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Europäisches Patentamt  
European Patent Office  
Office européen des brevets

(11) Publication number:

**0 349 721**  
**A1**

(12)

# EUROPEAN PATENT APPLICATION

(21) Application number: 89107299.3

(51) Int. Cl.4: **A44B 1/32**

(22) Date of filing: 22.04.89

(30) Priority: 06.07.88 CN 88218795  
22.10.88 CN 88107009  
06.12.88 CN 88220414

(43) Date of publication of application:  
10.01.90 Bulletin 90/02

(84) Designated Contracting States:  
BE CH DE ES FR GB IT LI NL

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(54) **A device for securing to and removing from fabric and a novel button or badge with a new securing device.**

(57) The invention provides a novel device for securing to and removing from fabric which comprises a locking unit and a fixing unit. The fixing unit includes at least one fixing pin (102) with at least one surface of the fixing pin curved longitudinally, and the locking unit includes a support means (105) with at least one flange (108) protrudes into space transversely. The said flange (108) engages with the curved surface of the fixing pin (102). The device is particularly used for a button or badge.

The invention also provides a novel button or badge which comprises a main body (112) and the device for securing to and removing from clothes.

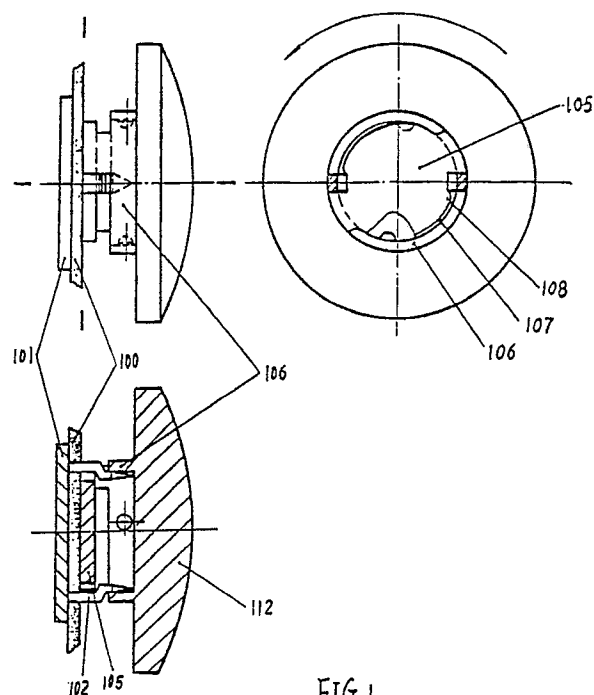


FIG.1

EP 0 349 721 A1

## A Device for Securing to and Removing from Fabric and A Novel Button or Badge with a New Securing Device

### Field of the Invention

The invention relates to a locking device particularly used for a button or badge for securing to and removing from fabric, the invention also relates to a button or badge with a new securing device for securing to and removing from clothes.

### Background of the Invention

At present, conventional buttons or badges are secured to clothes by means of safety pins or sewing that is complicated in fixation and removal and results in inconvenience in washing and ironing. It has been provided with a kind of button or badge without using any safety pins or sewing which is fixed by means of fastening pins, steel balls or springs. But such kind of buttons or badges has disadvantages, such as complicated structure and processing, heavy weight, and high cost, etc., therefore, it is not satisfactory in practice.

In order to overcome the shortcomings of the present buttons or badges, one object of the present invention is to provide a device which can be easily secured to and removed from fabric. Another object of the present invention is to provide a novel button or badge with a new securing device for securing to and removing from clothes. The other and further objects of the present invention can be easily seen from the following illustration of the invention.

### Summary of the Invention

The invention provides a novel device for securing to and removing from fabric which comprises a locking unit and a fixing unit. The fixing unit includes at least one fixing pin with at least one surface of the fixing pin curved longitudinally, and the locking unit includes a support means with at least one flange protrudes into space transversely. The said flange engages with the curved surface of the fixing pin. The device is particularly used for a button or badge.

The invention also provides a novel button or badge which comprises a main body and the device for securing to and removing from clothes.

### Brief Description of the Drawings

Description of the invention will now be made with reference to the accompanying drawings, in which:

Fig.1 shows the first embodiment of a device as well as a novel button or badge according to the invention;

Fig.2 shows a locking unit in Fig.1;

Fig.3 shows a fixing unit in Fig.1;

Fig.4 shows the second embodiment of a device as well as a novel button or badge according to the invention;

Fig.5 shows a locking unit in Fig.4;

Fig.6 shows a fixing unit in Fig.4;

Fig.7 shows the third embodiment of a device as well as a novel button or badge according to the invention;

Fig.8 shows a locking unit in Fig.7;

Fig.9 shows a fixing unit in Fig.7.

### Detailed Description of the Invention

According to the present invention, a device for securing to and removing from fabric comprises a locking unit and a fixing unit. The fixing unit includes at least one fixing pin with at least one side surface of the fixing pin curved longitudinally, and the locking unit includes a support means with at least one flange protrudes into space transversely. The said flange engages with the curved surface of the fixing pin when the locking unit and the fixing unit are both in a locking position whereby the locking unit and the fixing pin are locked together. The device can be made of various materials, such as metal, high molecular materials, etc. It can be formed through various processes, e.g. molding, machining or injection molding.

The fixing pin may have various cross section shapes, preferably, round, square or rectangular shape. The number of curved surface of the fixing pin may be more than one, and the curved surface may be of various shapes, preferably Z-shape or U-shape. More than one fixing pins may be used, that is determined by application conditions. When the device is a rotary-type of device, two or three fixing pins are preferred. The device can be a straight-type of device.

The fixing pin has one end with a pinpoint and the other end fixed to a base. The base has to be large enough to avoid being passed through the fabric when the pinpoint punches through the fabric to connect with the locking unit. It is preferable to have a same base for fixing on more than one fixing pin when two or more fixing pins are used in

the device. The base may be rigid or flexible, and it can be made of metal, plastics, cotton or fabric etc. The base can be in various forms, such as a round plate, or a rectangular plate. When the device is secured to fabric, the locking unit is on one side of the fabric and the base is on the opposite side of the fabric. In other words, the fabric is between the locking unit and the base of the fixing unit, and the fixing pin passes through the fabric and engages with the flange of the locking unit.

According to the present invention, the outer configuration of the support means can be in any form. A round shape among them is commonly used. The flange is used to engage with the curved surface of the fixing pin. The engagement of the locking unit and the fixing unit will be further illustrated in the embodiments discussed hereinafter. The shape of the flange can be various. For example, the protruding length of the flange can be slightly changed or keep unchanged along the support means. One of the embodiments shows that the protruding length of the flange increases smoothly along the support means. In other words, the protruding length of the flange increases from the end where the fixing pin enters to make engagement with the flange.

According to the present invention, the space may be an outer space. Preferably, the space is an inner space. The inner space is formed by the locking unit. The fabric may be anything woven by using threads, e.g. cloth.

According to the present invention, the locking unit also includes at least one detain means to prevent the fixing pin from escaping from the engagement with the flange as the securing or removing operation, which relates to a relative movement between the fixing pin of the fixing unit and the flange of the locking unit, is being carried out. Preferably, the detain means is connected or integrated with the support means. However, in the case where a button or badge uses the device as a securing device, one of the embodiments shows that the detain means is separatable from the support means.

In order to ensure a reliable securing of the device to the fabric, the locking unit is further provided with at least one detainer thereon. As the securing or removing operation is being carried out, the fixing pin runs into the detainer which has a blocking effect on the relative movement. The fixing pin performs a slight deformation and crosses over the detainer. After that, the deformed fixing pin restores by spring-back and is thus blocked against moving back by any undesired forces. The detainer can be in various forms, e.g. a protrude.

When the device is to be secured to fabric, the fixing pin with its curved surface punches through

the fabric till the base of the fixing unit bears against the fabric, thus, the fixing unit is attached to the fabric. Then, the locking unit fits with the fixing unit with its curved surface. After that, a locking action is applied, which is relevant to several factors, e.g. the arrangement of the fixing pin of the fixing unit and the flange of the locking unit, the forms of the flange, the orientation of the curved surface on the fixing pin, etc. Relative movement between the locking unit and the fixing unit makes the curved surface of the fixing pin bear against the flange. Thus, the locking unit and the fixing unit are connected and the device is secured to the fabric. In the rotary-type of device, the relative movement is rotation. In the straight-type of device, the relative movement is drawing.

When the secured device is to be removed from fabric, the operation is a reverse one.

According to the invention, a button or badge is provided utilizing the above mentioned device as a securing means for securing to and removing from cloth. The button or badge includes a main body and the device mentioned above. The main body can be made of metal, high molecular materials, etc., and it can be either connected or integrated with the locking unit or the fixing unit by conventional method, such as molding, welding or gluing. The main body of the button or badge is similar to a conventional button or badge.

According to the invention, the device has a wide range of application in securing buttons, badges, broaches, decoration buckles and braces, etc. The novel button or badge according to the present invention has many advantages, such as low cost, interchangeable fixing unit simple and reasonable structure, easily securing and removing operation and so on, which overcome the shortcomings of the prior art.

Referring to Figs. 1 to 3 which show the first embodiment of the invention. A fixing unit (Fig.3) was provided with two fixing pins (102) on a base (101) which was a round plate. The curved surfaces (103) of the fixing pins were in the form of a Z-shape facing toward each other. The cross sections of the fixing pins were of rectangular shapes. Each fixing pin had a pinpoint (104) thereof. A locking unit (Fig.2) included a support means (105) which included two flanges (108) in accordance with the fixing pins, and a detain means (106) which connected with the support means. An inner space was in the form of two slots (107) being confined between support means and the detain means. The slots extended in a circular line. Each slot provided with an entrance (109) at one end for fitting in the fixing pin. In the use, the fixing pins punched through any fabric with their pinpoints, till the base bearing against the fabric, then the locking unit was pulled in with the entrances of the

slots fitting with the fixing pins. The locking unit was then rotated in the direction of the arrow shown in Fig.1, thus, the fixing pins were moved along the slots relatively. As the locking unit being moved ahead, the fixing pins ran into a pair of protrudes (111) respectively which had a blocking effect. By an additional force, the fixing pins performed a slight deformation and crossed over the protrudes. After that, the deformed fixing pins restored by spring-back, and were thus blocked against reverse turning by undesired forces. In this way, the curved surface of the fixing pins beared against the flanges of the locking unit. Thus, the locking unit and the fixing unit were connected and secured to the fabric. As it can be seen in Fig.1, a main body (112) of the button or badge was integrated with the locking unit.

Figs. 4 to 6 show the second embodiment of the invention. The fixing unit (Fig.6) in this embodiment included one fixing pin (202) with a round cross-section. Two curved surfaces (203) being in the form of U-shape were provided on the fixing pin opposite to each other. A locking unit (Fig.5) had a support means (205) which provided with two flanges (208). The flanges had constant protruding lengths. An inner space was in the form of a slot (207) extended in a straight line. The slot had an entrance (209) at one end for fitting the fixing pin in. In securing, the fitted locking unit was to be drawn in a straight line. A protrude (211) was provided on the locking unit to block the locking unit, from moving back due to undesired forces. A main body (212) of the button or badge made of metal was separately prepared by stamping and connected with the locking unit by welding.

Figs.7 to 9 show the third embodiment of the invention, which is similar to the first embodiment. The fixing unit (Fig.9) in this embodiment contained three fixing pins (302) which arranged in a circumference on a base (301). Each fixing pin provided with a U-shape surface (303) facing toward the centre of the circumference. The cross sections of the fixing pins were of a round shape. A separable detain means, which was a sleeve (306) was provided, together with the flanges (308), to form three curved slots (307). The protruding length of any one the flanges increased smoothly along the edge where the support means and the flange connected. A main body (312) of the button or badge was integrated with the locking unit. It can be seen from Fig.7, the detain means (306) can be left out. In this case, the flanges protruded into an outer space.

## Claims

1. A device for securing to and removing from

fabric comprising a locking unit and a fixing unit, the fixing unit including at least one fixing pin with at least one surface of the fixing pin curved longitudinally, the locking unit including a support means with at least one flange protruding into space transversely, the said flange engaging with the curved surface of the fixing pin.

2. A device according to Claim 1, wherein the space is an outer space.

3. A device according to Claim 1, wherein the space is an inner space.

4. A device according to Claim 1, wherein the flange has an increasing width in a transverse direction.

5. A device according to Claim 1, wherein the locking unit further includes at least one detain means to prevent the fixing pin from escaping from the engagement with the flange.

6. A device according to Claim 5, wherein the detain means is connected with the support means.

7. A device according to Claim 1, wherein the locking unit further includes at least one detainer to block the locking unit from moving in a releasing direction by any undesired forces.

8. A device according to Claim 7, wherein the detainer is located in a place where it is crossed over by the pinpoint end of the fixing pin when the fixing pin moves in a securing direction.

9. A device according to Claim 7 to 8, wherein the detainer is a protrude.

10. A device according to Claim 1, wherein the curved surface of the fixing pin is of a Z-shape.

11. A device according to Claim 1, wherein the curved surface of the fixing pin is of a U-shape.

12. A device according to Claim 1, wherein the cross section of the fixing pin is a round shape.

13. A device according to any one of the previous claims, wherein the device is used for a button or badge.

14. A button or badge including a main body and a device for securing to and removing from clothes, the device comprising a locking unit and a fixing unit, the fixing unit including at least one fixing pin with at least one surface of the fixing pin curved longitudinally, the locking unit including a support means with at least one flange protruding into space transversely, the said flange engaging with the curved surface of the fixing pin.

15. A button or badge according to Claim 14, wherein the space is an outer space.

16. A button or badge according to Claim 14, wherein the space is an inner space.

17. A button or badge according to Claim 14, wherein the flange has an increasing width in a transverse direction.

18. A button or badge according to Claim 14, wherein the locking unit is further provided with at least one detain means to prevent the fixing pin

from escaping from the engagement with the flange.

19. A button or badge according to Claim 18, wherein the detain means is connected with the support means.

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20. A button or badge according to Claim 14, wherein the locking unit further includes at least one detainer to block the locking unit from moving in a releasing direction by any undesired forces.

21. A button or badge according to Claim 20, wherein the detainer is located in a place where it is crossed over by the pinpoint end of the fixing pin when the fixing pin moves in a securing direction.

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22. A button or badge according to Claim 20 or 21, wherein the detainer is a protrude.

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23. A button or badge according to Claim 14, wherein the curved surface of the fixing pin is of a Z-shape.

24. A button or badge according to Claim 14, wherein the curved surface of the fixing pin is of a U-shape.

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25. A button or badge according to Claim 14, wherein the cross section of the fixing pin is a round shape.

26. A button or badge according to Claim 14, wherein the main body connects with the locking unit.

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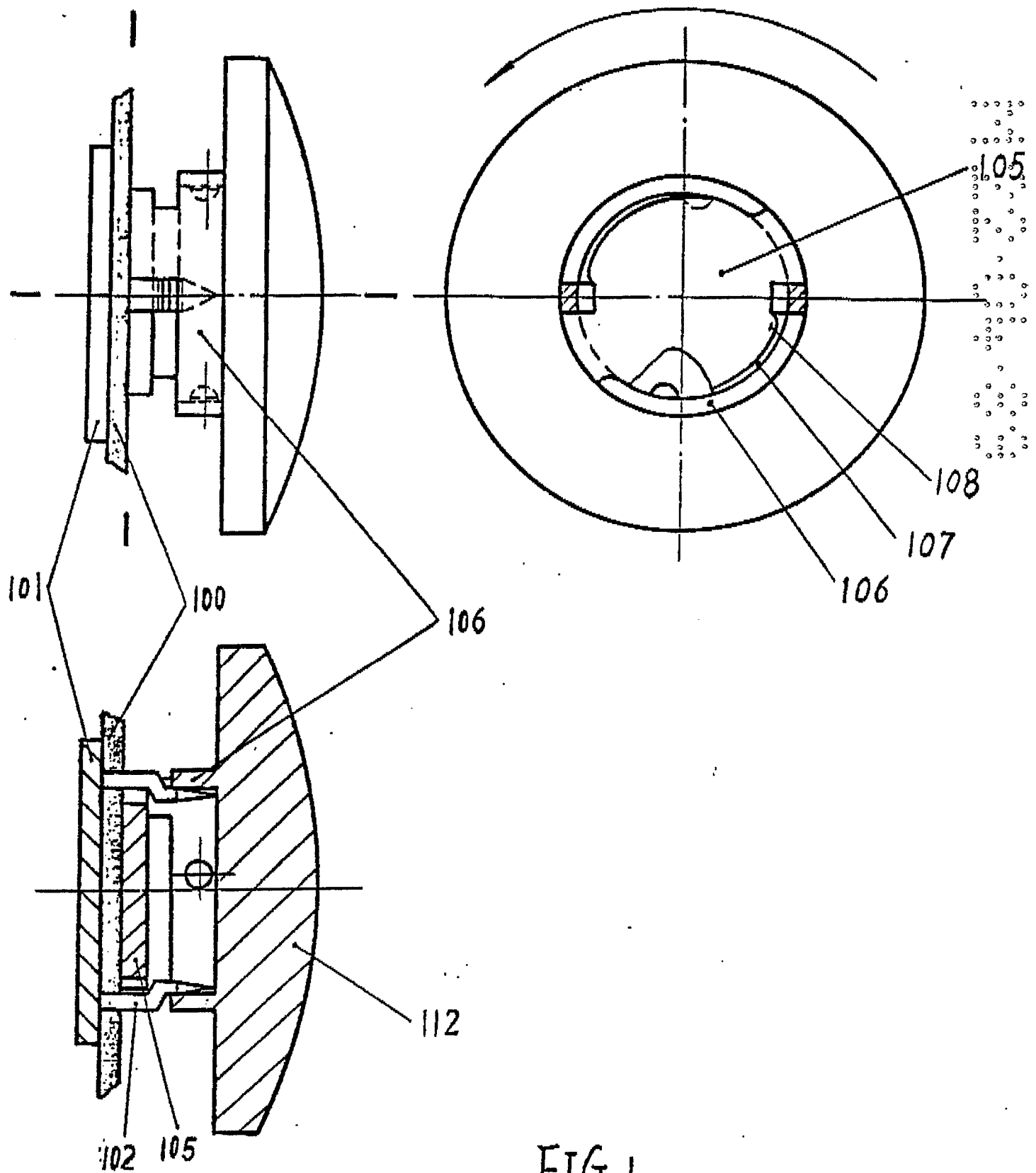


FIG. 1

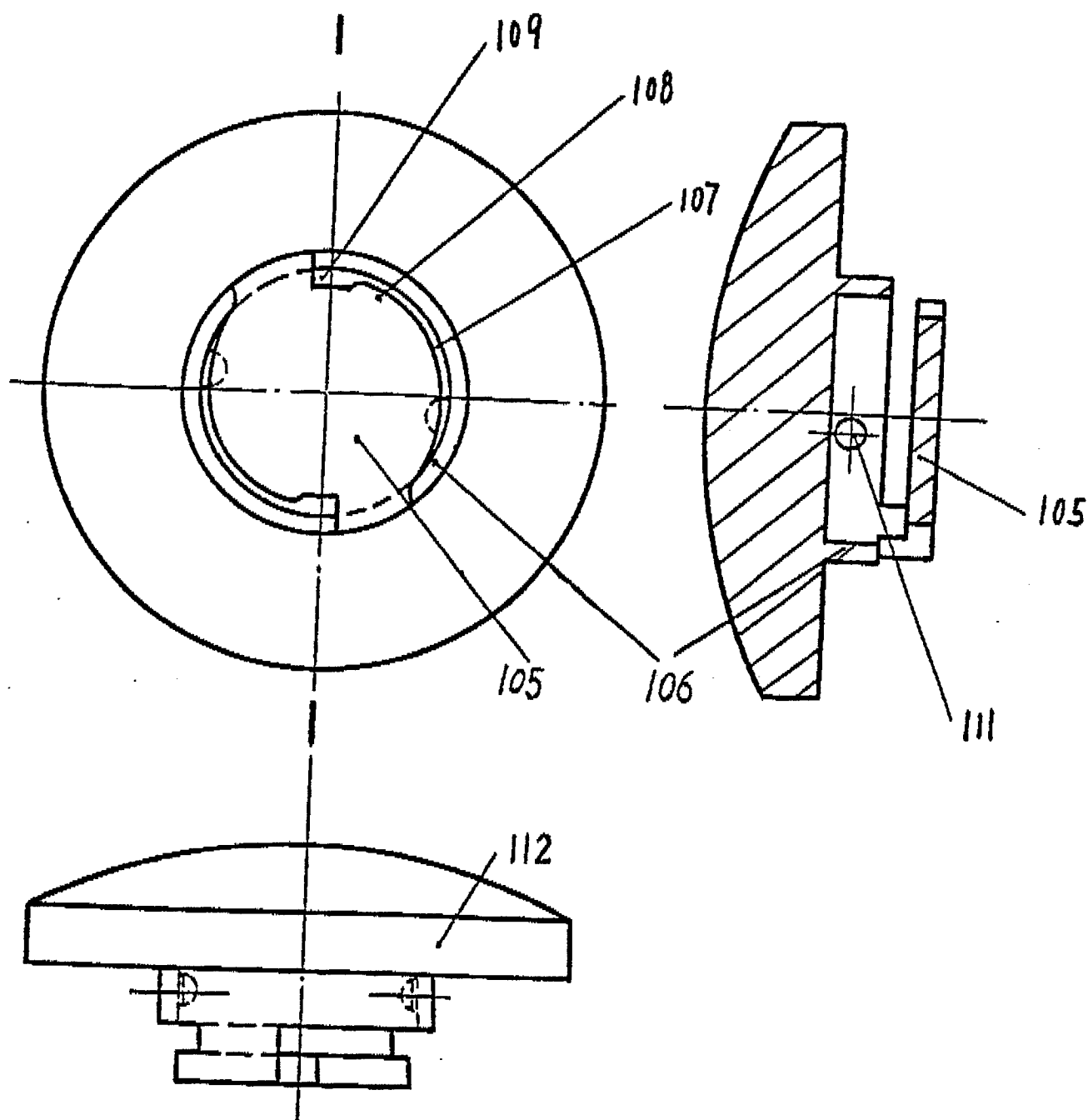


FIG. 2

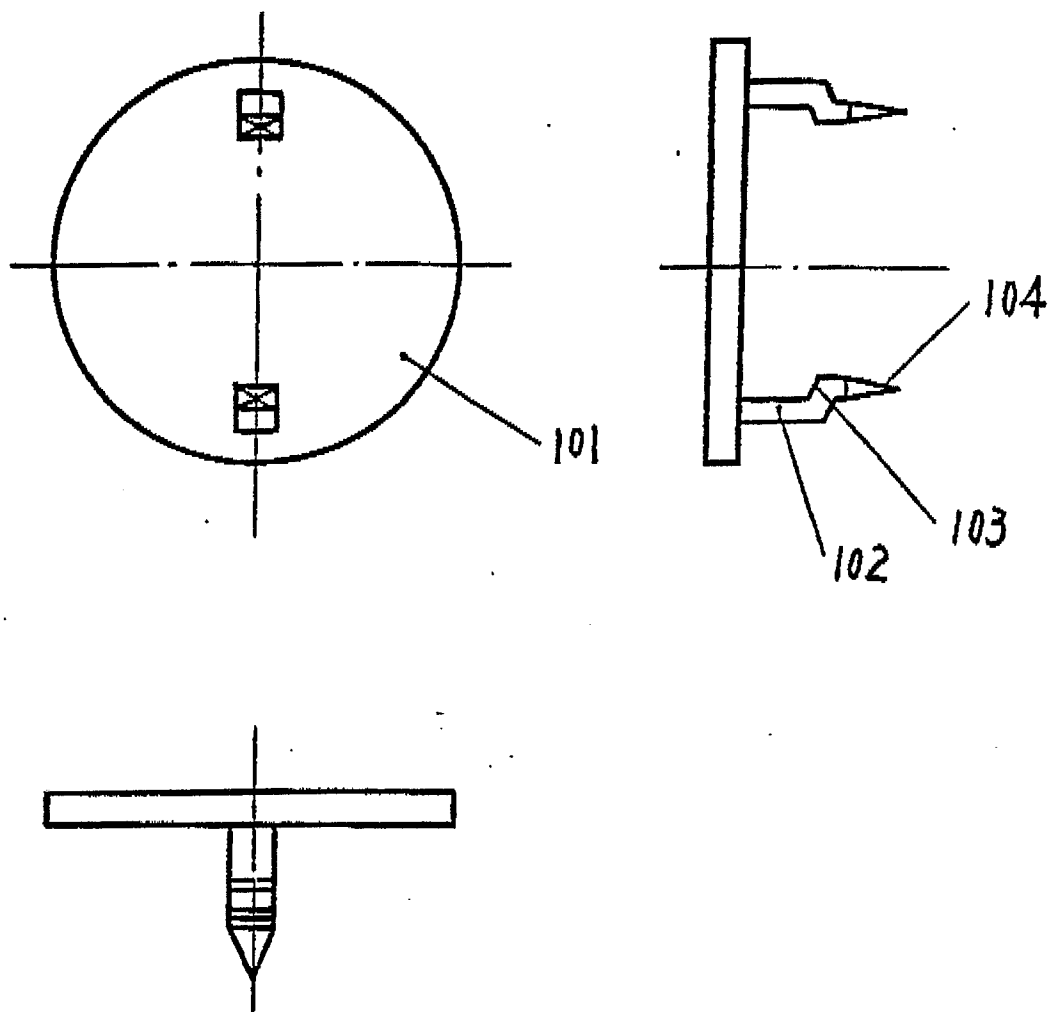


FIG.3



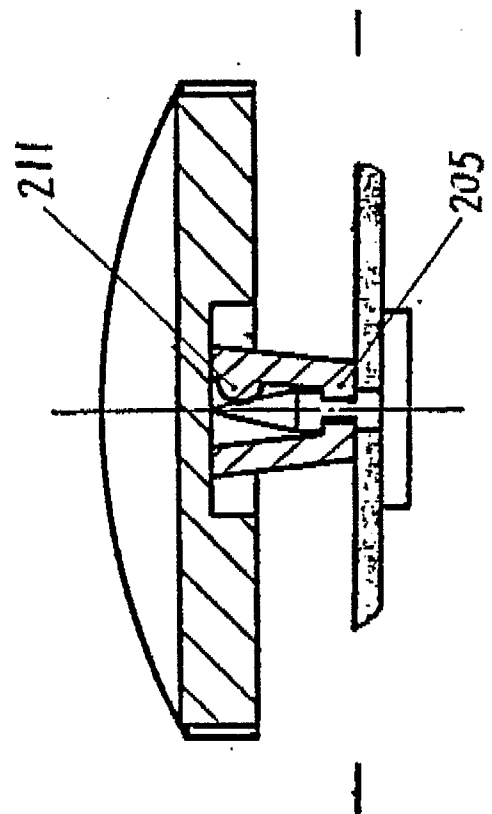
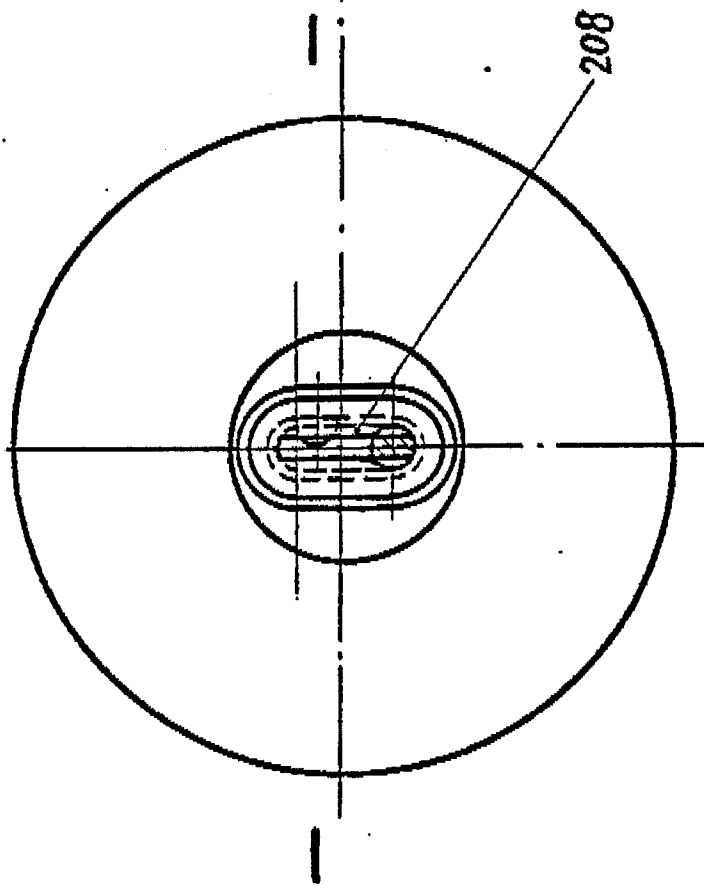
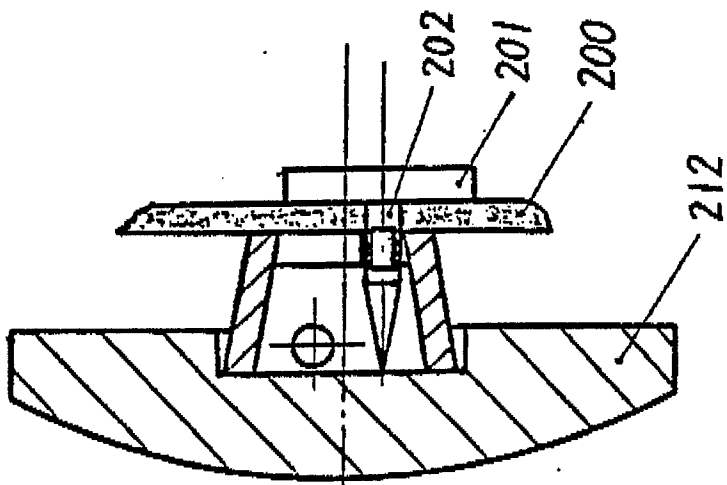


FIG. 4

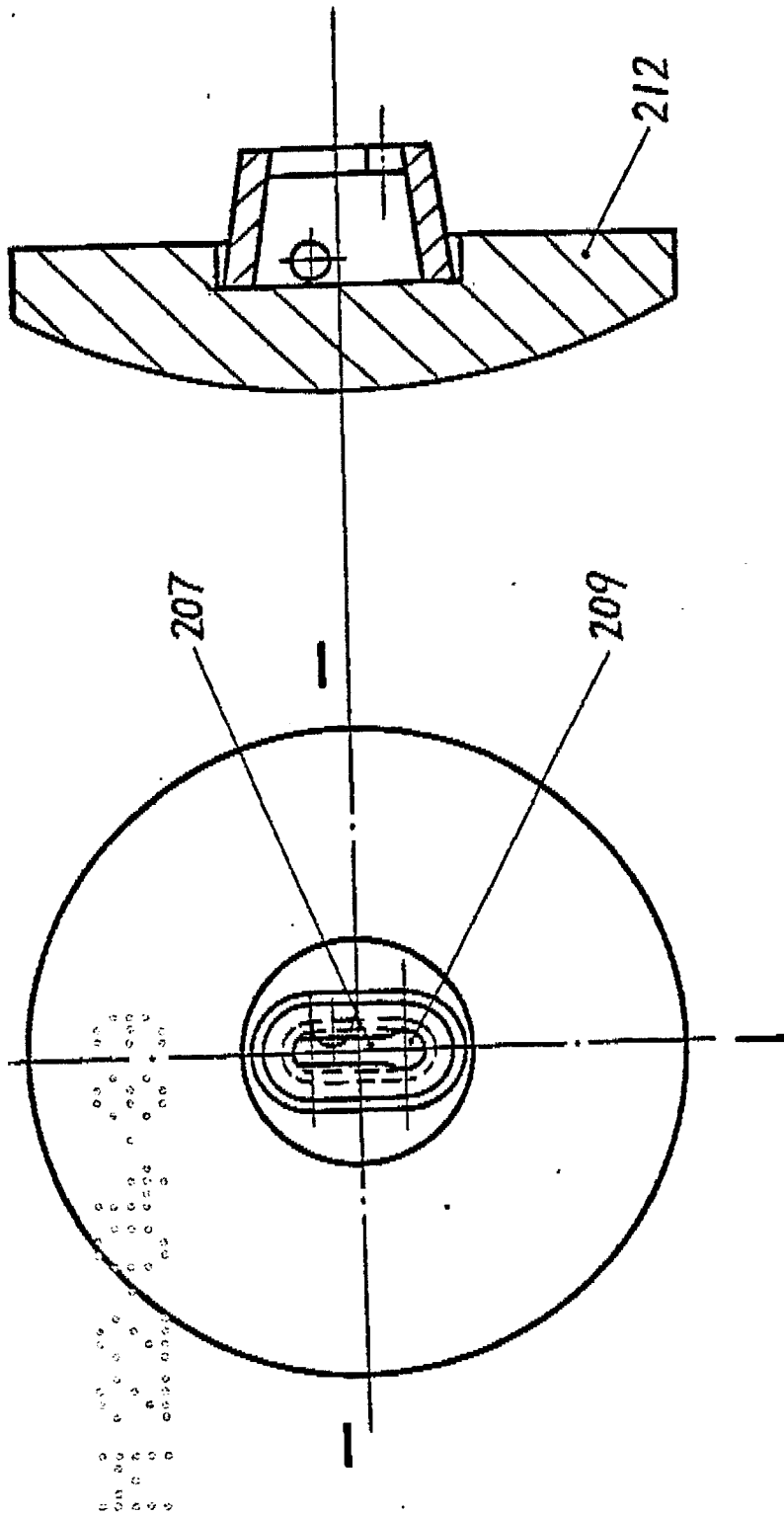
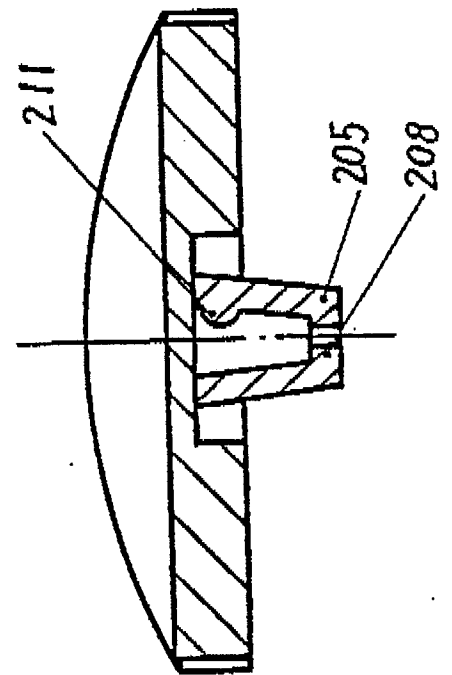


FIG. 5



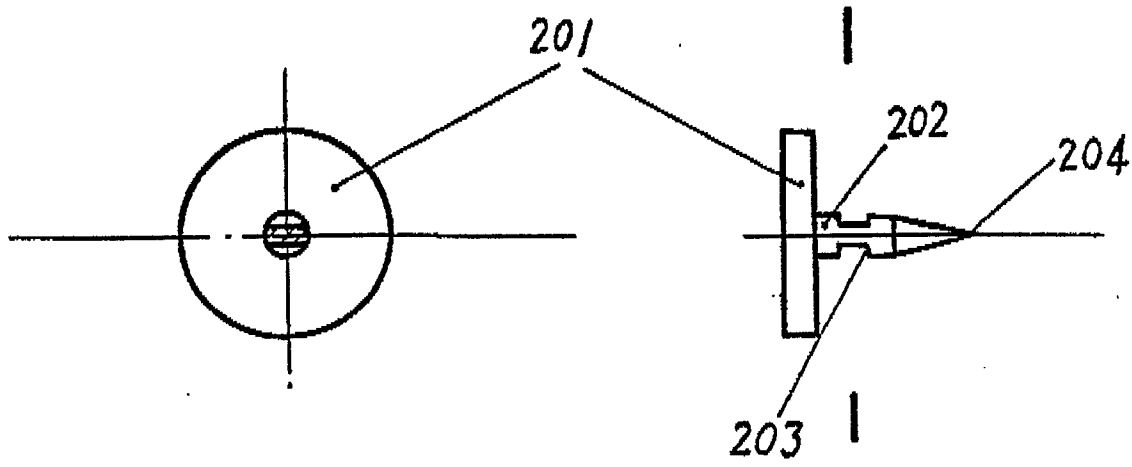


FIG. 6

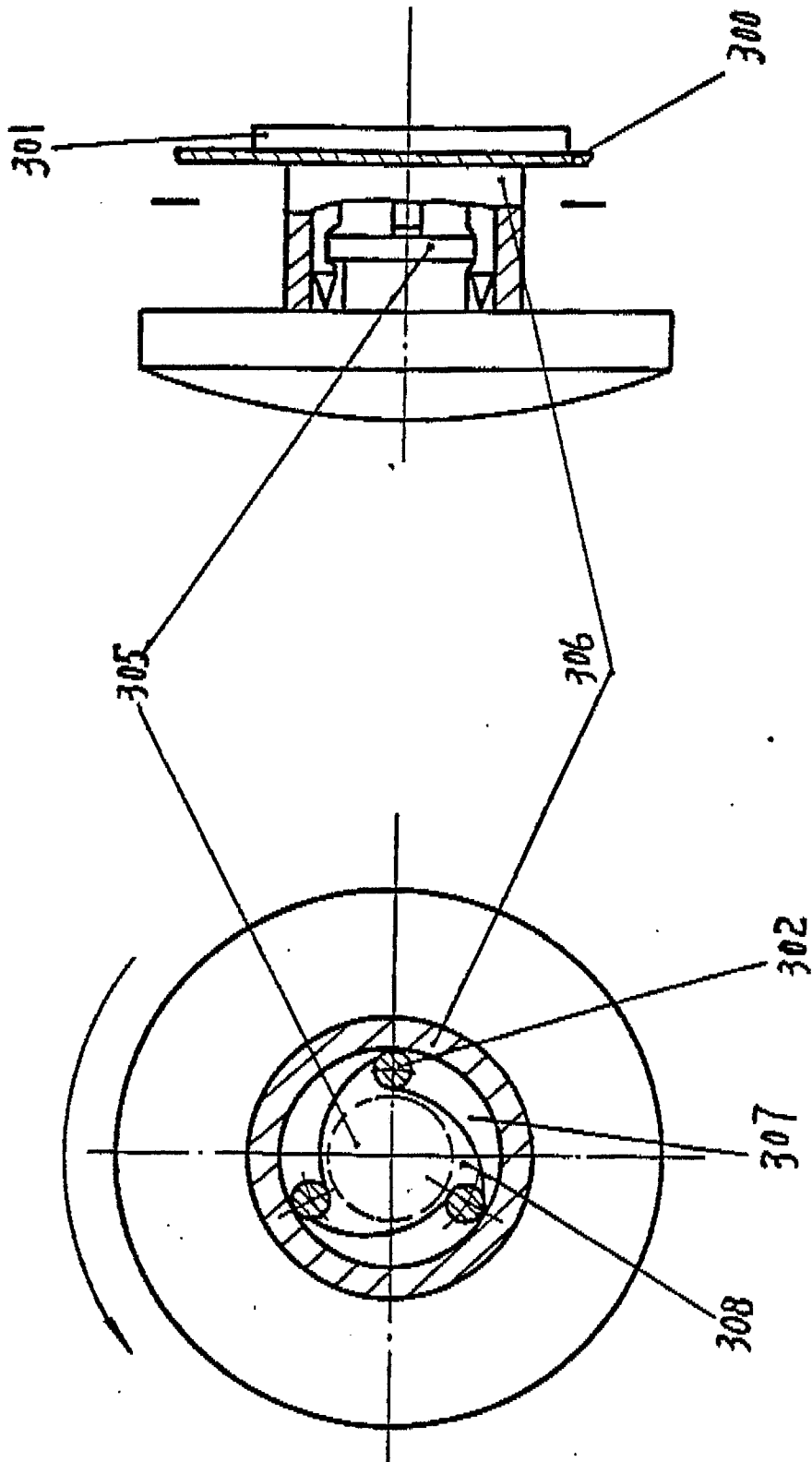


FIG. 7

301 300 305 306 307 308

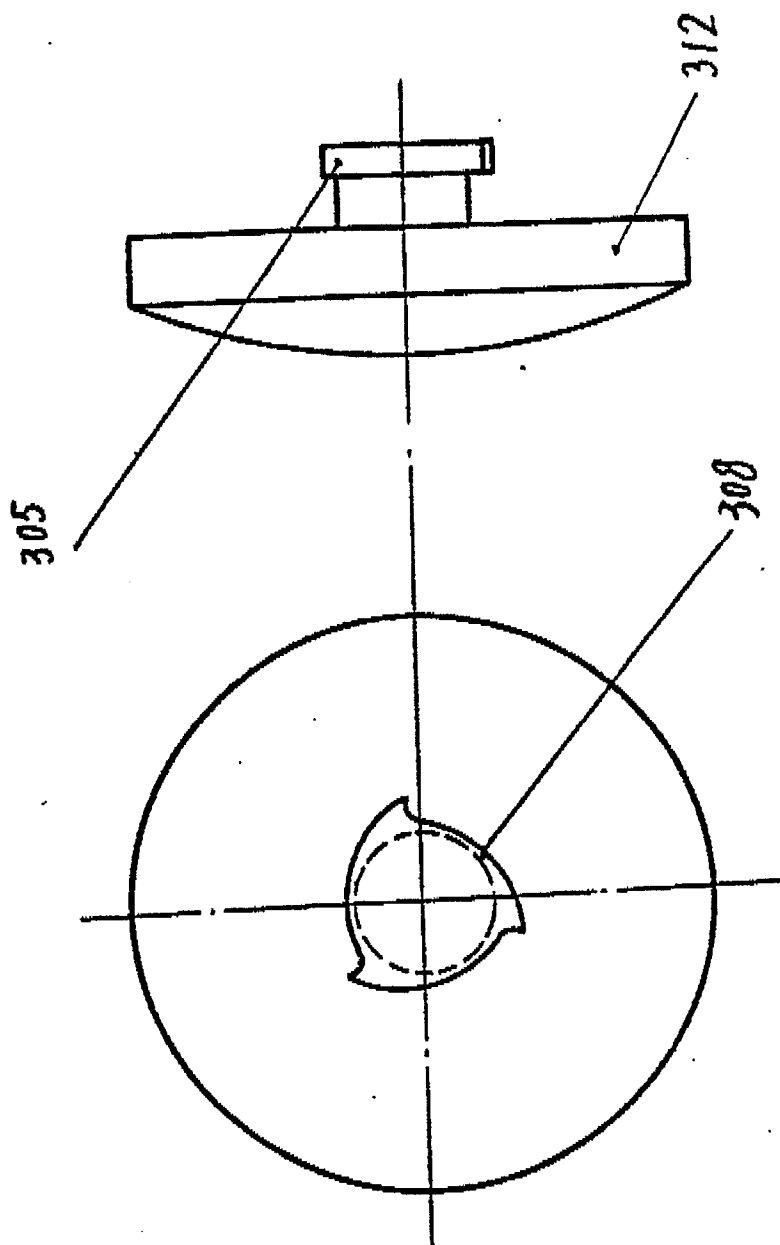
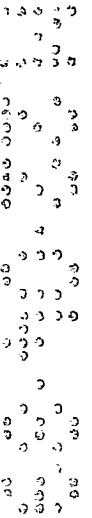
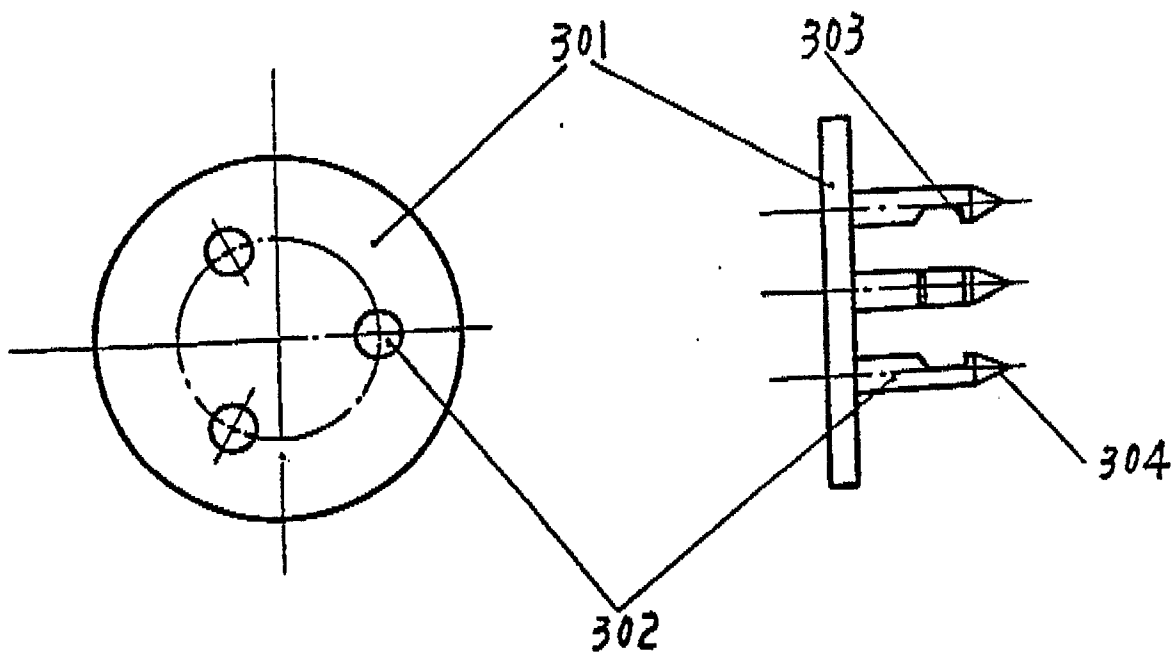


FIG. 8

312 306 305 308





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# EUROPEAN SEARCH REPORT

Application Number

EP 89 10 7299

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	US-A-2654133 (UNITED CARR FASTENER CORPORATION) * column 2, line 38 - column 3, line 32; figures 1-11 *	1, 2, 5-9, 13-15, 18-22	A44B1/32
X	FR-A-704219 (A. SCHÄRER) * the whole document *	1, 3-8, 11-14, 16-21, 24-26	
X	FR-A-2137922 (RICCI FEBRER) * page 2, line 13 - page 3, line 17; figures 1-8 *	1, 3, 5-8, 12-14, 16, 18-21 25, 26	
X	DE-C-63587 (G. KOHL) * the whole document *	1, 2, 13, 14, 16	
X	FR-A-777736 (M. HILTBRAND) * the whole document *	1, 3, 4, 11-14, 16, 17, 24-26	TECHNICAL FIELDS SEARCHED (Int. Cl.5)  A44B A44C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18 SEPTEMBER 1989	Examiner GARNIER F.M.A.C.
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