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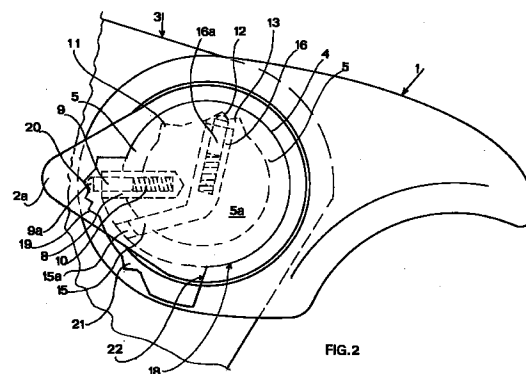
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(54) Device for locking in closed position the visor of helmets for motorcyclists and the like

(57) Locking device of the visor for helmets for motorcyclists, of the type comprising a plate (1) integral with the helmet cap through a pin, a visor (3) and a cylinder (9) opposite to a prewound spring for the engagement in notches (20, 21) obtained in the edge of the visor opening; the device comprises a lid (2) which revolves within an opening obtained in the body of plate (1) integral with a locking cylinder (16a) opposite to a prewound spring and connected to a stop arm (15), suitable to be led through the rotation of lid (2) in a first notch (11) obtained in the cylindrical body (5) of plate (1) causing at the same time the engagement of said arm (15) in a notch (22) of the visor, realizing in this way the locking of the visor; the rotation of the lid in the opposite direction leads the locking cylinder (16a) in another notch (12) of the plate and disengages arm (15) from the visor, allowing in this way the rotation of the visor between the two open and closed positions.



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Description

This invention relates to a device for locking in closed position, the visor of integral helmets and the like for motorcyclists.

As is known, integral helmets for motorcyclist are provided with a visor from transparent plastic material, arched and hinged at the two opposite sides of the front opening of the helmet, in order to allow its rotation from the closed position of the opening to that of complete uncovering of said opening.

It is also known that, in order to keep the stability of the visor both in the open position and in the closed position, different stop mechanisms have been proposed, the most recent of which provide for the fixed application of a plate at both sides of the helmet opening, and for means located between the plate and the helmet cap, to restrain and to allow the rotation of the visor and its stopping in at least the two positions of raising when opening and closing when lowering.

More precisely, the free rotation of the visor takes place around a pin protruding from the plate and anchored to the cap by screwing, embedding or the like.

The stop means of the visor in the two positions are generally formed by a cylinder or pin sliding along a guide countering a prewound spring; said guide is radially integral with the fixed plate, so as to cause, by rotating the visor, the end of said cylinder to engage alternatively into two notches obtained in the edge of the eyelet provided in the same visor and inserted coaxially on the central pin protruding from the plate.

Said notches are obtained at intervals angular to one another, which allow the visor to remain locked in the two open and closed positions; in some cases, said notches are part of an arched rack that allows the stop of the piston in various positions intermediate between the open and the closed positions of the visor.

The present means for stopping the visor especially in its closed position cannot always ensure the necessary stability of the visor, especially when the user of the helmet runs at high speed; in fact, in these cases, the very pressure exercised by the air on the visor tends to raise the latter from the closed position to the open position, causing the coming out of the stop cylinder from the relevant visor notch. This may cause the drawback that the visor may raise during the running, with the ensuing inconveniences for the user.

On the other hand, especially for safety reasons, it must always be possible to quickly raise the visor by hand during the running if any emergency situation should arise, when, for instance, mud or oil splashes or the like soil the visor, hindering, partly or completely, the visibility of the user.

Therefore, object of this invention is to provide a device for the stable locking of the visor and for the prompt release of the same in case of emergency, so designed as to obviate the drawback of the present means provided with a piston engageable in notches of the visor.

Another object of this invention is to provide a device for locking the visor so structured as to allow its prompt engagement and disengagement by the user, in relation with the running conditions or any other requirement.

A further object is to provide a locking device of the above specified type, so designed as to have a very simple structure, reduced overall dimensions, and anyhow such as to remain incorporated between plate and visor with no need for changes in the size of the latter, and also such as to ensure the highest working reliability and the possibility of being automatically and quickly unlocked if any emergency should arise.

These and still other objects that will be more clearly expounded in the following are achieved by a device for locking the visor of helmets for motorcyclists and the like, substantially integral helmets provided with a transparent visor hinged to the cap in correspondence of the two opposite sites of the front opening of the helmet, and revolving between a plate anchored to the cap and the same cap, as well as with a piston opposite to a prewound spring, located radially to the plate pin and snap-hookable in notches of the visors, located in positions that keep the visor stable in the closed and open positions, which visor locking device comprises, according to this invention, a base plate connected to and integral with said cap provided with a round opening with whose edge a closed-bottom cylindrical hollow body is integral, and in the middle of the latter, with a pin for the stable connection to the cap, a cylinder opposite to a prewound spring with an end protruding from the external wall of said cylindrical body being radially located within the latter, said cylinder with the prewound spring being suitable to form the locking means of the visor revolvably mounted on the external cylindrical surface of said cylindrical body, in the two open and closed positions of the cap window, at least two spaced notches being provided on a length of the internal cylindrical surface of said cylindrical body, and a continuous through-opening being provided on an opposite length of the same, said two notches provided on the inner surface of the cylindrical body and said through opening being angularly arranged in such a manner as to allow a discoidal lid revolvably mounted on said round opening of the plate through a lever or the like and carrying on its internal face a locking cylinder opposite to a prewound spring locking as well as an angle arm protruding from said through-opening to push said locking cylinder in a notch of the cylindrical body associated to the fixed plate, and the end of its arm against a recess of the visor, preventing in this way the rotation of said visor only when the latter is in closed position, the unlocking of the visor being achieved by rotating said lid in such a way as to cause said locking cylinder to engage in another notch of the cylindrical hollow body and said arm to disengage from the visor.

More particularly, to allow the end of said arm integral with the lid to counter the rotation of the locked visor, the round opening of the visor, rotating on the

external surface of said closed-bottom cylindrical body, has a length of its greater radius circumference so shaped as to have a steplike conformation, with the function of stopping the end of said arm protruding from the through-opening of the cylindrical body, and to have also two stop notches of the visor in the open and closed positions of of the same respectively.

Besides, said discoidal lid carrying said locking cylinder and the related stop arm is provided with a hand-controlled external lever suitable to allow, through the partly rotation of the lid, the positioning of said locking cylinder either in visor-stop position when the visor is closed or in open or closed visor position without visor-stop.

Further characteristics and advantages of this invention will appear more clearly from the following detailed description, made with reference to the attached drawings, which are supplied only by way of non limitative example, and wherein:

Fig. 1 shows in separate form and in prospective view all the components of the locking device according to this invention;

Fig. 2 shows, at an increased scale, the device of Fig. 1 mounted and illustrated according to a plan view and in transparency, for a better understanding of the relative positioning of the various components;

Fig. 3 shows a section according to the IV-IV broken line of Fig. 4, i.e. the locked-visor position, while Figs. 4, 5 and 6 show the visor locking device in the positions, respectively, of closed and locked visor, of open visor and of closed visor and disengaged lock.

With reference to the above figures, the visor locking device subject matter of this invention is substantially formed by three main components, namely, as shown in Fig. 1, a base plate 1, a discoidal lid 2 carrying the locking cylinder, and a common transparent visor 3.

Plate 1, of ovalized and elongated shape, has, on its external face, an annular embedding length forming the seat for the rotatory rest of lid 2, and concentrically with said embedding, a round opening integral with a hollow cylindrical body 5 (either forming one same body or stably applied), which body 5 protrudes beside the closed circular bottom plate 5a, from which a pin (screw-like or the like) 6 goes off which forms the stable connection of plate 1 to cap 7 of the helmet, as can be seen for instance, in Fig. 3.

On bottom 5a of the cylindrical hollow body 5 a tube 8 is radially anchored in whose inside a cylinder 9 opposite to a prewound spring 10 is slidingly kept; the ends of tube 8 and cylinder 9-9a partly protrude from the external cylindrical surface of the hollow cylindrical body 5 (Figs. 1 and 2), and their function will be clarified in the following.

In the thickness of the hollow body 5, and more precisely within the cylindrical inner surface of the same,

there are obtained a first notch 11, a second notch 12 and, beside these, a further notch 13 which form respectively the stop means of visor 3 in the locked position, the opening position, and the position provided for the assembly of lid 2, as will also be clarified in the following. Lid 2 in Fig. 1 is schematically shown in transparency.

Besides, in the inner cylindrical surface of said hollow body 5, and more precisely in the part opposite to the one of the notches, a wide opening 14 is provided, substantially developed as an arch equal to about a quarter of the circumference of body 5. In the inside of said opening 14 an arm 15 integral with lid 2 (Fig. 1) translates, whose end 15a protrudes from the cylindrical hollow body 5. Said arm 15 is angularly connected with a tube 16 in whose inside a cylinder 16a, also opposite to a prewound spring, is translatable mounted; the length of said cylinder allows it to get in touch with the internal cylindrical surface of the hollow body, causing in this way end 16b of said cylinder to engage in notches 11 and 12, through the rotation in both directions of lid 2 by means of a shaped lever 2a (Figs. 1, 2), integral with said lid. Said cylinder 16a forms the stop or lock of the visor when it is engaged with notch 11 and the unlock of said visor when it is engaged in notch 12.

Lid 2 is revolvingly fixed on the plate with suitable snap-release means integral with it and acting in correspondence of openings of the internal cylindrical surface of the hollow body 5; said openings, possibly additional to 14 where end 15a of arm 15 is already housed, are suitably located, for instance, in a position opposite to the latter, i.e. near notches 12 and 13. Moreover, the centering and free rotation of said lid 2 relatively to plate 1 is ensured by a pin integral with the same which engages in a central hole obtained coaxially to the axis of pin 6 of plate 1, as shown in Fig. 3.

Visor 3, of a conventional type, has an opening 17 with a circular development 18 for about three quarters of its circumference (Fig. 1) and a flaring 19 in the last quarter on whose edge a notch 20 is obtained, which houses and restrains the end of piston 9 protruding from the hollow body 5 when the visor is in open position (Figs. 2 and 5), a second notch 21 suitable to house and restrains the same piston 9 when the visor is rotated upwards in open position, as shown in Fig. 5, and a recess 22, substantially a rectilinear length, up to the outside of the hollow body 5 on which said visor is rotatably freely mounted with a limited travel between the position of maximum opening, defined by the engagement of the fixed piston 9 engaged in notch 21, as shown in Fig. 5, and the position of full closing with said piston 9 engaged in notch 20, as shown in Fig. 4. Said recess 22 of the visor forms a stop for arm 15 which rotates together with piston 16a with a limited travel between notches 11 and 12 obtained in body 5 integral with the plate.

Therefore, keeping in mind that the assembly of the various components of the device described above provides for plate 1 to be stably anchored to cap 7 and that

visor 3 rotates around the external surface of the hollow cylindrical body 5 between plate 1 and said cap 7, as shown in the section of Fig. 4, the working of the visor locking device subject matter of this invention can be easily understood from what is schematically illustrated in Figs. 4, 5 and 6.

In fact, Fig. 4 shows the closed visor and engaged visor locked position, as, having closed the visor with the fixed piston 9 stopped in notch 20 of the visor, by anticlockwise rotation of lever 2a of the lid, the locking piston 16a stops within notch 11 of the hollow body 5 integral with the plate, while at the same time end 15a of arm 15 protruding from body 5 through opening 14, stops against the rectilinear side of recess 22 of the visor, which side is, as said, outside the cylindrical body 5 on which said visor rotates according to a fixed angular shifting, defined by notches 20, 21 related to cylinder 9.

In this position, the visor remains locked in closed position by the stop of piston 16a in the body fixed to the plate under the pushing of its spring and the touch between the end 15a of arm 15 and recess 22 of the visor.

The strength of the spring of the locking piston is a strength additional to the one exercised by the spring of the fixed piston 9, so that the effort necessary to unlock the locking piston is greater; however, in case of emergency or for other reasons, the unlocking of the visor and therefore its opening may be obtained by exerting a couple of forces on the visor, forcing in this way the locking piston to come out from notch 11 of the fixed body of the plate.

Fig. 5 shows the open visor position; to obtain the opening, i.e. the unlocking of the locking piston 16a, it suffices to rotate lever 2a in the direction contrary to the preceding one, so as to force the locking piston to transfer in notch 12, letting arm 15 to unlock tooth 22, moving away from it by translation within opening 14 of the hollow body 5; starting from this position it is possible to control the visor either entirely or partly, as the visor locking piston remains still, while only the fixed piston 9 continues operating.

Fig. 6 shows the closed visor and disengaged visor lock position.

Starting from this position (closed visor and disengaged lock), to lock the visor it suffices to rotate anticlockwise lever 2a, reaching in this way the engaged stop position, as shown in Fig. 4.

The above described device is provided also with a notch 13 in the hollow cylindrical body 5 which notch is utilized to realize the assembly of the visor on the cap together with the plate with the visor lock.

During this operation, arm 15 of the visor lock is near the fixed piston, and the locking piston is in notch 13, so that it is possible to insert the plate and the related visor lock in the visor which is kept resting on the cap in closed position, and to rotate then the plate-lock whole by 90° relatively to the cap, and to perform lastly the locking of the plate on the visor. After this operation,

the locking piston and the related arm are rotated relatively to the plate, integral with the cap, until the visor locking piston reaches the open visor position (Fig. 2). At the end, the closed visor and disengaged stop position is obtained.

In the practice, the invention as described above according to a preferred embodiment, may be subject to changes and variants equivalent from the structural and functional point of view, always within the protection scope of the invention.

Claims

1. A device for locking the visor of helmets for motorcyclists and the like, particularly integral helmets of the type provided with a visor from transparent material hinged to the cap in correspondence of the two opposite sites of the front window of the cap, and revolvable between a plate anchored to the cap and the same cap, at least a piston opposite to a prewound spring for the stable stop of the visor in the positions of full or partial closing and opening of said window, characterized in that it comprises a base plate (1) integral with said cap (7) provided with a round opening with whose edge a hollow cylindrical body (5) with a closed bottom (5a) is integral and, in its middle, with a pin (6) for the stable connection to cap (7), a cylinder (9) opposite to a prewound spring (10) and with an end (9a) protruding from the external wall of said cylindrical body (5) being radially located within the latter, which cylinder (9) is suitable to form the stop of the visor (3) revolvingly mounted on the external cylindrical surface of said cylindrical body, in the two open and closed positions of the cap opening, two spaced notches (11, 12) being provided on a length of the internal cylindrical surface of said cylindrical body (5), and a continuous through-opening (14) being provided on an opposite length, said two notches (11, 12) provided on the internal surface of the cylindrical body and said through-opening (14) being angularly arranged in such a manner as to allow a discoidal lid (2), revolvingly mounted on said round opening of plate (1) through lever (2a), and carrying on the internal face a locking cylinder (16a) opposite to a prewound spring as well as an angular arm (15) protruding from said through-opening (14), to shift said locking cylinder (16a) in a notch (11) of the cylindrical body (5) associated to the fixed plate (1) and end (15a) of its arm (15) against a recess (22) of visor (3), so as to prevent the rotation of the visor only when it is in closed position, the unlocking of the visor being obtained by rotating said lid (2) in such a way as to engage said locking cylinder (16a) in another notch (12) of the hollow cylindrical body (5) and to disengage arm (15) from the visor.

2. The locking device according to claim 1, character-

ized in that the round opening (17) obtained in said visor (3) and rotating in touch with the external surface of said cylindrical body (5) has a profile formed by a circular length (18) and a greater radius length (19), said greater radius length (19) being provided with an open visor stop notch (21) and with a closed visor (3) stop notch (20), and with a recess (22) having the function of stable stop of said arm (15) protruding from the through-opening (14) of said cylindrical hollow body (5).

3. The locking device according to claim 1, characterized in that said discoidal lid (2) carrying said locking cylinder (16a) and said stop arm (15) is provided with a hand controlled external lever (2a), suitable to allow, by rotation of said lid in the two directions, the shifting of said locking cylinder (16a) from the position of lock of the visor in closed position to a position of open or closed visor without locking of the visor.
4. The locking device according to claim 1, characterized in that said lid (2) is revolvingly anchored to plate 1 by snap-release means integral with it, acting in correspondence of openings obtained in the internal cylindrical surface of the hollow body (5), and in that it then results to be centered thanks to a pin integral with said lid, engaged in a central hole obtained coaxially to the axis of said pin (6) connecting plate (1) to cap (7) of the helmet.
5. The locking device according to claim 1, characterized in that on the internal cylindrical surface of said hollow body (5) there is obtained, in a radially shifted position relatively to the two stop notches (11, 12) of the locking piston (16a), a further notch (13) suitable to allow the assembly of the locking device and the related plate on the visor, which plate is held still in closed position on the helmet cap.

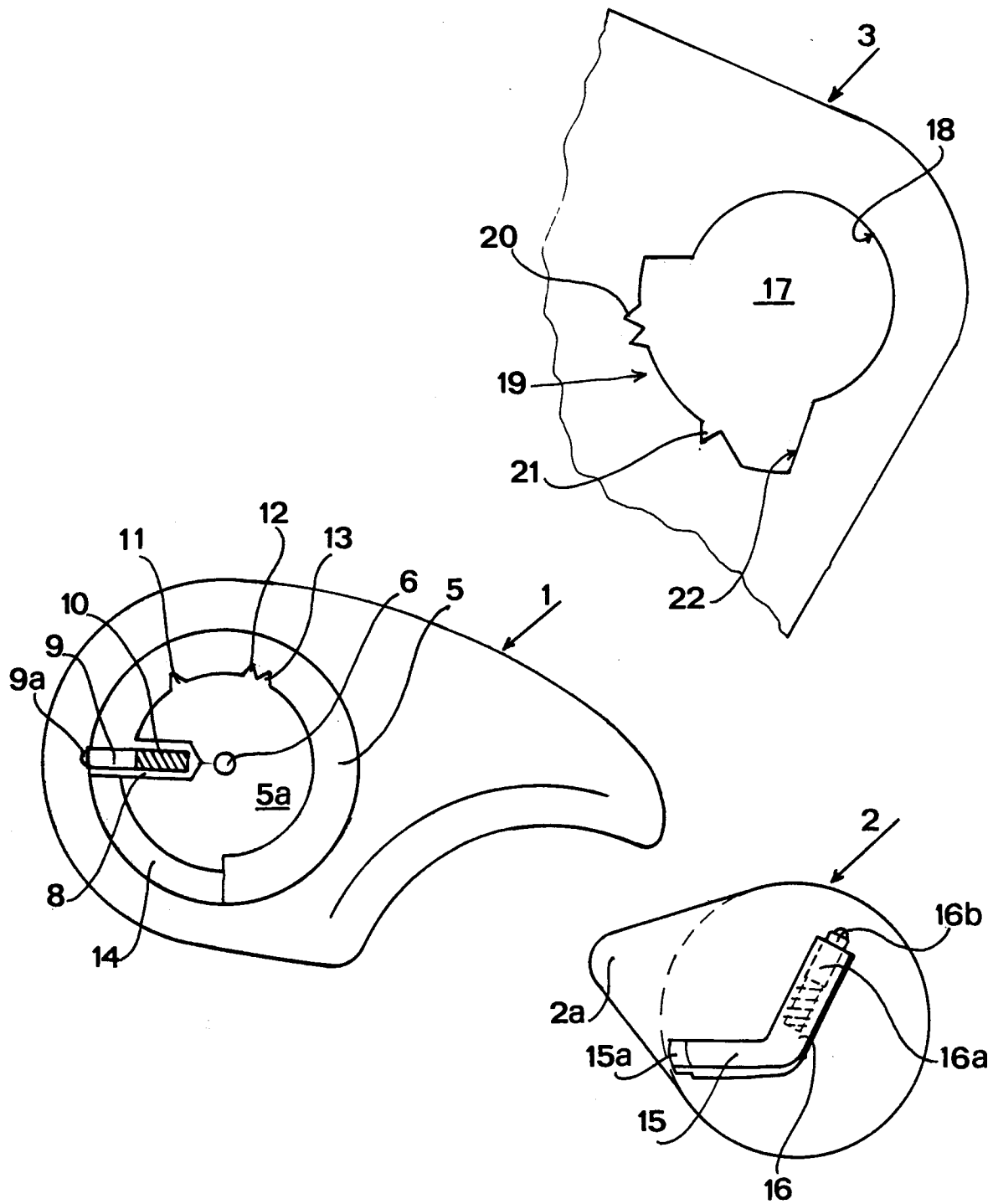


FIG.1

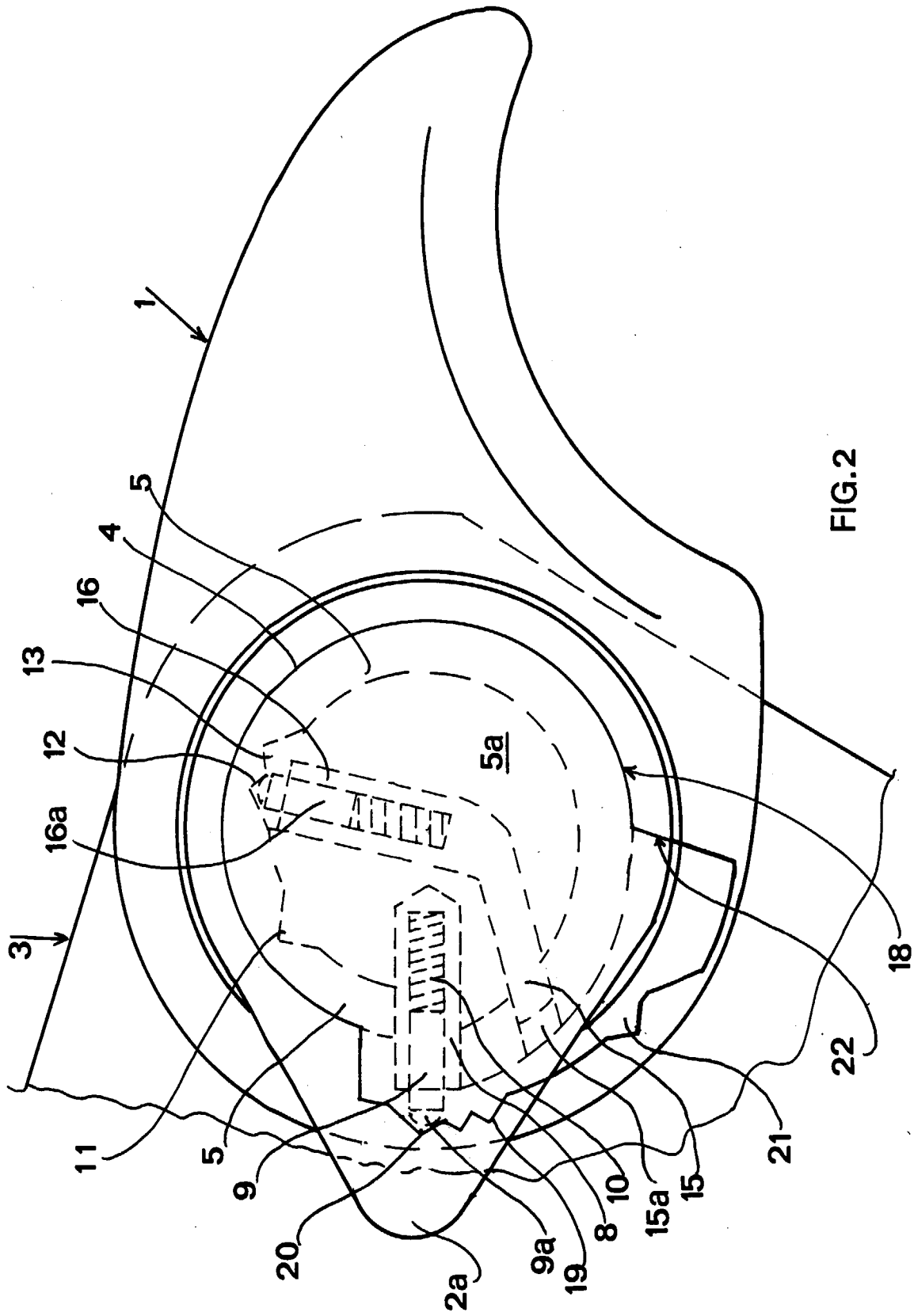


FIG. 2

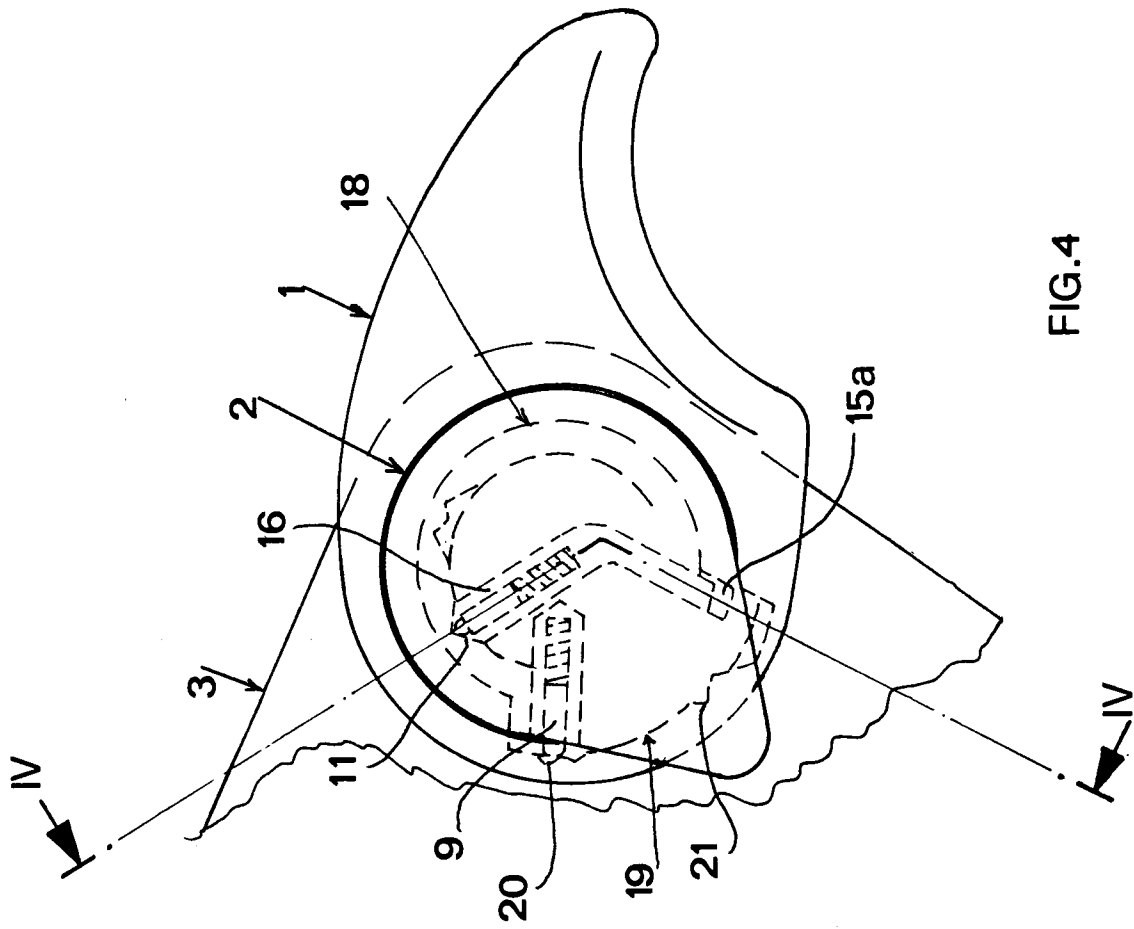


FIG. 4

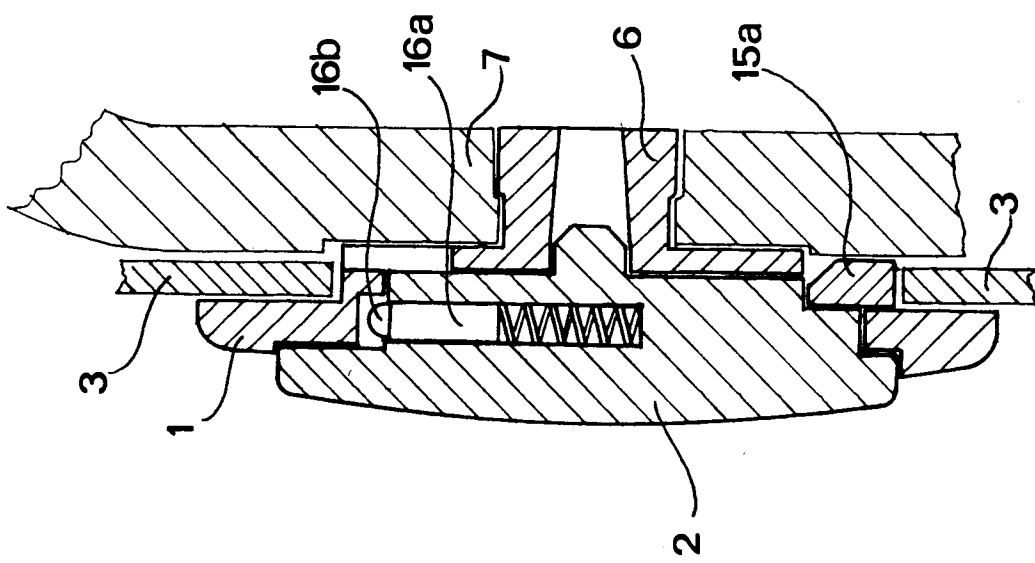


FIG. 3

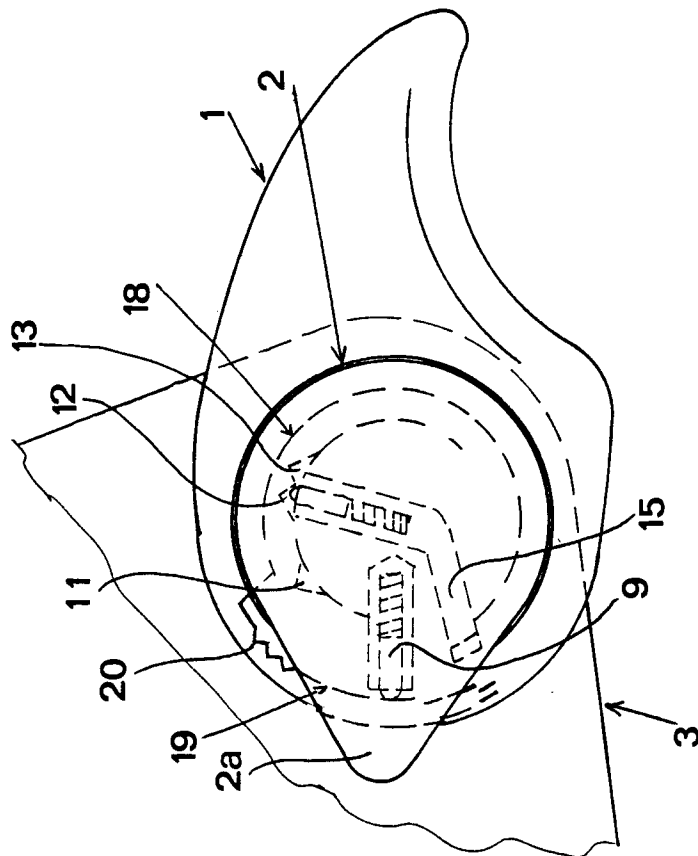


FIG. 5

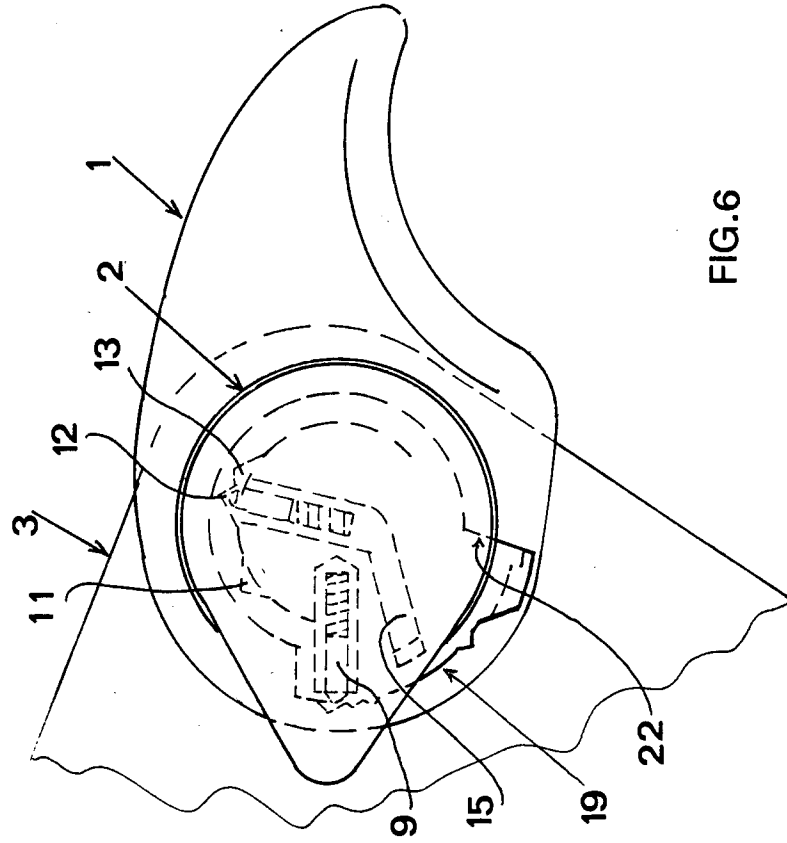


FIG. 6



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EUROPEAN SEARCH REPORT

Application Number
EP 95 83 0536

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.6)
A	FR-A-2 413 892 (C. LANDI) * the whole document *	1-5	A42B3/22
A	WO-A-95 20887 (F. MALENOTTI) * page 7, line 14 - page 9, line 12 * * claims 1,3,4,7; figures 1,2 *	1-5	
A	EP-A-0 628 261 (SEXTANT AVIONIQUE) * column 4, line 16 - column 5, line 12 * * claims 1-3,6-10; figures *	1	
A	EP-A-0 481 860 (SEXTANT AVIONIQUE) * abstract; figure 2 *	1	
A	DE-A-32 29 430 (NOLAN S.P.A.)		
A	GB-A-2 087 221 (NOLAN S.P.A.)		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6) A42B
Place of search THE HAGUE		Date of completion of the search 15 May 1996	Examiner Bourseau, A-M
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