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(54) **A MOP HEAD**

(57) A mop head 10. The mop head 10 comprises a body member 20 for attaching to a mop handle 50. The body member 20 is connected to a fastening member 30 by a hinge 90. The fastening member 30 is movable about the hinge 90 between a closed position for retaining mop material and an open position for attaching and detaching mop material. The mop head 20 further comprises a lever 170 connected to the body member 20 at a pivot 160. The lever 170 is arranged to move about the pivot 160 between an engaged position where the lever 170 is engaged with and retains the fastening member 30 in the closed position and a disengaged position where the lever 170 is disengaged from the fastening member 30.

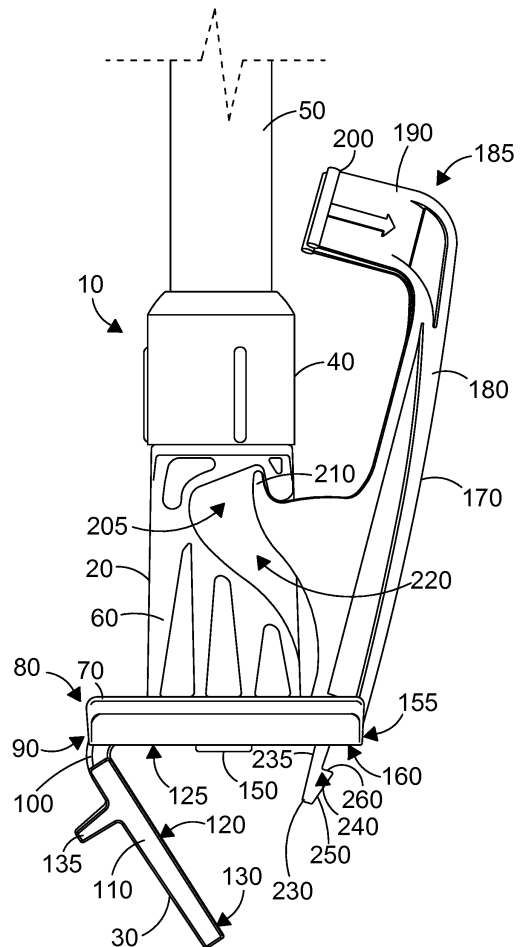


FIG. 1

EP 3 782 526 A1

Description

Field of the Invention

[0001] The present invention relates to a mop head, and in particular, to a mop head comprising a lever connected to the mop head by pivot.

Background of the Invention

[0002] Mops which removably retain mop materials are commonly used to clean floors in commercial, industrial, office and residential spaces. In particular, the mop head of the mop securely retains and holds the mop material, such that the absorbent mop material can be used by the user to clean the floor. Typically, the mop head comprises the mechanism from removably retaining the mop material and provides a portion to which a mop handle can be connected.

[0003] However, some problems exist with current mop heads. For example, mop heads often comprise complex mechanisms for securing the mop material. These complex mechanisms can often become damaged with use of the mop or from drying the mop material with wringers. Further, these complex mechanisms are often difficult to clean and remove the build-up of dirt or grime. Secondly, removal and replacement of the mop material from the mop head can often require the user to touch the soiled mop material itself, which is undesirable and unhygienic. Thirdly, the mechanism for fastening mop material to the mop head is often reliant on a component or property of the mop material itself, for example, the mop material having a pocket or hook. This is undesirable as the mop material can quickly become damaged, distorted or worn through use.

[0004] Objects and aspects of the present invention seek to alleviate at least these problems with the prior art.

Summary of the Invention

[0005] According to the present invention, there is provided a mop head. The mop head comprises a body member for attaching to a mop handle. The body member is connected to a fastening member by a hinge. The fastening member is moveable about the hinge between a closed position for retaining mop material and an open position for attaching and detaching mop material. The mop head further comprises a lever connected to the body member at a pivot. The lever is arranged to move about the pivot between an engaged position where the lever is engaged with and retains the fastening member in the closed position and a disengaged position where the lever is disengaged from the fastening member.

[0006] The present invention is advantageous in that a lever is used to secure the fastening member in the closed position. The nature of a lever is that it can be positioned and designed such that it is spaced from the mop material and operated without touching mop mate-

rial. Therefore, the lever can be moved to the disengaged position releasing the retained mop material without the user touching a part of the mop head or mop material which may have become soiled through use. Further, a lever and pivot are less complex than many mechanisms used to retain mop material. The simplicity and elegance of lever and pivot increases the robustness, durability and lifespan of the mop head.

[0007] Another advantage of the mop head of the present invention is that mop material can be retained directly by the mop head by the action of the lever on the fastening member. Therefore, the mop head is not reliant on the mop material comprising any specific components to enable the attachment and can be used with a variety of mop materials.

[0008] The preferred features of the present invention detailed hereinafter seek to augment the present invention by enhancing one or more of the advantages detailed above or seek to provide the present invention with another advantageous characteristic.

[0009] Preferably, the lever comprises a fixing formation for securely holding the lever in the engaged position. In this way, the mop head comprises an additional mechanism for securing the fastening member in the closed position, which strengthens the engagement and securement of mop material.

[0010] Preferably, the fixing formation comprises a snap-fit or push-fit mechanism for reversibly attaching the lever to a mop handle extending from the body member. Alternatively, the fixing formation comprises a snap-fit or push-fit mechanism for reversibly attaching the lever to the body member. Preferably, the snap-fit or push-fit mechanism comprises a clip. Preferably, the clip is a circular clip. Preferably, the clip resembles a major segment of a circle.

[0011] Preferably, the fixing formation extends from an end of the lever spaced from the pivot. Preferably, the fixing formation extends from an end of the lever opposing the end comprising the pivot. Spacing the fixing formation and the pivot apart increases the force applied by the fixing formation to the engagement and securement of the fastening member.

[0012] Preferably, the mop head comprises a locking formation for securely engaging and retaining the fastening member in the closed position.

[0013] Preferably, the locking formation is arranged to securely engage and retain the fastening member in the closed position when the lever is located in the engaged position.

[0014] Preferably, the locking formation comprises a protrusion extending from the lever. Preferably, the protrusion extends from an end of the lever. Preferably, the protrusion extends from a position adjacent to the pivot.

[0015] Preferably, the protrusion comprises a tapered surface. Preferably, the tapered surface widens the protrusion in the direction towards the pivot and narrows the protrusion in the direction away from the pivot.

[0016] Preferably, the protrusion comprises a barb.

Preferably, the barb comprises a planar engagement surface which lies in a plane substantially perpendicular to the longitudinal axis of the lever.

[0017] Preferably, the protrusion comprises a tapered surface and a barb. Preferably, the protrusion and the barb are proximate to one another. Preferably, the protrusion and the barb are adjacent to one another. Preferably, the protrusion is a hook. Preferably, in the engaged position, the barb engages and retains the fastening member in the closed position. Preferably, in the engaged position, the planar engagement surface of the barb engages and retains the fastening member in the closed position.

[0018] Preferably, the locking formation comprises an aperture extending through the fastening member. Preferably, the aperture is located proximate the end of the fastening member which opposes the end of the fastening member comprising the hinge.

[0019] Preferably, the protrusion is arranged to extend through the aperture and securely engage and retain the fastening member in the closed position when the lever is located in the engaged position. Preferably, the aperture is arranged to allow the protrusion to move through the aperture when the lever is moved between the engaged position and the disengaged position.

[0020] Preferably, the locking formation is located on a side of the body member opposing the hinge. Preferably, the locking formation is located proximate a side of the body member opposing the hinge.

[0021] Preferably, the mop head comprises a stop formation, where the stop formation is arranged to limit the rotational freedom of the lever about the pivot. Preferably, the stop formation is arranged to stop rotation of the lever about the pivot past the disengaged position. Preferably, the stop formation is arranged to stop rotation of the lever about the pivot past the engaged formation. Preferably, the stop formation is arranged to limit rotation of the lever about the pivot between the engaged formation and the disengaged formation.

[0022] Preferably, the stop formation comprises a projection extending from the lever. Preferably, the stop formation comprises a recess, cavity or space in the body member. Preferably, in use, the stop formation comprises an engagement between the projection of the lever and the recess, cavity or space of the body member.

[0023] Preferably, the mop head comprises two stop formations located on opposing sides of the body member.

[0024] Preferably, the pivot and the hinge have a spaced relationship. Preferably, the pivot and the hinge are located on opposing sides of the body member.

[0025] Preferably, the axis of rotation of the hinge and the axis of rotation of the pivot are substantially parallel. Preferably, the axis rotation of the hinge and the axis of rotation of the pivot lie in same plane.

[0026] Preferably, the longitudinal axis of the lever when the lever in the engaged position is substantially perpendicular to the longitudinal axis of the fastening

member when the fastening member is located in the closed position.

[0027] Preferably, rotation of the lever about the pivot from the engaged position to the disengaged position is in the same rotational direction as rotation of the fastening member about the hinge from the closed position to the open position.

[0028] Preferably, the body member comprises a foot member for engaging the fastening member when the fastening member is located in the closed position. In the closed position, the foot member helps to frictionally engage and secure mop material between the body member and the fastening member.

[0029] Preferably, the fastening member comprises a cavity for accepting the foot member when the fastening member is located in the closed position.

[0030] Preferably, the body member comprises two feet members and the fastening member comprises two cavities.

[0031] Preferably, the fastening member comprises a closing protuberance for assisting the user in moving the fastening portion from the open position to the closed position without use of their hands.

25 Detailed Description

[0032] An embodiment of the present invention will now be described by way of example only and with reference to the accompanying drawings, in which:

30 Figure 1 is a side-on view of the mop head in accordance with the present invention, where the fastening member is in the open position and the lever is in the disengaged position;

35 Figure 2 is a perspective view of the mop of Figure 1, where the fastening member is in the open position and the lever is in the disengaged position;

40 Figure 3 is a side-on view of the mop head of Figure 1, where the fastening member is in the closed position and the lever is in the disengaged position; and

45 Figure 4 is a side-on view of the mop head of Figure 1, where the fastening member is in the closed position and the lever is in the engaged position.

[0033] Figures 1 to 4 depict views of an embodiment of a mop head 10 in accordance with the present invention. The mop head 10 comprises a body member 20 and a fastening member 30. In use, the mop head 10 retains mop material for cleaning surfaces, such as floors, by securely attaching or fixing the mop material in between the body member 20 and the fastening member 30.

50 **[0034]** The body member 20 comprises a handle portion 40 for accepting and securely retaining a detachable mop handle 50. The handle portion 40 is substantially cylindrical and at one end comprises a cavity for securely

retaining the mop handle 50 by a screw thread.

[0035] The body member 20 further comprises a main portion 60 which is substantially cuboid and extends from the handle section 40 to a base portion 70. The base portion 70 is also substantially cuboid. The longitudinal axes of the cuboid main portion 60 and base portion 70 are substantially perpendicular, where the longitudinal axis of the main portion 60 is parallel and collinear with the longitudinal axis of the attached mop handle 50. The base portion 70 has a width and thickness greater than the main portion 60 and resembles a cuboid lip or rim outwardly extending from an end of the main portion 60.

[0036] Proximate with a first edge 80 of the base portion 70 is a hinge 90. The rotational axis of the hinge 90 is adjacent to the first edge 80 of the base portion 70 and lies in a direction parallel with the first edge 80. Further, the hinge 90 is centrally aligned with the first edge 80. The first edge 80 of the base portion 70 comprises a cut-out section 85 for accommodating the hinge 90.

[0037] The fastening member 30 which is pivotally attached to the hinge 90 such that the fastening member 30 can rotationally move about the hinge 90 and depend from it. The fastening member 30 comprises an angled section 100 which is substantially curved and right-angled. The angled section 100 extends between the hinge 90 and a fastening section 110 of the fastening member 30. In Figure 1 and Figure 2 the fastening member is located in the open position, where mop material can be placed or removed from between the body member 20 and fastening member 30 for attachment or detachment.

[0038] The fastening section 110 is substantially cuboid with rounded corners and comprises a substantially planar face 120 for engaging the underside 125 of the base portion 70 of the body member 20 and securing the mop material. The fastening section 110 is smaller than the base portion 70. From one end of the fastening section 110 extends the angled section 100 and the opposing end of the fastening section 110 comprises an aperture 130 proximate the edge. The aperture 130 extends from the planar face 120 completely through the fastening member 30 and has a cross-section which is substantially rectangular.

[0039] Further, from the face of the fastening member 30 opposing the planar face 120 extends a series of movement protuberances 135. The movement protuberances 135 extend from the fastening member 30 from a position proximate the angled section 100 in a direction substantially perpendicular to the plane occupied by the planar face 120.

[0040] The planar face 120 of the fastening member 30 further comprises two cavities 140 for accepting and accommodating two foot members 150 which extend from the underside 125 of the base portion 70. The cavities 140 and the foot members 150 are complementarily sized and shaped.

[0041] The base portion 70 comprises a second edge 155 which is located on the opposing side of the base portion 70 to the first edge 80 and is substantially parallel

with the first edge 80. Proximate the second edge 155 is a pivot 160, where the pivot 160 is accommodated within a cut-out section 165 of the second edge 155.

[0042] Pivotally attached to the pivot 160 is the lever 170 such that the lever 170 can be rotated about the pivot 160. The lever 170 comprises a handle portion 180 which extends from the attachment at the pivot 160 away from the base portion 70. In this way, the handle portion 180 is located on the opposite side of the base portion 70 to the fastening member 30. The top end of the lever 170 and handle portion 180 spaced from the pivot 160 comprises fixing formation 185 for reversibly fixing the position of the lever. In this embodiment, the fixing formation 185 comprises a snap-fit clip 190 for attaching to a mop handle 50. The snap-fit clip 190 comprises two wings 200 which are resiliently deformable.

[0043] In this embodiment, the wings 200 are symmetrical and resemble segments of a circle such that the snap-fit clip 190 is substantially circular and resembles the circumference of a major segment circle. Thus, the snap-fit clip 190 and wings 200 complement the circular cross-section of the mop handle 50. The snap-fit clip 190 is arranged to surround the majority of the mop handle 50 when reversibly attached to the mop handle 50.

[0044] The handle portion 180 further comprises a pair of identical projections 210 which form part of a pair of stop formations 205 along with the two stop spaces 220. The stop spaces 220 are indentations, recesses or cavities in opposing rectangular walls of the main portion 60 of the body member 20. The stop spaces 220 extend from an edge on the main portion 60 adjacent the lever 170. Each of the projections 210 extends from the side of the lever 170 adjacent to the main portion 60 and is moveably accommodated within one of the stop spaces 220.

[0045] The lever 170 further comprises a protrusion or hook 230 which extends from the portion or end of lever 170 attached the pivot 160. The hook 230 has a narrow portion 235 which extends from proximate the pivot 160. The narrow portion 235 is complementary to the thickness of fastening section 110 of the fastening member 30. The hook 230 further comprises a barb 240 and tapered surface 250. The tapered surface 250 extends from the end of the hook 230 towards the pivot 160 and widens the hook 230 until it maximum adjacent to the narrow portion 235. The barb 240 then extends between the tapered surface 250 and the narrow portion 235 providing a planar engagement surface 260 for engaging the fastening member 30. The barb 240 and planar engagement surface 260 are substantially perpendicular with the longitudinal axis of the lever 170.

[0046] In use, the user can attach and detach mop material from the mop head 10 as detailed hereinafter.

[0047] Figure 1 and Figure 2 depict the mop head 10 where the fastening member 30 is in an open position and the lever 170 is in the disengaged position.

[0048] In the disengaged position the lever 170 is pivoted such that the longitudinal axis of the lever 170 is

angled with respect to and not parallel with the longitudinal axis of the body member 20. The snap-fit clip 190 and wings 200 are not engaged with and are spaced away from the mop handle 50. The lever 170 is prevented from pivoting further than the disengaged position by the pair of stop formations 205. That is, the pair of projections 210 of the stop formation 205 are accommodated within the pair of stop spaces 220 of the stop formation 205. In the disengaged position the projections 210 engage the edge of the stop space 220 proximate to the lever 170. It is this engagement which prevents the lever 170 from being rotated than the disengaged formation. The angle of the lever 170 in the disengaged formation angles the protrusion 230 and its features towards the fastening member 30 in its open position.

[0049] When the fastening member 30 is in this open position, the fastening member 30 depends from the hinge 90 and can be rotated about the hinge 90 by the user's hands or through contact of the movement protuberances 135 with a surface. The mop material to be attached can be placed in between the body member 20 and the fastening member 30.

[0050] Figure 3 depicts the mop head 10 where the fastening member 30 is in the closed position. The fastening member 30 can be moved from the open position of Figures 1 and 2 to the closed position by rotating about the hinge 90. In the closed position angled section 100 extends from the hinge 90 to proximate the underside 125 of the body member 20 and the fastening section 110 lies proximate and parallel to the underside 125 of the body member 20. In some embodiments, the planar face 120 and the underside 125 of the body member 20 substantially abut along their surfaces. In use, mop material is attached to the mop head 10 by placing it in between the fastening member 30 and the body member 20 in the open position and then moving the fastening member 30 towards its the closed position. In the closed position the mop material is then securely engaged between the fastening member 30 and the underside 125 of the body member 20.

[0051] Further, in the closed position, the cavities 140 of the fastening member 30 accommodate the foot members 150 of the body member 20. In use, the accommodation of the foot members 150 within the cavities 140 helps to securely and frictionally engage the mop material as the mop material is forced partial within the cavities 140.

[0052] In moving the fastening member 30 to the closed position, the hook 230 of the lever 170 is inserted in and through the aperture 130 of the fastening member 30. The angle of the tapered surface 240, when the lever 170 is in the disengaged position, allows the hook 230 to be inserted into the aperture 130 without any engagement between the parts. That is, without the tapered surface 240 the hook 230 would have to smaller or aperture 130 would have to be larger. Further, the tapered surface 240 helps to insert the hook 230 into the aperture 130 when the lever 170 is located at an intermediate position

by frictionally forcing the lever 170 towards the disengaged position from the intermediate position.

[0053] The stop formation 210 dictates the angle and position of the lever 170 and hook 230 in the disengaged position. Therefore, the configuration of the stop formation 210 is also important in controlling the interplay between the hook 230 and the aperture 130 when the fastening member 30 is moved from the open position to the closed position.

[0054] Figure 4 depicts the mop head 10 when the fastening member 30 is in the closed position and the lever 130 has been moved into the engaged position.

[0055] In the engaged position the snap-fit clip 190 and its wings 200 reversibly engage and are attached to the mop handle 50. In use, the snap-fit clip 190 is attached to the mop handle 50 by applying a force to the snap-fit clip 190 which resiliently deforms the snap-fit clip 190.

[0056] Further, in the engaged formation the hook 230 extends through the aperture 130. In particular, the narrow portion 235 extends through the aperture 130 and the barb 240 engages the underside on the fastening section 110. The planar engagement surface 260 of the barb 240 engages the fastening member 30 such that the fastening member 30 is securely locked in the closed position. In this way, the aperture 130 and hook 230 form a locking formation 270 for locking the fastening member 30 in the closed position, where the locking formation 270 is locked and unlocked by movement of the lever 170. Thus, the mop material positioned between the body member 20 and the fastening member 30 is securely attached to the mop head 10 and be used to clean a surface.

[0057] Finally, in the engaged position the projection 210 of the stop formation 205 engages the side of the stop space 220 furthest from the lever 170. The stop formation 205 prevents the lever from being rotated past the engaged position. This is beneficial as it prevents potential to damage the hook 230 and hinge 90 by pulling the fastening member 30 too far. Also, the stop formation helps prevent damage to the snap-fit clip 190.

[0058] Only the process for attaching mop material has been detailed above. The process for detaching mop material is simply the reverse of the attachment process. In short, moving the lever 170 to the disengaged position from the engaged position by hand, and then moving the fastening member 30 to the open position from the closed position using the movement protuberances 135.

Claims

1. A mop head, said mop head comprising:

a body member for attaching to a mop handle, said body member connected to a fastening member by a hinge;
said fastening member moveable about said hinge between a closed position for retaining

- mop material and an open position for attaching and detaching mop material; said mop head further comprising a lever connected to said body member at a pivot; and wherein said lever is arranged to move about said pivot between an engaged position where said lever is engaged with and retains said fastening member in said closed position and a disengaged position where said lever is disengaged from said fastening member. 5
- 2.** The mop head of any one preceding claim, wherein said lever comprises a fixing formation for securely holding said lever in said engaged position. 10
- 3.** The mop head of claim 2, wherein said fixing formation extends from an end of said lever spaced from said pivot.
- 4.** The mop head of any one preceding claim, wherein said mop head comprises a locking formation for securely engaging and retaining said fastening member in said closed position. 20
- 5.** The mop head of claim 4, wherein said locking formation is arranged to securely engage and retain said fastening member in said closed position when said lever is located in said engaged position. 25
- 6.** The mop head of claim 4, wherein said locking formation comprises an aperture extending through said fastening member. 30
- 7.** The mop head of any one of claims 4 to 6, wherein said locking formation is located on or proximate a side of said body member opposing said hinge. 35
- 8.** The mop head of any one preceding claim, wherein said mop head comprises a stop formation, where said stop formation is arranged to limit the rotational freedom of said lever about said pivot. 40
- 9.** The mop head of claim 8, wherein said stop formation comprises a projection extending from said lever. 45
- 10.** The mop head of claim 8 or claim 9, wherein said stop formation comprises a recess in said body member.
- 11.** The mop head of any one preceding claim, wherein said pivot and said hinge are located on opposing sides of said body member. 50
- 12.** The mop head of any preceding claim, wherein the axis of rotation of said hinge and the axis of rotation of said pivot are substantially parallel. 55
- 13.** The mop head of any one preceding claim, wherein the longitudinal axis of said lever when said lever is in said engaged position is substantially perpendicular to the longitudinal axis of the fastening member when said fastening member is located in the closed position.
- 14.** The mop head of any one preceding claim, wherein said body member comprises a foot member for engaging said fastening member when said fastening member is located in said closed position.
- 15.** The mop head of claim 14, wherein said fastening member comprises a cavity for accepting said foot member when said fastening member is located in said closed position.

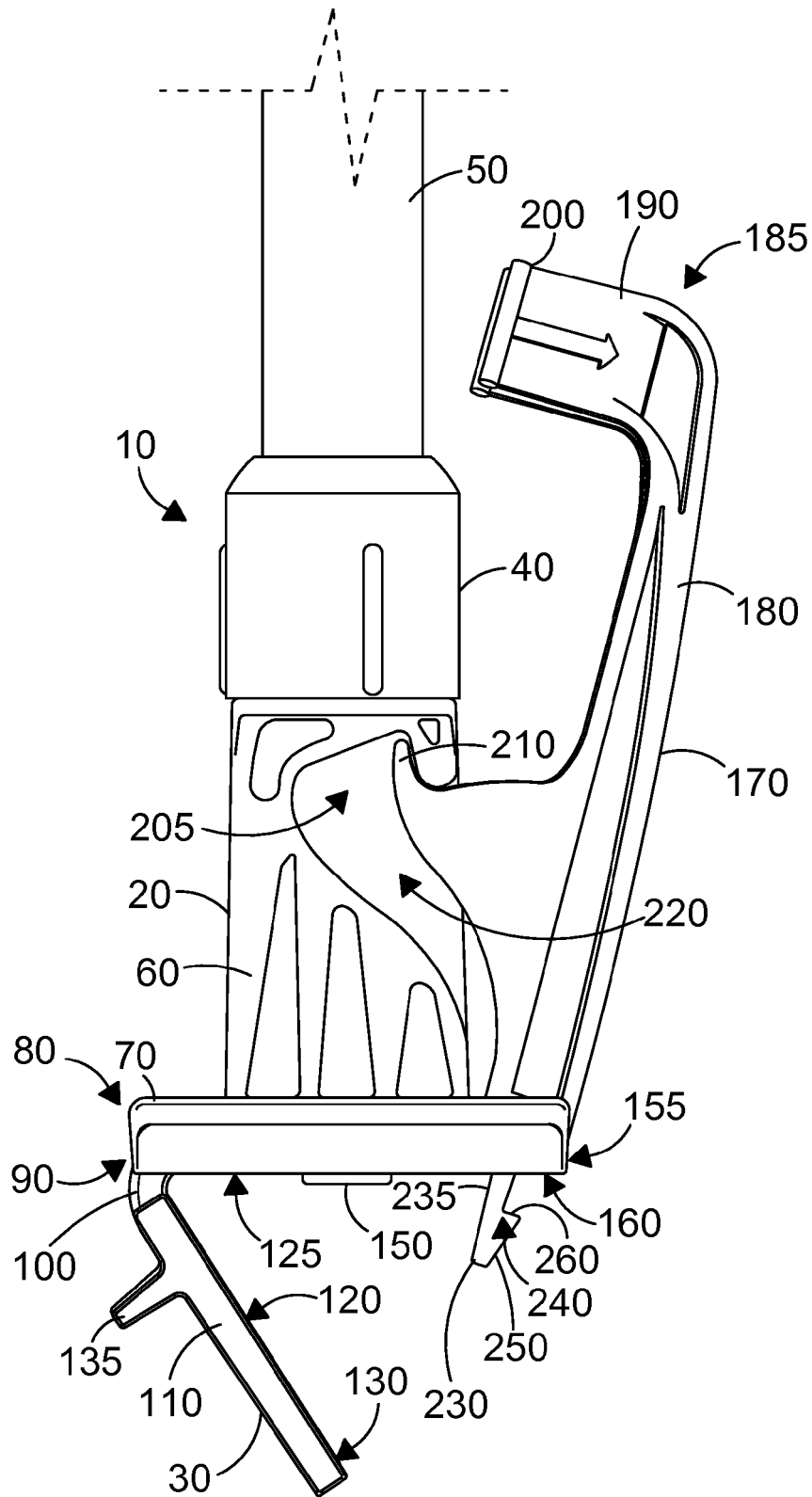


FIG. 1

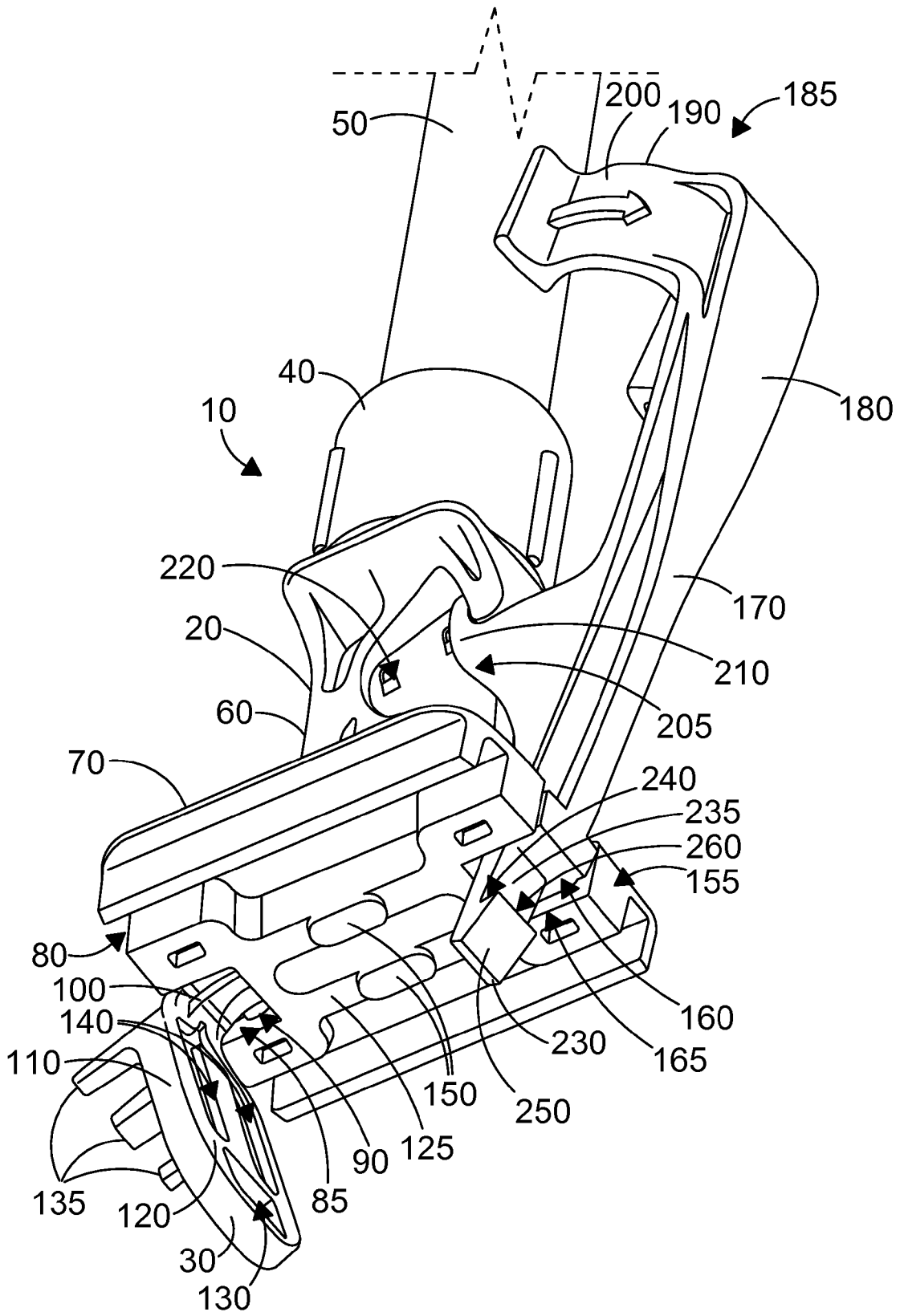


FIG. 2

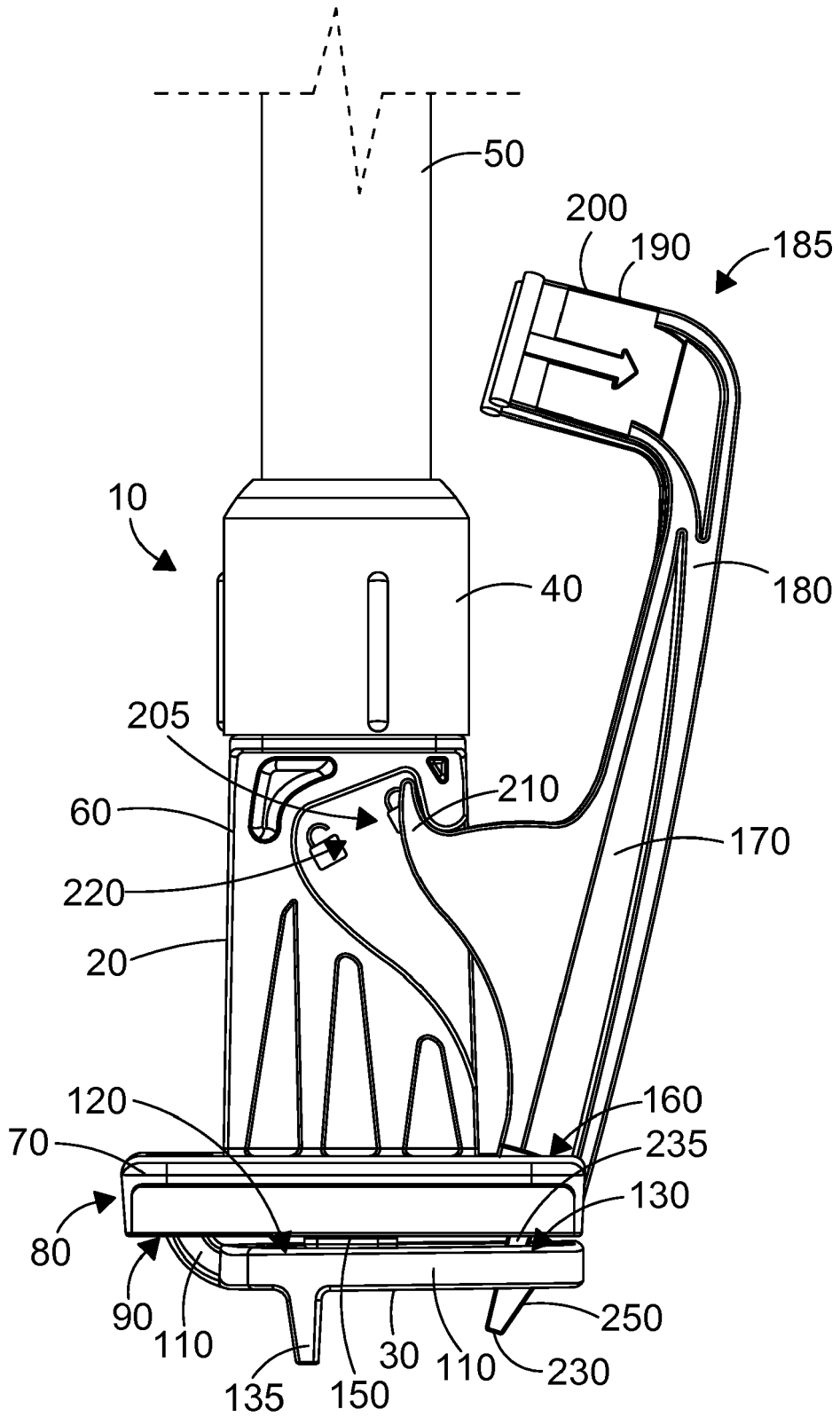


FIG. 3

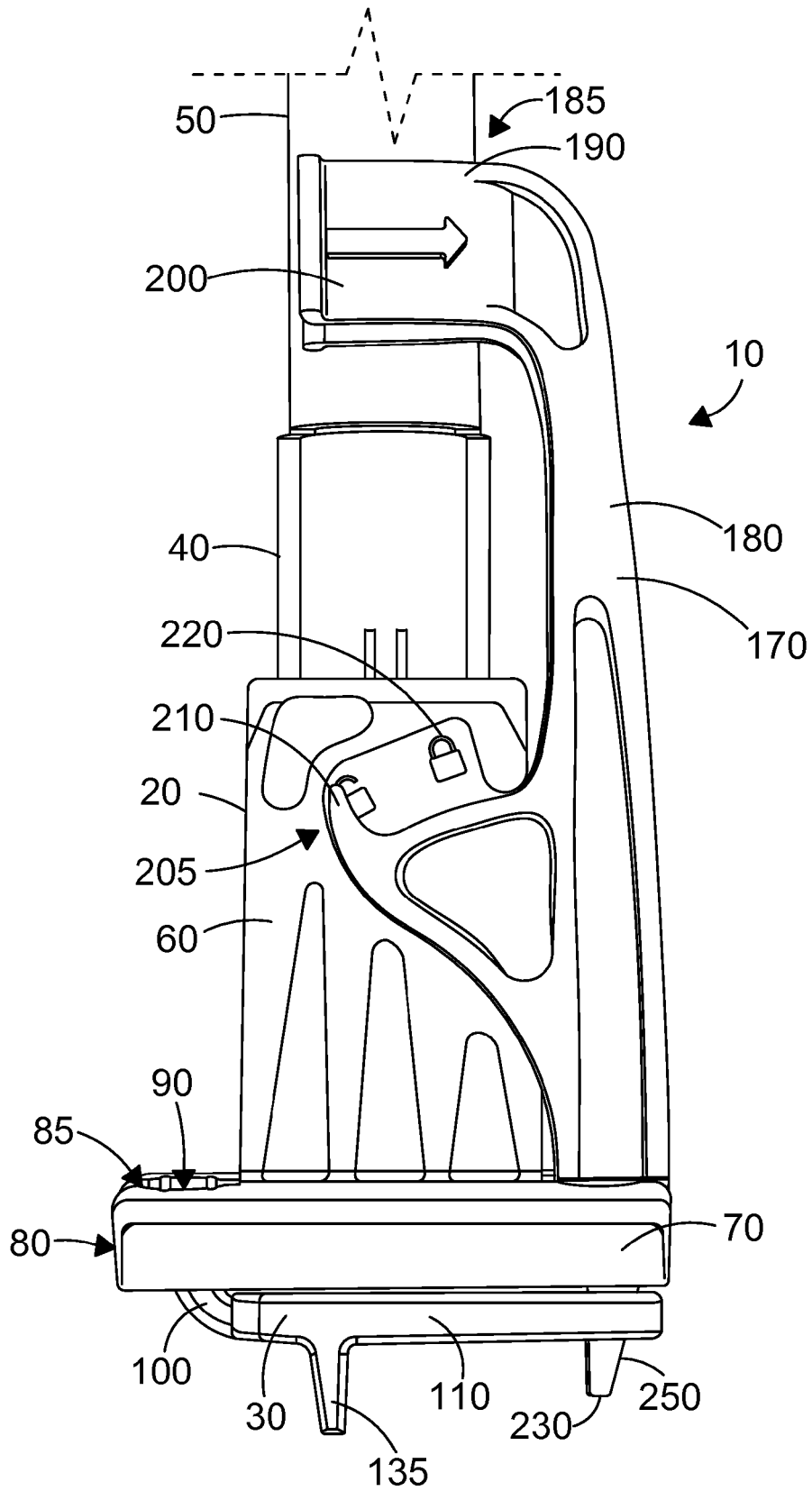


FIG. 4



EUROPEAN SEARCH REPORT

Application Number
EP 19 20 0922

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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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 6 April 2020	Examiner Masset, Markus
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
ON EUROPEAN PATENT APPLICATION NO.

EP 19 20 0922

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
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