon d'extrémité est amovible pour accéder à la boisson gazeuse contenue,

caractérisé en ce que les capuchons d'extrémité (4, 6) sont coniques et la barrière aux gaz (3) est amovible et constitue une doublure sur les surfaces intérieures de la paroi d'extrémité et des capuchons d'extrémité.

FIG. 1

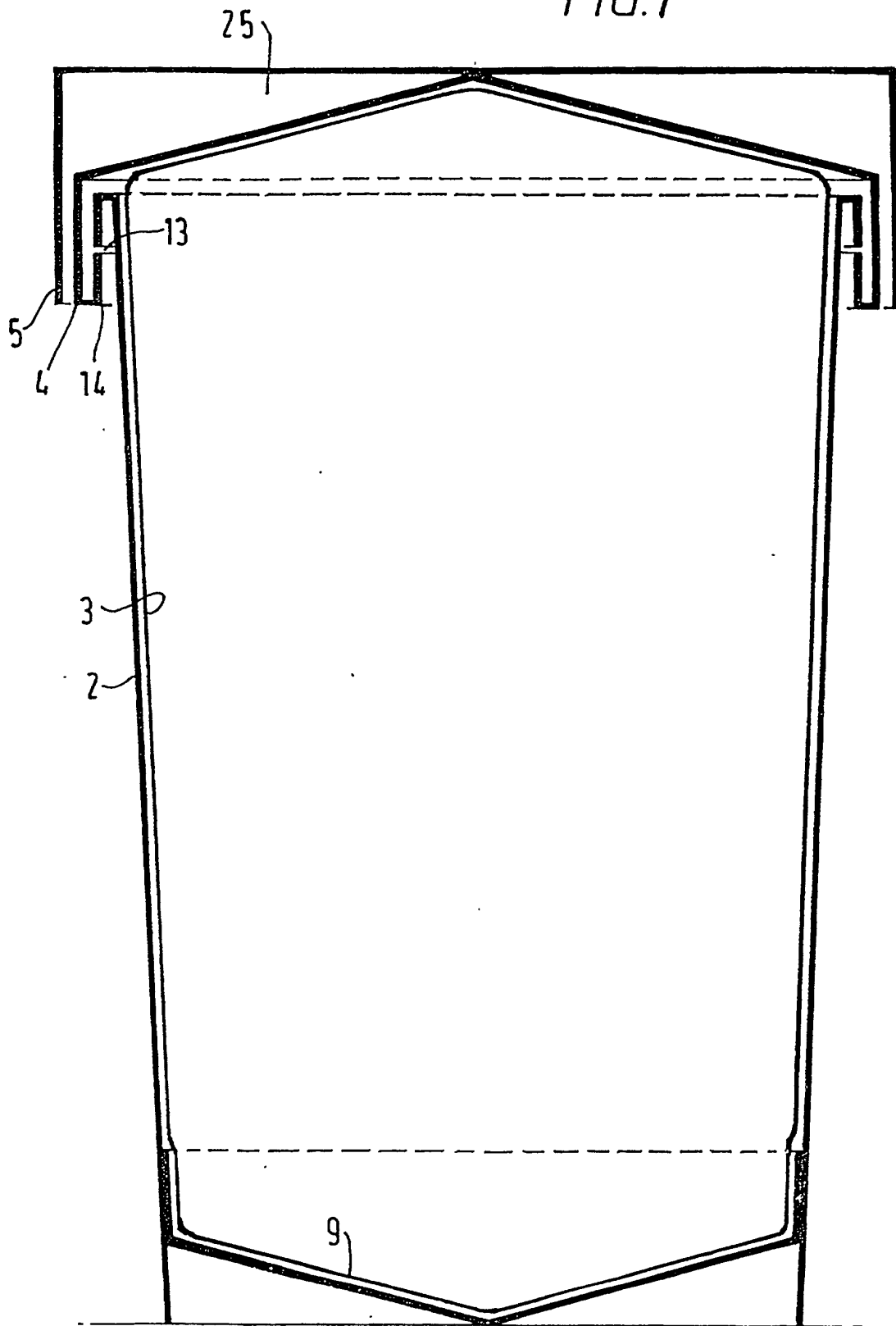


FIG. 2

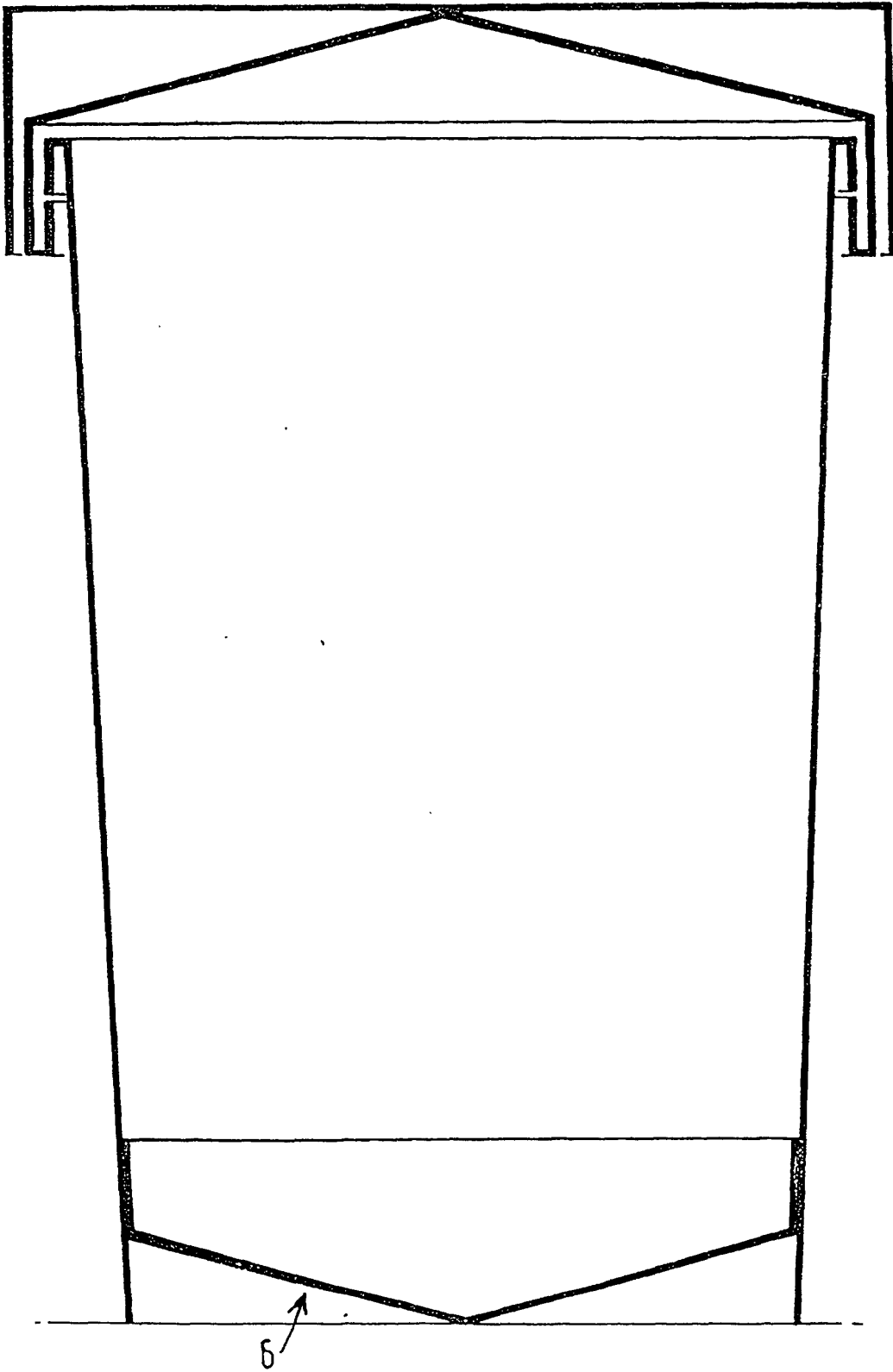


FIG.4

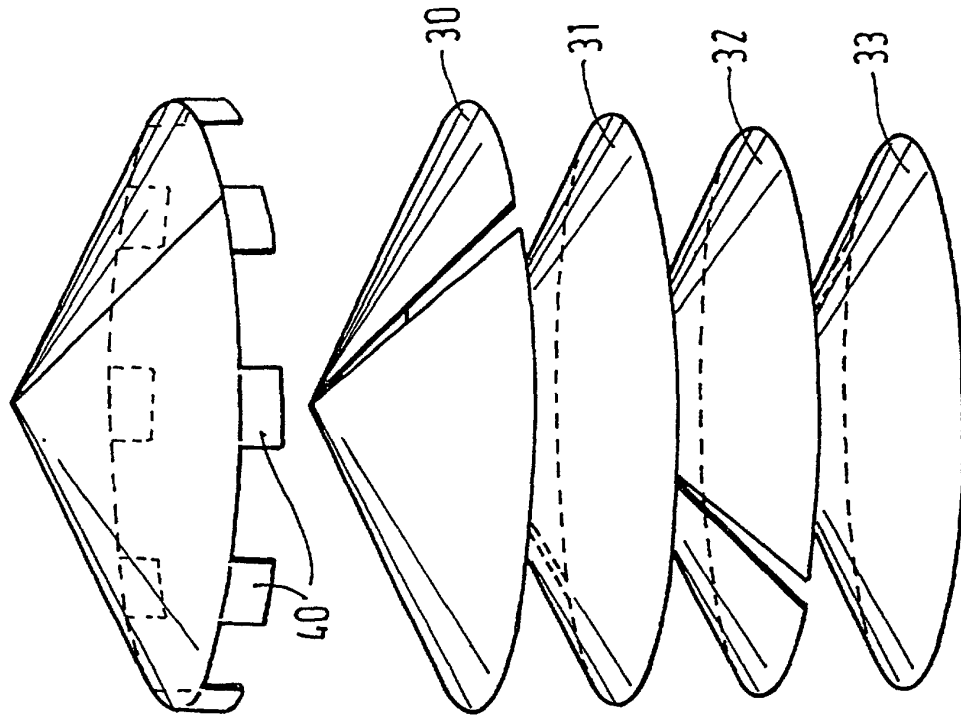


FIG.3

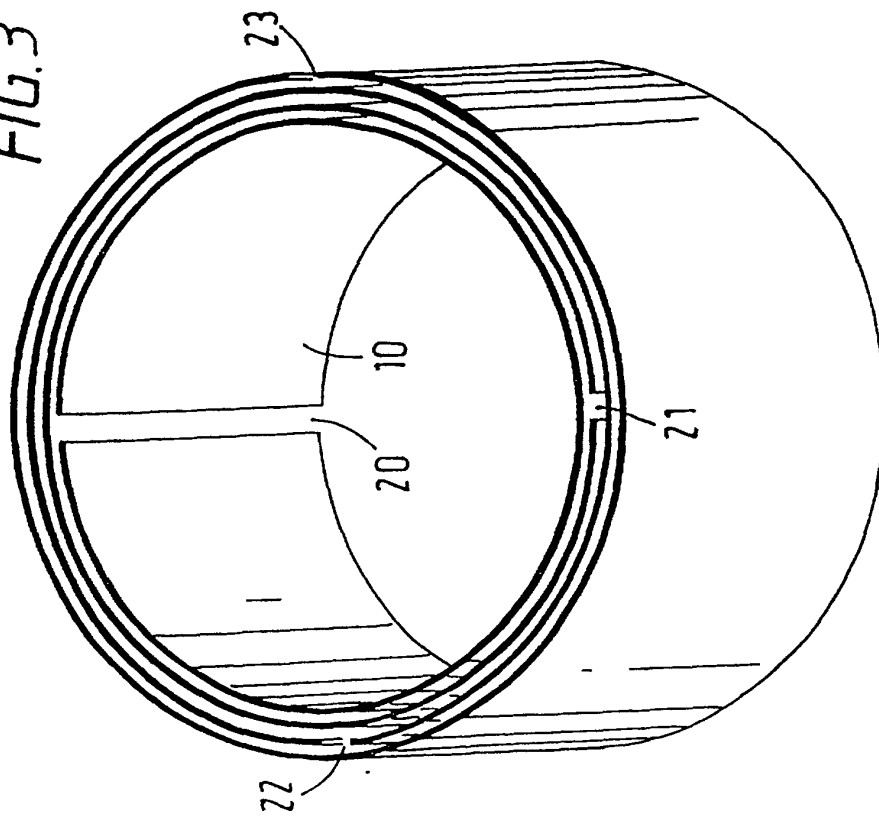


FIG.5

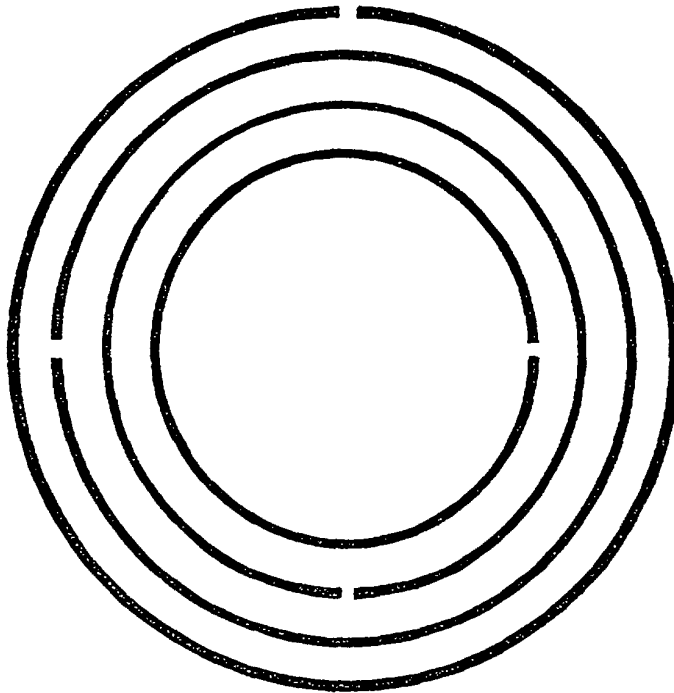


FIG.6

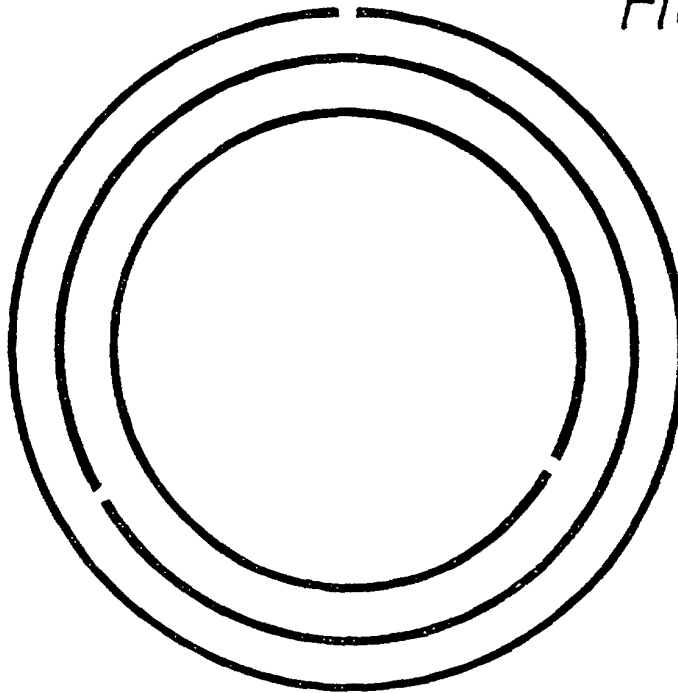


FIG. 7

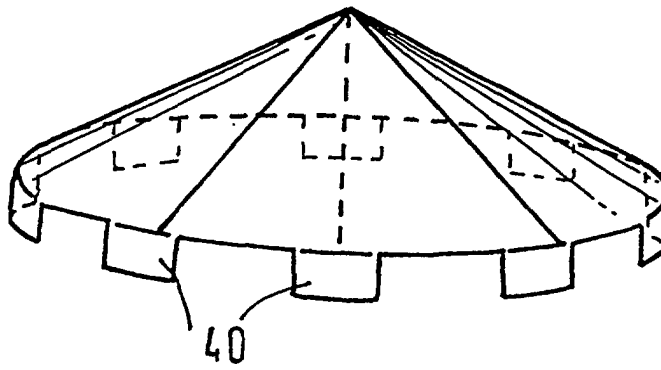


FIG. 8

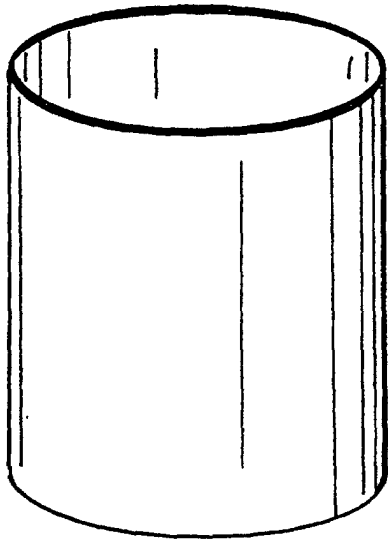


FIG. 9

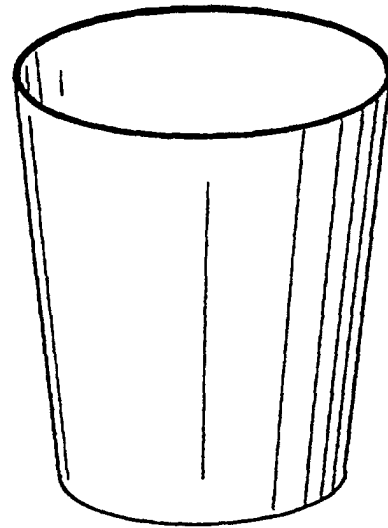


FIG. 10

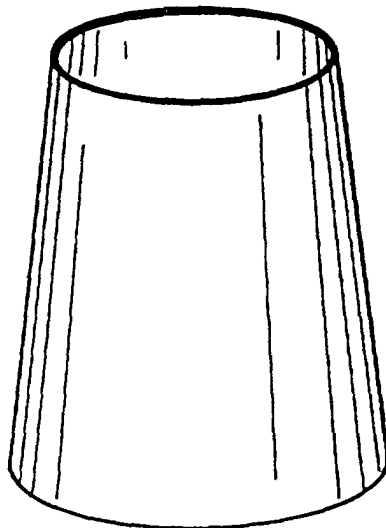


FIG. 11

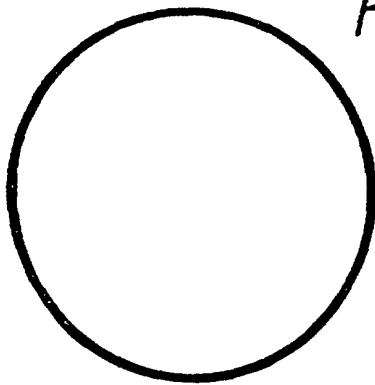


FIG. 12

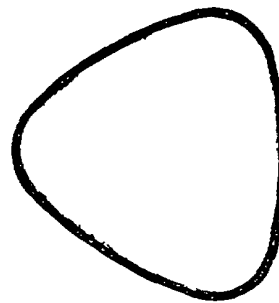


FIG. 13

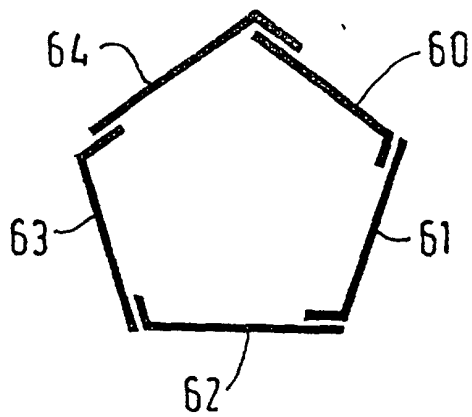


FIG. 14

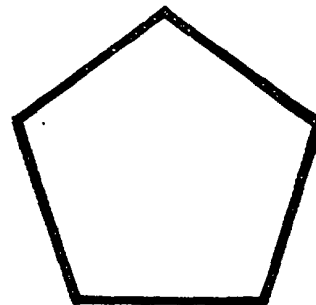


FIG. 15

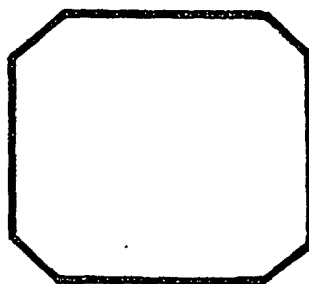


FIG. 16

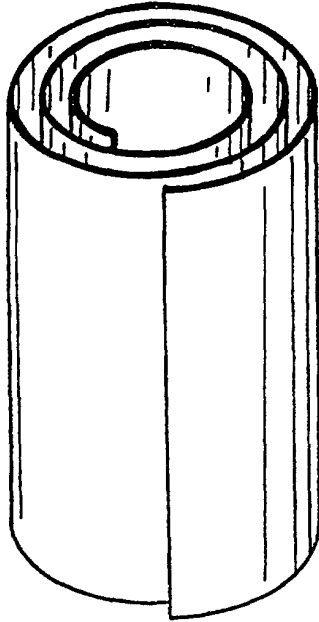


FIG. 17

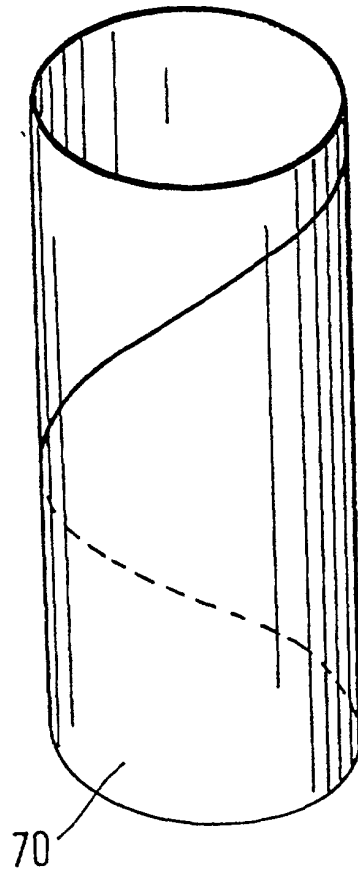
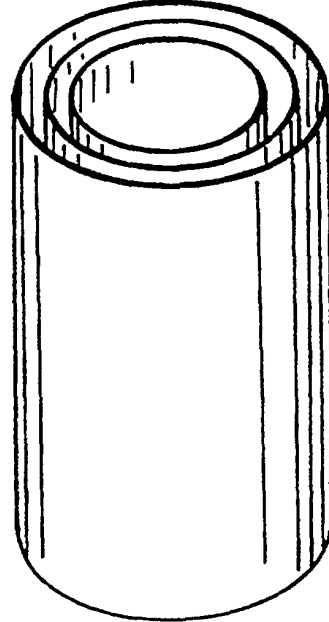


FIG. 18

FIG. 19

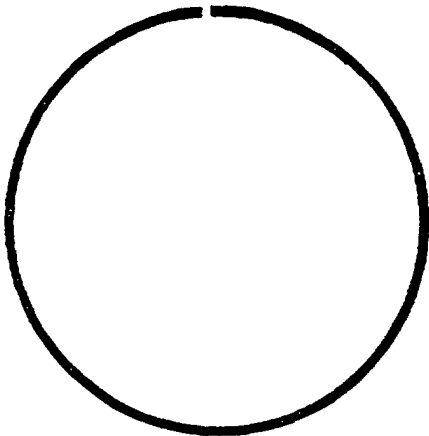


FIG. 20

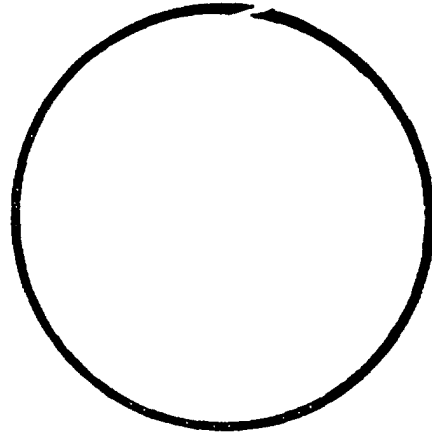


FIG. 21

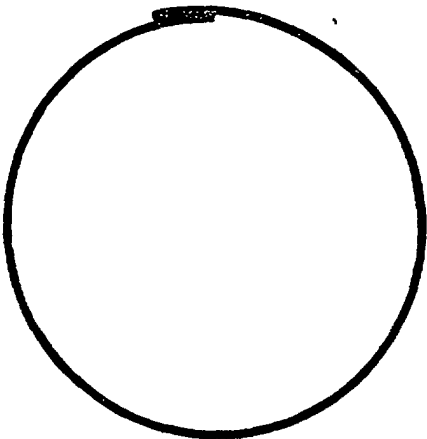


FIG. 22

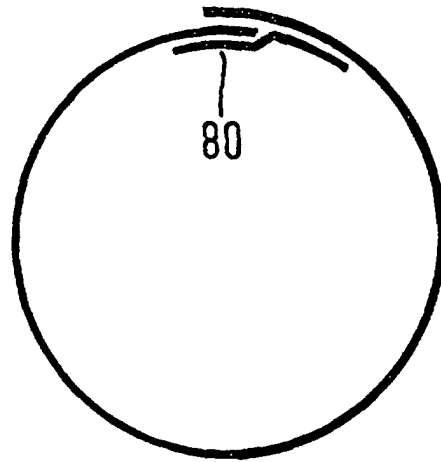


FIG. 23

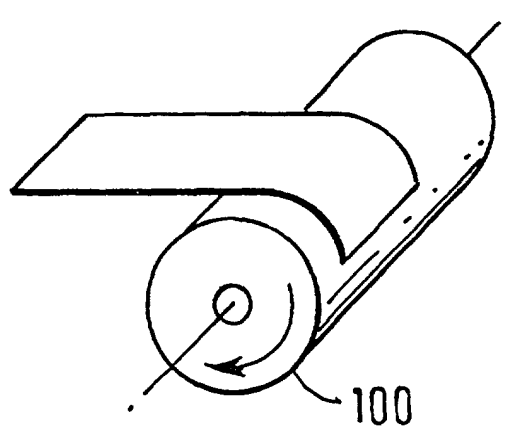


FIG. 24

