PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 5 :		(11) International Publication Number:
A44C 9/00, 27/00, 5/00	A1	WO 94/22341
		(43) International Publication Date: 13 October 1994 (13.10.94)

(21) International Application Number: PCT/IT94/00040

(22) International Filing Date: 30 March 1994 (30.03.94)

(30) Priority Data:

RM93A000223	7 April 1993 (07.04.93)	IT
RM93A000224	7 April 1993 (07.04.93)	IT
RM93A000690	13 October 1993 (13.10.93)	IT
RM93A000772	23 November 1993 (23.11.93)	IT
RM93A000773	23 November 1993 (23.11.93)	IT

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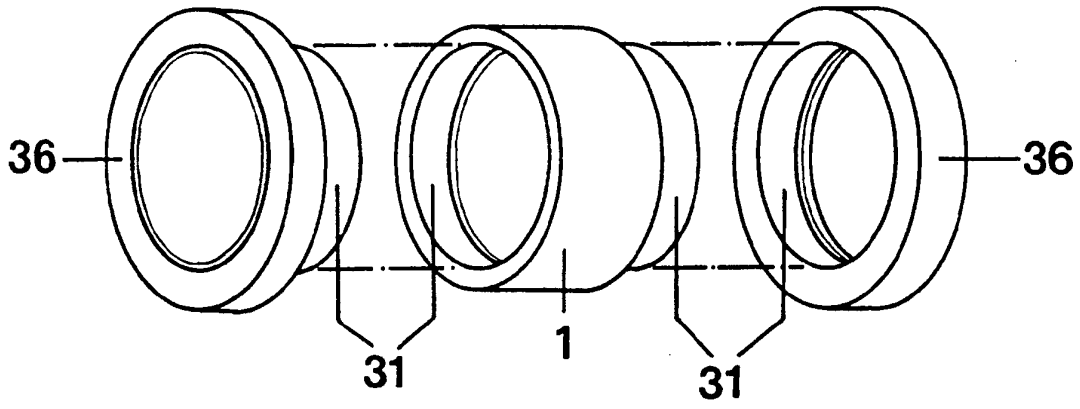
(81) Designated States: AU, CA, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published

With international search report.

Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: A MODULAR SYSTEM FOR THE REALIZATION OF RINGS, BRACELETS AND OTHER JEWELLERY OR CHEAP JEWELRY ARTICLES



(57) Abstract

The modular system according to the present invention allows to modify the colour and the external finishing of wedding rings or generally rings and other articles of jewellery and cheap jewelry, by the covering of a central module (1) with a plurality of superposed blades (2, 3) and/or with the subsequent addition, by means of connecting systems like pressure connection, release insertion, screwing, joint connection, of a plurality of modelled and coloured annular structures (36). The industrial process for the realization of the modular system provides the shaping of tubular structures (63-64-65) with a plurality of coaxial layers, of different metals, with subsequent cutting and finishing, or the succession of electroplating deposits or subsequent casting.

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"A MODULAR SYSTEM FOR THE REALIZATION OF RINGS, BRACELETS AND OTHER JEWELLERY OR CHEAP JEWELRY ARTICLES"

The present invention concerns a modular system for the realization of jewellery or cheap jewelry articles like (wedding) rings, bracelets and other articles that may be changed in colour and in their external finish, with modular elements and/or with superposing layers.

It is well known that families are in the habit of remembering the most important wedding anniversaries by means of signs that underline the years passed together and renew the marriage covenant for the future. In particular, there is the custom of celebrating silver and gold wedding with the exchange of new rings, of gold or white gold, that replace the old wedding rings or are added to them.

This habit is for sure full of significance for the couple and therefore the expense for the new rings after such long periods - 25 or 50 years - is usually accepted.

However, there are some people who believe that new rings of a different colour may reduce the symbolic

value of the wedding ring, that would loose its character of unicity and authenticity.

Furthermore, jewels in general - even if less than rings and other worn articles - are subject to fashion. Until now, it has been usually possible to modify a jewellery article, e.g. a ring, when it it did no longer meet with the taste of the person who wore it, only selling it and buying a new, different article, or by smelting the metal, recovering the eventual gems and realizing a new jewel.

In both cases, the value of the article is usually valued on the percentage of the precious metal and on the carats of the gems, while for more complete valuation also the working cost of the jewel should be considered. However, this cost can not be recovered, especially in case of smelting. Furthermore, a ring or any other jewel usually has a great loving value that gets completely lost with its selling or smelting.

The aim of the present invention therefore is the one of responding to the following needs:

- to allow that the wedding ring may be adapted to the passing of the years, substantially maintaining the same features of the ring exchanged on the wedding day;

- to avoid the cost for buying new rings, because of the customs or because of pure aesthetical choices;
- to realize jewellery articles provided with modular elements that may be composed according to the taste of the customer;
- to provide jewellery articles that may be modified without being subject to irreversible changes, with the average ability of anyone, making use of suitable tools, and in any case with the quick intervention of a person skilled in the art;
- to realize a modular system for allowing to add and/or vary the decorative elements of rings, bracelets and other articles of jewellery or cheap jewelry.

Such additions or variations or completions respond to the need that, e.g., instead of an engagement and/or wedding and/or silver- or gold-wedding ring, one single structure may be used to which the various components may be added, even if bought in different time successions.

In a similar manner the request may be solved to vary, according to the tastes and the occasions, the decorative elements of rings and other jewels, making use always of the same modular structure.

- to realize a new process for the realization of wedding rings, rings and similar, characterized in that two, three or more superposed layers of precious metals or not, of different colours, are on sight on the lateral side.

The object of the present invention, as claimed in the following claims, solves the problem of providing a jewellery article, in particular a wedding ring, that may be modified in its colour and in its external finish and which, from a general point of view, is characterized in that is comprises an anular spporting element and at least one modelled metal blade for covering said anular supporting element, linked to the same and for its external covering, without use of adhesive means and that may be removed by means of a cut.

Said covering blades may be of different metal alloys and of different colours, or even coloured in different manners so as to define the different periods of marriage life. For modifying the ring, the blades may be added or removed. When they are added - and if the starting blades are cylindrical - they may be applied onto the ring, e.g., by means of spinning, while if the starting blades are plane they may be plastically deformed and welded to the opposite ends,

or also fixed by means of two ore more small disappearing screws to a wedding ring not provided with said blades.

When a ring, provided with said blades, is to be modified, said blades must be cut and removed.

Furthermore, the object according to the present invention solves the problem of providing a jewellery article, in particular a ring, that may be modified in its shape and colour and which, from a general point of view, is characterized in that is comprises an anular supporting element, delimited by an internal and an external cylindrical surface, whereby the latter one is laterally provided with circumferential reliefs for forming a central groove, and at least one external additional anular element which modifies the aesthetic of the ring, that may be engaged in a joint with said anular supporting element in correspondence of at least one of said circumferential reliefs, by means of a corresponding groove obtained in the internal surface of the additional anular element.

In a possible variant, the present invention solves also the problem of providing a ring of jewellery or cheap jewelry, with modular elements which, from a general point of view, is characterized in that it

comprises, as modular elements, a substantially tubular supporting base body, provided, at least at one of its ends, with an external threading; and at least one internaly threaded nut, that may be coupled with said external threading of the base body and blocked onto the same.

In some preferred embodiments of the present invention, the ring according to the present invention comprises furthermore at least one additional external anular element which modifies the aesthetic of the article, inserted onto said base body and kept there, due to antagonist action, by means of said threaded nut, and one circumferential relief of said base body, or also by means of a couple of nuts in threaded coupling with the corresponding threadings of the ends of said base body.

In a further variant, the ring according to the present invention comprises a base body showing, peripherically and transversally, a plurality of grooves provided with undercuts and having a length equal to the transversal dimension of said base body, and a plurality of curved laminar elements, whereby each one may be transversally inserted in said following or not grooves, and laterally blocked by means of threaded nuts.

Among above mentioned aims, the one of realizing modular processes different from screwing, is solved by means of a variant of the present invention, comprising a supporting structure provided with means for the pressure and/or release or joint, bayonet or with grooved guides insertion, from one or both sides, of structures shaped and decorated according to the requests, and in such way made linked to said supporting structure so as to form a compact.

Furthermore, said anular structures are provided in the present invention as having the same insertion means provided in said supporting structure, so as to allow the addition of further elements in succession or for replacement.

For realizing the variant of the system concerning rings or other jewels consisting of superposed metal layers, the present invention provides a process comprising the use of a tubular structure with a plurality of layers of different metals, obtained with the forced insertion of coaxial tubes one into the other, or by following wrapping up of metal sheeths, finally welded, or by various deposits of electroplating performed in succession from which, by means of cuts with tools perpendicular to the axis of

said composed tube, rings may be obtained with three-layer edges.

Further features and advantages of the present invention will be described more in detail hereinbelow, according to the enclosed drawings in which some preferred embodiments are shown:

figure 1 shows a square section of a first embodiment of a ring according to the present invention;

figure 2 shows a sequare section of a second embodiment of a ring according to the present invention;

figure 3 shows a square section of a third embodiment of a ring according to the present invention;

figure 4 shows a perspective view of one of the embodiments of the ring according to the present invention, partially cut for illustrating purposes;

figure 5, shows a front view of an anular supporting element for a jewellery article;

figures 6, 7, 8, 9, 10, 11, 12 and 13 show a partial square section of the anular supporting element of figure 5, as well as alternative

shapes of additional external anular elements for the supporting anular element;

figures 14, 15 and 16 show in a partial diametrical section, the elements composing a first embodiment of a jewellery or cheap jewelry anular article with modular elements;

figures 17, 18, 19 and 20 show a diametrical section of the elements composing a second embodiment of a jewellery or cheap jewelry anular article with modular elements;

figures 21 and 22 show, in a partial diametrical section, the elements composing a third embodiment of the jewellery or cheap jewelry anular article with modular elements;

figures 23 and 24 show, in a partial diametrical section, a fourth embodiment of the jewellery or cheap jewelry anular article with modular elements;

figures 25, 26, 27 and 28 show, in a partial diametrical section, elements composing a fifth embodiment of the jewellery or cheap jewelry anular article with modular elements;

figure 29 shows a central, partial square section of a sixth embodiment of the jewellery or cheap jewelry anular article with modular elements;

figure 30 shows a partial axonometric view of the embodiment according to figure 29;

figure 31 shows in a scheme a detail of an anular article with modular elements;

figure 32 shows an exploded axonometric view of the components of a modular system with a pressure insertion means, for the realization of a wedding ring and/or of a ring;

figure 33 shows a ring obtained composing the elements according to the precedent figure, with exemplifying decoration;

figure 34 shows an axonometric view of some components of a modular system with a joint insertion means;

figure 35 shows the components of a modular structure with release insertion means;

figure 36 shows a variant of the release system that may be applied to spring-catches and similar for allowing to replace parts without performing weldings;

figure 37 shows, in an exploded axonometric view, a variant of the plat form of the release system;

figure 38 shows a transparency, axonometric and lower view the details of a small block with the functions of a spring-catch;

figure 39 shows a lateral scheme of a modular system with grooved guides;

figures 40 and 41 show an exemplifyied front and lateral view of a system for the application of the upper part onto a modular ring with a dovetail joint;

figure 42 shows the components of a modular ring with a screw application system or similar;

figure 43 shows the direct coupling of the two portions into which a wedding ring is devided, without the central support;

figure 44 shows in a lateral exploded view a series of wedding rings inserted with hollow spaces in into the other;

figure 45 shows an exploded view of the tubes 63, 64 and 65 to be inserted one into the other as shown in figure 46, in which also the means for the realization process of the wedding rings, rings and similar, with a plurality of superposed layers of different metals and colours;

figure 47 shows that phase of the process in which the tube with multiple layers 63, 64 and 65 is divided by a cut in the rings, which are to be finished because the edges are cutting;

figure 48 shows a phase of the finish process for wedding rings or rings, with a tool provided with an appropriate shape for peforming the rounding of the edges so as to obtain rings like the one shown in a section in figure 1;

figure 49 shows metal coverings A, B and C, to be inserted one into the other and welded along the edges for obtaining a three-layer tube;

figure 50 shows two variants of the realization process, respectively consisting of the performing of the welding of half-wedding rings F-G of different diameters, first diveded in two parts F' and G' and then mounted in succesion around the central wedding ring E for obtaining the final ring with three layers; or of anular weldings for uniting hollow half-wedding rings, cut along a central vertical plane passing through the centre;

figure 51 shows an exemplification of the realization process for the three-layer wedding rings, obtained with wedding-rings of different diameter E,L and M, inserted one into the other and brought into contact due to expansion from inside in the phases W and X; and the variant in which the wedding rings L

and M consist of hollow, shaped metal covers shown in a lateral section in detail Y.

The enclosed figures show a modular system for the realization of rings, bracelets and other articles of jewellery and cheap jewelry, in which the anular supporting element 1 of figure 1 has the shape of a solid with a semi-toroidal surface obtained by the rotation of a half-circumference around an external straight line, parallel to its side and that lies on the same plane.

The supporting anular element 2 of figure 2 has the shape of a solid obtained by the rotation of a semi-ellipse around an external straight line, parallel to its side and that lies on the same plane.

The supporting anular element 3 of figure 3 has the shape of a solid obtained by the rotation of a trapezium around an external straight line and that lies on the same plane.

Obviously, the supporting anular element may have a section different from the ones shown, flat or with a different shape.

The metal covering blades 1a, b, c, 2a, b, c and 3a, b, c are realized modelled upon the respective supporting elements by means of plastic deformation. Such deformation may take place by the direct spinning of a cylindrical blade onto the corresponding ring, i.e. curving a plane blade to the shape of a ring, whereby said blade is shaped with a transversal section corresponding to the one of the anular element, applied to the same and welded or however fixed to its free ends as shown in figure 4. The blade adhering to the supporting element and the superposed blades are united without adhesive means, while the the same connection, obtained by plastic deformation of one blade with the ring or with the adjacent blade, may be released by means of a cut.

According to a further possible embodiment, the starting point may be a tubular element previously drawn to a plurality of layers; now the transversal turning with a hollow, diamond iron is performed which produces a ring with a corresponding half-round shape, or with a pointed diamond iron, which produces a ring with a mainly flat shape. In both cases a ring according to the present invention is obtained, in which on the lateral edges the colours and the thicknesses 4 of the drawn blades can be seen together with the supporting element, as shown in figure 5.

One ore more metal covering blades may eventually show a surface with decorations. The number of the blades may usually vary from one to three, but conveniently they are two.

For what concerns the system according to the present invention for the realization of jewellery articles that may be modified in shape and colours, as shown in figures 5, 6, 7, 8, 9, 10, 11, 12 and 13, the supporting anular element 4 is limited by a cylindrical internal suface 8 and by a cylindrical external surface 9. The external cylindrical surface 9 is provided at its sides with circumferential reliefs 10 and 11 for forming a central groove 12.

The supporting anular element 4 is a part of the jewellery article according to the present invention: in its most immediate shape it might realize, for exemplifying but not limiting purposes, a part of a ring, i.e. of a jewel to wear at a finger. However, it might also be used for realizing ear-rings, broochs and other articles comprising a substantially anular part.

The jewellery article according to the present invention furthermore mainly comprises at least one external additional anular element 5a, 5b, 5c, ... 5n,

that modifies the aesthetic of the article. Each external additional anular element may be realized of the desired metal alloys, have the required external shapes by means of the desired working and finish. It must have an internal shape that allows at least a partial insertion into the central groove 12 of the supporting anular element 4 and a removable joint engagement with the same in correspondence with at leaast one of the circumferential reliefs 10 and 11. This is made possible by at least one corresponding groove obtained in the internal surface of the additional anular element 5a, 5b, 5c, .. 5n, shown in figures 6, 7, 8, 9, 10, 11, 12 and 13, in which the same or similar numbers show the same or similar elements.

Figure 6 shows a jewellery article or, as it will be called for simplicity, a ring, in which the supporting anular element 4 is completely covered by only one additional anular element 5a. This additional element has an L-section and has two grooves 13a, 14a; the groove 13a may have a release insertion, due to the elasticity of the metal alloy of the additional anular element 5a, onto the circumferential relief 10, while the groove 14a will be over to the circumferential relief 11 after the release insertion. It is obvious that the external shape of the additional anular

element 5a, like the one of all elements described hereinbelow, may be different from the smooth and plane one shown in figure 6 and in the following figures.

The supporting anular element 4 shown in figure 7 is only partially covered with an additional anular element 5b with a transversal L-section. Of course this layer that covers only half the anular element, might have an aesthetical function, however polished in the embodiment according to figure 8 where on the supporting anular element, an additional anular element 5b is provided with a release insertion, as well as an anular element 5c, which has the identical specular shape. The grooves 13b and 13c get inserted onto the corresponding circumferential reliefs 10 and 11 of the supporting anular element 4.

In the embodiment according to figure 9, the supporting anular element is partially covered by two additional anular elements 5d and 5e, on release insertion on their grooves 13d and 13e in the reliefs 10 and 11. In the embodiment according to figure 10, the central groove space left free by the two additional, opposed anular elements 5d and 5e is occupied by ad additional anular element 6a with a polygonal section, without circumferential groove. In

the embodiment according to figure 11, the same space is occupied by a further additionala anular element 6b with a circular section, also without circumferential groove.

In the embodiment according to figure 12, ad additional anular element 5f has a section comprising an external portion 15f with a decorating shape and finish, e.g. curved, and an internal portion 16f complementar to the shape of the central groove 12 of the supporting anular element 4 as well as to the reliefs 10 and 11 with the grooves 13f and 16f. The external additional anular element has - in this case - an open shape that is then curved as a ring for being coupled with the supporting anular element by means of welding at its two ends.

In the embodiment according to figure 13, the jewellery article comprises an external additional anular element 5g in the shape of a solid with a semi-toroidal surface, obtained by the rotation of a half-circumference around a straigh line at its side, externally covered by two modelled covering metal blades 7 and internally provided with means that engage with the circumferential reliefs 10 and 11 in the central groove 12. The reliefs may eventually be elastic tongues provided on the circumference and that

get inserted in the central groove 12 at ledge against the reliefs 10 and 11 of the supporting anular element 4, whereby said reliefs may form undercuts with the cylindrical surface of groove 12. In this case, grooves 13g and 14g of the additional anular element are defined by said elastic tongues and by the section side.

The corresponding covering metal blade 7 is linked to the additional anular element 5g, for its external convering, without use of adhesive means and may be release by means of a cut.

Relating to the modular system as shown in figures 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29 and 30, in a first realization phase shown in figures 14, 15 and 16 the anular article according to the present invention comprises a base body 4, or supporting element, provided at one end with an external threading 22. At the opposite end, the base body 4 has a circumferential relief 23. On said base body 4, with a large sliding coupling, an external anular element 18 may be inserted as an element for the modification of aesthetics, said element being provided with a circumferential internal cavity 28 that covers, or at least enters into contact, with the relief 23 of the base body 4. The external anular

element 18 may be hold on the base body 4, that houses it by means of an internal threading 29 obtained in the end opposite to the circumferential cavity 28 or, if there is not internal threading 29, by means of a nut 17, externally smooth or appropriately shaped and internally threaded as shown in 27. As it can be seen in figures 14, 15 and 16, the external threading 22 has an external diameter greater than the maximum one of the base body 4, if the circumferential relief 23 is excluded, so that between the base body 4 and the external anular element 18 after the assembling of the anular article a more or less wide cavity may exist. Of course, without said external anular element 18, the same external surface 24 of the base body 4 might be finished or polished with different elements, like set gems or other elements not shown.

The threaded coupling of the anular element 18 and of the nut 17 may be made perfect in a rigid blocking by means of a small blocking screw onto the base body 4 - not shown - or by welding.

Said threaded coupling may be part of a bayonet-joint shown in a scheme in figure 31, where a pawl 19 will get engaged, due to a partial rotation, in parts of threadings 23 on the base body 4.

In the embodiment shown in figures 17, 18, 19 and 20, the anular element comprises a supporting base body 4 provided at each end with an external threading 22, having an external diameter equal to the external diameter of the base body 4. On base body 4, an external anular element 18 may be inserted with a sliding, more or less precise coupling, as modifying element of the external aesthetic of the article, that may be however finished and polished with set gems and other elements, not shown. The external anular element 18 may be hold by both ends on the housing base body 4, e.g. by means - according to the tastes or aesthetical choices - a first external finished nut 17 and a second nut 17 with at lease one set gem 26.

Figures 17, 18, 19 and 20 show, in dotted lines, modular elements 17 and 18 mounted onto the base body 4. The blocking of the nuts 17 onto the base body 4 takes place as above described.

In a further possible embodiment shown in figures 21 and 22, the anular article comprises a supporting base body 4 provided, at each end, with an external threading 22 with an external diameter greater that the external diameter of the base body 4. Onto said base body 4, only one nut 17 may be inserted by screw coupling for modifying the aesthetic of the article,

and that may be finished or polished with set gems and other elements, not shown. The threadings 22 of the base body 4 have the same direction while, of course, where there is one single nut 17 engaged by its own two threadings 27 with said two threadings 22, the latter ones may have different or opposite direction. In this embodiment, the width of the nut 17 is equal to the transversal dimension of the base body 4. In the embodiment shown in said figures 21 and 22, even if not particularly illustrated, a third central threading may be provided between the lateral one 22 so as to engage the nuts 17, equal or, e.g. different, to those shown in figures 16, 19 and 20, onto base body 4.

In the embodiment shown in figure 23, the anular element comprises a supporting base body 4 provided at each end with an external threading 22 havin an external diameter equal to the one of base body 4. Onto said base body 4 may be inserted, by screw coupling, two opposite nuts 17 that meet at ledge for covering the base body 4, while figure 24 shows the two nuts 17 in the shape of half-wedding-rings, assembled at distance so as to leave open part of the surface 24 of the base body 4. The nuts 17 may be however externally finished or polished with set gems or other elements, not shown. The threadings 22 of the

base body 4 may be, in this case, of the same or of different direction.

In the embodiment shown in figures from 25 to 30, the anular article comprises the supporting base body 4 provided at both ends with an external threading 22, having an external diameter smaller or equal to the one of the base body 4. Said base body 4 has a plurality of peripheral or transversal grooves 25. In the enclosed figures, said grooves are shown as having a dovetail section, but of course they might be also T-shaped or having any other undercut. The grooves 25 have a length equal to the transversal dimension of the base body and cut the threadings 22, if these have equal diameter to the maximum external diameter of the base body 4. In this embodiment, two nuts 17, threaded on their internal surface, may be coupled with the external threadings of the base body 4. A plurality of laminar curve elements is provided, like e.g. the thin sheets 20 of figure 30, each having dimensions such as to get engaged with at least two following or not following grooves 25, and shows at its own ends, internal radial projections 30 with a shape complementar to the half-section of said grooves. Each one of said curve elements 20, however they are externally finished or provided with aesthetical elements, may be transversally inserted

into the following or not following grooves 25, and is laterally blocked by means of the threaded nuts 17. As an alternative, a plurality of curve laminar elements 21, of a width smaller than the transversal dimensions of the base body 4 - e.g. submultiple of the same - may be transversally inserted into the same grooves 25 and may be lateraly blocked by means of threaded nuts 17. Said curve elements 20 and 21 may be smooth or finished on the surface, e.g. with reliefs or engravings of letters and numbers, of ideograms or similar, and have set gems or other, that may be combined according to tastes.

According to the variants of the modular system, different from the above mentioned screwing system, the followings components are shown in figures 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43 and 44:

- a central ring-like module 1, provided with end means 31 being lower or higher than its surface for a pressure insertion, or with means 32 and 33 for a joint, or with means 34 for a release insertion or with means 35 for a dovetail connection of the peripheral anular structures 36;
- a plurality of peripheral anular structures 36 provided with means for being linked to said central module, corresponding to those provided on said

module, with different shapes, decorations and dimensions.

A main feature of the system according to the present invention consists in that the presence of connection means between the pressure, joint, release, bayonet kind or the ones with grooved guides allows the direct coupling of two anular structures 36 without the need of the central module 1 for the realization of wedding rings or similar with different structures.

In the case of joint connection means or connection means with grooved guides 37, provided at the centre of the external band of the central module 1, the present invention provides means for blocking the coupled parts and eventual means for the aesthetical covering of the uncovered guide.

For what concerns the variant shown in figure 35, the means 34 for the release insertion provides the presence on the lateral edge of the central module 1 and/or on the peripheral structures 36, of one or more hooks 38 or similar that may be inserted into opposite openings 39 so as to get hooked, overcoming the resistance of springs 40 - said hooks may be removed and replaced by the extraction of the assemblying screws - to internal hooks 41 from which they may be

unhooked, in case of detachment of the components, through openings 42 provided on the interal surface of module 1 and/or of the structures 36.

In applying the concept according to the present invention to spring-catches, as shown in figures 36, 37 and 38, a container 53 is shown with an internal threading 54 to be inserted by welding into any hole provided onto the central structure 1 or on the anular structures 36, for subsequently receiving by screwing the sector 55 with external grooves 56, containing the means for the release assemblage. Of course, the container 53 and the sector 55 may be of different shapes for being assembled with screws or in other ways as shown in figure 37, where the screws 56 may be applied through eyelets 57 of the ultraflat container 58.

Such solution allows to obtain a lock with removable internal springs, that may be removed without replacing the whole lock, and to make ready for use complete parts and sectors or jewellery articles.

In the variant according to figure 39, the coupling means consists of a plurality of access grooves 43, provided onto the module 1 until the central groove 37 so that when a tooth or similar, placed inside each

anular structure 36 inserted in one of said grooves 43, reaches the central groove 37, following to the rotation of the parts, it may determine the blocking of the components be it for rings as well as for bracelets, for medals and eventual compositions of parts of wordings onto articles of jewellery and or cheap jewelry.

In the case of dovetail application system, as shown in figures 40 and 41, the insertion of the projections 44 between the wedges 45 together with a slight rotation are sufficient for realizing the contrast requested for the stability of the composition.

In the embodiment according to figure 42, the coupling system of the parts provides the insertion of small screws 46 into transversal passing through holes 47, provided in structures 36 and in the blind holes 48 onto central module 1.

The adoption of the system according to the present invention, in all above mentioned variants, allows the realization of the product shown in figure 44 consisting, in an original manner, of three modular wedding rings, inserted with hollow spaces one inside the other so as to show an internal module 49, out of white gold or platinum with an eventual small diamond

50, closed in the white gold hollow space 51 for silver wedding, and all this in turn closed in a red gold or golden wedding ring 52, allowing the use of all components together or the addition or replacing of the single parts, according to the choices and the events.

Obviously, in one and the same article of jewellery or cheap jewelry a plurality of above mentioned variants of the modular system according to the present invention may be combined; in particular, making use of said access grooves 43 and of the central one 37, different articles may be realized, like:

- rings in which the upper parts may be completely or partially replaced, or the stem;
- bracelets in which the upper part may be replaced, or sectors, or with settings or drawings that may be inserted.

With the application of the release insertion system with hooks 38 and 39, bracelets may be realized with small blocks carrying single letters that may be composed for obtaining a wording.

In the application of the screwing system, necklaces may be realized in which the lock may be completely or partially replaced by means of male and female

threadings. In a similar manner, said necklaces with a replaceable lock may be connected with the release system.

With the variant of the grooves 37-43, medals may be realized decorated with additional means, closed in a small pressure frame.

In the release variant according to figure 38, for the realization of spring-chatches, the following elements are provided:

- a rod 59 for disengaging the hook 38;
- screws for blocking the springs 40;
- a pawl 60 for the seats of the springs 40;
- grooves 61 for unscrewing the small block;
- a central pin 62 around which the internal hooks 41 rotate.

For completing the present invention, original processes have been elaborated for the modular system for the realization of rings, bracelets and other jewellery articles, in particular consisting of superposed layers of metals of different colours, shown in figures 45, 46, 47, 48, 49, 50 and 51.

Relating to said figures, the realization process for wedding rings, rings and similar with three superposed

metal layers of different colours, according to the present invention, may be described as follows:

- a tube 63, of a metal that may be platinum or white gold, is inserted under pressure into tube 64 of gold, and all together into a tube 65 of red gold ot other, making them stable by means of welding or other, obtaining a three-layer tube;
- said three-layer tube 63-64-65 is cut with an iron perpendicularly to its axis for obtaining rings 66 with sharp, not finished edges.

In the variant of the process shown in figures 46 and 48 the following phases are to be performed to obtain a finished wedding ring or ring:

- with an iron 68, the inner side of tube 63-64-65 is faced in axial direction until the shape 70 is obtained, that blunts it laterally; now the concave iron 67 is applied vertically to the axis of the tube 63-64-65, so as to join the blunting, shapes the wedding ring and cuts it;
- the wedding ring, which still shows a cutting edge, is turned upside down and is inserted inside expansion pliers and the blunting is completed, still with iron 68.

In a further variant of the process according to the present invention, the three-layer tube is obtained by

the subsequent welding 69 of open blades or covers A-B-C of different metals and colours.

An important variant of the process according to the present invention provides the deposit by electroplating, of subsequent metal layers onto single wedding rings or onto tubular structures to be cut, making use of solutions of the respective salts, with a final polishing, i.e. the electrolytical removal of the outer layers.

The process described in figure 50 is a variant of the one described in figure 49 where, instead of the metal covers A-B-C, welded along edges 69, the wedding rings F and G are cut and opened into two parts F' and G', so as to be subsequently mounted and welded in 71 or in 72-73 around the central wedding ring E.

In a similar manner, a three-layer ring may be realized by means of the variant described in figure 51: said ring is obtained by the forced expansion of wedding rings E-L-M, of different diameters, that may be inserted one into the other.

Furthermore, according to the process of the present invention, an already existing wedding ring may be covered with one or more layers of metals of different

qualities and colours, by means of casts that allow the realization of two lateral small rings, each one of them covers half of the wedding ring, and these small rings are then welded or united under pressure; on these rings, further layers of different metals may be superposed in succession, according to the purpose.

The process making use of die-casting provides the following operating steps:

- with vulcanized rubbed the structure of a wedding ring, slightly larger than the one to be covered, is realized; the wedding ring is inserted into the rubber; the whole is covered wit wax; die-casting with lost wax is performed, obtaining a metal cover instead of the wax; the whole process is repeated for all superimposed layers, according to the requests;
- the first wedding ring is plunged into melted wax; the internal part of the wedding ring is cleaned of the wax and of the further undesired deposits; die-casting with lost wax is performed, as already described;
- the wax is manually spread around the wedding ring and die-casting with lost wax is performed.

CLAIMS

1. A modular system for rings, bracelets and other articles of jewellery and cheap jewelry, for adding in succession modular decorative elements realizing a compact unity that may be modified in colour and in external finish, characterized in:

- a supporting anular element (1,2,3) and at least one or more modelled, covering metal blades (1a, b, c; 2a, b,c; 3a,b,c) for said supporting anular element (1, 2, 3), linked to the same for its external covering, without use of adhesive materials and that may be release by means of a cut;
- a plurality of circumferential reliefs (10, 11) onto the external cylindrical surface of said anular element (1, 2, 3 or 4), so as to form a central groove (12), and at least one additional external anular element (5a, 5b, 5c, 5d, 5e, 5f, 5g) for modifying the aesthetics, that may be engaged to and removed from said supporting anular element with a joint, by screwing, with release insertion or under pression, in correspondence of at least one of said circumferential reliefs (10, 11), by means of a corresponding groove obtained in the internal surface of the external additional anular element;
- a process for the realization of wedding rings, rings and other articles or jewellery and/or cheap jewelry,

with a plurality of superposed layers of different metals and colours.

2. A ring according to claim 1, characterized in that said supporting anular element (1) has the shape of a solid with a semi-toroidal surface, obtained by the rotation of a half-circumference around an external straight line, parallel to its side and that lies on the same plane.

3. A ring according to claim 1, characterized in that said supporting anular element (2) has the shape of a solid obtained by the rotation of a half-ellipse around an external straight line, parallel to its side and that lies on the same plane.

4. A ring according to claim 1, characterized in that said supporting anular element (3) has the shape of a solid obtaind by the rotation of a polygon around an external straight line and that lies on the same plane.

5. An article of jewellery according to claim 1, characterized in that said supporting anular element (4) is completely covered by one single additional anular element (5a).

6. An article of jewellery according to claim 1, characterized in that said supporting anular element (4) is partially covered by one single additional anular element (5b) engaged with only one of said circumferential reliefs.

7. An article of jewellery according to claim 1, characterized in that said supporting anular element (4) is completely covered by two counterposed and counterfaced additional anular elements (5b, 5c).

8. An article of jewellery according to claim 1, characterized in that said supporting anular element (4) is partially covered by two additional anular elements (5d, 5e), counterposed and engaged with the relative circumferential reliefs (10, 11), thus defining a hollow space.

9. An article of jewellery according to claims 1 to 8, characterized in that said supporting anular element (4) is covered by said two additional anular elements (5d, 5e), each forming a partial covering, and by at least one further additional anular element (6a, 6b), without said circumferential groove, place in the space defined by said additional anular elements (5d, 5e).

10. An article of jewellery according to claims 1 to 5, characterized in that said external additional anular element (5f) has a section that comprises an external portion (15f) shaped and finished for decoration, and an internal portion (16f) complementar to the shape of said groove (12) of said supporting anular element (4); said external additional anular element (5f) is coupled to said supporting anular element (4) by means of welding at its ends.

11. An article of jewellery according to claims 1 to 5, characterized in that said external additional anular element (5f) has the shape of a solid with a semi-toroidal surface, obtained by the rotation of a semi-circumference around a straight line parallel to its side, externally covered by one or more modelled covering metal blades (7) and internally provided with means for engaging with said circumferential reliefs (10, 11) in said central groove (12).

12. An article of jewellery according to claims 1 and 11, characterized in that said modelled covering metal blades (7) are linked to said supporting anular element (4), for its external covering, without making use of adhesive materials, and removable by means of a cut.

13. An anular article of jewellery or cheap jewellery with modular elements according to claim 1, characterized in that it comprises, as modular elements:

- a substantially tubular, supporting base body (4) provided, at least at one of its ends, with an external threading (22);
- at least one nut (17) with internal threading (27), that may be coupled with said external threading (22) of the base body (4) and blocked on the same.

14. An article according to claims 1 and 13, characerized in that said threaded coupling is part of a bayonet joint.

15. An article according to claims 1 and 13, characterized in that said blocking of the threaded nut (17) onto the supporting base body (4) is made perfect by a small blocking screw.

16. An article according to claims 1 and 13, characterized in that said blocking of the threaded nut (17) onto the supporting base body (4) is made perfect by welding.

17. An article according to claims 1 and 13, characterized in that said external threading (22) of the base body

(4) has an external diameter greater than the maximum external diameter of the base body (4).

18. An article according to claims 1 to 13, characterized in that said external threading (22) of the base body (4) has an external diameter equal to the maximum external diameter of the base body (4).

19. An article according to claims 1 and 13, characterized in that said external threading (22) of the base body (4) has an external diameter smaller than the maximum external diameter of the base body (4).

20. An article according to claims 1 and 13, characterized in that said threaded nut (17) has an external finished surface.

21. An article according to claims 1 and 13, characterized in that said threaded nut (17) has an external surface enriched with aesthetic elements (26) engaged therewith.

22. An article according to claims 1 and 13, characterized in that it comprises, as modular elements:

- said base body (4) provided at both ends with an external threading (22);

- at least one of said internally threaded nuts (17) that may get coupled with both external threadings (22) of said base body (4).

23. An article according to claims 1 and 22, characterized in that said external threadings (22) of the base body (4) have the same direction.

24. An article according to claims 1 and 22, characterized in that said external threadings (22) of the base body (4) have different directions.

25. An article according to claims 1, 22 and 23, characterized in the presence of one single threaded nut (17) that engages with both threadings (22) of the base body (4), said threading having different directions.

26. An article according to claims 1, 22, 23 or 24, characterized in the presence of two counterposed threaded nuts (17), linked at ledge.

27. An article according to claim 1, characterized in that it comprises as modular elements:

- said base body (4) provided, at one end thereof, with an external threading (22) and, at the opposite end, with a circumferential relief (237;

- said internally threaded nut (17) that may be coupled with said external threading (22) of the base body (4);
- at least one external additional anular element that modifies the aesthetic of the article, inserted onto said base body (4) and hold there, due to antagonist action, by said nut (17) and said relief (23).

28. An article according to claim 1,characterized in that it comprises as modular elements:
- said base body (4) provided, at both ends, with an external threading (22);
- two internally threaded nuts (17) that may be coupled with said external threadings (22) of the base body (4);
- at least one external additional anular element that modifies the aesthetic of the article, inserted onto said base body (4) and hold there, due to antagonist action, by means of said nuts (17) screwed at the ends of said base body (4).

29. An article according to claims 1, 27 and 28, characterized in that said additional anular element has an external finished surface.

30. An article according to claims 1, 27 and 28, characterized in that said additional anular element

has an external surface enriched with aesthetic elements connected thereto.

31. An article according to claim 1, characterized in that it comprises as modular elements:

- said base body (4) provided at both ends with an external threading (22) and having a plurality of peripheral and transversal grooves (25) with undercuts; said grooves (25) have a length equal to the transversal dimension of te base body (4);
- two nuts (17) internally threaded, that may be coupled with said external threadings (22) of said base body (4);
- a plurality of curve laminar elements (20), each having such dimensions as to get engaged with at least two of said grooves (25) and having, at its ends, internal radial projections (30) with a shape complementar to the half-section of said grooves (25); each of said curve elements (20), that are however externally finished and have aesthetic elements, may be transversally inserted into said grooves (25) and laterally blocked by means of said threaded nuts (17).

32. An article according to claims 1 and 31, characerized in that a plurality of curve laminar elements (21) may be inserted transversally in succession in the same

two grooves (25) and be laterally blocked by means of said threaded nuts (17).

33. A modular system according to claim 1, characterized in:

- a central, ring-like module (1) provided with ends (31) for the pressure insertion, and/or with ends (32, 33) for the joint insertion and/or with means (34) for the release insertion and/or with means (35) for the dovetail insertion of peripheral anular structures (36);
- a plurality of peripheral anular structures (36), provided with means for being linked to said central module (1), corresponding to the ones present onto said module, of different shapes, decorations and dimensions.

34. A modular system according to claims 1 and 33, characterized in the direct coupling between two anular structures (36), without the central module (1), for the realization of wedding rings or similar, with different structures due to the presence of connection possibilities between the parts by pressure, with release, with joint, with bayonet-joint or with grooved guides.

35. A modular system according to claims 1 and 33, characterized in the presence of means for blocking the coupled parts and means for aesthetic covering of the uncovered guide in the joint insertion and in the insertion with grooved guides (37), placed at the centre of the external band of the central module (1).

36. A modular system according to claims 1 and 33, characterized in that said release insertion means (34) comprises, on the lateral edge of said central module (1) and of the peripheral anular structures (36), one ore more hooks (38) or similar, that may be inserted into opposite openings (39) so as to get hooked, overcoming the resistance of springs (40), to internal hooks (41) from which they may get unhooked, if they are to be removed from the components, through openings (42) provided on the internal surface of module (1) and of structures (36).

37. A modular system according to claims 1 and 33 characterized in a plurality of access grooves (43), provided on the module (1), that reach out to the central groove (37), so that a tooth or similar, placed inside each anular structure (36) inserted in one of said grooves (43), reaching the central groove (37) following to the rotation of the parts, determines the blocking of the components.

38. A modular system according to claims 1 and 33, characterized in the insertion of projections (44) between the wedges (45) and a slight rotation for obtaining the contrast requested for the stability of the composition.

39. A modular system according to claims 1 and 33, characterized in the insertion of small screws (46) in the transversal passing through holes (47), provided in structures (36) and in the blind holes (48) on the central module (1).

40. A modular system according to claims 1 and 33, characterized in the realization of three modular wedding rings inserted with hollow spaces one into the other so as to obtain the internal module (49) of white gold or platinum with an eventual small diamond (50), closed in the white gold hollow space (51) for silver wedding, and this all surrounded by a hollow space (52), having the shape of a hollow, red gold or golden wedding ring, allowing the contemporary use of all components or the addition or replacing of the single parts.

41. A modular system according to claims 1 and 33, characterized in that in the realization of spring-catches with release devices, there are:

- a rod (59) for the disengagement of hook (38);
- screws fro blocking springs (40);
- a pawl (60) for the seats of the springs (40);
- grooves (61) for unscrewing the small block;
- a central pin (62) around which the internal hooks (41) rotate.

42. A process for the realization of the modular system for wedding rings, rings and similar in three superposed layers of different metals and colours, according to claim 1, characterized in the phases:

- a tube (63), of a metal that may be platinum or white gold, is inserted under pressure into tube (64) of gold, and all together into a tube (65) of red gold ot other, making them stable by means of welding or pressure, obtaining a three-layer tube;
- with an iron (68), the inner side of tube (63-64-65) is faced in axial direction until the shape (70) is obtained, that blunts it laterally; now the concave iron (67) is applied vertically to the axis of the tube (63-64-65), so as to join the blunting, shapes the wedding ring and cuts it;
- the wedding ring, which still shows a cutting edge, is turned upside down and is inserted inside expansion pliers and the blunting is completed, still with iron (68).

43. A process according to claims 1 and 42, characterized in the cutting of said three-layer tube (63-64-65) with an iron vertical to the axis, for obtaining rings (66) with unfinished edges.

44. A process according to claims 1 and 42, characterized in that the three-layer tube (63-64-65) is obtained with subsequent weldings (69) of the open blades or covers (A-B-C) of different metals and colours.

45. A process according to claims 1 and 42, characterized in an electroplating deposit of subsequent layers of materials, onto single wedding rings or onto tubular structures to be cut, with final polishing by means of electrolytical removal of the outermost layers.

46. A process according to claims 1 and 42, characterized in the subsequent assemblying of the wedding rings cut into two parts (F', G') around the central wedding ring (E), with successive weldings (71-72-73).

47. A process according to claims 1 and 42, characterized in a three-layer tube (63-64-65) obtained with wedding rings having a different diameter (E-L-M), inserted one into the other and brought to contact by expansion from the inside.

48. A process according to claims 1 and 42, characterized in the realization, with vulcanized rubber, of a structure of a wedding ring, slightly larger than the one to be covered; further in the insertion of the wedding ring into the rubber; in the covering of the whole with wax; die-casting with lost wax is performed, obtaining a metal cover instead of the wax; the whole process is repeated for all superimposed layers, according to the requests.

49. A process according to claims 1 and 42, characterized in that the first wedding ring is plunged into melted wax; the internal part of the wedding ring is cleaned of the wax and of the further undesired deposits; die-casting with lost wax is performed.

50. A process according to claims 1 and 42, characterized in that the wax is manually spread around the wedding ring and die-casting with lost wax is performed.

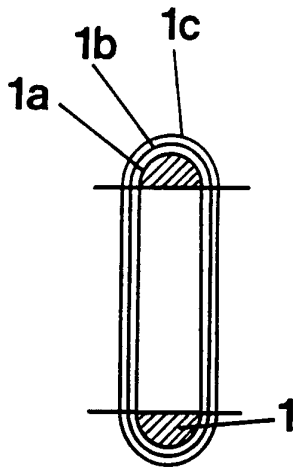


FIG.1

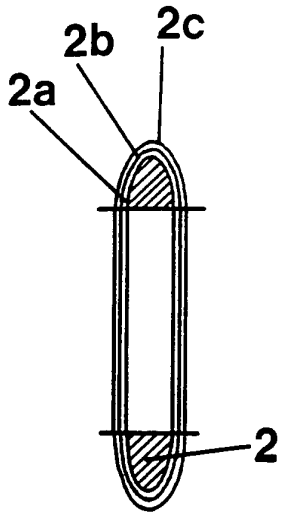


FIG.2

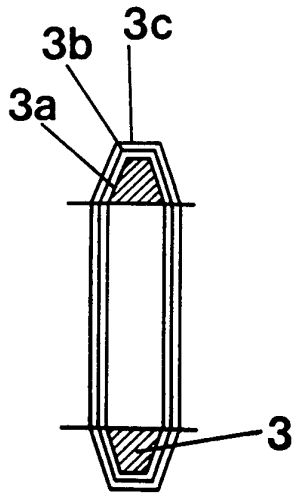


FIG.3

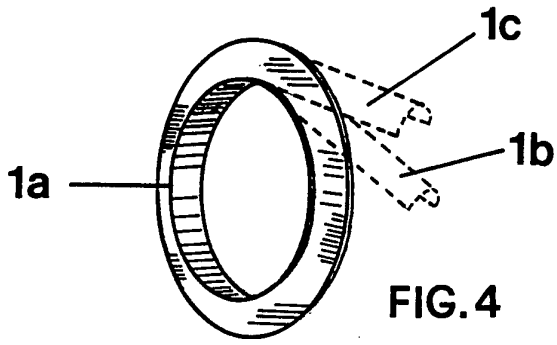


FIG.4

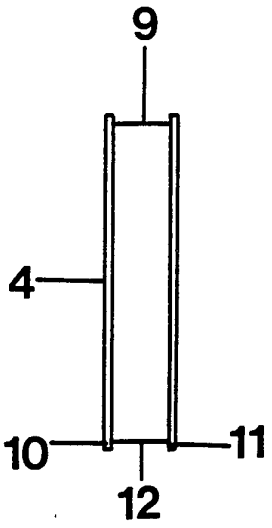


FIG.5

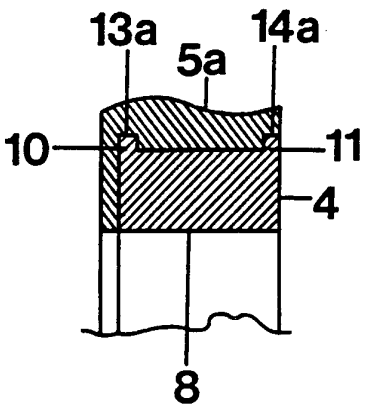


FIG.6

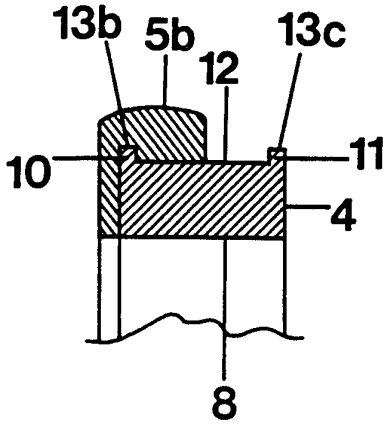


FIG.7

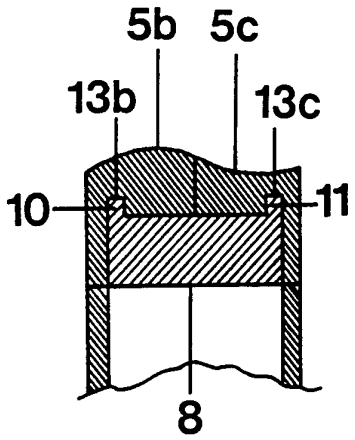


FIG.8

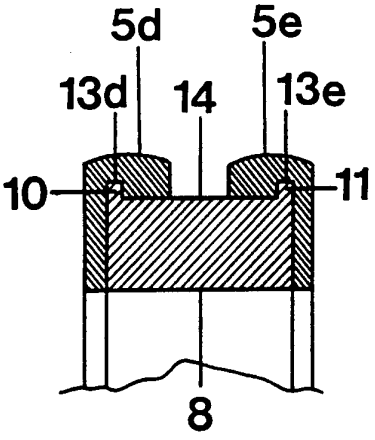


FIG.9

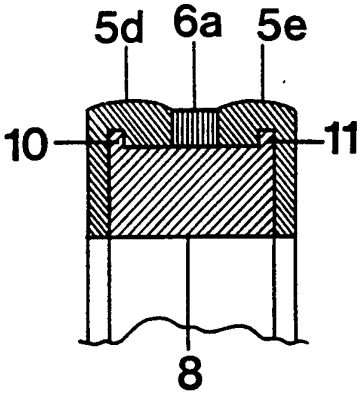


FIG.10

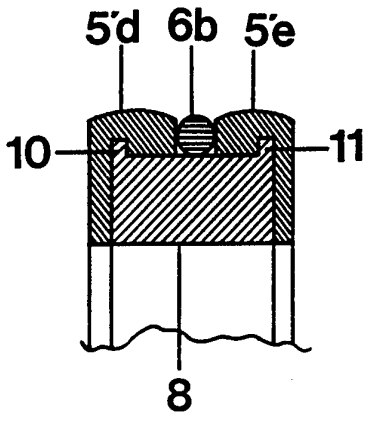


FIG.11

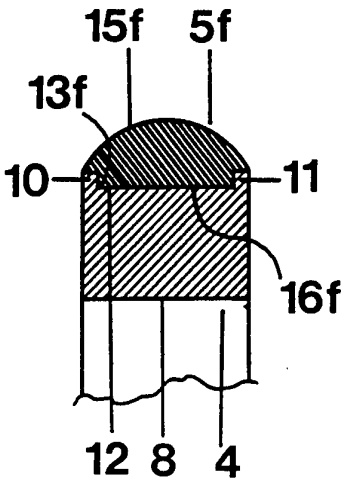


FIG.12

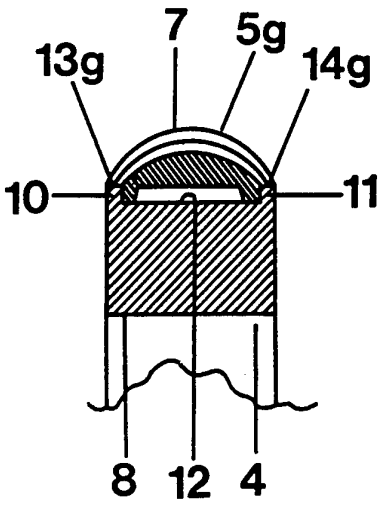


FIG.13

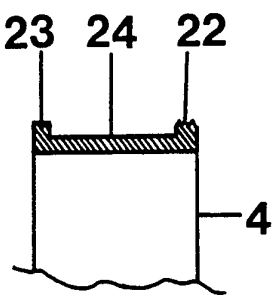


FIG.14

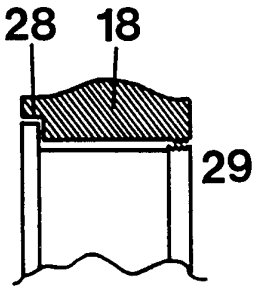


FIG.15

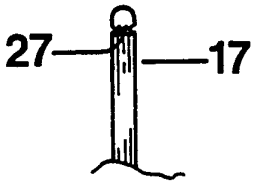


FIG.16

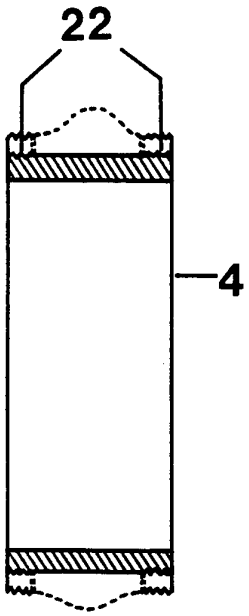


FIG.17

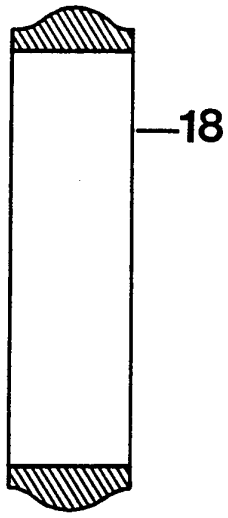


FIG.18

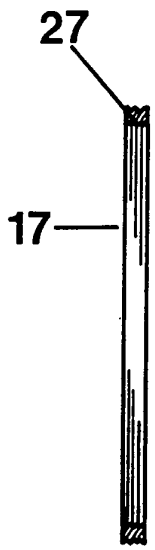


FIG.19

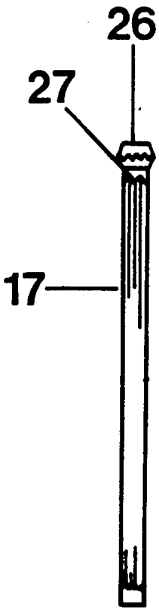


FIG.20

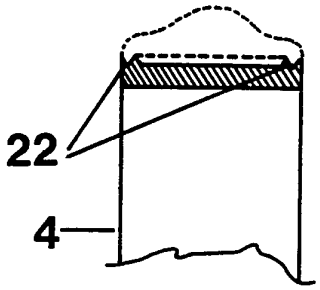


FIG.21

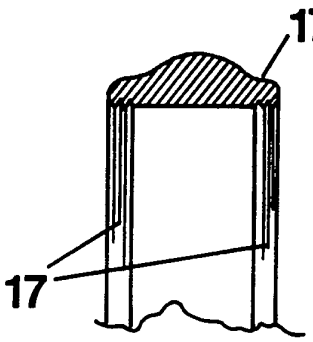


FIG.22

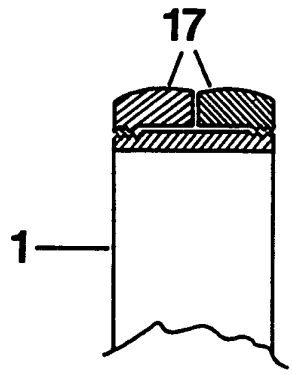


FIG.23

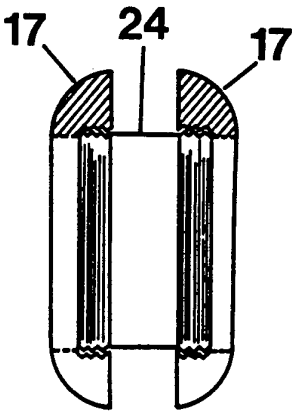


FIG.24

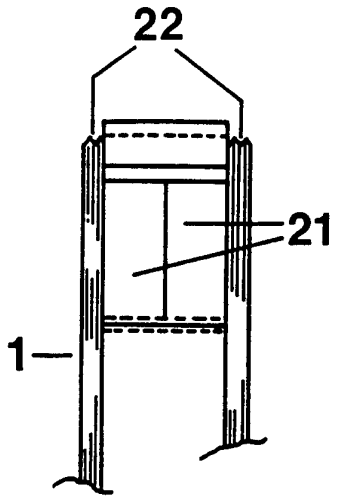


FIG.25

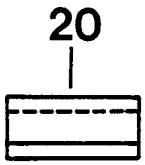


FIG.26

FIG.27

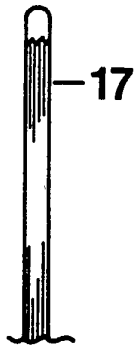


FIG.28

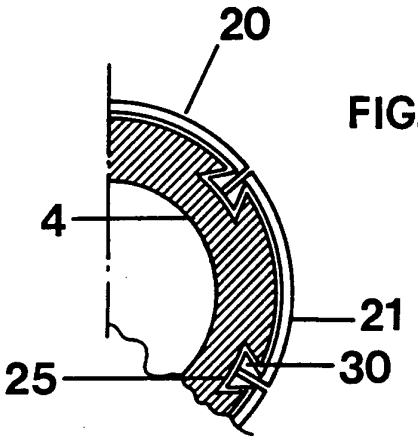


FIG. 29

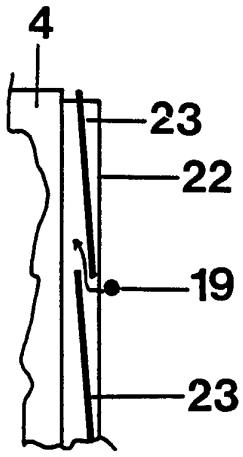


FIG.31

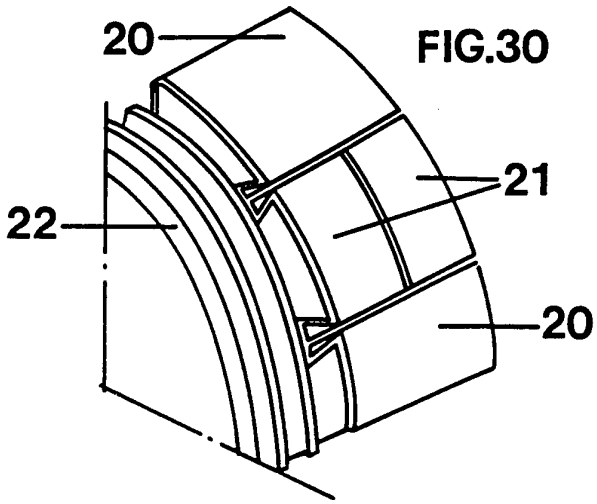


FIG.30

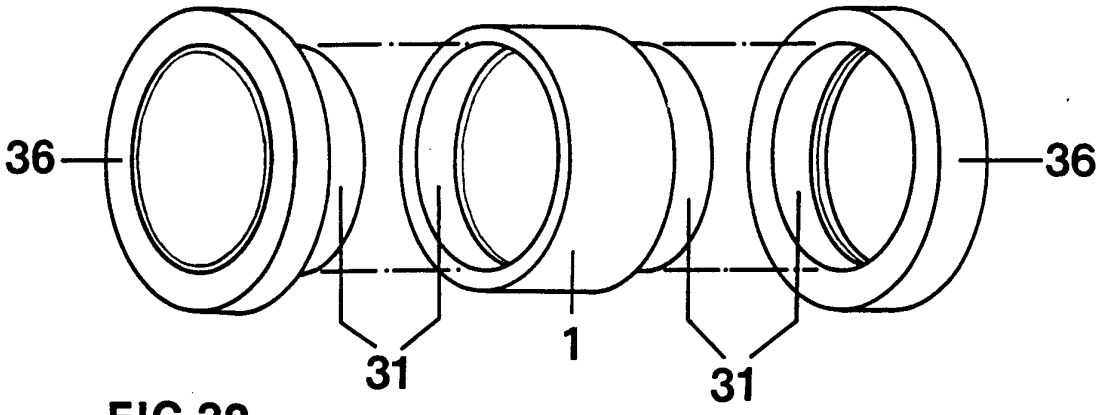


FIG.32

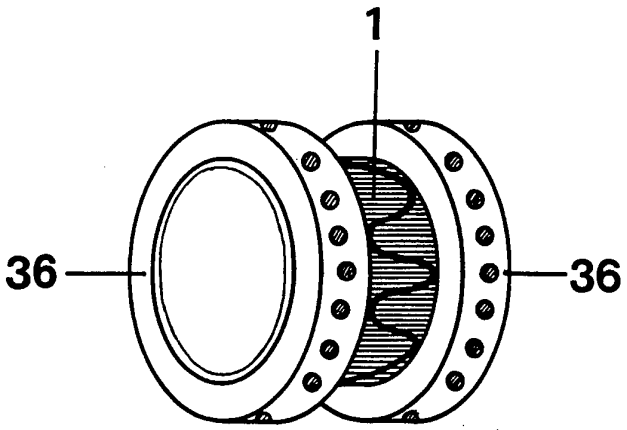


FIG.33

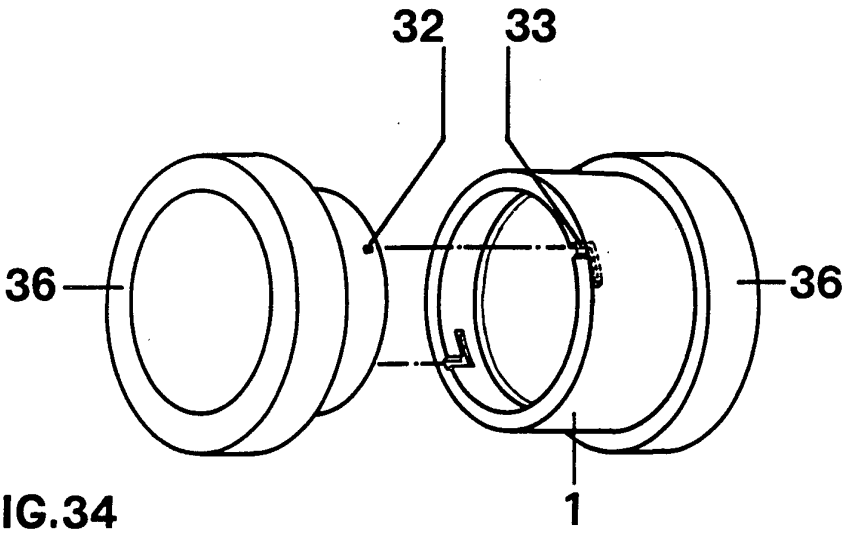


FIG.34

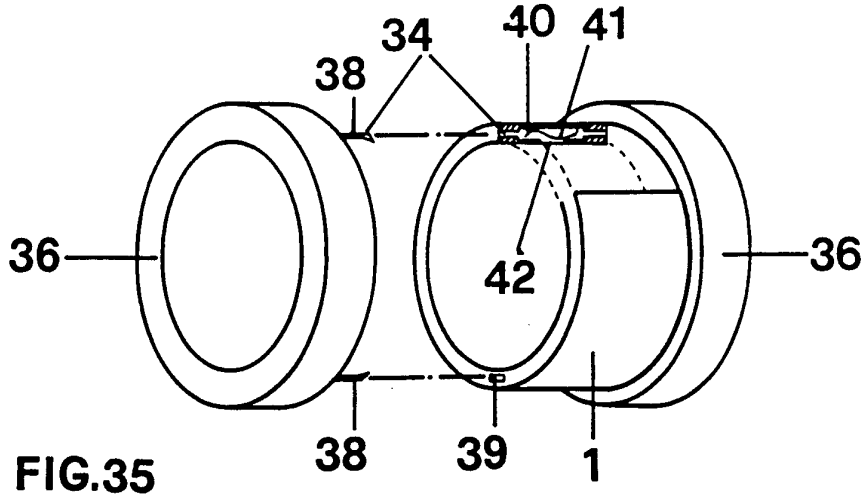


FIG.35

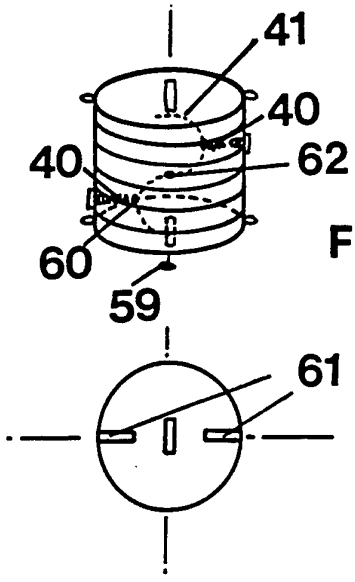


FIG.38

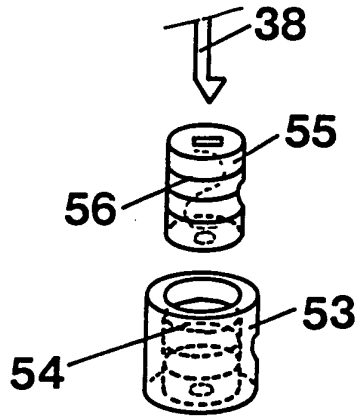


FIG.36

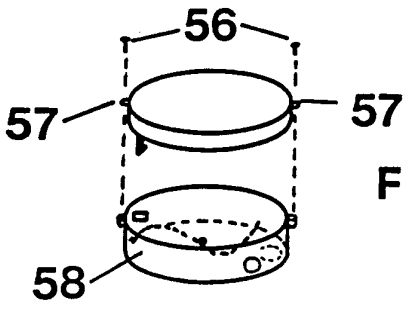


FIG.37

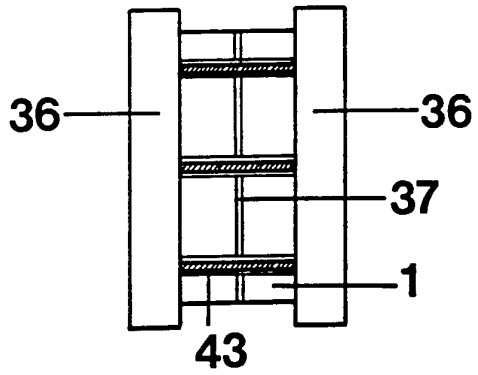


FIG.39

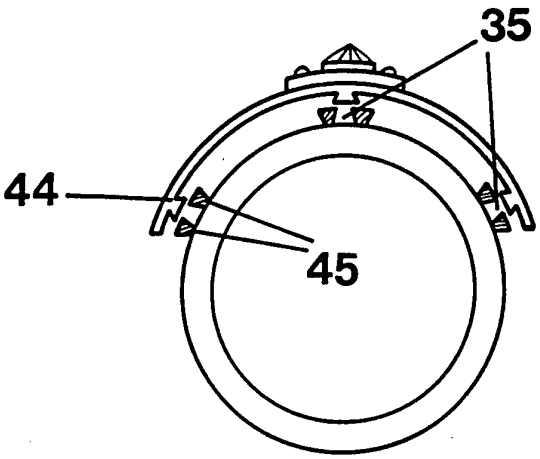


FIG.40

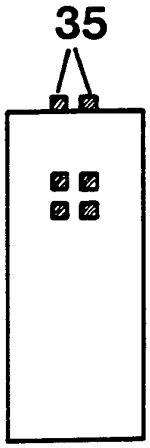


FIG.41

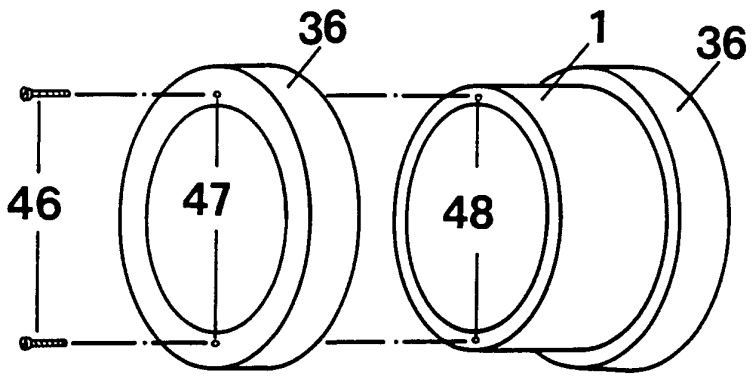


FIG.42

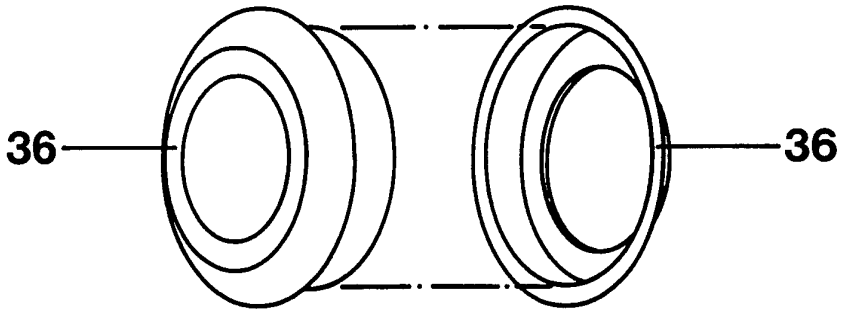


FIG.43

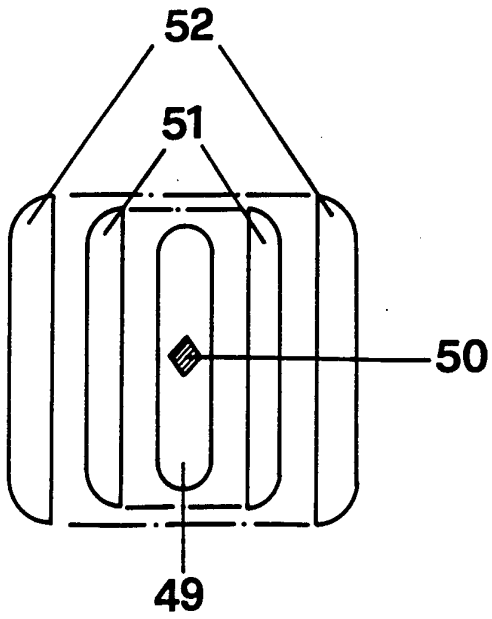


FIG.44

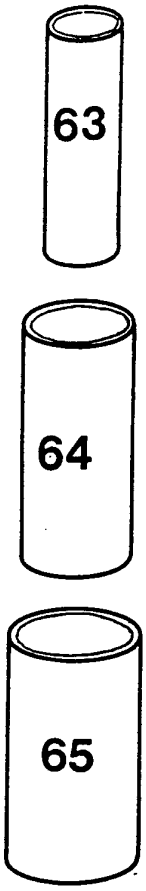


FIG.45

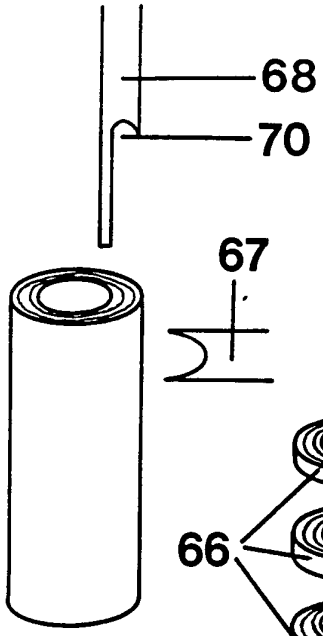


FIG.46

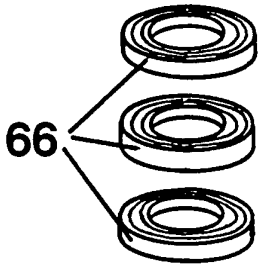


FIG.47

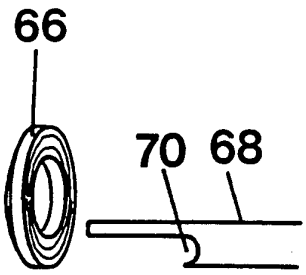
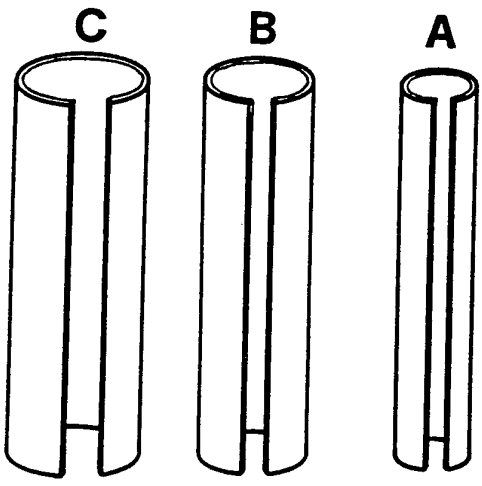


FIG.48



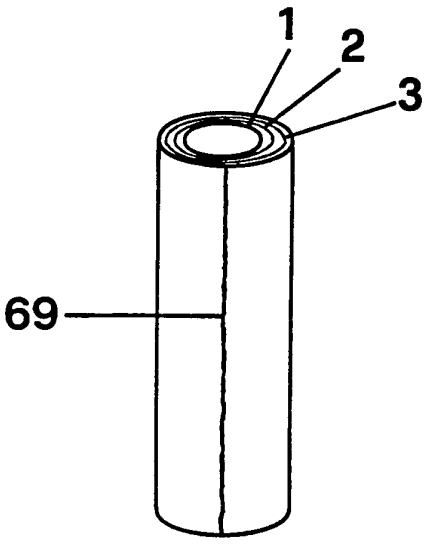


FIG.49

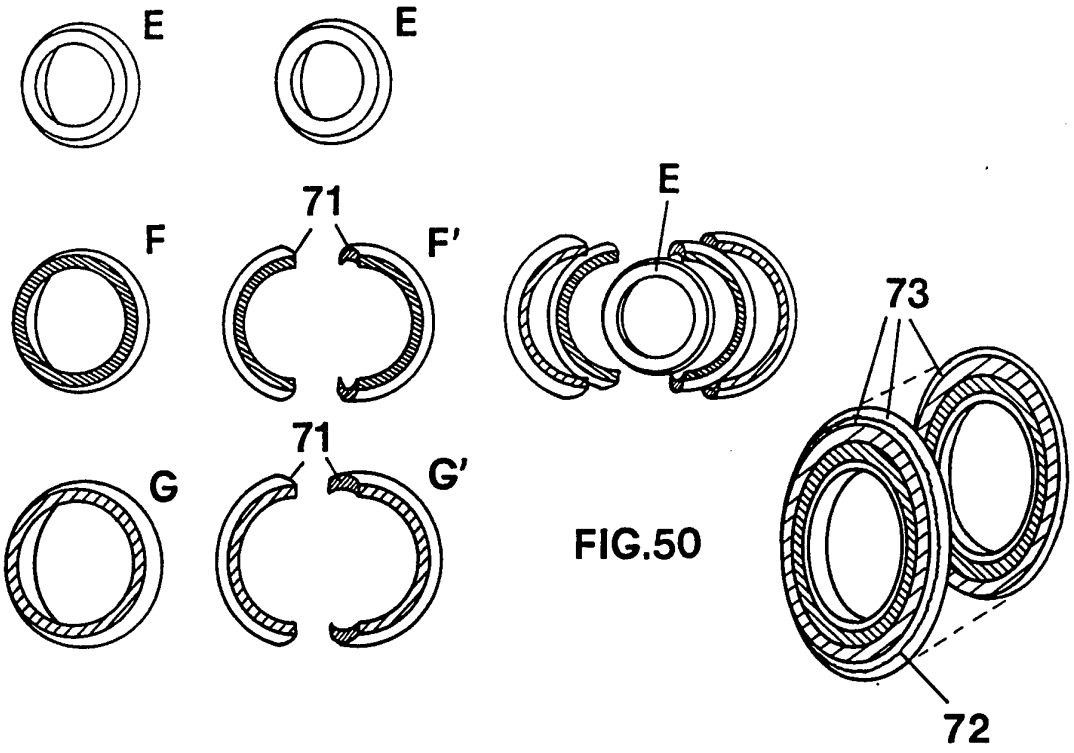


FIG.50

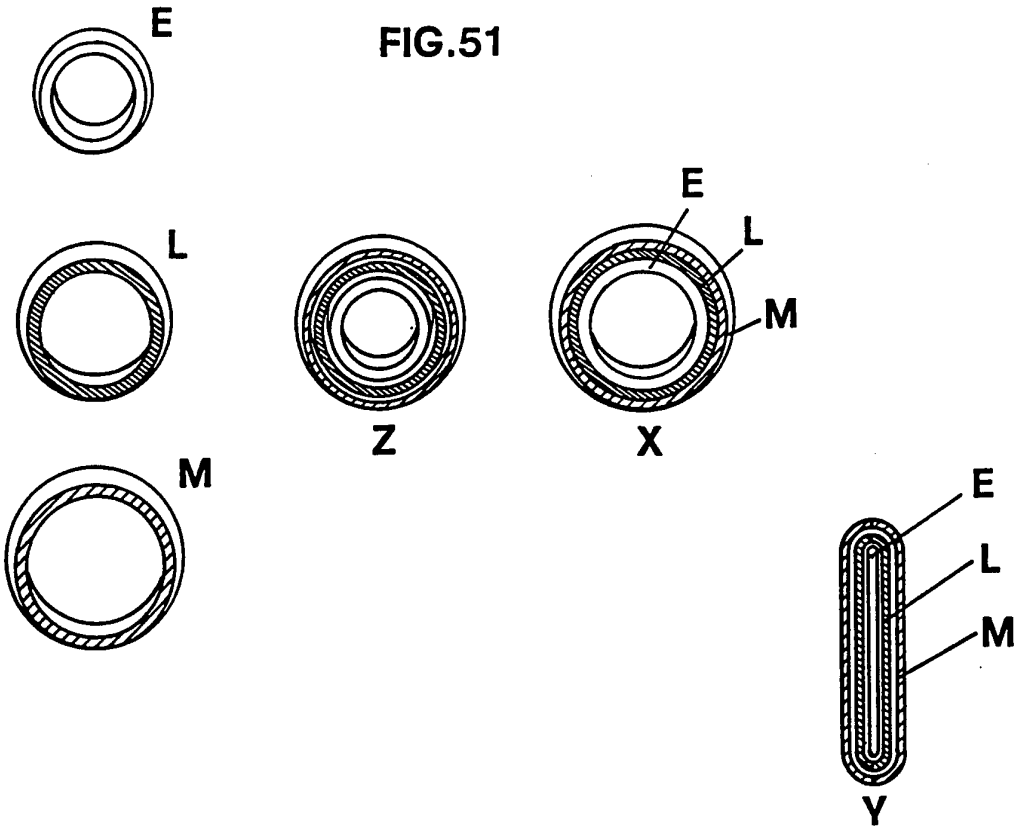


FIG.51

INTERNATIONAL SEARCH REPORT

Inter nal Application No
PCT/IT 94/00040

A. CLASSIFICATION OF SUBJECT MATTER
IPC 5 A44C9/00 A44C27/00 A44C5/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 5 A44C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP,A,0 529 168 (OR-EST) 3 March 1993 see column 2, line 20 - column 3, line 51 see claims 1-8 see figures 1-4	1,6-10, 29,30,42
A	US,A,1 327 606 (S. BACHARACH) 13 January 1920 see the whole document	1,6,7,33
A	GB,A,2 210 249 (J. R. BYRNE) 7 June 1989 see the whole document	1,6-9,33
A	DE,U,90 16 842 (FA. PETER HEIM) 16 April 1992 see the whole document	1

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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Date of the actual completion of the international search	Date of mailing of the international search report
12 August 1994	31.08.94

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+ 31-70) 340-3016	Fairbanks, S

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INTERNATIONAL SEARCH REPORT

Interr ıal Application No
PCT/IT 94/00040

C.(Conunuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US,A,4 226 094 (S. A WOLPOFF) 7 October 1980 see figures 1-4 -----	1

1

INTERNATIONAL SEARCH REPORT

. .formation on patent family members

Interr ıal Application No
PCT/IT 94/00040

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A-0529168	03-03-93	FR-A- 2659000 US-A- 5161392	06-09-91 10-11-92
US-A-1327606		NONE	
GB-A-2210249	07-06-89	NONE	
DE-U-9016842	16-04-92	NONE	
US-A-4226094	07-10-80	NONE	