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(54) Helmet comprising a visor and a mechanism to remove the visor

(57) A helmet (10) comprising a visor (11) and a coupling mechanism (13) to pivot the visor (11) at the sides of the helmet (10) in a releasable manner, and the mechanism (13) including elements which are adapted to clutch the visor (11) and to detach it by simply controlling said elements, is characterized in that the mechanism (13) on each side of the helmet (10) includes a seat (15) in which a complementary element (16) is inserted protruding from a pivoting axis (12) of the visor (11), the mechanism (13) further includes small fins (17) which protrude from the mechanism seat edge toward the mechanism seat centre and engage with the complementary element (16) in order to avoid it to move away from the seat (15), and the mechanism (13) includes a manually manoeuvrable control (23) which is adapted to move the small fins (17) backward to release the complementary element (16) in order to allow the detaching of the visor (11) from the helmet (10).

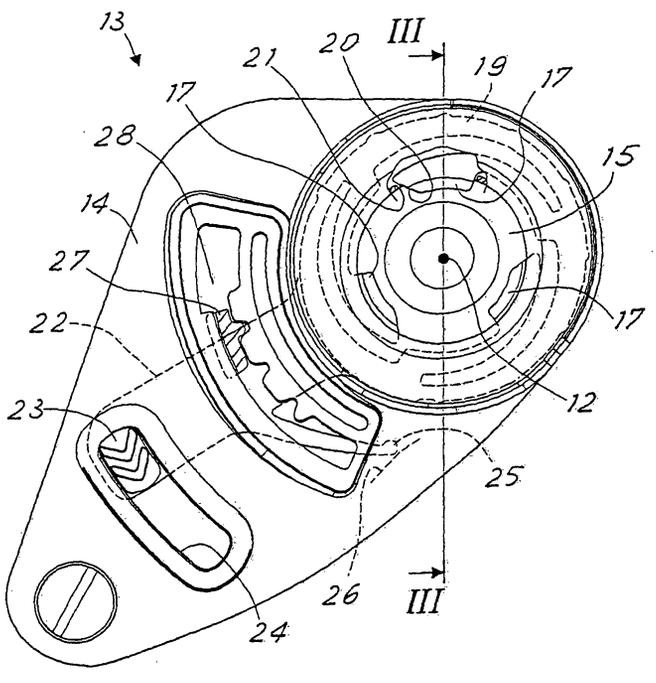

Fig. 2

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Description

[0001] The invention relates to a helmet comprising a releasable visor and a coupling mechanism for enabling a user to manually control the detaching of the visor.

[0002] In prior art, helmets are well known having the visor pivoted at the sides of the helmet in order to be raisable. Helmets having the visor pivoted and including a coupling mechanism to allow removing the visor are also well known. For example, it is quite common to pivot the visor with a big centrally located screw which holds the visor. Such a system particularly assures against an accidental detachment of the visor; however, it does not allow replacing or substituting the visor quickly when use is made of the helmet, in particular, in case the visor shall be replaced while wearing the helmet on the head.

[0003] There further are so called quick release systems including snap fasteners. These systems allow for mounting and detaching the visor quickly but are not very safe because of accidental detachment of the visor due to external factors, such as wind, bumps or impacts; whereas their use is very easy, in particular, when the helmet is used for sport off-road motor-cycling or similar activities.

[0004] It is an object of the present invention to remedy the above mentioned deficiencies and to provide a helmet including a visor mounting and detaching system which can be manipulated quickly and easily but which is at the same time safe against accidental detachment of the visor.

[0005] According to the invention, this object is achieved by a helmet comprising a visor which is provided with a mechanism to pivot the visor at the sides of the helmet in a releasable manner. The mechanism is equipped with elements which permit to clutch the visor and to detach it by simply controlling said elements. The features of the mechanism are that the mechanism on each side of the helmet has: a seat at which a complementary element is inserted protruding from the visor in correspondence of the pivoting axis; small fins that protrude from the mechanism seat edge toward the mechanism seat centre and engage with the visor complementary element in order to avoid it to move from the seat; a manually manoeuvrable control to move the small fins backward to release the complementary element in order to allow the detaching of the visor from the helmet.

[0006] In order to explain better the innovative principles of the present invention and its advantages with regard to the prior art, the following is a description, with the aid of the enclosed schematic drawings, of a possible implementation applying such principles. In the drawings:

- Fig. 1 represents a side view of a helmet including a visor coupling mechanism according to the invention;
- Fig. 2 represents an enlarged view of the coupling mechanism in a hooked position;
- Fig. 3 represents a partial section view of the mechanism, taken along line III-III of Fig. 2;
- Fig. 4 represents an enlarged view of the coupling mechanism in a release position; and
- Fig. 5 represents a partial section view of the mechanism, taken along line IV-IV of Fig. 4.

[0007] With reference to the Figures, in Fig. 1 there is represented, marked with reference sign 10, a helmet according to the invention. The helmet 10 (for example, but not necessarily, a full face helmet) includes a visor 11 pivoted to both sides of the helmet 10 on an pivoting axis 12 in order to be able to move between a lowered position (marked with the dashed line) and a raised position (marked with a full line). On the sides of the helmet 10, near the pivots or pivoting axis 12 of the visor 11, there further are devices 13 (of a so called visor coupling mechanism) which allow the controlled detaching of the visor 11.

[0008] The Figures show the visor coupling mechanism on only one side of the helmet 10, since the other side is specular to this one.

[0009] The device 13 comprise a support plate 14 which includes a seat 15 (in this case, but not necessarily, cylindrical, aligned with the rotation or pivoting axis 12) in which a complementary element or button 16 is inserted which projects through a hole in the visor 11 from the inner side of the visor 11 in correspondence with the visor pivoting axis 12.

[0010] As can be easily seen in Figures 2 and 3, holding fins 17 (advantageously three placed at angular distances of approximately 120° around the rotation or pivoting axis 12) protrude toward the mechanism seat centre from the mechanism seat edge to engage with the visor complementary element 16 (provided with a suitable undercut edge 18) to prevent it to move away from the seat 15. The fins 17 and the button edge or edge of the complementary elements 16 are tapered, so that a simple pressure or push of the button toward the seat centre causes the fins 17 to yield until they return automatically into the clutching position of Fig. 3.

[0011] This way the button 16 becomes or provides the pivoting axis 12 for the rotation of the visor 11 between said lowered and raised position, firmly holding, at the same time, the visor 11 to the helmet 10.

[0012] For the release, device 13 can be manually operated which draws the fins 17 back from the seat 15. When the device is operated the fins 17 radially draw back from the seat 15 and release the complementary element 16 allowing detaching the visor 11 from the helmet 10.

[0013] Conveniently, the device 13 comprises a ring element 19 placed on the back of plate 14 to encircle

the seat 15; this ring element 19 gives elastic support to the fins 17 for their radial movement. Each fin 17 includes a cam 20 which, by rotation of the ring element 19 (in anti-clockwise direction in Fig. 2), slides on the edge of a slot 21 in the side wall of the seat 15. In this way, each fin 17 is forced to draw back from the seat 15, as can be easily seen in Figures 4 and 5. When released from the constraint, the button 16 can get out of the seat 15, as shown in Fig. 5.

[0014] A lever 22 projects from the ring element 19; this lever 22 includes at one end a slider 23 which appears from or in a slot 24. This slot 24 is provided in the plate 14. By moving with a finger the slider 23 from the position of Fig. 2 to the position of Fig. 4, the ring element 19 rotates and the visor 11 is released. The movement of the slider 23 is made against an elastic strength or force which can be produced or generated only by the elasticity of the fins 17 which draw back. To make the spring-back or back movement safer, there is an elastic finger 25 protruding from the lever 22 which leans against a striker surface 26 on the inner face of the plate 14 conveniently producing an elastic spring-back force or strength.

[0015] Conveniently, the ring element 19, the fins 17, the lever 22 and the finger 25 are moulded in one piece of plastic only having the appropriate mechanical features.

[0016] Further preferred, the visor 11 includes on its inner face, near to the pivot or pivoting axis 12, an L-shaped tooth 27 which engages into a slot 28 in the plate 14. When the visor 11 is completely raised, the tooth 27 reaches a larger area 29 in the slot 28 in such a manner that the tooth 27 can come out of the slot 28 (see Fig. 4). The tooth 27 further provides a rounded protuberance 30 which resiliently engages into the notches 31 of the slot 28 in order to allow the visor 11 to be raised at different levels. To allow a elastic movement between the various positions, the side of the slot 28 with the notches 31 is made like a flat spring or leaf spring which is engaged at the ends.

[0017] At this point, it is clear how the purpose of the invention has been reached, providing an helmet 10 with a visor coupling mechanism 13 which is very safe but at the same time easy to engage with a simple pressure or pressing movement of the two buttons 16 in their respective side seats 15 and easy to disengage by simply controlling the two side sliders 23. Thus, an accidental detaching of the visor 11 from the helmet 10 is completely avoided even in case of strong impacts and other external strains that may occur while using the helmet 10.

[0018] Conveniently, the coupling mechanism 13 and, in particular, the slider 23, is protected by the visor 11 itself that covers it completely when in lowered position.

[0019] Off course, the above description of an implementation applying the innovative principles of the present invention is only for the purpose of explaining better such innovative principles. For example, the helmet 10 can be of any shape and both jet or full face.

Claims

1. A helmet (10) comprising a visor (11) and a coupling mechanism (13) to pivot the visor (11) at the sides of the helmet (10) in a releasable manner, the mechanism (13) including elements which are adapted to clutch the visor (11) and to detach it by simply controlling said elements,
characterized in that the mechanism (13) on each side of the helmet (10) includes a seat (15) at which a complementary element (16) is inserted protruding from the visor (11) in correspondence of a pivoting axis (12) of the visor (11), the mechanism (13) further includes small fins (17) which protrude from the mechanism seat edge toward the mechanism seat centre and engage with the complementary element (16) in order to avoid it to move away from the seat (15), and the mechanism (13) includes a manually manoeuvrable control (23) which is adapted to move the small fins (17) backward to release the complementary element (16) in order to allow the detaching of the visor (11) from the helmet (10).

2. The helmet according to claim 1,
characterised in that the complementary element (16) is rotatable in the seat (15) to become the pivoting axis (12) for the rotation of the visor (11) between a lowered position and a raised position.

3. The helmet according to claim 1 or 2,
characterised in that the fins (17) are adapted to be drawn back by controlling a slider (23) which is movable against an elastic force towards a release position.

4. The helmet according to claim 3,
characterised in that the fins (17) protrude toward the centre of a ring element (19) which rotates around the seat (15) and is, in particular, movable by said slider (23), each fin (17) having a cam (20) which is slideable on the edge of a slot (21) in the side wall of said seat (15) and which can be drawn back by a controlled rotation of the ring element (19).

5. The helmet according to claim 4,
characterised in that the slider (23) is connected to the ring element (19) via a lever (22) projecting from the ring element (19).

6. The helmet according to claim 5,
characterised in that the slider (23) is pushed elastically into the hooking position by means of an elastic finger (25) protruding from the lever (22).

7. The helmet according to claim 5 or 6,
characterised in that the ring element (19) and the lever (22) are covered by a plate (14) into which, in

particular, said seat (15) has been formed, the slider (23) appearing through a slot (24) which is provided in said plate (14).

8. The helmet according to one of claims 1 to 7, **characterised in that** there are three fins (17) being placed at an angular distance of 120° around said seat (15).

9. The helmet according to one of claims 1 to 8, **characterised in that** the visor (11) includes, near the pivoting axis (12) for the rotation of the visor (11), a tooth (27) which engages into a slot (28) to move between a raised and lowered position.

10. The helmet according to claim 9, **characterised in that** the slot (28) includes notches (31) at which the tooth (27) engages to raise the visor (11) at different levels.

11. The helmet according to claim 9 or 10, **characterised in that** the tooth (27) can be disengaged from the slot (28) when the visor (11) is raised to the maximum or uppermost position.

12. The helmet according to claim 11, **characterised in that** when the visor (11) is raised to the maximum or uppermost position the tooth (27) is in an area (29) of the slot (28) which is larger to allow the disengagement of the tooth (27).

13. The helmet according to claim 2, **characterised in that** when the visor (11) is lowered it covers the coupling mechanism (13).

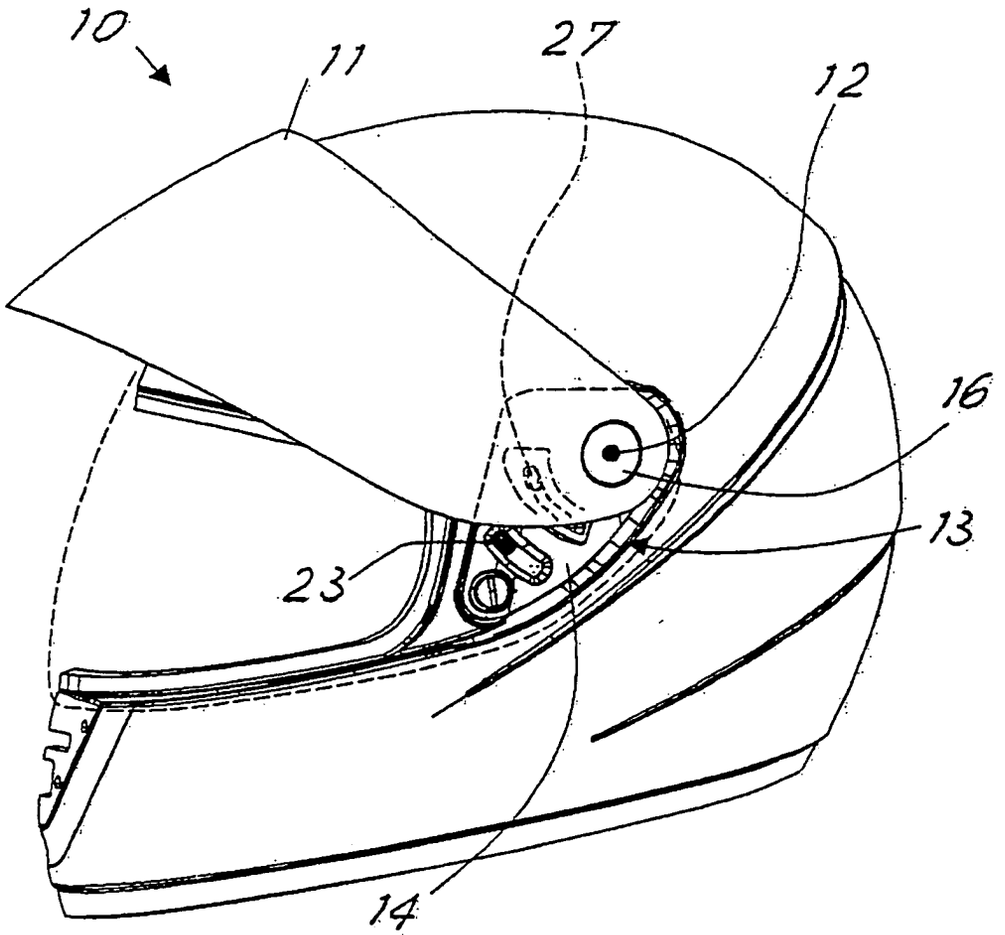

Fig. 1

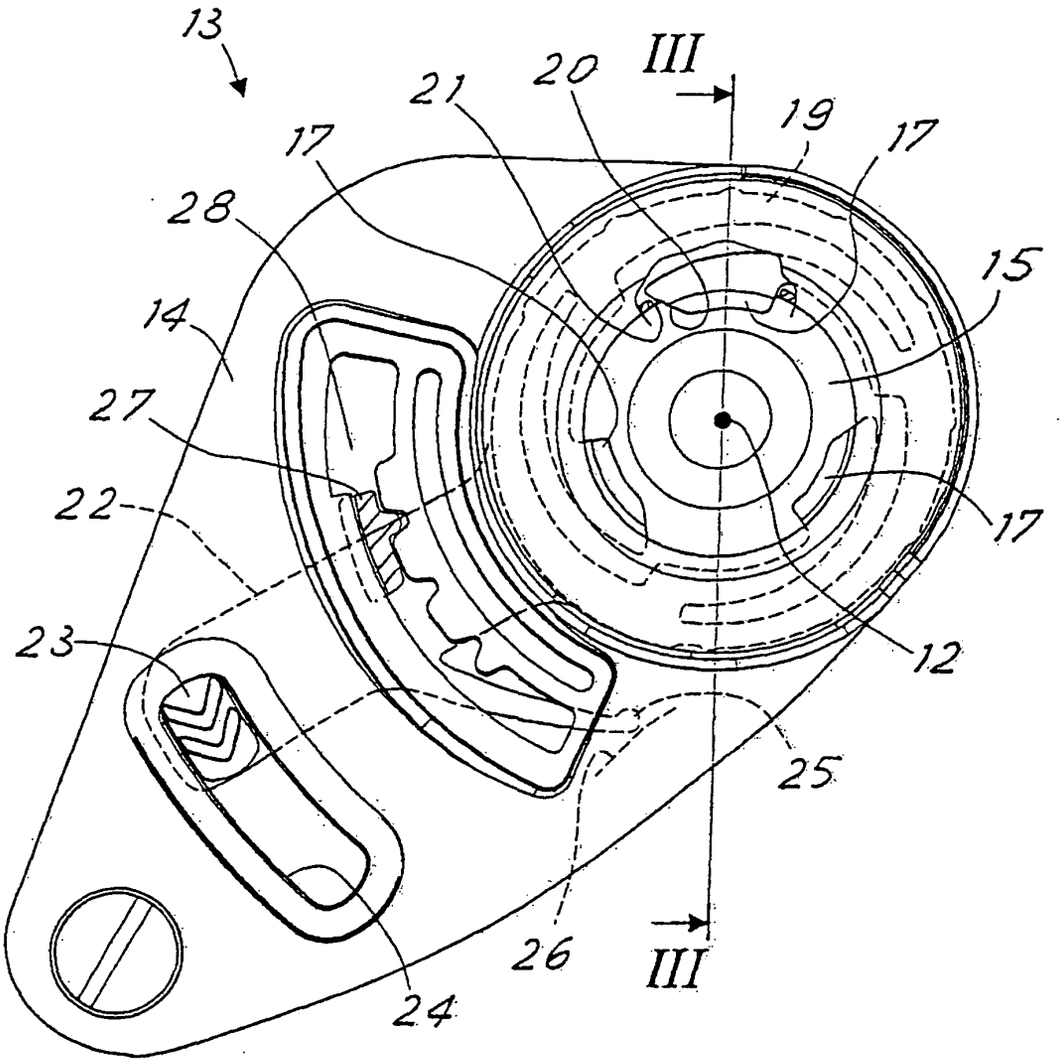
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Fig. 2

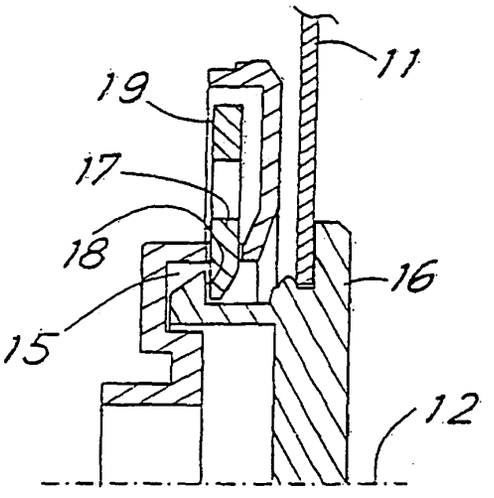
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Fig. 3

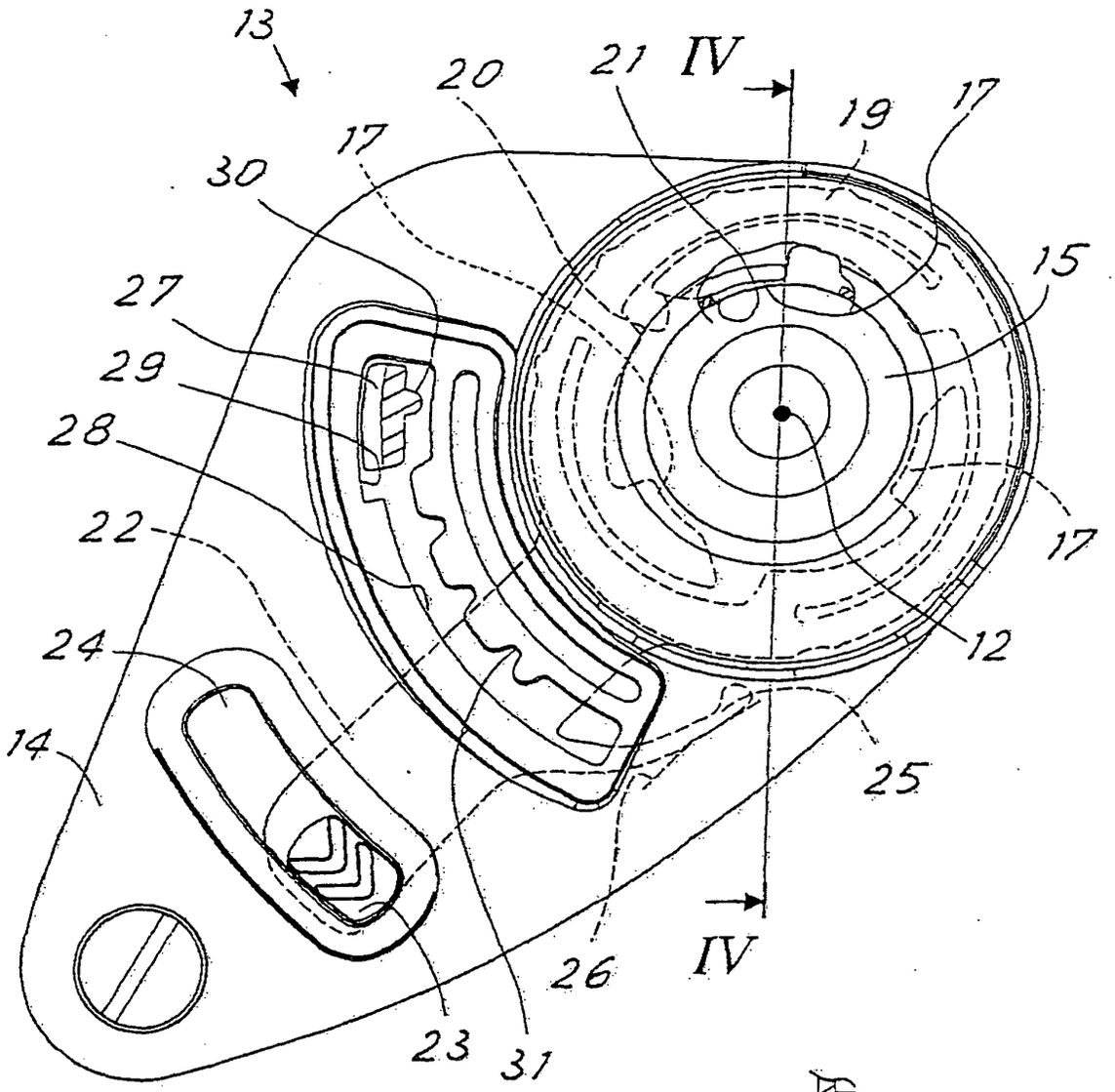
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Fig. 4

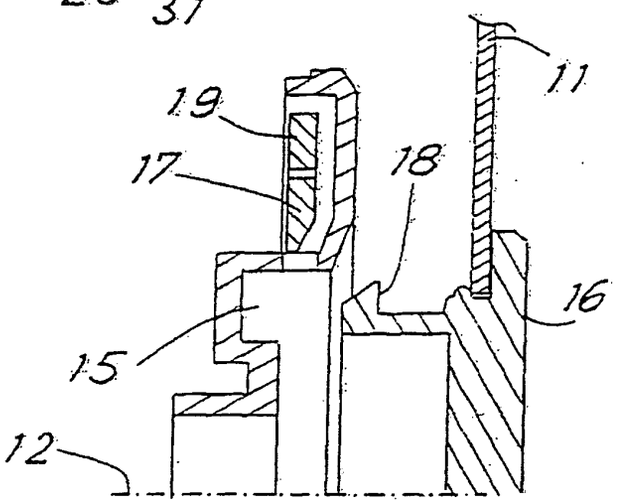
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Fig. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 05 00 8687

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	2 August 2005	Hannam, M

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