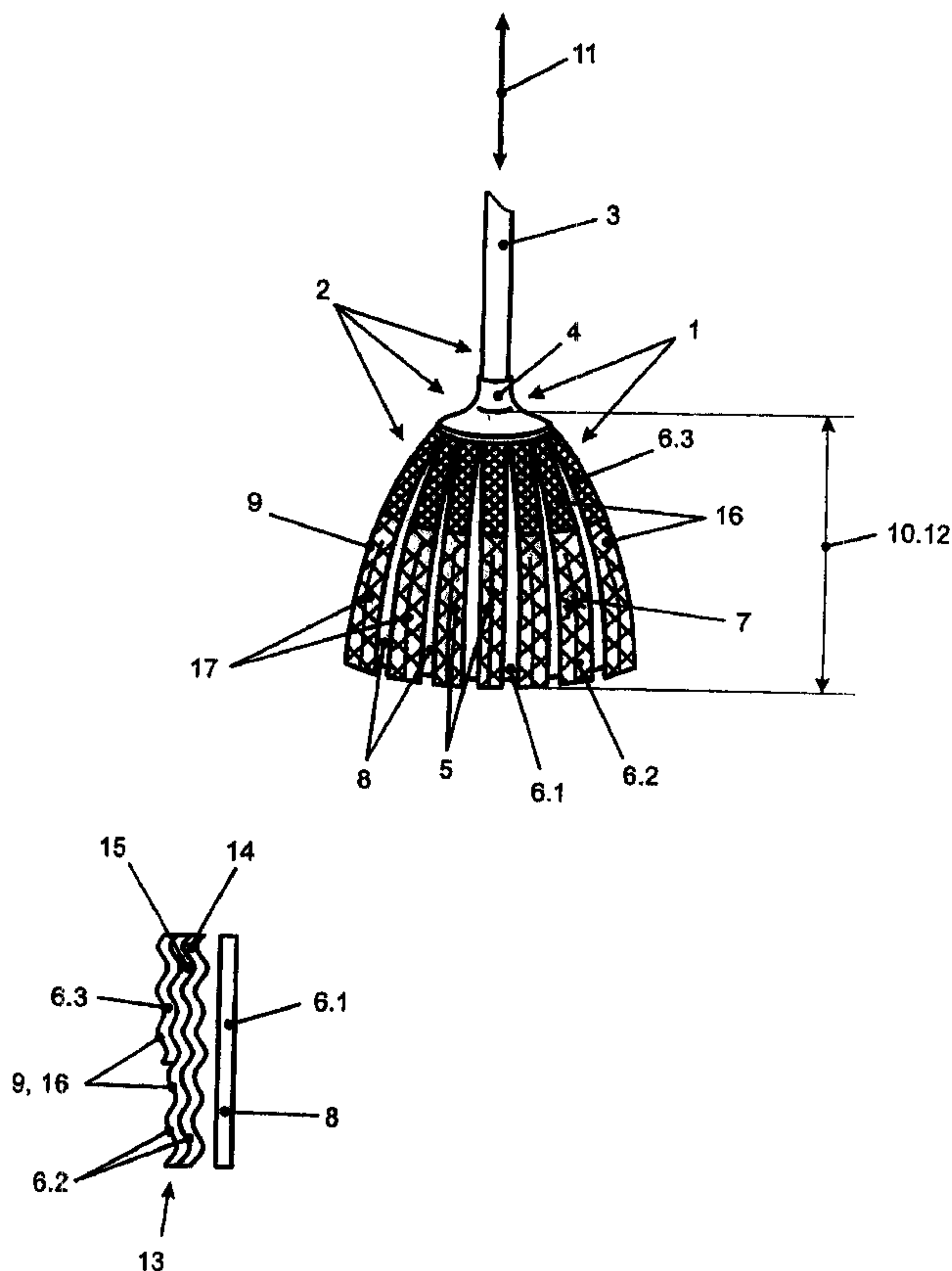




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 (54) Title: MOP HEAD AND MOP WITH SUCH A MOP HEAD



(57) Abrégé/Abstract:

Mop head (1) for a mop (2), comprising a support body (4) which can be connected to a shank (3) and is connected to cleaning strips (5) made of textile material (6), wherein at least one of the cleaning strips (5) has a substantially wave-like three-dimensional structure (7).

ABSTRACT

Mop head (1) for a mop (2), comprising a support body (4) which can be connected to a shank (3) and is connected to cleaning strips (5) made of textile material (6), wherein at least one of the cleaning strips (5) has a substantially wave-like three-dimensional structure (7).

MOP HEAD AND MOP WITH SUCH A MOP HEAD

Description

Technical Field

The invention relates to a mop head and a mop with such a mop head.

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State of the Art

A mop head for a mop is known from DE 198 33 553 C1. The mop head includes a support body, whereby the support body has a spring body for the spreading of the cleaning strips.

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The object which is achieved with such a mop is seen as the achievement of a fuller appearance even in the wetted condition, while significant additional costs during manufacture are avoided, and the reduction to a minimum of the danger of damage to the support body and/or furniture on unintentional impact.

The above mentioned spring body can be differently constructed, depending on the respective intended use, and can be made of different materials. For example, the spring body can be constructed as a foam body made of polymeric material, for example of a polyurethane foam, which loosely contacts the cleaning strips in a portion thereof. According to another embodiment, the spring body can also be formed by an elastic band which is laminated onto the cleaning strips in a portion thereof and at least on one side thereof. The band can thereby consist of a foil and/or a rubber band, or of synthetic fibers, whereby because of the breathability of the synthetic fibers, the drying process after a previous wetting is facilitated and rotting is avoided, which improves the durability of the mop.

25 Summary of the Invention

It is an object of the invention to further develop a mop head and a mop with such a mop head of the type mentioned in the beginning in such a way that an improved cleaning performance is achieved during the intended use.

This object is achieved with the features of a mop head for a mop which includes a support body connectable with a handle, and is connected with cleaning

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strips of a textile material, whereby at least one of the cleaning strips has a substantially wave-like three-dimensional structure. Because of the substantially wave-like three-dimensional structure of the cleaning strip, its surface is larger than that of a cleaning strip without substantially wave-like three-dimensional structure, which has a positive impact on the cleaning performance. Because of the substantially wave-like three-dimensional structure, persistent dirt on the surface to be cleaned is broken up by the elevations of the wave-like structure. Dirt is captured in the recesses of the substantially wave-like three-dimensional structure and reliably removed from the surface to be cleaned.

10 The cleaning strips with the substantially wave-like three-dimensional structure are advantageous especially in connection with a mop, since with them dirt can be removed/taken up from the surface to be cleaned without the user of the mop having to bend down to the surface to be cleaned.

15 It is further advantageous that a fuller appearance of the mop head results from the substantially wave-like three-dimensional structure.

The above mentioned advantages generally increase with the proportion of cleaning strips having the substantially wave-like three dimensional structure.

According to one preferred embodiment, the structure can be embossed onto the cleaning strip and the cleaning strip can have the same thickness in each portion.

20 The structure can be formed by semi-spherical depressions and semi-spherical elevations circumferentially adjacent thereto. The semi-spherical elevations directed towards the surface to be cleaned provide for a good, efficient cleaning of the surface to be cleaned. The dirt removed from the surface to be cleaned is collected in the semi-spherical depressions and reliably removed from the surface to be cleaned.

25 According to a preferred embodiment, it is provided that the textile material has a portion of a thermoplastic polymer which is 20 to 70 wt.%. It has proven especially advantageous when the portion of the thermoplastic polymer is between 40 and 60 wt.%. It is an advantage of the portion of a thermoplastic polymer in one of the above mentioned regions in that the cleaning strips with the substantially wave-like three-dimensional structure keep this substantially wave-like three-dimensional structure during their whole service life, even when the mop head is used often for cleaning and subsequently cleaned.

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The form stability of the substantially wave-like three-dimensional structure over a long period of use is no longer ensured with a portion of thermoplastic polymer below 20 wt.%; with a portion of thermoplastic polymer of above 70 wt.%, the cleaning strips with the substantially wave-like three-dimensional structure are too stiff so that the normally advantageous use properties of the cleaning strips with the substantially wave-like three-dimensional structure are reversed and the cleaning performance despite the cleaning strips with substantially wave-like three-dimensional structure is substantially decreased.

The textile material is preferably formed by a non-woven material. Non-woven materials have a high specific surface area and a good cleaning performance.

The cleaning strips can be formed as inner strips and outer strips respectively positioned in a bell-shape, whereby the support body, the inner strips and the outer strips are positioned essentially concentric to one another. In the region of connection with the support body, the inner strips and outer strips respectively define an essentially semi-spherical surface, whereby the cleaning strips directly thereafter extend essentially axially to the mop. Because of its shape, the above described mop head is excellently suited to be wrung out in generally known wringing out arrangements. Even a comparatively small number of cleaning strips leads to a large volume and to a voluminous appearance of the mop head.

The inner strips preferably have a length in axial direction which corresponds at least to the length of the outer strips in the same direction. The inner strips are primarily intended as liquid storage for the cleaning liquid.

Since mainly the outer strips have the effect of breaking up dirt on the surface to be cleaned, it is advantageous when at least one of the outer strips has the substantially wave-like three-dimensional structure. It is further preferred when all outer strips have the substantially wave-like three-dimensional structure. The cleaning result is thereby substantially improved, compared to a mop wherein only one outer strip has the substantially wave-like three-dimensional structure. Nevertheless, such a mop head is comparatively easily and cost efficiently manufactured.

For a further improved cleaning result, albeit at higher production costs, it can be provided that all cleaning strips which means all inner strips and all outer strips, have the substantially wave-like three-dimensional structure. With a view to a simple

and cost efficient manufacture, it is possible to form all cleaning strips of the same material. In that case, the inner strips are made of the same material as the outer strips. A micro-fiber material can be laminated onto the outer surfaces of the outer strips directed away from the inner strips, which micro-fiber material preferably covers at most the upper third of the outer surface directed towards the support body. This comparatively short axial length of the micro-fiber material is sufficient for the removal of strong dirt, since the highest force exerted by the user is only applied to that region of the outer strips which is adjacent the support body. Because of the manufacturing step of laminating, the micro-fiber material has a comparatively high shape retention and stability and provides, apart from a good cleaning performance, that the outer strips extend in a bell shape starting from the support body in axial direction. Preferably, the outer strips have the substantially wave-like three-dimensional structure at least in the region in which they are connected with the micro-fiber material

In order to obtain a functional individualization of the mop head, it is advantageous that at least one of the outer strips is made of a second textile material which is different from the first textile material of the inner strips. It is further preferred that all outer strips consist of a second textile material different from the first textile material of the inner strips. A good multi-stage cleaning of the surface to be cleaned can be carried out thereby, because of this material.

The second textile material can have a higher roughness than the first textile material in at least one portion. During cleaning, the dirt on the surface to be cleaned is especially efficiently broken up by the outer strips which are made of the comparatively rougher second textile material, when the outer strips all have a substantially wave-like three-dimensional structure. A further improvement with respect to the break up of dirt and subsequent removal can be achieved in that the second textile material of which the outer strips are made are formed in a second portion of a more fluffy material than the first textile material of which the inner strips are made. The specific surface area is enlarged by the fluffiness, as well as the take up of dirt and/or humidity from the surface to be cleaned.

After break up of the dirt, the dirt particles loosened from the surface to be cleaned are removed from the surface to be cleaned by the fluffy surface of the outer

strips. The best cleaning performance is achieved when the inner strips all have a substantially wave-like three-dimensional structure. The broken up dirt can also be removed best from the surface to be cleaned.

5 In order to achieve this fluffiness, the second textile material can consist of a dual layer compound material.

Adapted to the respective parameters of the specific application, the second textile can consist of a dual layer compound material with a first layer directed towards the inner strips and a second layer directed away from the inner strips. The two layers can be connected with one another by needling and/or can be thermally
10 connected. A strong connection of the two layers with one another is thereby achieved.

The generally known needling results in a simple manufacturing process for a cleaning strip which not only has excellent use properties over a long service period, but especially for this application has an esthetic appearance.

15 At least one of the outer strips, preferably all outer strips, can additionally consist of a third textile material in addition to the first and second textile material. By using a third textile material, the mop head is additionally better adapted to the respective parameters of the application. Because the mop head then overall includes three textile materials, of which two textile materials are components of the outer
20 strip, the outer strips can be constructed such that the third textile material provides a comparatively high abrasive action during the removal of strong dirt and that the second textile material is more suited for the cleaning of minor dirt and more sensitive surfaces. The third textile material can consist of micro-fibers, different from the second textile material.

25 Moreover, the second textile material can have abrasively active particles in order to facilitate the cleaning of strongly soiled surfaces.

The third textile material can be positioned on the outer surfaces of the outer strips directed away from the inner strips and cover at most the upper third of the outer surface which is directed to the support body. This comparatively short axial
30 length of the third textile material is sufficient for the removal of strong soilings, since the largest force exerted by the user is applied essentially only onto that area of the outer strips which is adjacent the supporting body. For that reason, it makes little

sense to cover, for example, the larger part of the outer surface with the third textile material.

The third textile material can be formed by a micro-fiber material laminated onto the outer surface. Because of the process step of laminating, the micro-fiber
5 material has a comparatively high shape consistency and stability and apart from a good cleaning performance provides that the outer strips extend bell-shaped in the axial direction, starting from the supporting body.

The second and third textile material preferably have a congruent,
substantially wave-like three-dimensional structure. Even strong soilings can be
10 removed thereby with comparatively little required force.

With respect to a simple, cost efficient manufacture, it can be provided that the radially mutually oppositely positioned cleaning strips are made in one piece and are connected essentially at the middle with the supporting body. The connection can be non-positive, for example by the clamping of the cleaning strips onto the supporting
15 body.

The first textile material is preferably a binder bonded non-woven material of about 80% cellulosic and about 20% synthetic fibers. The high portion of cellulosic fibers causes an improved water absorption. The first textile material can consist of 40% cellulose, 30% rayon, 1% polyester, 5% binder of nitrilokautschuk (NBR), and
20 10% printing paste and can have a surface weight of about 210 g/m².

The second textile material preferably consists of a thermally bonded non-woven material of about 50% cellulosic and about 50% synthetic fibers. The high portion of 50% synthetic fibers provides a stabilization of the thermally bonded non-woven material. The second textile material can consist of 50% rayon, 25% polyester
25 and 25% polypropylene and can have a surface weight of about 200 g/m².

The above described first and second textile materials have an especially good cleaning performance at an especially low cost.

The third textile material preferably consists of a calendared micro-fiber fleece made of polyamide and polyester. The strength of the material is increased by the
30 calendaring. With respect to processing technology, a composition of the micro-fiber material of 70% and 30% polyamide and a surface weight of about 210 g/m² is ideal.

The invention furthermore relates to a mop, comprising a mop head as described above, whereby this mop head is connected with a handle. Such a mop is variably useable, for the cleaning of surfaces, which are soiled from very strongly to only little. Good use properties over a long period of use are always guaranteed, while
5 the required force by the user is low. The substantially wave-like three-dimensional structure provides for the advantageous use properties, especially when at least all outer strips have the substantially wave-like three-dimensional structure and in particular when the outer strips have two mutually different textile materials which provide a different cleaning performance.

10

Brief Description of the Drawings

Exemplary embodiments of the mop in accordance with the invention with a mop head in accordance with the invention are in the following shown by way of Figures 1 to 4 in schematic illustration. They illustrate:

- 15 Figure 1: shows a first exemplary embodiment in which all cleaning strips are made of the same material;
- Figure 2: shows a second exemplary embodiment wherein the inner strips are made of a first and the outer strips at least partially of a second textile material;
- 20 Figure 3: shows a third exemplary embodiment wherein all cleaning strips are made of the same material, whereby a third textile material consisting of micro-fibers is laminated at the outside onto the outer strips in the region of the supporting body; and
- Figure 4: shows a fourth exemplary embodiment with which the highest
25 cleaning performance can be achieved.

Execution of the Invention

The exemplary embodiments of Figures 1 to 4 respectively show an exemplary embodiment with a mop 2 and a mop head 1, whereby the mop head is
30 connected with a handle 3.

The mop head 1 includes a supporting body 4 which preferably consists of a polymeric material. It is hereby advantageous that such a supporting body has only a

low weight and is furthermore rust free. Cleaning strips 5 of textile material 6.1, 6.2, 6.3, ... are connected with the supporting body 4, whereby at least one of the cleaning strips 5 has a substantially wave-like three-dimensional structure 7.

In the illustrated exemplary embodiments, the textile material 6.1, 6.2, 6.3, ...
5 consists of a non-woven fabric which includes a portion of a thermoplastic polymer which in the illustrated exemplary embodiments is 50 wt.%.

The mop head 1 has a bell-shape, whereby the cleaning strips 5 are
constructed as inner strips 8 arranged in a bell-shape and outer strips 9 also arranged
in a bell-shape, whereby the supporting body 4, the inner strips 8 and the outer strips 9
10 are arranged essentially concentric to one another.

In the illustrated exemplary embodiments, all outer strips 9 have the
substantially wave-like three-dimensional structure 7, whereby it can be provided, in
order to achieve especially good cleaning results, that all cleaning strips 5 have the
substantially wave-like three-dimensionally structure 7.

15 Figure 1 illustrates a first exemplary embodiment of a mop 2 wherein all
cleaning strips 5 are made of the same material and consist of a first textile material
6.1. The inner strips 8 are positioned radially inward of the outer strips 9, whereby all
cleaning strips 5 are slit in the axial direction 11. The slits 17 extend from the end of
the outer strips 9 axially remote from the supporting body 4 over at least half the
20 length of the outer strips 9. In the illustrated exemplary embodiment, the length of the
slit 17 is about two thirds of the total length 12. The illustrated exemplary
embodiment is especially easily and cost efficiently manufactured because of its
simple construction.

Figure 2 shows a second exemplary embodiment of a mop 2 which is
25 distinguished from the first exemplary embodiment mainly in that at least a part of the
outer strips 9 consists of a second textile material which is different from the first
textile material 6.1 of the inner strips 8. The second textile material 6.2 has a higher
fluffiness than the first textile material 6.1. The cleaning performance of the second
textile material 6.2 is thereby improved compared to the first textile material 6.1
30 which mainly has the function of a water reservoir.

In order to achieve this fluffiness, the second textile material 6.2 can be made
of two layers and consist of a compound material 14, whereby the two layers 14, 15

are needled to one another. Furthermore, the two layers 14,15 are thermally bonded with one another.

The third textile material preferably consists of micro-fibers.

Figure 3 shows a third exemplary embodiment of a mop 2, in which all
5 cleaning strips 5 are made of the same material, as in Figure 1. All outer strips 9 have a substantially wave-like three-dimensional structure 7 and the outer strips 9 are provided on the outside with the third textile material 6.3 in the region directed towards the supporting body 4. The third textile material 6.3 consists of micro-fibers and has a structure 7 congruent to the one of the first textile material 6.1, whereby the
10 third textile material 6.3 is laminated to the first textile material 6.1.

Figure 4 shows a fourth exemplary embodiment of the mop 2 in accordance with the invention, which has the best use properties out of all illustrated mops 2. At least all outer strips 9 have the substantially wave-like three-dimensional structure 7; depending on the degree of soiling, the inner strips 8 may or may not also have the
15 substantially wave-like three-dimensional structure 7. The outer strips 9 furthermore all have a third textile material 6.3 consisting of micro-fibers in addition to the second textile material 6.2.

The third textile material 6.3 is positioned on the outer surfaces 16 of the outer strips 9 which are directed away from the inner strips and in the illustrated exemplary
20 embodiment covers the upper third of the outer surface 16 actually directed towards the supporting body 4.

The third textile material 6.3 consists of a micro-fiber material laminated onto the outer surface 16, whereby the second and third textile materials 6.2, 6.3 have a congruent, substantially wave-like three-dimensional structure 7.

25 In order to achieve a simple manufacture of the mop head 1 and thereby the mop 2, the neutrally radially opposing cleaning strips 5 are made in one piece with one another and are connected with the supporting body 4 substantially in the middle. The connections are achieved in the illustrated exemplary embodiments by a non-positive clamping of the cleaning strips 5 in the support body 4.

CLAIMS:

1. Mop head for a mop, comprising a supporting body connectable with a handle, which supporting body is connected with cleaning strips made of a textile material, at least one of the cleaning strips having a substantially wave-like three-dimensional structure embossed into the cleaning strip to form elevations for breaking up dirt adhered to a surface to the cleaned and adjacent depressions for capturing broken up dirt, the cleaning strip having the same thickness in each portion.
2. Mop head according to claim 1, wherein the three-dimensional structure is formed by semi-spherical depressions and semi-spherical elevations circumferentially adjacent thereto.
3. Mop head according to claim 1 or 2, wherein the textile material comprises a portion of thermoplastic polymer which is 20 to 70 wt.%.
4. Mop head according to any one of claims 1 to 3, wherein the textile material is formed by a non-woven fabric.
5. Mop head according to any one of claims 1 to 4, wherein the cleaning strips are formed as bell-shaped inner strips and outer strips and the support body, the inner strips and the outer strips are positioned substantially concentric to one another.
6. Mop head according to claim 5, wherein the inner strips have a length in axial direction which corresponds at least to a length of the outer strips in the axial direction.
7. Mop head according to one of claims 5 or 6, wherein at least one of the outer strips has the substantially wave-like three-dimensional structure.

8. Mop head according to any one of claims 5 to 7, wherein all outer strips have the substantially wave-like three-dimensional structure.
9. Mop head according to any one of claims 1 to 8, wherein all cleaning strips have the substantially wave-like three-dimensional structure.
10. Mop head according to any one of claims 1 to 9, wherein all cleaning strips are made of the same material.
11. Mop head according to any one of claims 5 to 9, wherein at least one of the outer strips is made of a second textile material which is different from the first textile material of the inner strips.
12. Mop head according to claim 11, wherein all outer strips are made of the second textile material different from the first textile material of the inner strips and the second textile material comprises a portion of micro-fibers for improving a scrubbing capacity of the outer strips.
13. Mop head according to one of claims 11 or 12, wherein the second textile material in at least one portion has a higher roughness than the first textile material.
14. Mop head according to any one of claims 11 to 13, wherein the second textile material in a further portion is constructed to be more fleecy than the first textile material.
15. Mop head according to any one of claims 11 to 14, wherein the second textile material consists of a dual layer compound material with a first layer which is directed towards the inner strips and a second layer which is directed away from the inner strips.
16. Mop head according to any one of claims 11 to 15, wherein the first and second layers are needled to one another.

17. Mop head according to one of claims 15 or 16, wherein the first and second layers are thermally bonded to one another.
18. Mop head according to any one of claims 1 to 17, wherein at least one or all outer strips comprise a third textile material in addition to the first textile material or the second textile material.
19. Mop head according to any one of claims 11 to 18, wherein the second textile material or the third textile material have a portion of micro-fibers for improving a scrubbing capacity of the outer strips.
20. Mop head according to one of claims 18 or 19, wherein the third textile material is positioned on outer surfaces of the outer strips which are directed away from the inner strips and covers at most an upper third of the outer surfaces directed towards the supporting body.
21. Mop head according to any one of claims 18 to 20, wherein the third textile material is formed by a micro-fiber material laminated onto the outer surfaces.
22. Mop head according to any one of claims 18 to 21, wherein the second textile material and the third textile material have a congruently-shaped substantially wave-like three-dimensional structure embossed therein.
23. Mop head according to any one of claims 1 to 22, wherein the mutually oppositely positioned cleaning strips are made in one piece with one another and are connected with the supporting body substantially at a midpoint.
24. Mop including mop head according to any one of claims 1 to 23 and a handle connected with the supporting body.

Fig. 1

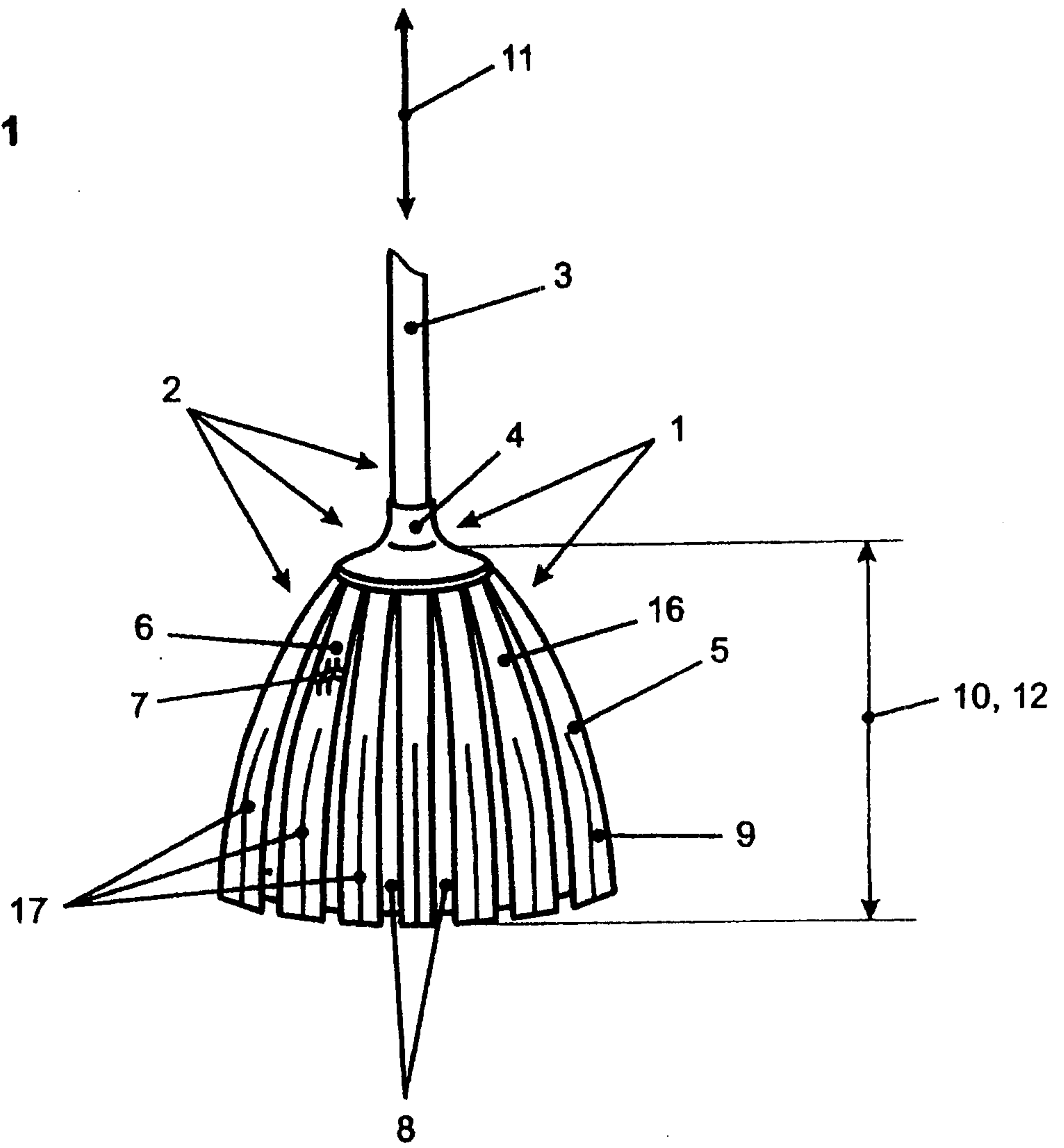


Fig. 3

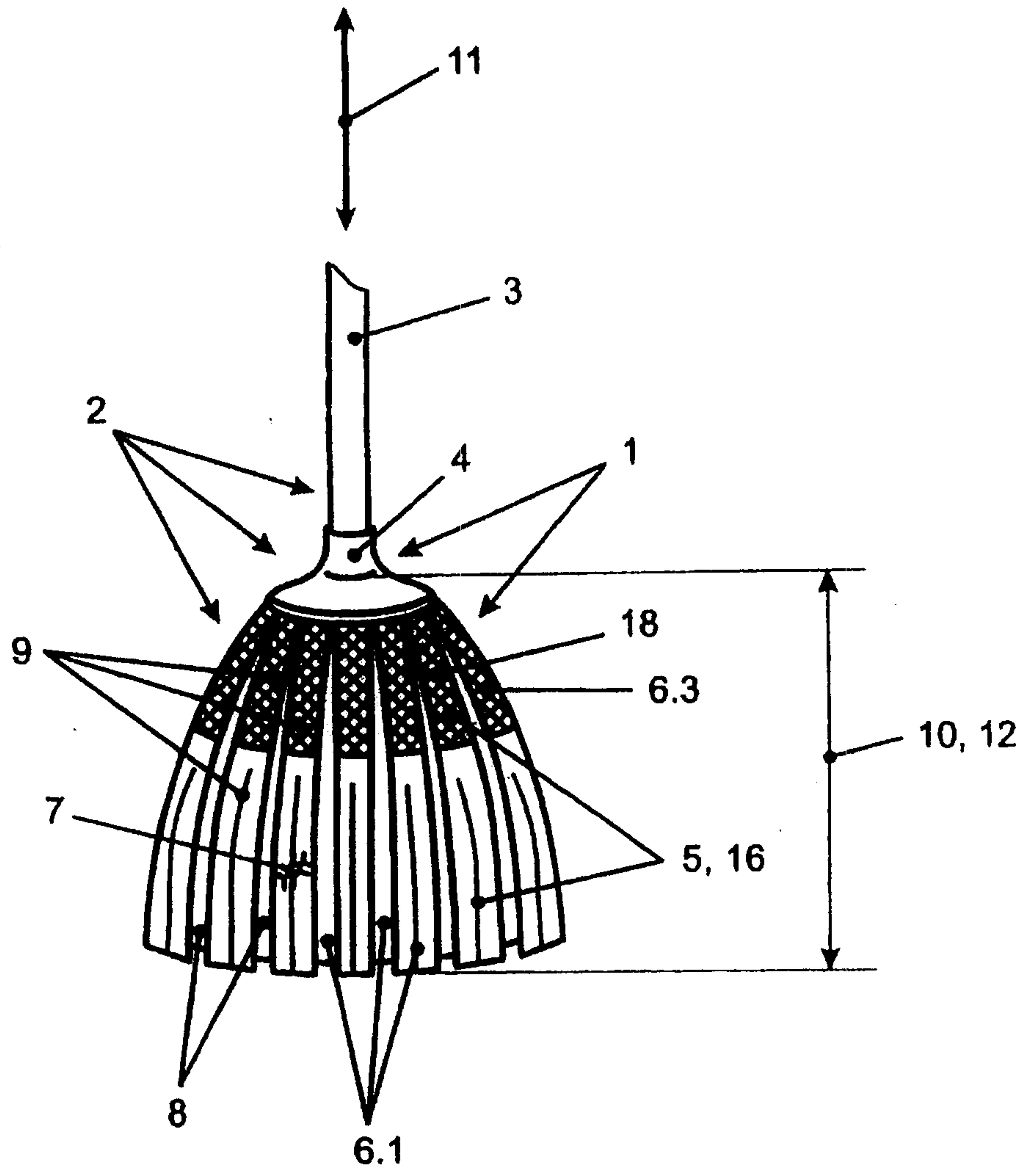


Fig. 4

