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(54) AUXILIARY VACUUM DEVICE FOR A CENTRAL VACUUM CLEANING SYSTEM

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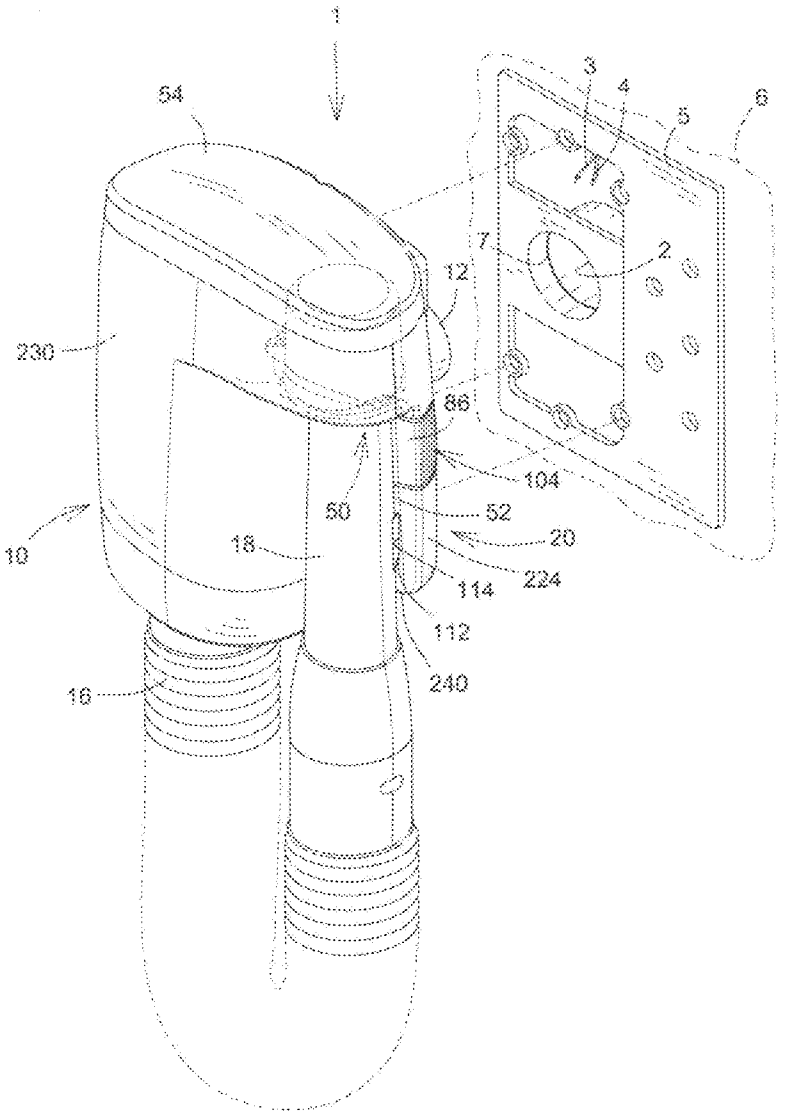
(57) **ABSTRACT**

An auxiliary vacuum device for a central vacuum cleaning system is location specific and comprises housing mountable externally on an inlet of a mounting plate of the system, a dedicated flexible concertina hose is provided on the device and a cleaning tool mounting probe is registrable with a docking station. When the probe is removed from the docking station, a lever may be moved in first and second directions to selectively activate and deactivate the motor of the central vacuum cleaning system and the device. When the probe is parked in the docking station the probe moves the lever in one of the directions and holds the lever in a deactivated configuration, thus deactivating the motor and the device and preventing activation thereof.



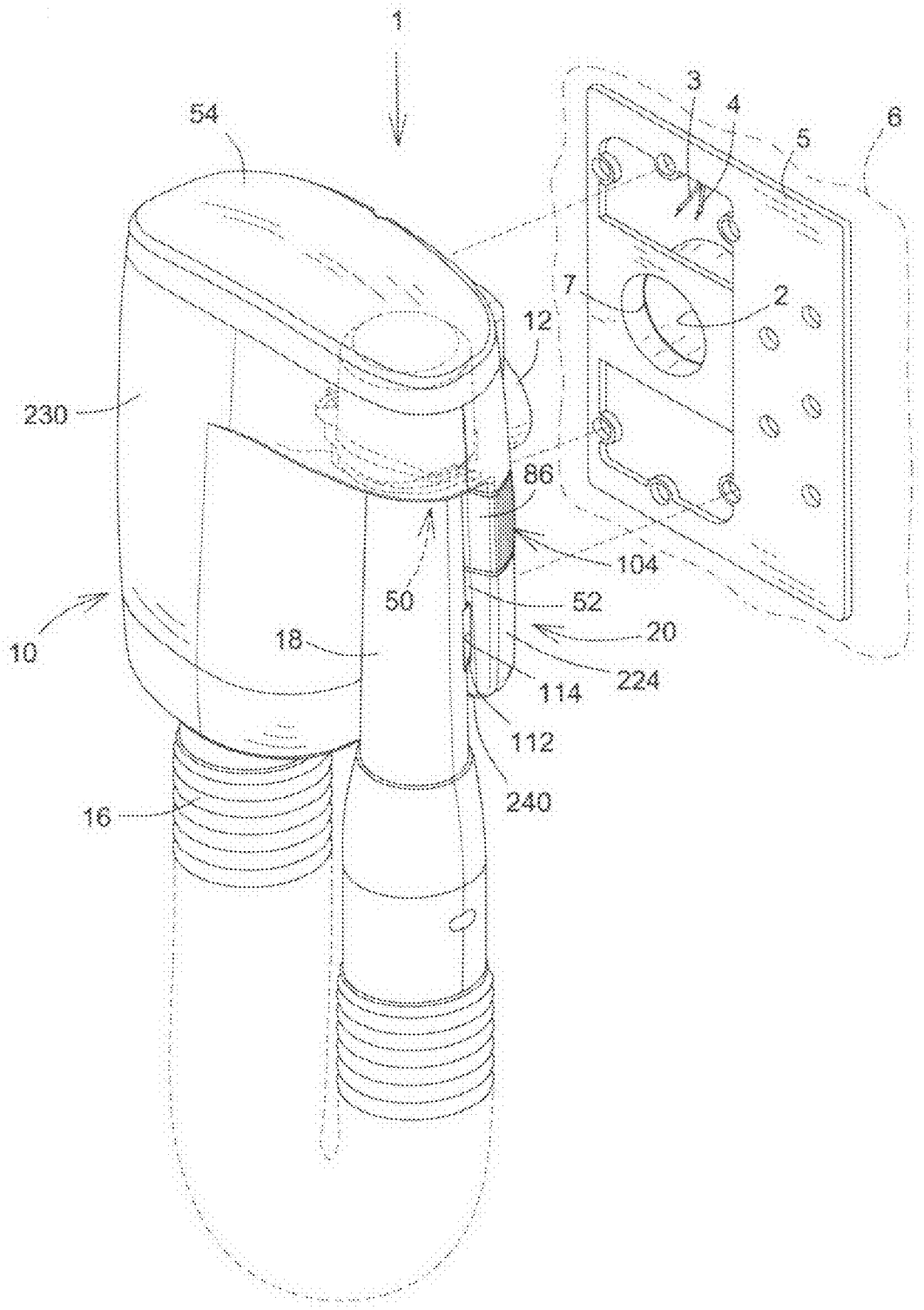
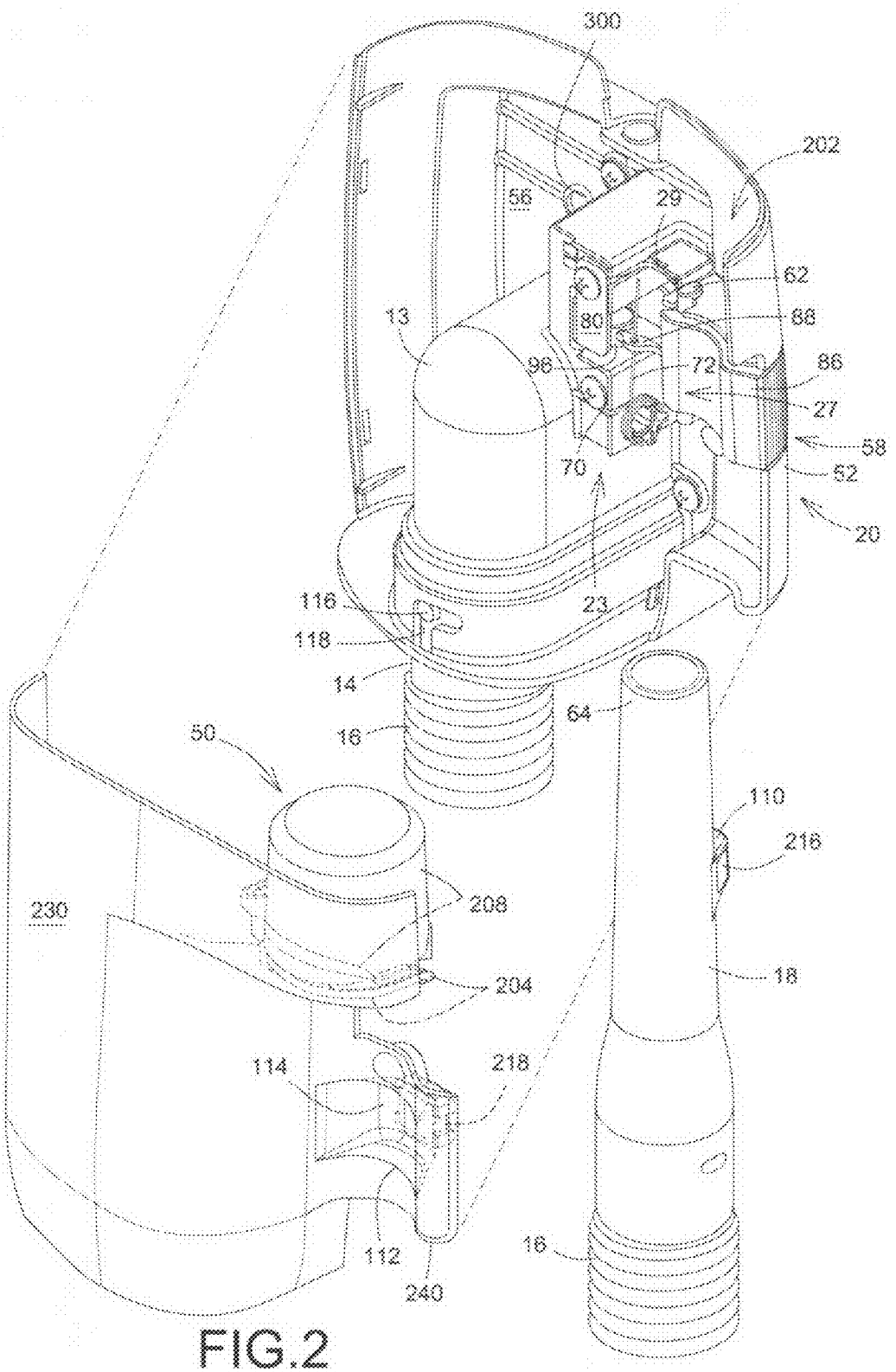


FIG.1


300
202
56
29
62
13
80
66
96
72
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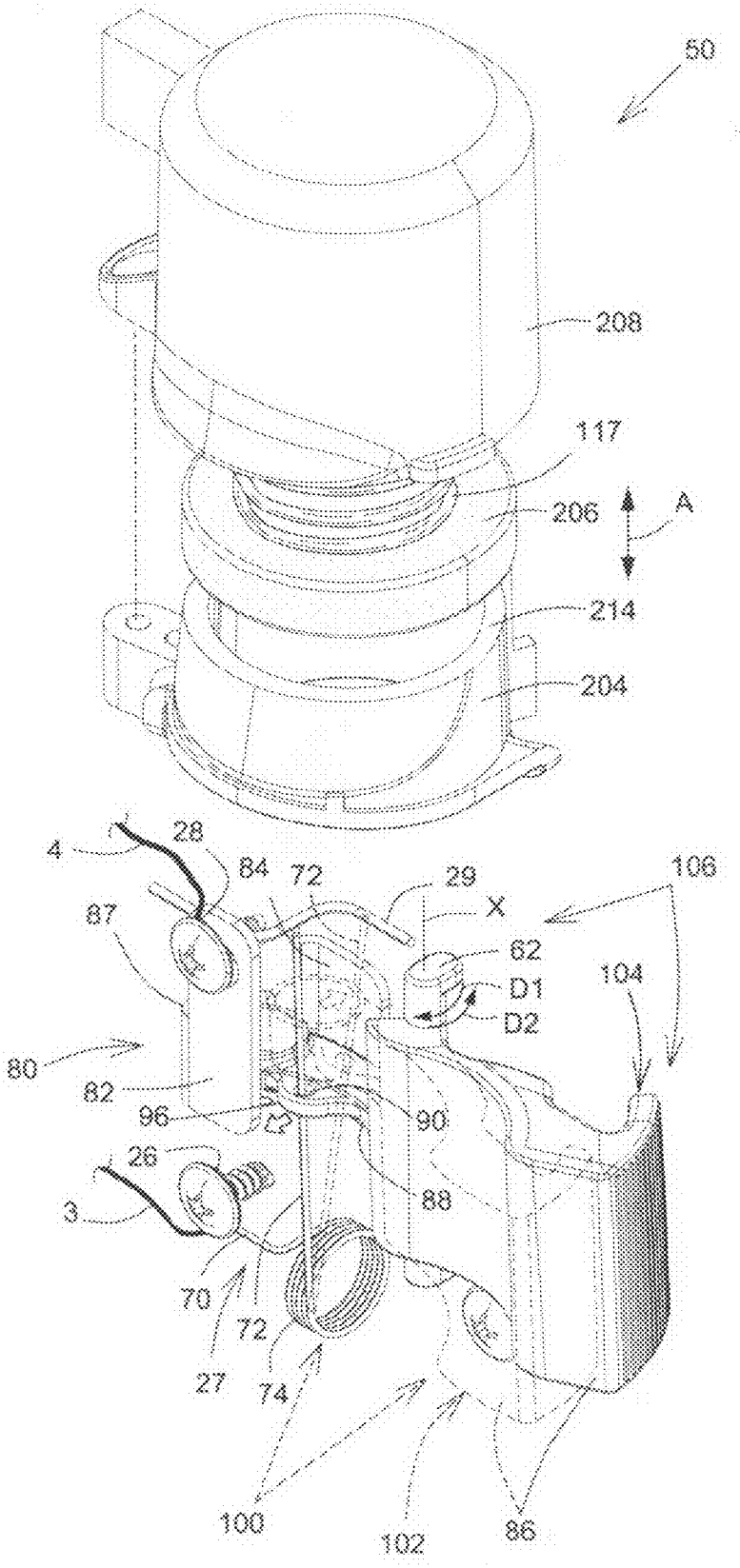
27
58
70
62
20
116
23
118
14
64
16
50
110
216
230
208
18
204
114
218
112
16
240

FIG.2


50
208
117
206
A
214
204
4
28
84
72
29
X
106
87
62
D1
D2
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80
82
96
90
26
3
88
70
72
27
74
100
102
86

FIG.3

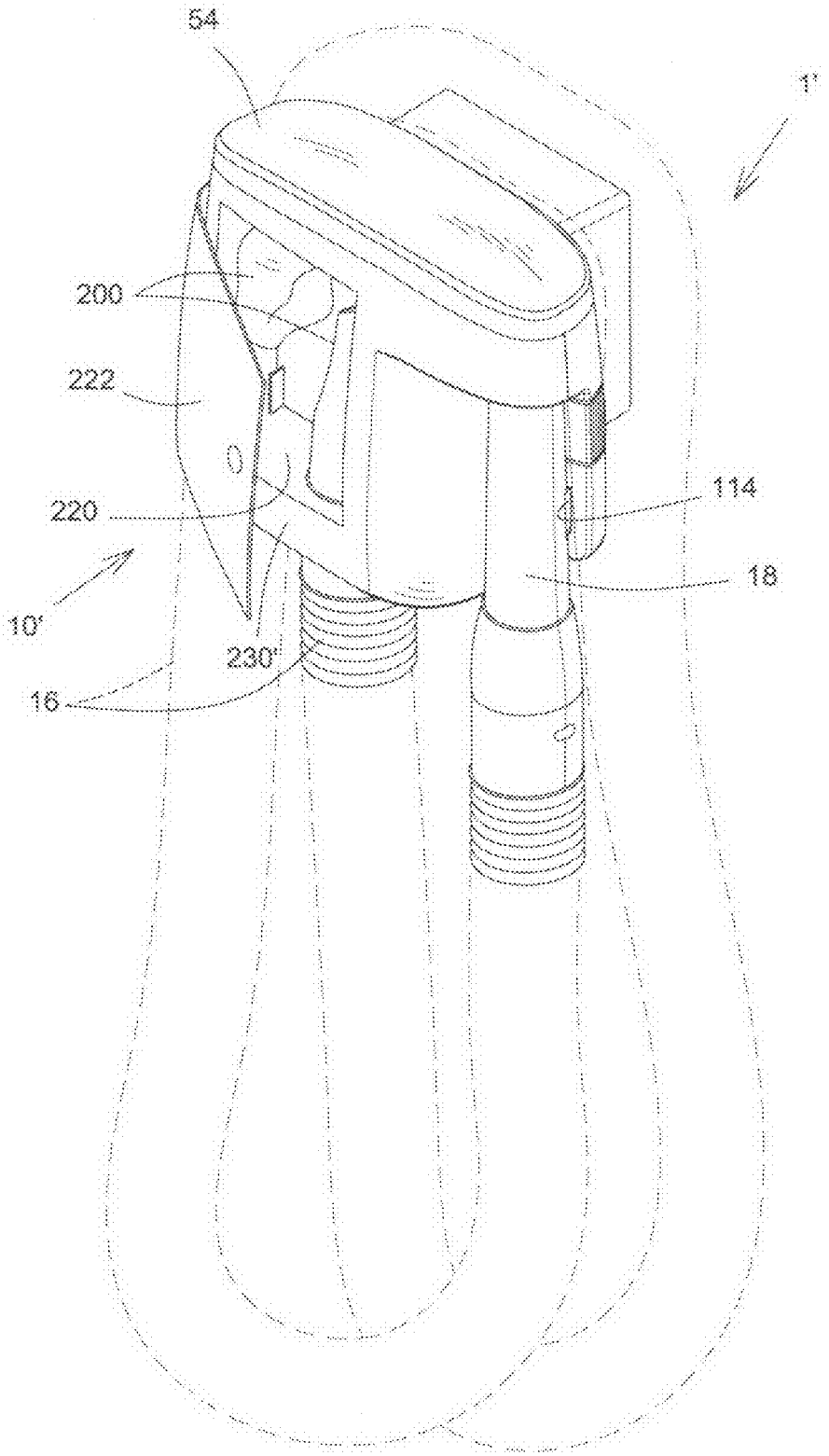

FIG.4

AUXILIARY VACUUM DEVICE FOR A CENTRAL VACUUM CLEANING SYSTEM

FIELD OF THE INVENTION

[0001] The present invention relates in general to a central vacuum cleaning system and more particularly to an auxiliary device for attachment to the central vacuum cleaning system.

BACKGROUND OF THE INVENTION

[0002] Central vacuum cleaning systems are well known and are to be found in domestic and commercial premises to provide a centralized cleaning regime based on the vacuum cleaner principle to minimize the carriage of conventional equipment from place to place. Naturally, there are available small portable vacuum cleaners operable independently of the central vacuum system, which may easily be transported manually from location to location within domestic or commercial premises, but generally their power is restricted by the need to afford portability.

[0003] It is normal in a central vacuum cleaning system, for example as deployed in a condominium, to site a few strategically placed connection stations, coupled in a circuit to a central vacuum generating unit, and to provide a flexible hose of not inconsiderable length for registration with one station enabling cleaning of a number of rooms and areas to be achieved with that one length of hose. The length of the hose makes laborious the task of vacuuming in view of the need to carry such an unwieldy and relatively heavy mass of hose between stations.

[0004] Various proposals to alleviate this problem have been made. For example, US Patent Application Publication No. US 2007/0256269 to Pagni discloses a location specific unit integral with the fabric of the building in which it is to be employed, namely within the wall structure. However, this proposal merely provides a vacuum system for each cleaning area, rather than a central vacuum system with a number of outlets throughout the building.

[0005] Another example of prior art is to be found in US Patent Application Publication No. US 2008/0092323 to Smith et al who describe a central vacuum cleaning system as such with wall valves in the various rooms of a building structure and one cabinet housing cleaning tools including a flexible hose connected into the central system through a wall valve within the cabinet, which again is mounted within a stud wall.

[0006] There are other systems which provide for a similar arrangement as in the Smith et al proposal but with a free-standing cabinet, for example in a kitchen, housing an appropriate suction tool on a hose connected permanently to an inlet of the central vacuum cleaning system. Removal of the tool from a specially designed docking station, incorporating a switching arrangement, activates the vacuuming mode with replacement of the tool causing deactivation. A disadvantage of such a system is it always requires the opening of a cabinet door before reaching the cleaning tool, and the door remains open during operation of the system, which might be highly cumbersome.

[0007] An auxiliary vacuum device which at least partially addresses some of the aforementioned shortcomings is taught by U.S. Pat. No. 7,594,295 issued to the Applicants on Sep. 29, 2009. This reference teaches an auxiliary vacuum device mountable externally of the structure of the building in which the system is installed on an inlet mounting plate the same type used to install a conventional inlet valve. Further, the auxiliary vacuum device incorporates a manageable length of flexible hose permanently associated with the system and has a tapered sealing component (docking station and probe) capable of receiving most cleaning accessories for different cleaning tasks. Thus, the auxiliary vacuum device is location specific and may be readily adapted to different cleaning tasks. Additionally, the switching mechanism of the auxiliary vacuum device is so designed as to avoid startup and automatically shut down the device if the probe is installed in the docking station when the probe of the auxiliary vacuum device is docked/sealed, thus protecting the central vacuum cleaning system motor from harmful overloading and allowing other inlet stations to be used in the central vacuum cleaning system. An independent on/off switch for local operation and safety purposes allows a user, when the probe is removed from docking station the operator must manually press the on/off button to allow central vacuum cleaning system to start. Should the operator have to stop the central vacuum cleaning system for any reason he can do so by simply repressing the on/off button. Unfortunately, the switch mechanism enabling the on/off functionality for the probe and docking station and the separate on/off switch is unnecessarily complex and cumbersome in that it requires a substantial number of cams, guide arms, stub shafts, and the like to provide the aforementioned functionality.

[0008] Accordingly, there is a need for an improved auxiliary vacuum device for use with a central vacuum cleaning system and having a simplified switching mechanism for activating and deactivating the device.

SUMMARY OF THE INVENTION

[0009] It is therefore a general object of the present invention to provide an auxiliary vacuum device for use with a central vacuum cleaning system and having a simplified switching mechanism for activating and deactivating the device.

[0010] An advantage of the present invention is that the switching mechanism for deactivating and activating the device is of simple construction and design.

[0011] A further advantage of the present invention is that the switching mechanism uses a single lever or switch for ensuring both automatic deactivation of the device when the probe is installed in the docking station and enabling activation of the device when the probe is removed from the docking station.

[0012] Yet another advantage of the present invention is that the switching mechanism is designed such that, when the probe is removed from the docking station, accidental activation of the device is discouraged.

[0013] According to an aspect of the invention, there is provided an auxiliary vacuum device for a central vacuum cleaning system for premises defining areas of occupancy, the system including an electrically powered vacuum generating unit, a system network of piping extending throughout the premises and terminating in at least one inlet formed in one of the walls defining at least some of the areas of occupancy, the device comprising a housing adapted for installation externally of the wall at a mounting plate of the system network, the mounting plate disposed on the wall with the inlet extending through the mounting plate, the housing being provided with a port for communication with the inlet, a connector exterior to the housing, a pipe extending within the housing from the port to the connector, a flexible hose connected to the

port and extending externally from the housing, a cleaning tool mounting probe provided on the hose distal the connector a docking station for parking of the probe therein and extending adjacently alongside a proximal side of the housing, and a switch mechanism having a pivotally mounted lever extending within the housing and outside of the housing into the docking station, the lever being pivotable, when the probe is disengaged from the docking station, in a first direction into a activated position therefor to place the switch mechanism in an activated configuration in which the device is activated and in a generally opposed second direction into a deactivated position therefor to place the switch mechanism in a deactivated configuration in which the device is deactivated, the probe moving the lever in the second direction to place the switch mechanism into the deactivated configuration when the probe is parked in the docking station and holding the switch mechanism in the deactivated configuration when parked in the docking station.

[0014] Other objects and advantages of the present invention will become apparent from a careful reading of the detailed description provided herein, with appropriate reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] Further aspects and advantages of the present invention will become better understood with reference to the description in association with the following Figures, in which similar references used in different Figures denote similar components, wherein:

[0016] FIG. **1** is an isometric view of an auxiliary vacuum device in accordance with an embodiment of the present invention showing the device aligned for external mounting to an inlet mounting plate of a central vacuum cleaning system;

[0017] FIG. **2** is a partial exploded view of the interior of the device;

[0018] FIG. **3** is an enlarged partial perspective view of the switching mechanism and receptacle for the device; and

[0019] FIG. **4** is an isometric view of an auxiliary vacuum device in accordance with a variant of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0020] With reference to the annexed drawings the preferred embodiment of the present invention will be herein described for indicative purpose and by no means as of limitation.

[0021] In FIG. **1**, there is illustrated an auxiliary vacuum device, shown generally as **1**, which is mountable on a mounting plate **5**. Mounting plate **5** incorporates an inlet opening **2** of a central vacuum cleaning system (not shown) which incorporates an electrically powered vacuum generating unit, including a motor, for generating a vacuum. The operation of vacuum generating unit is controlled by the device **1** in the manner hereinafter defined. Suitable low voltage electrical wires **3**, **4**, connected to an electrical power supply and to the electrically powered vacuum generating unit, are provided and protrude from a rear aperture **300** in the mounting plate **5** which is installed in or on a wall **6** of the area of occupancy or premises in which the central vacuum cleaning system is installed.

[0022] Referring now to FIGS. **1**, **2** and **4**, the device **1**, includes inter alia a housing, shown generally as **10**, having a rear wall or housing plate **56**, a front cover **230**, and a top cover **54**. The rear housing plate **56** generally extends proximal the mounting plate **5** when the device **10** is connected thereto. The top cover **54** and front cover **230** are, preferably removably, connected to the housing plate **56**, using means, for example screws, well known in the art.

[0023] The housing **10** is provided with a port **12** for registration and flow communication with the inlet opening **2**, typically provided with a seal member **7** such as an O-ring or the like. Further, the housing **10** encases a typically 90-degree elbow pipe **13** which interconnects the port **12** with a connector **14** for a flexible concertina hose **16**, with a portion of the connector **14** extending preferably externally of the housing **10**. The length of the flexible concertina hose **16** may be of the order of up to 1.5 metres extensible to 6 metres, thus providing a local hose **16** of manageable length for the location concerned. However, various lengths and different types of hoses, for example extruded or extruded electric hose with on/off switch, etc, may be deployed. The hose **16** is removable from the device **1** by turning the connector **14** such that hose protrusion **116** may be passed through the passageway of L-shaped notch **118** in housing **10**. At the end of the hose **16**, distal from the connector **14**, is a cleaning tool mounting probe **18** for attachment of cleaning accessories or tools **200**, such as those shown for device **1'** in FIG. **4**, thereto. Preferably, the probe **18** is of tapered conical shape and is sized such that most typical cleaning tools **200** can be mounted or received thereon, thus enabling use of the device **1** for different cleaning tasks.

[0024] Reference is now made to FIGS. **1**, **2**, **3** and **4**. The housing **10** is further provided with a docking station, shown generally as **20** in which the probe **18** may be parked, for example releasably inserted or seated. The docking station **20** extends downwardly out of the interior of housing **10**, proximal the top cover **54**, and generally alongside and parallel a proximal side **224** of the housing **10**. In particular, the docking station **20** has a receptacle, shown generally as **50**, fixedly mounted within housing **10** at **202**, and a rear docking station wall **52**, preferably formed on front cover **230**, extending on the exterior of the housing **10** from a rear portion of the receptacle **50** towards the bottom **240**. Thus, docking station wall **52** preferably abuts the receptacle **50** and extends below the receptacle **50** and in back thereof.

[0025] The receptacle **50**, best illustrated in FIG. **3**, provides for sealing, yet removable insertion of the probe end **64** into the receptacle **50**. As shown, the receptacle **50** includes a receptacle cover **208**, a socket **204**, and a socket cap **206** formed of a resilient, and preferably partially rigid, foam. The socket **204** is, preferably, fixedly and rigidly connected to housing **10**, for example formed in, bonded, or fixedly connected to interior of front cover **230** at **202**. Receptacle cover **208** covers socket **204** and is, preferably removably, connected thereto, for example with screws or the like. As shown, socket **204** is of tapered conical form and is configured, notably sized and shaped, along with the probe end **64** of probe **18**, for removable insertion of probe **18**, notably probe end **64**, therein. The socket cap **206** is disposed between receptacle cover **208** and socket **204**, with a resilient biasing mechanism or element **117** disposed between the receptacle cover **208** and the socket cap **206**. The resilient biasing element **117** resiliently biases the socket cap **206** downwards toward top socket end **214** and enables upward and downward resilient vertical movement of plug **206** as shown by arrows A while biasing the socket cap **206** onto top socket end **214**. The

socket cap **206** is sized and shaped to securely and completely cover, preferably sealingly, the top socket end **214** when seated thereon. At the same time, the socket cap **206** is of sufficient size that it cannot accidentally be passed completely through top socket end **214**, thus minimizing the risk that the socket cap **206** may be accidentally removed or ejected from the receptacle **50** by action of the vacuum from the probe **18**.

[0026] When the probe end **64** is initially inserted into the receptacle **50**, the socket cap **206** may be biased upwardly by the probe **18** and then be resiliently biased downwardly by the resilient biasing element **117** to sealingly engage and cover the probe end **64**, thus providing sealing connection therewith. The sealing of the probe end **64** in receptacle **50** advantageously prevents air from being drawn through the probe end **64** in receptacle **50** in one device **1** while another apparatus not shown, connected to central vacuum cleaning system is in use. It will be appreciated by one skilled in the art that the resilient biasing element **117** could include any material or mechanism that provides the required resiliency and biasing towards the socket **204**, for example a conventional resilient spring. Alternatively, the resilient biasing element **117** could be a resilient foam member, made of a resilient memory foam disposed between socket cap **206** and receptacle cover **208**.

[0027] Referring now to FIGS. **1**, **2**, and **4**, probe **18** also has a probe flange **110** extending horizontally and circumferentially around at least a portion thereof. Further, docking station **20** has a ledge **112**, best shown in FIG. **2**, extending horizontally along the rear docking station wall **52** proximal the bottom **240** of the docking station **20** away from proximal side **224** towards the interior of the housing **10**. Preferably, the ledge **112** could be provided by a depression or cavity **114** formed within the rear docking station wall **52**. Alternatively, the ledge **112** could be a flange protruding outwardly from the rear docking station wall **52**. The probe flange **110** and the ledge **112** are configured, for example positioned, sized and shaped, such that when probe end **64** is inserted into receptacle **50**, the probe flange **110** rests on the ledge **112**, with the resilient biasing element **117** biasing the socket cap **206** downwardly onto the probe end **64** to ensure sealing connection therewith. The probe **18** may be removed from docking station **20** by pulling outwardly thereon to disengage flange **110** from ledge **112** and allow the probe **18** to be pulled outwardly and/or vertically downwardly. Preferably, the flange **110** includes a metal member or strip **216** and the docking station **20** has a docking station magnet **218** disposed on, within, or behind rear docking station wall **52** adjacent or proximal the ledge **112**. In particular, the docking station magnet **218** is preferably positioned such that when the probe **18** is seated in the docking station **20** with the probe flange **110** resting on the ledge **112**, the docking station magnet **218** is situated proximal to and preferably directly across from, the metal strip **216** such that the docking station magnet **218** may exert sufficient magnetic attraction on the strip **216** to magnetically retain the probe **18** against the docking station rear wall **52** with flange **110** seated on ledge **112**. Thus, the flange **110**, notably metal strip **216**, is magnetically attracted towards docking station magnet **218** proximal ledge **112** when in proximity thereto, facilitating insertion of the probe **18** into the docking station **20** and impeding accidental removal of the probe **18** therefrom. If desired, when the ledge **112** is provided as part of cavity **114** formed within the rear docking station wall **52**, the cavity **114** and the flange **110** may be sized, shaped and positioned such that the flange **110** fits snugly in the cavity **114** when rested on the ledge **112**.

[0028] A contact member or lever, shown generally as **58**, for activating and deactivating the device **1** is pivotally mounted in or on the housing **10** on pivotal mounting **62**, defining axis X, extending adjacent and parallel the docking station **20**. Thus, the lever **58** is pivotally mounted on pivotal mounting **62** in general axial alignment with the docking station **20**. The lever **58** includes an exterior lever portion or arm **86** which extends outwardly from the pivotal mounting into the docking station **20** and forms a movable portion **86** of the docking station wall **52**. The lever **58** also has an interior lever portion or arm **88**, generally longitudinally opposed to exterior lever arm **86**, extending inwardly from pivotal mounting **62** into housing **10**. The lever **58** is pivotally movable back and forth relative axis X in opposing rotational directions D**1**, generally clockwise, and D**2**, generally counter-clockwise.

[0029] FIGS. **2** and **3** illustrate the mechanical details of the switch mechanism, shown generally as **23**, for activating and deactivating the device **1**. As shown, first and second wires **3**, **4**, are fed through the rear housing plate **56**. Outside the housing **10**, the wires **3**, **4** are connected to the central vacuum cleaning system, not shown, and notably the motor control switching unit which controls activation and deactivation of a motor of the electrically powered vacuum generating unit. Within the housing **10**, the first and second wires **3**, **4** are respectively connected to first and second terminating screws **26**, **28** constituting first and second terminals **26**, **28** for the wires **3**, **4** in conventional manner. The first terminal **26**, connected to wire **3**, provides a contact point for a first spring arm **70**, connected to terminal **26**, of torsion spring **27**, made of resilient electrically conductive material, for example a resilient metal. The second terminal **28**, connected to wire **4**, provides a mount for a contact arm **29**, also of electrically conductive material, disposed proximal the second spring arm **72** of torsion spring **27**, both spring arms **70**, **72** extending generally outwardly away from the coil **74** of spring **27**.

[0030] A generally u-shaped metal bracket **80**, having longitudinally opposed first and second bracket end plates **82**, **84**, with a middle bracket plate **87** extending therebetween, is also mounted in or connected to housing **10**. The second spring arm **72** is connected to the interior lever arm **88** proximal interior lever arm end thereof, for example by threading of the arm **72** through an arm socket or arm aperture **90**. An arm magnet **96** is also mounted or connected to interior lever arm **88**, preferably generally opposite to the connection of second spring arm **72**, for example on an opposite side of interior lever arm **88**.

[0031] The lever **58**, notably lever arms **86**, **88**, magnet **96**, spring **27** and second spring arm **72** connected to interior lever arm **88**, and bracket end plates **82**, **84**, are configured, for example sized, shaped and positioned, such that, when the probe **18** is removed from docking station **20**, the lever **58** may be pivoted by a user, using exterior lever arm **86**, in directions D**1** and D**2** between, respectively, an activated position **102** (direction D**1**) for the lever **58**, and notably exterior lever arm **86**, corresponding to an activated configuration **100** for the switch mechanism **23**, and a deactivated position **104** (direction D**2**) corresponding to a deactivated configuration **106**. For the deactivated configuration **106**, interior lever arm **88** is positioned distal second bracket end plate **84**, with second spring arm **72** separated from contact member **29**, arm magnet **96** in abutting contact with first

bracket end plate **82**, and exterior lever arm **86** in generally planar registration with rear docking station wall **52**. In the deactivated configuration **106**, magnetic force or attraction exerted by magnet **96** in direction D2, and stronger than any opposing resilient force exerted by spring coil **74** in direction D1 on second spring arm **72** towards second bracket end plate **84**, magnetically holds the magnet **96** against the first bracket end plate **82**. Thus, in deactivated configuration **106**, arm magnet **96** retains interior lever arm **88** positioned distal second bracket end plate **84** and second spring arm **72** separated from contact arm **29**, thus disabling and preventing electrical connection between the second spring arm **72** and the second terminal **28** via contact arm **29**. As the second spring arm **72** is separated from contact arm **29**, there is no electrical connection from first terminal **26** and spring **27** to second terminal **28** and the electrical connection or circuit between the device **1** and the central vacuum cleaning system is disabled. Accordingly, the central vacuum cleaning system, and notably the motor thereof, is deactivated, thereby deactivating the device **1**. As the action of the arm magnet **96** retains the magnet **96** in abutment with the first bracket end plate **82**, the arm magnet **96** retains the lever **58** in the deactivated position **104** and the switch mechanism in the deactivated configuration **106**, thus impeding accidental activation. At the same time, in deactivated configuration **106**, abutment of arm magnet **96** with first bracket end plate **82** prevents further movement of exterior lever arm **86** in direction D2 beyond deactivated position **104** in which the exterior lever arm **86** is in generally planar registration with the docking station wall **52**.

[0032] For the activated configuration **100**, the probe **18** must be removed from the docking station **20**. For the activated configuration **100**, interior lever arm **88** is positioned proximal second bracket end plate **84**, with second spring arm **72** in abutting contact with contact member **29**, arm magnet **96** in abutting contact with second bracket end plate **84**, and exterior lever arm **86** extending generally slightly outwardly spaced apart relative docking station wall **52** in activated position **102** for the lever **58**. In the activated configuration **100**, magnetic force or attraction exerted by the arm magnet **96** in direction D1, and stronger than any opposing resilient force exerted by spring coil **74** in direction D2 on second spring arm **72** towards first bracket end plate **82**, abuttingly holds the magnet **96** against the second bracket end plate **84**. Thus, in activated configuration **100**, magnet **96** retains second spring arm **72** in abutting contact with contact arm **29** and enables electrical connection between the second spring arm **72** and the second terminal **28** via contact arm **29**. Accordingly, flow of electricity is enabled through electrical circuit between spring **27**, contact arm **29**, and terminals **26**, **28** and the motor of the central vacuum cleaning system. The motor of the central vacuum cleaning system is thereby activated, also activating device **1**. As the action of the arm magnet **96** retains the magnet **96** in abutment with the second bracket end plate **84**, the arm magnet **96** retains the lever **58** in the activated position **102** and the switch mechanism **23** in the activated configuration **100**, thus impeding accidental deactivation. At the same time, in activated configuration **100**, abutment of magnet **96** with second bracket end plate **84** prevents further movement of lever **58** in direction D1 beyond activated position **102**.

[0033] As shown in FIGS. **1** and **3**, probe **18**, docking station rear wall **52** and ledge **112**, exterior lever arm **86** and lever **58**, receptacle **50**, and probe flange **110** are configured, and notably sized, shaped, and positioned, such that whenever the probe **18** is parked in the docking station **20** with the probe end **64** in the receptacle **50** and the probe flange **110** resting on the ledge **112**, the probe **18** abuts against the exterior arm **86** and pushes arm **86** of lever **58**, if not already in the deactivated position **104**, in direction D2 into the deactivated position **104**. As the probe **18**, when parked in docking station **20**, abuts against the exterior lever arm **86** of lever **58** in deactivated position **104**, the probe **18** retains the lever in the deactivated position **104** and the switch mechanism **23** in the deactivated configuration **106**. Thus, and conveniently, whenever the probe **18** is parked in the docking station **20**, the probe **18** automatically, by causing rotation of lever **58** in direction D2, places the switch mechanism **23** into the deactivated configuration **106** and prevents rotation of the lever **58** in direction D1, thus preventing placement of the switch mechanism **23** in the activated configuration **100**. Accordingly, whenever the probe **18** is parked in the docking station **20**, the device **1** is automatically deactivated and activation, either intentional or accidental, of the device **1** is prevented. To activate the device **1**, by placing switch mechanism **23** in activated configuration **100**, the probe **18** must first be removed from docking station **20**.

[0034] In use, the auxiliary vacuum device **1** is mounted externally on the wall **6** on the mounting plate **5** of a central vacuum cleaning system which provides a piping network (not shown) extending to strategic cleaning points throughout the premises. The system includes an electrically powered vacuum generating unit connected to the network and operable upon demand by the actuation of the device **1** which is location specific within the premises. For example in domestic premises where there is likely to be a heavy cleaning burden, e.g. the main entrance, laundry room or the garage, an inlet would be provided as would a device dedicated to that location.

[0035] To commence vacuuming, the user must first remove probe **18** from docking station **20**, as explained above. Once the probe **18** is removed from docking station **20**, a user may switch the switch mechanism **23** from the deactivated configuration **106**, to the activated configuration **100**, by simply pivotally moving lever **58**, typically exterior lever arm **86**, in direction D1, typically towards user and away from docking station wall **52** and wall **6** until the lever **58** is in the activated position **102**. As the exterior outer lever arm **86** is moved in direction D1, interior lever arm **88** is moved towards contact arm **29** and second end plate **84** until arm magnet **96** abuts second end plate **84** and second spring arm **72** contacts contact arm **29**, thus establishing electrical connection and enabling the flow of electricity in the device **1** to activate the motor of the central vacuum cleaning system and the device **1**.

[0036] To terminate vacuuming, when the probe **18** is removed from the docking station **20** and the switch mechanism **23** is in the activated configuration **100**, the user simply pivotally moves lever **58**, typically exterior lever arm **86**, in direction D2, typically away from user and towards docking station wall **52** and wall **6** until the lever **58** is in the deactivated position **104**. As the exterior outer lever arm **86** is moved in direction D2, interior lever arm **88** is moved away from contact arm **29** and second end plate **84** until magnet **96** abuts first end plate **82**, thus breaking the electrical connection and disabling the flow of electricity. Alternatively, a user may, at any time, simply insert the probe **18** into the docking station **20**, which also causes the lever **58** to move in direction D2 as just described and places the switch mechanism **23** and device **1** in the deactivated configuration **106**. This dual pos-

sibility for cutting power is a valuable safety feature which can be triggered speedily when needed. Further, the automatic deactivation of the device **1** by parking of probe **18** in docking station **20**, as well as switching between activated and deactivated configurations **100**, **106** is provided by the same simple means, namely action of the lever **58**.

[0037] Referring now to FIG. **4**, therein is shown a variant of the device **1'**. Device **1'** is identical to device **1** in most respects, and notably with regard to switching mechanism **23**, probe **18**, and docking station **20**. However, housing **10'** of device **1'** has a cleaning tool chamber **220** formed in, or otherwise extending inwardly from, front cover **230'** and disposed adjacent switching mechanism **23** and docking station **20**. The cleaning tool chamber **220** provides convenient storage of cleaning tools **200** for attachment to probe **18**. Optional pivotally mounted door **222** may be opened and closed to open or close access to chamber **220** and accessories **200**.

[0038] It will be understood that the device **1**, **1'** may be deployed ab initio in the installation of a central vacuum cleaning system or may be retrofitted to an existing system with suitable modifications at the inlets thereof. It will further be appreciated that the device per se may be enclosed within a cabinet in order to confer an aesthetic quality thereto.

[0039] Although the present invention has been described with a certain degree of particularity, it is to be understood that the disclosure has been made by way of example only and that the present invention is not limited to the features of the embodiments described and illustrated herein, but includes all variations and modifications within the scope and spirit of the invention as hereinafter claimed.

We claim:

1. An auxiliary vacuum device for a central vacuum cleaning system for premises defining areas of occupancy, said system including an electrically powered vacuum generating unit, a system network of piping extending throughout the premises and terminating in at least one inlet formed in one of the walls defining at least some of the areas of occupancy, the device comprising a housing adapted for installation externally of the wall at a mounting plate of the system network, the mounting plate disposed on the wall with the inlet extending through the mounting plate, the housing being provided with a port for communication with said inlet, a connector exterior to the housing, a pipe extending within the housing from said port to said connector, a flexible hose connected to said port and extending externally from the housing, a cleaning tool mounting probe provided on the hose distal the connector, a docking station on housing for parking of the probe therein and extending proximally alongside a proximal side of housing, and a switch mechanism having a pivotally mounted lever extending within the housing and outside of the housing into the docking station, said lever being pivotable, when said probe is disengaged from said docking station, in a first direction into a activated position therefor to place said switch mechanism in an activated configuration in which the electrically powered vacuum generating unit is activated and generates a vacuum to enable vacuuming, and in a generally opposed second direction into a deactivated position therefor to place said switch mechanism in a deactivated configuration in which the electrically powered vacuum generating unit is deactivated, said probe moving said lever in said second direction to place said switch mechanism into said deactivated configuration when said probe is parked in said docking station and holding said switch mechanism in said deactivated configuration when parked in said docking station.

2. The device of claim **1**, wherein said lever is pivotally mounted in axial alignment with said docking station, said lever having an exterior lever arm extending on the outside of the housing into said docking station and a generally longitudinally opposed interior lever arm extending within the housing.

3. The device of claim **2**, wherein the switch mechanism further comprises first and second electrical terminals connected by wires to an electrical power supply and to said electrically powered vacuum generating unit, said lever enabling electrical connection between said terminals and flow of electricity to electrically powered vacuum generating unit when said lever is in said activated position for said activated configuration and disabling said electrical connection when said lever is in said deactivated position for said deactivated configuration.

4. The device of claim **3**, further comprising an electrically conductive torsion spring mounted in said housing, said torsion spring having first and second spring arms, said first spring arm connected to said first electrical terminal and said second spring arm connected to said lever at said interior lever arm, said second spring arm being resiliently movable in said first direction by pivoting of said exterior lever arm in said first direction to enable said electrical connection with said second terminal, the lever being placed thereby in said activated position and said switch mechanism in said activated configuration, and in said second direction by pivoting of said exterior lever arm to disable said electrical connection for said deactivated configuration, the lever being placed thereby in said deactivated position and said switch mechanism in said deactivated configuration.

5. The device of claim **4**, further comprising an electrically conductive contact arm mounted in said housing and connected to said second terminal, said second spring arm being movable by pivoting of said exterior lever arm in said first direction into contact with said contact arm when said lever is placed in said activated position, thereby enabling said electrical connection for said activated configuration, and in said second direction to move said second spring arm away from said contact arm by pivoting of said exterior lever arm in said second direction when said lever in placed in said deactivated position, thereby disabling said electrical connection for said deactivated configuration.

6. The device of claim **5**, further comprising spaced apart first and second metal bracket plates mounted in the housing, said first bracket plate mounted distal said contact arm and said second bracket plate mounted proximal said contact arm, and an arm magnet mounted on said interior lever arm between said plates, said arm magnet contacting said first bracket plate when said switch mechanism is in said deactivated configuration and maintaining by magnetic force said switch mechanism in said deactivated configuration with said lever in said deactivated position, and contacting said second bracket plate when said switch mechanism is in said activated configuration and maintaining by magnetic force said switch in said activated configuration with said lever in said activated position.

7. The device of claim **2**, wherein said docking station comprises a docking station wall extending alongside said proximal side, said exterior lever arm being moved generally clockwise away from said docking station wall when said

lever is moved in said first direction and generally clockwise towards said docking station wall when said lever is moved in said second direction.

8. The device of claim **7**, wherein said exterior arm lever is generally in planar registration with said docking station wall when said lever is in said deactivated position.

9. The device of claim **8**, wherein said docking station comprises a receptacle for releasable and sealing insertion of a probe end of said probe therein when said probe is parked in said docking station, said receptacle being disposed within said housing with said docking station wall extending downwardly and in back of said receptacle.

10. The device of claim **9**, wherein said receptacle comprises a socket, a socket cap plug, a socket cap, and a resilient biasing element, said socket receiving said probe end and said resilient biasing element resiliently biasing said socket cap onto said probe end when inserted into said socket to provide sealing connection therewith when said probe is parked in said docking station.

11. The device of claim **7**, wherein said probe is sized and shaped to abut against said docking station wall when parked in said docking station, said probe pushing said exterior lever arm in said second direction into said deactivated position, thereby placing said switch mechanism into said deactivated configuration, when said probe is parked in said docking station and abutting against said exterior lever arm and holding said lever in said deactivated position, said probe thereby holding said switch mechanism in said deactivated configuration while parked in said docking station.

12. The device of claim **8**, wherein said probe has a probe flange extending at least partially therearound and said docking station wall has a ledge extending thereacross, said ledge and said probe flange being positioned for resting of the probe flange on said ledge when said probe is seated in said docking station with said probe end inserted in said receptacle.

13. The device of claim **12**, wherein said probe flange comprises a metal member and said docking station comprises a docking station magnet disposed adjacent said ledge, said docking station magnet being positioned generally across from said metal member when said probe flange rests on said ledge and thereby magnetically retaining said probe parked in said docking station with said probe flange resting on said ledge.

14. The device of claim **10**, wherein said plug is constructed of a resilient foam.

15. The device of claim **10**, wherein said resilient biasing element comprises a resilient plug spring.

16. The device of claim **10**, wherein said resilient biasing element comprises a resilient foam member.

17. The device of claim **10**, wherein said receptacle further comprises a receptacle cover rigidly connected to said socket, said resilient biasing element being disposed between said socket cap and said receptacle cover.

18. The device of claim **10**, wherein said socket is rigidly mounted in said housing by rigid connection to said front cover.

19. The device of claim **1**, further comprising a cleaning tool chamber formed in said housing for storage of at least one cleaning tool in said chamber, said cleaning tool being attachable to said probe.

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