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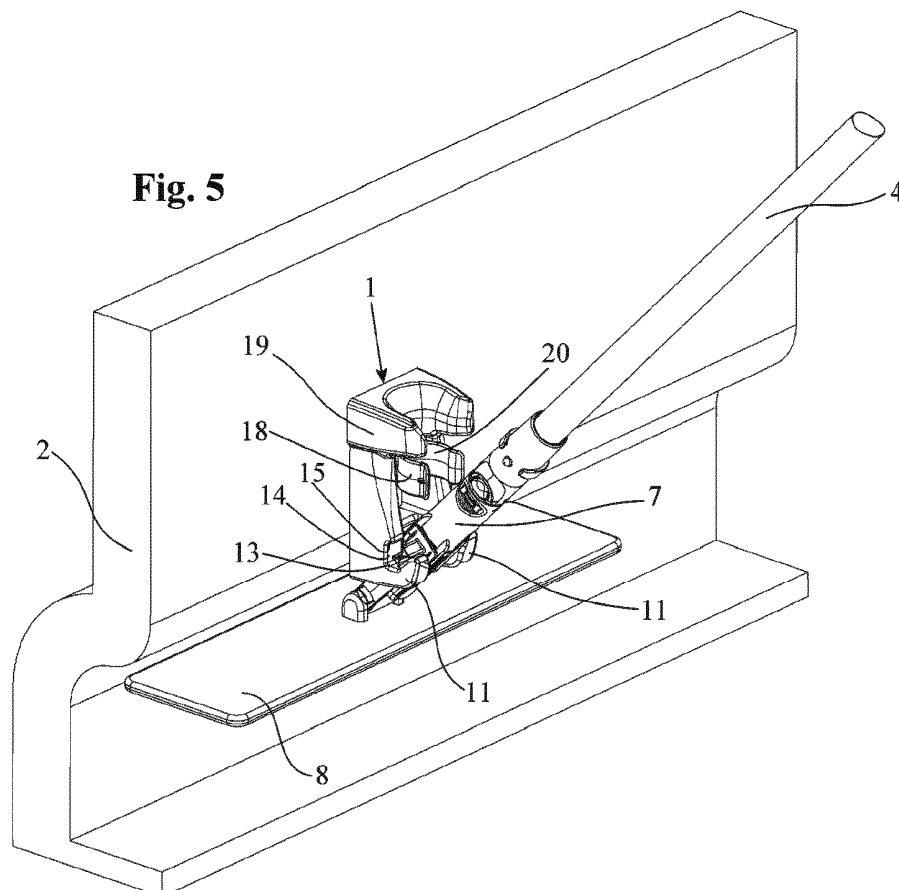
(71) Applicant: **TTS Cleaning S.r.l.**
35010 Santa Giustina in Colle (PD) (IT)

(72) Inventor: **Zorzo, Renato**
35010 Onara di Tombolo (PD) (IT)

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(54) **CLEANING ITEM INCLUDING A CLEANING TOOL AND A DEVICE FOR
COUPLING/UNCOUPLING AND RETAINING TO A FIXED STRUCTURE, OR A MOBILE ONE OR
TO A TROLLEY, THE FRAME OF CLEANING TOOLS**

(57) Device for connecting and retaining the frame of cleaning items and/or cleaning tools to a fixed or mobile structure or a trolley.



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Description

[0001] The object of this invention relates to a cleaning item including a cleaning tool and a device for coupling/uncoupling and retaining to a fixed structure, or a mobile one or to a trolley, the frame of cleaning tools.

Prior art

[0002] In this description, a cleaning item and/or cleaning tool is intended as a tool used to carry out the general cleaning of surfaces, e.g. floors or walls, and is equipped with a handle, generally tubular and extending longitudinally along its main axis, which can be grasped and handled by an operator, and at the end of which there is a frame for carrying out the main cleaning for which it is intended; furthermore, in this description the term frame means that part of a cleaning tool fixed to the end of a handle, which, with the use of an interposed cloth or sponge or mop, is placed in contact with the surfaces to be cleaned and is operated by the handle to which it is fixed, this connection being removable by means of a coupling device between said frame and the handle. Sometimes the frame is configured with an extension or a hinged and articulated part to provide improved maneuverability of the frame by the handle to which it is joined.

[0003] It is known that in the field of cleaning, especially professional cleaning, operators clean with dedicated cleaning tools, such as brooms, floor washing frames, wax dispensers, mops, cloths, etc. and also the same tool can be used differently because of its configuration and accessories.

[0004] For example, a cleaning tool such as a mop base can be fitted with a slightly damp cloth for dusting, or the same base, or a different base, could be fitted with a dry cloth for drying, and again, the same base, or a different base, could be fitted with a cloth that is particularly suitable for spreading wax, and finally, the same base, or a different mop base, could be fitted with a rough cloth in order to remove hard or stubborn stains from the floor.

[0005] Although it is possible for the operator to use the same tool, and therefore the same mop base, modifying the type of cloth to be used with the same mop base from time to time, as needed, it is much more convenient and faster to use cleaning tools whose mop base is already fitted with the cloth for its main function. However, this convenience has a general drawback, i.e. when all the cleaning tools are complete with all the various operating parts and when they are not actually being used, said tools must be safely stored, for example by means of an element for securing the handle on the cleaning trolley used to move around the various environments where the cleaning is being carried out.

[0006] Practically, therefore, the trolley carries a number of brooms, mops, and other cleaning tools, whose handles go around the trolley itself, and in particular, they go around the perimeter edge of the upper part

of the trolley.

[0007] In fact, cleaning trolleys usually have a wheeled base, which extends parallel to the floor and is supported by wheels, the raised part of which can correspond to the wheeled base or not. The retention of the handle of the cleaning tools is usually carried out on the upper perimeter edge of this raised part.

[0008] The elevated part of the trolleys has a height that is generally lower than the height of the operator's torso so that they can push the trolley from the rear while maintaining a clear view ahead, and also from the front of the trolley itself towards the direction of movement; whereas the handles of the tools are usually higher than said trolley and up to the height of the operators' shoulders for a comfortable use of the tool equipped with this handle.

[0009] Since these handles are higher than the elevated part of the cleaning trolleys, when said tools are fixed to the elevated part of the trolley, the relative handle protrudes upwards beyond the upper perimeter, and the succession of numerous tools that go around the top part of the trolley, like a grid provided with a continuous and spaced succession of rods or like a railing, prevents easy access to the upper shelf of the trolley.

[0010] For cleaning operators, the upper shelf of the trolley is the most convenient and frequently used part for placing and removing the objects that are most usually used, such as, for example, dusting cloths, gloves, sponges, spare bags for collecting waste etc.

[0011] The fact of impeding or limiting access to this most convenient and most frequently used part of a cleaning trolley is, therefore, a serious drawback.

[0012] Furthermore, very often, said trolleys, in the part that extends upwards but below the aforementioned top part, have one or more shelves, or a series of drawers/large drawers one on top of the other that can be pulled out from a single side wall of said upper part of the trolley.

[0013] The presence of one or more handles that are retained on the perimeter edge of the upper part of the trolley limits or prevents free access to these shelves or prevents the drawers being opened in order to access what is inside them.

[0014] Also in this case, in practice the operators are forced to retain the handles of the various tools along the perimeter edge of the upper part of the trolley only along a side that is free, suitable, available and above all that does not prevent free access to the drawers so that they can be opened.

[0015] In fact, not all the sides of the raised part of a trolley are free and available for retaining the handles; for example, very often trolleys must also carry a wringer and a waste bag, elements that require a support shelf on the wheeled base adjacent to the said element in elevation, so that the free sides for holding the handle of the cleaning tools correspond to the lateral and externally exposed sides of the trolley.

[0016] Therefore, as described above, the various

cleaning tools are held on one external side only, and on the opposite external side of the elevated element of the cleaning trolley, the drawers can be opened and/or the various shelves can be accessed.

[0017] This clear distinction in the positioning of the various cleaning tools, all held on one side only, makes cleaning operations very awkward for operators, who are forced, from time to time, to go around the trolley in order to use a tool and/or to store it away and moving to the opposite side of the same trolley to grasp a different tool or item available on the opposite side of the trolley inside one of the drawers.

Objects of the invention

[0018] The purpose of this invention is to make available a cleaning item including a cleaning tool and a device for coupling/uncoupling and retaining to a fixed structure, or a mobile one or to a trolley, the frame of cleaning tools (hereinafter also only: "coupling device") that can overcome one or more of the above-mentioned drawbacks of the prior art.

[0019] A further object of the present invention is to make available a coupling device that keeps a frame joined to the trolley, whenever said frame is detached from the relative handle.

[0020] Another object of the present invention is to make available a coupling device that carries out this coupling or decoupling without the operator having to use the coupling and decoupling mechanisms of the frame with the handle.

[0021] Yet another object of the present invention is to make available a coupling device whose uncoupling and coupling operations are extremely easy and can be carried out quickly and are also ergonomic.

[0022] An equally important object of the present invention is to make available a coupling device that keeps the frame in a stable and fixed position during transportation, and ready for being coupled if necessary, without needing to be repositioned.

Disclosure of the invention

[0023] All the previously mentioned objects, and others which will become clearer from the following description, are achieved by the coupling device of the invention.

[0024] This is a device that allows the frame, or the base or the end part of a tool to be released in a position for a subsequent recovery without further maneuvering and/or repositioning, from its handle, since said frame is joined to a handle in a detachable manner by means of generic connection devices, in a very simple way, without direct manual contact by the operator with said frame, but only by using the handle of the respective tool.

[0025] Cleaning item including a cleaning tool and a device for coupling/uncoupling and retaining to a fixed structure, or a mobile one or to a trolley, the frame of cleaning tools, for holding a frame (8) of said cleaning

tool (3) and to permit the removal and replacement of the relative handle (4), where said cleaning tool (3) comprises at least:

- 5 - a frame, possibly with a cloth or other cleaning element interposed, suitable for coming into contact with a surface to be cleaned,
- a handle for the manual operation of said frame, and
- an interposed element, called a connection tube, which connects, either because it is inserted or because it surrounds it, from the inside or the outside, the handle to the frame, or which connects the handle to an extension of the frame, in a removable way, since between said interposed element and the handle are releasable connection devices;

this device is configured with at least three parts, preferably arranged one on top of the other:

- 20 - a first lower part configured as the first devices that connect with the frame of a tool, and equipped with one or more walls that join with one or more walls of the frame to keep it stably fixed and joined to said device and that limit its relative movements and that have at least one opening for the entry and exit of said tool with a handle;
- 25 - a second intermediate part, interposed between said first lower part and a third upper part, configured as second devices that join with the connecting sleeve, and that has a seat that is partially or totally complementary to the connection sleeve, to hold said sleeve devoid of handle in a convenient position for subsequent reconnection with the handle, where said second devices have at least one open side for inserting the handle and/or the sleeve into said seat;
- 30 - a third part above said second intermediate part, configured as devices that join with the releasable connecting devices, belonging to the sleeve or to the handle, and allow their relative operation.

Advantageous characteristics of the invention

[0026] Advantageously, said uncoupling device has an opening overlaid for at least the second and third devices for connecting with the cleaning tool, facilitating the coupling and uncoupling operations to/from the device of the tool with a single operation or movement of the handle.

[0027] Advantageously, said second part can be joined completely with the first part or the lower part, in order to improve the overall dimensions.

[0028] Advantageously, said second part can be joined completely with the third part or the upper part in order to improve the overall dimensions.

[0029] Advantageously, the lower devices for attachment to the tool are configured as a seat, through the opening mouth of which all or part of said tool enters and that holds it since at the top and/or at the bottom it has stops to counter the detachment movement of the handle

and/or the movement joining the handle to the relative tool. Advantageously, the lower devices for attaching to the tool are configured with one or more parts capable of maintaining and stably retaining said tool on the device after the relative handle has been removed.

[0030] Advantageously, said lower connection devices prevent the tool, at least in the part that joins to the handle, from moving downwards. Advantageously, said lower connection devices prevent the tool, at least in the part that joins to the handle, from moving upwards.

[0031] Advantageously, the profile of the entrance to the seat of the lower connection devices is configured, at the end of the cantilevered edge, in an oblique manner, allowing the tool, or its part that is to be retained, to be inserted obliquely.

[0032] Advantageously, the profile of the seat, after the oblique entry profile, is parallel to the plane of the floor, allowing the tool to be maintained and held in a configuration parallel to the floor. Advantageously, the cantilevered protruding part of said seat is inclined upwards, preventing the tool from coming out and detaching from the seat of the device when being transported. Advantageously, the devices of the third upper part, which join with the releasable connection devices, are configured as a fork, whose opening mouth is large enough to allow entry into the decoupling device of all or part of the tool with the handle, and at least one of the lateral sides or the rear side of the internal profile of this fork has at least one element that acts on the movable part on the releasable coupling devices, activating the release of the handle from the tool and allowing the handle to be released from its connection with the tool.

[0033] Advantageously, said upper fork-shaped connection devices are able to keep the part to be engaged on the handle in a stable and convenient position for the extraction and removal of the handle and the subsequent insertion of the handle.

[0034] Advantageously, said devices that are specifically dedicated to acting on the releasable connection devices of the upper part are distinct and possibly separated, in an overlapping manner, with respect to the devices specifically dedicated to acting on the retention of the part to be connected onto the handle. Advantageously, said devices for acting on the retention of the part to be connected onto the handle consist of a fork with one or more of its elastically yielding parts and that hold the part to be connected onto the handle with a residual elastic pressure. Advantageously, said devices for acting on the retention of the part to be connected onto the handle have an insertion opening with a width that is smaller than the maximum size of the part to be retained, and since they have one or more elastic parts and can widen to allow entry into the very devices the part to be retained, return, in whole or in part, to the rest position, adhering to the part to be retained after it has passed through the entry.

[0035] These and other objects are all achieved by the device of this invention according to the attached claims.

Brief description of the drawings

[0036] The technical characteristics of the invention, according to the previously mentioned objects, can clearly be seen in the claims below, and its advantages will become more readily apparent in the detailed description that follows, made with reference to the accompanying drawings, which illustrate a preferred embodiment, which is purely exemplary and not limiting, in which:

Fig. 1 shows a generic cleaning tool equipped with a handle joined to a frame.

Fig. 2 shows the cleaning tool shown in fig. 1, in which the handle has been separated and moved away from the connector located above the frame extension.

Fig. 3 shows the cleaning tool of fig. 1 with the handle placed obliquely and partially inserted into the lower part of the coupling device.

Fig. 4, fig. 5 and fig. 6 show different views of what is shown in fig. 3, highlighting the connection between the walls of the connection devices of the lower part of the device with the extension of the frame. Fig. 7 shows the cleaning tool of fig. 1 with the handle placed vertically and inserted into the coupling device

Fig. 8, fig. 9 and fig. 10 show different views of what is shown in fig. 7, showing the connection of the connector with the connection devices of the intermediate part of the device, and the connection of the releasable coupling devices with the connection devices of the upper part of the device.

Fig. 11 shows a sectional view of what is shown in fig. 7, highlighting the cooperation of the releasable connection devices, also called uncoupling/coupling devices, with the internal side walls of the third connection devices of the upper part of the device.

Fig. 12, 13, 14 and 15 show the frame held by the coupling device, while the lower end of the handle is detached from the connector of the frame, in particular the connector of the frame held by the second connection devices of the intermediate part of the device is highlighted, in a position ready for a new insertion of the handle, without any manual intervention by the operator.

Fig. 16 shows a frame held by the coupling device of the invention with the connector arranged in a fixed and convenient position for inserting the end part of a handle; the handle is axially positioned above the connector for its connection with a downward movement within the connector.

Fig. 17 shows the result of the downwards movement of the handle within the connector of the frame (as shown in fig. 16), making the relative connection without any manual intervention by the operator.

Fig. 18 shows, by way of example, a trolley equipped with the device of the invention; the trolley has a wheeled base and has an elevated part, the upper

perimeter edge of which is free from cleaning tools, the relative frame being held in the lower part where the said coupling device of the invention is positioned.

Detailed description of an example of a preferred embodiment

[0037] With reference to the diagrams, the coupling device of the invention comprises a device joined to a fixed part of a structure, such as for example a wall of a storage room or a cleaning trolley, which permits the rapid coupling of a cleaning tool to said device and that can automatically release the relative handle to then take a second tool with the same handle, from a similar retention and uncoupling/coupling device.

[0038] This device, therefore, allows the replacement of a tool with a different one, using a single handle; in fact, it allows the operator to release the frame without bending over, without touching the tool and without having to operate any device. The operator just has to insert the tool into the appropriate seat, rotate or move the handle, for example from an inclined position to a vertical position, and lift the handle upwards so that it can be released from the connector of the tool that remains firmly held by the device on the trolley.

[0039] Vice-versa, to take a second tool, insert the handle on the connector of the tool from above, move or rotate the handle, for example from a vertical to an oblique position, so that the connection devices for the handle and the frame create the relative connection and then the tool, whose handle is joined to the frame, is removed from the device. The operating mechanism can be easily implemented to allow the uncoupling and coupling through a rotational movement of the handle with respect to the relative connector.

[0040] In fact, the aforesaid movements in one direction of the handle join the upper part of the device onto the releasable connection devices, creating the connection, while movements in a contrary or opposite direction of the handle create the detachment of the upper part of the device on the releasable connection devices, creating the uncoupling.

[0041] With reference to the diagrams, the automatic coupling/decoupling device 1 of the invention is attached to a fixed structure 2.

[0042] If necessary, said coupling/uncoupling device 1 is fixed to a cleaning trolley on which the operator can replace the cleaning tool 3.

[0043] In fact, said cleaning tool 3 is composed of at least a handle 4 that is joined at its lower end 5 to the seat 6 of a connector 7 of a cleaning frame 8.

[0044] Obviously, the frame 8, shown by way of example in the drawings, can take the form of any kind of base or end part for a specific cleaning operation.

[0045] The attachment between the connector 7 and the end part 5 of the handle 4 is provided by releasable coupling or uncoupling devices 9, 10.

[0046] Using said uncoupling devices 9, 10, the connection between the connector 7 and the end part 5 of the handle 4 is removed, allowing the handle 4 to move away from the frame 8.

5 **[0047]** The connector 7 has a seat 6 for receiving the end part 5 of the handle 4, and only when the end part 5 of the handle 4 has been fully inserted do the uncoupling devices 9, 10 provide the relative and mutual stable connection between the handle 4 and frame 8. Advantageously, allowing for smaller overall dimensions of the whole, the connection between the connector 7 and the handle 4 takes place with the insertion of the connector 7 itself into the handle 4, where said handle is hollow at its end part 5 to accommodate the connector 7.

10 **[0048]** Also for this last embodiment of the connection between connector 7 and handle 4, there are similar uncoupling devices 9, 10.

15 **[0049]** The uncoupling devices 9, 10 can take different embodiments, all united by the presence on the connector 7 and on the terminal part 5 of the handle 4 with seats and/or projections and respective edges and/or grooves that create, during the operation of the tool cleaning unit 3, a reciprocal solid joint between handle 4 and frame 8.

20 **[0050]** The device 1 of the invention comprises at least three parts:

- 25 - a first lower part 11 configured as first devices that are joined to the base or the frame 8 or the end part of a tool 3 or its extension 12 thereof, and equipped with one or more walls 13, 14, 15 that join with one or more walls 16 of the base, or the frame 8 or of the end part of said tool 3 or an extension 12 thereof, to keep it stably fixed and joined to said device 1, and that limit its relative movements and that have at least one opening 17 for the entry and exit of said tool 3 or frame 8 with a handle 4 in device 1;
- 30 - a second intermediate part 18, interposed between said first lower part 11 and a third upper part 19, configured as second devices that join with a part interposed between the frame 8 and the handle 4, i. e. with the connector 7, which inserts or is inserted by the end part 5 of the handle 4; said second devices have a seat that is partially or totally complementary to the connection connector 7 for holding said connector 7 without a handle 4 in a convenient position for the subsequent reconnection to the handle 4, since it has at least one open side 20 for the insertion of the connector 7 and/or the end part 5 of the handle 4.
- 35 - a third part 19 above said second intermediate part 18, configured as third devices that are joined to the uncoupling device 9, 10, of said frame 8, or of said base or of said tool, with a handle 4; said third devices are joined to the uncoupling device 9, 10 and are configured with protruding and/or receding parts, to act on said uncoupling device 9, 10. Said intervention of the third devices on the uncoupling device 9, 10 activates the uncoupling device and makes it easy

to remove the handle 4.

[0051] It is possible that the actuation of the uncoupling device 9, 10 by the third devices occurs in combination with a movement or rotation of the handle 4 itself.

Operation of the preferred embodiment

[0052] With reference to the diagrams, an initial connection of the handle 4 to the frame 8 takes place by placing said frame 8 on the floor and holding its extension 12 or its connector 7 positioned correctly in line with the end 5 of the handle. With a sideshift movement along the main axis of the handle 4, the end part 5 of the handle 4 enters the connector 7 and overcoming the momentary and elastic interference of its uncoupling/coupling devices 9, 10, the relative connection between handle 4 and frame 8 is attained, with the coupling devices 9, 10 that guarantee the reciprocal connection between handle 4 and frame 8.

[0053] In order to be able to separate the handle 4, the cleaning tool 3, configured in this way and complete with handle 4 and frame 8, is brought close to the device 1 of the invention, making at least a part of the frame 8 or an extension thereof 12 enter the opening 17 of the first devices of the first lower part 11 of the device 1, in such a way that one or more walls 16 of the base or the frame 8 come to work together with one or more walls 13, 14 or 15 to support the frame 8 and to limit its movements, keeping it connected to device 1.

[0054] After the preceding coupling, with a movement of the handle 4, which in the embodiment shown in the drawings corresponds to a rotational movement, the connector 7 enters, through the open side 20, the second devices of the second intermediate part 18, which, configured as a fork with elastic arms, expand elastically to allow said connector 7 to enter and close elastically, retaining it with a residual elastic pressure. This retention keeps the connector 7 in a specific position for a possible and subsequent recoupling operation.

[0055] With the same movement of the handle 4 described above, the coupling and uncoupling devices 9, 10 of the connector 7 with the end part 5 of the handle 4 are connected to the third devices of the third part 19 of the device 1, in particular the internal side walls of the third devices, configured as a fork, which push the protruding parts of the coupling and freeing the relative connection between the connector 7 and the end part 5, allowing the handle 4, now freed from its relative constraint, to be extracted with an axial movement upwards, along the main axis of the handle 4, and completely detaching it from the frame 8.

[0056] The final situation corresponds to a handle 4 that is free and possibly available for connecting to a different frame 8 held by a different device 1 of the invention; and to a frame 8 held by the first devices of the first lower part 11 of the device, with a connector 7 held in position by the second devices of the second interme-

mediate part 18 available for easy re-attachment of a handle 4. In the different variants that can easily be implemented, the various parts are connected: the lower part 11 and the upper part 19, or the intermediate part 18 with the lower one 11 or the intermediate part 18 with the upper one 19, creating a device that is small in size and/or corresponding to the various shapes and types of cleaning tools 3 that have a handle 4, which can be uncoupled and then coupled again.

Claims

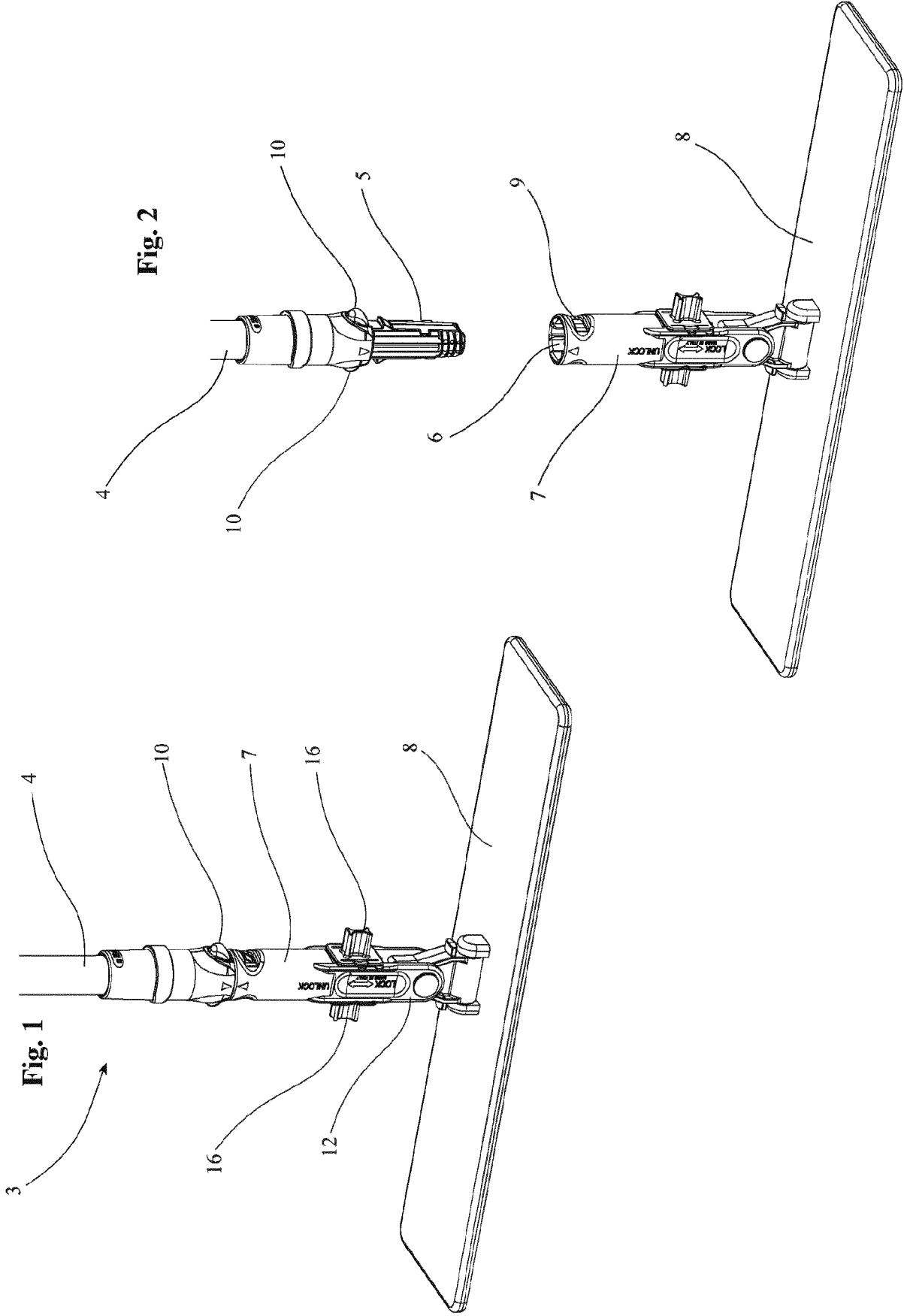
1. Cleaning item including a cleaning tool and a device for coupling/uncoupling and retaining to a fixed structure, or a mobile one or to a trolley, the frame of cleaning tools, for holding a frame (8) of said cleaning tool (3) and to permit the removal and replacement of the relative handle (4), where said cleaning tool (3) comprises at least:

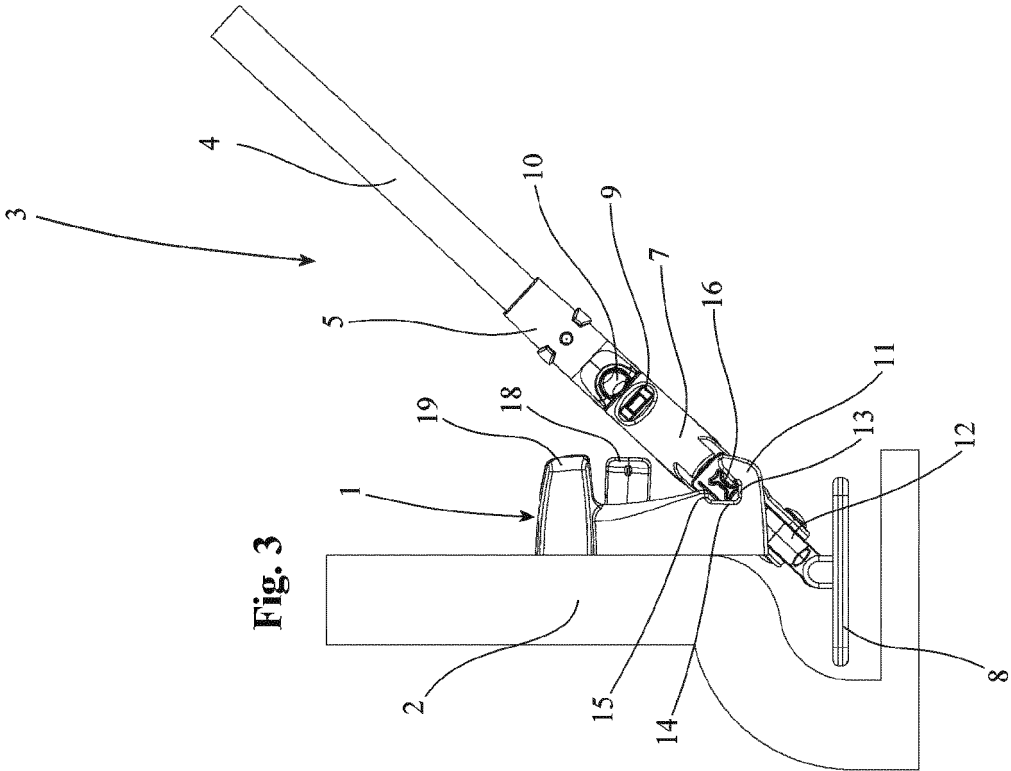
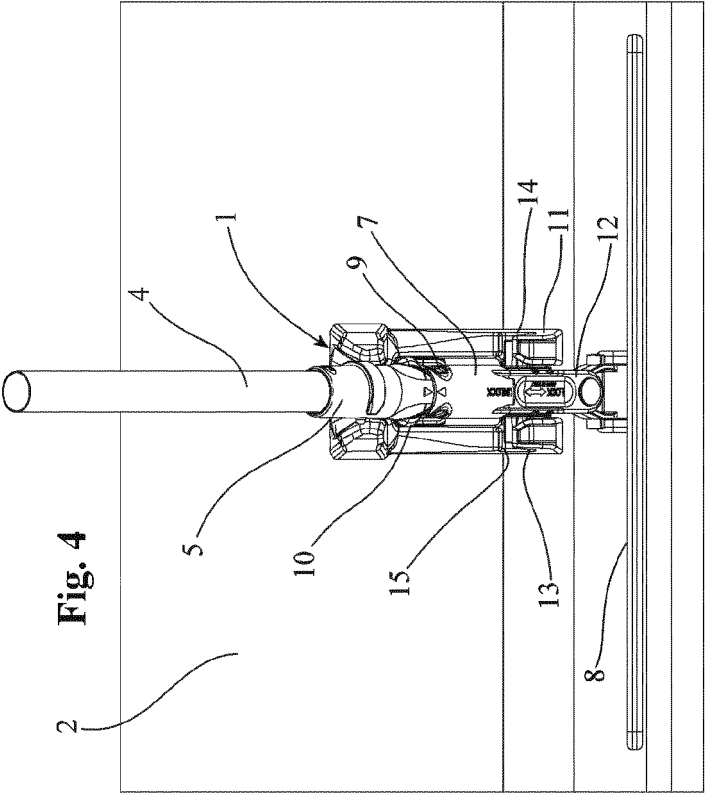
- a frame (8), possibly with a cloth or other cleaning element interposed, suitable for coming into contact with a surface to be cleaned,
- a handle (4) for the manual operation of said frame (8), and
- an interposed element, called a connector (7) or connection sleeve, which joins, either because it is inserted or because it surrounds it, from inside or outside, the handle (4) to the frame (8), or which joins the handle (4) to an extension (12) of the frame (8), in a removable manner since between said interposed element (7) and the handle (4) there are connection devices that can be released (9, 10) or uncoupled;

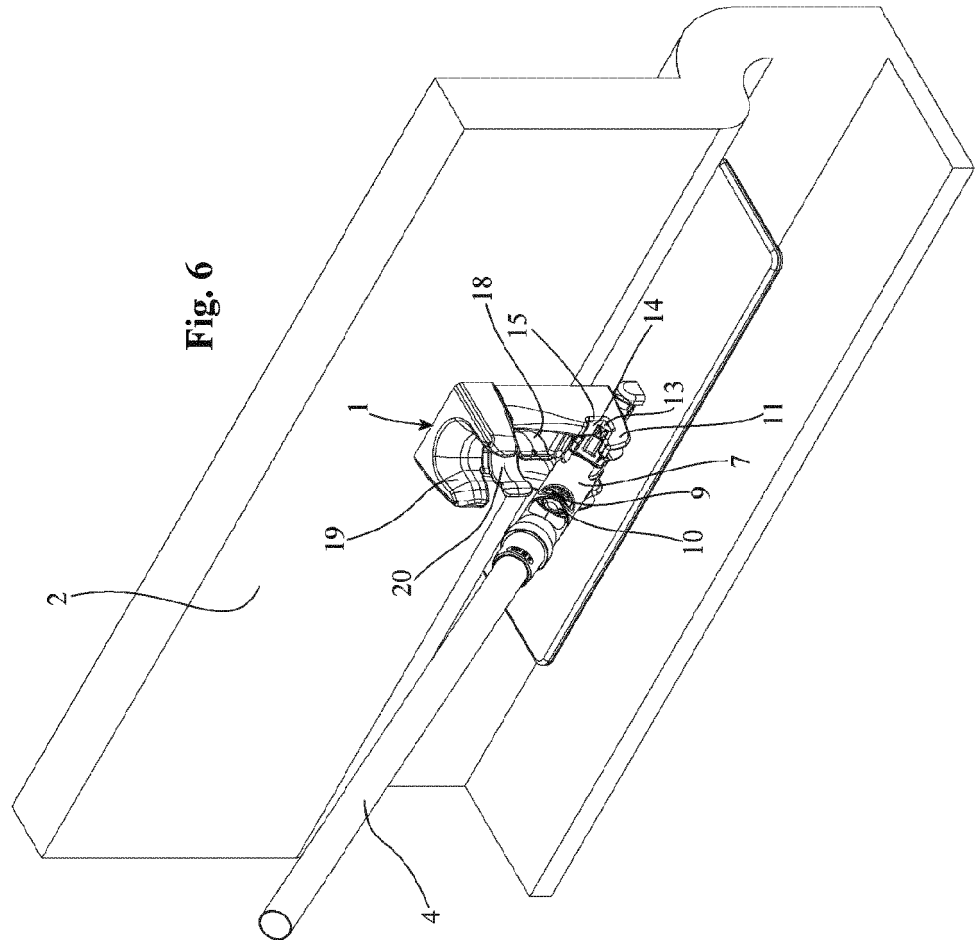
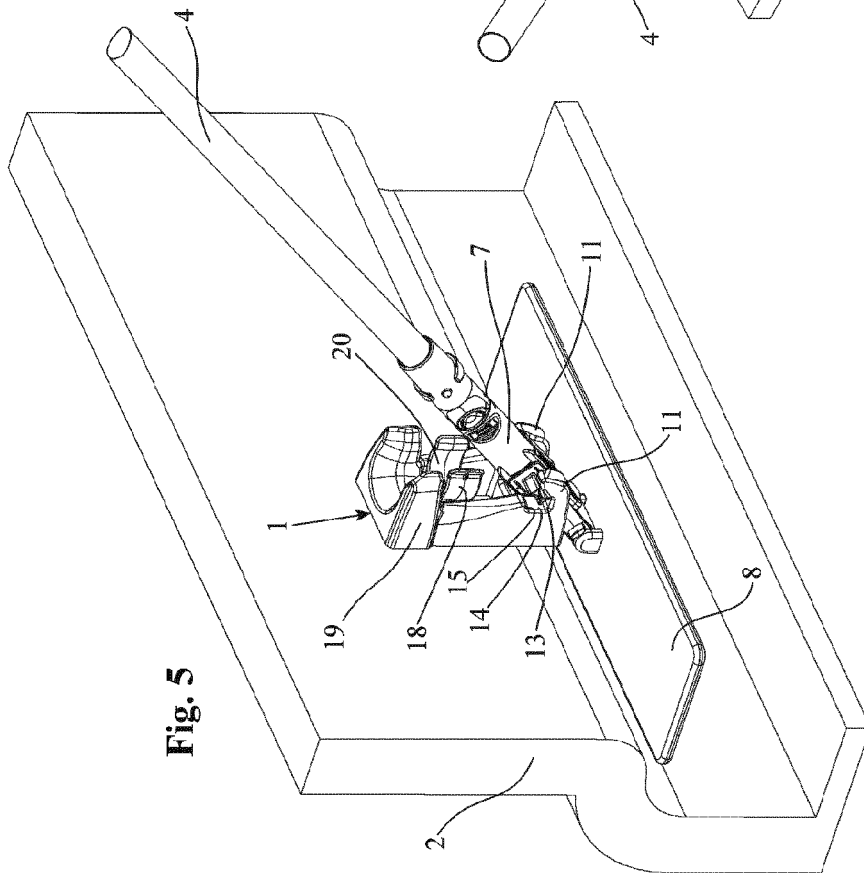
characterised by the fact that said coupling/uncoupling device (1) comprises at least three parts, preferably arranged one above the other:

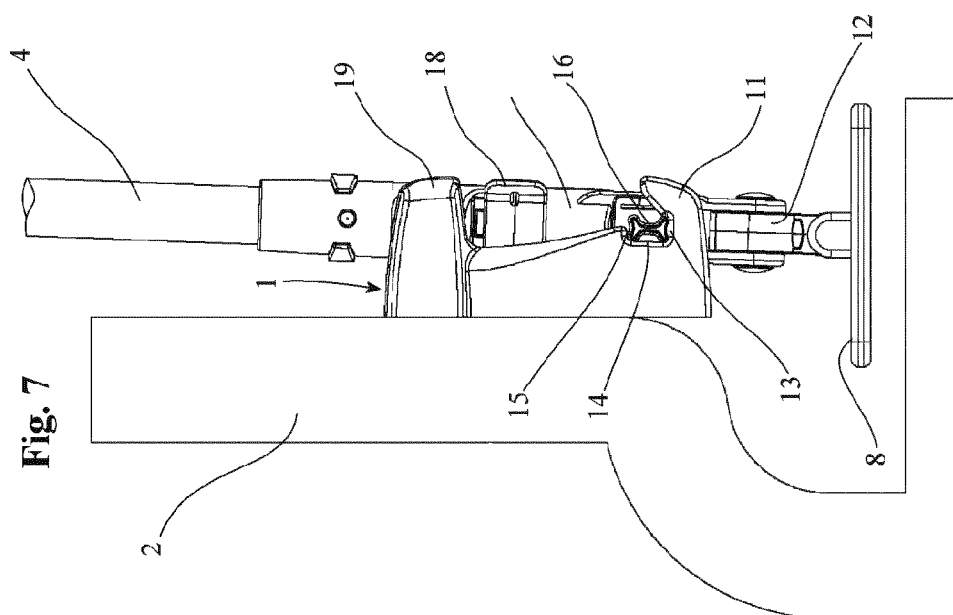
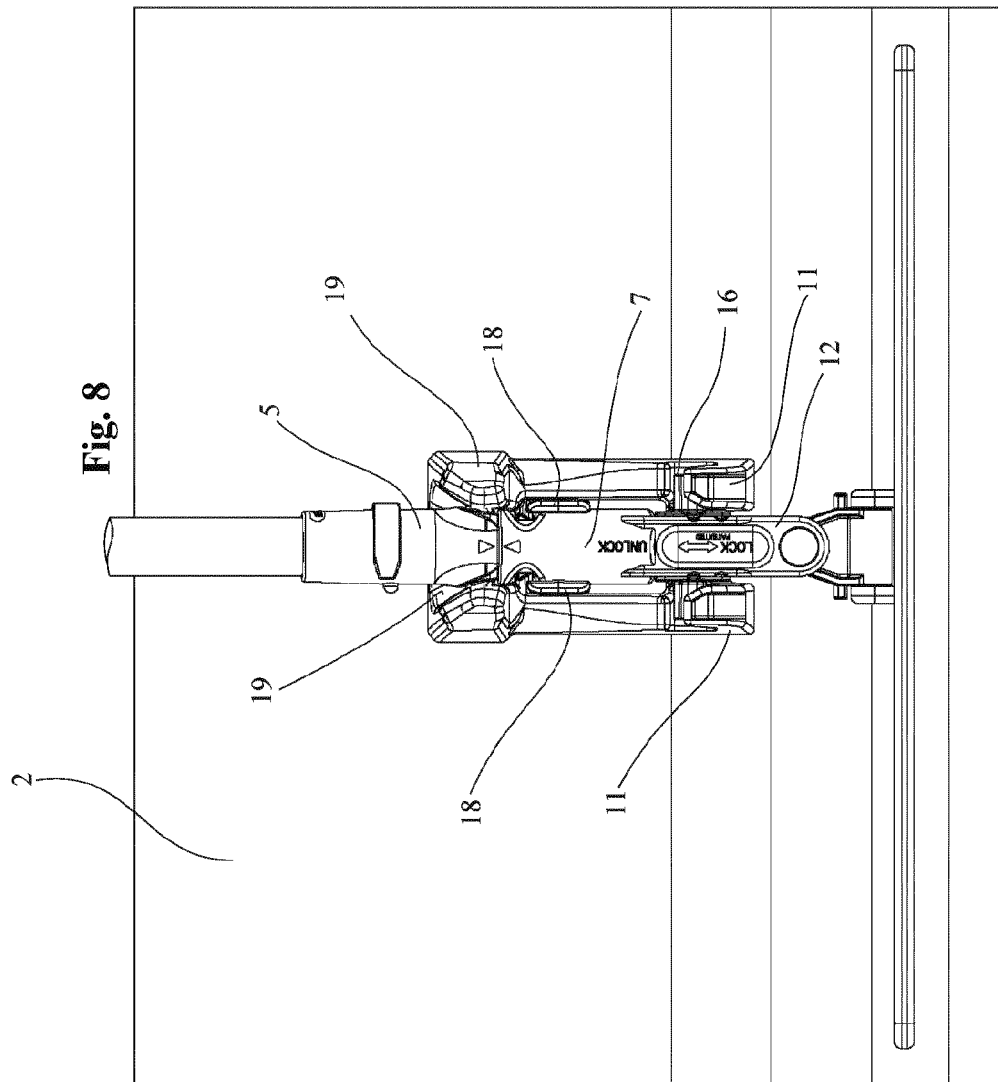
- a first lower part (11) configured as first devices that are joined to the frame (8) of a tool (3), and having one or more walls (13, 14, 15) that are joined to one or more walls (16) of the frame (8) in order to keep it permanently fixed and joined to said device (1) and that limit its movements and that have at least one opening (17) for the entry and exit of said tool (3) that has a handle (4);
- a second intermediate part (18), interposed between said first lower part (11) and a third upper part (19), configured as second devices that are joined with the connector (7), and that has a seat, partially or totally complementary to the connector (7), for retaining said connector, without a handle (4), in a convenient position for a subsequent re-connection with the handle (4), where said second devices have at least one open side

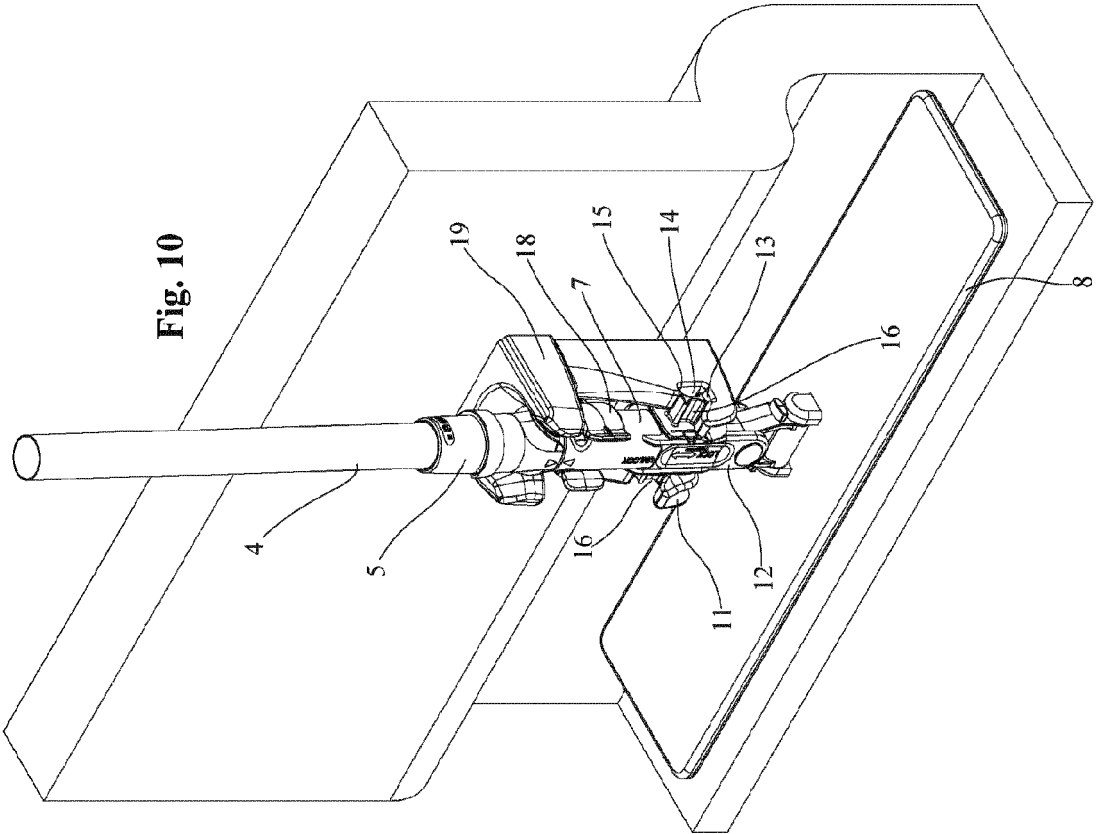
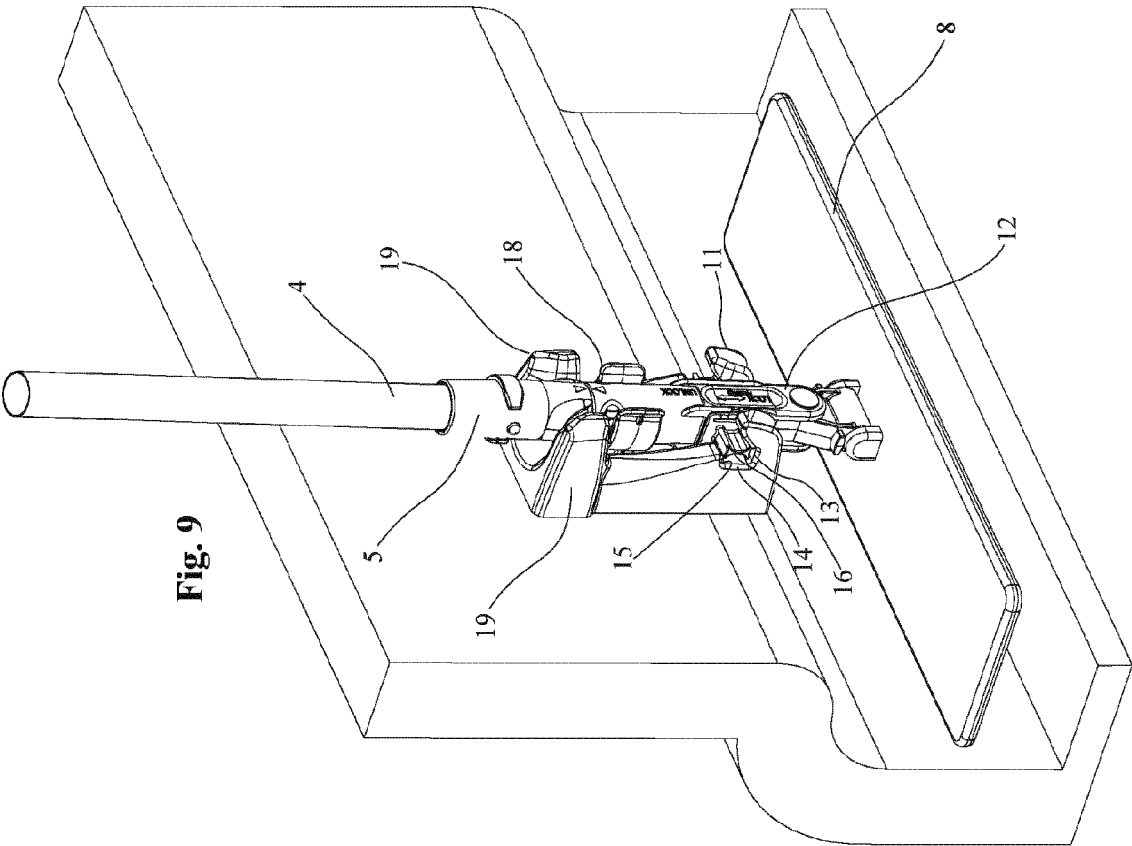
- (20) for inserting the handle (4) and/or the connector (7) inside said seat;
 - a third part (19) above said second intermediate part (18), configured as devices that are connected to the releasable connection devices (9, 10), belonging to the connector (7) or the handle (4), and enabling its operation.
2. Cleaning item according to claim 1, **characterised** by the fact that said opening (20) of the connecting devices of the intermediate part (18) is on top of said opening of the connecting devices of the upper part (19). 10
 3. Cleaning item according to claim 1, **characterised** by the fact that the lower part (11) of the device is united and one with the intermediate part (18) of the device (1). 15
 4. Cleaning item according to claim 1, **characterised** by the fact that the intermediate part (18) of the device is united and one with the upper part (19) of the device (1). 20
 5. Cleaning item according to claim 1, **characterised** by the fact that said connecting devices of the lower part (11) of the device have a seat with an opening mouth (17) through which all or part of the frame (8) enters. 25
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 6. Cleaning item according to claim 1, **characterised** by the fact said devices for connecting the lower part (11) of the device (1) are configured with cantilever elements configured obliquely with respect to the horizontal, allowing the tool (3), or its part that is to be retained, to insert itself obliquely into the device (1). 35
 7. Cleaning item according to claim 1, **characterised** by the fact said devices for connecting the lower part (11) of the device (1) are configured with cantilevered elements, whose part protruding from said seat slopes upwards. 40
 8. Cleaning item according to claim 1, **characterised** by the fact said devices for connecting the upper part (19) of the device (1) are configured as a fork, whose opening is sized to allow all or part of the tool (3) with the handle (4) to enter the uncoupling device (1), and at least one of the lateral sides or the rear side of the internal profile of this fork has at least one element which acts on the mobile part on the releasable connecting devices (9, 10) activating the release of the handle (4) from the tool (3). 45
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 9. Cleaning item according to claim 1, **characterised** by the fact that said devices connecting the intermediate part (18) have a fork-shaped insertion opening
- (20) with one or more of its parts elastically yielding, and which hold the part to be engaged on the handle (4) with a residual elastic pressure.
- 5 10. Cleaning item according to claim 1, **characterised** by the fact that said devices connecting the intermediate part (18) have an insertion opening (20) that is smaller than the maximum dimensions of the part to be retained, and are equipped with one or more elastic parts that yield and expand to allow the part to be retained to enter these second devices, and subsequently return, in whole or in part, to the rest position, adhering to the part to be retained after it has passed through said opening.

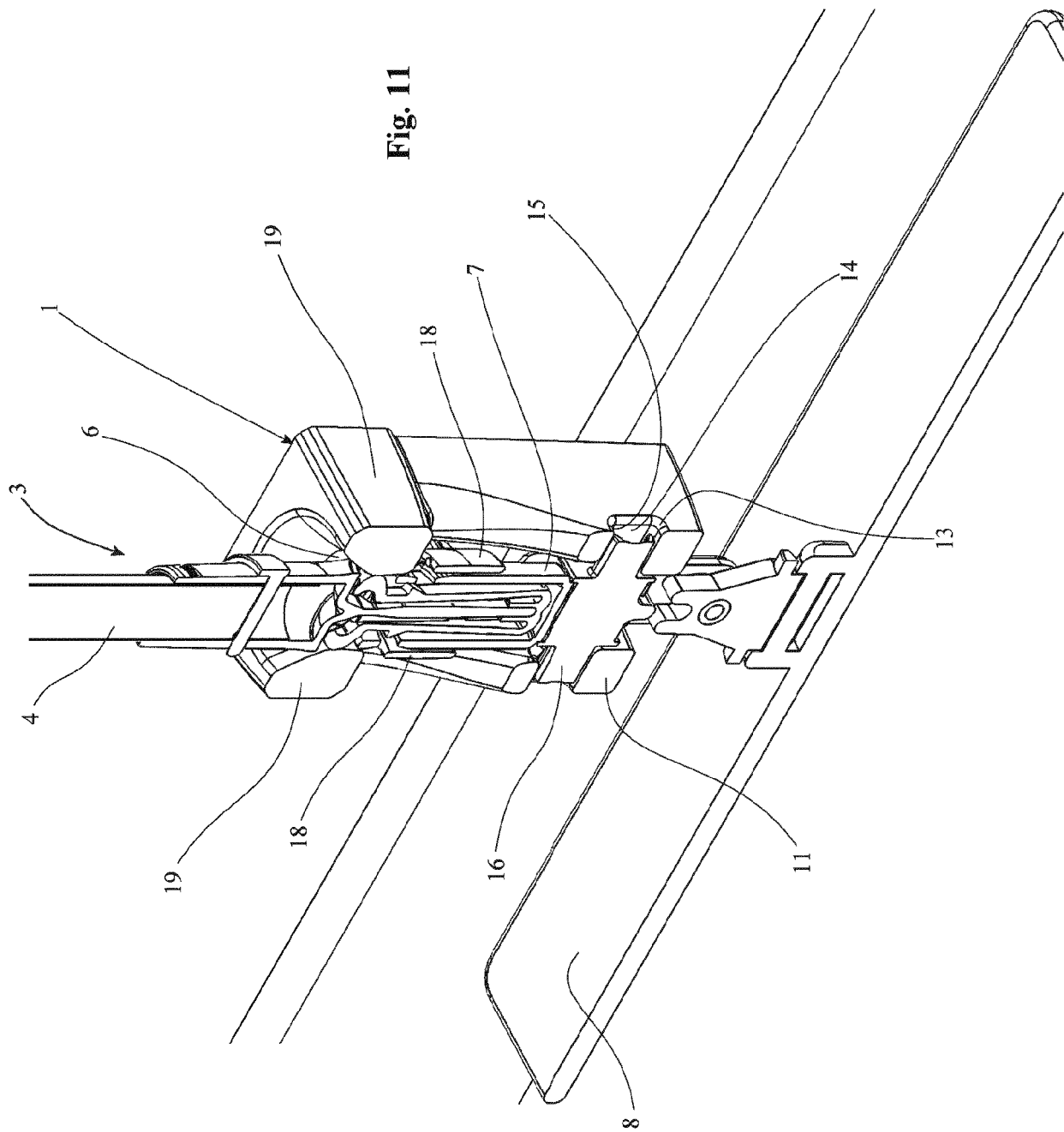


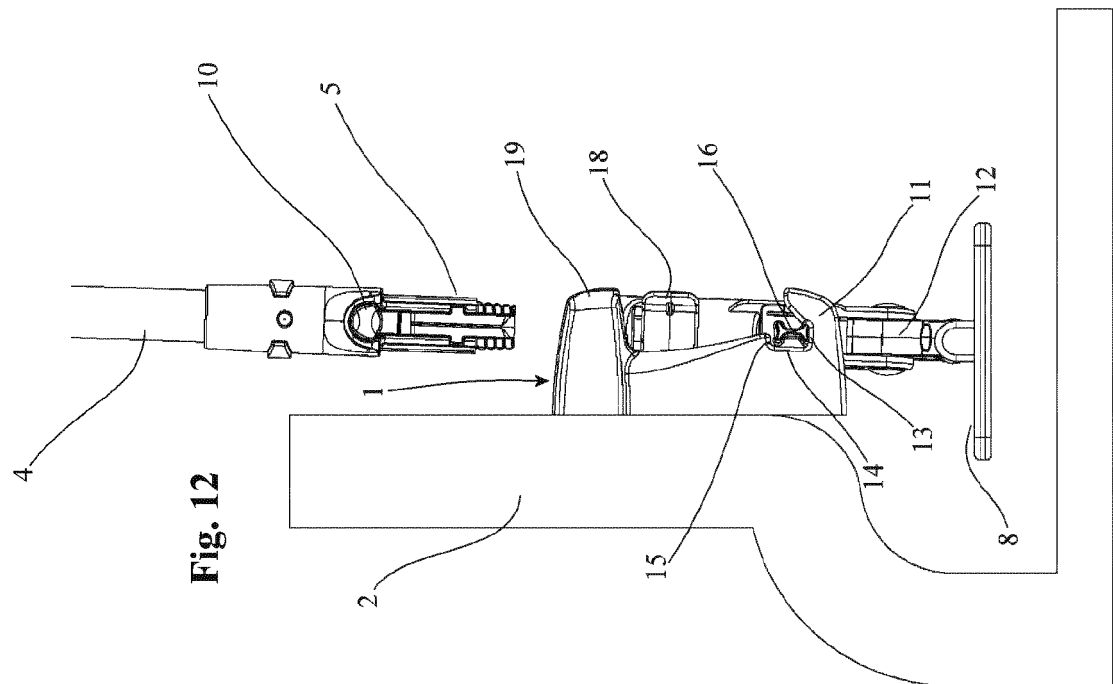
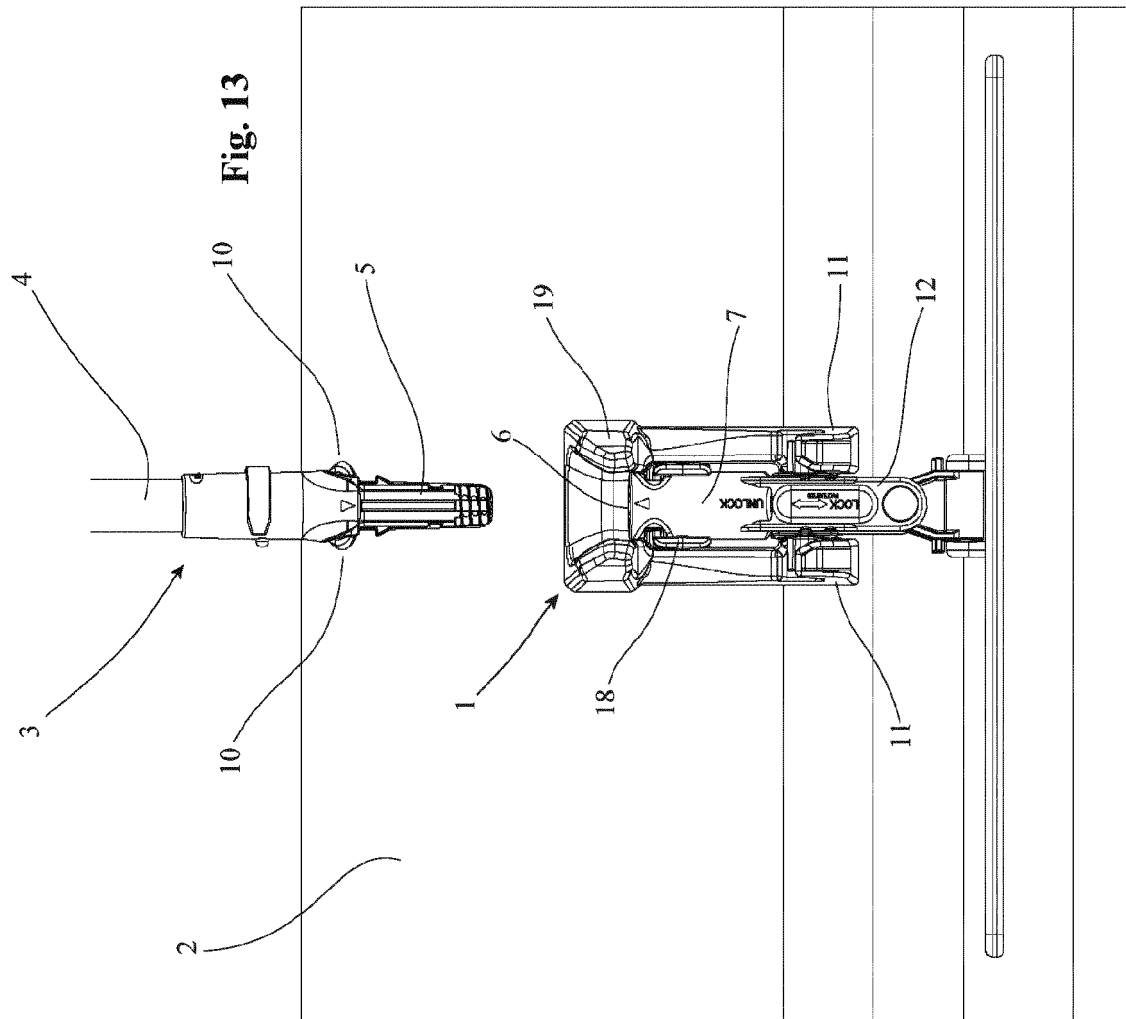


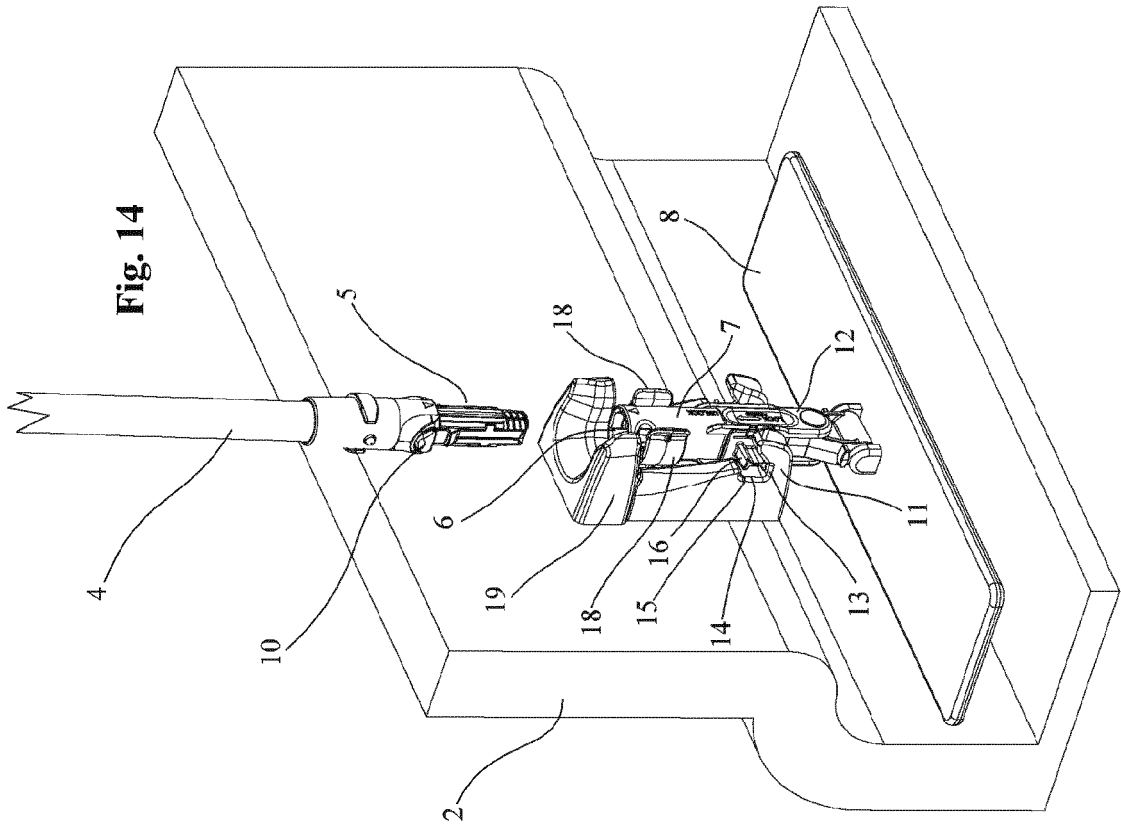
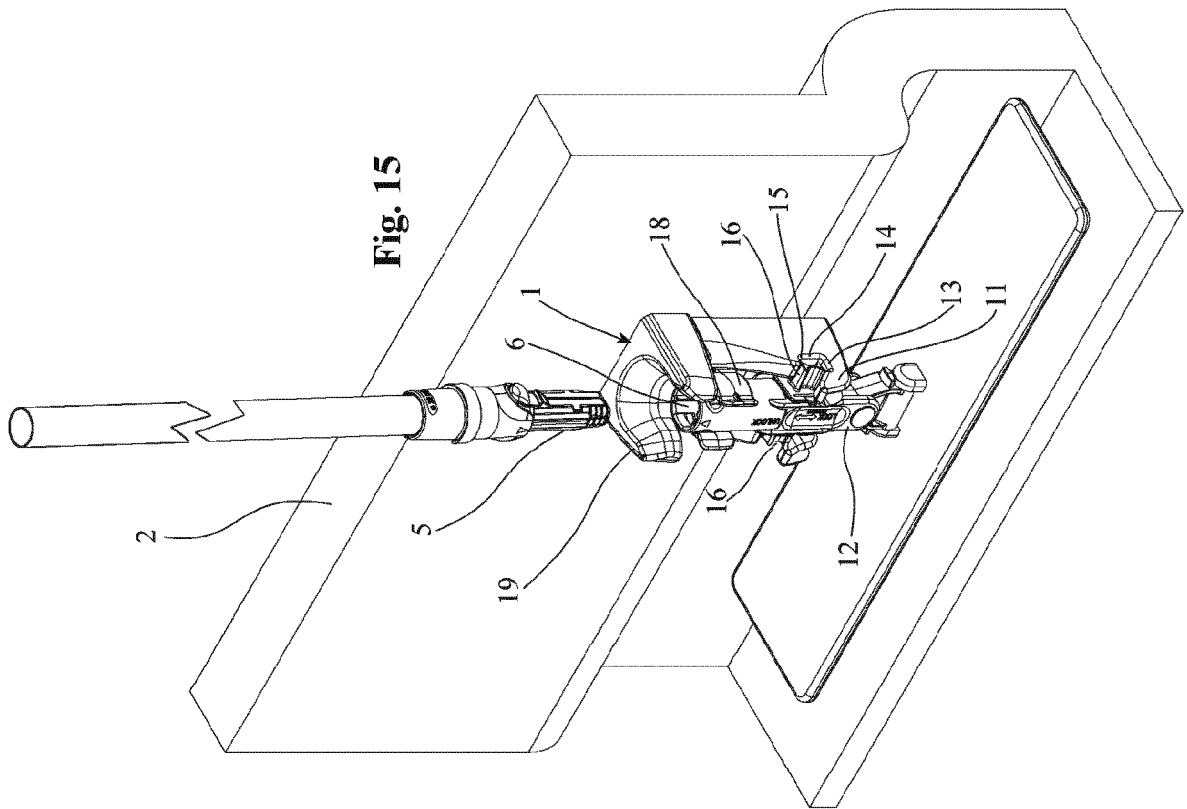












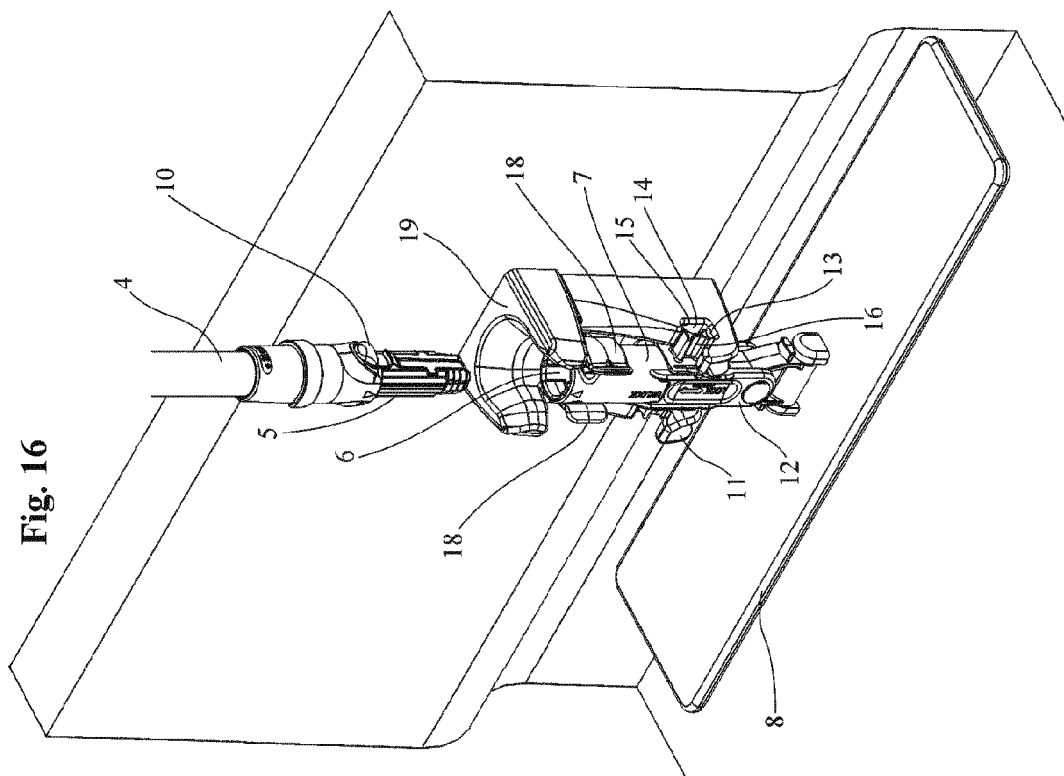
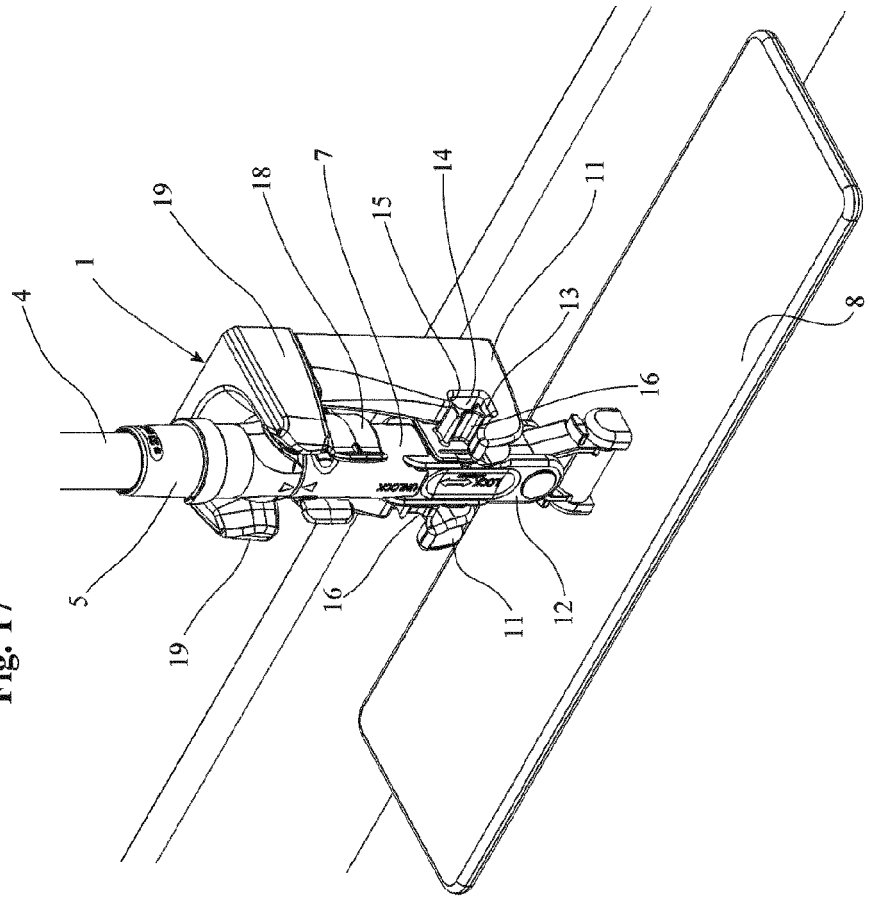
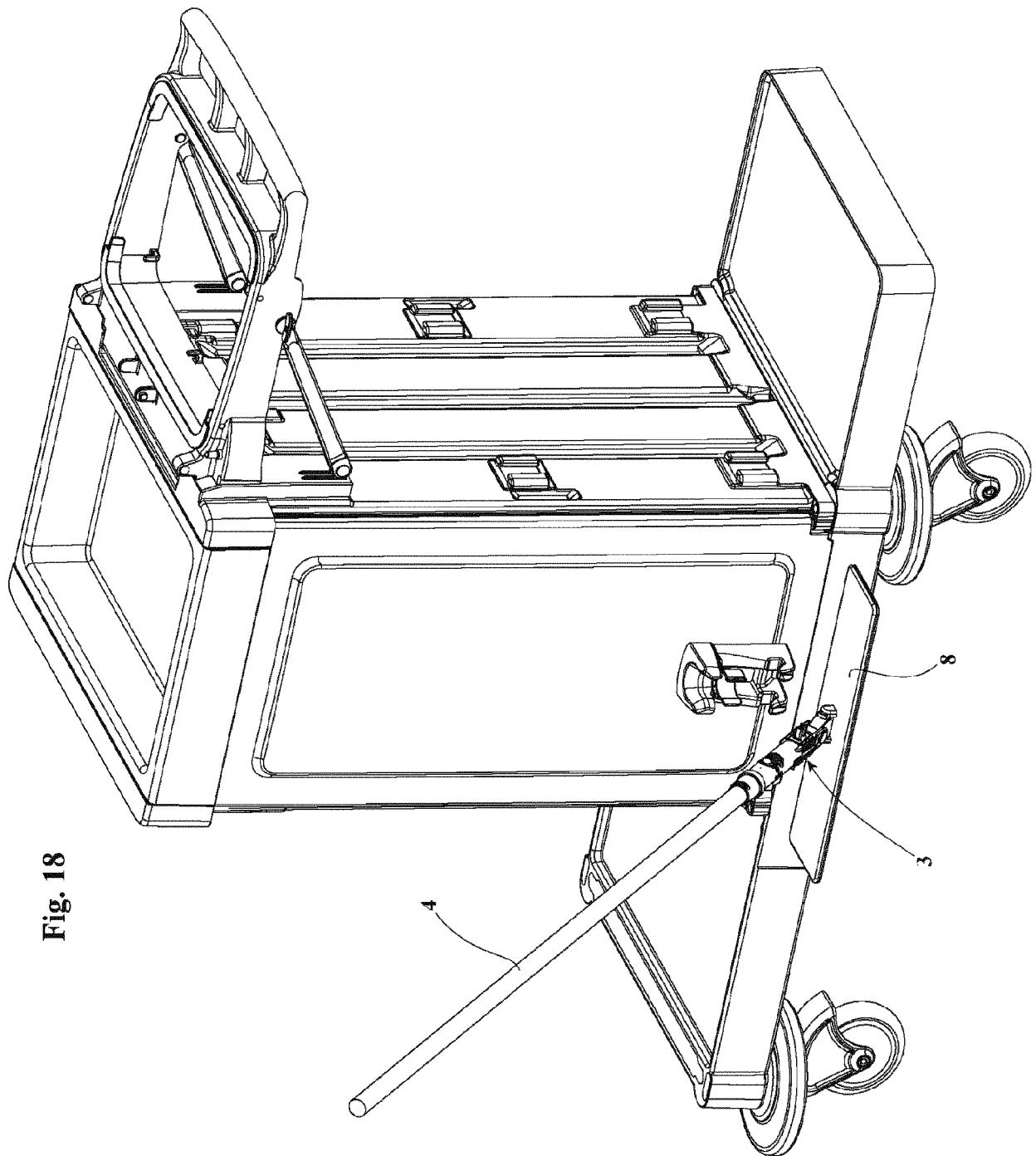


Fig. 17







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