HELMET BREATH GUARD

Applicant: Kimpex Inc., Drummondville (CA)
Inventors: Robert HANDFIELD, St-Lucien (CA); Nicolas BOUCHARD-FORTIN, Racine (CA)

Filed: Aug. 21, 2017

Abstract
A helmet breath guard add-on which is capable of effectively preventing steam formation in a helmet shield, thereby removing inconveniences when wearing a helmet, is disclosed. The breath guard may be made from a flexible yet solid elastomeric material providing for an adequate elastic adjustment, and allowing a fit to a wide variety of different helmet user faces. Preferably, the single piece nature of the breath guard allows for the prevention of leaks for adequate helmet fog reduction. The elastic nature of the material allows the breath guard to generally keep its shape even when distorted from the putting on and the removal of the helmet.
HELMET BREATH GUARD

CROSS-REFERENCE TO RELATED APPLICATIONS


FIELD OF THE INVENTION

[0002] The present invention generally relates to breath guards for use in helmets, such as but not limited to motorcycle or snowmobile helmet.

BACKGROUND OF THE INVENTION

[0003] Breath guards are commonly used today to prevent the formation of fog in helmets when they are worn by riders. However, one of the problems of breath guards is their permeability and the degree to which they absorb moisture which ultimately result in ice and/or fog formation in the helmet. Understandably, frozen breath guards are uncomfortable due to the distortions caused by frost.

[0004] There is thus a need for a breath guard which will provide a workable solution to mitigate at least some of the aforementioned problems.

SUMMARY OF THE INVENTION

[0005] At least some of the aforementioned problems are mitigated by the present invention concerning an impermeable breath guard for a helmet. The helmet comprises a helmet outer shell having an inside surface facing the head of a person wearing the helmet, a substantially transparent face shield attached to the helmet outer shell, and a chin bar disposed below the face shield, the chin bar having an inside surface facing toward a person using the helmet. The breath guard is then configured to be operatively inserted into the helmet and to extend from the inside surface of the chin bar toward the face of the person, the breath guard comprising an impermeable material, whereby in use, the impermeable breath guard prevents the breath of the person to pass through the breath guard and contact the face shield and the inside surface of the helmet outer shell.

[0006] The invention is also directed to a protective helmet, such as a snowmobile helmet or a modular helmet the helmet comprising:

[0007] a helmet outer shell;
[0008] a substantially transparent face shield attached to the helmet outer shell;
[0009] a chin bar disposed below the face shield, the chin bar having an inside surface facing toward a person wearing the helmet; and
[0010] a breath guard being configured to be operatively inserted into the helmet and to extend from the inside surface of the chin bar toward the face of the person, the breath guard comprising an impermeable material to prevent the breath of the person to pass through the breath guard and contact the face shield and the outer shell.

[0011] The invention is directed to an impermeable breath guard for a helmet; the helmet comprising a helmet outer shell having an inside surface facing the head of a person wearing the helmet, a substantially transparent face shield attached to the helmet outer shell, and a chin bar disposed below the face shield, the chin bar having an inside surface facing toward a person using the helmet; the breath guard being configured to be operatively inserted into the helmet and to extend from the inside surface of the chin bar toward the face of the person, the breath guard comprising an impermeable material, whereby in use, the impermeable breath guard prevents the breath of the person to pass through the breath guard and contact the face shield and the inside surface of the helmet outer shell; the impermeable breath guard comprises:

[0012] a first portion defining a cavity adapted for receiving the nose of the person;
[0013] a second portion extending from the first portion towards the inside surface of the chin bar;
[0014] a third portion extending downwardly from the second portion and being adapted to connect the breath guard to the chin bar of the helmet; and
[0015] a fifth and a sixth portion being in elevation and extending substantially perpendicularly to the third portion.

[0016] The helmet can be a snowmobile helmet (particularly adapted for being used with cold temperature) or a modular helmet (where the chin bar is hingely connected to the outer shell of the helmet).

[0017] Preferably, the impermeable breath guard comprises:

[0018] a first portion defining a cavity adapted for receiving the nose of the person;
[0019] a second portion extending from the first portion towards the inside surface of the chin bar; and
[0020] a third portion extending from the second portion and being adapted to connect the breath guard to the chin bar of the helmet.

[0021] The invention is directed to a protective helmet, the helmet comprises:

[0022] a helmet outer shell;
[0023] a substantially transparent face shield attached to the helmet outer shell;
[0024] a chin bar disposed below the face shield, the chin bar having an inside surface facing toward a person wearing the helmet; and
[0025] a breath guard being configured to be operatively inserted into the helmet and to extend from the inside surface of the chin bar toward the face of the person, the breath guard comprising an impermeable material to prevent the breath of the person to pass through the breath guard and contact the face shield and the outer shell;

[0026] the impermeable breath guard comprises:
[0027] a first portion defining a cavity adapted for receiving the nose of the person;
[0028] a second portion extending from the first portion towards the inside surface of the chin bar;
[0029] a third portion extending downwardly from the second portion and being adapted to connect the breath guard to the chin bar of the helmet; and
[0030] a fifth and a sixth portion being in elevation and extending substantially perpendicularly to the third portion.
[0031] Preferably, the first, second and third portions of the breath guard form a single element, which can be made more preferably by extrusion or moulding.

[0032] The third portion of the impermeable breath guard may comprise at least one fixing element to secure the breath guard to the helmet. Preferably, each fixing element comprises an opening made through the third portion of the guard and adapted to receive a male element extending from the chin bar of the helmet.

[0033] The impermeable material of the guard may comprise a polymer or a composite which is flexible enough to allow the breath guard to both regain its shape after distortion and prevent moisture from going through. More preferably, the impermeable material comprises silicone or rubber.

[0034] In the he impermeable breath guard disclosed herein, the first portion may comprise a deformable insert for shaping the first portion to a form of the nose of the person. More preferably, the deformable insert is metallic.

[0035] Preferably, the breath guard may further comprise a fourth portion along a rear edge of the third portion, the fourth portion being adapted to be in contact with the face of the person to improve the impermeability of the guard when in contact with the face of the person. The fourth portion may be a curved portion extending from the rear edge of the third portion.

[0036] Preferably, the breath guard is unitary and substantially made from elastomeric material. In typical yet non-limitative embodiments, the breath guard is made from a silicon or rubber containing material. Still, the breath guard may be made from other resilient material such as polymer or composite, which are flexible enough and non-permeable to allow the breath guard to both regain its shape after distortion and prevent moisture from going through.

[0037] Understandably, the resilient nature of the material of the breath guard will typically provide for an easy opening of the chinstrap of the helmet and will typically allow the breath guard to take its shape back upon removal of the helmet. In addition, the preferred single piece nature of the breath guard will generally prevent leaks, thereby preventing fog formation inside the shield.

[0038] Other and further aspects and advantages of the present invention will be better understood of the illustrative embodiments about to be described, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

BRIEF DESCRIPTION OF THE DRAWINGS

[0039] The above and other aspects, features and advantages of the invention will become more readily apparent from the following description, reference being made to the accompanying drawings in which:

[0040] FIG. 1 is a side view of an exemplary helmet equipped with a breath guard in accordance with the principles of the present invention, the visor of the helmet being in close position.

[0041] FIG. 2 is a side view of the helmet of FIG. 1, with the visor of the helmet being in partially open position.

[0042] FIG. 3 is a side view of the helmet of FIG. 1, with the visor of the helmet being in open position.

[0043] FIG. 4 is a front view of the helmet of FIG. 1, with the visor being in close position.

[0044] FIG. 5 is a front perspective view of the helmet of FIG. 1, with the visor being in close position.

[0045] FIG. 6 is a rear top perspective view of the breath guard of FIG. 1, without the helmet.

[0046] FIG. 7 is a rear view of the breath guard of FIG. 1, with the helmet partially shown.

[0047] FIG. 8 is another rear top perspective view of the breath guard of FIG. 1, without the helmet.

[0048] FIG. 9 is a rear bottom perspective view of the breath guard of FIG. 8.

[0049] FIG. 10 is a side view of the breath guard of FIG. 8.

[0050] FIG. 11 is a cross-sectional side view of the breath guard of FIG. 8 along line A-A of FIG. 13.

[0051] FIG. 12 is a top view of the breath guard of FIG. 8.

[0052] FIG. 13 is a rear view of the breath guard of FIG. 8.

[0053] FIG. 14 is a bottom view of the breath guard of FIG. 8.

[0054] FIG. 15 is a front view of another embodiment of the breath guard.

[0055] FIG. 16 is a perspective view of a helmet showing cheek pads.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0056] A novel helmet breath guard and protective helmet will be described hereinafter.

[0057] Referring first to FIGS. 1 to 5, an exemplary modular helmet 1 is shown equipped with a breath guard 10 in accordance with the principles of the present invention. The protective helmet 1 comprises a helmet outer shell 20; a substantially transparent face shield 30 attached to the helmet outer shell; a chin bar 40 disposed below the face shield 30. The chin bar has an inside surface facing toward a person 50 wearing the helmet. The breath guard 10 is configured to be operatively inserted into the helmet 1 and to extend from the inside surface of the chin bar toward the face of the person 50.

[0058] The breath guard 10 is configured to be mounted inside the modular helmet 1, preferably near or adjacent to the lower part of the shield holder or chin bar 40.

[0059] Referring now to FIGS. 6 to 14, the breath guard 10 is shown in greater details.

[0060] The breath guard 10 as illustrated is substantially made from a single piece of elastomeric material and generally comprises a semi-circular main portion 101 which is terminated, at its curved edge, with an upwardly extending flange portion 100. The main portion 101 comprises an upwardly protruding portion 102 defining a space for the helmet user's nose, and an intermediate portion 103 linking the main portion 101 with the protruding portion 102.

[0061] Referring now to FIGS. 10 and 11, the flange portion 100 is depicted as being lower than the protrusion portion 102 such as to not obstruct the view of the user. Referring particularly to FIG. 8, the flange portion 100 is shown having three distinct openings, one central opening 107 and two side openings 104 and 108 respectively located on the left and right sides of the flange portion 100. The openings 104, 107 and 108 are used to secure the breath guard 10 to the helmet 1.

[0062] Referring to FIGS. 8 and 10, in the present embodiment, the side openings 104 and 108 are slightly elongated while the central opening 107 is circular. The slightly
elongated openings 104 and 108 allow for a better adjustment of the breath guard 10 to different types and/or sizes of helmets 1.

[0063] Referring now to FIGS. 8-11 and 15, the rear edge of the main portion 101 is provided with a curved portion 105. This curved portion 105 which is in contact with the helmet user’s face, is constructed from a curving downward of the body of the breath guard 106. This curved portion 106 allows for an enhanced contact with the user face thereby preventing any steam or moisture from the breath of the user to reach the shield. This bent portion 106 also act as a cushion with the user face and provide for a more comfortable leak free breath guard.

[0064] Referring to FIGS. 8 and 13, in the present embodiment, the protruding portion 102 is provided with embedded thin malleable metal pieces enabling for the adjustment of the protruding portion 102 to different nose shapes and/or sizes. The adjustment is typically performed by pressing on both sides of the protruding portion 102 to provide a tighter nose fit.

[0065] As mentioned above, breath guard 10 shown in FIG. 8 is made from a single piece of resilient elastomeric material such as, but not limited to, rubber or silicon containing material. Other materials known in the art that possess both shape memory and flexibility could also be used.

[0066] The ability of the material to regain its original shape upon physical distortion is a preferred feature in that it will insure the same comfortable wear of the breath guard in spite of multiple uses. In addition, the flexibility in the material will enable the breath guard to fit different users in a comfortable manner. Such material will also allow for uses in a wide range of temperatures. Moreover, the elastomeric character of the material will also allow for an easier opening of the chinstrap.

[0067] Referring now to FIG. 15, another preferred embodiment of a breath guard 10 is illustrated. The breath guard 10 as shown is substantially made from a single piece of elastomeric material adapted for the prevention of leaks for adequate helmet fog reduction. The breath guard 10 generally comprises a semi-circular main portion 101A which is terminated, at its curved edge, with a downwardly extending flange portion 100A. The main portion 101A comprises an upwardly protruding portion 102A defining a space for the helmet user’s nose, and an intermediate portions 103A linking the main portion 101A with the protruding portion 102A. The intermediate portions 103A allow to better adjust the protruding portion 102A to the user’s nose.

[0068] In a preferred embodiment, the main portion 101A is flat.

[0069] Still referring to FIG. 15, the flange portion 100A is lower than the protrusion portion 102A such as to not obstruct the view of the user and especially to downwardly direct the user’s breath to prevent steam formation in a helmet shield. The flange portion 100A comprises four distinct openings 107 distributed over the circumference of the flange portion and adapted to receive fastener means to secure the breath guard 10 to the helmet 1. The openings 107 comprise one first circular slot 107A communicating with one second slot 107B larger than the first slot. The openings 107 are shaped in a way to ensure a quick and easy mounting of the breath guard 10 to the helmet 1.

[0070] Still referring to FIG. 15, the breath guard 10 comprises two side protrusions 108A and 108B located at both side extremities of the flange portion 100A. Both side protrusions 108A and 108B are being in elevation and extending substantially perpendicularly to the flange portion 100A. The side protrusions 108A and 108B aim to prevent the user’s breath from upwardly circulating towards the transparent face shield. Both side protrusions 108A and 108B are adapted to be in contact with the inner front surface 60 of the helmet 1 and the side cheek pads 70 (See FIG. 16) to insure a better sealing of the breath guard 10 to the helmet 1.

[0071] In a preferred embodiment, the side protrusions 108A and 108B are as thin as the main portion’s wall.

[0072] The preferred single piece nature of the breath guard 10 will typically prevent leaks, thereby effectively reducing fog formation inside the helmet 1. In addition to the non-permeable character of the material, its non-absorbent nature will prevent any moisture absorption, thereby preventing ice formation at below zero temperature.

[0073] The unitary breath guard is preferably made by extrusion or by mould injection, whereby the silicon or rubber based material is injected in the mould bearing the metal adjustment pieces.

[0074] While illustrative and presently preferred embodiments of the invention have been described in detail hereinabove, it is to be understood that the inventive concepts may be otherwise variously embodied and employed and that the appended claims are intended to be construed to include such variations except insofar as limited by the prior art.

1. An impermeable breath guard for a helmet; the helmet comprising a helmet outer shell having an inside surface facing the head of a person wearing the helmet, a substantially transparent face shield attached to the helmet outer shell, and a chin bar disposed below the face shield, the chin bar having an inside surface facing toward a person using the helmet; the breath guard being configured to be operatively inserted into the helmet and to extend from the inside surface of the chin bar toward the face of the person, the breath guard comprising an impermeable material, whereby in use, the impermeable breath guard prevents the breath of the person to pass through the breath guard and contact the face shield and the inside surface of the helmet outer shell; wherein the impermeable breath guard comprises:
   a. first portion defining a cavity adapted for receiving the nose of the person;
   b. a second portion extending from the first portion towards the inside surface of the chin bar;
   c. a third portion extending downwardly from the second portion and being adapted to connect the breath guard to the chin bar of the helmet; and
   d. a fifth and a sixth portion being in elevation and extending substantially perpendicularly to the third portion.

2. The impermeable breath guard of claim 1, wherein the first, second and third portions of the breath guard form a single element.

3. The impermeable breath guard of claim 2, wherein the breath guard is made by extrusion or moulding.

4. The impermeable breath guard of claim 1, wherein the third portion comprises at least one fixing element to secure the breath guard to the helmet.

5. The impermeable breath guard of claim 4, wherein each fixing element comprises an opening made through the third portion of the guard and adapted to receive a male element extending from the chin bar of the helmet.
6. The impermeable breath guard of claim 1, wherein the impermeable material comprises a polymer or a composite which is flexible enough to allow the breath guard to both regain its shape after distortion and prevent moisture from going through.

7. The impermeable breath guard of claim 6, wherein the impermeable material comprises silicone or rubber.

8. The impermeable breath guard of claim 1, wherein the first portion comprises a deformable insert for shaping the first portion to a form of the nose of the person.

9. The impermeable breath guard of claim 8, wherein the deformable insert is metallic.

10. The impermeable breath guard of claim 1, wherein the breath guard further comprises a fourth portion along a rear edge of the second portion, the fourth portion being adapted to be in contact with the face of the person to improve the impermeability of the guard when in contact with the face of the person.

11. The impermeable breath guard of claim 10, wherein the fourth portion is a curved portion extending from the rear edge of the second portion.

12. The impermeable breath guard of claim 1, wherein the fifth and the sixth portions being adapted to be in contact with an inner front surface of the helmet and side cheek pads.

13. A protective helmet, the helmet comprising:
   a helmet outer shell;
   a substantially transparent face shield attached to the helmet outer shell;
   a chin bar disposed below the face shield, the chin bar having an inside surface facing toward a person wearing the helmet; and
   a breath guard being configured to be operatively inserted into the helmet and to extend from the inside surface of the chin bar toward the face of the person, the breath guard comprising an impermeable material to prevent the breath of the person to pass through the breath guard and contact the face shield and the outer shell;
   wherein the impermeable breath guard comprises:
   a first portion defining a cavity adapted for receiving the nose of the person;
   a second portion extending from the first portion towards the inside surface of the chin bar;
   a third portion extending downwardly from the second portion and being adapted to connect the breath guard to the chin bar of the helmet; and
   a fifth and a sixth portion being in elevation and extending perpendicularly to the third portion.

14. The helmet of claim 13, wherein the first, second and third portions of the breath guard form a single element.

15. The helmet of claim 14, wherein the breath guard further comprises a fourth portion along a rear edge of the second portion, the fourth portion being adapted to be in contact with the face of the person to improve the impermeability of the guard when in contact with the face of the person.

16. The helmet of claim 13, further comprising at least one fixing element to secure the breath guard to the chin bar of the helmet.

17. The helmet of claim 16, wherein each fixing element comprises an opening made through the third portion of the guard and adapted to receive a male element extending from the chin bar of the helmet.

18. The impermeable breath guard of claim 13, wherein the fifth and the sixth portions being adapted to be in contact with an inner front surface of the helmet and side cheek pads.

19. The helmet of claim 13, wherein the helmet is a snowmobile helmet.

20. The helmet of claim 13, wherein the helmet is a modular helmet having the chin bar hingedly connected to the outer shell to easily put on or remove the helmet.

* * * * *