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(54) Improved rucksack

(57) A rucksack comprises a load containing portion (2) and a carrying system (4) mounted to the rear of the load containing portion (2), part at least of the carrying system (4) comprising a laminate (16) of at least two layers (12,14) of resiliently compressible cellular material, each layer (12,14) having a plurality of apertures formed therethrough, an aperture in one layer (12) overlapping part of at least of two apertures in the adjacent layer (14) whereby a matrix of interlinked cavities is established in the laminate (16) to provide a plurality of passageways between the opposed surfaces of the laminate (16).

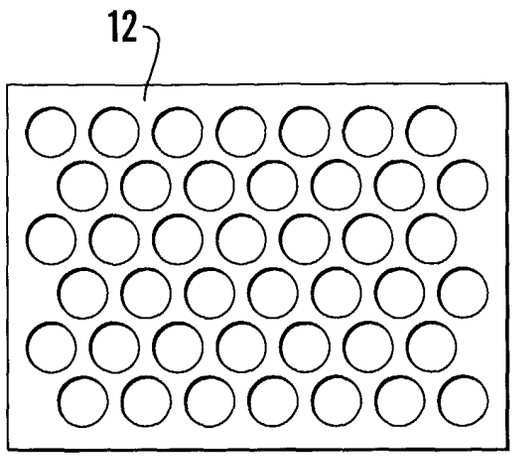

Fig.2a

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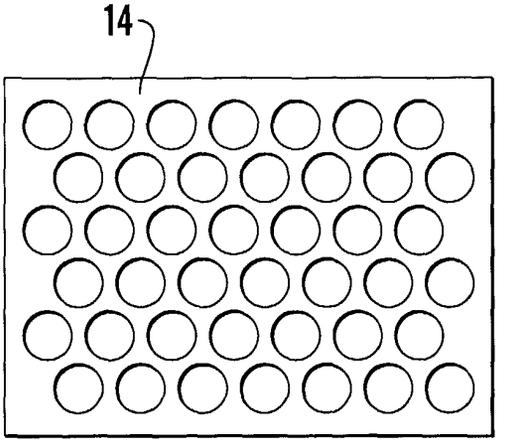

Fig.2b

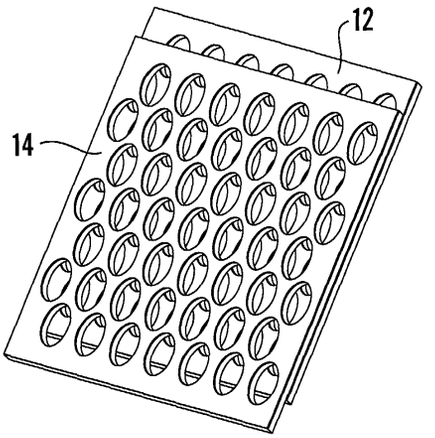

Fig.2c

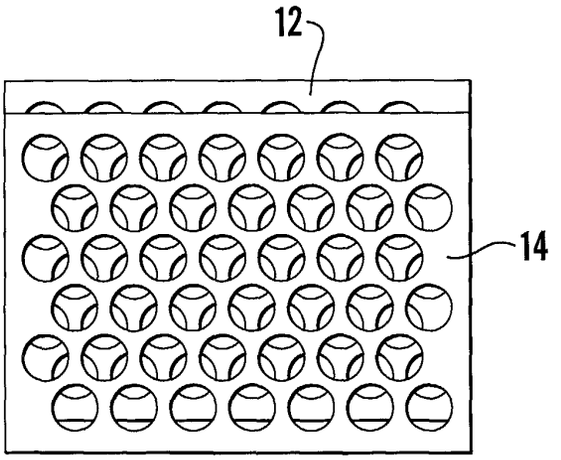

Fig.2d

Description

[0001] This invention relates to rucksacks, and more particularly to carrying systems for rucksacks.

[0002] Rucksacks commonly comprise a carrying system to be worn by the user, and a bag holding the contents of the rucksack to which the carrying system is mounted.

[0003] The carrying system typically includes a pair of shoulder straps, a hip belt with hip fins one to each side of the rucksack, and a back panel between the user and the bag.

[0004] In use of the rucksack, pressurised contact is made with the user by the shoulder straps, the hip belt and the back panel, whereby there is a tendency for heat/sweat to be formed in these areas.

[0005] It is conventional practice to attempt to avoid any significant build-up of sweat by providing so-called breathable carrying systems, which can take a variety of different forms.

[0006] One such arrangement utilises a spacer mesh on the outer surface of part at least of the carrying system for engagement by the user. This mesh typically includes two spaced layers of knitted material between which is provided monofilament fibre which maintains the spacing of the outer layers and establishes an air gap of about 2mm therebetween. In use, this spacer mesh is conventionally mounted on a solid layer of foam or sponge, typically closed cell ethylene vinyl acetate (EVA), with the result that, instead of providing an outlet for warm air and moisture, the spacer mesh, when subjected to pressure, is squashed flat against this solid layer and no air can in practice flow therethrough.

[0007] It is also known to provide a layer of reticulated material between the spacer mesh and the solid layer of closed cell foam or sponge for additional comfort purposes, but again, under pressure, this reticulated foam closes up and doesn't permit airflow therethrough.

[0008] FR-A-2313886 discloses a rucksack the back portion of which comprises a soft and supple web material one side of which supports a network of intersecting soft, elastic cellular bands whereby the comfort of a loaded rucksack on the user's back is improved.

[0009] DE-A-2649067 discloses a rucksack provided with a ventilated layer next to the user's back which consists of a perforated material such as metal, plastics or a vegetable material. The ventilated layer has a springy texture and improves the comfort of the user.

[0010] DE-U1-200 10 407 discloses a strap for a rucksack which is of a padded hollow structure with ventilation holes therein to carry away perspiration.

[0011] It would be desirable to be able to provide a carrying system for a rucksack which was truly breathable, in that it allowed airflow therethrough whereby moisture could travel away from the back of the user.

[0012] According to the present invention there is provided a rucksack comprising a load containing portion and a carrying system mounted to the rear of the load containing portion, part at least of the carrying system comprising a laminate of at least two layers of resiliently compressible cellular material, each layer having a plurality of apertures formed therethrough, an aperture in one layer overlapping part of at least of two apertures in the adjacent layer whereby a matrix of interlinked cavities is established in the laminate to provide a plurality of passageways between the opposed surfaces of the laminate.

[0013] It will thus be appreciated that, with such a construction and on compression of the laminate, the laminate does not collapse into sealed cavities as heretofore, but maintains the plurality of passageways between the opposed surfaces through which body moisture and the like can flow.

[0014] In a preferred laminate, the apertures in the layers are such that the matrix of interlinked cavities feeds through the side edges of the laminate.

[0015] Conveniently each layer has formed therein an array of circular apertures so arranged that a hole in one layer symmetrically overlaps part of three apertures in the adjacent layer.

[0016] Preferably the material of each layer is ethylene vinyl acetate (EVA), although other foam-like or sponge-like materials may be used.

[0017] The carrying system may comprise a back panel, a pair of shoulder straps and a hip belt, the laminate being embodied in at least the back panel, and preferably in the back panel and at least those parts of the shoulder straps and the hip belt contacting the wearer of the rucksack.

[0018] The laminate in the back panel may typically comprise four layers for purposes of support and comfort, while the laminate in the shoulder straps and hip belt may typically comprise two layers.

[0019] By way of example only, the invention will now be described in greater detail with reference to the accompanying drawings of which:

Fig. 1 is an isometric view of a rucksack according to the invention with parts of the back panel, shoulder strap and hip belt cut away to show the laminate incorporated therein;

Figs. 2a, 2b,2c,2d are, respectively, a front view of a first layer, a front view of a second layer, an isometric view of a laminate comprising the first and second layers, and a front view of the laminate of Fig. 2c, all of a rucksack according to the invention;

Fig. 3 is an isometric view of part of a laminate of a rucksack according to the invention showing a typical flow path therethrough, and

Fig. 4 is a schematic section through a three layer laminate of a rucksack according to the invention showing typical flow paths therethrough.

[0020] Referring to Fig. 1, the basic constructions of the illustrated rucksack is of relatively conventional form, comprising a load-containing portion or bag indi-

cated generally at 2, and a carrying system mounted on the rear of the bag 2 and indicated generally at 4.

[0021] The carrying system 4 includes a back panel 6 sewn or otherwise attached to the bag 2, a pair of shoulder straps 8, and a hip belt comprising a pair of opposed hip fins 10 projecting one from each side of the lower regions of the back panel 6.

[0022] The novelty of the illustrated rucksack lies in the construction of the individual components 6,8,10 of the carrying system and as shown in the cut-away areas 6a,8a and 10a respectively of these components which show the internal constructions thereof.

[0023] Fig. 2 shows the laminate that constitutes the basic material of the back panel 6, the shoulder straps 8 and the hip fins 10. More particularly Figs. 2a and 2b show first and second sheets 12,14 respectively of EVA in each of which is formed an identical symmetrical array of apertures.

[0024] The basic laminate of the rucksack of the invention is formed by overlapping the two sheets 12,14 as shown in Fig 2c with the arrays of apertures in the two sheets 12,14 offset from one another whereby an aperture in one sheet symmetrically overlaps parts of three apertures in the other sheet as most clearly seen in Fig. 2d.

[0025] The laminate may comprise more than two sheets, any two adjacent sheets beings disposed as shown in Figs 2c and 2d, whereby the laminate defines therein a matrix of interlinked cavities and whereby a plurality of passageways, both linear and tortuous, are created therein.

[0026] The positions and relationship of the holes in the sheets 12,14 adjacent the side edges of the laminate are such that air/moisture passing through the passageways in the laminate can exit through the side edges of the laminate as indicated in Figs. 3 and 4.

[0027] More particularly, Fig. 3 is an isometric view of part of a two sheet laminate indicated generally at 16 and as described above and showing a typical flow path through the laminate which comprises a downward part, a return upward part, a downward part and a sideways exit from the laminate.

[0028] Similarly Fig. 4 shows a three layer laminate indicated generally at 18 and abutting a support layer 20, air being able to flow down through the laminate 18 and out through the sides of the laminate 18.

[0029] It is important that, even on squashing of the described laminates, the integrity of the matrix of interlinked cavities is maintained and, unlike prior art arrangements, the laminate does not collapse down to a series of sealed cavities which do not allow air flow therethrough. Thus air incident on the laminate, even when under compression, can travel into one cavity and then transfer through the interlinked structure to eventually pass out through the other side of the laminate if accessible, or through the side edges of the laminate.

[0030] Referring back to Fig. 1, the back panel 6, shoulder straps 8 and hip fins 10 each comprise a laminate as detailed above, the laminate of the back panel 6 preferably comprising four layers for comfort and support, and the laminate of the shoulder straps 8 and hip fins 10 each comprising two layers.

[0031] It will be appreciated from the above description that, if warm air and moisture/sweat are created as a result of pressurised contact of the user with any or all of the components of the carrying system, and even though the laminates of said components are compressed, there are still a variety of paths available to the air and moisture to flow from the laminates to the atmosphere thereby to create a carrying system which is drier and of improved comfort than heretofore.

[0032] More particularly, if the material of the bag 2 on which the back panel 6 is mounted is itself permeable, air/moisture can flow from the user through the laminate and thence into the bag.

[0033] If the material of the bag 2 is not air permeable, the air/moisture from the user's body will be reflected from the bag back through the laminate eventually to pass out through the side edges thereof.

[0034] The laminate may comprise two or more layers, may be embodied in some or all of the components 6,8,10 of the carrying system 4 and may comprise part or all of each component 6,8,10.

[0035] The material of the sheets of the laminate is preferably EVA, but may comprise other resilient compressible foams or sponges.

[0036] Other modifications or variations from the described and illustrated arrangements will be apparent to those skilled in the art.

[0037] Thus there is provided a truly breathable carrying system which, even when compressed, permits warm air and moisture to travel through the laminate away from the back of the user, thus creating a drier, more comfortable and user friendly rucksack than heretofore.

Claims

1. A rucksack comprising a load containing portion (2) and a carrying system (4) mounted to the rear of the load containing portion (2), **characterised in that** part at least of the carrying system (4) comprises a laminate (16) of at least two layers (12,14) of resiliently compressible cellular material, each layer (12,14) having a plurality of apertures formed therethrough, an aperture in one layer (12) overlapping part of at least of two apertures in the adjacent layer (14) whereby a matrix of interlinked cavities is established in the laminate (16) to provide a plurality of passageways between the opposed surfaces of the laminate (16).

2. A rucksack as claimed in claim 1 in which the apertures in the layers (12,14) of the laminate (16) are such that the matrix of interlinked cavities feeds

through the side edges of the laminate (16).

3. A rucksack as claimed in claim 1 or claim 2 in which each layer (12,14) of the laminate (16) has formed therein an array of circular apertures so arranged that a hole in one layer (12) symmetrically overlaps part of three apertures in the adjacent layer (14).

4. A rucksack as claimed in any one of claims 1 to 3 in which the material of each layer (12,14) is ethylene vinyl acetate (EVA).

5. A rucksack as claimed in any one of claims 1 to 4 in which the carrying system (4) comprises a back panel (6), a pair of shoulder straps (8) and a hip belt, the laminate (16) being embodied in at least the back panel (6).

6. A rucksack as claimed in claim 5 in which the laminate (16) is embodied in the back panel (6) and at least those parts of the shoulder straps (8) and the hip belt contacting the wearer of the rucksack.

7. A rucksack as claimed in claim 5 or claim 6 in which the laminate in the back panel (6) comprises four layers, and the laminate (16) in the shoulder straps (8) and hip belt comprises two layers (12,14).

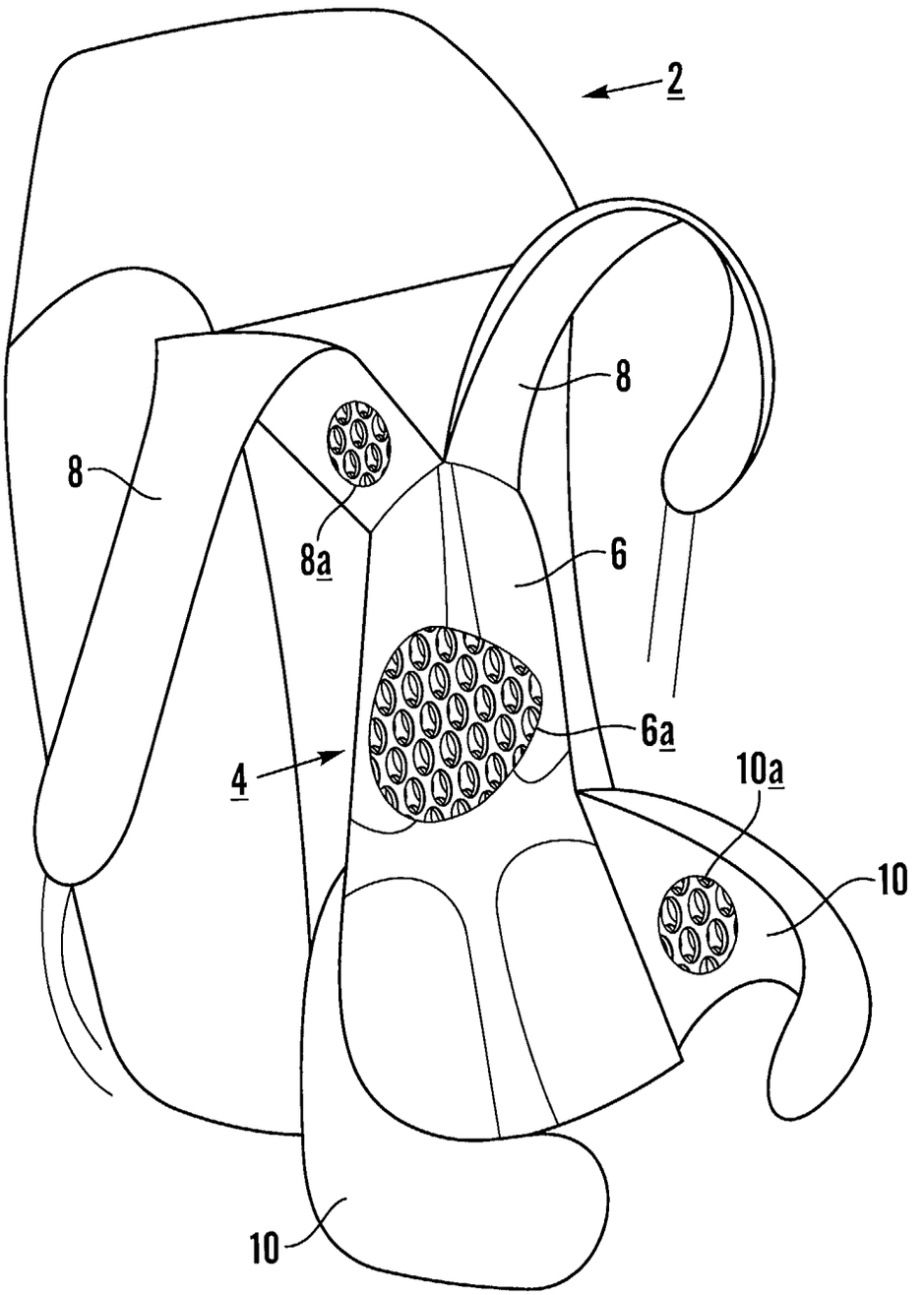

Fig. 1

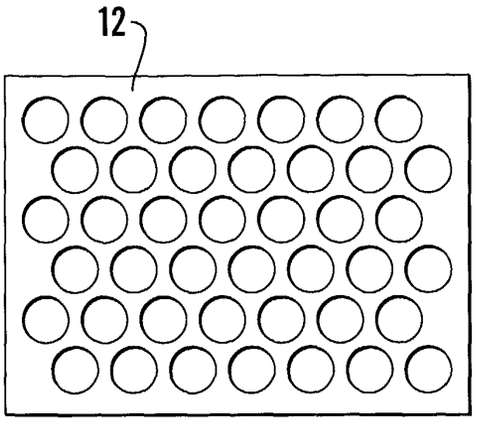

Fig.2a

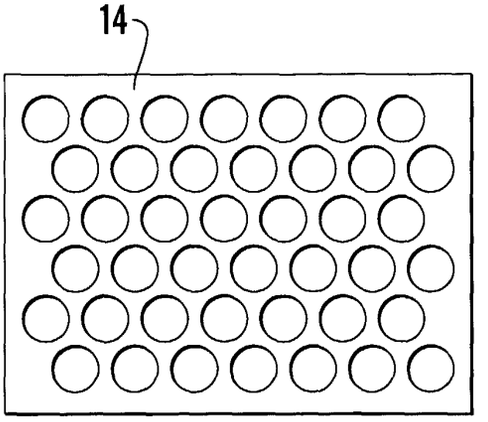

Fig.2b

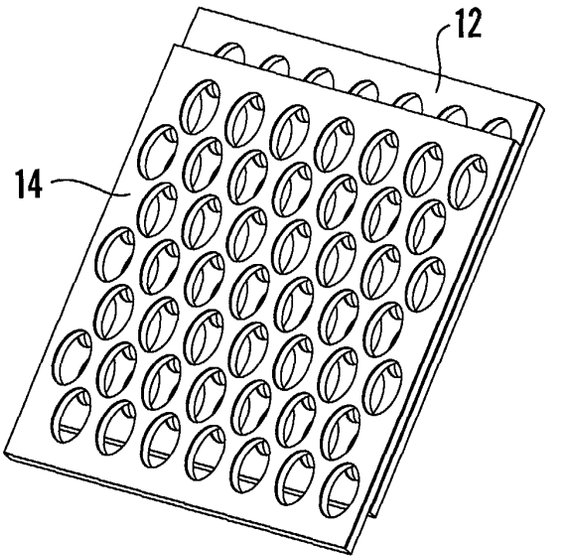

Fig.2c

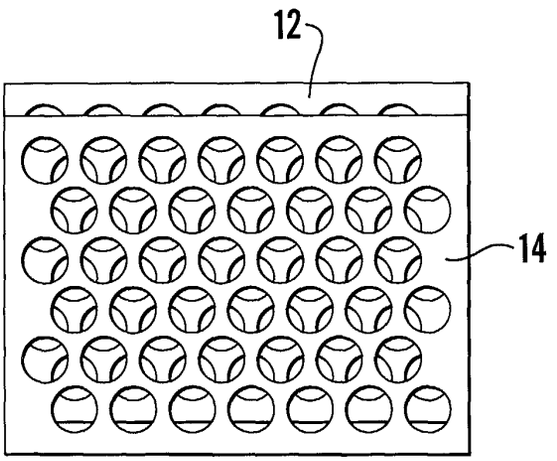

Fig.2d

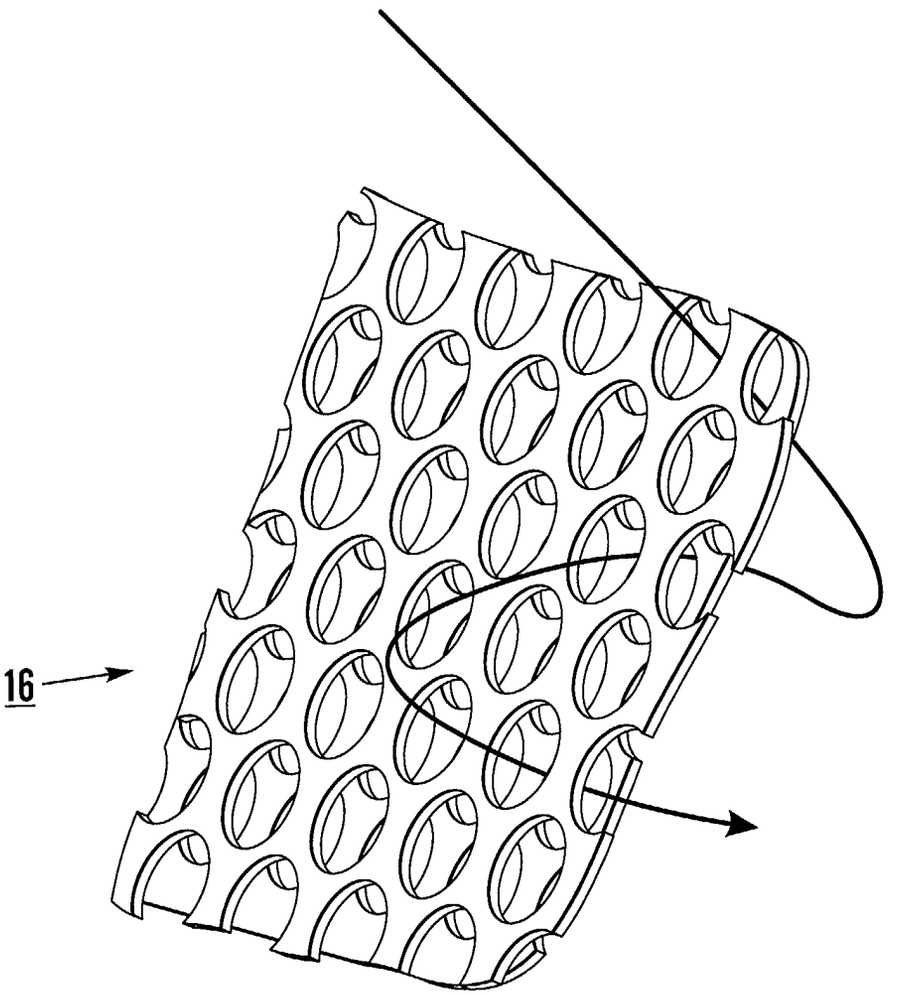

Fig.3

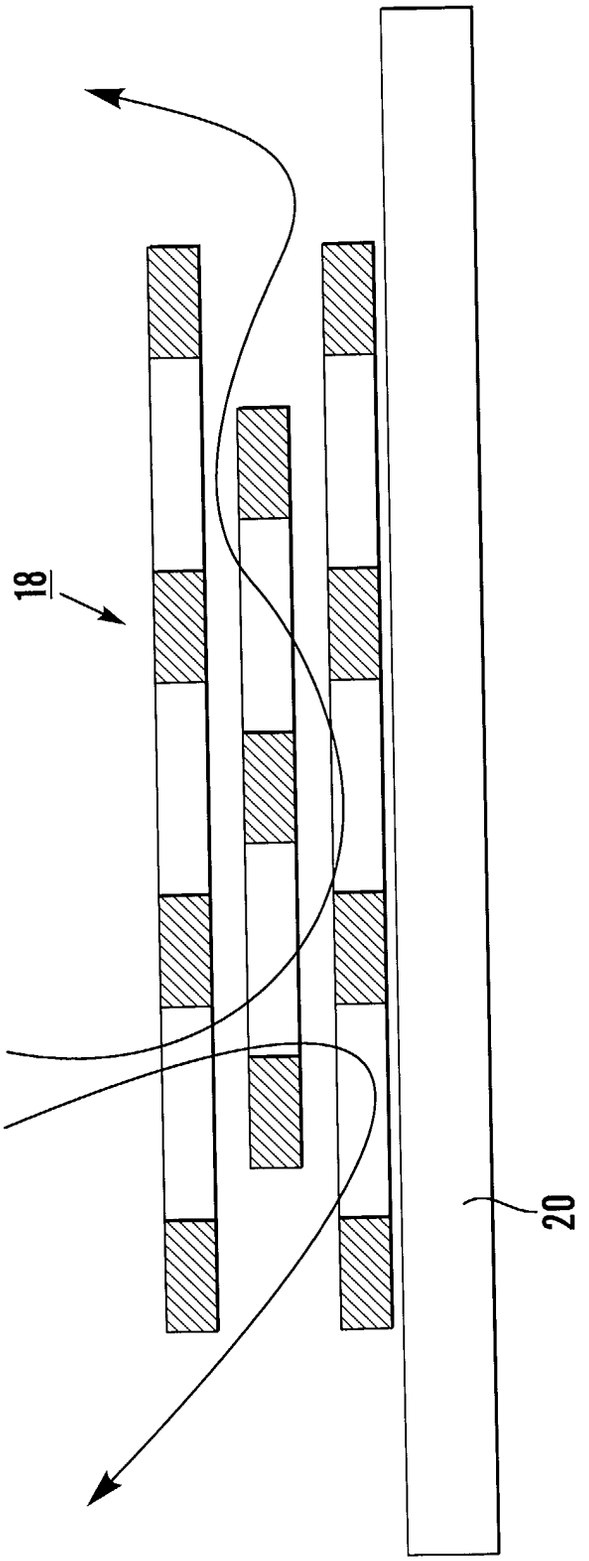

Fig.4