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(54) **Visored face guard, with incorporated anti-misting device**

(57) A visored face guard comprising two chambers: a first chamber 14 communicating with the atmosphere and containing said visor and, in use, surrounding the eyes of the wearer, and a second chamber 15 containing at least the nose of the wearer, which second chamber communicates with the atmosphere and, also with the first chamber through at least one one-way breathing-in valve 18.

ERRATUM

SPECIFICATION NO 2046581A

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THE PATENT OFFICE
26th June 1981

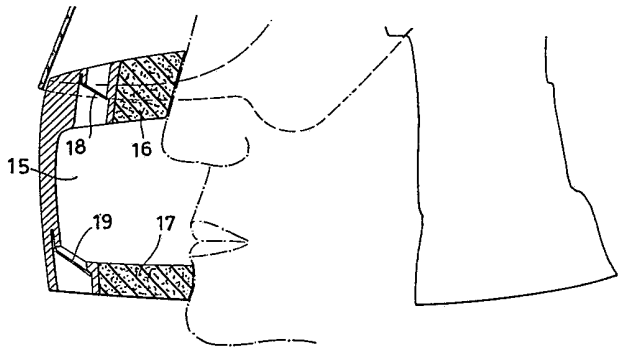

Fig.1

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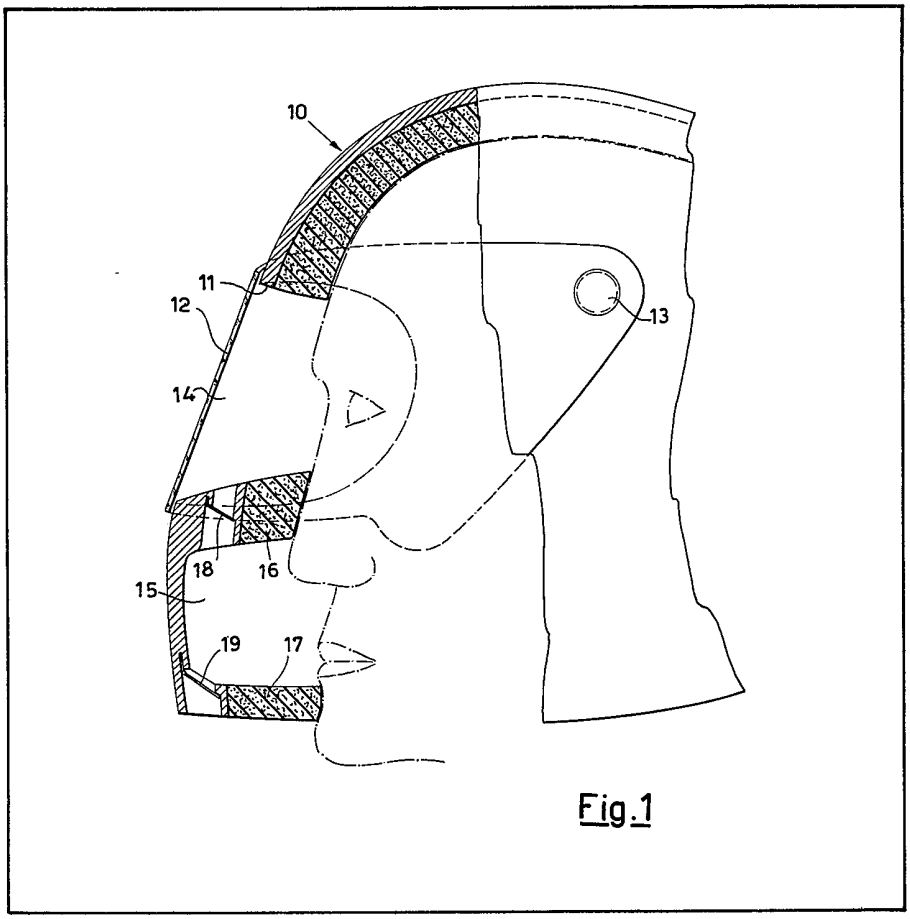

Fig.1

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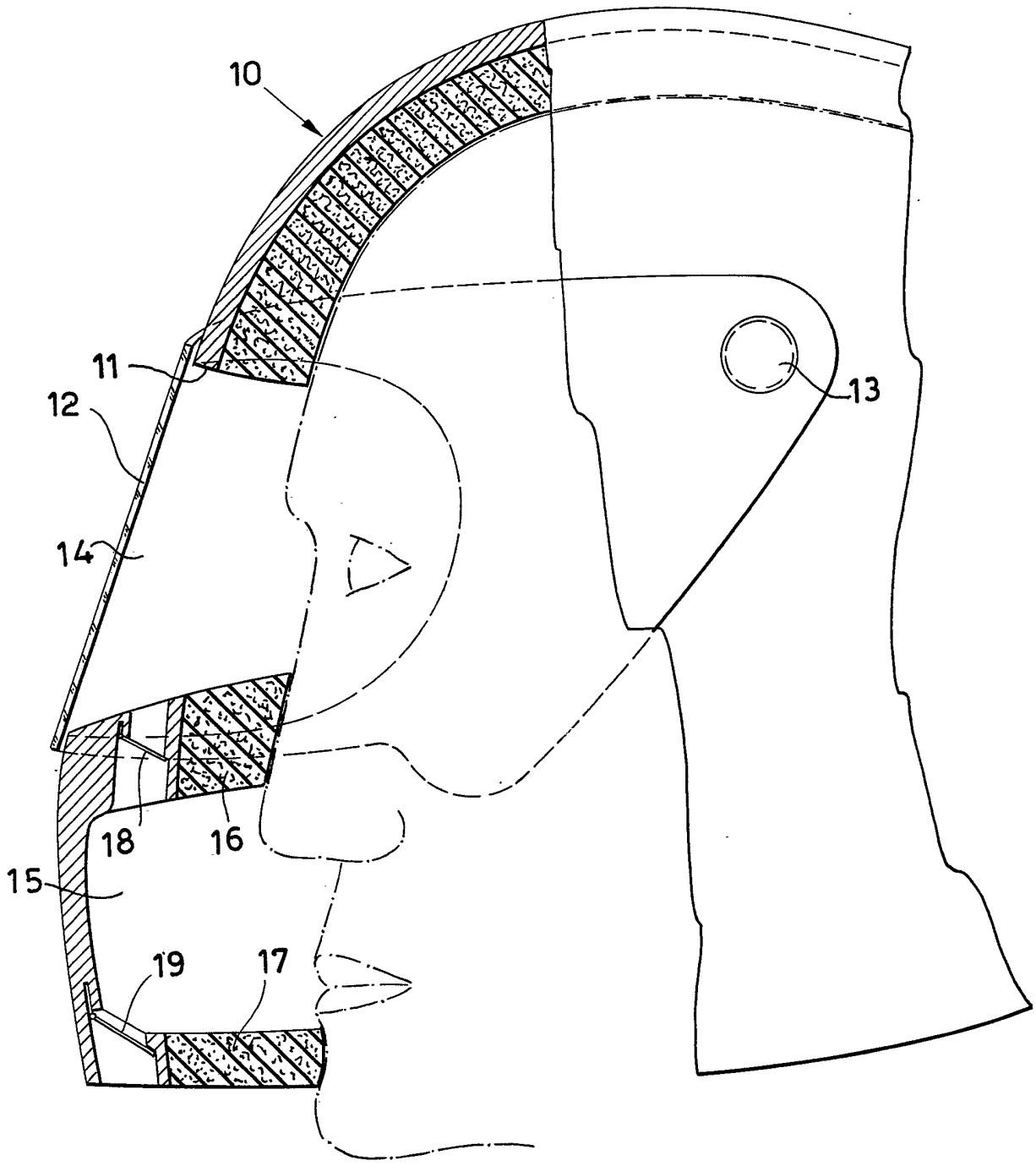


Fig.1

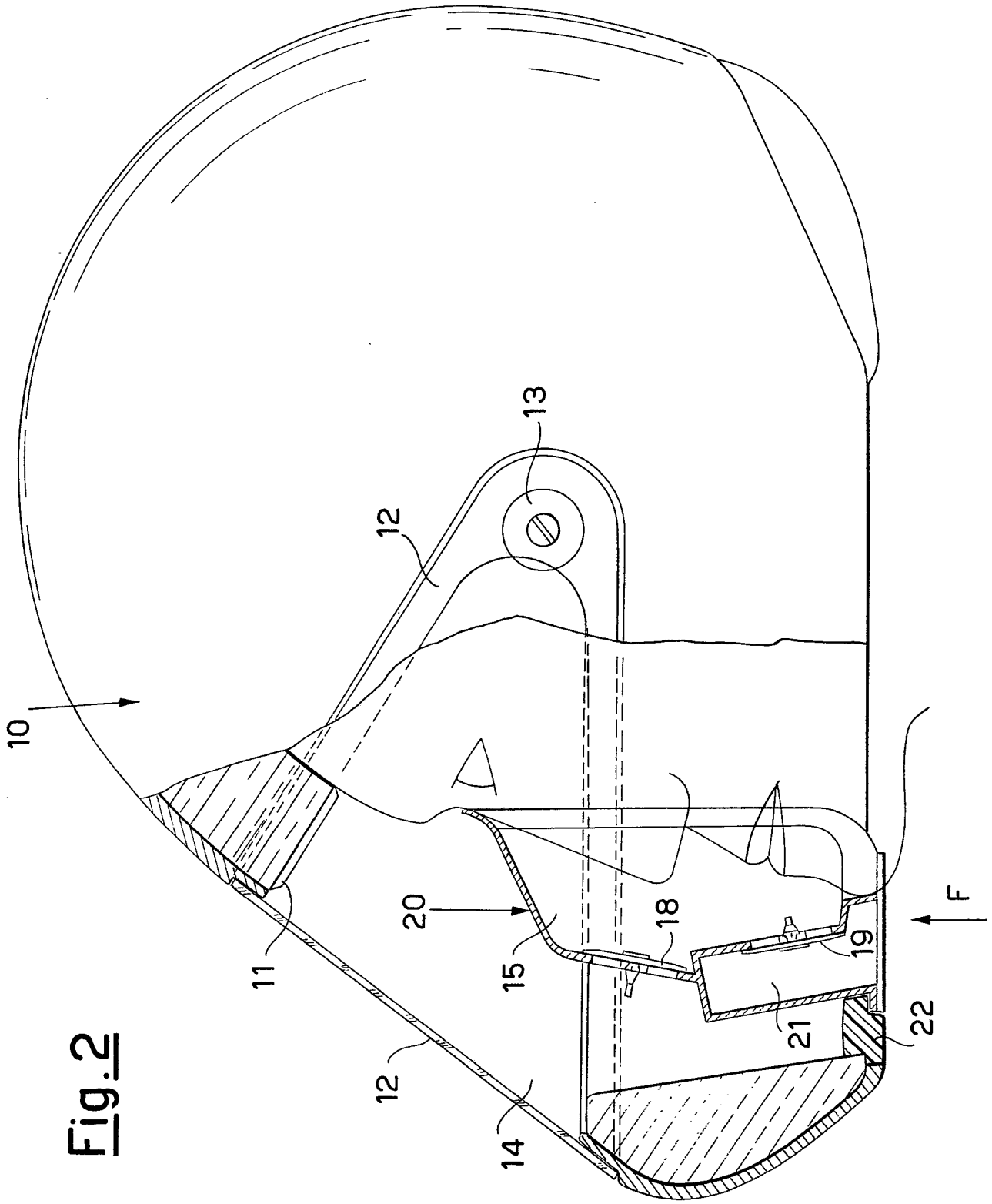


Fig.2

Fig. 3

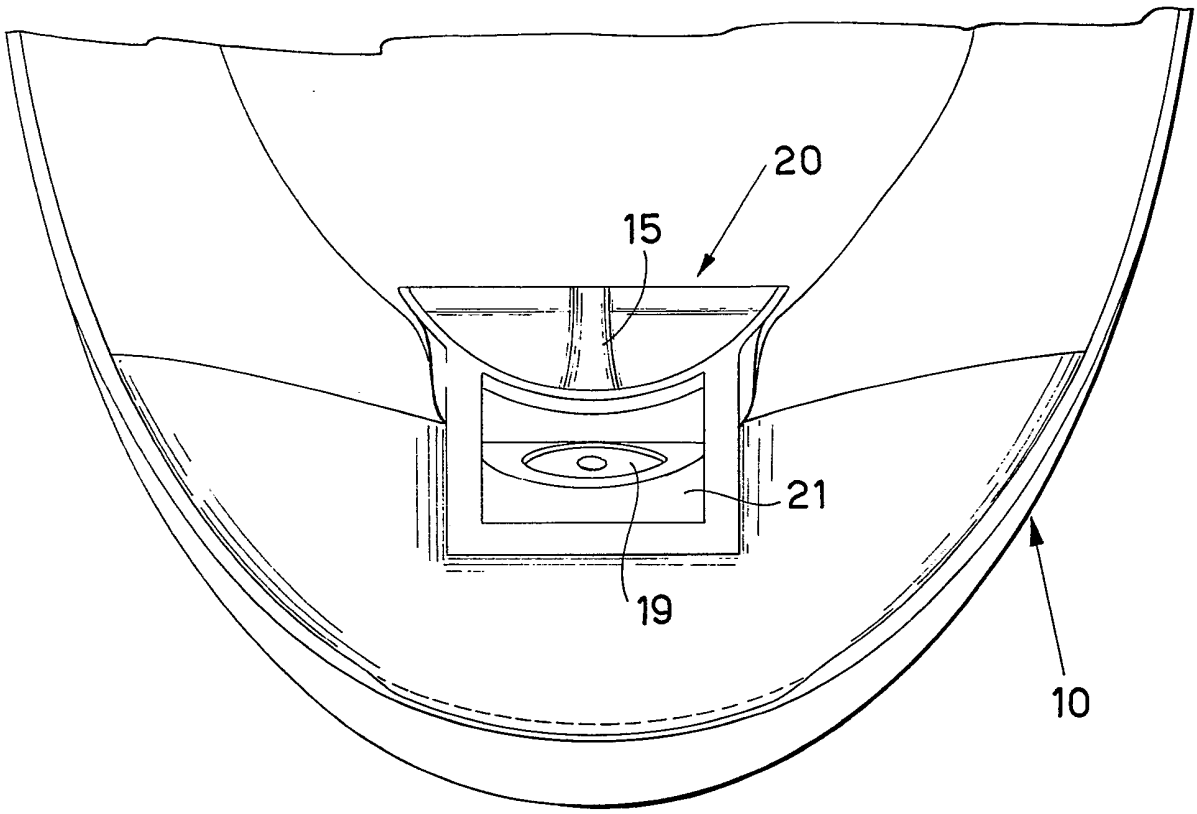


Fig. 4

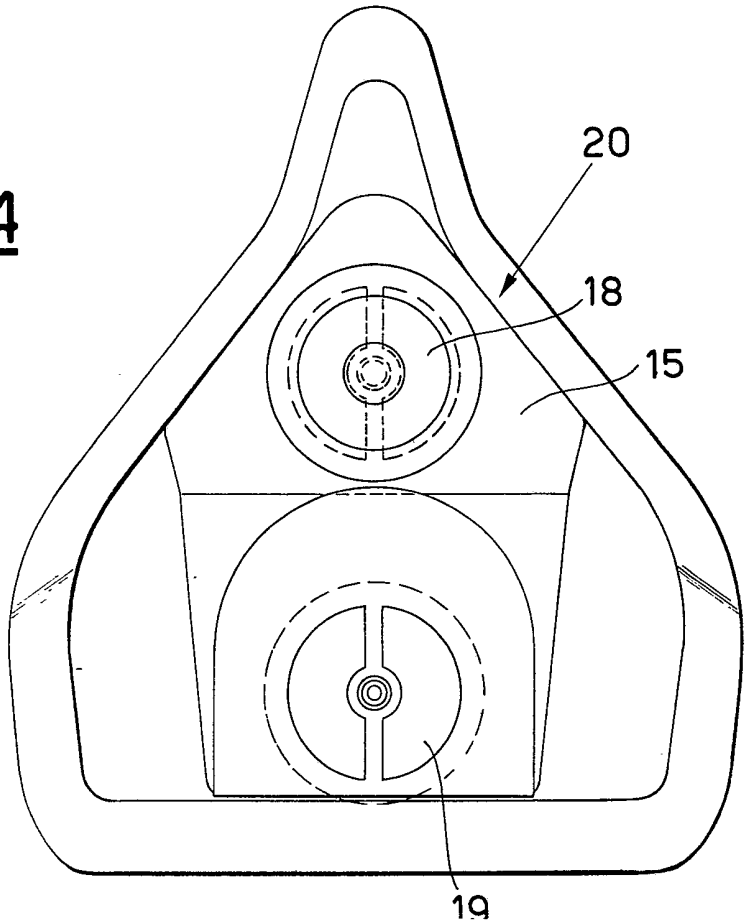


Fig. 5

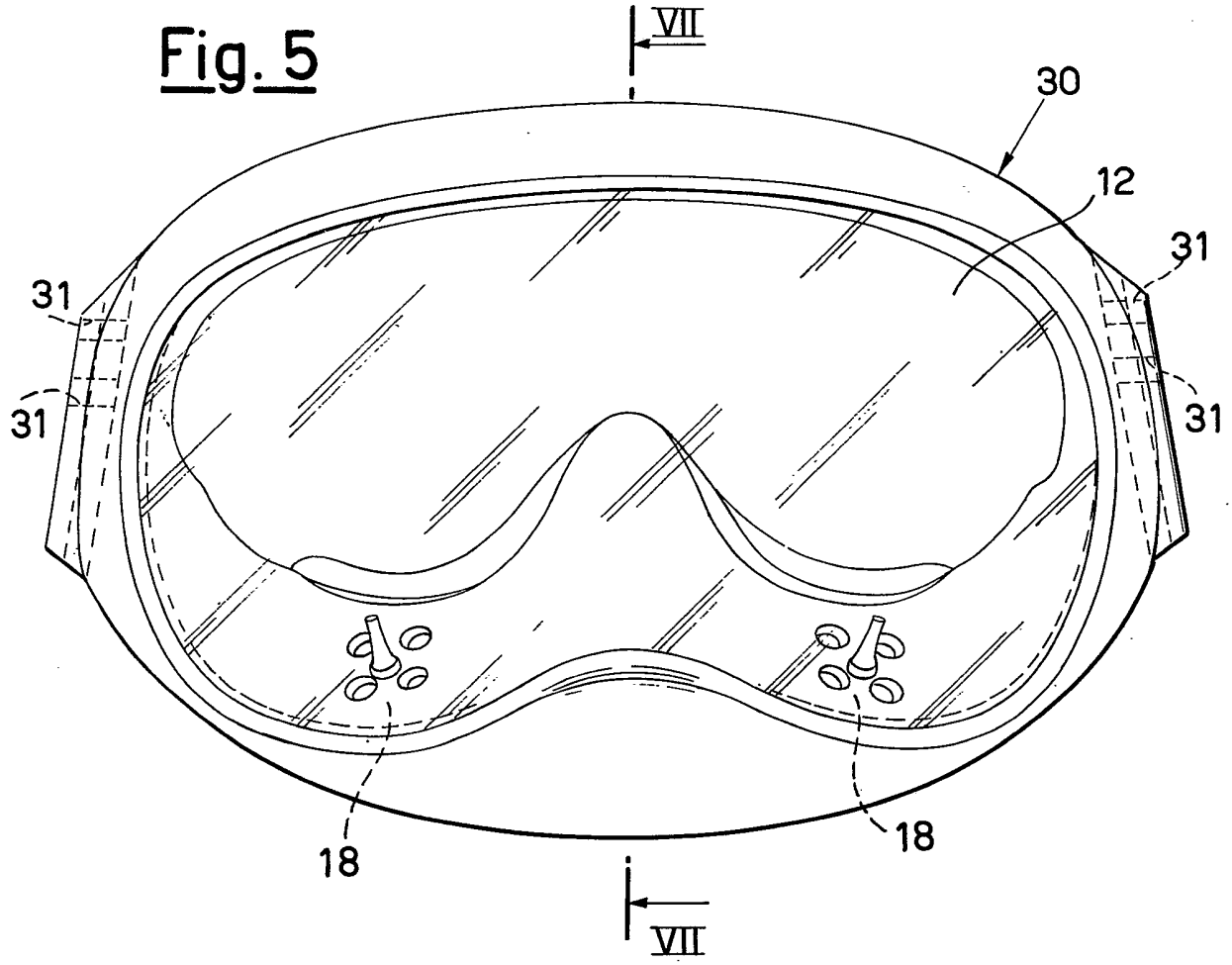
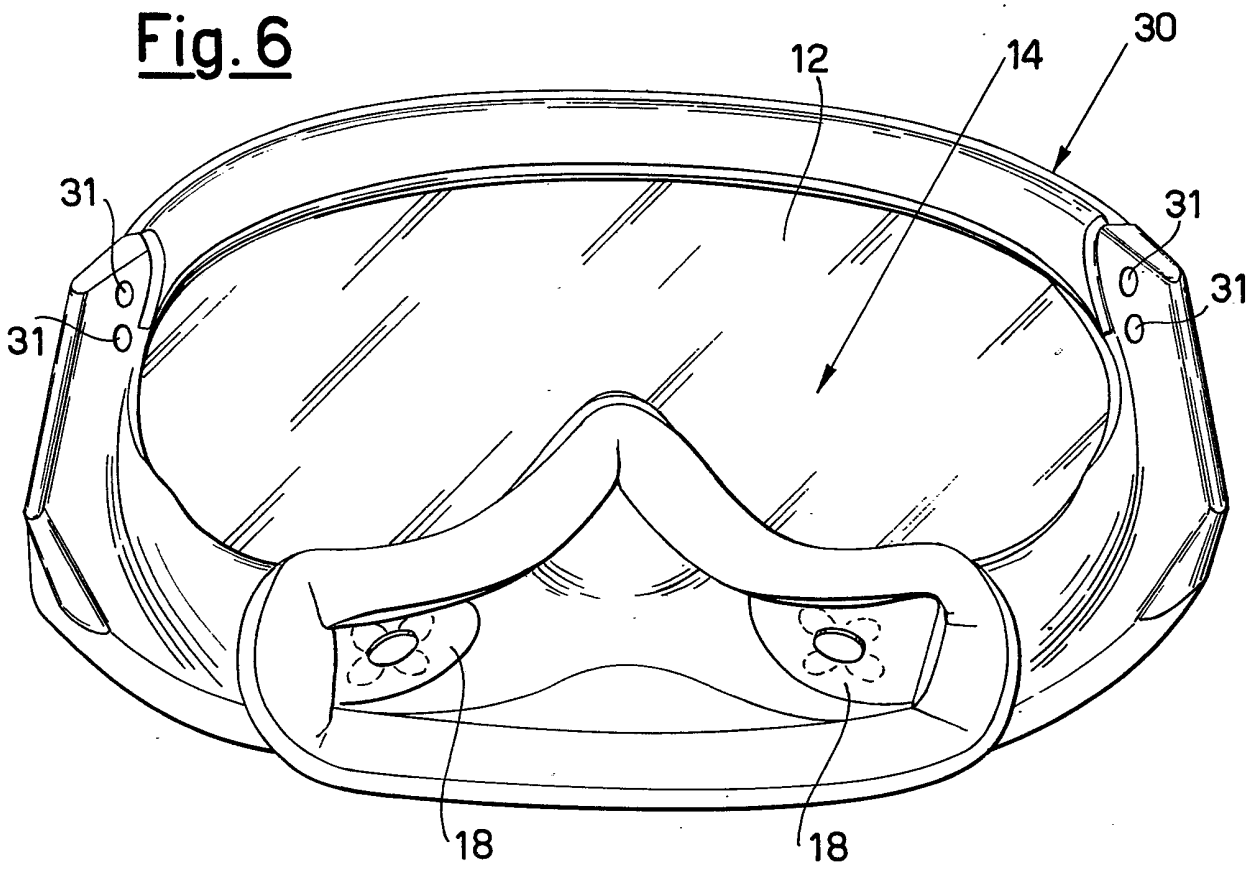


Fig. 6



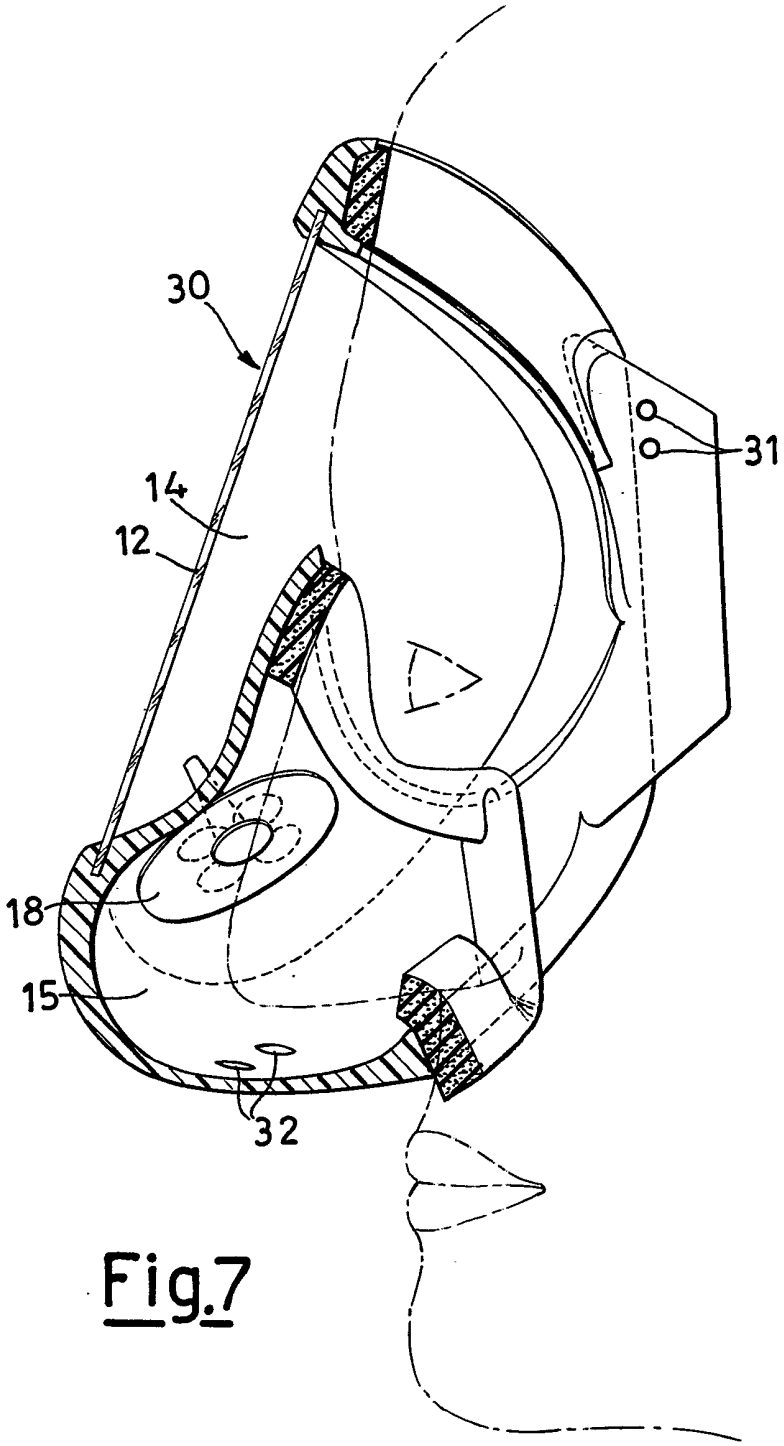


Fig.7

SPECIFICATION

Visored face guard, with incorporated anti-misting device

The present invention relates to a visored face guard provided with a device which prevents misting of the visor.

Characteristically, the face guard according to the invention can form part of a complete protective helmet, or can also be embodied as sports goggles or glasses.

There are known complete protective helmets which have in their frontal portion a wide aperture accompanied by a visor which can be incorporated in the helmet or, more generally, be hinged thereto, so as to allow it to be raised and lowered.

The visor used for said helmets suffers from the serious handicap of easy misting, due chiefly to two factors, and more exactly the humid air breathed out by the user during the respiratory cycle, and body temperature, which adds to the effect of the temperature and degree of humidity of the air within the helmet.

A rapid misting of the visor occurs for example in ski helmets, in which case, on account of environmental conditions, the difference in temperature between the facial area enclosed by the helmet and the outside environment is in general relatively high.

A known method used to prevent the misting of the visor in complete helmets is to treat the inside surface of the visor with surfactant chemicals capable of preventing the formation of drops of condensate, but not capable of preventing formation of an equally troublesome film of water. Furthermore, such chemical products have the drawback of causing greasiness on the visor, which can of course give rise to abnormal light reflections that deform vision in a manner which is particularly dangerous at the high speeds at which these helmets are used.

Finally, said chemical products have limited duration and it is never certain that they have been correctly and uniformly applied to the visor.

In order to prevent misting of visors on complete helmets, especially those used by drivers of automotive vehicles of various kinds, it has been proposed to prevent, by means of an intermediate septum, the breathed out air from entering the upper facial area covered by the helmet, including the visor.

In these helmets, the wearer breathes in through an activated carbon filter incorporated in the front portion of the helmet (below the visor), and breathes out through a valve. Even this system, however, has shown itself to be insufficient to prevent the visor from misting up: the air which stagnates in the upper facial area covered by the helmet, said air being in contact with the human body having a higher temperature and subject to perspiration, becomes quickly charged with humidity which condenses on the visor and causes it to mist up.

The same drawback of easy misting occurs in goggles or glasses of the type worn for example by skiers and motor-cyclists, that is to say of the type that enclose a facial area comprising the eyes and part of the nose of the wearer. In this case the inconvenience arises chiefly as a result of cutaneous perspiration, which causes an appreciable increase of the stagnant air entrapped behind the goggles or glasses.

The purpose of the present invention is to overcome the inconveniences existing in the known art by embodying a face guard that can be applied without distinction either to a complete helmet or to sports goggles or glasses and having a structure such as will automatically prevent misting of the visor by means of a special system for the supply of air to the wearer of the helmet, goggles or glasses.

It has in effect been surprisingly found that if the wearer is obliged to breathe in the atmospheric air already contained inside the helmet, goggles or glasses in the facial area which includes the visor, which air rapidly increases the temperature and humidity, and if the said facial area is simultaneously excluded from the breathing-out route of the humid air, the misting of the visor is prevented. For this system eliminates, at one and the same time, both the factors which, conjointly, contribute to causing the misting-up both of complete helmets and of sports goggles or glasses.

More exactly, the present invention proposes a visored face guard characterized by the fact that it comprises two chambers: a first chamber communicating with the atmosphere and containing said visor and the eyes of the wearer; and a second chamber containing at least the nose of the wearer, this second chamber likewise communicating with the atmosphere and, also, with the first chamber through a one-way breathing-in valve.

The said face guard can be embodied in the form of sports goggles or glasses, or can be incorporated in a helmet.

In the latter case, the second chamber also contains the mouth of the wearer and is preferably provided as well with a one-way valve for the breathing-out into the atmosphere of the humid air expelled by the lungs of the wearer.

The structural and functional characteristics of the invention and its advantages will become even clearer from an examination of the exemplifying description which follows and which is referred to the attached drawing, in which:

FIGURE 1 is a partial sectional view of a complete helmet incorporating the face guard according to the invention;

FIGURE 2 is a sectional view of another possible form of embodiment of the helmet according to the invention;

FIGURE 3 is a particular of the helmet in the direction of the arrow F of FIGURE 2;

FIGURE 4 is a front elevation view of the guard incorporated in the helmet of the FIGURES 2 and 3;

FIGURE 5 is a front elevation view of a pair of sports goggles or glasses incorporating the principles of the invention;

FIGURE 6 is rear view of the same goggles or glasses as shown in FIGURE 5; and

FIGURE 7 is a section in the direction of the line VII-VII of FIGURE 5.

in FIGURE 1 of the drawings there is shown a complete helmet 10 with a broad frontal aperture 11

provided with a visor 12 which can be raised about lateral hinges 13.

According to the present invention, the face area of the helmet is divided into two chambers 14, 15, which have different functions.

The chamber 14, which comprises the visor 12, communicates directly with the atmosphere, for example through the non-airtight borders of the said visor 12, and serves as air collector, as will be explained hereafter.

The chamber 15, on the other hand, encloses the nose and mouth of the wearer by means of two septa 16, 17 which encircle in airtight fashion the respective face areas. The chamber 15 communicates with the chamber 14 through a one-way breathing-in valve 18 and with the atmosphere preferably through a one-way breathing-out valve 19. The valves 18, 19 are arranged centrally and can be of flap type or other equivalent type.

The manner of functioning of the helmet in question is evident from what has been described hitherto, and is briefly the following.

By breathing in, the wearer sets up a vacuum in chamber 15, so that the more greatly pressurized air in chamber 14 opens the valve 18 and passes into the chamber 15 to be breathed-in, while fresh atmospheric air enters the chamber 14 directly. The humid air breathed-out by the wearer is, on the contrary, discharged to the atmosphere, through the valve 19, while the valve 18 is kept closed by the slight overpressure existing in the chamber 15 during this phase of breathing-out: and so on at every respiratory cycle.

It requires to be noted that the presence of the septum 17, which encircles in airtight fashion the respective face area, obliges the wearer to breathe-in only the air contained in the chamber 14, before it becomes vitiated and causes misting of the visor.

It is therefore clearly seen that there is set up in the chamber 14 a continuous, free supply of fresh air, while the humid air is breathed-out directly to the atmosphere without affecting the chamber 14, with the result that the visor 12 is prevented from misting.

The continuous and natural exchange of air coming from the inside of the helmet directly from the atmosphere also ensures that the body temperature does not appreciably influence either the temperature or even the degree of humidity of the volume of air which is momentarily present in the chamber 14.

There is in this way avoided the other cause of misting of the visor 12.

FIGURE 2 shows another helmet embodied according to the invention, exactly equivalent to the one illustrated in FIGURE 1.

In the helmet of FIGURE 2 the chamber 15 is formed of a guard 20 made for example of elastically yielding plastics material. In the frontal area of the guard 20 (FIGURE 4) are applied the valves 18, 19, and the valve 19 discarges into an enclosed space 21, i.e. a space which is not affected by the turbulence of the atmospheric air (although communicating directly with it), so as to ensure a prompt and correct opening of the said valve 19 at the time when the wearer breathes out.

The valve 19 could also be omitted and the chamber 15 be in communication with the atmosphere through one or more shutter holes, since the volume of air to be pumped out of the helmet with respect to the volume breathed-in by the wearer is minimal.

In this type of helmet, as the visor 12 is closed on its seating in a practically airtight manner, the chamber 14 communicates directly with the atmosphere only through the circumferential play which is always present between the side and rear areas of the wearer's head and the base of the helmet, but is closed, by means of a septum 22, at the base of the guard 20, in order to prevent the wearer from being able to breathe in a large amount of fresh air from below, leaving vitiated air in the chamber 14.

in the FIGURES 5, 6 and 7 of the drawings there is shown a pair of sports goggles or glasses embodied according to the informing principle of the invention, and in these FIGURES the parts essentially equivalent to those illustrated in the FIGURES from 1 to 4 are indicated with the same reference numbers.

The said goggles or glasses are indicated overall by 30 and have an internal structure consisting of two chambers 14 and 15. The chamber 14 comprises a visor 12 and encloses the eyes of the wearer, while the chamber 15 encloses the nose of the wearer and is separated from the chamber 14 by an intermediate septum. The chambers 14 and 15 intercommunicate through a pair of one-way breathing-in valves 18, and communicates with the atmosphere through respective sets of holes 31 and 32. The holes 32 are made through the lower wall of the chamber 15 (FIGURE 7), while the holes 31 can be made at any point of the upper peripheral border of the chamber 14.

The functioning of the goggles or glasses described above is equivalent to that of the helmet illustrated in the FIGURES 1-4.

The vitiated air contained in the chamber 14 is pumped out by means of breathing-in with the nose through the valves 18 and fresh air enters from the holes 31.

The wearer can breathe-out both through the mouth and through the nose; in this latter case, the valves 18 prevent the humidity-laden air from entering the chamber 14.

In this way the visor 12 is prevented from misting.

CLAIMS

1. A visored face guard having a first chamber communicating with the atmosphere and containing a visor and, in use, surrounding the eyes of the wearer, and a second chamber containing, in use, at least the nose of the wearer, which second chamber communicates with the atmosphere and also with the first chamber via at least one one-way valve, allowing air flow from the first to the second chamber.

2. A face guard according to claim 1, wherein the second chamber communicates with the atmosphere through a set of holes.

3. A face guard according to claim 1, wherein the second chamber communicates with the atmosphere through at least one one-way valve, allowing air flow out of the second chamber.

4. A face guard according to claim 1, 2 or 3,

wherein, in use, the second chamber also surrounds the mouth of the wearer.

5. A visored face guard substantially as hereinbefore described with reference to and as illustrated in Figure 1 or Figures 2, 3 and 4 of the accompanying drawings.

6. A helmet having a face guard as claimed in any of claims 1 to 5.

7. A visored face guard substantially as hereinbefore described with reference to and as illustrated in Figures 5, 6 and 7 of the accompanying drawings.

8. Sports goggles or glasses having a face guard as claimed in any of claims 1 to 4 or 7.

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