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(54) **Bag for therapeutic solutions**

(57) The bag is constituted by two principal laminar faces joined to each other, forming a substantially rectangular structure and having on one of the minor sides welded tubular members for permitting the filling of the bag and the extraction of the liquid for perfusion of same, characterized in that the tubular members are equipped with fins diametrically opposed to each other and which extend at the part of the length of said tubular members which receives the welding of the bag, permitting the fitting of the laminar members constituting the bag on the aforementioned tubular members and their fins without the formation of creases or defects in the welding.

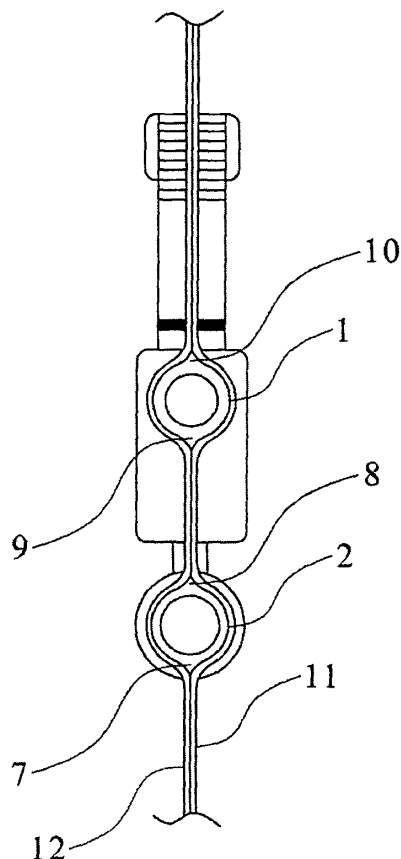


FIG.2

Description

[0001] The present invention relates to bags for therapeutic solutions, of the type used in the perfusion of medicinal solutions to the human body.

[0002] Bags of this type are preferably made of synthetic materials with flexible walls, usually rectangular, and they have on one of their minor sides respective openings for the filling and for the extraction of the liquid. For filling, a tubular member is provided, inserted by means of welding between the walls of the bag, and which after filling will be equipped with a stopper member, customarily irremovable. For the extraction of the liquid to be perfused, the bag has a second opening, which is normally related to the first by means of a connecting bridge, and which likewise assumes a tubular structure, but which is equipped with a transverse membrane which maintains the interior enclosure of the bag isolated with respect to the ambient medium. At the moment when it is desired to administer the liquid in the bag, the perforation of the membrane is carried out by means of a needle of the type used in infusion equipment or a similar member, which will be that which, by gravity, with the opening being situated in the lower part of the bag during emptying, will permit the emergence of the liquid by means of a flexible tube connected to a catheter, which is that which is inserted into a blood vessel of the patient to effect perfusion.

[0003] In the manufacture of the bags there is a certain difficulty in the welding of the two faces constituting the two faces of the bag over the tubular members which constitute the openings for filling and extraction. In fact, given the tubular structure of said members, it proves difficult to fit the laminar members which form the two sides or faces of the bag correctly over the body of said terminals at the moment when they are being joined to one another by welding.

[0004] It is an aim of the present invention to solve the aforesaid problem by disclosing bags for therapeutic solutions in which the incorporation of the tubular members for filling and extraction of the liquid is achieved very easily in a welding operation which avoids manufacturing defects and permits simple and rapid fitting of the walls of the bag to said tubular members.

[0005] In order to achieve its aims, the present invention fundamentally provides for the production of the aforementioned tubular members for filling and extraction of liquid so that, instead of exhibiting the customary circular shape on their outer surface, they have a symmetrical but not circular shape, a characteristic of which is the production of respective projecting regions or fins in a diametrically opposed arrangement, having a structure with section decreasing from their region of connection with the tubular member to the free end, at which it has a termination which is substantially tapered or pointed in cross-section. This gives rise to a structure of said tubular members that is substantially "flattened" by diametrically opposed lateral regions which extend at the

part of the length of the tubular member which will be joined by welding to the laminar walls of the bag. In this way, easy adaptation of the walls of the bag on said tubular members for filling and extraction of liquid is achieved, in such a way that at the moment of carrying out the welding, correct contact is established over the entire length of the coincident region, without creases or defects.

[0006] The tubular members equipped with the fins or lateral projections described may be incorporated in a single member by means of a connecting bridge or may remain separate from one another, being incorporated in the bag without a direct connection member.

[0007] In an alternative embodiment, the tubular members, both for filling and for emptying the bag, will have a structure with transverse ribs.

[0008] For greater understanding thereof, drawings of preferred embodiments of the present invention are appended by way of explanatory but non-limiting example.

[0009] Figure 1 shows a partial section of a bag for therapeutic solutions according to the present invention.

[0010] Figure 2 shows a cross-section of the bag of Figure 1.

[0011] Figure 3 shows a section similar to Figure 1 in a variant with transverse ribs.

[0012] Figure 4 shows a variant of closure of the tubes according to the invention.

[0013] Figure 5 shows a section similar to Figure 4 with the tubular members equipped with transverse ribs.

[0014] Figure 6 shows a detail of a separate tubular member, equipped with transverse ribs.

[0015] Figures 7 and 8 are perspective views of an assembly of tubes with transverse ribs in part of the length of the tubular member and showing a connecting bridge.

[0016] The bags to which the present invention refers are of the type which comprises a body of laminar plastics material 1' constituted substantially by means of two principal faces joined to each other by welding, folding over or other means and which have on one of their minor faces two openings such as those indicated by the numbers 1 and 2, the first of which is intended for the filling of the bag and the second for the recovery of the liquid to be perfused, located in the bag, for which it is necessary to pass through the closure membrane 3, for example by means of a needle of the type used in infusion equipment. A tongue 4 facilitates the closure of the opening 2 by means of a plug 5. The two openings 1 and 2 are joined to each other by means of a connecting bridge 6.

[0017] According to the present invention, the members 1 and 2 which constitute the openings for filling and extraction of liquid are equipped with respective pairs of lateral fins or projecting regions such as those indicated by the numbers 7 and 8 for the tubular member 2, and 9 and 10 for the tubular member 1. Said fins assume the structure of preferably diametrically opposed projecting regions, which permit correct adaptation of the laminar members constituting the bag, which have been indicat-

ed by the numbers 11 and 12 in Figure 2. Said fins, which are also shown in Figure 1, permit easy adaptation of the laminar members 11 and 12 which constitute the bag, so that they make it possible to achieve easy and rapid welding, without creases or voids, of said laminar members

[0018] Said tubular members may be equipped with transverse ribs, such as those shown in Figure 3, in which can be seen tubular members 13 and 14 in an arrangement similar to that indicated in Figure 1, with multiple peripheral ribs such as 15, 15' and 16, 16' which extend over the whole of the length of the tubular member that is intended to be joined to the bag by welding.

[0019] In a variant shown in Figure 4, the tubular members 17 and 18 are joined by the bridge 19 and one of them forms an upper cavity 20 of slightly larger diameter than that of the inner orifice of the tubular member and which is equipped with a pressure closure stopper 21. An upper cap 23 permits retention of the stopper 21. The tubular member 18 is in turn equipped with a membrane 22 and a tongue 24 with a plug. Figure 5 shows a variant with a general structure similar to that of Figure 4, but the tubular members 25 and 26 therein are equipped with multiple ribs of a shape similar to the version shown in Figure 3.

[0020] Figure 6 shows a variant in which the tubular members are constituted by independent bodies, so that they will be incorporated in the bag without an intermediate bridge. In said figure, a cylindrical member 27 is shown which may be equipped with multiple external ribs such as 28 and 28', or may be devoid of them, assuming a structure similar to that corresponding to Figures 1 and 4.

[0021] Figures 7 and 8 show a variant according to respective perspective views in which the tubular members 29 and 30 have the fins or projections such as 31 and 32 extending at only one part of said tubular members, especially the lower part. In said embodiment the upper connecting bridge 33 and the tongue 34 bearing the plug 35 can be seen, and lateral ribs 36 and 37 on the bridge 33, for permitting the flush fitting of the tongue 34, can also be seen.

[0022] By means of the embodiment which has been disclosed for bags for therapeutic solutions, a significant ease and economy of manufacture is obtained by facilitating the welding of the bag to the tubular members for entry and exit, obtaining correct adaptation of same, and avoiding the formation of creases and defects in the welding.

[0023] Although the invention has been represented on the basis of preferred examples, it should be understood that experts in the field may introduce numerous variants which will be included within the scope of the invention if they come within the field of the attached claims.

Claims

1. A bag for therapeutic solutions, of the type which comprise a flexible laminar bag constituted by two principal laminar faces joined to each other, forming a substantially rectangular structure and having on one of the minor sides welded tubular members for permitting the filling of the bag and the extraction of the liquid for perfusion of same, **characterized in that** the tubular members are equipped with fins diametrically opposed to each other and which extend at the part of the length of said tubular members which receives the welding of the bag, permitting the fitting of the laminar members constituting the bag on the aforementioned tubular members and their fins without the formation of creases or defects in the welding.
2. A bag for therapeutic solutions according to claim 1, **characterized in that** the tubular members have transverse ribs in the regions in which they are equipped with the longitudinal fins.
3. A bag for therapeutic solutions according to claim 1, **characterized in that** the fins of the tubular members are constituted by diametrically opposed expansions of the outer surface of the tubular member with a section decreasing transversely to a sharp edge.
4. A bag for therapeutic solutions according to claim 1, **characterized in that** the fins extend only at a part of the total length of the tubular members, occupying the lower part of same.

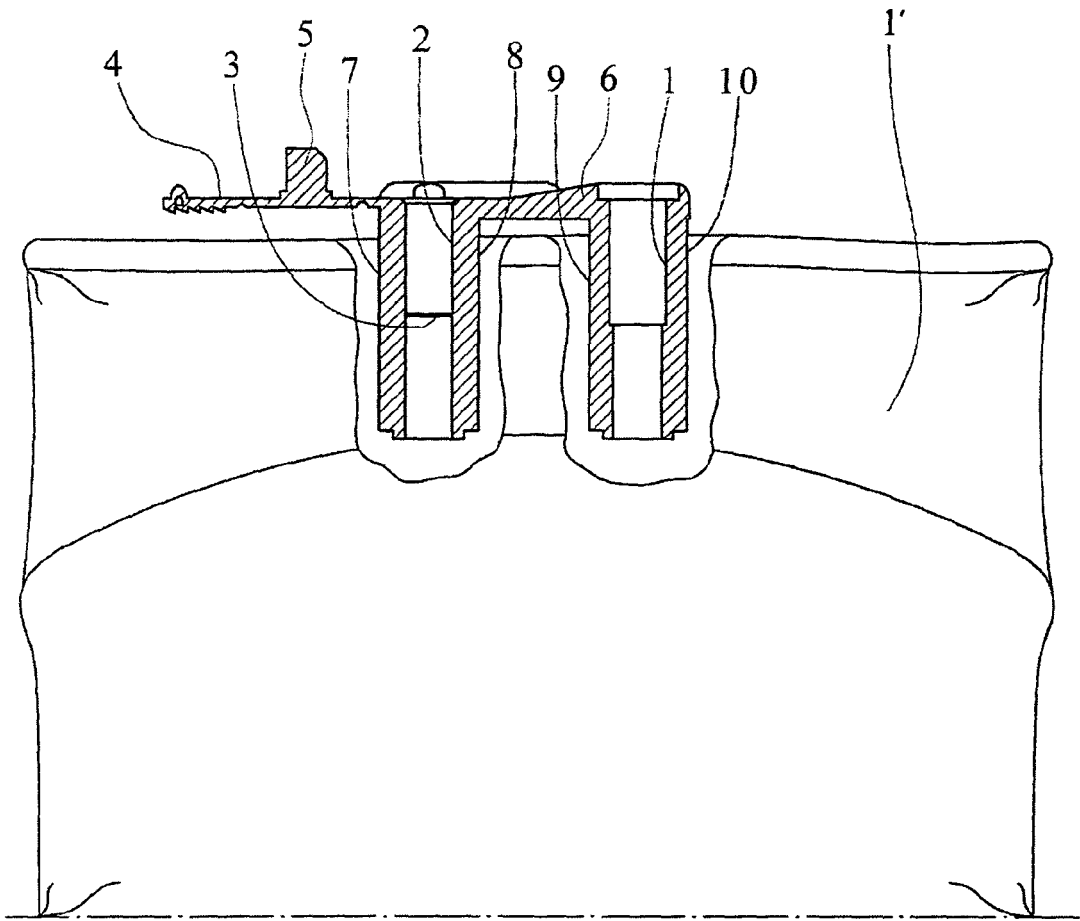


FIG.1

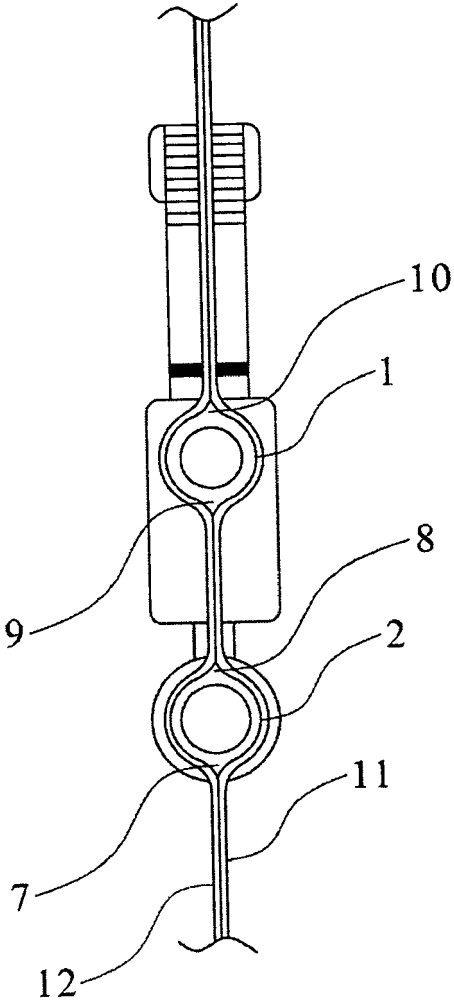


FIG.2

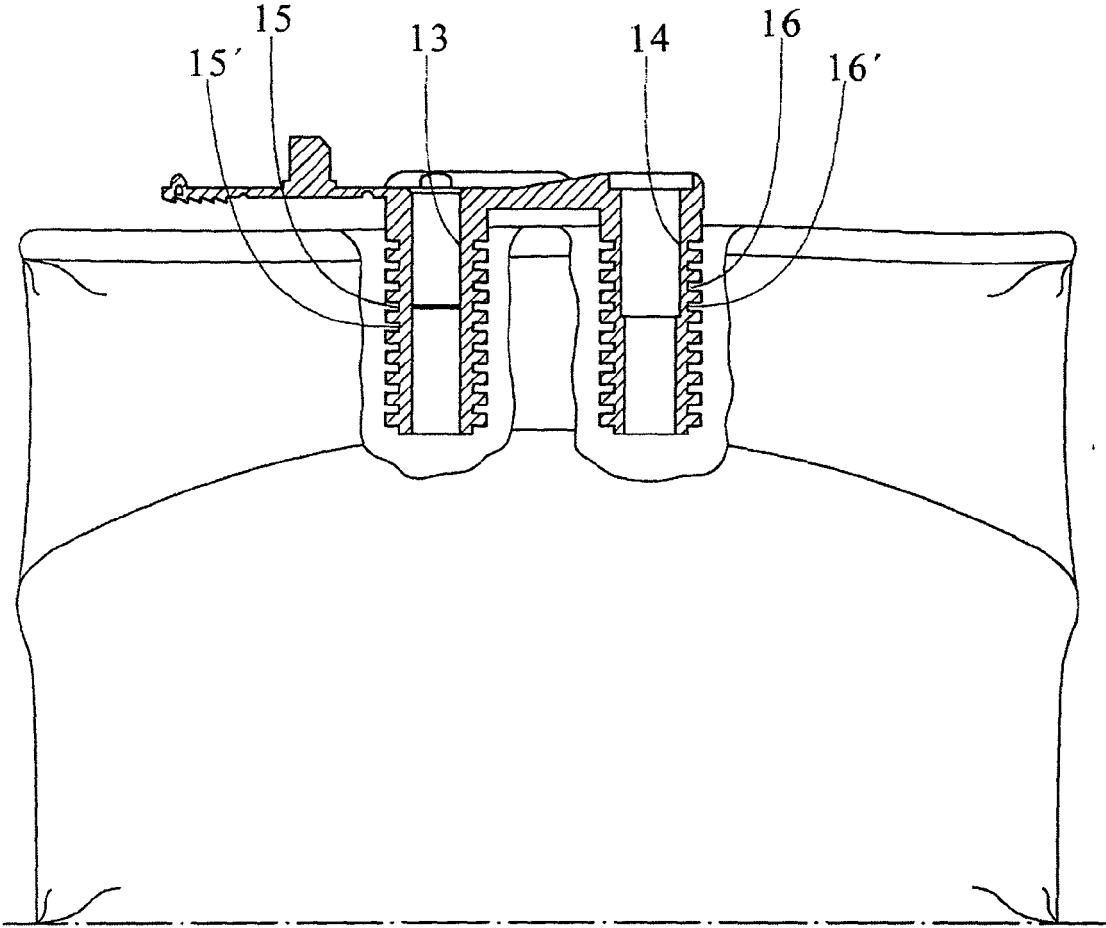


FIG.3

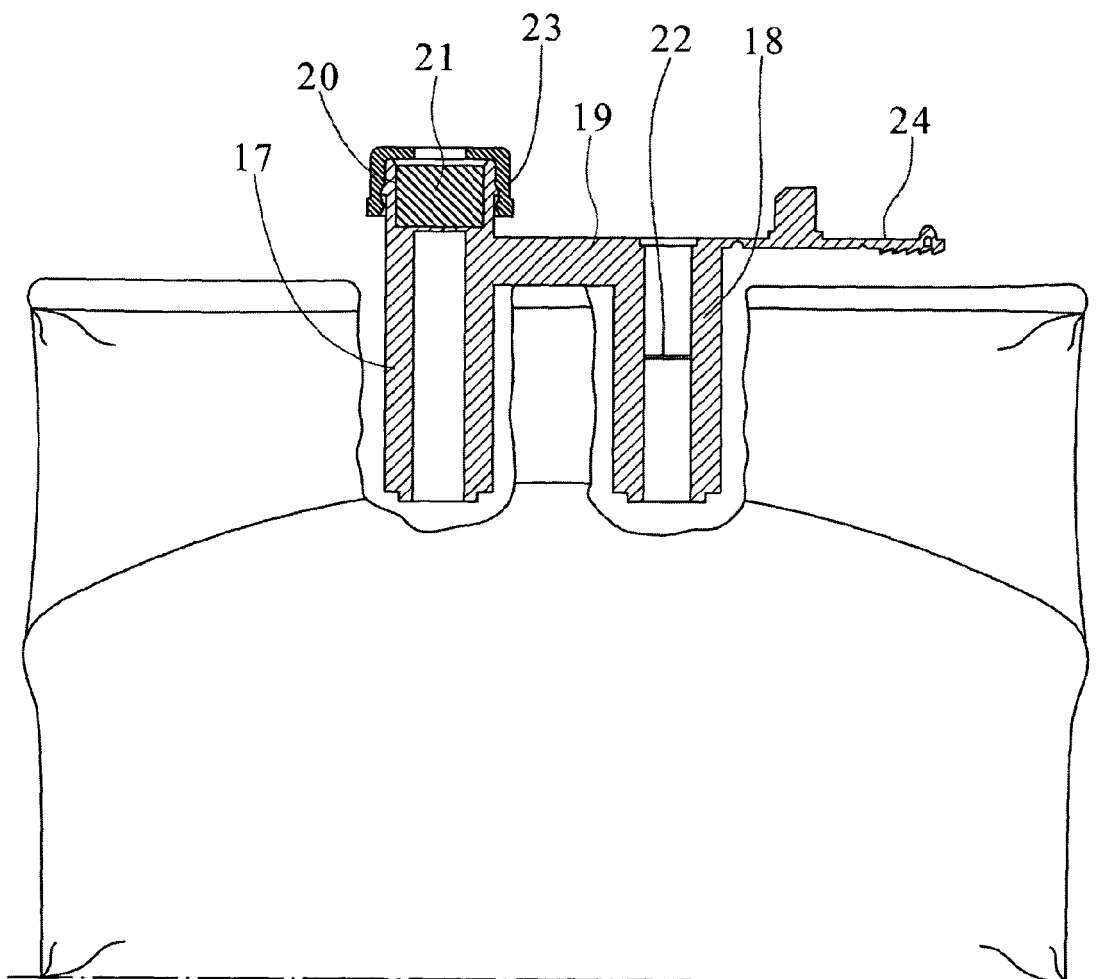


FIG.4

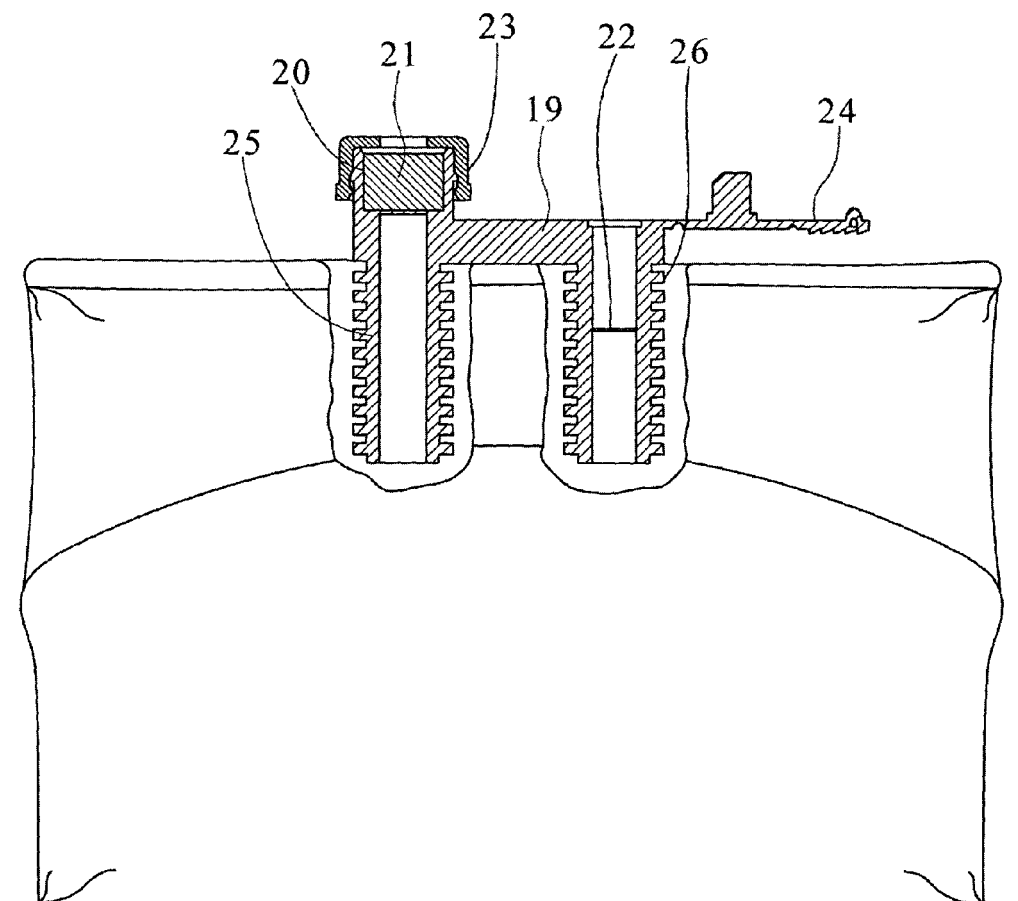


FIG.5

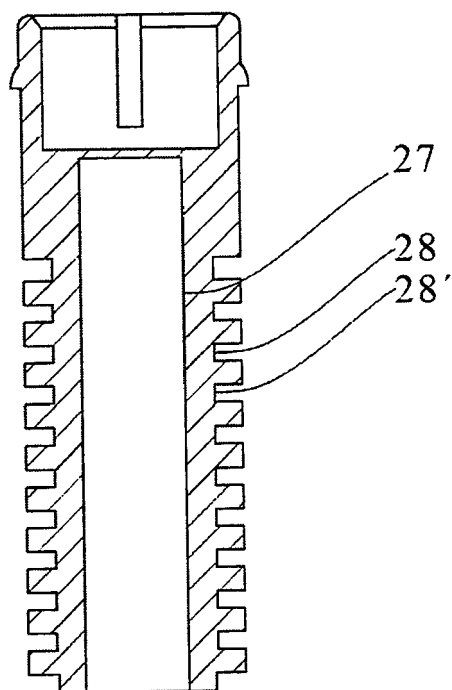


FIG.6

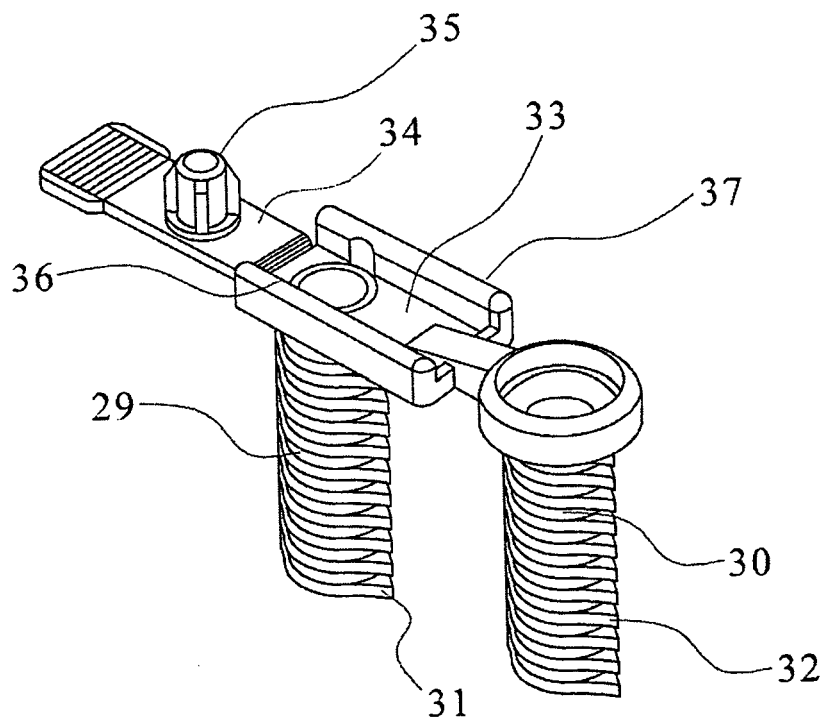


FIG.7

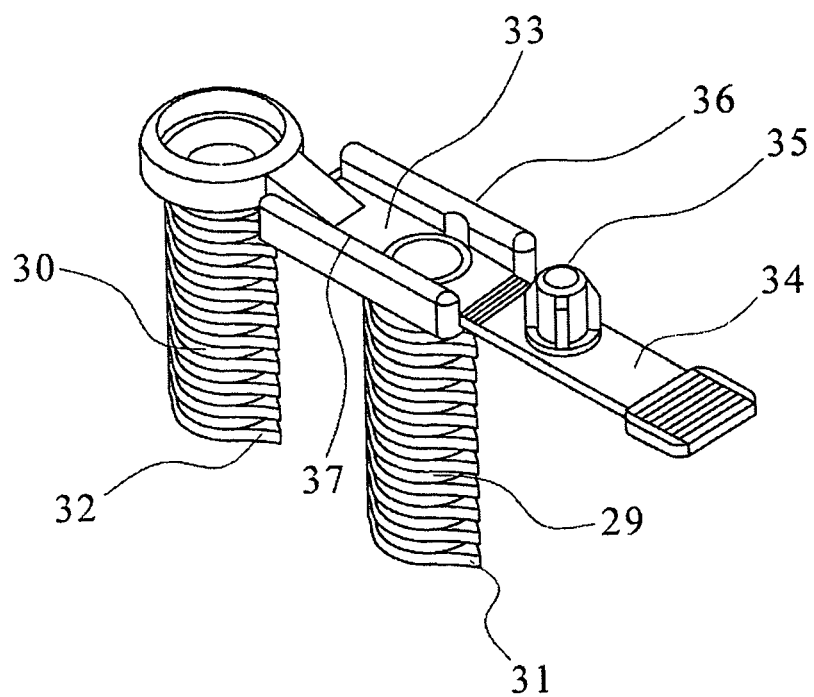


FIG.8



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 06 38 0165

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X	US 2004/094571 A1 (RANI ROBERT G [US]) 20 May 2004 (2004-05-20) * paragraph [0025] - paragraph [0026] * * paragraph [0028] * * figures 1,3,4 *	1-4	
			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 16 October 2006	Examiner Ong, Hong Djien
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 06 38 0165

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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