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(54) **SUPPORTING DEVICE AND METHOD FOR MAKING SUCH A SUPPORTING DEVICE**

(57) A supporting device (1) configured for removably supporting a cleaning element (M), in particular a cleaning cloth, comprises: an elongated base body (6); holding means (9; 15), for removably holding the cleaning element (M); and bumper means (20), arranged at opposite ends of the supporting device (1), for protecting the supporting device (1) from lateral impacts; wherein the holding means (9; 15) and the bumper means (20) are parts of a support body (7) fixed to said base body (6) by overmoulding.

A method for making a supporting device (1) config-

ured for removably supporting a cleaning element (M), in particular a cleaning cloth, comprises the steps of: forming an elongated base body (6); forming holding means (9; 15), for removably holding the cleaning element (M); and forming bumper means (20), arranged at opposite ends of the supporting device (1), for protecting the supporting device (1) from lateral impacts; wherein the method comprises the step of forming as a single body the holding means (9; 15) and the bumper means (20) so as to make a support body (7) which is fixable to said base body (6) by overmoulding.

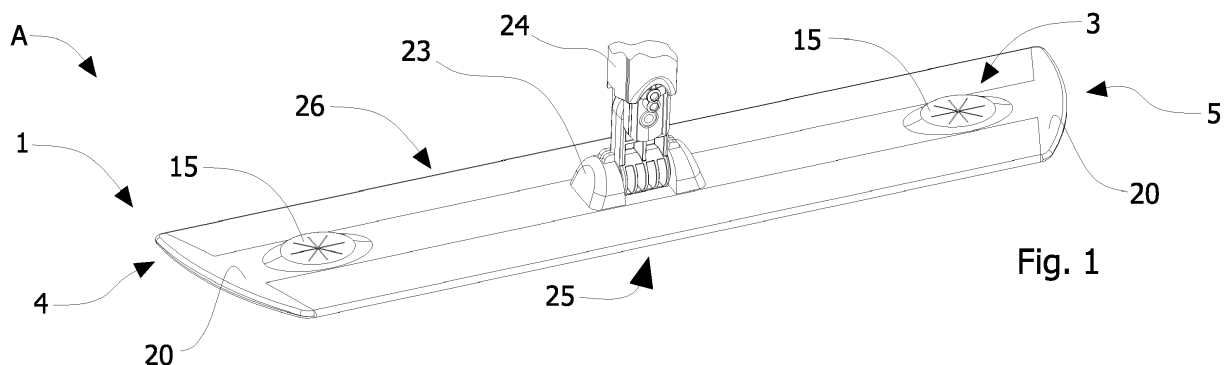


Fig. 1

Description

[0001] The invention relates to a supporting device configured for removably supporting a cleaning element, and a method for making this supporting device.

[0002] In particular, the invention refers to a supporting device intended to form a support base for a cleaning cloth, known as a "mop" by the experts of the field; a handle being connectable with this supporting device so that it can be operated by an operator.

[0003] The assembly formed by the supporting device, by the cleaning cloth and by the handle, makes a so-called "broom mop".

[0004] Supporting devices, which are also called "bases for mops" are known, comprising a base body, typically made of aluminium, of substantially rectangular shape.

[0005] The base body comprises a lower side, arranged in use facing a surface to be cleaned, on which two longitudinal guides are obtained, i.e. which extend along an axis of prevalent extent of the base body, that are parallel to one another.

[0006] Within the longitudinal guides, Velcro strips are received slidably that are arranged in use to hold the cleaning cloth removably.

[0007] Also, known supporting devices include a pair of "bumpers" that are fixed by screws to the less long sides of the base body.

[0008] The bumpers have the function of protecting known supporting devices from lateral impacts and holding laterally the strips of Velcro to prevent the exit thereof, parallel to the axis of prevalent extent of the base body, from the respective guides.

[0009] Also, the known supporting devices comprise a fixing element, fixed, by screws, to an upper side of the base body, which fixing element is arranged for fixing a handle to the supporting device.

[0010] In order to make a known supporting device, an operator has to perform the following operations manually:

- insert the Velcro strips longitudinally into the respective guides;
- screw the bumpers onto the base body;
- screw the fixing element onto the base body.

[0011] It is clear how these operations, performed as said above manually, are particularly slow and laborious to be performed, this contributing to increasing also the final cost of the supporting device.

[0012] An object of the present invention is to improve the supporting devices configured for supporting removably a cleaning element and the methods for making such supporting devices.

[0013] A further object is to provide supporting devices that are simply and fast to assemble and are at the same time cheap.

[0014] Such objects and still others are achieved by a

supporting device, and by a method of making the supporting device, according to one or more of the claims set out below.

[0015] The invention can be better understood and implemented with reference to the attached drawings that illustrate some embodiments thereof by way of non-limiting example, in which:

- figure 1 is a top schematic axonometric view of a supporting device according to a first embodiment of the invention;
- figure 2 is a bottom schematic axonometric view of the supporting device according to the first embodiment of the invention;
- figure 3 is a schematic top exploded view of the supporting device according to the first embodiment of the invention;
- figure 4 is a schematic bottom exploded view of the supporting device according to the first embodiment of the invention;
- figure 5 is a schematic section taken along a transverse plane of figure 1, of the supporting device according to the first embodiment of the invention;
- figure 6 is a top schematic axonometric view of a supporting device according to a second embodiment of the invention;
- figure 7 is a bottom schematic axonometric view of the supporting device according to the second embodiment of the invention;
- figure 8 is a schematic top exploded view of the supporting device according to the second embodiment of the invention;
- figure 9 schematic bottom exploded view of the supporting device according to the second embodiment of the invention;
- figure 10 is a schematic section taken along a transverse plane of figure 6, of the supporting device according to the second embodiment of the invention;
- figure 11 is a schematic view of projecting elements included in the supporting device according to the invention;
- figure 12 is an enlarged schematic view of one of the projecting elements of figure 11;
- figure 13 is a schematic view of gripping means included in the supporting device according to the invention; and
- figure 14 is a schematic plan view of a cleaning element that is associable with the supporting device according to the invention.

[0016] With reference to figures 1 to 5, a supporting device 1 according to a first embodiment A of the invention is shown.

[0017] The supporting device 1 is configured for removably supporting a cleaning element M, in particular for supporting a cleaning cloth, or "mop", illustrated schematically in figure 14.

[0018] The supporting device 1 has a substantially rec-

tangular shape, extends along a longitudinal axis of prevalent extent, and comprises a lower side 2, facing, in use, a surface to be cleaned, which is not shown, an upper side 3, opposite the lower side 2, a first lateral side 4 and a second lateral side 5, opposite one another and extend transversely to the longitudinal axis of prevalent extent of the supporting device 1, and a third lateral side 25 and a fourth lateral side 26, which are opposite one another and extend parallel to the longitudinal axis of prevalent extent of the supporting device 1.

[0019] Also, the supporting device 1 is formed by a base body 6 and by a support body 7, the support body 7 being overmoulded, for example by injection moulding, onto the base body 6.

[0020] The base body 6 is made of metal, in particular aluminium, whereas the support body 7 is made of plastics.

[0021] In an alternative embodiment of the first embodiment A, also the base body 6 is made of plastics.

[0022] The supporting device 1 further comprises holding means, for holding removably the cleaning element M that is anchored to the supporting device 1.

[0023] As is illustrated better in figures 11 and 12, the holding means comprises a plurality of hook-shaped projecting elements 9 that project from the lower side 2 of the supporting device 1, which projecting elements 9 are provided with a free end 10 configured for holding, removably, a substantially flat surface portion M1, of the cleaning element M.

[0024] In particular, each projecting element 9 comprises a stem 11, for example tapering away from the lower side 2 of the supporting device 1, and a head 12, positioned at the free end 10, which is a wider than an end of the stem 11 with which it is integral, so as to grasp wires projecting from the surface M1 of the cleaning element M.

[0025] Once the cleaning element M has been used it can be easily removed from the supporting device 1 by exerting on the cleaning element M sufficient force to disengage the heads 12 from the wires of the cleaning element M, with a movement that is similar to a sharp pull.

[0026] Also, in order to improve the holding capacity of the projecting elements 9, they are arranged equidistantly angularly to one another to form a plurality of circles 13.

[0027] In one embodiment of the invention, which is not shown, the projecting elements 9 are arranged so as to form other geometric figures, for example squares, rectangles, polygons, ellipses, etc.

[0028] In turn, the circles 13 are arranged in rows 14 that are parallel to one another and staggered with respect to the longitudinal axis of prevalent extent of the supporting device 1.

[0029] The holding means further comprises a pair of gripping means 15, which is illustrated in greater detail in figure 13, arranged at and on opposite sides of the upper side 3 of the supporting device 1, which gripping means 15 is configured for holding, removably, possible

free edges M2, M3 (figure 14) of the cleaning element M.

[0030] In particular, each of the gripping means 15 comprises a plurality of flexible gripping elements 16, that are separated from one another by cutting lines 17.

5 [0031] More precisely, the gripping elements 16, which are for example eight in number, have a triangular shape, are connected together along an edge P, for example of elliptic shape, and are provided with free vertices 18 that are spaced apart from one another so as to define an outline of a through hole 19.

10 [0032] In use, a pair of free edges M2, M3 of the cleaning element M is inserted into the through hole 19 of each of the gripping means 15, this flexing to the inside of the supporting device 1 one or more of the gripping elements 16, so as to hold therebetween the free edges M2, M3.

15 [0033] The supporting device 1 further comprises bumper means 20, having, for example, a curvilinear profile, arranged for protecting the supporting device 1, in particular the base body 6, from lateral impacts.

20 [0034] In order to do this, the bumper means 20 is positioned at opposite ends 21, 22 of the base body 6, thereby defining the lateral sides 4, 5 of the supporting device 1.

25 [0035] Lastly, the supporting device 1 comprises fixing means 23, for fixing a handle 24 to the supporting device 1, to enable an operator to operate the supporting device 1.

30 [0036] The assembly formed by the supporting device 1, by the cleaning element M, and by the handle 24, makes a so-called "broom mop".

35 [0037] According to the first embodiment A, the holding means 9, 15, the bumper means 20 and the fixing means 23 are parts of the support body 7, i.e. are formed as a single body, the support body 7 being made by injection moulding and being overmoulded, as said above, onto the base body 6.

[0038] In other words, in the first embodiment A the support body 7 is formed by the holding means 9, 15, by the bumper means 20 and by the fixing means 23.

40 [0039] With reference to figures 6 to 10, a supporting device 1 according to a second embodiment B of the invention is shown.

45 [0040] The supporting device 1 according to the second embodiment B differs from the supporting device 1 according to the first embodiment A in that the base body 6 is made of plastics, just like the support body 7, and in that the fixing means 23 forms a single body with the base body 6; the holding means 9, 15 and the bumper means 20 forming a single body with the support body 7.

50 [0041] It should be noted how the method for making the supporting device 1 is particularly simple, rapid and cheap.

[0042] It is in fact sufficient to overmould, for example by injection moulding, the support body 7 onto the base body 6 without the need for any manual fitting.

[0043] It should be noted further how the supporting device 1 according to the invention is particularly efficient.

[0044] It is in fact possible to make the base body 6

and the support body 7 with different plastics so as to improve the efficiency of the supporting device 1, i.e. the capacity of the bumper means 20 to absorb the impacts, the capacity of the holding means 9, 15, to hold the cleaning element M, and the capacity of the fixing means 23 to hold the handle 24 firmly.

[0045] The invention that is thus conceived is capable of undergoing numerous modifications and variations that all fall within the scope of the inventive concept. Further, all the details can be replaced by technically equivalent elements.

Claims

1. Supporting device (1) configured for removably supporting a cleaning element (M), in particular a cleaning cloth, comprising:

an elongated base body (6);
holding means (9; 15), for removably holding said cleaning element (M); and
bumper means (20), arranged at opposite ends of said supporting device (1), for protecting said supporting device (1) from lateral impacts;
said supporting device (1) is **characterised in that**
said holding means (9; 15) and said bumper means (20) are parts of a support body (7) fixed to said base body (6) by overmoulding.

2. Supporting device (1) according to claim 1, and comprising fixing means (23), for fixing a handle (24) to said supporting device (1).

3. Supporting device (1) according to claim 1, or 2, wherein said fixing means (23) is part of said support body (7).

4. Supporting device (1) according to any one of claims 1 to 3, wherein said support body (7) is formed as a single body.

5. Supporting device (1) according to claim 2, wherein said fixing means (23) is part of said base body (6).

6. Supporting device (1) according to claim 5, wherein said base body (6) is a single body.

7. Supporting device (1) according to any one of claims 1 to 6, wherein said base body (6) is made of a metal material, or of plastics, and wherein said support body (7) is made of plastics.

8. Supporting device (1) according to any one of claims 1 to 7, wherein said holding means (9; 15) comprises a plurality of projecting elements (9) projecting from a lower side (2) of said supporting device (1), which

projecting elements (9) are provided with a free end (10) configured for removably holding said cleaning element (M).

9. Supporting device (1) according to claim 8, wherein said projecting elements (9) are arranged, spaced angularly equidistantly from one another, to form a plurality of geometric figures, in particular circles (13).

10. Supporting device (1) according to any one of claims 1 to 9, wherein said holding means (9; 15) comprises a pair of gripping means (15) arranged on opposite sides of an upper side (3) of said supporting device (1), which gripping means (15) is configured for holding possible free edges (M2, M3) of said cleaning element (M).

11. Supporting device (1) according to claim 10, wherein each of said gripping means (15) comprises a plurality of flexible gripping elements (16) which are separated from one another by cutting lines (17).

12. Supporting device (1) according to claim 11, wherein said gripping elements (16) have a triangular shape, the free vertices (18) of said gripping elements (16) defining an outline of a through hole (19).

13. Method for making a supporting device (1) configured for removably supporting a cleaning element (M), in particular a cleaning cloth, comprising the steps of:

forming an elongated base body (6);
forming holding means (9; 15), for removably holding said cleaning element (M); and
forming bumper means (20), arranged at opposite ends of said supporting device (1), for protecting said supporting device (1) from lateral impacts;
said method is **characterised in that it** comprises the step of
forming as a single body said holding means (9; 15) and said bumper means (20) so as to make a support body (7) which is fixable to said base body (6) by overmoulding.

14. Method according to claim 13, and comprising the step of forming fixing means (23), for fixing a handle (24) to said base body (6).

15. Method according to claim 14, wherein said forming as a single body comprises forming as a single body said holding means (9; 15), said bumper means (20) and said fixing means (23) so as to make said support body (7).

16. Method according to claim 14, wherein forming said

base body (6) comprises forming as a single body
said fixing means (23) and said base body (6).

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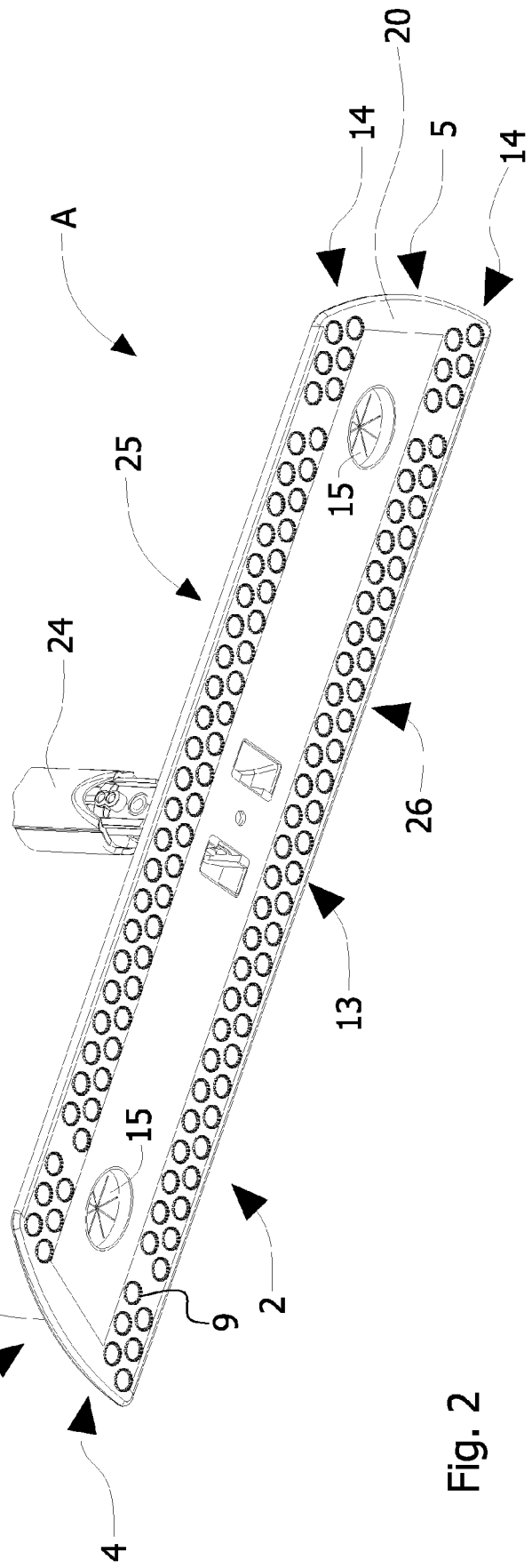
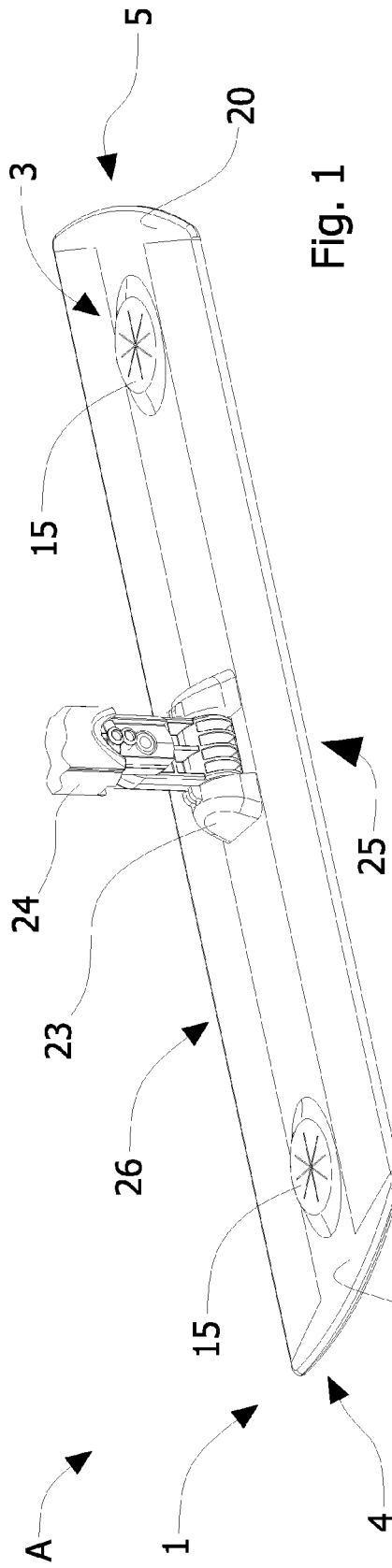
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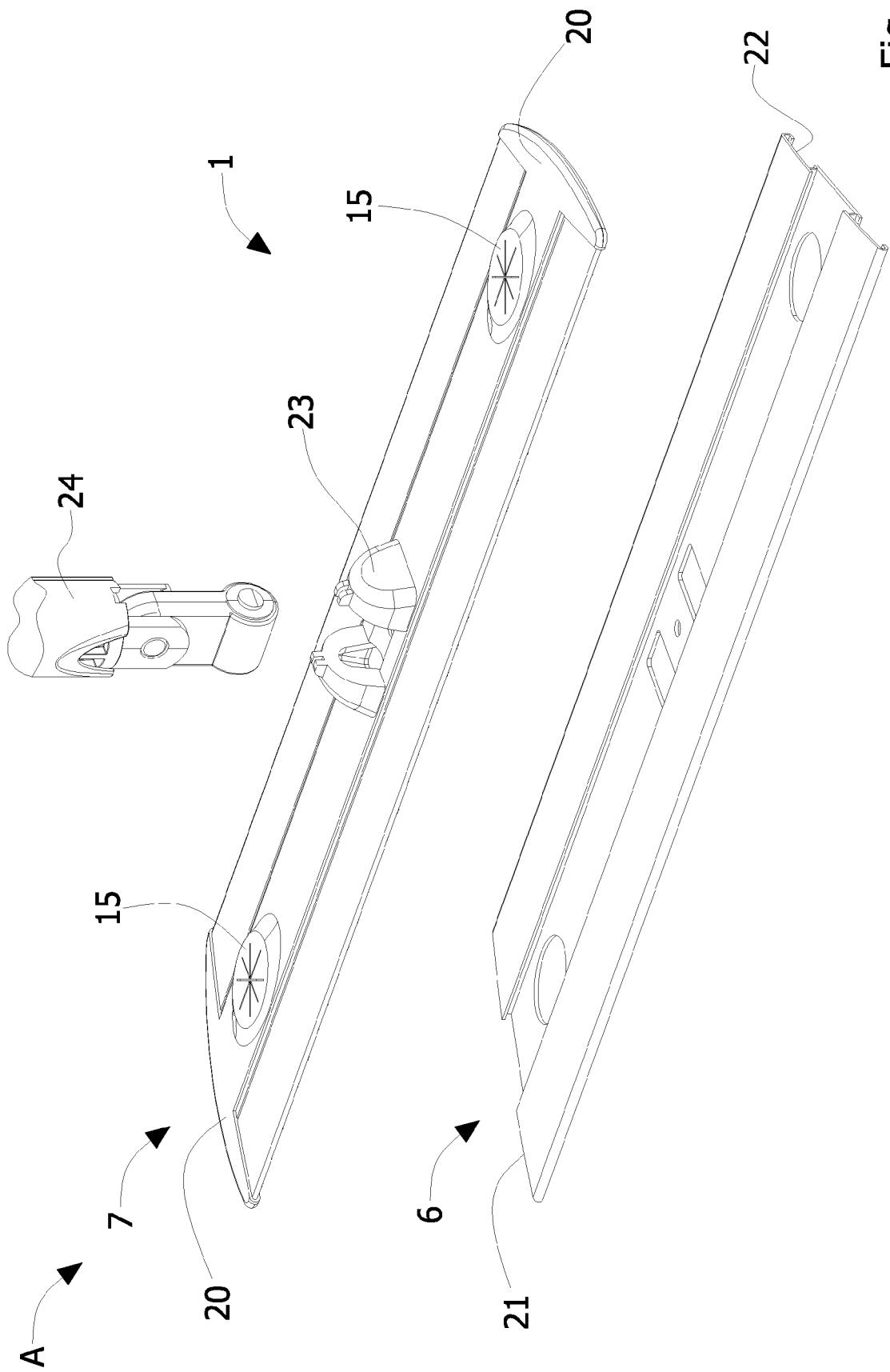


Fig. 3

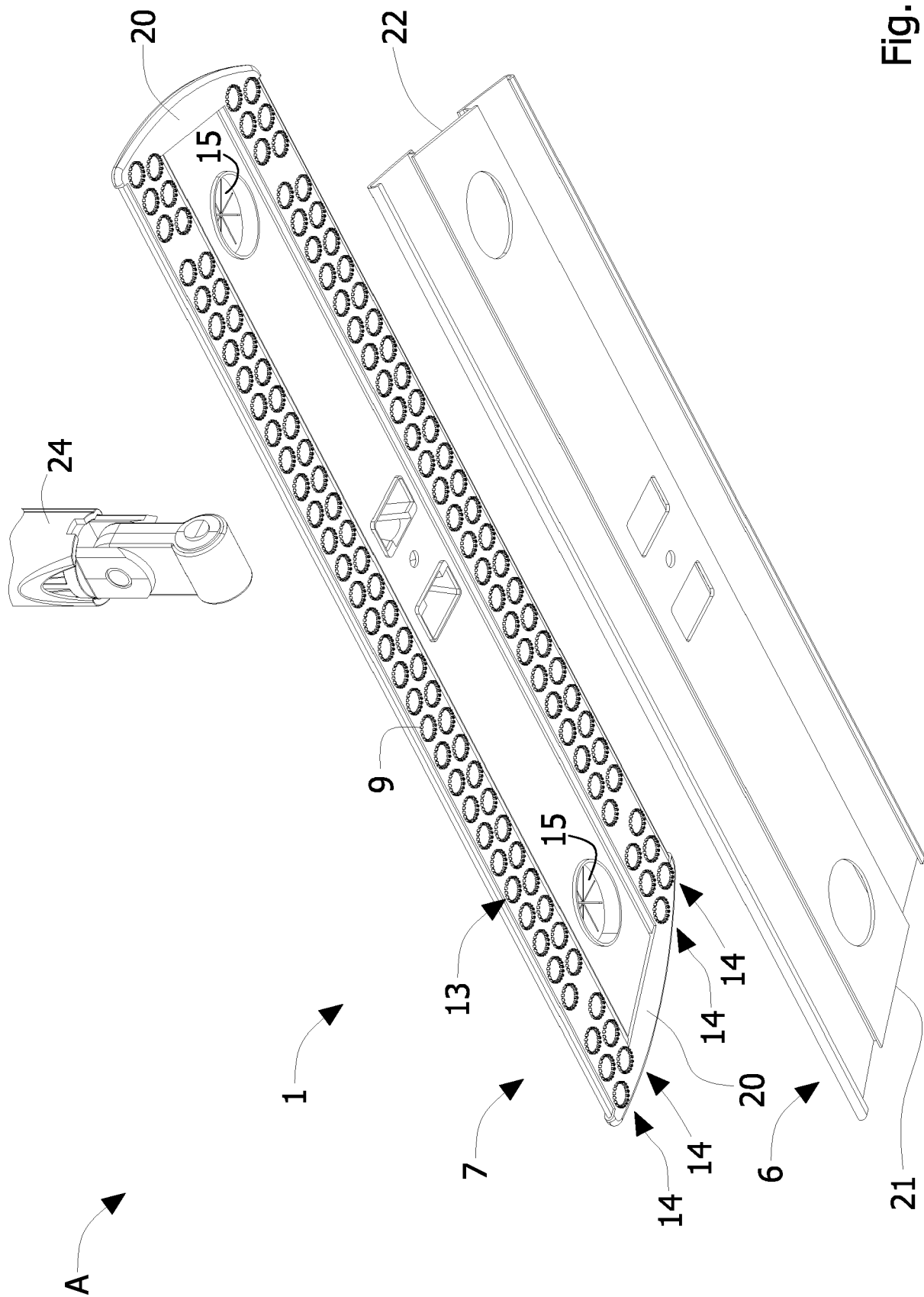


Fig. 4

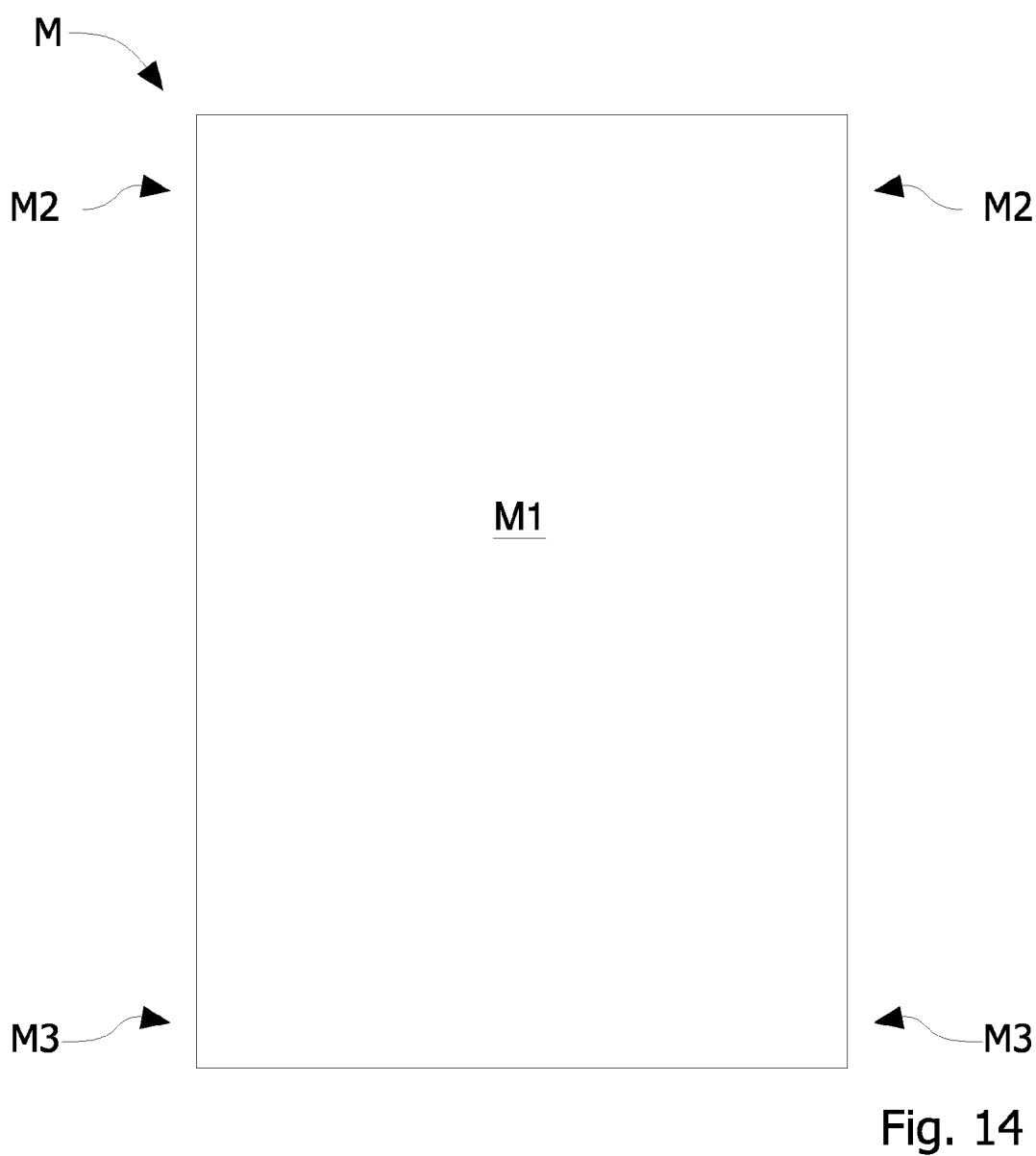
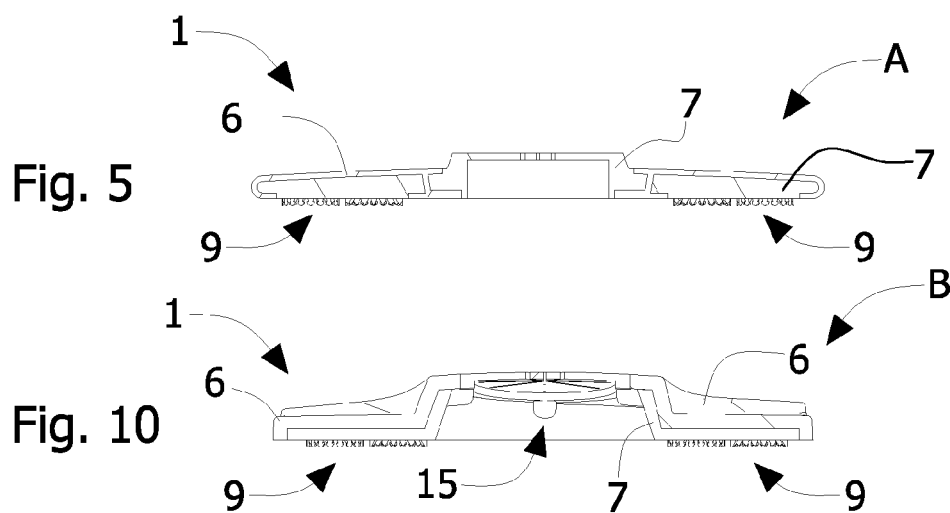


Fig. 6

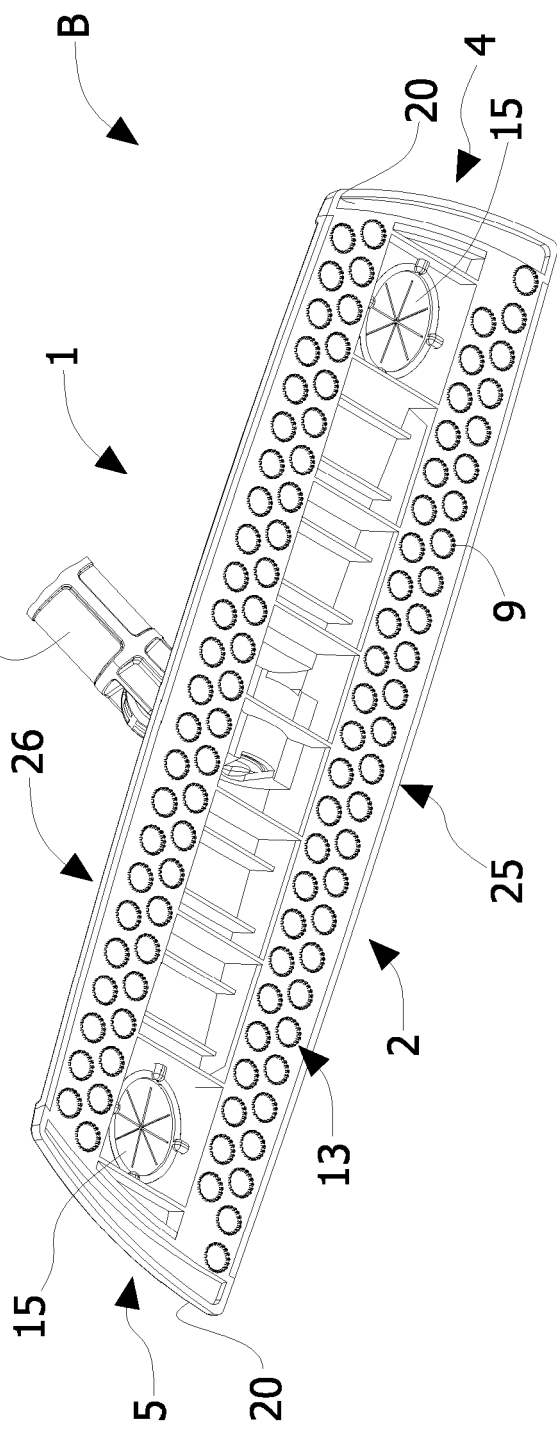
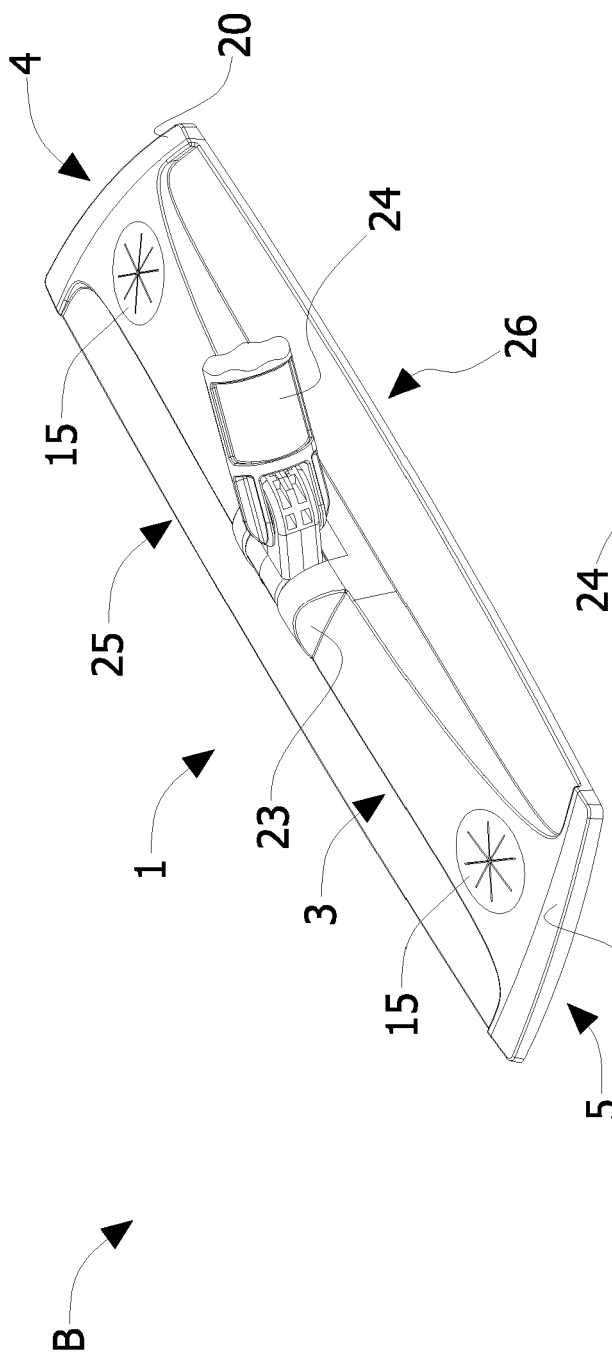


Fig. 7

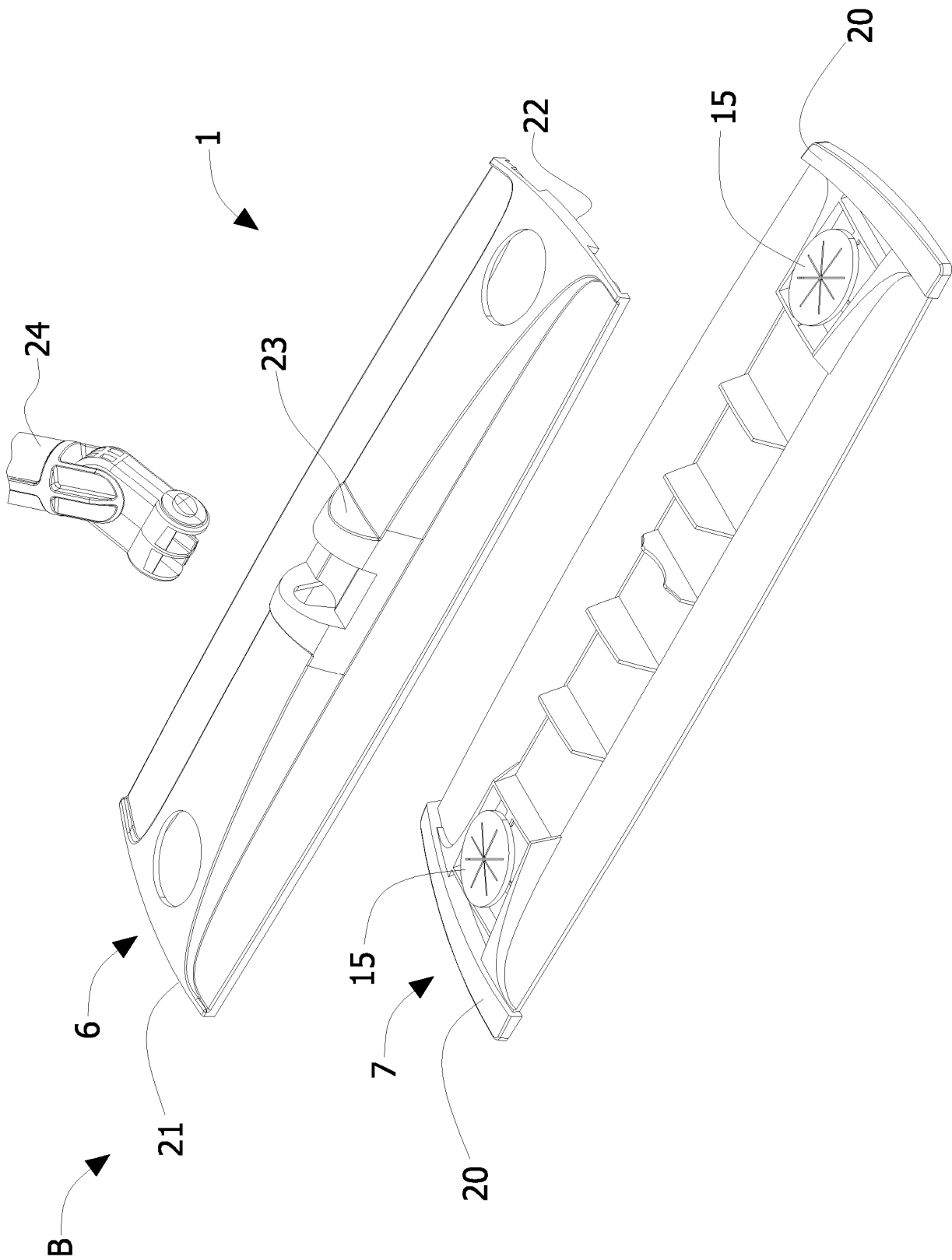


Fig. 8

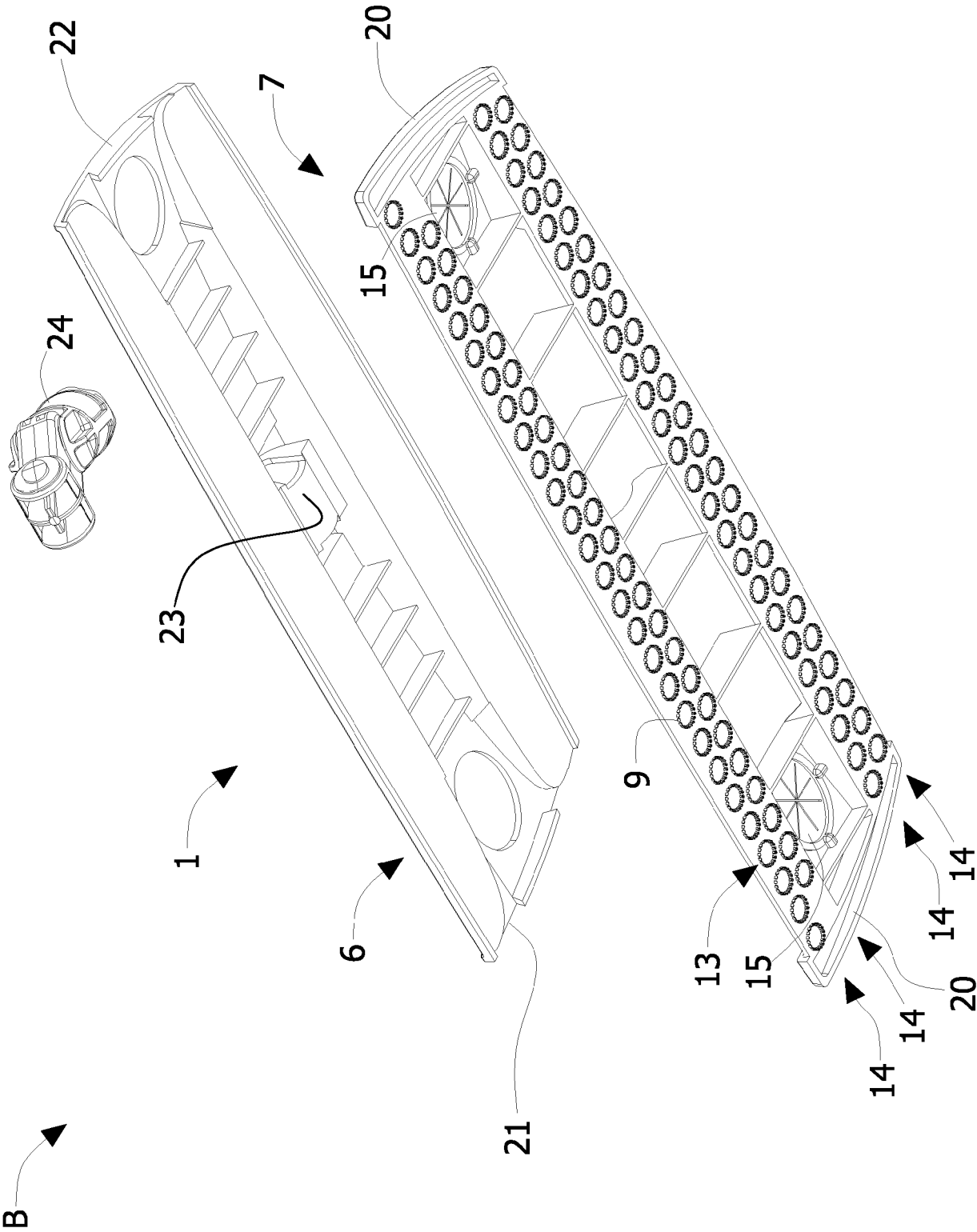


Fig. 9

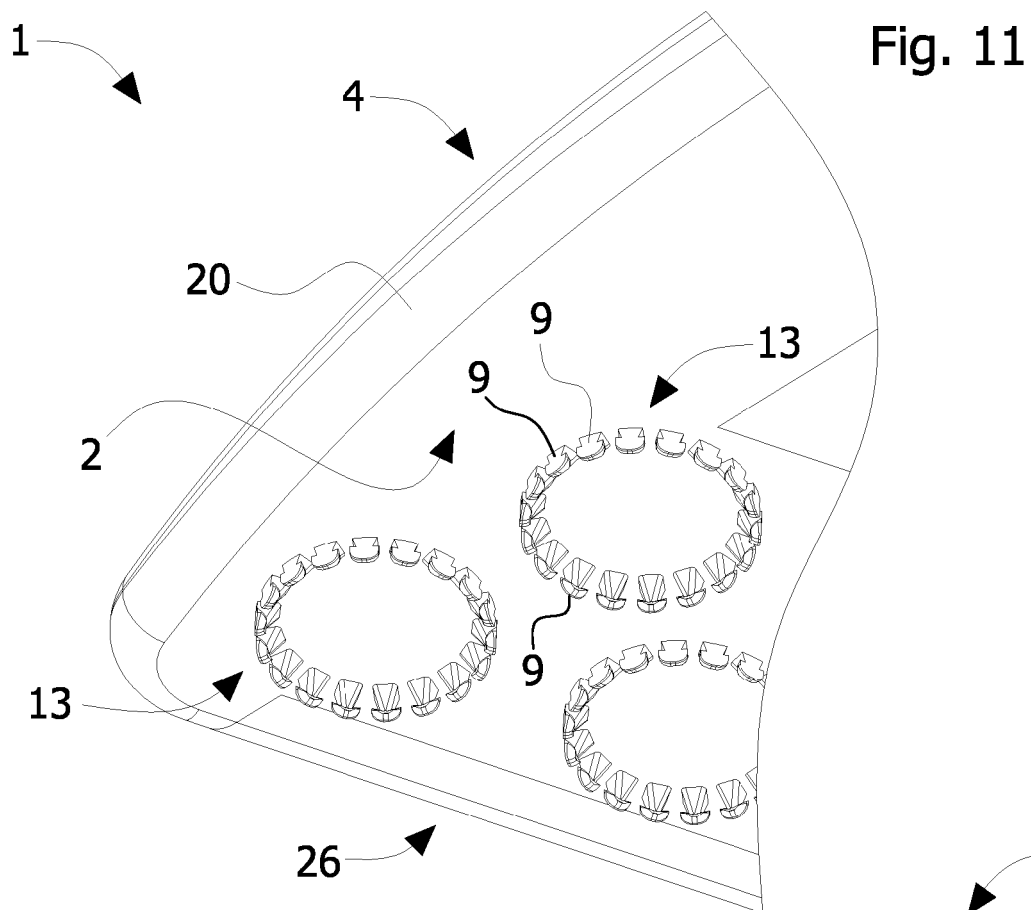
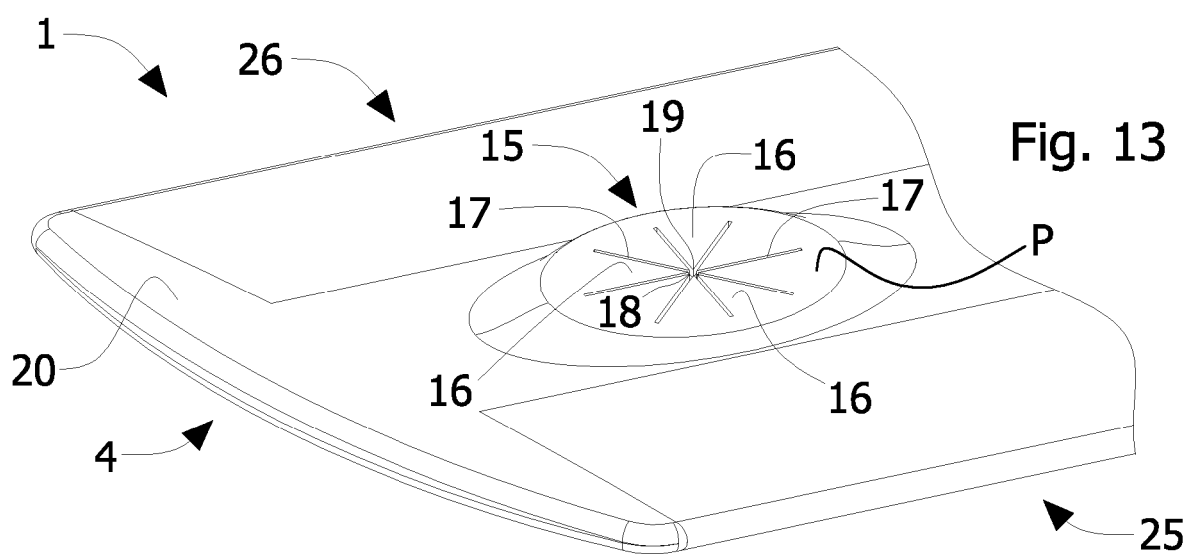


Fig. 12





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Application Number
EP 18 17 3323

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 11 September 2018	Examiner Lopez Vega, Javier
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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