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(54) **MASK**

(57) Mask (100) for individual protection comprising a first external portion (1) for covering the face and configured to face the external environment, a second internal portion (2) configured to face the user, connection means connected by means of openings (6, 6') to the first portion (1) of the mask (100) for fixing in position. The first portion (1) comprises in its lower portion (1') at least a first opening (3, 3') for the incoming air flows and at least a second opening (4, 4') in a higher position than the at least one first opening (3, 3') for the outgoing air flows, so that all the air entering from the first opening (3, 3') is expelled directly from the second opening (4, 4').

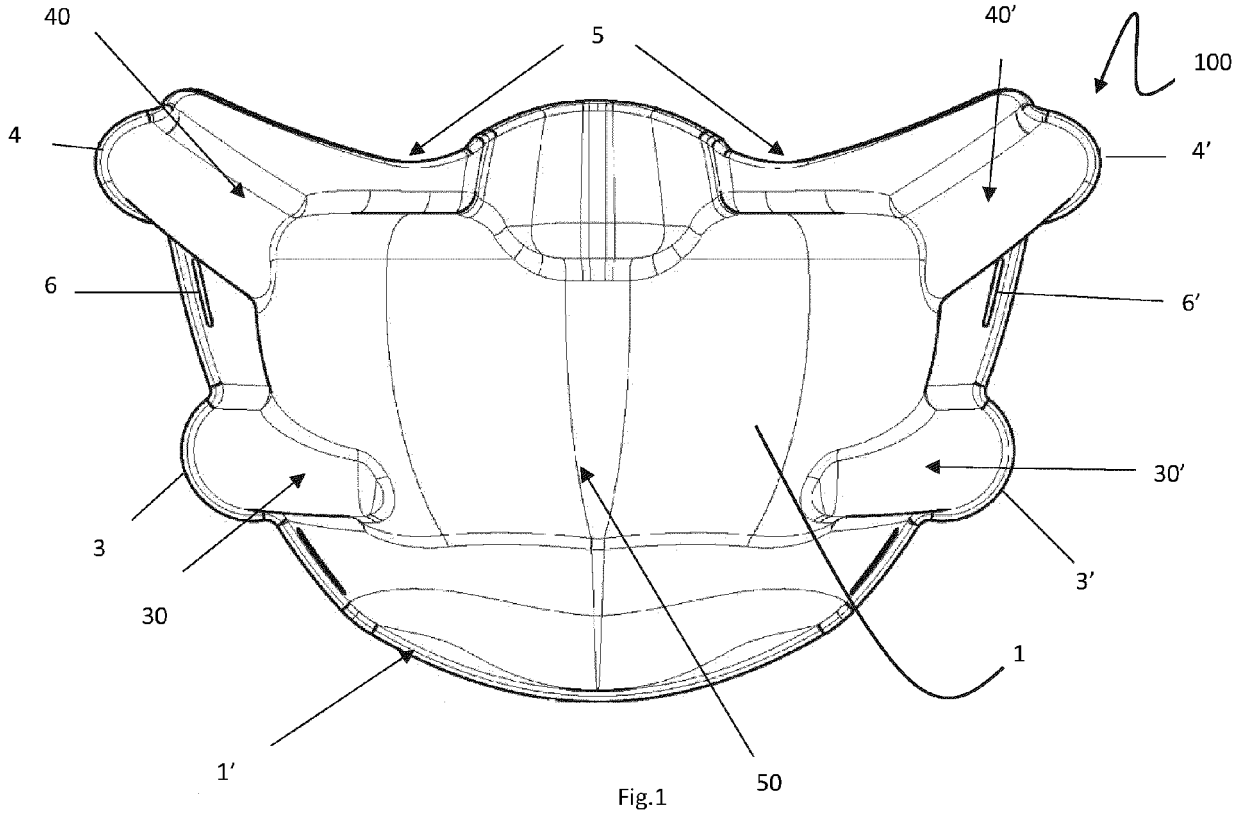

Fig.1

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Description

Technical field

[0001] The present invention relates to an innovative mask for individual protection. The sector of use of this type of mask is the one aimed at protecting the individual to reduce the risk of transmission of infections. In particular, the innovative mask is functional for any type of infection, in particular but not exclusively so as not to spread bacterial or viral infections (such as coronavirus infections: Covid-19, Mers, etc.). Therefore the mask object of the present invention can be validly used by all those who need to reduce the risk of transmission of any infection, either for medical personnel, paramedics or hospitalized patients.

Background

[0002] Various types of masks for individual protection are known in the state of the art. One of these is represented by surgical masks. These masks are of the filtering and fabric type, generally do not adhere closely to the contours of the face and therefore their main purpose is to prevent the largest droplets of the respiratory secretions from escaping from them.

[0003] Numerous other types of masks are also known, equipped with filtering apparatuses and approved for use as medical devices. These masks are tested to ensure specific levels of protection against the penetration of blood and other biological fluids through the mucous membranes of the nose and mouth.

[0004] Furthermore, the masks currently on the market have different characteristics regarding materials and design. In general, they are secured to the face by laces or elastics to be passed behind the ears or tied behind the nape. Some models are also equipped with a flexible underwire for better adherence to the nasal saddle.

[0005] Known masks provide protection against the spread of an infection both by blocking the droplets of respiratory secretions emitted by the sick people who wear them, and by preventing the same droplets or spray of secretions or other biological fluids from reaching the mucous membranes of the nose and mouth. However, these masks are not effective to protect the individual against fine aerosols that could contain very small infectious particles such as viruses. In particular, the filters on commonly used masks are generally positioned frontally, in correspondence with the mouth and nose, thus always allowing an outflow during the exhalation phase by the user. This therefore generates a potentially dangerous and direct outflow to people in the immediate vicinity. Furthermore, once used, being mostly made of fabric and disposable, they must be immediately disposed of in the trash. Or, alternatively, the masks that have replaceable filters can be reused after replacing the filter with a certain frequency to ensure its effectiveness.

[0006] There is therefore the need to define an innovative mask for individual protection, reusable and free of filter elements or fabric elements, capable of minimizing the risk of transmission of infections between individuals who come into contact with each other.

Summary of the invention

[0007] An object of the present invention is therefore an innovative face protection device, in particular a face mask capable of preventing the transmission of an infection from one individual to another.

[0008] Advantageously, the mask object of the present invention is washable and reusable. Furthermore, it does not include filtering or fabric elements to be replaced. It is made in a plastic mold, excluding the use of any fabric, therefore of different conception and realization compared to the known type masks. The density and consistency of the material of which the mask is made cancels the influx or reflux of any type of particle, even microscopic.

[0009] Advantageously, the mask is made of rigid and transparent material, therefore not hiding the features of the mouth, nose, etc. allows an immediate identification of the individual who wears it, in the case of police checks, etc. The feature of the transparency of the mask also allows the deaf to be able to read the lips and therefore is not penalizing them.

[0010] Advantageously, the transparent mask also makes it easier to identify individuals with flu or other symptoms, paying attention to the cleanliness of the mask itself and therefore to maintain an adequate distance from the individuals around us.

[0011] These and other purposes and advantages are achieved, according to the invention, by an innovative mask for individual protection, having the characteristics stated in the attached independent claim.

[0012] Further preferred and / or particularly advantageous embodiments of the invention are described according to the characteristics set out in the appended dependent claims.

Brief Description of the Drawings

[0013] The invention will now be described with reference to the attached drawings, which illustrate an example of non-limiting implementation, in which:

- Figure 1 is an axonometric overall view of a mask according to the present invention;
- Figure 2 is a side view of the mask of Figure 1;
- Figure 3 is a front view of the mask of Figure 1, worn by a user.

Detailed Description

[0014] With reference to the above figures, the present invention relates to a face mask 100 which must be worn by a user, comprising a first external portion 1 for covering

the face and configured to be pointed towards the external environment and a second portion 2 internal and facing the user.

The first portion 1 comprises in the lower portion 1' and laterally with respect to the user's chin, respectively one on the right side and one on the opposite side, on the left, at least a first opening 3, 3' for the incoming air flows and at least a second opening 4, 4' in a higher position than the at least a first opening 3, 3', approximately at the height of the user's ears, for the outgoing air flows.

As shown in Figure 3, to allow normal breathing of the user, the air flow, in the inspiration phase, enters the at least a first opening 3, 3' of the mask 100 and in the exhalation phase, exits towards the at least a second opening 4, 4'.

A cavity 50 is thus created between the first external portion 1 and the second internal portion 2, i.e. a free zone for the circulation of air which is fed by at least one channel 30, 30' for introducing air from the at least one first opening. 3, 3' and directed towards the nose and mouth. The at least one extraction channel 40, 40' of the air directed towards the at least a second opening 4, 4' leaves from the same cavity 50.

The mask 100 according to the invention does not include any filter, since, as already mentioned, this mask does not filter the incoming or outgoing air, but regulates its flows according to the directions indicated. The release of air at ear level therefore avoids the front exit of any particle.

[0015] According to this configuration, the mask 100 frontally inhibits the emission of each particle of breath, both in gaseous and liquid form by the user who wears it, thus protecting those who are in the immediate vicinity. The mask 100 is also perfectly hermetic in an upper portion 5 of the first external portion 1, which perfectly adheres to the user's nose and face.

[0016] The face protection mask 100 also includes, on both the right and left sides of the first portion 1 of the mask 100, a pair of openings 6, 6' for attachment by means of connection means (of a known type and therefore not shown in the figures attached) to a user's head. These connection means are, for example, an elastic band, a velcro (or strip) in order to allow different adjustments depending on the size of the user's head.

[0017] Advantageously, the mask 100 is made of rigid material, for example in polymethylmethacrylate (PMMA), commonly known with the trade name transparent "plexiglass". The methods for manufacturing the masks 100 are manifold, according to absolutely non-limiting examples, they may be molding, thermoforming and other similar processes.

[0018] Advantageously, the air channeling inside the mask 100 does not allow the glasses to mist up for those who use them.

[0019] Advantageously, the mask 100 has no sharp edges, i.e. it has all rounded edges so as not to create marks and irritation on the skin.

[0020] Even if at least one exemplary embodiment has been presented in the summary and detailed description, it must be understood that there is a large number of variants within the scope of the invention. Furthermore, it must be understood that the realization or the realizations presented are only examples that do not intend in any way to limit the scope of protection of the invention or its application or its configurations. Rather, the brief and detailed description provide the skilled technician in the sector with a convenient guide for implementing at least one exemplary embodiment, being clear that numerous variations can be made in the function and assembly of the elements described herein, without departing from the scope of protection of the invention as established by the attached claims and their technical-legal equivalents.

Claims

1. Mask (100) for individual protection comprising:

   a first external portion (1) for covering the face and configured to face the external environment,
   a second internal portion (2) configured to face the user,
   connection means connected by means of openings (6, 6') to the first portion (1) of the mask (100) for fixing in position,
   said mask being **characterized in that** the first portion (1) comprises in its lower portion (1, 1') at least a first opening (3, 3') for the incoming air flows and at least a second opening (4, 4') in a higher position than the at least one first opening (3, 3') for the outgoing air flows, so that all the air entering from the first opening (3, 3') is expelled directly from the second opening (4, 4').

2. Mask (100) according to claim 1, further comprising at least one intake channel (30, 30') for introducing the air from the at least one first opening (3, 3') directed towards the nose and mouth and at least one extraction channel (40, 40') of the air directed towards the at least a second opening (4, 4').

3. Mask (100) according to claim 2, wherein between the first external portion (1) and the second internal portion (2) there is a cavity (50) used for the circulation of the air which is fed by the at least one intake channel (30, 30') of the air from the at least one first opening (3, 3') and feeds the at least one extraction channel (40, 40') of the air directed towards the at least one second opening (4, 4 ').

4. Mask (100) according to any of the preceding claims, wherein an upper portion (5) of the first external portion (1) adheres tightly, once worn, to the user's nose and face.

5. Mask (100) according to any of the preceding claims, **characterized in that** it is made of transparent rigid material.

6. Mask (100) according to claim 5, **characterized in that** said rigid material is a polymethylmethacrylate.

7. Mask (100) according to one of the preceding claims, **characterized in that** it is made by molding or by thermoforming.

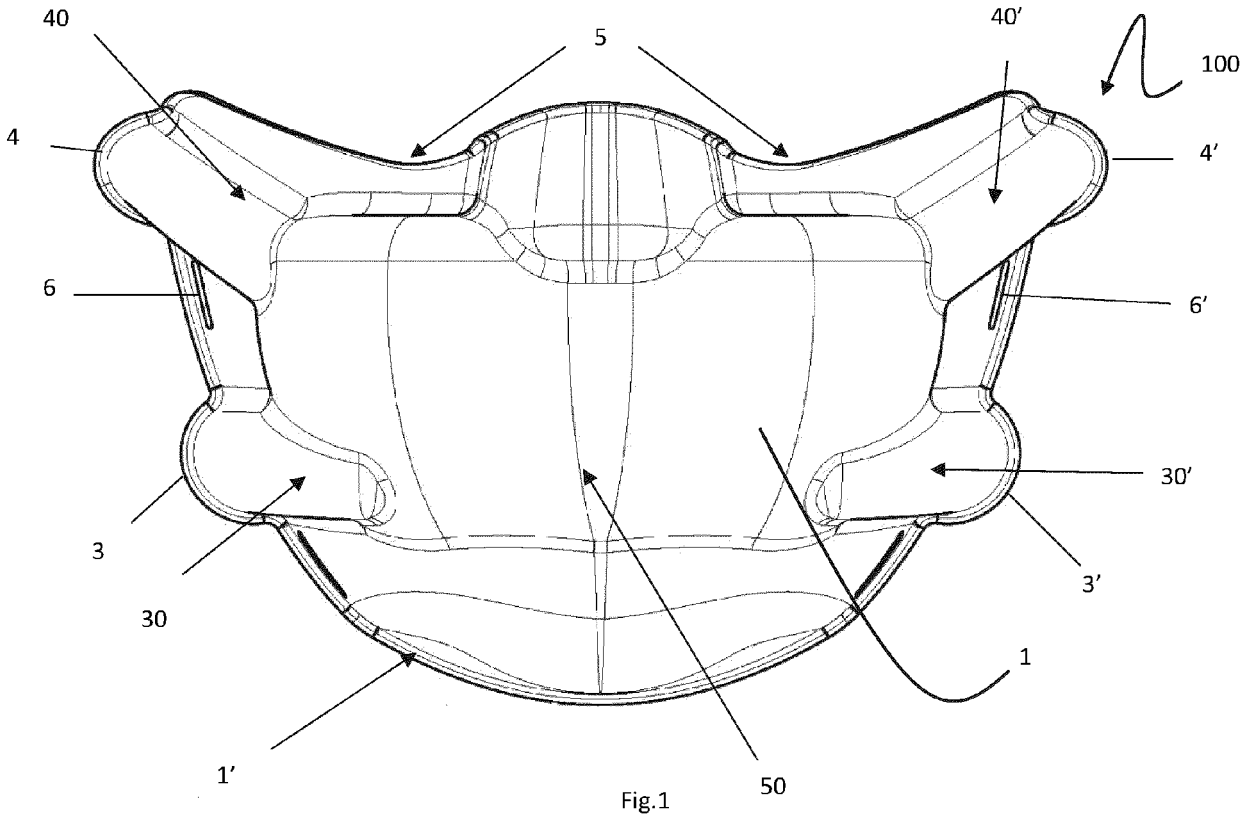

Fig.1

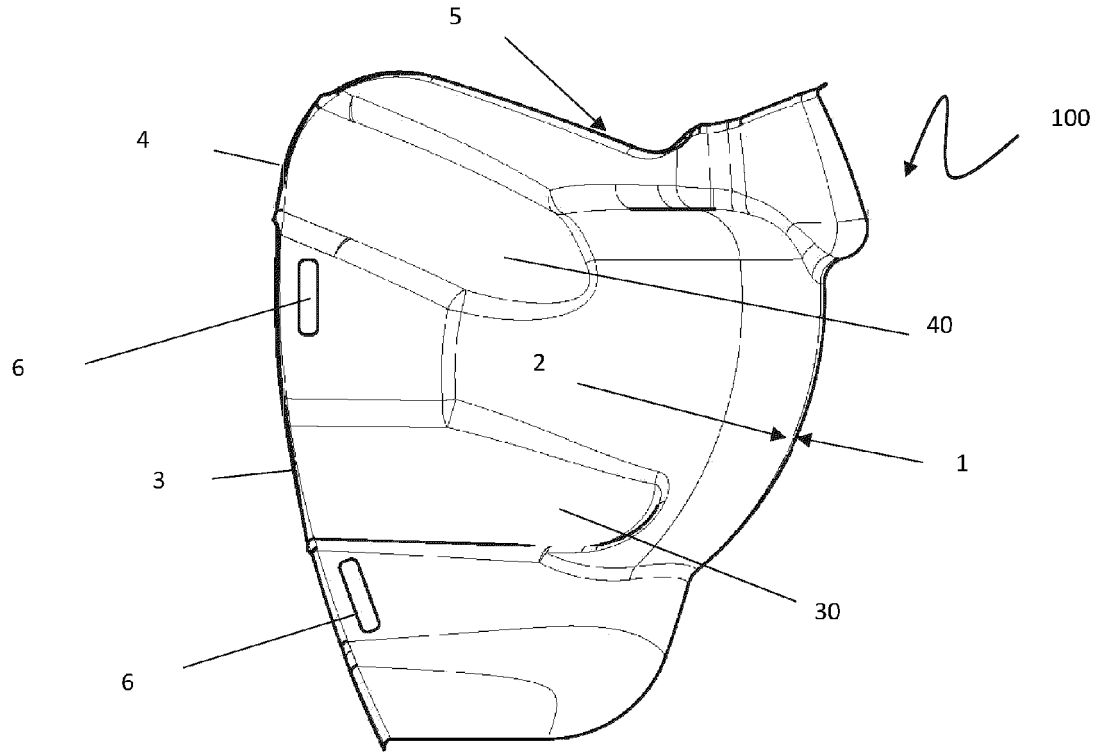

Fig.2

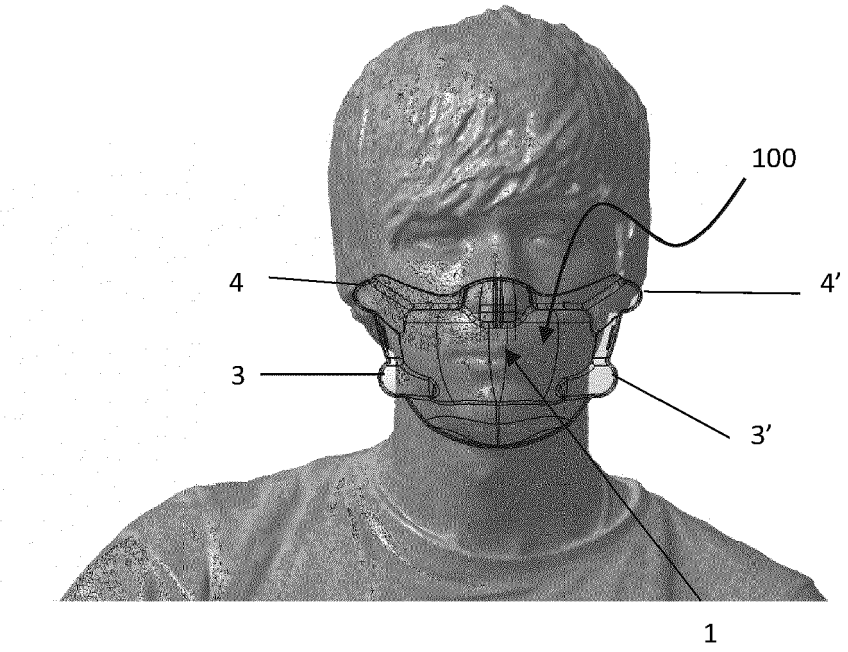

Fig.3

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EUROPEAN SEARCH REPORT

Application Number
EP 20 17 0920

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 1 410 775 A2 (HOERNELL INTERNAT AB [SE]) 21 April 2004 (2004-04-21) * paragraphs [0020], [0027]; figures 6,9 * -----	1-3,5-7	INV. A41D13/11
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A	US 3 838 466 A (POIRIER R) 1 October 1974 (1974-10-01) * column 2, lines 25-67; figures 1-4 * -----	1-7	

TECHNICAL FIELDS SEARCHED (IPC)

A41D
A42B
A61F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	10 September 2020	D'Souza, Jennifer

CATEGORY OF CITED DOCUMENTS

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82