The present invention relates to a structurally improved seat cushion, comprising a main body which includes a padding part, a backrest part and multiple accordion-shaped vent pipes used to connect the padding and backrest parts. There are guide grooves formed between padding components on the padding and backrest parts, multiple wings extending from two side edges of the padding components and capable of being bent to fit in with a seat adequately and a containing space with an opening at front end of the padding part to fix a wind scooper, while a blower fan is connected with the opening. When the blower fan draws external cooling air into the main body, the cooling air goes quickly out of vent holes along diversion grooves formed by multiple separation boards in the wind scooper, guide grooves and vent pipes, making users feel cool, ventilative and more comfortable when sitting on it.
FIG. 5
STRUCTURALLY IMPROVED SEAT CUSHION

This application is a Continuation-In-Part of application Ser. No. 12/470,495, filed on May 22, 2009, now pending. The patent application identified above is incorporated here by reference in its entirety to provide continuity of disclosure.

BACKGROUND OF THE INVENTION

1. Field of the Invention
2. Description of the Related Art
3. For chairs currently available in the marketplace, e.g., sofa chairs, car seats or office chairs, they are usually designed to be filled with preformed foam and sewed and packed by fabric, leather or other materials, so that people can sit on these chairs with comfort. Due to limited air permeability of fabric and leather, however, people easily feel sultry and uncomfortable or suffer from eczemas or bedsores on their body parts in contact with chairs as a result of sultriness or sweating when sitting on these chairs. In addition, some persons may cover chairs with cushions made of bead strings, bamboo, rattan wares or other materials. Though this can improve situations of sultriness and poor air permeability temporarily by reducing direct body contact, it cannot effectively achieve quick cooling and ventilation effect when users seat themselves on such kinds of chairs.

Therefore, some persons engaged in this field develop a seat cushion as shown in FIG. 7, which comprises a soft plastic board A, a soft plastic sheet B and a fan C. The soft plastic board A is covered by multiple elastic convex strips A1 arranged at regular intervals, and multiple air ducts A2 are formed to connect with each other between the elastic convex strips A1. In addition, multiple air vents A21 are established on the air ducts A2, which converge into an integrating space A3 at the front end. Then, the soft plastic sheet B covers the soft plastic board A to form a closed space. Besides, the fan C is installed inside the integrating space A3 of the soft plastic board A to blow air into air ducts A2 and blow it out of the air vents quickly when the fan C works, so that users can feel cool and comfortable when sitting on the seat cushion. Yet, the aforesaid seat cushion still has certain deficiencies and shortcomings in use, which are described respectively as below:

1. When the aforesaid seat cushion bears users’ body weight, its elastic convex strips A1 and air ducts A2 will be squashed flat, preventing the fan C inside the integrating space A3 from blowing cooling air into the air ducts A2 directly for heat radiation. As a result, heat will accumulate in the seat cushion and cannot be radiated effectively.
2. For the aforesaid seat cushion, the fan C hangs from the integrating space A3 inside the soft plastic board A, and there is no supporting structure built in the folded part of the soft plastic board A. So when users sit on the cushion, the air ducts A2 will be squashed flat, causing the fan C to be blocked due to too large wind resistance.
3. The soft plastic board A used in the aforesaid seat cushion is in the shape of a flat board. When the seat cushion is placed on a chair, it first needs to be folded along the middle of the soft plastic board A. As there is no foldable structure in the soft plastic board A, it will cause the soft plastic board A unable to be placed steadily over the chair, thus making users feel rather uncomfortable after long periods of sitting.

Nevertheless, many seat cushions of the same kind are produced with high-cost but unskillful design that features complexity of overall structure in order to prevent their air inlets and outlets from being squashed and blocked. For such design, air channels are molded with plastics, and peripheries of air outlets bulge like edges of city walls to prevent the air outlets from being squeezed by human bodies. Though such design does produce certain effect, these bulging parts that serve as a support make sitters feel very uncomfortable and make them unable to sit on these cushions for a long period of time.

Therefore, how to solve deficiencies and shortcomings of conventional seat cushions in use is what those engaged in this field need urgently to explore and improve.

SUMMARY OF THE INVENTION

The primary object of the present invention is to make the main body contain a padding part, a backrest part and multiple accordion-shaped vent pipes that can be integrated between the padding part and the backrest part. There are multiple supporting parts established respectively on the padding part and backrest part, and guide grooves formed between these supporting parts include multiple vent holes inside. In the padding part, a containing space with an opening is formed to fix a wind scooper in front of the guide grooves, and the opening is connected with a blower fan. When the blower fan draws cooling air from outside into the main body, the cooling air goes along diversion grooves formed by multiple separation boards inside the wind scooper, the guide grooves and vent pipes, and quickly blows out of the vent holes, making users feel cool, ventilative and more comfortable when sitting on the cushion.

The secondary object of the present invention is to make the airflows generated by the blower fan (as it operates) guided into the diversion grooves through the multiple separation boards of the wind scooper. Since the wind scooper has sufficient structural strength to bear the weight of a human body, it is not easy to squash the guide grooves and opening flat and cause blockages when a user sits on the padding part. This allows cooling airflows to go smoothly with less wind resistance to secure working stability of the blower fan and also reduce the noise caused by flow disturbance. Besides, this helps prevent overloads on the blower fan and prolongs the overall service life of the cushion effectively.

Another object of the present invention is to introduce the design of a separated and comfortable contour design folded wing structure for multiple wings on both side edges of the main body to enable the main body to be placed on the seat easily and freely and against the concave bucket back steadily, and to enable the main body to be folded freely and adequately fit in with various kinds of car seats (for example, racing bucket seats), desk chairs and home chairs (e.g. deck chairs) etc., so that users can feel cool and ventilative when sitting on the main body and feel more comfortable.
with wrapping of multiple wings. Besides, as the present invention has sufficient structural strength and packing and supporting properties, it can be used more widely in different aspects.

A further object of the present invention is to wrap the main body with at least one layer of a cover made from high density foam as supports and pads of the vent holes on the surface opposite to the padding components of the padding part, supplemented by pierced mesh fabric with dense holes and considerable structural strength, so that airflow go more smoothly along guide grooves formed between the padding components and multiple vent holes, thus making users feel more comfortable when sitting on the seat cushion.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a three-dimensional appearance drawing of the present invention.

FIG. 2 is a three-dimensional decomposition drawing of the present invention from another angle of view.

FIG. 3 is a three-dimensional decomposition drawing of a vent pipe according to one embodiment of the present invention.

FIG. 4 shows three-dimensional decomposition drawings of a blower fan and a wind scooper respectively according to one embodiment of the present invention.

FIG. 5 is a sectional drawing of the present invention from a side view.

FIG. 6 is a three-dimensional appearance drawing according to one preferred embodiment of the present invention.

FIG. 7 is a three-dimensional decomposition drawing of a conventional seat cushion.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Refer to FIGS. 1, 2, 3 and 4, which clearly show that the present invention comprises a main body 1, a blower fan 2 and a wind scooper 3, wherein:

The main body 1 includes a padding part 11, a backrest part 12 and multiple accordion-shaped vent pipes 13, and the vent pipes 13 are fixed between the padding part 11 and the backrest part 12 as hollow connection tubes to connect the two parts. Multiple padding components 111 and 121 are transversely installed on the padding part 11 and backrest part 12 respectively, and are arranged at regular intervals. There are guide grooves 112 formed between the padding components 111 and guide grooves 122 between the padding components 121 to guide airflows, and there are multiple vent holes 113 inside the guide grooves 112 and multiple vent holes 123 inside the guide grooves 122. In addition, there are multiple wings 114 and 124 established on the side edges of the padding components 111 and 121 respectively. The padding part 11 includes a containing space 14 with an opening 141 in front of the guide grooves 112, and then the padding part 11, backrest part 12 and multiple vent pipes 13 are packed by a cover 15 of at least one layer.

Catching grooves 115 are established on the left side of the multiple padding components 111 of the padding part 11 close to the connection part of the main body, while catching grooves 125 are built on the right side of the multiple padding components 121 of the backrest part 12 close to the connection part of the main body, and the catching grooves 115 correspond to the catching grooves 125. The vent pipes 13 may be a fixed or dismountable structure, and have convex fasteners 131 at both ends, so that the convex fasteners 131 are fastened into the catching grooves 115 and 125 respectively on the padding components 111 and 121 for a fixing purpose.

The blower fan 2 connects to and hangs from the front of the main body 1, and includes a motor 21 and multiple blades 22. It is connected with a power wire 23 that includes a control switch set 231, and is covered by a cover 24. On the surface of the cover 24, a through hole 241 is opened facing the blower fan 2 rightly to allow external cooling air to go in, and there is an outlet 242 established on the outer side of the through hole 241 to connect with the opening 141 in front of the padding part 11 for guiding cooling air into the containing space 14.

The wind scooper 3 is fixed inside the containing space 14 of the main body 1, and contains multiple bent separation board 31 in it. And there are multiple diversion grooves 32 formed between the separation boards 31 to connect with the opening 141 and guide groove 112 of the padding part 11 respectively.

Furthermore, the padding components 111 and 121 and wings 114 and 124 on the padding part 11 and backrest part 12 may be made from foam, foamed substances, elastomeric polymers, rubber, silicon rubber or other soft and elastic materials, and are pasted onto the padding part 11 or backrest part 12 by using adhesives, resin or other adhesive substances. Regarding design of folding lines of the multiple wings 114 and 124, two side edges of both the padding part 11 and backrest part 12 are wrapped by four pieces of high density foam, while ethylene vinyl acetate (EVA) battens of 1 cm x 0.4 cm x 42 cm are used as the padding components 111 and 121 on the padding part 11 and backrest part 12 to separate the wings 114 and 124 from the main body 1, so as to make the wings 114 and 124 be folded or bent at users’ will. As the mainstream, however, car seats are currently designed to consist of seats bulging on edges and sinking in the middle and backs with bucket sheathing. In view of this, the multiple wings 114 and 124 on the two side edges of the main body 1 are made with the design of separated and comfortable contour design folded wing structure, so that the main body 1 can be placed on the cushion easily and freely and lean against the concave bucket-shaped back appropriately. Besides, it also can be folded freely and fit in with various kinds of car seats (e.g. racing bucket seats), office chairs and home chairs (e.g. deck chairs) etc, without difficulty to provide sufficient structural strength in addition to sheathing and supporting properties, thus making it able to be used more widely in different aspects.

The cover 15 over the main body 1 may be made of foam, mesh fabric, soft plastic, synthetic fiber, leather, artificial leather or other materials that can be over-molded by means of combining methods, such as sewing or adhesion, while the wind scooper 3 may be made of hard materials such as metals or plastic, as long as the wind scooper 3 has sufficient structural strength to support the weight of a human body and prevent the guide grooves 112 and 122 on the padding part 11 from being squashed flat, so as to avoid the situations where airflows are blocked and cannot go smoothly.

However, the cover 15 is formed by coating the surface of the padding part 11 opposite to the padding components 111 with high density foam of 0.5 cm in thickness to support and pad the multiple vent holes 113, supplemented with a sheet of pierced mesh fabric which has the thickness of
0.4 cm and considerable supporting strength to make the airflows go more smoothly along the guide grooves 112 formed between the padding components 111 and 121 as well as multiple vent holes 113, so that users can feel more comfortable when sitting on it.

[0030] Therefore, the structural improvement of the seat cushion in the present invention is made in a logical, simple and effective way by selecting appropriate materials and with a perfect design of comfortable contour design folded wing structure, integrating the wind scoop 3 which prevents from being squashed, accordion-shaped vent pipes 13 and ergonomic wings 114 and 124, and with a simple and reasonable design of vent conduits for the guide grooves 112 and 122. Besides, the padding components 111 and 121 inside the main body 1 are made of EVA foam as supporting materials. All these demonstrate advantages of the present invention and highlight its affordability, commonality and practical applicability, as it is made with the simplest and most practical concept and a special patent design that achieve its functions to the utmost.

[0031] Refer to FIGS. 5 and 6, which clearly show that the backrest part 12 of the main body 1 is bent to be almost vertical along the multiple vent pipes 13 as a pivot when the seat cushion of the present invention is used. The accordion-shaped vent pipes 13 can not only be bent easily, but also be made of hollow and flexible materials, so as to effectively prevent blockage of airflows inside the hollow vent pipes 13 due to bending. In this way, the padding part 11 and backrest part 12 of the main body 1 can be connected with each other via the vent pipes 13. Then, users can put the main body 1 on seats in their cars or outdoors (rooms or offices, etc.) and fasten it onto the seats by using the elastics, lashings, strips or magic tapes (not indicated in the figures) of the main body 1.

[0032] When users connect the plug or igniter (not shown in the figures) of the power wire 23 linked with the blower fan 2 to an igniter receptacle in a proposed car or an electric outlet of a power supply or external power source, the blower fan 2 will be supplied with electricity as required through the power wire 23 and will be controlled via the control switch set 231 to make it start, operate, switched on/off or to adjust the air volume. As a result, cooling air from a proposed car will be drawn into the main body 1, and flow through the diversion grooves 32 of the wind scoop 3. The cooling air will then go along the guide grooves 112 and multiple vent pipes 13 of the padding part 11 and the guide grooves 122 of the backrest part 12, till it blows out of the vent holes 113 and 123. In this way, the cooling air blows out of the main body 1 directly and quickly through the vent holes 113 and 123, or assists with exchange of heat accumulated inside the main body 1 to cool down, so that users can feel cool, ventilative and more comfortable when sitting on the seat cushion.

[0033] In the process of drawing in cooling air, the airflows generated by the blower fan 2 as it works will be guided along the separation boards 31 of the wind scoop 3 into the diversion grooves 32 respectively. Since the wind scoop 3 is made of hard materials and has sufficient structural strength to bear the weight of a human body, when users sit on the padding part 11 of the main body 1, it is not easy for the weight of a human body to squash the guide grooves 112 and the opening 141 in front of it and cause blockages. Thus, the cooling air can go smoothly through the main body 1 with reduced wind resistance after entering into the wind scoop 3, and the air volume will be equally distributed along the diversion grooves 32 into the guide groove 112 of the padding part 11, so as to secure operational stability of the blower fan 2. Besides, lower wind resistance will help reduce the noise generated by airflow disturbance and resonance effect, and overloads on the blower fan 2 will be avoided without unequal distribution of air volume, thus extending the overall service life effectively.

[0034] Thus, for the present invention, when a user sits on the main body 1, the padding components 111 on the padding part 11 and padding components 121 on the backrest part 12 can bear the body weight of the user. As the design of separated and comfortable contour design folded wing structure is adopted for the wings 114 and 124 extending from two outer edges of the padding components 111 and 121, it enables the main body 1 to be placed onto the seat easily and freely and lean against the concave bucket-shaped back appropriately. In addition to making the user feel the cooling and ventilative effect when he/she sits on the main body 1, it also enables the user to feel soft and comfortable through sheathing of the wings 114 and 124, and provides sufficient structural strength in addition to good sheathing and supporting properties. As a result, it is more likely that the seat cushion of the present invention is used more widely in different aspects, thus further promoting its competitive advantage in the marketplace.

[0035] The above detailed descriptions are given to illustrate one preferred embodiment of the present invention. However, such embodiment shall not be construed as limiting the appended patent claims of the present invention. It is hereby stated that all modifications and equivalent structural changes made without departing from the spirit and art of the present invention shall be included in the patent claims of the present invention.

[0036] In summary, the structural improvement of a seat cushion as disclosed in the present invention can achieve its functions and objects. Therefore, the present invention is really an excellent one with practical applicability and can satisfy the conditions for patentability of a utility model. While the application of patent is filed pursuant to applicable laws, your early approval will be highly appreciated so as to guarantee benefits and rights of the inventor who has worked hard at this invention. For any question, please do not hesitate to inform the inventor by mail, and the inventor will try his best to cooperate with you.

What the invention claimed is:
1. A structurally improved seat cushion, comprising a main body, a blower fan and a wind scoop, whereby:
   - the main body includes a padding part, a backrest part and a multiplicity of hollow accordion-shaped vent pipes connecting the padding part through to the backrest part; both the padding and backrest parts have multiple padding components that are transversely arranged at regular intervals, and guide grooves are established between the padding components to guide airflows, and multiple vent holes are further formed inside these guide grooves for air to blow out of the main body;
   - there are multiple wings extending from two outer edges of the padding components, in which the wings can be bent to fit in with a proposed seat adequately; the padding part has a containing space with an opening in front of the guide grooves, and the main body is covered by at least one layer of cover;
   - the blower fan is connected to the opening at the front end of the main body, and consists of a motor and multiple blades; the blower fan is connected with a power wire which is equipped with a control switch set, and is
wrapped by a cover; on the surface of the cover, a through hole is opened facing the blower fan for external cooling air to go in, and on the outer side of the through hole, an outlet is established to connect with the opening at the front end of the padding part to guide cooling air into the containing space; the wind scooper is fixed in the containing space of the main body, and multiple bent separation boards are installed inside the wind scooper; multiple diversion grooves are formed between the separation boards to connect with the opening and guide grooves in the padding part respectively.

2. The structurally improved seat cushion according to claim 1, wherein the main body contains catching grooves, while the vent pipes have convex fasteners at their front and back ends, so that the convex fasteners are fastened into the catching grooves on the padding components for a fixing purpose.

3. The structurally improved seat cushion according to claim 1, wherein the padding part and wings of the main body may be made respectively from foam, foamed substances or elastomeric polymers.

4. The structurally improved seat cushion according to claim 1, wherein the padding part and wings of the main body may be made from rubber or silicon rubber.

5. The structurally improved seat cushion according to claim 1, wherein the wings of the main body are wrapped by four pieces of high density foam along the side edges of the padding parts and backrest parts, and the padding components made from EVA foam on the padding parts and backrest parts are used to separate the wings from the main body, so as to make the wings be freely folded or bent, thus enabling the main body to be easily placed on a proposed seat and lean against the concave bucket-shaped back appropriately.

6. The structurally improved seat cushion according to claim 1, wherein the vent pipes of the main body are made of hollow and flexible materials.

7. The structurally improved seat cushion according to claim 1, wherein the surface of the cover on the padding part of the main body opposite to the padding components is wrapped by a sheet of high density foam as supports and pads of the multiple vent holes, supplemented by a sheet of pierced mesh fabric with dense holes and supporting structural strength.

8. The structurally improved seat cushion according to claim 1, wherein the cover that wraps the main body may be made of soft plastic.

9. The structurally improved seat cushion according to claim 1, wherein the cover that wraps the main body may be made from foam.

10. The structurally improved seat cushion according to claim 1, wherein the cover that wraps the main body may be made of mesh fabric or artificial fibre.

11. The structurally improved seat cushion according to claim 1, wherein the cover that wraps the main body may be made of leather or artificial leather.

12. The structurally improved seat cushion according to claim 1, wherein the power wire of the blower fan can be electrically connected with a proposed power supply or external power source for supply of the electricity required by the seat cushion, and the control switch set is used to start, switch on/off the blower fan or to adjust the air volume.

13. The structurally improved seat cushion according to claim 1, wherein the wind scooper is made of metal materials or with injection molding of plastic.