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(54) **Device for hooking the visor of a helmet for motorcyclists and the like**

(57) A device for hooking the visor (14) of a helmet for motorcyclists and the like to a mechanism for moving the visor, said device comprising a visor (14), provided with guides (15-15a) translatablely engaged on the flanks (10a-10b) of a visor supporting means or table (10) and a hole or opening (14a) for a hooking element (16) translatable within an eyelid (11) obtained in the table, a slide (18) integral with table (10), provided with an eyelet (19), wherein a bush (21) translates, which is coaxially anchored to said hooking block (16), as well as a sheet-like spring (23) anchored to said slide (18) and in

touch with said bush (21), so as to exercise a pressure on bush (21) and therefore on block (16) such as to maintain said block engaged within opening (14a) of visor (14) and to be able to bend to allow, through the sliding of the visor on table (10) the automatic hooking of block (16) in eyelet (14a) of the visor. There is also provided a screw (24) engaged within said bush (21), suitable to lock the hooking element (16) to slide (18), when the visor is mounted, and to allow the adjustment of the visor position with a partly unscrewed screw.

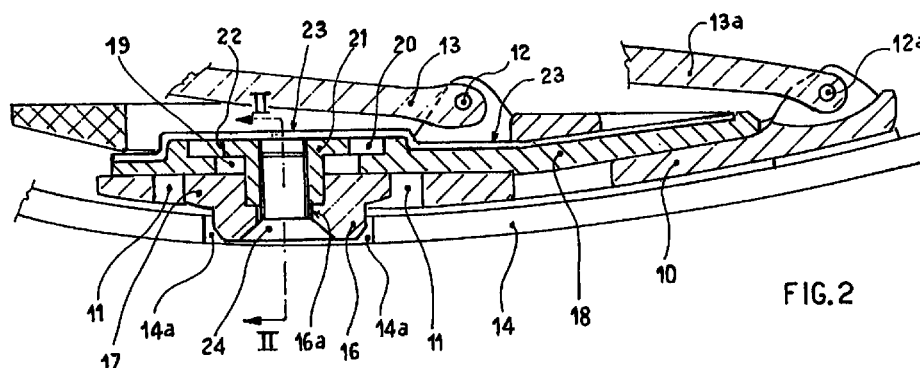


FIG. 2

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Description

[0001] The present invention relates to a device for hooking in an adjustable position a visor for helmets for motorcyclists and the like, to a special activating mechanism so provided as to maintain the visor, when it is in closed position, entirely embedded and flush with the external surface of the cap, in order to avoid discontinuities on the external surface of said cap.

[0002] As is known, at present the visors for safety helmets for motorcyclists and the like, and in particular the so-called "integral" helmets, are anchored on both sides of the helmet cap by means of pins integral with the cap and protruding therefrom; this hooking system involves in practice the drawback of having the visor cantilevering on the cap, both when it is in closed position on the porthole-aperture and when it is lifted, i.e. in open position.

[0003] In practice, these cap hooking systems involve some drawbacks, namely a discontinuity of the external surface of the cap, which involves alterations in the aerodynamic characteristics of the helmet, and also poorly agreeable aesthetic characteristics.

[0004] Besides, said known hooking systems require the disassembly of the visor in those cases when it is necessary to adjust its position with respect to the porthole-aperture, for instance when it is necessary to replace the usual gasket around said porthole-aperture because of wear or accidental breakdown.

[0005] Besides, said known hooking systems require the use of tools of various kind for the assembly and the disassembly of the visor from the opening mechanisms of the same.

[0006] In other cases, the disassembly of the visor is made without using tools, but in order to carry out the operation it is necessary to take off from the helmet some additional components (side plates or lids), snap-mounted on the helmet cap and which create discontinuities on the cap's external surface, which cover the side ends of the visor, under which there is realised, by suitable means, the hooking of the visor to the opening mechanisms of the same.

[0007] To obviate these drawbacks and disadvantages, it has already been proposed, for instance, a mechanical device able to allow to have the visor fully embedded in and flush with the helmet cap, so as to eliminate the surface discontinuities of the cap and to improve its aesthetic as well as its aerodynamic characteristics.

[0008] This device is the object of a co-pending application for invention patent, filed on behalf of the same applicant for the present patent application; in substance, it provides for a special mechanism which allows to open (and to close) the visor, beginning from a closed visor starting position with a closed visor embedded in the cap. Said mechanism comprises means for unlocking the visor from its closed position embedded in the cap, and for imparting said visor a movement of side

extraction and simultaneous advancing of the visor, until this comes out from the embedding, allowing in this way to rotate it upwards until a complete opening is achieved, possibly through various intermediate stop positions; afterwards, the visor is brought back by hand to a closed position, with the automatic recovery of the same in the position embedded in the cap.

[0009] In this particular case, the visor is hooked to an arched support referred to as a "table", which in the aforementioned co-pending patent application, automatically shifts outside the porthole-aperture of the helmet, so as to allow the visor to rotate upwards.

[0010] More details and clarifications on the structure of said mechanism object of the co-pending patent application, shall be clarified in the following for the only purpose of better stressing the structural and functional characteristics of the present invention.

[0011] Anyhow, from what has been expounded hereinabove, it is easy to understand that if the visor is hooked to said table in a stable manner, its possible replacement, for any reason whatever, involves the use of tools and long times for the correct re-positioning of the visor.

[0012] Therefore, object of the present invention is to realise, by exploiting preferably but not exclusively the presence of said table making part of the above described visor movement mechanism, a visor hooking device allowing to hook the visor without the help of special tools or qualified personnel.

[0013] Another object of the invention is to realise a visor hooking device allowing to adjust the visor position with regard to said table (or like support) in a quick, safe manner and without removing the visor from the helmet.

[0014] A further object of the invention is to realise a visor hooking device so designed and structured as to ensure a correct coupling of the visor against the usual gasket of the porthole-aperture, and therefore the sealing of said visor in its closed position.

[0015] These and still other objects, which will be more clearly stressed later on, are achieved by an adjustable hooking device of the visor of an integral helmet for motorcyclists and the like for hooking the visor to a visor moving mechanism of the type comprising means both for maintaining said visor, in its closed position, embedded in and flush with the cap, and for extracting the same from the embedding and for the opening upwards rotation, as well as visor supporting and hooking means constituted by a shaped element, substantially a table of a substantially quadrangular form, which hooking device comprises, according to the present invention:

- a visor provided with side guides, obtained on the internal face of the same and translatably engaged with the flanks protruding from the opposite longitudinal sides of said table, as well as an opening so shaped as to house in its inside a tubular hooking element, translatably mounted within an eyelet

obtained in said table;

- a slide, anchored on the internal face of said table for constraining said tubular visor hooking element translatable within the eyelet obtained in said table and provided with an eyelet or open cavity so shaped as to house in its inside a cylindrical bush coaxially anchored in the inside of said tubular hooking element, so as to be translatable in both directions and with a limited travel, together with said hooking element;
 - a sheet-spring or the like, anchored to said slide integral with the table and so positioned as to close the open cavity of said slide and to exercise on the free end of said bush a pressure sufficient to maintain said hooking element entirely inserted in the visor cavity;
- there being lastly provided a screw, engaged with a threading obtained in said bush, suitable to allow, when the visor is mounted, the stable locking of said bush with the slide and therefore the table, and after a partly unscrewing of said screw, the translation in both directions of the visor hooking element and the related bush, so as to allow the adjustment of the visor position with regard to the helmet and the subsequent stable mounting of the system through the tightening of said screw.

[0016] More particularly, said sheet-spring is so sized as to exercise a force on the hooking system such as to allow the disengagement of the tubular element of the visor hooking from the visor by means of a pressure axially exercised, towards the inside of the helmet, on said element until the latter is disengaged from the visor aperture, allowing in this way to disassemble the visor without using any tool.

[0017] In the same way, the strength of said spring acting on said locking system, constituted by said hooking element and said bush, is such as to bend towards the inside of the helmet during the translation of the visor on the table, until the visor aperture faces the hooking element, allowing in this manner the hooking element to translate towards the outside of the helmet, engaging said aperture and ensuring the locking of the visor.

[0018] Further characteristics and advantages of the present invention shall be highlighted by the following detailed description, made with reference to the attached drawings, solely given by way of non limiting indication, and wherein:

figure 1 shows, in schematic form and only by way of example, a mechanism of rotation of the visor object of a co-pending patent application, shown without the visor, to which the adjustable visor hooking device object of the present invention is applicable;

figure 2 show, in cross-section and on an enlarged scale, the visor hooking device object of the present

invention;

figure 3 shows a detail of the hooking device of figure 2, shown according to a section taken along the II-II line of figure 2, while

figures 4 and 5 show, respectively in plant and in V-V longitudinal section of figure 4, the table-like support of a known type utilised in the device object of the present invention as a basic element for the adjustable visor hooking.

[0019] With reference to the aforesaid figures, and in particular to figure 1, the mechanism of a known type shown therein and to which the visor adjustable hooking device is applicable, is substantially realised to allow the rotation of the visor, starting preferably from its entirely embedded closed position and flush with the cap; in the co-pending patent application there is said that said mechanism is constituted by a base plate 1 on which there is slidably mounted an external slide 2 opposite to pre-loaded springs acting on a bush 3 coaxially positioned with respect to a rivet 3a integral with slide 2; said springs maintain the external slide 2 pushed always towards the front part of the helmet; slide 2 is maintained in said position by a hand-activated release lever.

[0020] The mechanism also includes a second slide or internal slide 4 (only partly visible in figure 1) which, through a cam or niche integral with the same and in touch with bush 3 of the external slide 2, is dragged forwards together with said external slide. Besides, the internal slide 4 also translates in the inside of a rotary body provided with opposite flanks wherein grooved guides are obtained.

[0021] Following the forwards translation of the internal slide 4 with respect to the rotary body 5, by effect of the inclined guides obtained on the flanks of the rotary body 5, which engage pins protruding from the flanks of the connecting rods 6-7, said connecting rods undergo a translation due to their being riveted on the internal slide 4, and also a rotation by effect of their pins inserted in the grooved and inclined guides obtained on the flanks of the rotary body; the simultaneous translation and rotation of said connecting rods causes said connecting rods to take on a position inclined towards the inside, as shown in figure 1.

[0022] The shifting of the connecting rods is transferred to a support or table 10 through pins 9-9a, so that the table is brought to an advanced position with respect to the starting one, as is the visor (not shown in figure 1), which is caused to be anchored to said table. Therefore, the visor is now on the outside of the cap, out of the embedding and ready to be rotated upwards.

[0023] The mechanism as shortly described hereinabove is then completed by a release lever by a recovery lever and other means to allow the stable opening of the visor in several intermediate positions.

[0024] This being said, the device for hooking and adjusting the visor position, realised according to the present invention, utilises as a support for the visor said

table 10 protruding from the cap, as shown in figure 1, or it may utilise a like support provided by other like visor rotation mechanisms, even though they do not provide for a visor embedded in the helmet cap.

[0025] Therefore, the device object of the invention, illustrated in figures 2-5, is substantially constituted by a table 10 having a substantially rectangular known shape, provided with opposite protruding sides or flanks 10a-10b (figures 3-5) and with a wide eyelet or opening 11. Said table 10 is hinged in 12-12a to the connecting rods 13-13a of a visor rotation mechanism like the one shown in figure 1 by way of example.

[0026] On the external surface of said table 10 (figures 2, 3) there is translatablely mounted in both direction a conventional transparent visor 14, provided with an opening 14a; the translation is allowed by two opposite guides 15-15a (figure 3) slidably engaged against flanks 10a-10b of the table. Said opening or hole 14a of visor 14 is so sized as to house in its inside a cylindrical block 16 provided with an axial cavity 16a (figures 2-3); said block 16 has an edge 17 which allows it to freely translate within eyelet 11 obtained in table 10.

[0027] On the internal surface of said table 10 there is anchored in a stable manner a slide 18 having a first eyelet 19 in a position coaxial with eyelet 11, obtained in table 10, and also concentrically a second eyelet 20 having a greater size with respect to the size of the first eyelet 19. Eyelet 20 is open on the top.

[0028] The device includes also a bush 21 coaxially anchored in the inside of the cylindrical block 16 and provided with a peripheral edge 22, which allows it to translate within eyelet 20.

[0029] The cylindrical block 16 is fixed at its end on the outside of table 10 by a sheet-like spring or the like 23, anchored at its opposite ends to the hooking slide 18; said spring rests on the end, internal relatively to the helmet, of bush 21, so as to impart stability to the assembly constituted by block 16 and said bush 21, integral with the block, while it is able to bend towards the inside of the helmet, until it brings the ends of block 16 flush with the external surface of the table, by means of a pressure exercised on said block.

[0030] Bush 21 is threaded in the inside so as to house a flathead screw 24 (fig. 2) intended for locking the hooking element 16 against slide 18, so as to have the screw head embedded in and flush with said element 16 and therefore with the visor and also the cap, in the case of a mechanism having an embedded visor when it is in closed position.

[0031] Two like hooking devices structured as shown in figure 2 are utilised for hooking the visor to both sides of the cap.

[0032] In practice, visor 14 is assembled on the hooking device of figure 2, by causing the visor to slide on table 10 thanks to guides 15 obtained on the visor (fig. 3), which translatablely couple with flanks 10a-10b of table 10.

[0033] During the visor assembly operation, the

hooking block 16 may yield towards the inside of the helmet, overcoming the strength of the sheet-like spring 23 as it is integral with the bush 21, which is directly in touch with said spring.

[0034] When, as the visor slides on table 10, the opening 14a of the visor faces the hooking block 16, the latter snaps towards the outside of the helmet, engaging opening 14a of the visor, ensuring its stable locking.

[0035] At the start of the visor assembly stage, the hooking block 16 is mounted in an intermediate position with respect to its translation eyelet 11 on table 10 by tightening screw 24; then, by unscrewing screw 24, it is possible and easy to cause the hooking block 16 to translate forwards and backwards with respect to slide 18 thanks to eyelet 20 realised in the latter and wherein bush 21 integral with the hooking block slides.

[0036] Therefore, by exploiting the possibility of causing the visor hooking block 16 to translate, it is possible, when the visor is mounted, to adjust the position of said visor with respect to the helmet and afterwards, having reached the correct position, to proceed to tightening the locking screw 24.

[0037] To carry out the disassembly of the visor, it suffices to press the hooking block 16 towards the inside of the helmet, until spring 23 is bent to such an extent as to allow the disengagement of the hooking block 16 of opening 14a of the visor. Now, by pushing the visor towards the front part of the helmet, it is possible to cause the former to slide with respect to table 10, until its guides 15-15a (fig. 3) are no longer coupled with flanks 10a-10b of the table.

[0038] In the practice, structurally and functionally equivalent modifications and variants may be obviously introduced, without departing from the protection scope of the invention as described hereinabove and claimed hereinafter; in fact, the device object of the invention may be applied also to helmets having a not embedded visor, allowing them the possibility of adjusting the position of the visor.

Claims

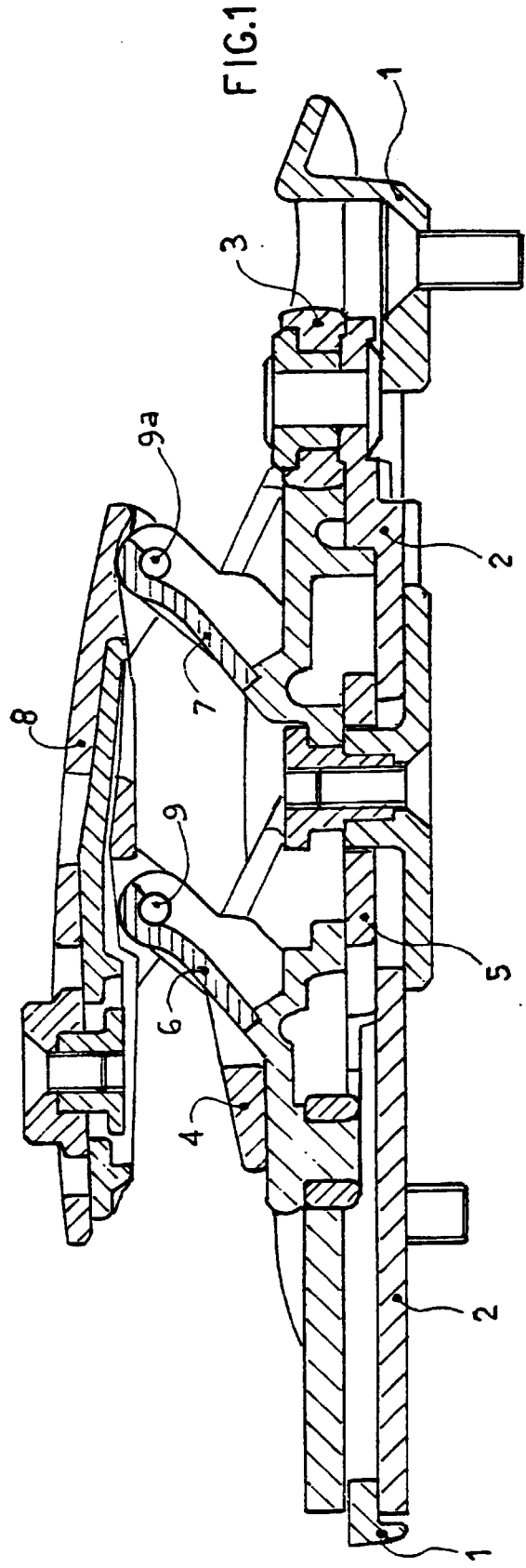
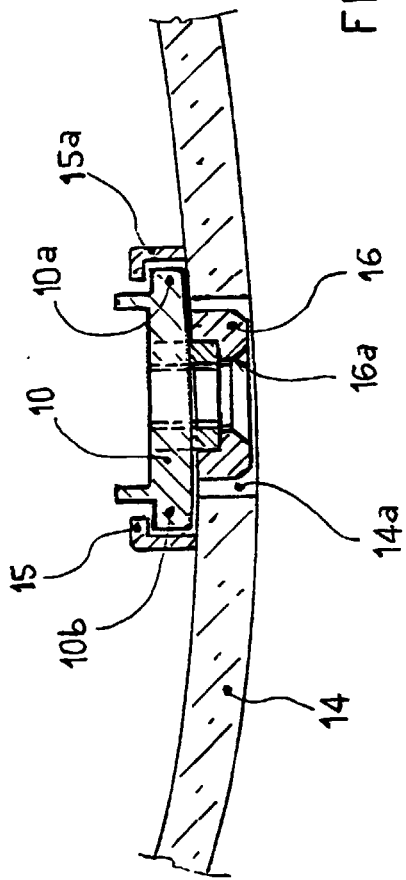
1. A device for adjustably hooking the visor of an integral helmet for motorcyclists and the like to a movement mechanism for opening and closing the visor, of the type providing means both for maintaining said visor, in its closed position, embedded in and flush with the cap, and for extracting the same from the embedding and for the opening upwards rotation, as well as means for supporting and hooking visor (14) constituted by a shaped element, substantially a table (10) of a substantially quadrangular form, which hooking device comprises according to the present invention:
 - a visor (14) provided with side guides (15-15a), obtained on the internal face of the same and translatablely engaged with flanks (10-10a) pro-

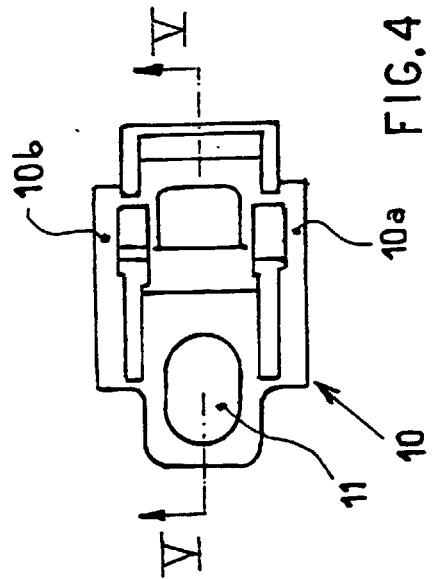
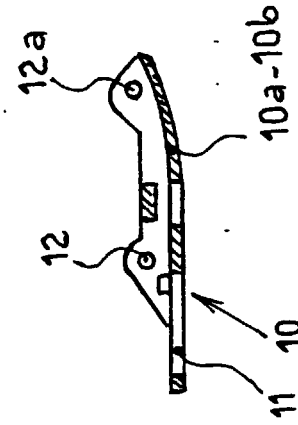
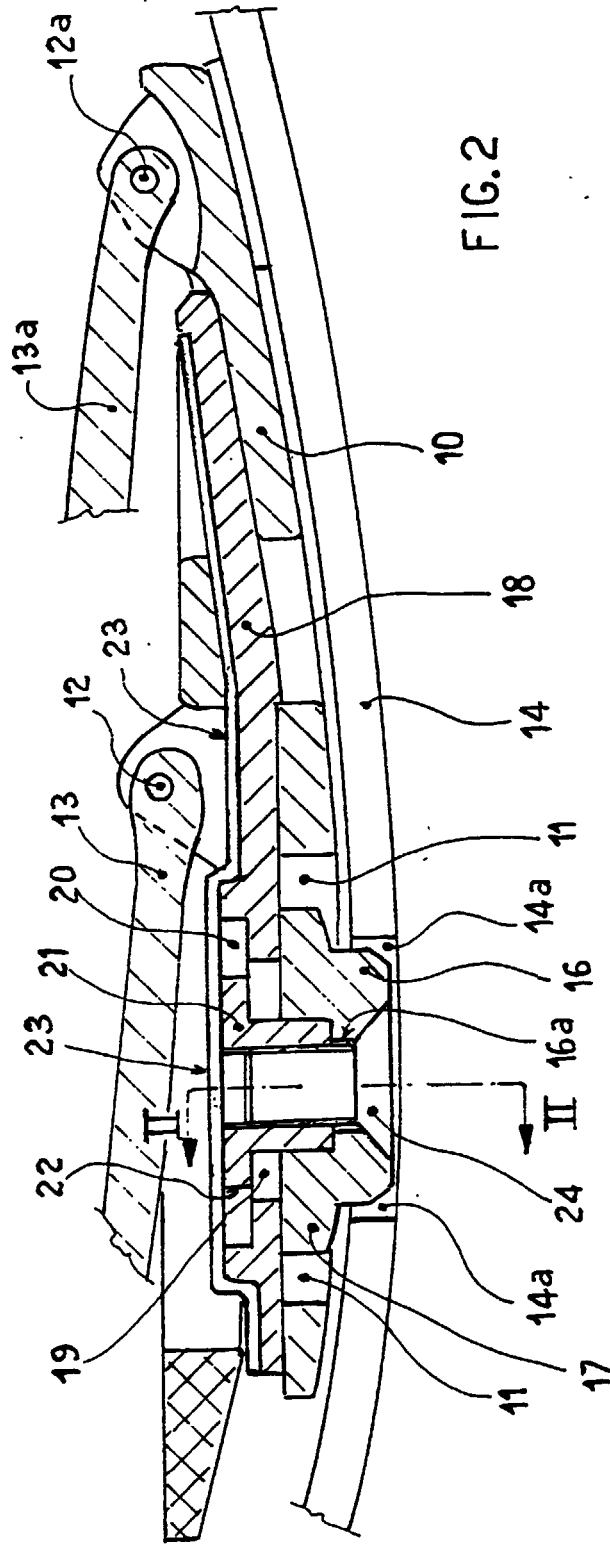
truding from the opposite longitudinal sides of said table (10), as well as with an opening (14a) so shaped as to house in its inside a tubular hooking element (16), translatable mounted within an eyelet (11) obtained in said table;

- a slide (18), anchored on the internal face of said table (10) for constraining said tubular visor hooking element (16) translatable within eyelet (11) obtained in said table (10) and provided with an eyelet or open cavity (19) so shaped as to house in its inside a cylindrical bush (21) coaxially anchored in the inside of said tubular hooking element (16), so as to be translatable in both directions and with a limited travel, together with said hooking element;
 - a sheet-spring (23) or the like, anchored to said slide (18) integral with table (10) and so positioned as to close said open cavity (19) of said bush (21) a pressure sufficient to maintain said hooking element (16) entirely inserted in the visor (14) cavity (14a);
- there being lastly provided a screw (24), engaged with a threading obtained in said bush (21), suitable to allow, when the visor is mounted, the stable locking of said bush with slide (18) and therefore table (10), and after a partly unscrewing of said screw (24), the translation in both directions of the visor hooking element (16) and the related bush (21), so as to allow the adjustment of the visor (14) position with regard to the helmet and the subsequent stable mounting of the system through the tightening of said screw (24).

ing screw (24) has the same conic form suitable to allow the embedding into the flaring of the hooking block (16), when the screw is locked.

2. The hooking device according to claim 1, characterised in that said sheet-spring (23) is so sized as to exercise a force on the hooking system (16-21) such as to allow the disengagement of the tubular hooking element (16) of the visor from the visor, by a pressure axially exercised towards the inside of the helmet on said tubular element until it disengages from the hole or opening (14a) of visor (14) allowing to disassemble the visor (14) without using tools.
3. The hooking device according to claim 1, characterised in that said sheet-spring (23) is anchored to slide (18) so as to bend towards the inside of the helmet until opening (14a) of the visor faces the hooking element (16), allowing in this manner the latter to translate towards the outside of the helmet, engaging said opening (14a) of the visor, ensuring its stable locking.
4. The hooking device according to one or more of the preceding claims, characterised in that said tighten-







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EUROPEAN SEARCH REPORT

Application Number
EP 99 83 0325

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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 28 October 1999	Examiner Bourseau, A-M
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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