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(56) Documents Cited:
GB 2416296 A GB 2413943 A
GB 2359735 A

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(54) Abstract Title: A cleaning device

(57) A cleaning appliance, such as a vacuum cleaner 10 comprises a main body 12, a handle assembly 100 and a hose 50. The handle assembly 100 comprises a tube (104, fig 2) and a gripping portion (114, fig 2) fixedly attached thereto. The hose 50 has one end attached to the main body 12. The tube (104, fig 2) is movable relative to the main body 12 between a stored position in which at least a part of the tube (104, fig 2) lies within the hose 50 and an extended position in which the gripping portion (114, fig 2) can be used to manipulate the cleaning appliance 10. By providing such an arrangement, the handle assembly 100 and the hose 50 can be stored in a compact manner. When the user wishes to store the cleaning appliance 10, the tube 104 can be refracted inside the hose 50 for storage. However, when the tube 104 is extended, the gripping portion 114 is at a convenient height to be manipulated by a user. This arrangement requires less space than conventional arrangements. The tube (14, fig 2) can also be completely removed from the hose 50 for above-the-floor cleaning.

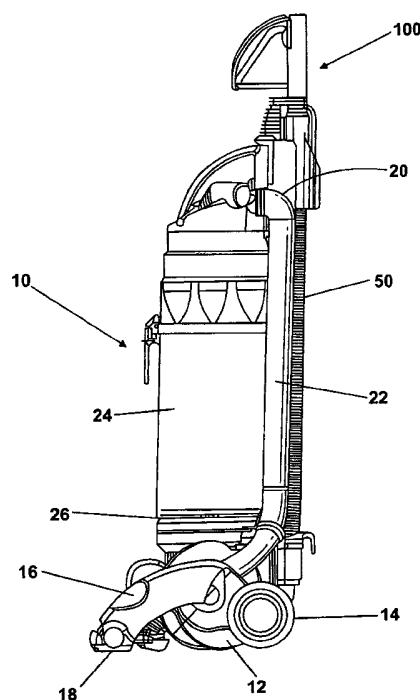


Fig. 1

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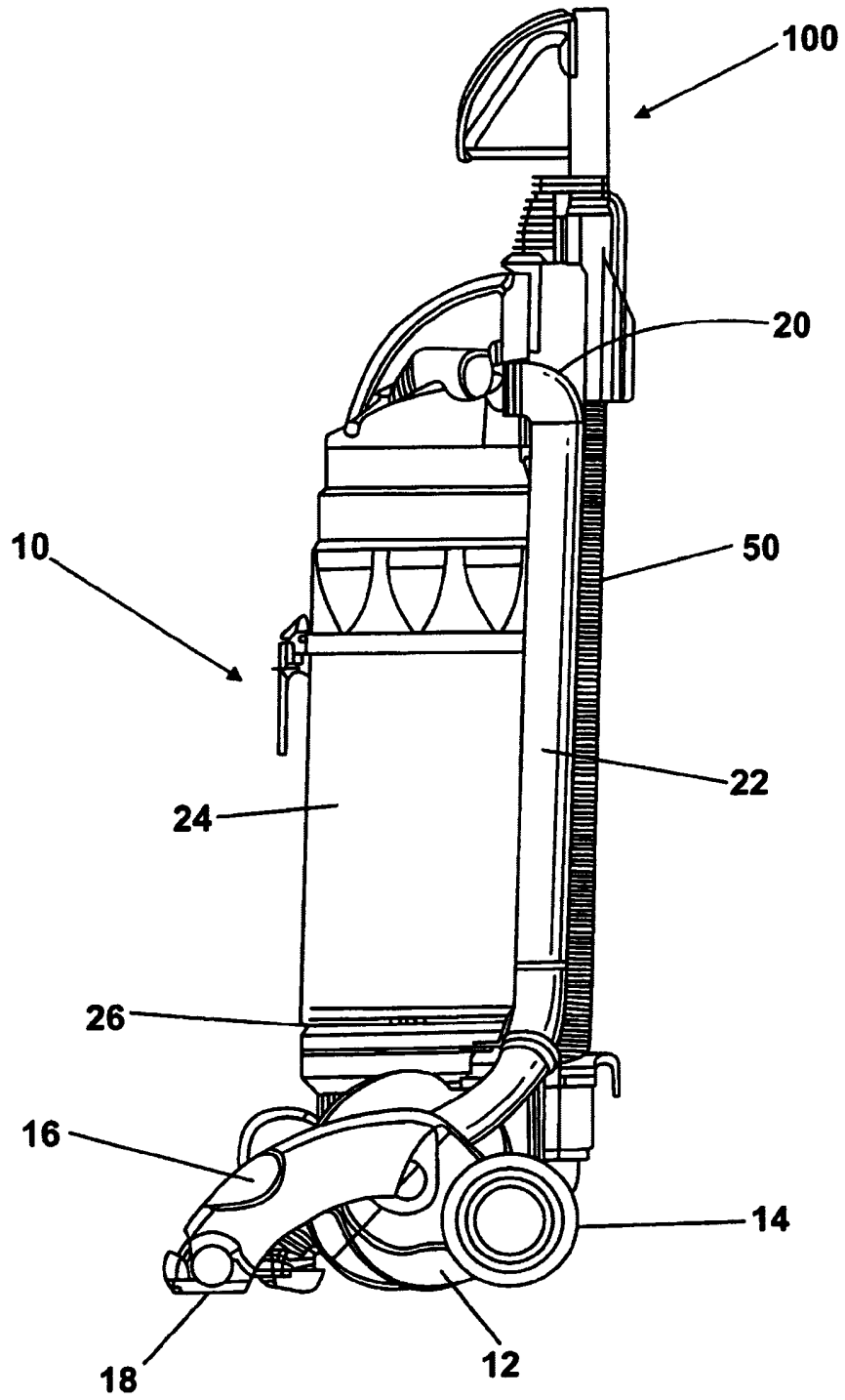


Fig. 1

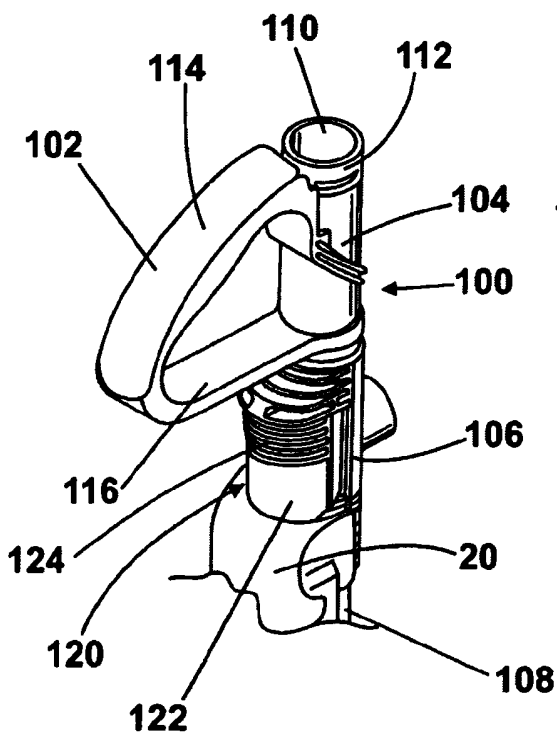


Fig. 2

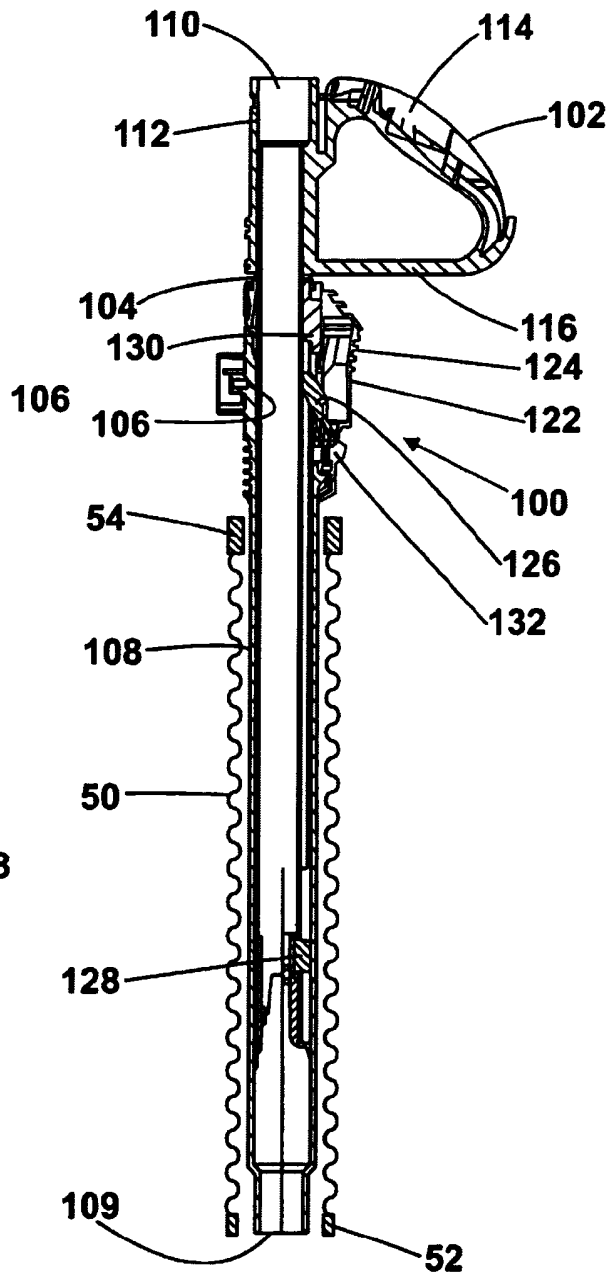
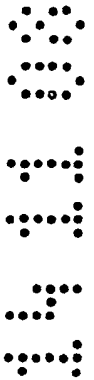


Fig. 3



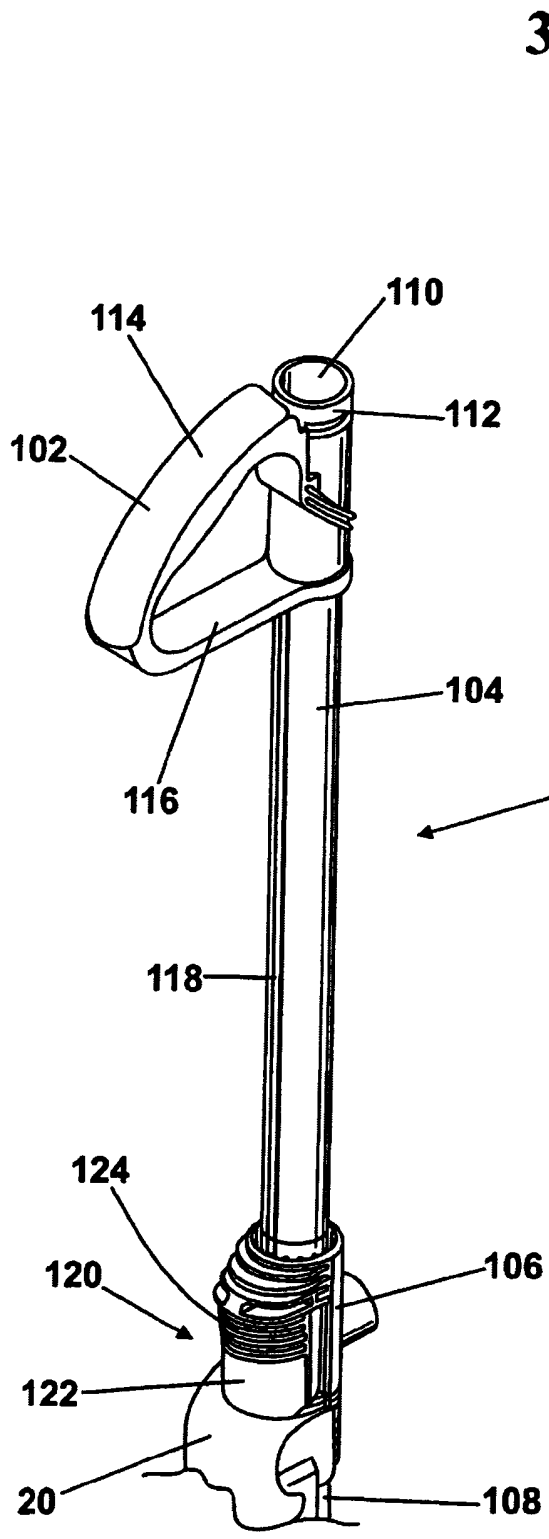


Fig. 4

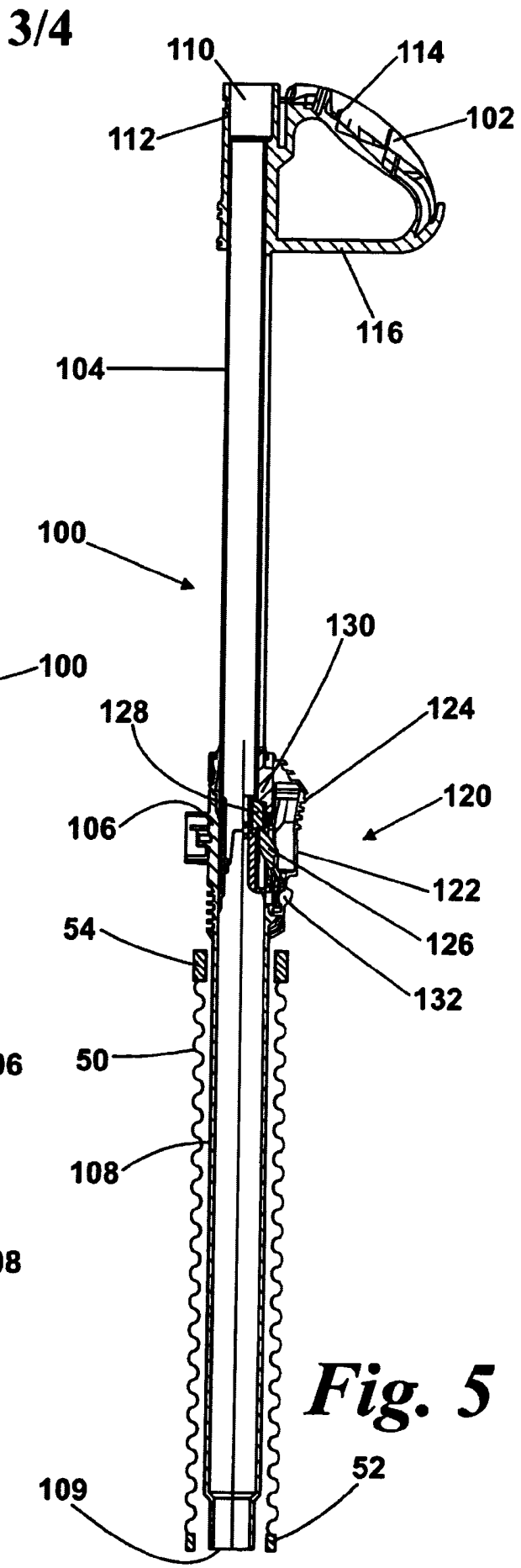
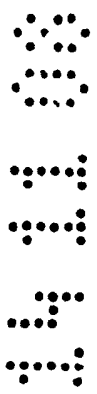


Fig. 5



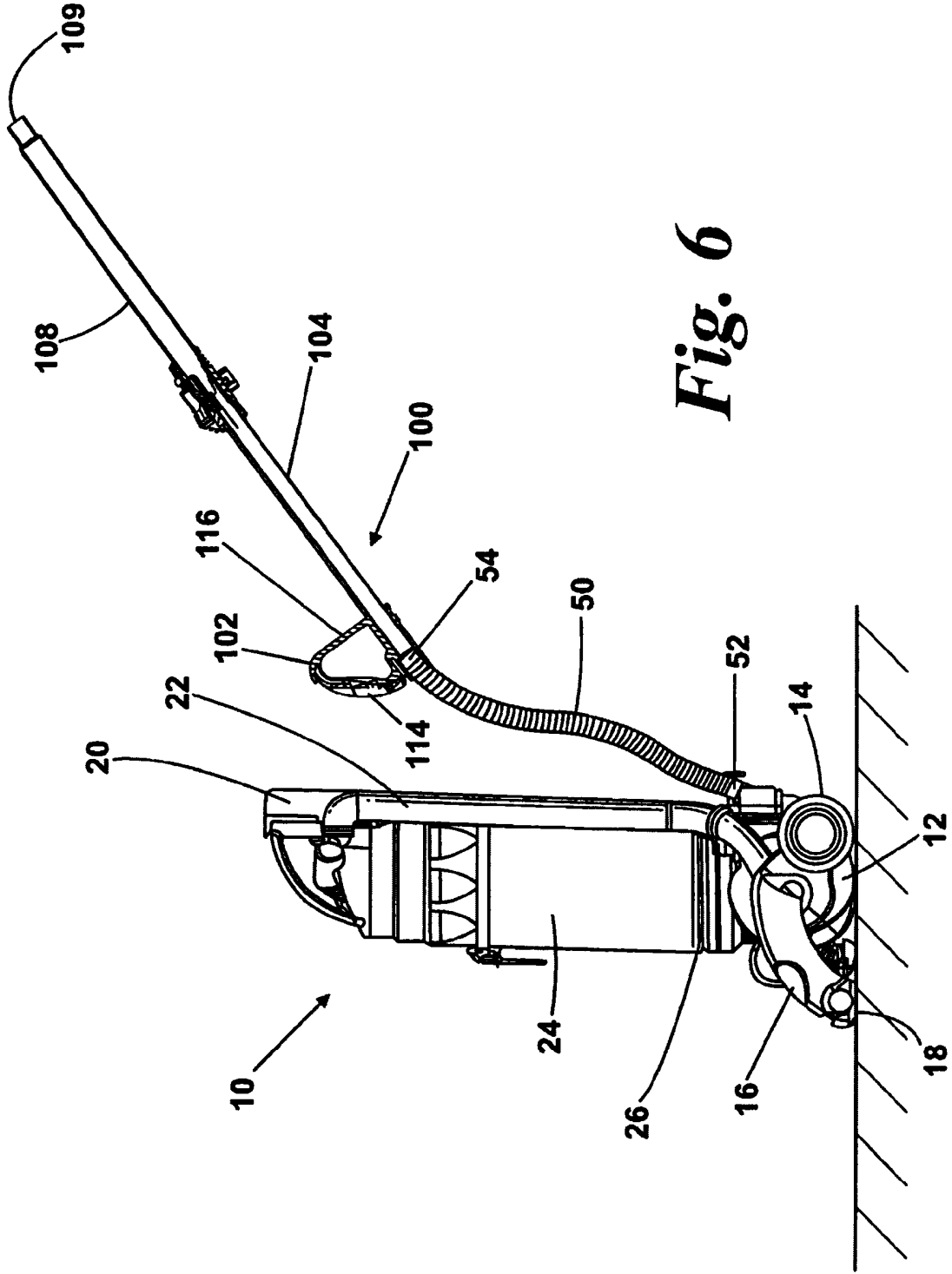
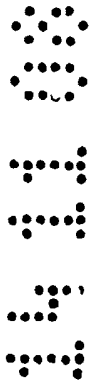


Fig. 6

A Cleaning Appliance

The present invention relates to a cleaning appliance. Particularly, but not exclusively,
5 the present invention relates to a vacuum cleaner.

Upright vacuum cleaners are well known. Further, upright vacuum cleaners that can be converted from a floor cleaning mode into an "above-the-floor" cleaning mode are also well known. In order to carry out both of these cleaning modes, it is common for an
10 upright vacuum cleaner to incorporate a handle assembly which can be used when required for above-the-floor cleaning. A known arrangement is shown in US 4,519,113. In this arrangement, the handle assembly includes a handle and a wand which are attached to the cleaner head such that they form part of the airflow path within the vacuum cleaner when the machine is used in the floor cleaning mode. The handle and a
15 wand are releasable from the cleaner head when above-the-floor cleaning is required.

Whilst this arrangement is simple to implement, the air has to travel through the wand and hose when the machine is used in the floor cleaning mode. This increases losses within the vacuum cleaner. Further, when the machine is used in the floor cleaning mode, the hose hangs behind the handle and wand. This is cumbersome and frustrating
20 for a user, and requires extra storage space.

Another known type of handle assembly forming part of a vacuum cleaner is shown in EP 1 265 519. In this arrangement, a handle and wand are releasably attached to a main body of the vacuum cleaner by a catch. A hose is stored around a part of the wand. The
25 handle and wand can be released from the upper end of the hose, turned around and reconnected. In this way, when the handle assembly is to be used for above-the-floor cleaning, the hose is attached to the handle portion with the wand then projecting away from the hose. This arrangement includes a changeover valve which selectively directs incoming air either through the cleaner head or through the hose. Therefore, when the
30 vacuum cleaner is used for above-the-floor cleaning, no air is drawn through the cleaner head.

A further variation of handle assembly is shown in WO 2006/008444. In this arrangement, the illustrated vacuum cleaner has a handle assembly comprising a hose and a tubular wand which is slideable between a stowed and an extended position with respect to a handle of the vacuum cleaner. The handle assembly is releasable from the remainder of the vacuum cleaner. When attached to the vacuum cleaner, the handle is fixed with respect to the main body.

It is also known to provide an extendible handle on a vacuum cleaner in order to reduce the size of the vacuum cleaner when stored. Such an arrangement is shown in US 2,660,457. In this arrangement, a wand forms part of a handle assembly of the vacuum cleaner shown therein. The wand is extendible to provide a handle which can be gripped by a user. The wand can also be removed from the remainder of the vacuum cleaner and reattached to a hose located at the front of the vacuum cleaner for above-the-floor cleaning purposes. However, this arrangement requires separate storage of a hose, which is inconvenient for a user and adds to the overall size of the appliance.

It is an object of the invention to provide an improved handle assembly for a vacuum cleaner which improves upon the prior art arrangements. It is a further object of the invention to provide an improved handle assembly for a vacuum cleaner which is more compact and easier to store than prior art arrangements.

According to the invention, there is provided a cleaning appliance comprising a main body, a handle assembly and a hose, the handle assembly comprising a tube and a gripping portion fixedly attached thereto and the hose having one end attached to the main body, wherein the tube is movable relative to the main body between a stored position in which at least a part of the tube lies within the hose and an extended position in which the gripping portion can be used to manipulate the cleaning appliance in use.

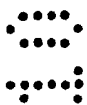
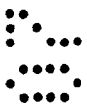
By providing such an arrangement, the handle assembly and the hose can be stored in a compact manner. When the user wishes to store the cleaning appliance, the tube can be

retracted inside the hose for storage. However, when the tube is extended, the gripping portion is at a convenient height to be manipulated by a user. This arrangement requires less space than conventional arrangements.

- 5 Preferably, the handle assembly is removable from the main body. More preferably, the handle assembly further comprises a connecting portion which is adapted and arranged to connect releasably to the main body, the tube being slideably movable with respect to the connecting portion. By providing such an arrangement, the handle assembly can be releasably attached to the main body in order to be used to manipulate the vacuum cleaner in use, but can also be detached in order to enable above-the-floor cleaning to be carried out.

Preferably, wherein the handle assembly further comprises a further tube connected to the connecting portion, the tube being telescopically slideable within the further tube.

- 15 More preferably, at least a part of the further tube lies within the hose when the handle assembly is releasably connected to the main body.



- 20 By providing such an arrangement, the tube and further tube can be extended to form a longer wand so that areas above the floor such as ceilings or doors can be cleaned easily. However, the tube and further tube can be retracted inside one another for convenient storage, or to enable cleaning of areas which are not suited to a larger wand.

- 25 Preferably, the gripping portion extends away from the tube and forms a part of a handle. By providing such an arrangement, the handle can be conveniently gripped by a user when the vacuum cleaner is used for floor cleaning or above-the-floor cleaning.

An embodiment of the invention will now be described with reference to the accompanying drawings, in which:

Figure 1 is a side view of a cleaning appliance according to the invention in the form of an upright vacuum cleaner incorporating a handle assembly which is shown in a stored configuration;

- 5 Figure 2 is an isometric view of the handle assembly showing the handle assembly in the stored configuration and attached to a part of the upright vacuum cleaner of Figure 1;

Figure 3 is a side section of the handle assembly of Figure 2 showing the handle
10 assembly in the stored configuration;

Figure 4 is an isometric view of the handle assembly of Figure 2 showing the handle assembly in an extended configuration;

- 15 Figure 5 is a side section of the handle assembly of Figure 2 showing the handle assembly in the extended configuration; and



Figure 6 is a side view of the vacuum cleaner of Figure 1 showing the handle assembly released from the vacuum cleaner and configured for above-the-floor cleaning.



20 A cleaning appliance according to the invention in the form of a vacuum cleaner is shown in Figure 1. Figure 1 shows an upright vacuum cleaner 10 having a main body 12 which includes a motor and fan unit (not shown) and a pair of wheels 14. A cleaner head 16 is pivotably mounted on the lower end of the main body 12 and a dirty air inlet 18 is provided in the underside of the cleaner head 16 facing the floor surface. The main
25 body 12 further includes a spine 20 which extends upwards and includes ducting 22 for carrying an airflow.



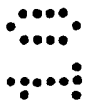
30 Separating apparatus 24 is releasably held on the main body 12 adjacent the spine 20. In the embodiment shown, the separating apparatus 24 comprises a cyclonic separator but this could be replaced by a filter, a bag or a combination of different known separation

devices. The nature of the separating apparatus 24 is not material to the present invention.

5 The interior of the separating apparatus 24 is in communication with the dirty air inlet 18 through the ducting 22 in the spine 20. Further, the separating apparatus 24 can be removed from the main body 12 for emptying purposes. The main body 12 also includes a plurality of outlet ports 26 for exhausting air from the vacuum cleaner 10. The outlet ports 26 are located below the separating apparatus 24. These features are not material to the present invention and will not be discussed further.

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The vacuum cleaner 10 includes a hose 50 and a handle assembly 100. When attached to the vacuum cleaner 10 as shown in Figure 1, a part of the handle assembly 100 extends inside the hose 50. The handle assembly 100 can be detached from the vacuum cleaner 10 and arranged so as to enable above-the-floor cleaning. These features will be
15 discussed further later. The handle assembly 100 is shown in a stored configuration in Figure 1. When the handle assembly 100 is in the stored configuration, the vacuum cleaner 10 is compact and easy to store.



The handle assembly 100 is shown in more detail in Figures 2 and 3. For clarity, Figure 20 2 shows only the upper end of the handle assembly 100 and a part of the spine 20 of the vacuum cleaner 10. Figure 3 shows the complete handle assembly 100 and hose 50 removed from the remainder of the vacuum cleaner 10. The handle assembly 100 is shown in the stored configuration in Figures 2 and 3.

25 The handle assembly 100 comprises a handle 102, a tubular wand 104, a connecting portion 106 and a fixed tube 108. The connecting portion 106 is adapted to connect to the spine 20 of the vacuum cleaner 10. The fixed tube 108 is attached to the connecting portion 106 and extends downwards from the connecting portion 106. The fixed tube 108 is hollow inside and has an opening 109 at the lower end.

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The tubular wand 104 is able to slide with respect to the connecting portion 106 between a retracted position (as shown in Figures 2 and 3) and an extended position (as shown in Figures 4 and 5). Therefore, when the handle assembly 100 is attached to the main body 12 of the vacuum cleaner 10, the tubular wand 104 is able to slide with respect to the main body 12. The tubular wand 104 has a diameter which is smaller than that of the fixed tube 108 so that, when the tubular wand 104 is in the retracted position, a significant portion of the tubular wand 104 can be stored within the fixed tube 108. This is shown in Figure 3. The tubular wand 104 and the fixed tube 108 lie coaxially with respect to one another, such that the tubular wand 104 is able to slide within the fixed tube 108.

The tubular wand 104 is hollow inside and is open at its upper end 110. The open upper end 110 forms a connector 112 which is adapted to receive an end of the hose 50 when above-the-floor cleaning is required. A cover (not shown) may be provided over the upper end 110 to prevent ingress of dirt and dust into the tubular wand 104 and also to improve the appearance of the handle assembly 100.

The handle 102 is fixedly attached to the upper end 110 of the tubular wand 104 and moves with respect to the connecting portion 106 when the tubular wand 104 is slid between the retracted and extended positions. The handle 102 has a gripping portion 114 and a support member 116. The gripping portion 114 extends away from the tubular wand 104 and is arranged to be gripped by a user when manoeuvring the vacuum cleaner 10 across a floor surface or during above-the-floor cleaning. The support member 116 provides mechanical support for the gripping portion 114.

The hose 50 is secured to the main body 12 of the vacuum cleaner by a first connector 52 located at a first end of the hose 50. The first connector 52 is releasable so that the hose 50 can be removed for cleaning or replacement. However, other arrangements could be used; for example, a permanent connection to the main body 12 of the vacuum cleaner 10. The hose 50 also has a second connector 54 located at a second end of the

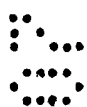
hose 50. The second connector 54 is arranged to connect to the connector 112 when above-the-floor cleaning takes place.

Further, when the handle assembly 100 is stored on the vacuum cleaner 10, substantial portions of the tubular wand 104 and the fixed tube 108 lie inside the hose 50. This is shown in Figure 3. The hose 50 sits around the outside of the fixed tube 108 but does not seal against it. By storing the tubular wand 104, the fixed tube 108 and the hose 50 coaxially with respect to one another, the handle assembly 100 is compact and easy to store.

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In the configuration shown in Figures 1 and 2, no airflow is carried by the hose 50. This is because the vacuum cleaner 10 has a change-over valve (not shown) which selectively draws air in through the dirty air inlet 18 on the cleaner head 16 or through the hose 50. The change-over valve is operated by the lower end of the fixed tube 108.

15 When the handle assembly 100 is stored on the vacuum cleaner 10 in the configuration shown in Figures 1 and 2, the fixed tube 108 engages with a part of the change-over valve in order to move the change-over valve into a position in which air is drawn in through the dirty air inlet 18.



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When the tubular wand 104 is in the retracted position (as shown in Figures 2 and 3), the handle 102 lies directly above the connecting portion 106 and the tubular wand 104 is stored within the fixed tube 108. In this configuration, the vacuum cleaner 10 is compact and easy to store. However, in order for the user to use comfortably the vacuum cleaner 10 to clean a floor surface, the handle assembly 100 needs to be moved to an extended configuration.

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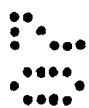
The handle assembly 100 is shown in the extended configuration in Figures 4 and 5. Figure 4 shows only the upper end of the handle assembly 100 and a part of the spine 20 of the vacuum cleaner 10. Figure 5 shows the complete handle assembly 100 and hose 50 removed from the remainder of the vacuum cleaner 10 for clarity. In the extended configuration, the tubular wand 104 extends upwardly away from the connecting

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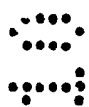
portion 106. In this configuration, the handle 102 is at a convenient height to be gripped by a standing user. Therefore, the vacuum cleaner 10 can be manoeuvred easily across a floor surface using the handle 102.

- 5 In order to facilitate the extension and retraction of the tubular wand 104 between the positions shown in Figures 3 and 5, the tubular wand 104 has a longitudinal groove 118 (this is best shown in Figure 4) which cooperates with a complementary lug (not shown) located on the connecting portion 106. The longitudinal groove 118 and lug guide the tubular wand 104 along a linear path between the retracted and extended positions with
 10 respect to the connecting portion 106. Further, the longitudinal groove 118 and lug prevent the tubular wand 104 from rotating about the axis of movement with respect to the connecting portion 106.

15 The connecting portion 106 further includes a locking mechanism 120. The locking mechanism 120 is arranged to secure the handle assembly 100 to the spine 20 of the vacuum cleaner 10 as shown in Figures 1, 2 and 4. The locking mechanism 120 is also arranged to lock the tubular wand 104 in the extended position (as shown in Figures 4 and 5).



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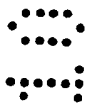
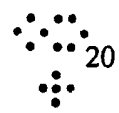
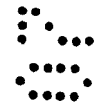
- The locking mechanism 120 includes an actuator 122 which is pivotably mounted on the connecting portion 106. The actuator 122 is arranged to be pressed by a user to release the handle assembly 100 from the spine 20 and to unlock the tubular wand 104. The actuator 122 is pivotably located on a part of the connecting portion 106 which faces forwardly away from the user when the handle assembly 100 is connected to the
 25 vacuum cleaner 10. This makes the actuator 122 easily graspable by a user. The upper end of the actuator 122 has a plurality of parallel ribs 124 which define a user-operable button.

- 30 The locking mechanism 120 also includes a first locking arrangement comprising a wand catch 126, a lug 128 and a shoulder 130. The wand catch 126 (Figures 3 and 5) is pivotably connected to the connecting portion 106. The wand catch 126 engages with

the lug 128 to prevent the tubular wand 104 from moving downwardly. The tubular wand 104 is also prevented from moving upwardly by the shoulder 130 located towards the upper end of the connecting portion 106. When the wand catch 126 is engaged with the tubular wand 104, the tubular wand 104 is prevented from sliding with respect to the connecting portion 106 due to the interaction between the lug 128, the wand catch 126 and the shoulder 130. The engagement between these parts locks the tubular wand 104 in the extended position as shown in Figure 5.

When pressed, the actuator 122 engages with the wand catch 126 and pivots the wand catch 126 away from the tubular wand 104 to release the wand catch 126 from its engagement with a lug 132.

The locking mechanism 120 also includes a second locking arrangement comprising a main body catch 132. The main body catch 132 is adapted to engage with a part (not shown) of the main body 12 of the vacuum cleaner 10 in order to secure the handle assembly 100 to the main body 12. The main body catch 132 is also releasable by pressing the actuator 122.



The arrangement described above is particularly suited to a small upright vacuum cleaner, commonly known as a stick-vacuum. Stick-vacuums are generally much smaller in size than conventional upright vacuum cleaners. Therefore, they tend to be less powerful and comprise fewer features. However, the above arrangement allows the handle assembly and the hose to be compact when stored yet to have excellent functionality.

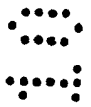
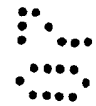
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In use, the user starts with the vacuum cleaner 10 in the configuration shown in Figure 1. In this configuration, the handle assembly 100 is in the stored configuration; the handle assembly 100 is secured to the main body 12 of the vacuum cleaner 10 and the tubular wand 104 is in the retracted position. In this position, a part of the tubular wand lies within the hose 50. In order to configure the vacuum cleaner 10 for cleaning a floor surface, the user extends the tubular wand 104 by pulling upwardly on the handle 102

until the tubular wand 104 is locked in the extended position shown in Figure 4. The locking mechanism 120 is now in the first configuration as shown in Figure 6.

The user then switches the vacuum cleaner 10 on so that the motor and fan unit draws
 5 dirty air into the vacuum cleaner 10 via the dirty air inlet 18. The user manipulates the handle 102 to manoeuvre the vacuum cleaner 10 across the floor surface in order to carry out a cleaning operation. The dirty air, carrying dirt and dust from the floor surface, is drawn into the separating apparatus 24 via the ducting 22 in the spine 20. Dirt and dust is separated from the airflow by the separating apparatus 24 and retained
 10 therein. The cleaned air then passes from the separating apparatus 24, through a pre-motor filter (not shown), across the motor for cooling and through a post-motor filter (not shown) before being ejected from the vacuum cleaner 10 via the outlet ports 26.

The user may also wish to clean surfaces above the floor. In order to do this the user
 15 depresses the actuator 122. This moves the locking mechanism 120 to unlock the main body catch 132 and release the connecting portion 106 from the spine 20. The handle assembly 100 can then be removed from the main body 12 of the vacuum cleaner 10. As the user removes the handle assembly 100 from the main body 12, the fixed tube 108 will slide out of the hose 50. When the fixed tube 108 is removed from the stored position shown in Figures 2 and 3, the change-over valve switches the airflow path to draw air in through the hose 50 instead of the dirty air inlet 18.

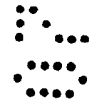


Once the handle assembly 100 is released from the main body 12 of the vacuum cleaner 10 and the hose 50, the user turns the handle assembly 100 around and attaches the
 25 second connector 54 of the hose 50 to the connector 116 adjacent the handle 102. The second connector 54 attaches to the connector 116 by way of a catch (not shown) although other arrangements, such as a friction fit or a snap fit, may alternatively be used. The vacuum cleaner 10 is now configured for above-the-floor cleaning. This configuration is shown in Figure 6. The user then grips the gripping portion 114 of the
 30 handle 102 and manipulates the handle assembly 100 to clean, for example, walls, doors

or ceilings. Optionally, an accessory tool such as a stair tool or a crevice tool may be attached to the distal end of the fixed pipe 108.

When the user has finished the above-the-floor cleaning operation, the user may wish to return the vacuum cleaner 10 to the floor cleaning mode. In order to do this, the user disconnects the second connector 54 from the connector 116, turns the handle assembly 100 around and re-inserts the fixed tube 108 back into the end of the hose 50. The user also aligns the connecting portion 106 with the spine 20 of the vacuum cleaner 10 in order to reattach the handle assembly 100 to the main body 12 of the vacuum cleaner 10.

The handle assembly 100 is now releasably secured to the main body 12 of the vacuum cleaner 10 by engagement of the main body catch 132 with a part of the main body 12 of the vacuum cleaner. The tubular wand 104 also remains locked in the extended position by engagement between the wand catch 126, the lug 128 and the shoulder 130. The replacement of the handle assembly 100 on the vacuum cleaner 10 operates the change-over valve which switches the airflow path back to draw air in through the dirty air inlet 18. The vacuum cleaner 10 is now re-configured for floor cleaning without the user having to be concerned about returning the tubular wand 104 to the extended position. The tubular wand 104 is also prevented from collapsing unexpectedly which may cause injury or be frustrating.



When the user has finished the cleaning operation, the vacuum cleaner 10 is switched off. In order to return the vacuum cleaner 10 to a storage configuration as shown in Figure 1, the user depresses the actuator 122. This action unlocks the wand catch 126 from the tubular wand 104 and allows the tubular wand 104 to be collapsed from the extended position into the retracted position for storage. The geometry of the connecting portion 106 ensures that the handle assembly 100 will not fall away from the vacuum cleaner 10 during this process unless the user desires to remove the handle assembly 100. The vacuum cleaner 10 is now back in the configuration shown in Figure 1.

The invention is not limited to the detailed description given above. Variations will be apparent to the person skilled in the art. For example, there also need not be a fixed tube. Instead, a single tube or tubular wand may be provided.

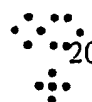
- 5 Additionally, the whole of the tube or tubular wand may lie within the hose when stored. Further, the whole of the fixed tube may also lie within the hose.

The handle assembly need not be releasable from the main body of the vacuum cleaner. What is important is that the tube or tubular wand moves with respect to the main body
10 so that, when stored, at least a part of the tube or tubular wand lies within the hose. For example, the tube or tubular wand could be extended in order to access the hose, and retracted into the hose for storage.

The handle need not extend from the tubular wand. Instead, a contoured or textured
15 gripping portion may be provided on the surface of the tubular wand to enable the tubular wand to be manipulated comfortably by a user.



Additionally, the tubular wand may have more positions than merely retracted and extended. Notches may be provided in the longitudinal groove to allow the wand to be
20 locked in a number of different positions of extension.



Further, other forms and arrangements of the wand catch and main body catch may be used; for instance, electronic or magnetic catches. If mechanical catches are used,
25 arrangements other than pivotable catches may be used; for example, sliding or deformable catches.

Alternative forms of actuator may be used. The actuator need not be pivotable nor need it comprise a user operable button. The actuator may be electronically operated or may comprise sliding or deformable components.

The cleaning appliance need not be an upright vacuum cleaner. The invention is applicable to other types of vacuum cleaner, for example, stick-vacuums. Further, the present invention is applicable to other types of cleaning appliances, for example, a wet and dry machine or a carpet shampooer.



CLAIMS

1. A cleaning appliance comprising a main body, a handle assembly and a hose, the handle assembly comprising a tube and a gripping portion fixedly attached thereto and the hose having one end attached to the main body, wherein the tube is movable relative to the main body between a stored position in which at least a part of the tube lies within the hose and an extended position in which the gripping portion can be used to manipulate the cleaning appliance in use.

2. A cleaning appliance as claimed in claim 1, wherein the handle assembly is removable from the main body.

3. A cleaning appliance as claimed in claim 2, wherein the handle assembly further comprises a connecting portion which is adapted and arranged to connect releasably to the main body, the tube being slideably movable with respect to the connecting portion.

4. A cleaning appliance as claimed in claim 3, wherein the connecting portion includes a first locking arrangement for releasably securing the handle assembly to the main body.

5. A cleaning appliance as claimed in claim 4, wherein the connecting portion further includes a second locking arrangement for releasably locking the tube in the extended position.

6. A cleaning appliance as claimed in any one of claims 3 to 5, wherein the handle assembly further comprises a further tube connected to the connecting portion, the tube being telescopically slideable within the further tube.

7. A cleaning appliance as claimed in claim 6, wherein at least a part of the further tube lies within the hose when the handle assembly is releasably connected to the main body.

8. A cleaning appliance as claimed in any one of the preceding claims, wherein the tube is hollow and has a first opening located adjacent the gripping portion which is adapted to connect to the hose.

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9. A cleaning appliance as claimed in claims 6 and 8, wherein the further tube is hollow and has a second opening in fluid communication with the first opening.

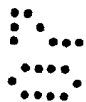
10. A cleaning appliance as claimed in claim 10, wherein the second opening is adapted and arranged to receive an accessory tool or floor tool.

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11. A cleaning appliance as claimed in any one of the preceding claims, wherein the gripping portion extends away from the tube and forms a part of a handle.

12. A cleaning appliance as claimed in any one of the preceding claims, wherein the cleaning appliance is a vacuum cleaner.

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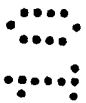


13. A cleaning appliance as claimed in claim 12, wherein the vacuum cleaner is an upright vacuum cleaner.



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14. A cleaning appliance as claimed in claim 12, wherein the vacuum cleaner is a stick vacuum.



15. A cleaning appliance substantially as hereinbefore described with reference to the accompanying drawings.

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Application No: GB0715563.3

Examiner: Rhodri Evans

Claims searched: 1-15

Date of search: 19 October 2007

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
A	-	GB 2416296 A (Dyson)
A	-	GB 2413943 A (Dyson)
A	-	GB 2359735 A (Dyson)

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X:

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Worldwide search of patent documents classified in the following areas of the IPC

A47L

The following online and other databases have been used in the preparation of this search report

WPI, EPODOC

International Classification:

Subclass	Subgroup	Valid From
A47L	0005/32	01/01/2006
A47L	0009/24	01/01/2006
A47L	0009/32	01/01/2006