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(54) **Supporting frame for the visor of a helmet**

(57) A supporting frame (1) for the visor of a helmet. The frame is adapted to be connected to the shell of a protective helmet so as to be arranged at the front opening (4) of the shell. The frame further has a shape adapted to follow the perimeter of the front opening of the helmet and supports at least one gasket element (2).

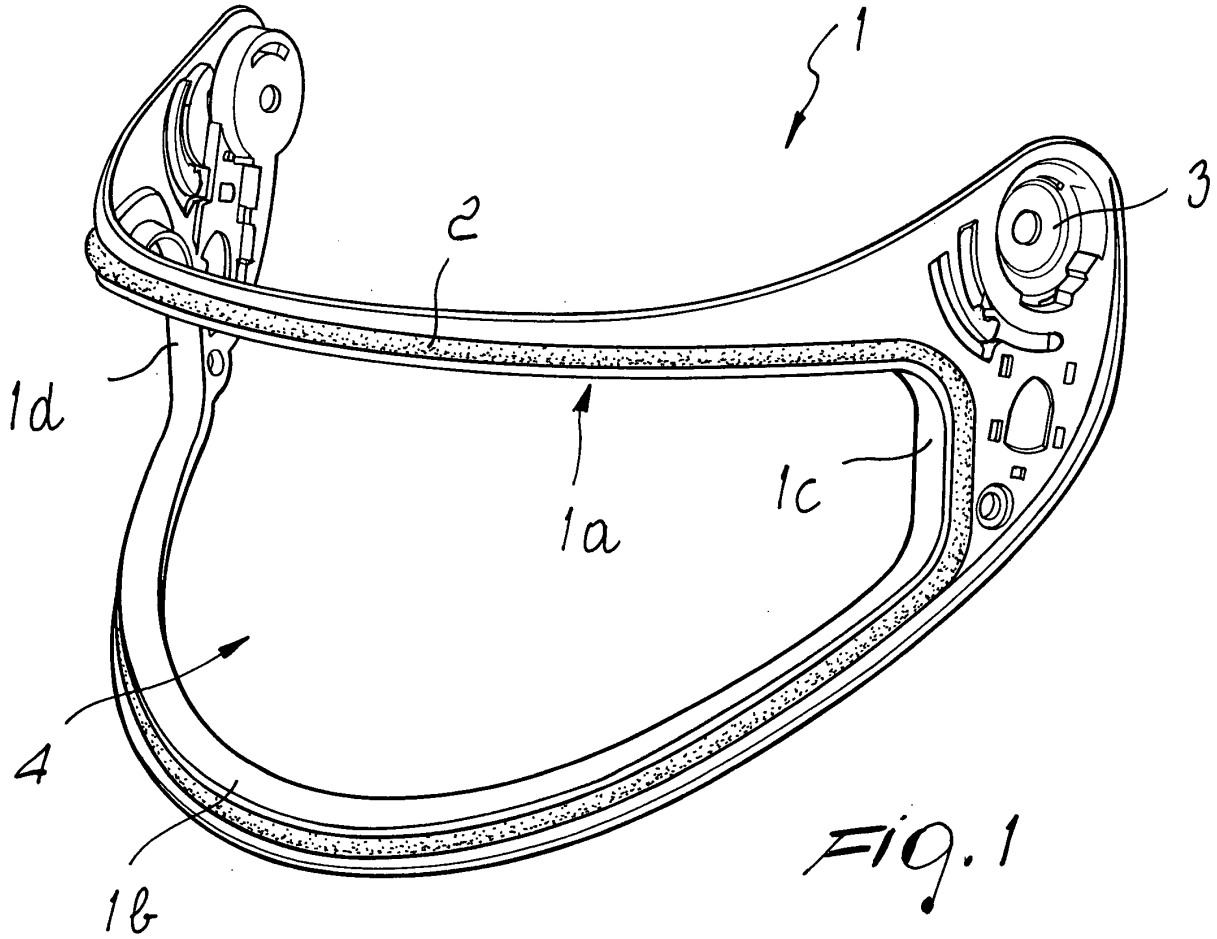

Fig. 1

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Description

[0001] The present invention relates to a supporting frame for the visor of a helmet.

[0002] As is known, protective helmets, used for example for motorcycling, substantially comprise a shell, adapted to protect the head of the user against accidental impacts, and an element having a certain degree of transparency, known as visor, which allows the user to see and also offers at the same time a high degree of protection. The visor protects in particular the eyes of the user both in case of impacts and in case of rain, insects, dust or any kind of foreign matter that might strike the user in the face during normal use of the helmet.

[0003] The shape and structural strength of the shell, as is known, are adapted to absorb impacts also at the region where the opening for the visor is located.

[0004] The visor instead owes much of its strength and sealing capacity to the quality of its assembly to the shell. This assembly is commonly achieved by way of means for connecting the visor to the shell which also allow to open and close the visor, acting substantially as hinges.

[0005] The visor, therefore, is substantially hinged to the helmet at its two endpoints, and when it is closed it abuts against the lower element of the front part of the helmet, which is usually known as chin bar. To eliminate the play between the visor and the shell of the helmet, a generally continuous gasket is normally used and is fitted directly on the shell, running along the entire perimeter of the opening.

[0006] When the visor is closed, it compresses the gasket enough to achieve a closure which is effective both in terms of stability of the visor and in terms of tightness against infiltrations of air, dust, rain and any external agent in general, in addition to providing sound insulation from the outside.

[0007] However, this solution which up to now is the most commonly used suffers drawbacks.

[0008] The manufacturing process of helmet shells, which comprises molding, painting, the provision of the holes required for example to connect the visor or other elements such as the air intakes commonly provided in so-called full-face helmets, in fact entails several manual steps, which can introduce many dimensional variations among the end products, especially for shells made of composite material.

[0009] The provision of the opening of the helmet and the fixing of the gasket also are delicate production steps, which as such can lead to differences between one shell and another.

[0010] The visor is instead obtained generally by molding a suitable polymer. In this case it is much simpler to control the process for obtaining the part by controlling appropriately the dimensional tolerances, and therefore ultimately there are no significant dimensional differences between one visor and another.

[0011] As a consequence of this situation, the final assembly of a visor on the shell is not perfect. The dimensional variations that occur as a consequence of the shell production process cause the final assembly of the visor to the shell to be less than ideal. In other words, the same coupling among different helmets that leave the production line cannot be reproduced with the desired accuracy, consequently compromising the quality of the end product.

[0012] The aim of the present invention is to provide a supporting frame for the visor of a helmet that allows to overcome the drawbacks described above.

[0013] Within this aim, an object of the present invention is to provide a supporting frame for the visor of a helmet that allows to reduce significantly the dimensional differences between one shell and another that compromise the quality of the coupling of the visor to the shell.

[0014] Another object of the present invention is to provide a supporting frame for the visor of a helmet that allows easy replacement of the gasket if needed.

[0015] This aim and these and other objects, which will become better apparent hereinafter, are achieved by a supporting frame for the visor of a helmet, said frame being adapted to be connected to the shell of said helmet at the front opening of said shell, having a shape which is adapted to follow the perimeter of said front opening, and comprising at least one gasket element.

[0016] Further characteristics and advantages of the present invention will become better apparent from the following detailed description, given by way of non-limiting example and illustrated in the accompanying figures, wherein:

Figure 1 is a perspective view of the supporting frame according to the present invention;
Figure 2 is a view of the supporting frame according to the present invention assembled to the visor of a helmet;
Figure 3 is a view of a detail of the visor shown in Figure 2.

[0017] According to a preferred embodiment of the present invention shown in the cited figures, the frame 1 has a configuration which is suitable to allow its assembly with the shell, not shown, of the helmet. The supporting frame 1 comprises a seat in which the gasket 2 is inserted. The frame 1 substantially reproduces the external perimeter of the opening provided at the visor of the dome or shell of the helmet on which it will be assembled. The frame 1 therefore has an upper edge 1a and a lower edge 1b, which define the perimeter of the front opening 4.

[0018] The gasket 2 runs along the entire perimeter of the frame 1 formed by the upper portion 1a, the lower portion 1b, and the connecting portions 1c and 1d, which follow the profile of the front opening 4.

[0019] The frame 1 comprises first means 3 for pivoting the visor 10. The visor 10 is provided with corresponding second pivoting means 11, which are suitably sized so as to interact with said first pivoting means 3 provided on the frame 1, achieving the pivoting coupling between the

visor 10 and the frame 1.

[0020] The frame 1 can be provided by molding and also injection-molding plastic materials.

[0021] Operation of the frame 1 according to the present invention is as follows.

[0022] The frame 1, which supports the gasket 2, is assembled to the shell of the helmet, which is not shown in the figures. The frame 1 can be assembled to the shell by way of known techniques. The visor 10 is then assembled to the frame 1 with a pivoting coupling by way of the first pivoting means 3 and the second pivoting means 11, so that the visor can be opened and closed by the user. In the closed position, the gasket 2 makes precise contact with the internal surface of the visor 10, providing the hermetic closure.

[0023] It has thus been shown that the present frame achieves the intended aim and objects. In particular, it has been shown that the frame for supporting the visor allows to achieve optimized closure of the visor. The frame obtained with a manufacturing process that is independent of the shell manufacturing process in fact allows to control the dimensional tolerances so as to optimize the interaction between the gasket and the visor and therefore the tightness of the closure.

[0024] Moreover, the frame according to the present invention allows, if necessary, to replace the gasket more simply.

[0025] Moreover, a further object achieved by the supporting frame according to the present invention consists in that said device, when the visor is closed, is completely protected against external agents and in this manner is more reliable and durable.

[0026] Numerous modifications may be made by the skilled in the art without abandoning the scope of the protection of the present invention.

[0027] The scope of the protection of the claims, therefore, must not be limited by the illustrations or by the preferred embodiments presented in the description by way of example, but rather the claims must comprise all the characteristics of patentable novelty that can be deduced from the present invention, including all the characteristics that would be treated as equivalent by the person skilled in the art.

[0028] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility, of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A supporting frame (1) for the visor (10) of a helmet, adapted to be connected to the shell of said helmet at the front opening (4) of said shell, having a shape adapted to follow the perimeter of said front opening (4), and comprising at least one gasket element (2).

2. The frame (1) according to claim 1, **characterized in that** said at least one gasket element runs along one or more portions (1a, 1b, 1c, 1d) of said frame, which follow the perimeter of said front opening (4).

3. The frame (1) according to any one of the preceding claims, **characterized in that** it comprises first pivoting means (3) for said visor (10).

4. The frame (1) according to claim 2 or 3, **characterized in that** said at least one gasket element runs at least along the upper portion (1a) and the lower portion (1b) of said frame (1), which follow the perimeter of said front opening (4).

5. The frame (1) according to claim 4, **characterized in that** said at least one gasket element also runs along the two connecting portions (1c, 1d) between said upper portion (1a) and said lower portion (1b) of said frame (1).

6. The frame (1) according to any one of the preceding claims, **characterized in that** said at least one gasket element (2) is a single continuous element.

7. The frame (1) according to any one of claims 1 to 5, **characterized in that** it comprises a plurality of separate gasket elements, each of said elements running along one or more portions (1a, 1b, 1c, 1d) of said frame (1).

8. The frame (1) according to any one of the preceding claims, **characterized in that** it is provided by molding.

9. The frame (1) according to claim 8, **characterized in that** it is made of plastic material.

10. The frame (1) according to any one of the preceding claims, **characterized in that** said at least one gasket element (2) is made of extruded rubber.

11. A protective helmet, **characterized in that** it comprises a frame (1) for supporting a visor (10) according to any one of the preceding claims.

12. A helmet visor (10), **characterized in that** it comprises second pivoting means (11), which are adapted to connect said visor (10) to a supporting frame (1) according to any one of claims 1 to 11.

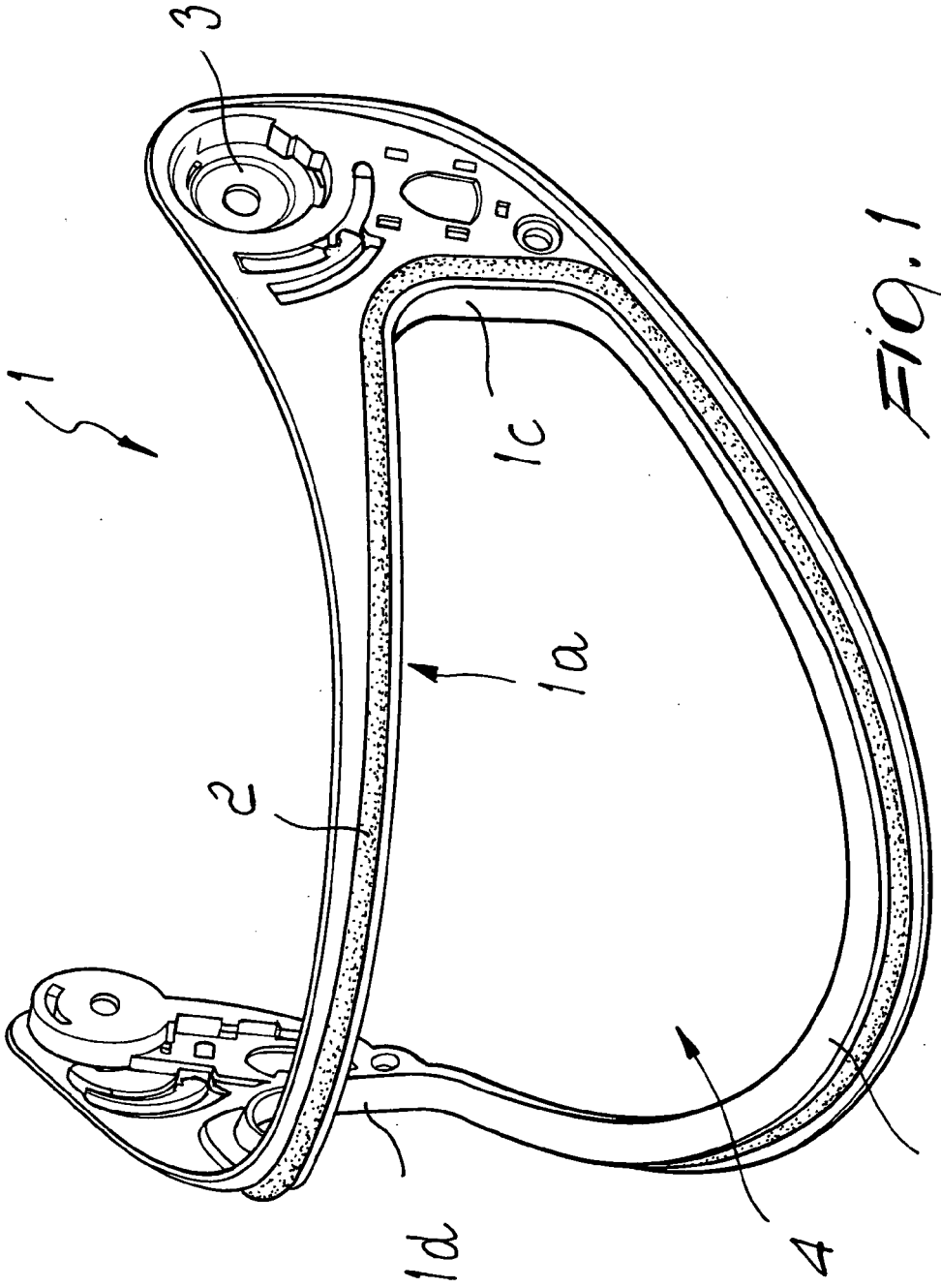

Fig. 1

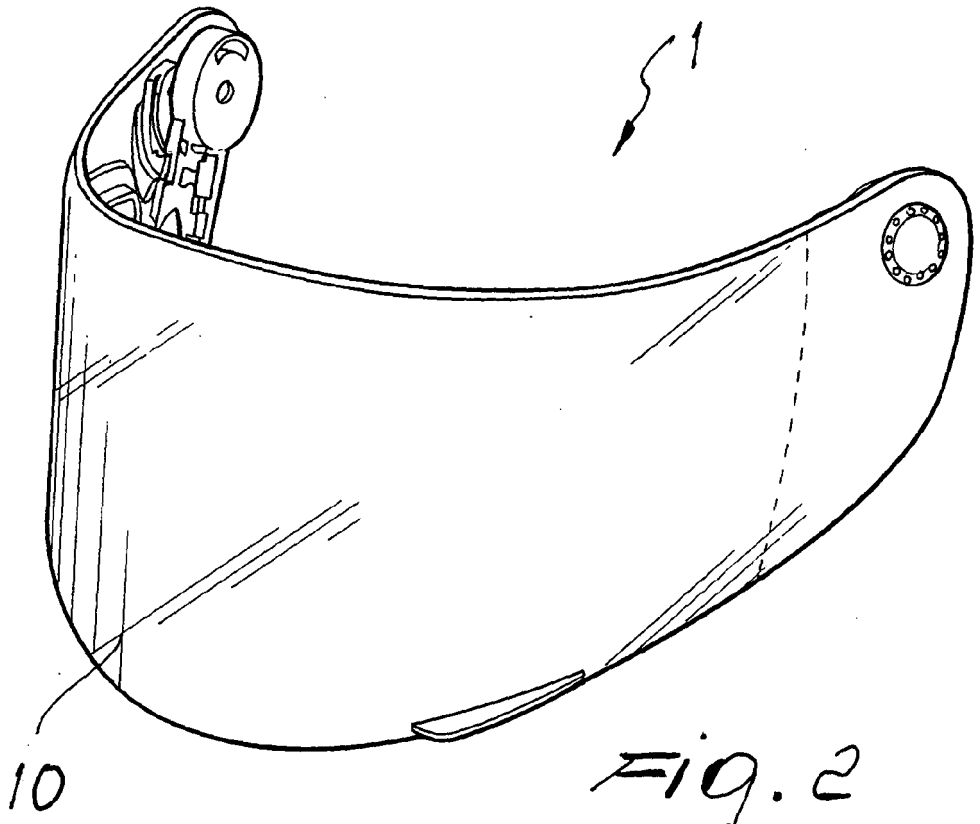

Fig. 2

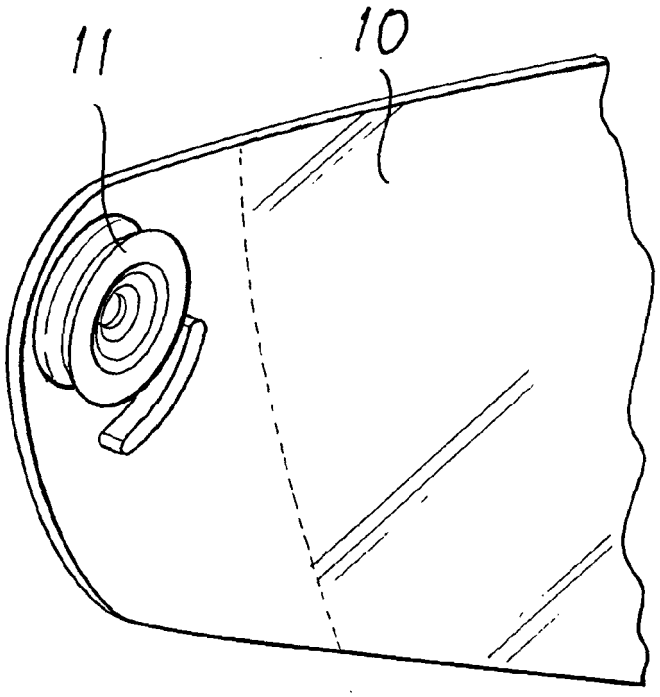

Fig. 3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 42 5272

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A	EP 0 515 753 A (SHOEI KAKO KABUSHIKI KAISHA) 2 December 1992 (1992-12-02) * column 2, line 50 - line 56; figure 2 *	1,11,12	
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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
The Hague	18 September 2006	D'Souza, Jennifer

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
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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
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 06 42 5272

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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