Claims

1. An air barrier device adaptable for being worn by a user for producing a flow of air across a face of the user comprising:

a support structure being shaped and dimensioned for affixing to a portion of the head of the user;

an air intake being coupled to the support structure for drawing ambient air thereinto, the air intake comprising:

an intake air channel in fluid communication with the exhaust air channel;

an impeller disposed in the intake air channel and driven by an electrical actuator for drawing ambient air into the intake air channel;

a filter for filtering air being drawn into the intake air channel; and

an ionizer for ionizing the air being drawn into the intake air channel,

an air exhaust coupled to the support structure and being in fluid communication with the air intake for receiving the drawn air therefrom and directing a flow of air across the face of the user to form an air barrier thereover, the air exhaust being shaped to extend across the forehead of the user and comprises an exhaust air channel wherethrough air is transported and terminating at one or more nozzles wherefrom air can be discharged;

a shield structure coupled to the support structure for extending across at least a portion of the face of the user,

at least one sensor disposed in at least one of the air intake and the air exhaust for sensing air quality of air at least one of being drawn into the air intake and being discharged from the air exhaust; and

a controller circuitry in data communication with the at least one sensor for generating data from air quality being sensed thereby.

2. The air barrier device as in claim 1, the support structure comprising at least one of a head band adapted to have an adjustable girth for fitting around the head of the user and an arcuate arm being shaped and dimensioned for extending one of around the rear of the head of the user and around the back of the ear of the user.

3. The air barrier device as in claim 1, the shield structure is light permeable and being shaped and dimensioned for extending over at least one of the eyes, nose and mouth of the user.

4. The air barrier device as in claim 1, the shield structure comprising a lens adaptor for receiving at least one prescription lens.

5. The air barrier device as in claim 1, the filter being shaped as a removable filter cartridge with the air intake being adapted to enable removable and replacement of the filter cartridge therefrom.

6. The air barrier device as in claim 1, the filter comprising at least one of a micro-filter and a nano-filter.

7. The air barrier device as in claim 1, further comprising a battery module for providing electrical energy for operating at least one of the electrical actuator and the ionizer.

8. The air barrier device as in claim 7, further comprising at least one of:

a charging adaptor in electrical communication with the battery module and being shaped and dimensioned for removable coupling with an electrical source for charging the battery module; and

a solar charge module for converting light energy into electrical energy for at least one of charging the battery module and powering the electrical actuator and the ionizer.

9. The air barrier device as in claim 8, further comprising:

a controller circuitry for controlling charging of the battery via at least one of the charging adaptor and the solar charge module.

10. The air barrier device as in claim 1, the air exhaust for directing the flow of air at a mass flow rate for creating a higher than ambient pressure in a space between the face of the user and the shield structure.

11. The air barrier device as in claim 1, the shield structure having a curved shape.

12. The air barrier device as in claim 1, the air intake and the support structure being inter-configured for disposing the air intake one of away from the face and at the back of the head of the user when the support structure is worn on the head of the user.