(11) EP 4 026 941 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication: 13.07.2022 Bulletin 2022/28

(21) Application number: 21151062.3

(22) Date of filing: 12.01.2021

(51) International Patent Classification (IPC): **D06F** 73/00 (2006.01) D06F 81/02 (2006.01)

(52) Cooperative Patent Classification (CPC): **D06F 73/00**; D06F 81/02

(84) Designated Contracting States:

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated Extension States:

BA ME

Designated Validation States:

KH MA MD TN

(71) Applicant: Koninklijke Philips N.V. 5656 AG Eindhoven (NL)

(72) Inventor: SIN, Hee Poh 5656 AE Eindhoven (NL)

(74) Representative: de Vries, Janna et al Philips Domestic Appliances Nederland B.V. High Tech Campus 42 5656 AE Eindhoven (NL)

(54) GARMENT STEAMER WITH PIVOTABLE HOLDER FOR STEAMER HEAD

(57) The invention relates to a garment steamer comprising a pole assembly, an ironing board (102) defining a surface (SS) and cooperating with the pole assembly to take a vertical orientation or a horizontal orientation, a steamer head for releasing steam, a holder (104) for holding the steamer head, and a pivot coupling (105) arranged between the ironing board and the holder. The pivot coupling comprises a first end (EI) attached to the ironing board and a second end (E2) attached to said holder. The holder is fixed relative to the second end. The pivot coupling has a rotation axis (AA) inclined by a first angle (AI) being in the range [+10; +65] degrees compared to the surface (SS) of the ironing board.

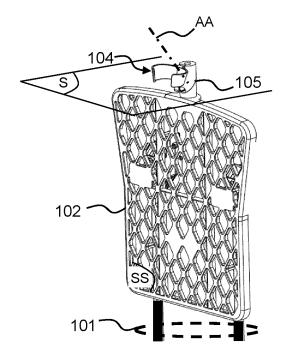


FIG.2A

EP 4 026 941 A1

5

Description

FIELD OF THE INVENTION

[0001] The invention relates to a garment steamer.
[0002] The invention may be used in the field of garment care.

1

BACKGROUND OF THE INVENTION

[0003] Some garment steamer comprises a base with a steam generator, a support structure or pole extending from the base with hanger attached to the top end of the support structure/pole, a steamer head connected to the steam generator via a steam hose and a holder or dock attached to the hanger for holding the steamer head during the inactive phase of steaming or ironing. Garment steamer offers a convenient way of removing wrinkles. However when compared to conventional ironing method, the level of wrinkle removal performance is much lower since there is nothing to support the hanged garment. Tough wrinkles cannot be pressed out like in the process of conventional ironing method which uses a horizontal board to support the garment.

[0004] To improve de-wrinkling performance, other garment steamers also come with an ironing board that can be arranged in a vertical and a horizontal orientation to facilitate steaming or ironing or garments.

[0005] Garment steamer often do have a docking system attached for example to the pole assembly, for docking the steamer head during the inactive phase of steaming or ironing.

[0006] For garment steamer that has an ironing board that can be orientated vertically or horizontal for steaming or ironing, there is a need to have a solution for easily docking the steaming head in a convenient and user friendly manner when the board is in vertical or horizontal orientation.

[0007] Some garment steamers provide two separate docking systems, each for holding the steamer head when the ironing board is in vertical or in horizontal orientation. However, such solution is costly and not user friendly.

OBJECT AND SUMMARY OF THE INVENTION

[0008] It is an object of the invention to propose an improved garment steamer that avoids or mitigates above-mentioned problems.

[0009] The invention is defined by the independent claims. The dependent claims define advantageous embodiments.

[0010] To this end, the garment steamer according to the invention comprises:

- a pole assembly,
- an ironing board defining a surface, the ironing board cooperating with the pole assembly to take a vertical

- orientation or a horizontal orientation,
- a steamer head for releasing steam,
- a holder for holding the steamer head,
- a pivot coupling arranged between the ironing board and the holder, the pivot coupling comprising a first end attached to the ironing board and a second end attached to the holder, the holder being fixed relative to the second end.
- The pivot coupling has a rotation axis inclined by a first angle being in the range [+10; +65] degrees compared to the surface of the ironing board.

[0011] This solution allows to rotate the holder relative to the ironing board such that:

- when the ironing board is in the vertical orientation, the holder can take a first position to hold the steamer head, and
- when the ironing board is in the horizontal orientation, the holder can take a second position to hold the steamer head.

[0012] In other words, the holder can be used to hold the steamer head whether the ironing board is oriented vertically or oriented horizontally.

[0013] This solution allows the steamer head for use along with an ironing board which can be arranged in a vertical and horizontal orientation in a simple and user friendly manner as well as simple to manufacture and cost effective.

[0014] Detailed explanations and other aspects of the invention will be given below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] Particular aspects of the invention will now be explained with reference to the embodiments described hereinafter and considered in connection with the accompanying drawings, in which identical parts or sub-steps are designated in the same manner:

Fig. 1A depicts a garment steamer according to the invention comprising an ironing board oriented vertically.

- Fig. 1B depicts the garment steamer of Fig. 1A when the ironing board is oriented horizontally,
 - Fig. 2A depicts a partial view of a garment steamer according to the invention having an ironing board oriented vertically,
 - Fig. 2B depicts the garment steamer of Fig. 2A when the ironing board oriented horizontally,
 - Fig. 3A depicts a side view of a pivot coupling used in a garment steamer according to the invention when the ironing board is oriented vertically,
 - Fig. 3B depicts the pivot coupling of Fig. 3A when the ironing board is oriented horizontally,
 - Fig. 4 depicts an upper part of a pivot coupling used in a garment steamer according to the invention,

2

55

35

40

45

Fig. 5 depicts a lower part of a pivot coupling used in a garment steamer according to the invention,

Fig. 6 depicts a cross-sectional view of a pivot coupling used in a garment steamer according to the invention and attached to an ironing board oriented vertically,

Fig. 7 depicts a partial front view of a garment steamer according to the invention and attached to an ironing board oriented vertically,

Fig. 8 depicts a side view of Fig. 7,

Fig. 9 depicts a three-dimensional partial view of a garment steamer according to the invention, with an ironing board oriented vertically,

Fig. 10 depicts an exploded rear view of Fig. 9,

Fig. 11 depicts a partial zoomed-in view of Fig. 2A, Fig. 12A depicts a first embodiment of a holder for steamer head used in a garment steamer according to the invention, when the ironing board is oriented vertically,

Fig. 12B depicts the holder of Fig. 12A, when the ironing board is oriented horizontally and the holder pivoted by 180 degree,

Fig. 13A depicts a second embodiment of a holder for steamer head used in a garment steamer according to the invention, when the ironing board is oriented vertically,

Fig. 13B depicts the holder of Fig. 13A, when the ironing board is oriented horizontally and the holder pivoted by 180 degree,

Fig. 13C depicts a three-dimensional view of a holder depicted in Fig. 13A,

Fig. 14A to Fig. 25B depicts various embodiments of a garment steamer according to the invention,

Fig. 26A depicts a third embodiment of a holder for steamer head used in a garment steamer according to the invention, when the ironing board is oriented vertically and the steamer head is hooked by the holder.

Fig. 26B depicts the holder of Fig. 26A when the steamer head is detached from the holder.

DETAILED DESCRIPTION OF THE INVENTION

[0016] Fig. 1A depicts a garment steamer 100 according to the invention comprising an ironing board 102 oriented vertically.

[0017] Fig. 1B depicts a garment steamer 102 according to the invention comprising an ironing board 102 oriented horizontally.

[0018] The garment steamer 100 comprises a pole assembly 101. For example, as illustrated, the pole assembly may comprise two parallel poles extending vertically. [0019] The garment steamer 100 also comprises an ironing board 102 defining a surface (SS). The ironing board cooperates with the pole assembly to take a vertical orientation or a horizontal orientation. The surface (SS) is intended to be used as back support for garments during steaming treatment of the garments. Preferably,

the surface (SS) is overall flat or slightly curved.

[0020] The garment steamer 100 also comprises a steamer head 103 for releasing steam.

[0021] For example, steam is generated in a base unit 110 comprising a steam generator (not shown) supplied with water by a water tank 111, and the steamer head 103 is fluidly connected to the base via a steam hose cord 112.

[0022] In an alternative embodiment (not shown), the steamer head directly comprises a steam generator supplied with water from a water tank 111 arranged in the base unit 110.

[0023] The garment steamer 100 also comprises a holder 104 for holding the steamer head.

It is noted that term "holding" may also cover the technical meaning of hanging, hooking, attaching or supporting, depending on the type of technical cooperation between the holder and the steamer head.

[0024] The holder is used to dock (by the user) the steamer head during inactive phase of steaming or ironing session.

[0025] The garment steamer 100 also comprises a pivot coupling 105 arranged between the ironing board and the holder, the pivot coupling comprising a first end E1 attached to the ironing board and a second end E2 attached to the holder. The holder is fixed relative to the second end. The pivot coupling has a rotation axis (AA) inclined by a first angle A1 being in the range [+10; +65] degrees compared to the surface (SS) of the ironing board

[0026] The first angle A1 is defined compared to the surface (SS) of the ironing board, and the sign of the first angle A1 is positive in the trigonometric direction (i.e. counter-clockwise) and negative in the anti-trigonometric direction (i.e. clockwise).

[0027] Preferably, the pivot coupling is adapted to operate a rotation of the holder in the range of 0-360 degrees around the rotation axis AA.

In this case, the rotation can be free in both clockwise direction and counter-clockwise direction.

[0028] Alternatively, the pivot coupling is adapted to operate a rotation of the holder in the range of 0-180 degrees around the rotation axis AA.

In this case, the rotation is limited by stoppers (not shown), and requires a counter-rotation.

[0029] Fig. 2A depicts a partial view of a garment steamer according to the invention having an ironing board oriented vertically.

[0030] Fig. 2B depicts the garment steamer of Fig. 2A when the ironing board oriented horizontally.

[0031] Preferably, the value of the first angle (A1) is +45 degrees.

If the first angle A1 has a value of +45 degrees, this allows positioning the holder with exactly the same position relative to horizontal (e.g. the ground) when the ironing board is either vertical or horizontal. An illustration of this specific embodiment is depicted in Fig. 3A and Fig. 3B.

[0032] The holder (104) of Fig. 2A and Fig. 2B comprise

two arms 106a, 106b for holding the steamer head.

[0033] The two arms 106a, 106b are attached to the second end E2.

[0034] The two arms extend in a main planar surface (S) such that the main planar surface is inclined by a second angle A2 being in the range [-45; +95] degrees compared to the rotation axis (AA).

[0035] The angle A2 is defined compared to the rotation axis (AA), when the ironing board 102 is oriented vertically, and the holder 104 is pivoted such as to functionally be able to hold the steamer head 103. The sign of angle A2 is positive in the trigonometric direction (i.e. counter-clockwise) and negative in the anti-trigonometric direction (i.e. clockwise).

[0036] Preferably, the value of the second angle A2 is 45 degrees compared to the rotation axis AA.

[0037] Fig. 3A depicts a side view of a pivot coupling used in a garment steamer according to the invention when the ironing board is oriented vertically.

[0038] Fig. 3B depicts the pivot coupling of Fig. 3A when the ironing board is oriented horizontally.

[0039] Fig. 4 depicts an upper part (corresponding to the second end E2) of a pivot coupling used in a garment steamer according to the invention.

Fig. 5 depicts a lower part (corresponding to the first end E1) of a pivot coupling used in a garment steamer according to the invention.

[0040] The upper part (i.e. second end E2) and the lower part (i.e. first end E1) are adapted to cooperate with each other in order to form the pivot coupling.

[0041] The pivot coupling is adapted to operate the rotation of the holder at fixed interval of 180 degrees.

[0042] The first end E1 is fixed relative to the ironing board 102 and the second end E2 is rotatable relative to the first end E1 in the range of 0-180 degree in clockwise or counter-clockwise direction thanks to pivot coupling 105.

[0043] The first end comprises a first surface S1 and the second end comprises a second surface S2. The first surface and the second surface are in close contact and rotatable relative to each other around the rotation axis AA.

[0044] For example, as illustrated, the first surface and second surface are circular, and this type of surface contact ensures a robust and non-loose pivot coupling.

[0045] The second end E2 and the first end E1 can be made from low cost plastic material for example Polypropylene (PP), Acrylonitrile Butadiene Styrene (ABS), Polycarbonate (PC), Polyoxymethylene (POM),...etc.

[0046] Preferably, the two arms 106a / 106b can be integrally formed as part of the second end E2, or made as a separate component and fixed to the upper part E2 using any suitable fixation means (such as screw).

[0047] Preferably, the first surface comprises protrusions P1 arranged at predefined angular positions around the rotation axis and cooperating with cavities C2 arranged at corresponding angular positions on the second surface, or the other way around. As illustrated, there

are two protrusions and two cavities arranged symmetrically compared to the rotation axis AA. The protrusions and the cavities are arranged around the rotation axis AA such that they match with each other, the main planar surface (S) of the two arms is perpendicular to the ironing board when the ironing board is oriented vertically.

[0048] Following a rotation of the two arm, when the protrusions and the cavities successively match together, this means that the two arms have rotated by 180 degrees around the rotation axis AA.

[0049] This alignment mechanism around the rotation axis AA helps the user to easily set the two arms perpendicular to the ironing board when the ironing board is oriented vertically, and this helps the user to set the two arms parallel to the ironing board when the ironing board is oriented horizontally.

[0050] Fig. 6 depicts a cross-sectional view of a pivot coupling used in a garment steamer according to the invention and attached to an ironing board oriented vertically.

[0051] Preferably, the pivot coupling further comprises a biasing mechanism for maintaining contact between the first surface S1 and the second surface S2.

[0052] For example, the biasing mechanism comprises a spring 107a mounted on a shaft 107b protruding from the second end E2. A cap 107c is mounted at the extremity of the shaft to prevent the spring from leaving the shaft. This creates a back-force for pushing the first end and the second end against each other.

0 [0053] Preferably, the pivot coupling is made of low friction self-lubricating plastic material.

This reduces friction between the moving parts (i.e. surface S1 and S2) and ensures a smooth rotation.

[0054] For example, material such as Polyoxymethylene (POM), Nylon... etc can be used.

[0055] Fig. 7 depicts a partial front view of a garment steamer according to the invention and attached to an ironing board oriented vertically. Fig. 8 depicts a side view of Fig. 7.

40 [0056] Preferably, the holder 104 is arranged at an extremity of the ironing board 102, along its longitudinal symmetrical axis YY

This results in a convenient docking of the steamer head by the user.

5 [0057] Preferably, the two arms 106a, 106b are arcshaped and arranged symmetrically compared to the longitudinal symmetrical axis YY.

[0058] This ensures a stable holding of the steamer head, and also ensures that the steamer head will be oriented downward/vertically once docked.

[0059] Fig. 11 depicts a partial zoomed-in view of Fig. 2A.

[0060] Preferably, the second end E2 further comprises a hook 109.

The hook 109 is intended for hanging a garment hanger or other accessories. For example, the hook 109 is arranged along the longitudinal symmetrical axis YY.

[0061] Fig. 9 depicts a three-dimensional partial view

of a garment steamer according to the invention, with an ironing board oriented vertically.

Fig. 10 depicts an exploded rear view of Fig. 9.

[0062] Preferably, the first end E1 is directly detachable from the ironing board. Alternatively, an intermediate element 108 can be arranged between the ironing board and the first end E1. The intermediate element is fixed relative to the first end E1 and is detachable from the ironing board.

This results in that the holder can completely be detached from the ironing board, which is convenient to reduce the volume of the packaging of the garment steamer.

[0063] For example, a snap-fit mechanism can be used to attach the fixing element to the ironing board.

[0064] The fixing element can for example be flush with the periphery of the ironing board (as illustrated), otherwise protruding from the periphery of the ironing board.

[0065] Preferably, as illustrated in Fig. 10, the second surface S2 is formed by a separate male element 113 having a cylindrical shape, and is fixed inside the internal cylindrical female shape of the second end E2.

This type of assembly brings convenience during the manufacturing of the pivot coupling.

[0066] Fig. 12A depicts a first embodiment of a holder for steamer head used in a garment steamer according to the invention, when the ironing board is oriented vertically.

[0067] Fig. 12B depicts the holder of Fig. 12A, when the ironing board is oriented horizontally and the holder being rotated around axis of rotation (AA) by 180 degree. In this embodiment, each of the two arms 106a, 106b have a flat top edge and a flat bottom edge.

[0068] Fig. 13A depicts a second embodiment of a holder for steamer head used in a garment steamer according to the invention, when the ironing board is oriented vertically. Fig. 13B depicts the holder of Fig. 13A, when the ironing board is oriented horizontally and the holder being rotated around axis of rotation (AA) by 180 degree.

Fig. 13C depicts a three-dimensional view of a holder depicted in Fig. 13A.

In this embodiment, each of the two arms 106a, 106b have a curved top edge and a curved bottom edge.

[0069] Fig. 14A depicts a partial view of a garment steamer according to the invention with an ironing board oriented vertically, comprising a pivot coupling with axis of rotation (AA) inclined by a first angle A1 of +10 degree compared to the surface (SS) of the ironing board 102, and a holder for steamer head having a main planar surface (S) being tilted by a second angle A2 of -10 degree compared to the axis of rotation AA.

Fig. 14B depicts the holder of Fig. 14A, when the ironing board is oriented horizontally, and the holder being rotated around the axis of rotation (AA) by 180 degree.

[0070] Fig. 15A depicts a partial view of a garment steamer according to the invention with an ironing board oriented vertically, comprising a pivot coupling with axis of rotation (AA) inclined by a first angle A1 of +10 degree

compared to the surface (SS) of the ironing board 102, and a holder for steamer head having a main planar surface (S) being tilted by a second angle A2 of +10 degree compared to the axis of rotation AA.

Fig. 15B depicts the holder of Fig. 15A, when the ironing board is oriented horizontally, and the holder being rotated around the axis of rotation (AA) by 180 degree.

[0071] Fig. 16A depicts a partial view of a garment steamer according to the invention with an ironing board oriented vertically, comprising a pivot coupling with axis of rotation (AA) inclined by a first angle A1 of +10 degree compared to the surface (SS) of the ironing board 102, and a holder for steamer head having a main planar surface (S) being tilted by a second angle A2 of +95 degree compared to the axis of rotation AA Fig. 16B depicts the holder of Fig. 16A, when the ironing board is oriented horizontally, and the holder being rotated around axis of rotation (AA) by 180 degree.

[0072] Fig. 17A depicts a partial view of a garment steamer according to the invention with an ironing board oriented vertically, comprising a pivot coupling with axis of rotation (AA) inclined by a first angle A1 of +30 degree compared to the surface (SS) of the ironing board 102, and a holder for steamer head having a main planar surface (S) being tilted by a second angle A2 of -30 degree compared to the axis of rotation AA.

Fig. 17B depicts the holder of Fig. 17A, when the ironing board is oriented horizontally, and the holder being rotated around axis of rotation (AA) by 180 degree.

[0073] Fig. 18A depicts a partial view of a garment steamer according to the invention with an ironing board oriented vertically, comprising a pivot coupling with axis of rotation (AA) inclined by a first angle A1 of +30 degree compared to the surface (SS) of the ironing board 102, and a holder for steamer head having a main planar surface (S) being tilted by a second angle A2 of +30 degree compared to the axis of rotation AA Fig. 18B depicts the holder of Fig. 18A, when the ironing board is oriented horizontally, and the holder being rotated around axis of rotation (AA) by 180 degree.

[0074] Fig. 19A depicts a partial view of a garment steamer according to the invention with an ironing board oriented vertically, comprising a pivot coupling with axis of rotation (AA) inclined by a first angle A1 of +30 degree compared to the surface (SS) of the ironing board 102, and a holder for steamer head having a main planar surface (S) being tilted by a second angle A2 of +75 degree compared to the axis of rotation AA Fig. 19B depicts the holder of Fig. 19A, when the ironing board is oriented horizontally, and the holder being rotated around axis of rotation (AA) by 180 degree.

[0075] Fig. 20A depicts a partial view of a garment steamer according to the invention with an ironing board oriented vertically, comprising a pivot coupling with axis of rotation (AA) inclined by a first angle A1 of +45 degree compared to the surface (SS) of the ironing board 102, and a holder for steamer head having a main planar surface (S) being tilted by a second angle A2 of -45 degree

compared to the axis of rotation AA.

Fig. 20B depicts the holder of Fig. 20A, when the ironing board is oriented horizontally, and the holder being rotated around axis of rotation (AA) by 180 degree.

[0076] Fig. 21A depicts a partial view of a garment steamer according to the invention with an ironing board oriented vertically, comprising a pivot coupling with axis of rotation (AA) inclined by a first angle A1 of +45 degree compared to the surface (SS) of the ironing board 102, and a holder for steamer head having a main planar surface (S) being parallel to the axis of rotation AA

[0077] Fig. 21B depicts the holder of Fig. 21A, when the ironing board is oriented horizontally, and the holder being rotated around axis of rotation (AA) by 180 degree. [0078] Fig. 22A depicts a partial view of a garment steamer according to the invention with an ironing board oriented vertically, comprising a pivot coupling with axis of rotation (AA) inclined by a first angle A1 of +45 degree compared to the surface (SS) of the ironing board 102, and a holder for steamer head having a main planar surface (S) being tilted by a second angle A2 of +60 degree compared to the axis of rotation AA Fig. 22B depicts the holder of Fig. 22A, when the ironing board is oriented horizontally, and the holder being rotated around axis of rotation (AA) by 180 degree.

[0079] Fig. 23A depicts a partial view of a garment steamer according to the invention with an ironing board oriented vertically, comprising a pivot coupling with axis of rotation (AA) inclined by a first angle A1 of +65 degree compared to the surface (SS) of the ironing board 102, and a holder for steamer head having a main planar surface (S) being tilted by a second angle A2 of -25 degree compared to the axis of rotation AA.

Fig. 23B depicts the holder of Fig. 23A, when the ironing board is oriented horizontally, and the holder being rotated around axis of rotation (AA) by 180 degree.

[0080] Fig. 24A depicts a partial view of a garment steamer according to the invention with an ironing board oriented vertically, comprising a pivot coupling with axis of rotation (AA) inclined by a first angle A1 of +65 degree compared to the surface (SS) of the ironing board 102, and a holder for steamer head having a main planar surface (S) being tilted by a second angle A2 of -5 degree compared to the axis of rotation AA.

Fig. 24B depicts the holder of Fig. 24A, when the ironing board is oriented horizontally, and the holder being rotated around axis of rotation (AA) by 180 degree.

Fig. 24C depicts a three-dimensional view of a steamer head held in a holder depicted in Fig. 24A.

[0081] Fig. 25A depicts a partial view of a garment steamer according to the invention with an ironing board oriented vertically, comprising a pivot coupling with axis of rotation (AA) inclined by a first angle A1 of +65 degree compared to the surface (SS) of the ironing board 102, and a holder for steamer head having a main planar surface (S) being tilted by a second angle A2 of +40 degree compared to the axis of rotation AA.

Fig. 25B depicts the holder of Fig. 25A, when the ironing

board is oriented horizontally, and the holder being rotated around axis of rotation (AA) by 180 degree.

[0082] Fig. 26A depicts a third embodiment of a holder for steamer head used in a garment steamer according to the invention, when the ironing board 102 is oriented vertically and the steamer head is hooked by the holder. Fig. 26B depicts the holder of Fig. 26A when the steamer head is detached from the holder. In this embodiment, the holder 104 corresponds to a hook 104a. The hook 104a is adapted to cooperated with a ring (or loop) 104b arranged on the housing of the steamer head 103.

[0083] The above embodiments as described are only illustrative, and not intended to limit the technique approaches of the present invention. Although the present invention is described in details referring to the preferable embodiments, those skilled in the art will understand that the technique approaches of the present invention can be modified or equally displaced without departing from the protective scope of the claims of the present invention. In the claims, the word "comprising" does not exclude other elements or steps, and the indefinite article "a" or "an" does not exclude a plurality. Any reference signs in the claims should not be construed as limiting the scope.

Claims

25

30

40

45

- 1. A garment steamer (100) comprising:
 - a pole assembly (101),
 - an ironing board (102) defining a surface (SS), said ironing board cooperating with the pole assembly to take a vertical orientation or a horizontal orientation,
 - a steamer head (103) for releasing steam,
 - a holder (104) for holding the steamer head,
 - a pivot coupling (105) arranged between the ironing board and the holder, the pivot coupling comprising a first end (E1) attached to the ironing board and a second end (E2) attached to said holder, said holder being fixed relative to the second end,
 - said pivot coupling having a rotation axis (AA) inclined by a first angle (A1) being in the range [+10; +65] degrees compared to the surface (SS) of the ironing board.
- 2. Garment steamer as claimed in claim 1, wherein the pivot coupling is adapted to operate a rotation of the holder:

in the range of 0-360 degrees around said rotation axis, or

in the range of 0-180 degrees around said rotation axis.

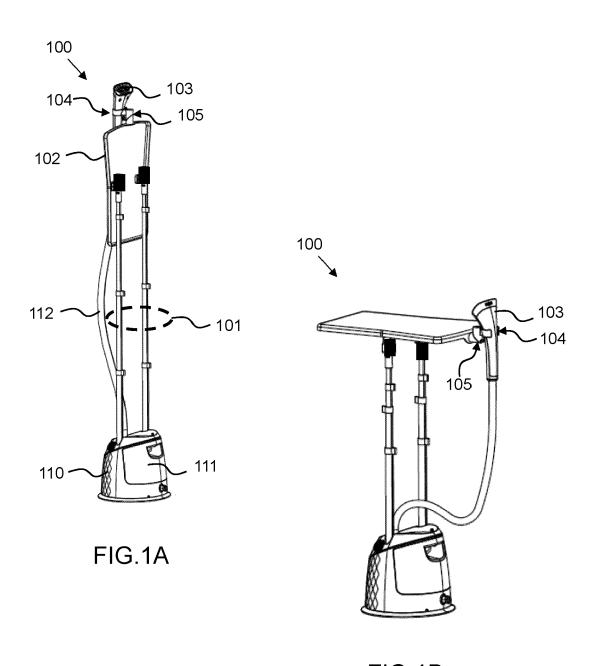
- 3. Garment steamer as claimed in any one of the preceding claims, wherein the holder comprises two arms (106a, 106b) for holding the steamer head, said two arms extending in a main planar surface (S) such that said main planar surface is inclined by a second angle (A2) in the range [-45; +95] degrees compared to said rotation axis (AA).
- 4. Garment steamer as claimed in claim 1, wherein the value of said first angle (A1) is +45 degrees.

5. Garment steamer as claimed in any one of the preceding claims, wherein said first end comprises a first surface (S1) and said second end comprises a second surface (S2), said first surface and said second surface being in close contact and rotatable relative to each other around said rotation axis.

- 6. Garment steamer as claimed in claim 5, wherein said pivot coupling further comprises a biasing mechanism (107a, 107b, 107c) for maintaining contact between the first surface and the second surface.
- 7. Garment steamer as claimed in claim 5 or 6, wherein said first surface comprises protrusions (P1) arranged at predefined angular positions around said rotation axis and cooperating with cavities (C2) arranged at corresponding angular positions on said second surface, or the other way around.
- 8. Garment steamer as claimed in any one of the preceding claims, wherein said first end (E1) is detachable from the ironing board.
- 9. Garment steamer as claimed in any one of the preceding claims, wherein said second end further comprises a hook (109).
- 10. Garment steamer as claimed in anyone of the preceding claims, wherein the pivot coupling is made of 40 low friction self-lubricating plastic material.
- 11. Garment steamer as claimed in anyone of the preceding claims, wherein the holder and the pivot coupling are arranged at an extremity of the ironing board, along its longitudinal symmetrical axis (YY).
- 12. Garment steamer as claimed in claim 3, wherein the two arms are arc-shaped and arranged symmetrically compared to said longitudinal symmetrical axis.
- 13. Garment steamer as claimed in claim 1 and 2, wherein said holder is a hook (104a) attached to the second part, adapted to cooperate with a loop (104b) arranged on the steamer head.

10

55



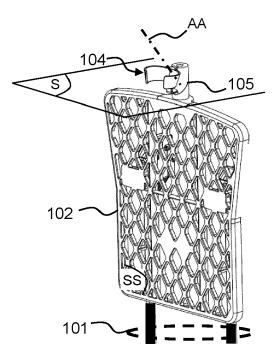
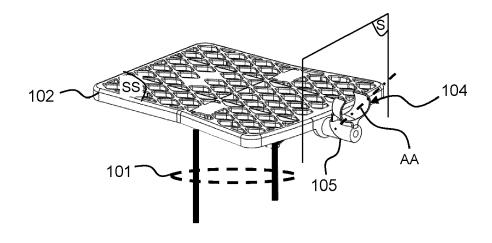


FIG.2A



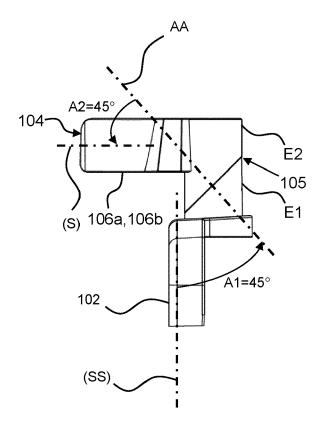


FIG.3A

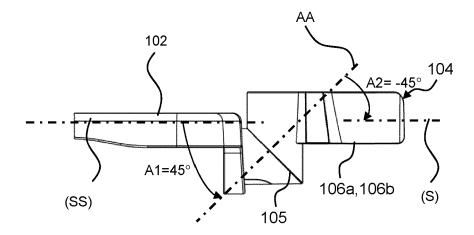


FIG.3B

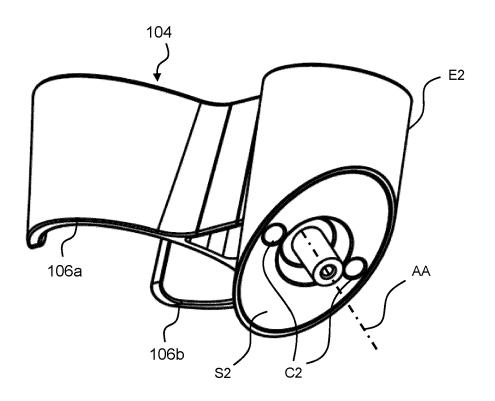


FIG.4

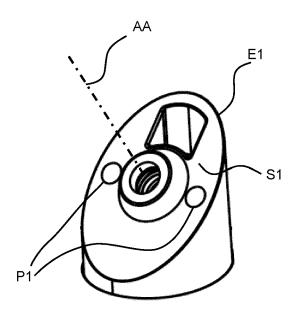


FIG.5

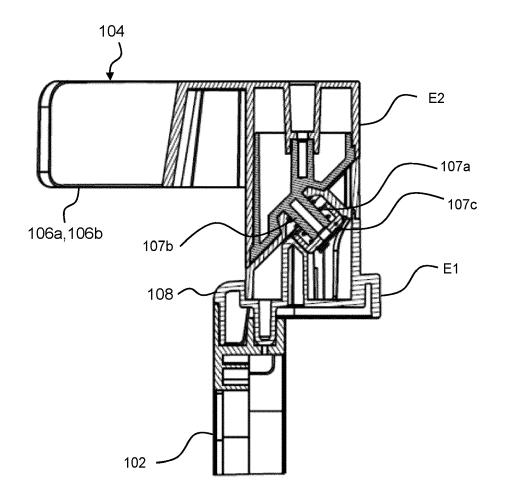


FIG.6

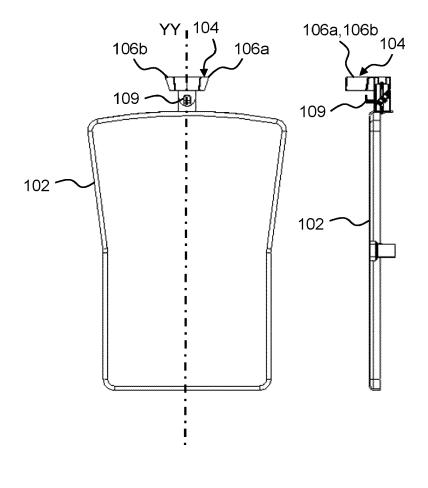


FIG.7

FIG.8

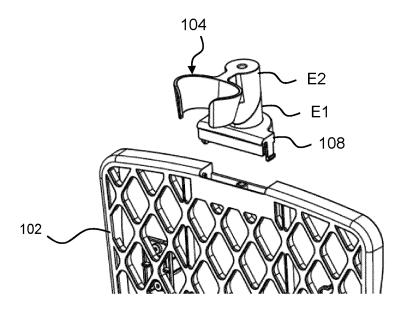


FIG.9

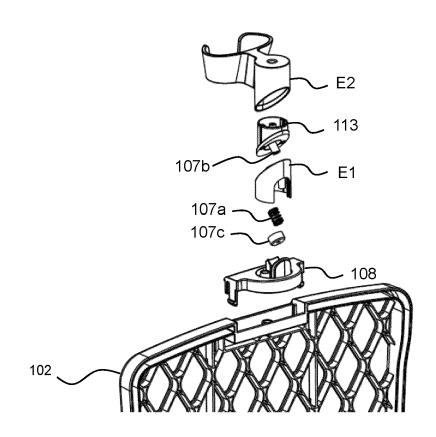


FIG.10

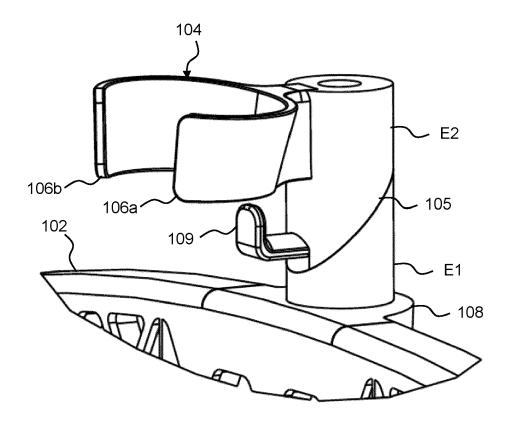
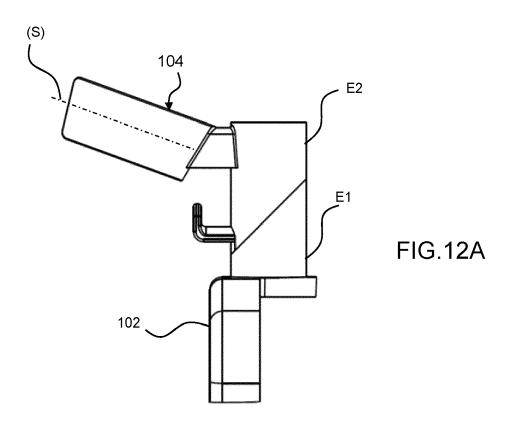
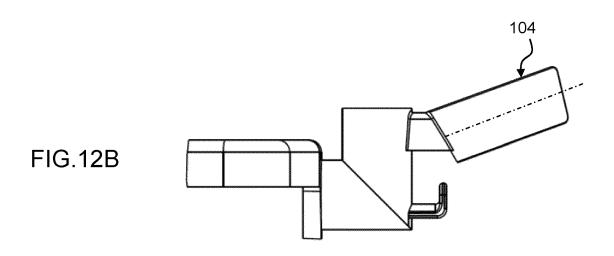
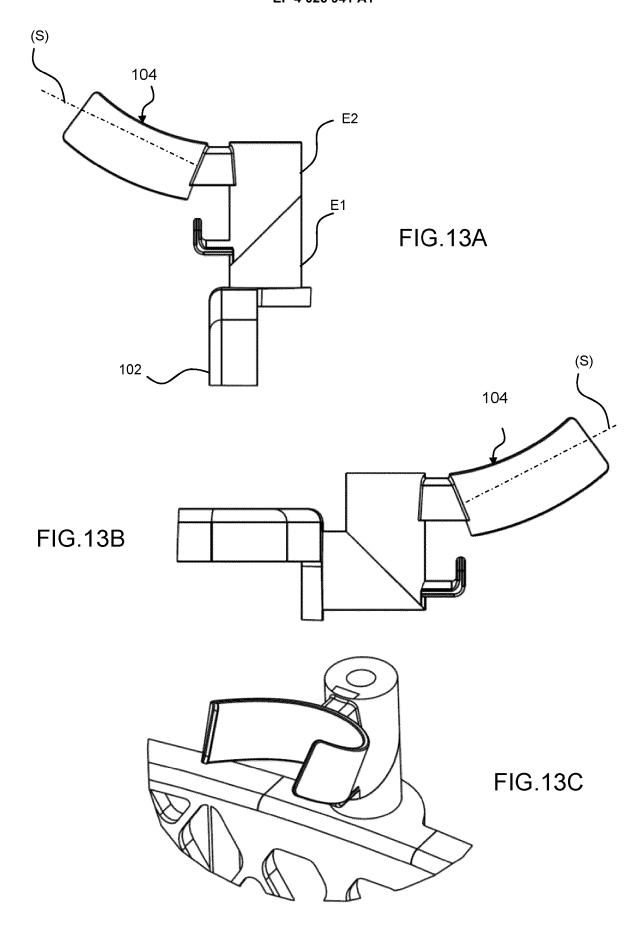


FIG.11







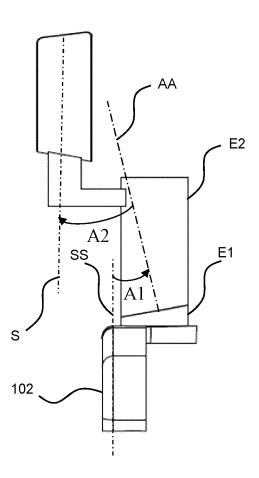
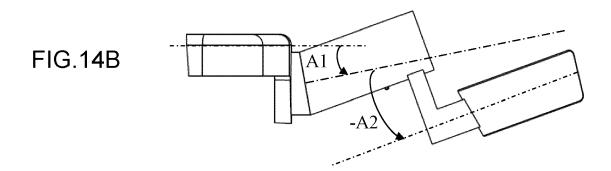
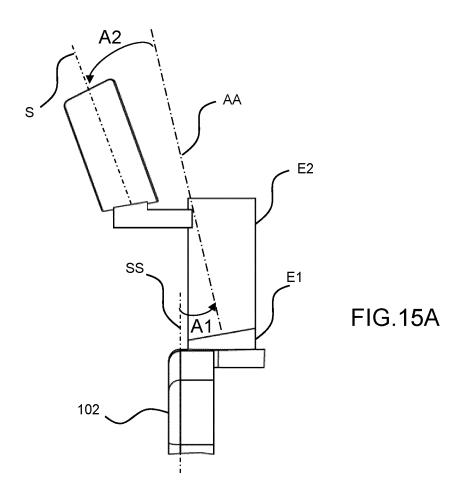
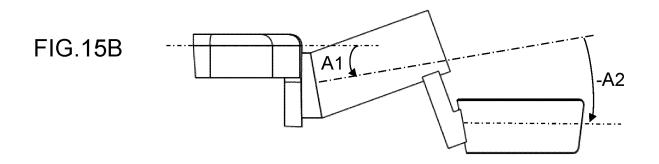
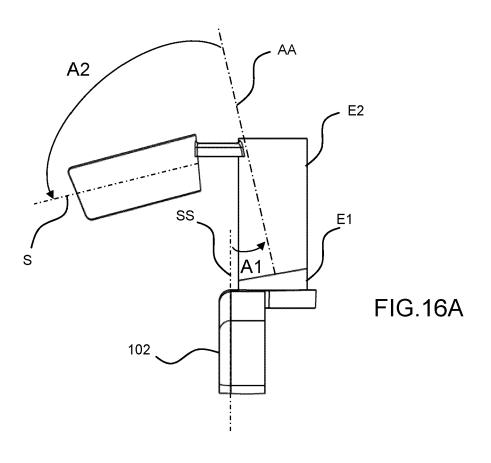


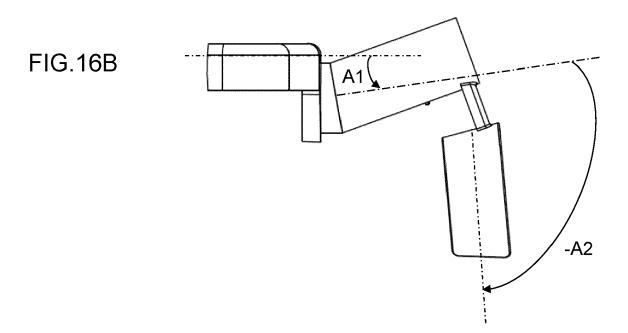
FIG.14A

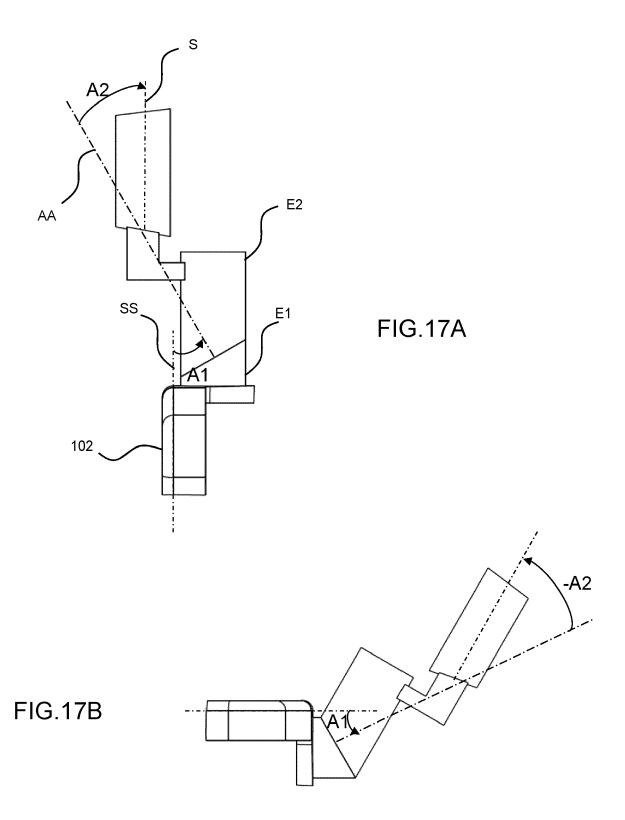


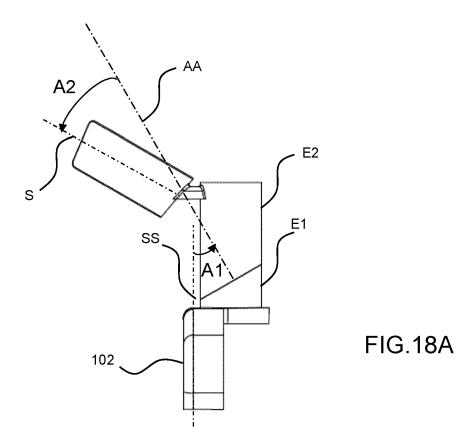


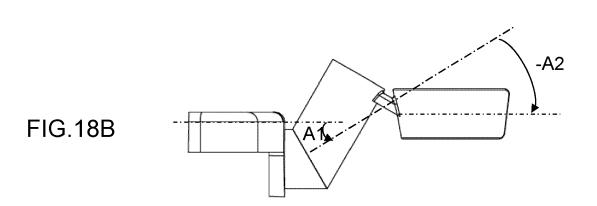


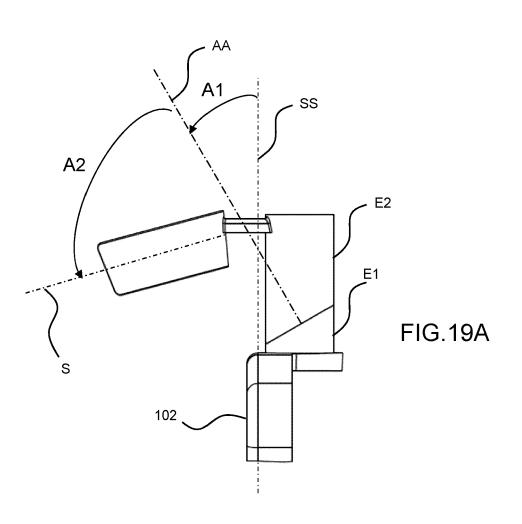


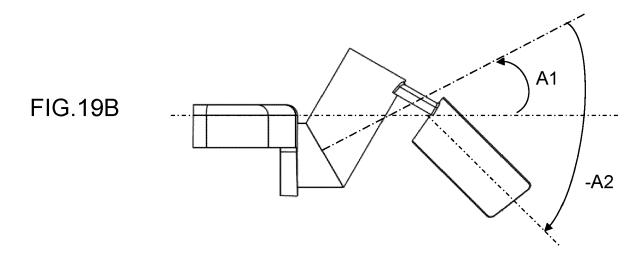


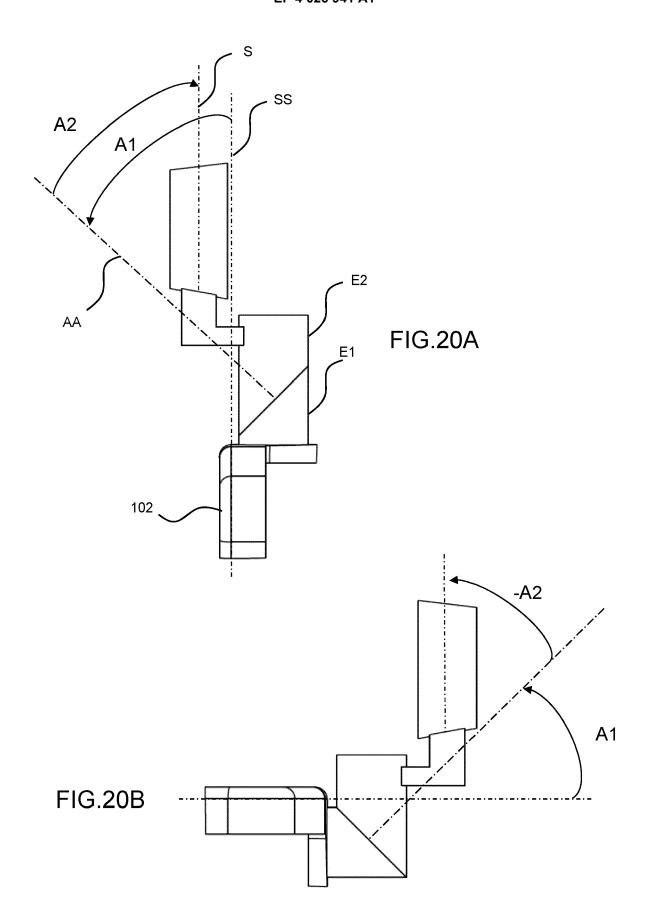


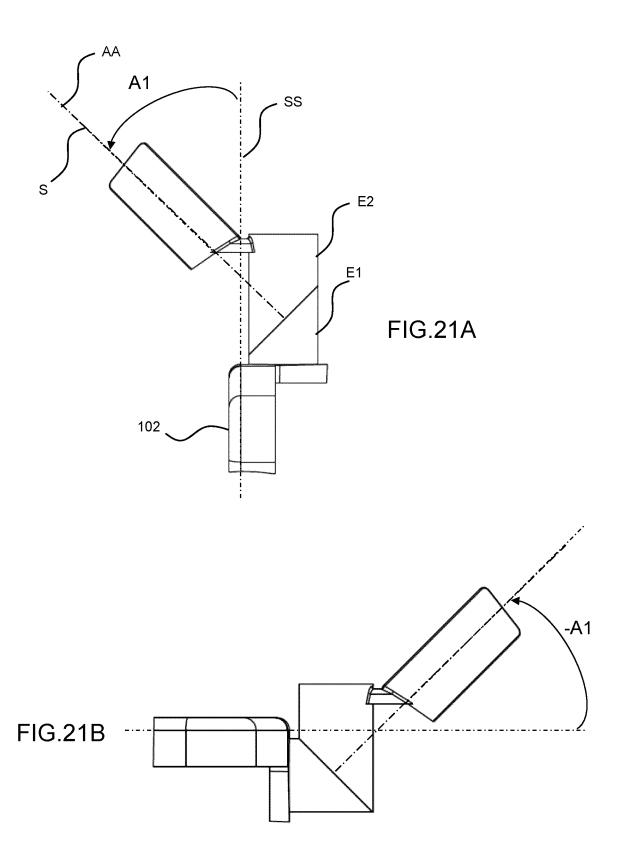


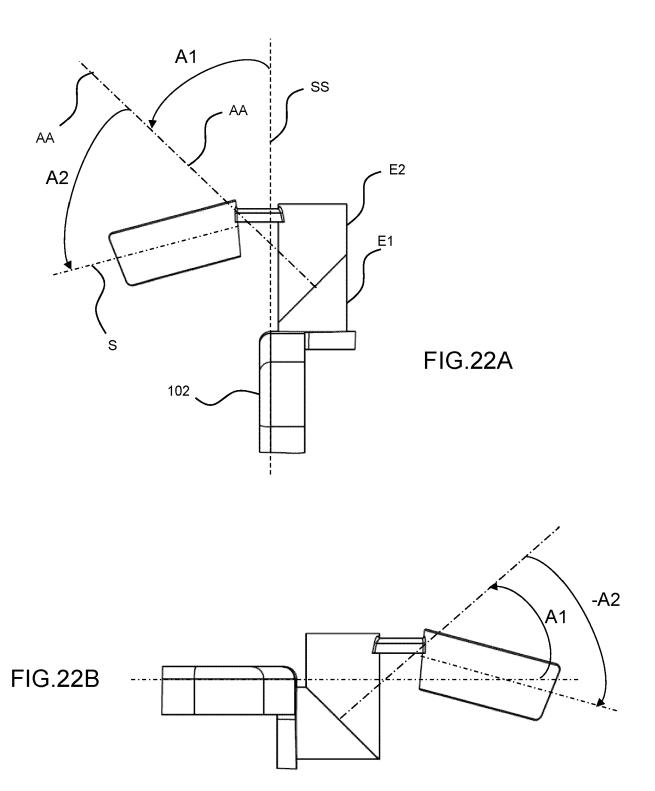


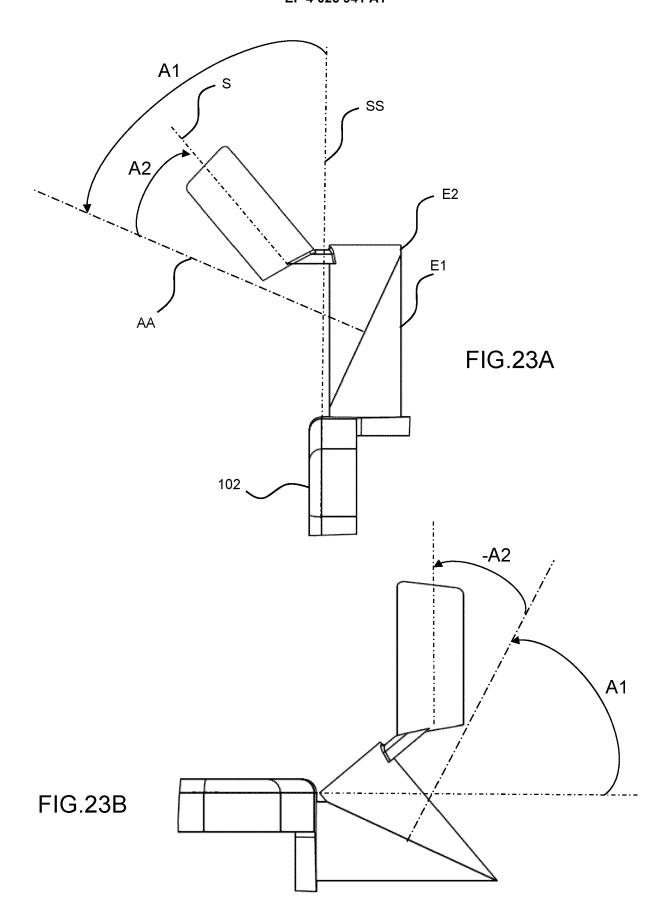


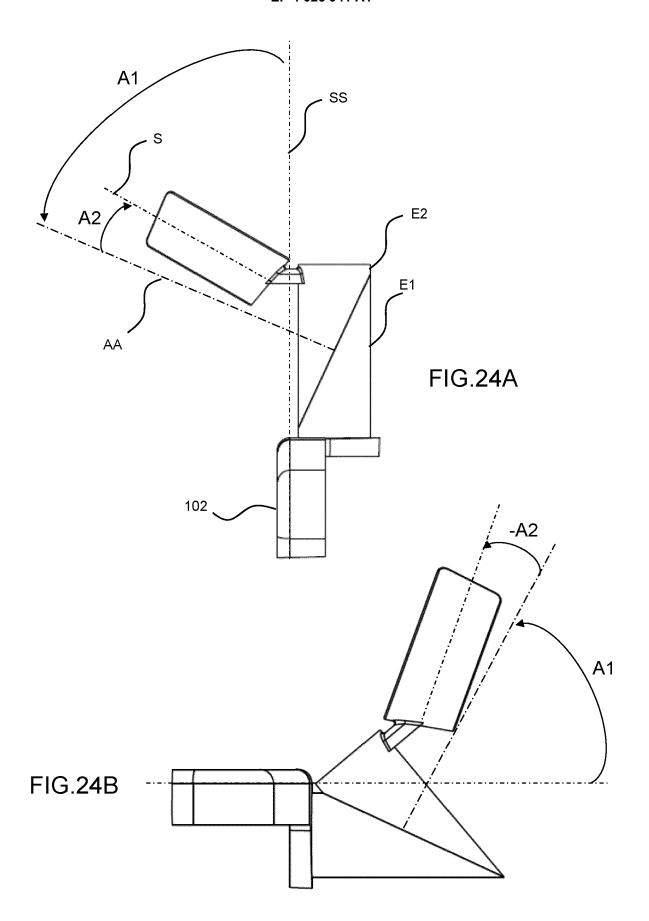












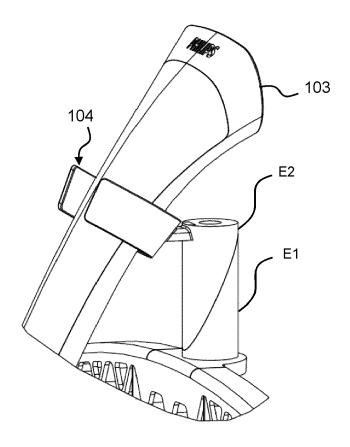
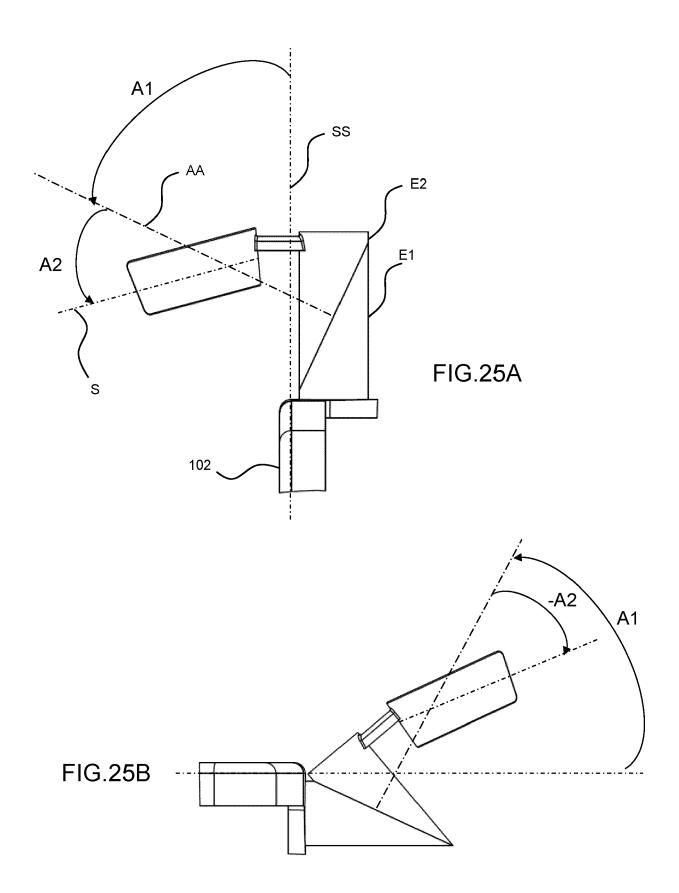


FIG.24C



EP 4 026 941 A1

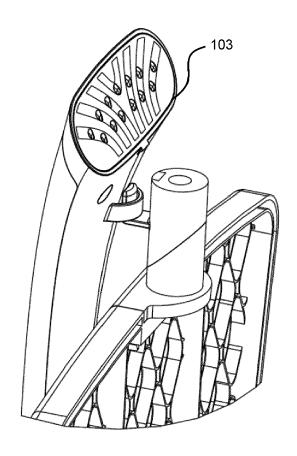


FIG.26A

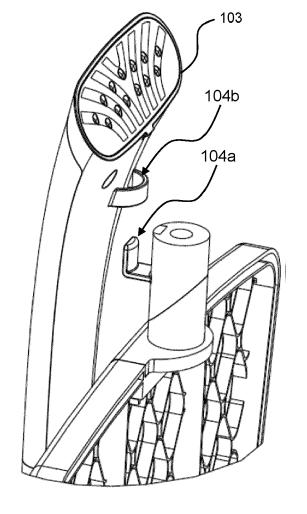


FIG.26B



EUROPEAN SEARCH REPORT

DOCUMENTS CONSIDERED TO BE RELEVANT

Application Number

EP 21 15 1062

| 10 | |
|----|--|
| 15 | |

20

30

25

35

40

45

50

55

| | | | _ | |
|---|---|--|---|---|
| Category | Citation of document with in of relevant passa | dication, where appropriate, ages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
| X | CN 108 004 748 A (G ENVIRONMENT APPLIAN GROUP CO LTD) 8 May * paragraphs [0054] * figures 1-4 * | CES MFG CO LTD; MIDEA 2018 (2018-05-08) | 1-13 | INV. D06F73/00 ADD. D06F81/02 |
| A | CN 108 252 064 A (G ENVIRONMENT APPLIAN GROUP CO LTD) 6 Jul * paragraphs [0033] * figures 1-5 * | CES MFG CO LTD; MIDEA y 2018 (2018-07-06) | 1,2,5,6,8,11 | |
| t d | CN 108 085 946 A (GENVIRONMENT APPLIAN GROUP CO LTD) 29 Ma * paragraphs [0036] * figures 1, 2 * | CES MFG CO LTD; MIDEA y 2018 (2018-05-29) | 1 | |
| A | FR 3 096 992 A1 (SE 11 December 2020 (2 * paragraphs [0035] * figures 1-5 * | 020-12-11) | | TECHNICAL FIELDS SEARCHED (IPC) D06F |
| | The present search report has be | peen drawn up for all claims Date of completion of the search | | Examiner |
| | Munich | 31 May 2021 | Wei | dner, Maximilian |
| X : parti Y : parti docu A : tech O : non | ATEGORY OF CITED DOCUMENTS icularly relevant if taken alone icularly relevant if combined with anothement of the same category inclogical background -written disclosure rediate document | T: theory or princip E: earlier patent d after the filing d D: document cited L: document. | lole underlying the in ocument, but publis ate I in the application for other reasons | nvention shed on, or |

EP 4 026 941 A1

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 21 15 1062

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

31-05-2021

| 10 | Patent document cited in search report | Patent document cited in search report | | Patent family member(s) | | Publication date |
|----|--|--|------------|----------------------------|---------------------------|--------------------------|
| | CN 108004748 | Α | 08-05-2018 | NONE | | • |
| 15 | CN 108252064 | Α | 06-07-2018 | NONE | | |
| 15 | CN 108085946 | Α | 29-05-2018 | NONE | | |
| | FR 3096992 | A1 | 11-12-2020 | CN FR | 212582248 U 3096992 A1 | 23-02-2021 11-12-2020 |
| 20 | | | | | | |
| | | | | | | |
| 25 | | | | | | |
| | | | | | | |
| | | | | | | |
| 30 | | | | | | |
| | | | | | | |
| 35 | | | | | | |
| 33 | | | | | | |
| | | | | | | |
| 40 | | | | | | |
| | | | | | | |
| 45 | | | | | | |
| 40 | | | | | | |
| | | | | | | |
| 50 | | | | | | |
| | g . | | | | | |
| | ORM P0459 | | | | | |
| 55 | ፬ | | | | | |

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82