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(54) **A system to attach a transparent visor onto a helmet**

(57) This device includes two support plates (3) fixed onto the sides of the helmet (2), and have two openings (4) to introduce the pivots (5) located on the internal face of the transparent visor (1); devices to hold the pivots (5), which can turn within the openings (4) of

the support plates (3), and devices to hold the visor (1) at the lower or upper position; the pivots (5) with a cylindrical section and its side opening (51), the free end of which aligns with a rim (52), orientated towards the inside of the pivot; this pivot (5) having an inside diameter smaller than the cylindrical section.

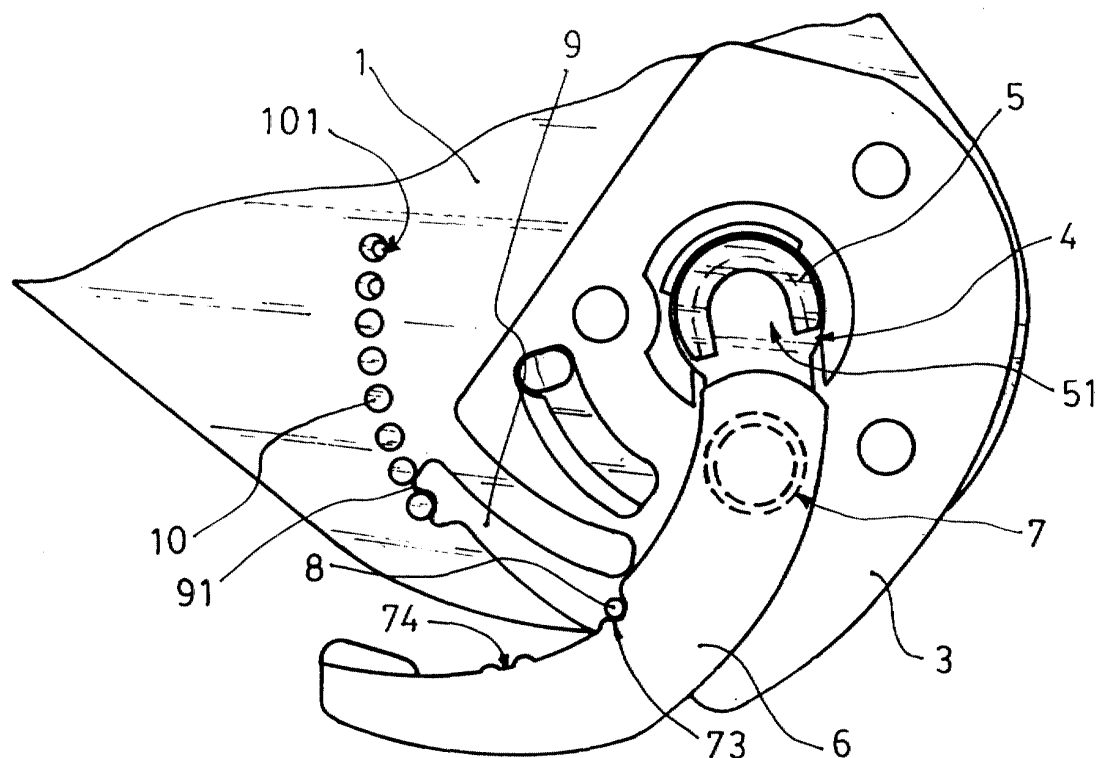


Fig. 2

Description

THE PURPOSE OF THE INVENTION

[0001] As is suggested by the title, this invention relates to a system to attach a transparent visor onto a crash helmet, of the kind which is most commonly used in motorcycling.

GENERAL BACKGROUND

[0002] Presently, there are various types of protective helmets for motorists on the market, which usually incorporate a clear visor to cover the face. The purpose of the visor is to provide protection from the wind, impact from flying insects, dust, and other external bodies.

[0003] The visor is generally fixed onto both sides of the helmet in such a way that it can be lowered for use, or raised when it is not required.

[0004] In addition, the helmet and visor design normally allows the user to position the visor at different positions between fully open and fully closed.

[0005] One of the problems with these helmets is the difficulty of removing the visor to clean or replace it. In many cases, this operation requires the use of tools, and dismantling other parts of the helmet, such as the chin guard, when this is also retractable.

[0006] This problem can be partly resolved by the European Patent EPO471906. In this design, the helmet incorporates side plates with cylindrical openings to insert the cylindrical pivots, which are situated on the sides of the visor. When duly out of alignment, rims fit over to allow the pivots to be introduced sideways into the openings.

[0007] In order to hold each pivot securely and to allow the visor to be rotated into position, from fully or partially open to closed, in this invention the cylindrical opening between the tabs on the arm can move towards the centre of the visor through the action of a spring. An additional part is therefore necessary to hold the visor in place.

[0008] In this design, each pivot is guided over the outer surface and into the openings in the side plates. The rims in the hole and the aforementioned arm stop the visor pivots from coming loose.

DESCRIPTION OF THE INVENTION

[0009] This device, which holds the transparent visor on the helmet as explained above, includes the two support plates fixed onto the sides of the helmet. There are openings in these plates, into which the pivots located on the inside sides of the visor are placed. A device inside the opening in each plate holds the pivot in place, and also allows for rotation. The visor can therefore be raised or lowered by a system which is designed to simplify visor assembly, which pushes aside the springs acting on the devices holding them in place, and permits

the pivots to turn in a system that holds them securely in the assembly position.

[0010] In this invention, the visor pivot design consists of a cylindrical section with a side opening, the free end connects with a locating rim on the inside of the pivot system, with a smaller internal diameter than the cylindrical section.

[0011] The openings within the support plates to locate the visor pivots into the pivot system are in the form of long cylindrical slots. The width of the slots is less than the diameter of the aforementioned cylindrical configuration. When the visor is either fixed in place or removed, the slot guides the pivot as it moves between the two end positions.

[0012] The cylindrical arrangement of the openings in the support plates permits the visor pivots to be introduced perpendicularly, without the need to hold the visor sideways, as with previously mentioned systems.

[0013] The system to hold the pivots in place, and thus attach the visor to the helmet, comprises sliding parts mounted between the support plates and the outer surface of the helmet.

[0014] These sliding parts, which are located on the outer side face, near the back, have cylindrical protrusions, with an initially smaller diameter in cross-section, and end with a larger diameter.

[0015] According to the design of the invention, these cylindrical protrusions are used to guide the sliding parts over the slots located in the support plates whilst moving between the two end positions to mount or remove the visor.

[0016] The outside diameters of the initial and end cross-sections of the aforementioned protrusions are the same or slightly smaller than the inside diameters of the cylindrical section and the visor pivot rims. This allows these protrusions to be inserted within them, and act as a turning axis when the visor is mounted.

[0017] In order to hold the sliding parts in either of the two end positions, to mount or release the visor, without the need for springs or additional parts, these parts have two separate grooves on the same side in which a stub in the corresponding support plate can be located. The location of a stub in either of the grooves allows the sliding part to be held at the corresponding end position until it is manually moved to the other extreme.

[0018] Inside the visor there are some cylindrical stubs, which act against the tabs of a flexible arm fixed on the support plates. This allows the visor to be held firmly in various positions, from closed to fully open.

[0019] Two of the end stubs have some grooves on the side facing the flexible arm, to locate the end tabs of the arm. This permits the visor to be held open at the minimum position, which is sufficient to stop the visor from misting up on the inside.

DESCRIPTION OF THE FIGURES

[0020] To complement this description, and with the

aim of making it easier to understand the theory behind the invention, this description is accompanied by a set of drawings, in which the following details have been fully illustrated:

- Figure 1 shows a profile of a helmet with the mounting device of the invention in position; the outline of the visor is shown by a dashed line.
- Figure 2 shows an internal side view of one of the support sections. The pivot corresponding to one side of the visor can be seen introduced into the cylindrical opening of the plate, and also the sliding part in the end position to release the visor.
- Figure 3 shows a similar view to the previous one. Here, the visor is held in the assembly position by the sliding part, and it is slightly lowered. In this figure, a section of the sliding part has been omitted to enable the side protrusion to be observed inside the visor pivot, acting as a turning axis.
- Figure 4 is section A-A taken from the previous figure.
- Figure 5 shows an elevation of one of the sliding parts, and section B-B taken from it.
- Figure 6 shows a partial elevation of one side of the transparent visor.
- Figure 7 corresponds to section C-C of the visor, from figure 6.
- Figure 8 corresponds to section D-D of the visor, from figure 6.
- Figure 9 shows a partial detail of the visor mounted on one of the support plates, in which the visor can be seen held open at the minimum position.

PREFERENTIAL ASSEMBLY OF THE INVENTION

[0021] As can be seen from the figures, the system to mount the visor (1) onto the helmet (2) incorporates two support plates (3), fixed onto the sides of the helmet (2), which contain openings (4) into which the pivots are inserted (5) for the visor (1).

[0022] The pivots (5) consist of a cylindrical section and a side opening (51), the free end of which has a rim (52) orientated towards the centre of the pivot, and which has a smaller inside diameter than the aforementioned cylindrical section of the pivot (5).

[0023] The openings (4) in the support plates (3) are cylindrical, and extend sideways to form a slot (41).

[0024] As can be observed in Figure 2, the visor (1) is fixed onto the support plates (3) by inserting the each pivot (5) into the opening of the cylindrical system (4),

such that the side opening (51) faces the side slot (41) of the opening.

[0025] To hold the visor (1) in assembly position, the system has two sliding parts (6) mounted on the support plates (3) and the outer surface of the helmet (2).

[0026] These sliding parts (6) incorporate cylindrical protrusions (7), with an initial cross-section (71) of a smaller diameter, and an end cross-section (72) with a greater diameter.

[0027] The protrusions (7) are then located inside the slots (41) of the support plates (3), guiding the sliding parts (6) when they are moved between the two extremes, as shown in Figures 2 and 3, corresponding to the position for fixing or for release of the visor.

[0028] When the sliding parts (6) are moved into position to mount the visor (1), the protrusions (7) are inserted into the side openings (51) on the inside of the pivots (5), thus establishing a turning axis for the visor at the pivot. When mounting the visor (1), in the position shown in Figures 3 and 4, the end piece (72) of the protrusions (7) faces the internal surface of the rim (52), preventing the pivots (5) from coming out of the openings (4) in the support plates (3).

[0029] The sliding parts (6) have two separate grooves on one side (73 & 74), for the optional introduction of a stub (8), located on the support plate (3). The introduction of this stub (8) into one of the grooves (73 or 74) prevents the sliding part (6) from moving from one of the end positions, until it is moved manually to the other extreme.

[0030] Inside the visor (1) some cylindrical stubs (10) contact with the end protrusions (91) of an arm (9) on the support plate (3). This permits the visor (1) to remain open at one of the various positions, or to be securely closed.

[0031] Two of the cylindrical end stubs (10) have grooves (101) facing the side of the arm (9) in which the protrusions (91) can be inserted to hold the visor (1) open at the minimum position, which is sufficient to stop it from misting up on the inside.

[0032] Following the thorough description of the nature of the invention, including an example of the preferential assembly, the necessary formalities should be made known to those concerned. The materials, shape, size, and arrangement of the elements described may be modified, only when such a modification does not alter the essential characteristics of the invention. These characteristics are set out in the subsequent text.

Claims

1. A device to mount a transparent visor onto a helmet. The design includes two support plates (3) fixed onto the sides of the helmet (2), and have two openings (4) to introduce the pivots (5) located on the internal face of the transparent visor (1); devices to hold the pivots (5), which can turn within the open-

ings (4) of the support plates (3), and devices to hold the visor (1) at the lower or upper position; **characterised by** the pivots (5) with a cylindrical section and its side opening (51), the free end of which aligns with a rim (52), orientated towards the inside of the pivot; this pivot (5) having an inside diameter smaller than the cylindrical section.

2. A device according to Claim 1 **characterised in that** the cylindrical openings (4) extend sideways to form a slot (41), which serves as a guide to hold the pivots (5) in position, and which has a smaller width than the inside diameter of the aforementioned cylindrical arrangement.
3. A devices according to the previous claims **characterised in that** the pivot retaining means, which hold the pivots (5) within the openings (4), are composed of sliding parts (6) mounted between the support plates (3) and the external face of the helmet (2).
4. A device according to the previous claims **characterised in that** the sliding parts (6), on the sides, close to the back, have cylindrical protrusions (7) with an initial cross-sectional diameter (71) less than the end diameter (72).
5. A device according to the previous claims **characterised in that** the cylindrical protrusions (7) can guide the sliding parts (6) over slots (41) during the movement of these sliding parts (6) between the positions to release or attach the pivots (5).
6. A device according to the previous claims, **characterised in that** the initial and end cross-sections (71 & 72) of the cylindrical protrusions (7) have the same or slightly smaller diameters than the inside diameters of the cylindrical sections and the rims (52) of the pivot openings (4).
7. A device according to the previous claims **characterised in that** the side opening (51) of the pivots (5) forms an access for the protrusions (7) in the inside of the pivots (5) during assembly of the visor (1).
8. A device according to the previous claims **characterised in that** in the position of the visor assembly (1), the pivots (5) form a turning axis for the visor (1).
9. A device according to the previous claims **characterised in that** the sliding parts (6) have separate grooves (73 & 74) on one side for the optional insertion of a stub (8) situated on the corresponding support plate (3), which prevents the sliding parts from moving from the end positions to release or mount the visor (1).

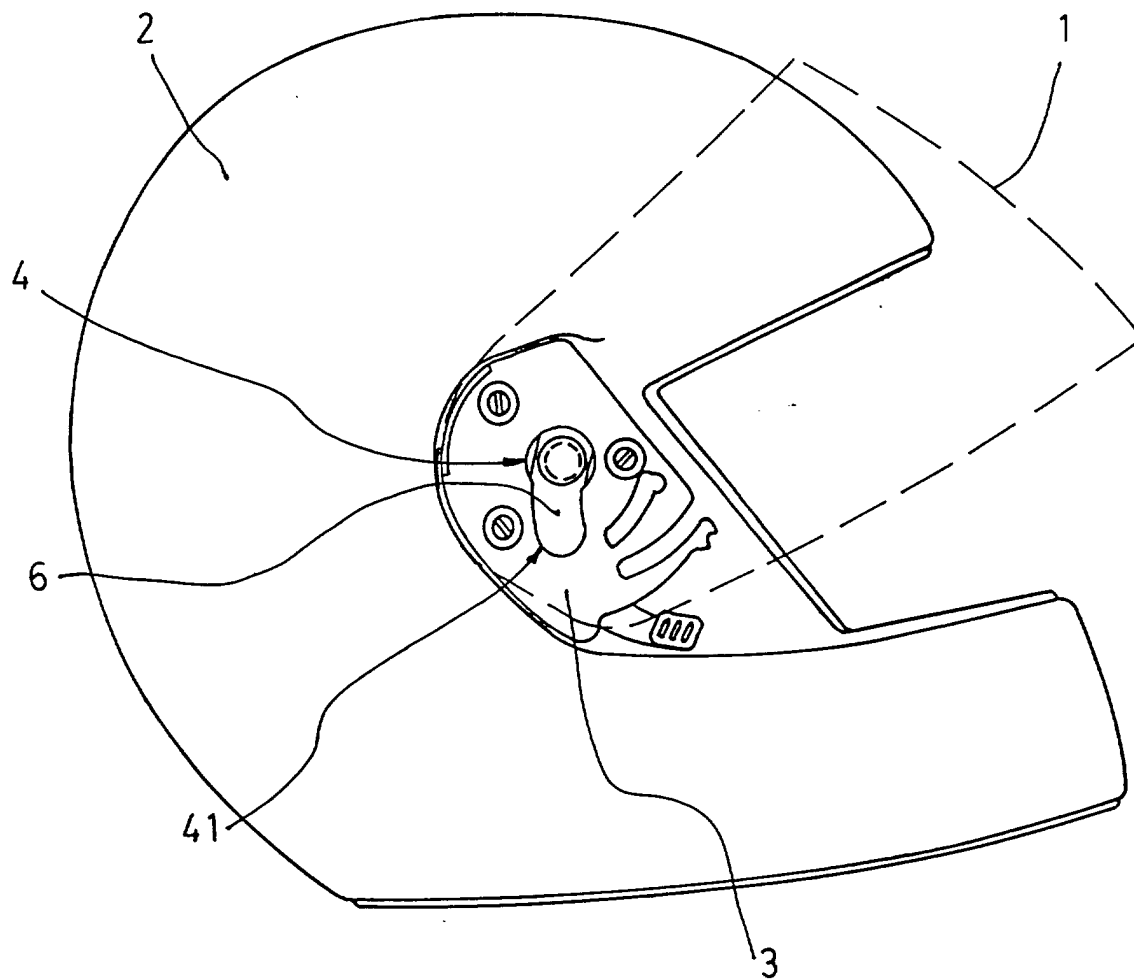
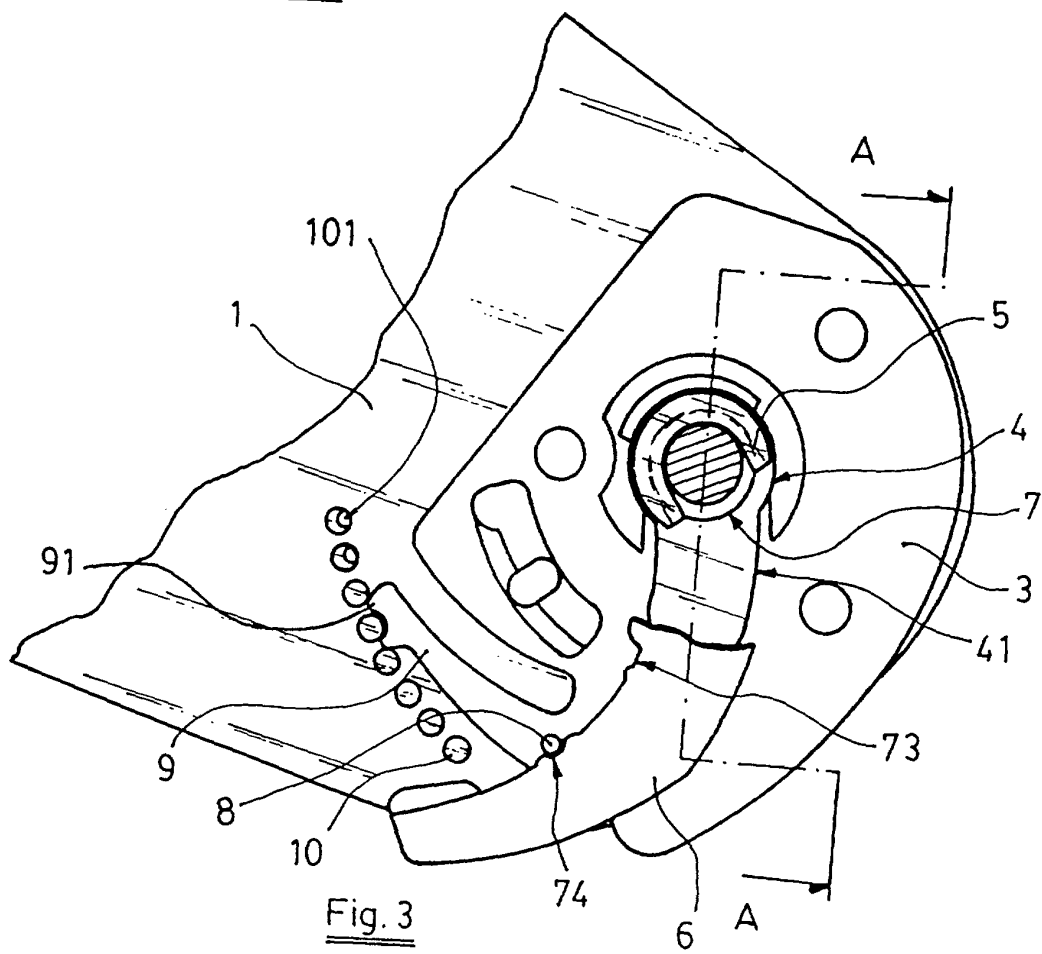
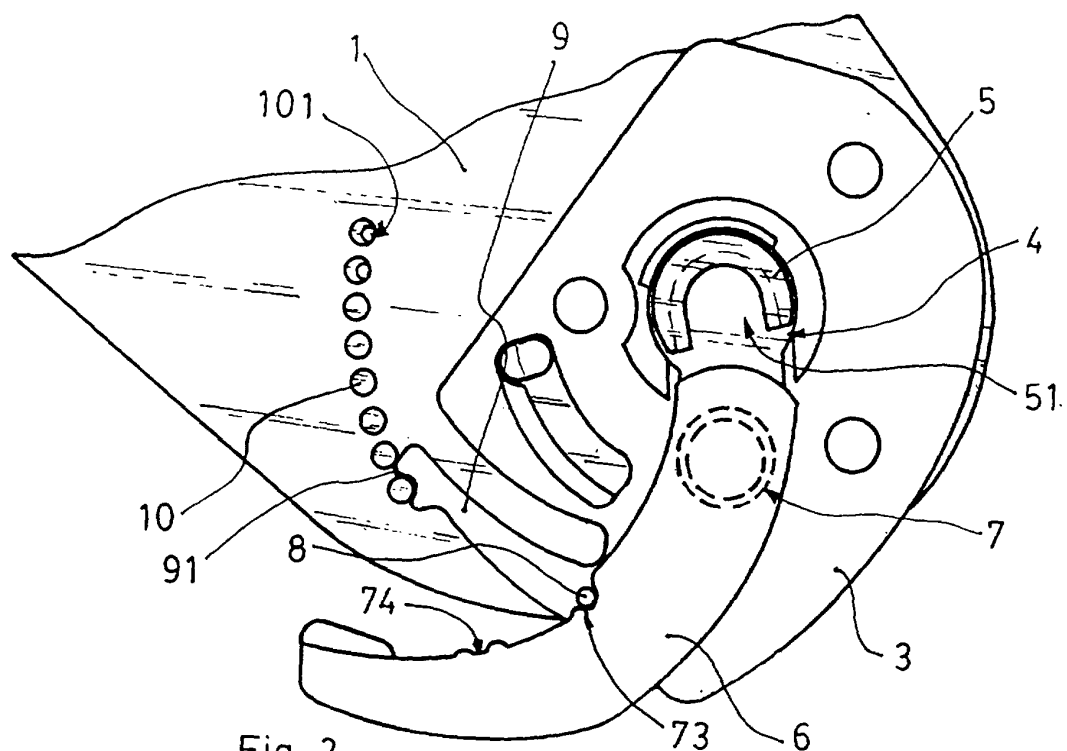


Fig. 1



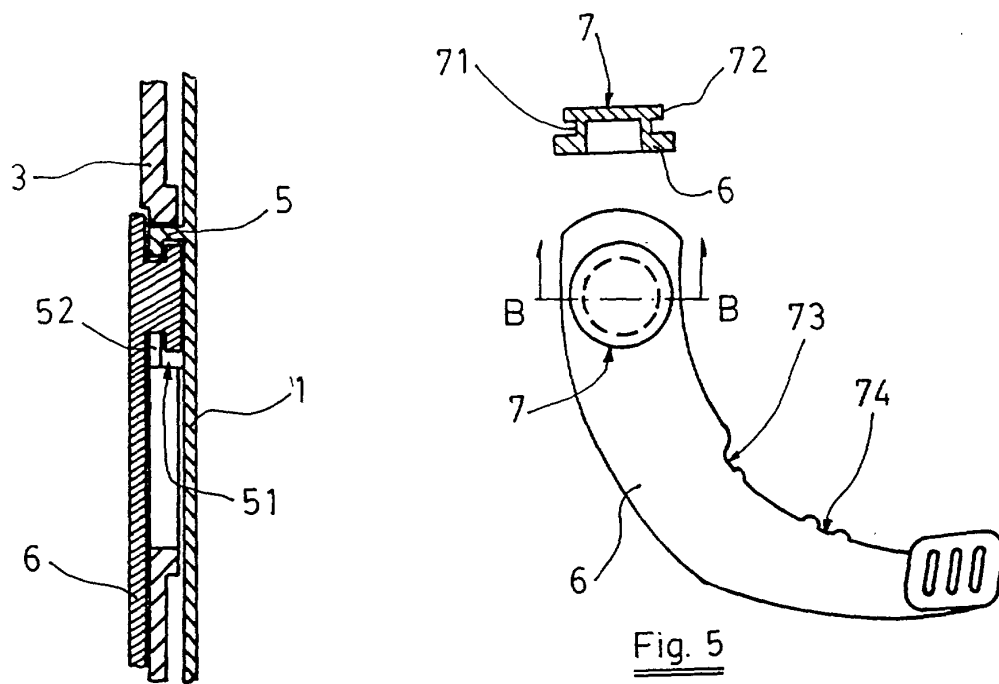


Fig. 5

Fig. 4

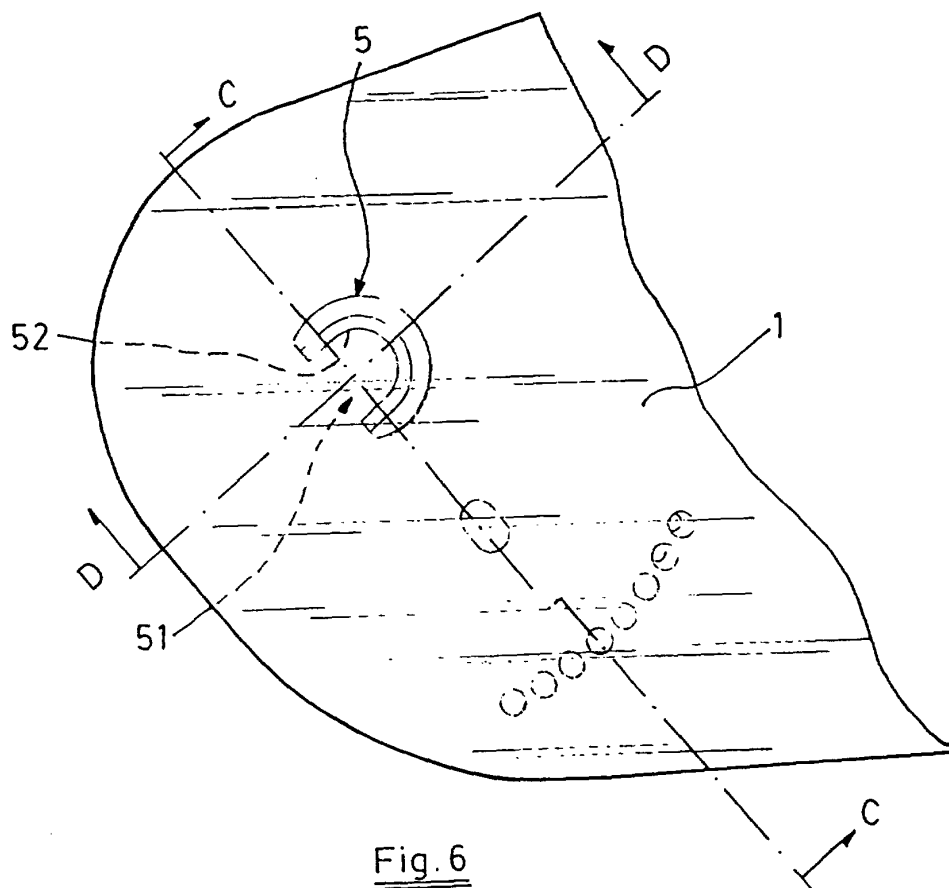


Fig. 6

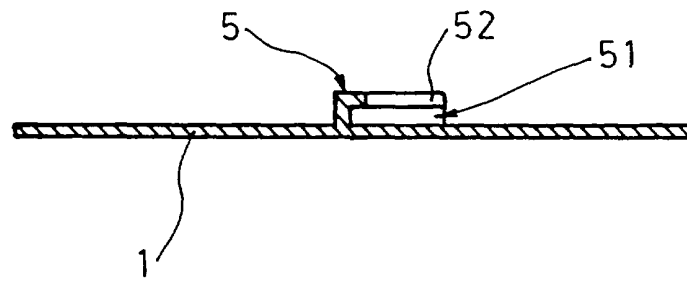


Fig. 7

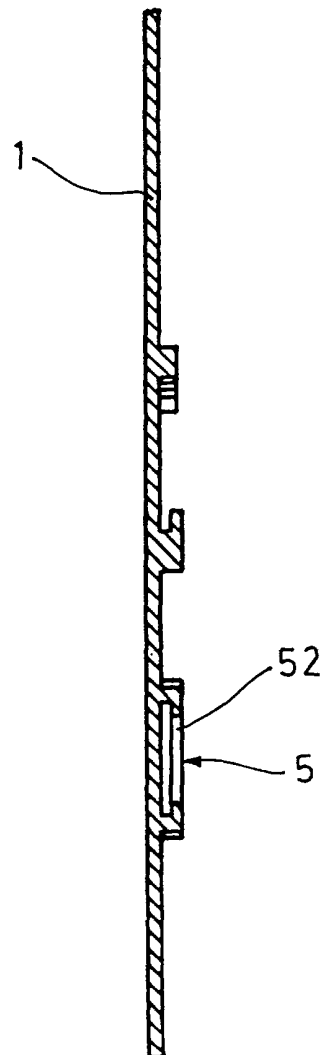


Fig. 8

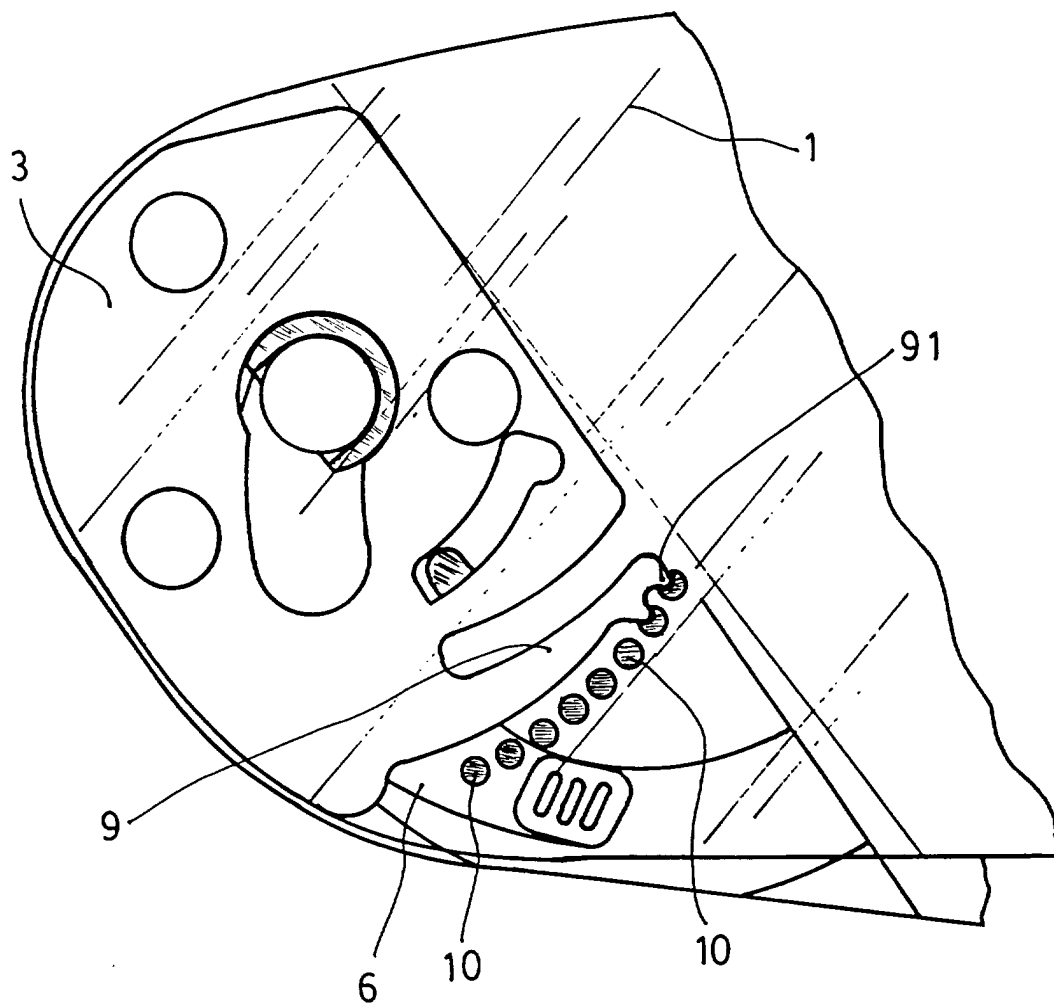


Fig. 9



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 00 50 0121

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.7)
X	PATENT ABSTRACTS OF JAPAN vol. 1998, no. 09, 31 July 1998 (1998-07-31) -& JP 10 110320 A (KOSHIN CROWN:KK), 28 April 1998 (1998-04-28) * abstract; figures *	1,3,8,9	A42B3/22
A	EP 1 000 558 A (HONG JIN CROWN CORPORATION) 17 May 2000 (2000-05-17)		
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			A42B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 7 December 2000	Examiner Bourseau, A-M
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			

EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 50 0121

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07-12-2000

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