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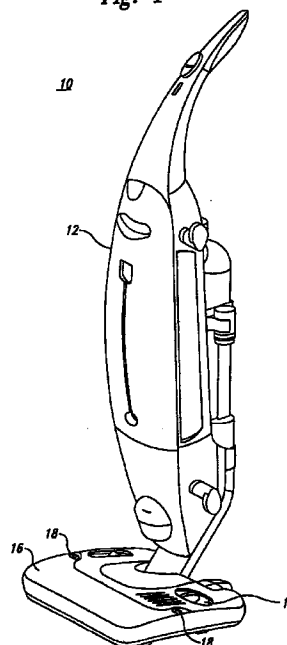
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(54) **Vacuum cleaner having top access brush panel**

(57) An access panel mounted atop a vacuum nozzle base via finger operated latches. When the latches are undone the access panel is removed from the top surface of the nozzle base allowing access to the parts of the brush assembly. The panel also has an integral arm which engages a safety motor switch such that when the panel is removed the motor switch is switched into an open circuit position preventing the motor from continued operation.

*Fig. 1*



**EP 0 909 547 A2**

## Description

### TECHNICAL FIELD

[0001] This application is directed toward a brush assembly access panel positioned on the top surface of the nozzle base of a vacuum cleaner unit.

### BACKGROUND OF THE INVENTION

[0002] Upright vacuum cleaners generally comprise, among other elements, an adjustable handle/body assembly connected to a nozzle base that houses a motor, an air flow system, and a brush assembly. Access to the brush assembly for maintenance purposes requires tilting the entire vacuum cleaner unit to such an angle until the brush assembly is exposed from the bottom side of the nozzle base, *i.e.*, the side that remains in contact with the surface being cleaned. This is a cumbersome exercise that usually requires turning the entire vacuum cleaner either completely over or at least on its side in order to expose the parts which need to be manipulated.

[0003] Thus, a need exists for a vacuum cleaner which provides access to the brush assembly from the top side of the vacuum nozzle base.

### SUMMARY OF THE INVENTION

[0004] The present invention comprises an access panel mounted atop a vacuum nozzle base via a pair of finger operated latches. When the latches are undone the access panel is removed from the top surface of the nozzle base allowing access to the parts of the brush assembly. The panel further has an integral arm which engages a motor switch such that when the panel is removed the motor switch is switched into an open circuit position for safety reasons.

### BRIEF DESCRIPTION OF THE DRAWINGS

#### [0005]

Figure 1 illustrates an upright vacuum cleaner having a top access panel.

Figure 2 illustrates the top access panel of Figure 1 in the process of being removed.

### DETAILED DESCRIPTION OF THE INVENTION

[0006] Referring to Figure 1, an upright vacuum cleaner 10 is shown generally comprising an adjustable handle/body assembly 12 connected to a nozzle base 14 that houses a motor, an air flow system, and a brush assembly.

[0007] The brush assembly 28 (Fig. 2) comprises a brush dowel and a drive belt. The drive belt connects the motor to the brush dowel, such that operation of the

motor causes the belt to spin, in turn causing the brush dowel to rotate engaging the bristles of the brush against the surface being cleaned.

[0008] The nozzle base 14 is substantially rectangular having length, width, and height. Length defines the front-to-back dimension of the nozzle base 14. Width defines the side-to-side dimension of the nozzle base 14, *i.e.*, effective sweeping distance of the vacuum cleaner. Height defines the top-to-bottom dimension of the nozzle base 14. The resulting volume houses, among other parts, the brush assembly 28 (Fig. 2).

[0009] An aperture 26 is defined in the node base 14, positioned at the front end of the top side of node base 14 over the brush assembly. As shown in the figures, the aperture 26 is in register with the brush assembly 28.

[0010] An access panel 16 is selectively positionable between a closed position (Fig. 1), in which the access panel 16 covers the aperture 26, and an open position (Fig. 2), in which the access panel 16 is spaced from the aperture 26. The access panel 16 extends substantially the width and approximately half the length of nozzle base 14. As shown in the figures, the access panel 16 is also positioned at the front end of the top side of nozzle base 14 over the brush assembly 28. The access panel 16 is connected to the nozzle base 14 by a pair of latches 18 which are situated on opposite corners of the back edge of access panel 16. The latches 18 are designed to be finger operated, *i.e.*, no tools are required to remove and replace the access panel 16. Many conventional latches are suitable for securing the access panel 16 in place, such as the rocker style latch shown in Figure 2, which is pivotally mounted to the access panel at one end and which has a detent mechanism at the other end for selectively engaging a pair of lips 19 formed on the interior of the nozzle base 14. A sliding style latch would also be suitable.

[0011] The access panel 16 may additionally be connected to the nozzle base 14 by a set of hooks or fingers (not shown) which may be formed on the front edge of the access panel 16 for engaging a lip or flange (not shown) formed in the aperture 26 of the node base 14. Alternatively, a set of hinges (not shown) may be formed along the front edge of the access panel 16 and aperture 26 for pivotally mounting the front edge of the access panel 16 to the nozzle base 14.

[0012] Access panel 16 can be removed from nozzle base 14 by unlatching the latches 18. Once the latches 18 are undone, access panel 16 can be lifted and removed from the top side of nozzle base 14 thereby providing access to the parts within nozzle base 14 including the brush assembly 28. Where hinges are employed to mount the access panel 16 to the nozzle base 14, once latches 18 are undone the access panel 16 is pivoted into the open position, thereby providing access to the parts with the nozzle base 14.

[0013] Figure 2 illustrates the node base 14 of Figure 1 with the top access panel 16 in the process of being removed. With the panel partially removed motor switch

22 is visible. A variety of switch devices may be employed, so long as an open circuit condition exists when the access panel 16 is removed. A switch from a family of miniature-switches identified as the X3 Series (Trademark), available from Burgess-SALA Electronics of Buffalo Grove, Illinois, U.S.A, would be suitable. Access panel 16 is further equipped with an integral arm 20 which operably engages motor switch 22 (shown in broken lines). When integral arm 20 extends through an aperture 24 formed in the node base 14 to engage switch 22 the circuit powering the vacuum cleaner 10 is closed and operable. However, when access panel 16 is removed from node base 14 by releasing latches 18 then the circuit connection provided by integral arm 20 is broken and power is prohibited from operating the vacuum cleaner 10. This is a safety feature designed to ensure that the motor can not operate while access panel 16 is removed from node base 14. Thus, even if the vacuum 10 is plugged in and the main power switch (not pictured) is switched "on", the motor will not operate due to a break in the circuit caused by removing access panel 16. An operator is now free to manipulate the parts within node base 14 without fear of injury due to sudden movement of the parts. Providing access to the switch 22 through the aperture 24 is an additionally safety feature which prevents the switch 22 from being accidentally closed by the operator while the access panel 16 is open. It should be noted that none of the wiring is exposed, thereby protecting the operating from injury due to electric shock.

**[0014]** While the invention has been described with respect to the description above, it will be noted that variations and modifications may be effected without departing from the spirit and scope of the invention as a whole. For instance, the number and position of the latches connecting the access panel 16 and the nozzle base 14 may be altered without compromising the invention.

## Claims

1. A vacuum cleaner brush assembly access system comprising:

a vacuum cleaner having a nozzle base which houses a brush assembly;  
 an access panel removably seated on a top side of said nozzle base; and  
 at least one latch for connecting said access panel to said nozzle base such that unlatching said at least one latch and removing said access panel exposes said brush assembly sufficiently to allow an operator to manipulate said brush assembly.

2. The brush assembly access system of claim 1, further comprising:

a motor switch seated within said nozzle base; and  
 an integral arm having at least one electrical contact downwardly extending therefrom attached to the underside of said access panel, said contact operably contacting said motor switch when said access panel is seated; and said contact displaced from said motor switch when said access panel is unlatched and removed from said nozzle base thereby creating a non operable open circuit condition.

3. The brush assembly access system of claim 2 wherein said at least one latch is finger operable.

4. The brush assembly access system of claim 3 wherein:

said nozzle base is substantially rectangular having a length defining the front-to-back dimension, a width defining the side-to-side dimension, and a height defining the top-to-bottom dimension;

said access panel is positioned at the front end of the top side of said nozzle base extending substantially the width and approximately half the length of said nozzle base; and

said at least one latch comprises a pair of latches situated on opposite corners of the rear edge of said access panel.

5. A vacuum cleaner brush assembly access system comprising:

a vacuum cleaner having a nozzle base, the nozzle base housing a brush assembly and having an aperture defined in a top side thereof, the aperture in register with the brush assembly; and

an access panel selectively positionable between a closed position in which the access panel covers the aperture of the nozzle base and an open position in which the access panel is spaced from the aperture of the nozzle base.

6. The brush assembly access system of claim 5, further comprising:

a motor switch seated within said nozzle base, the motor switch operatably engagable by the access panel between a closed circuit state when the access panel is the closed position and an open circuit state when the access panel is the open position.

7. A vacuum cleaner brush assembly access system comprising:

a vacuum cleaner having a nozzle base which houses a brush assembly;

an access panel having a width and a length greater than a width and a length of the brush assembly, the access panel removably seated over the brush assembly on a top side of said nozzle base.

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8. A vacuum cleaner brush assembly access system comprising:

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a vacuum cleaner having a nozzle base, the nozzle base housing a brush assembly and having an aperture defined in a top side thereof, the aperture in register with the brush assembly; and

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an access panel selectively positionable between a closed position in which the access panel covers the aperture of the nozzle base and an open position in which the access panel is spaced from the aperture of the nozzle base a motor switch in electrical connection with a motor of the vacuum cleaner, the motor switch operatably engagable by the access panel between a closed circuit state when the access panel is the closed position and an open circuit state when the access panel is the open position.

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9. The vacuum cleaner brush assembly access system of claim 9, further comprising an integral arm extending from the access panel, the integral arm dimensioned to be removably received in a switch aperture defined in the nozzle base for operatably engaging the motor switch.

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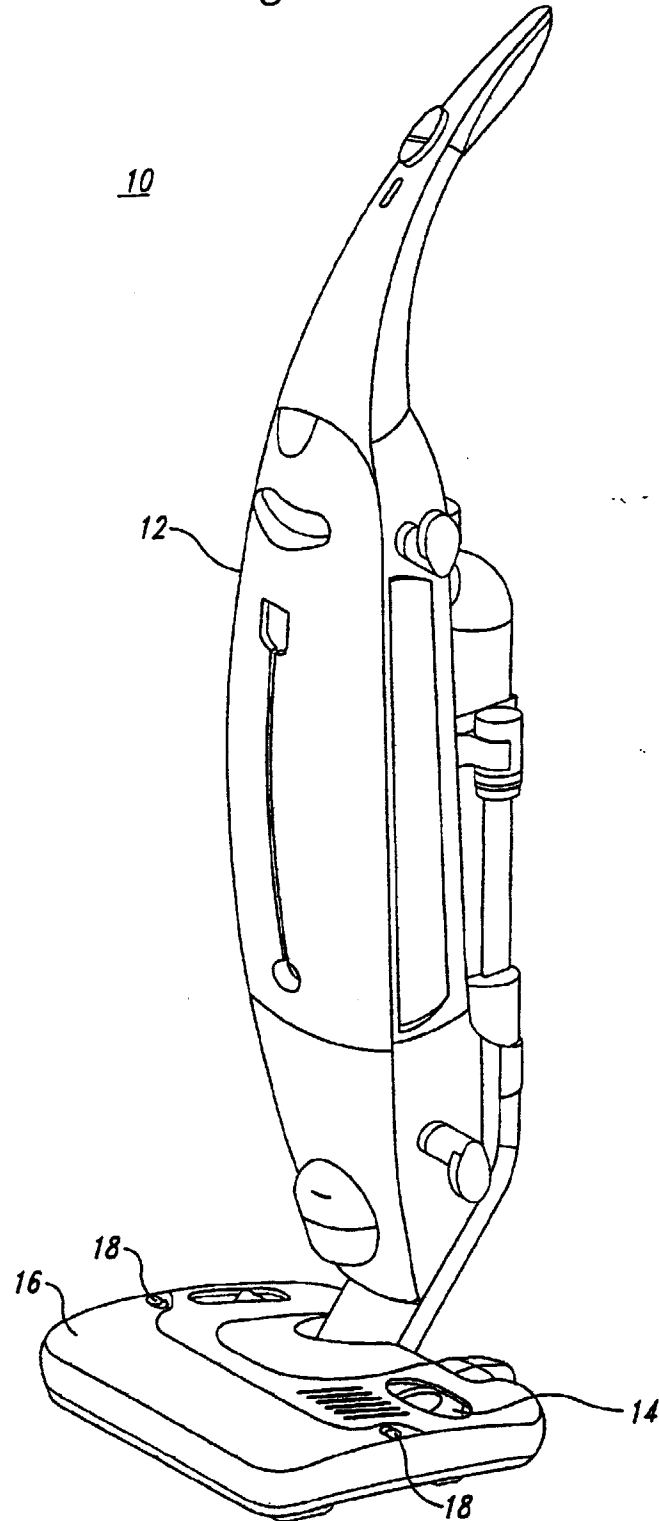
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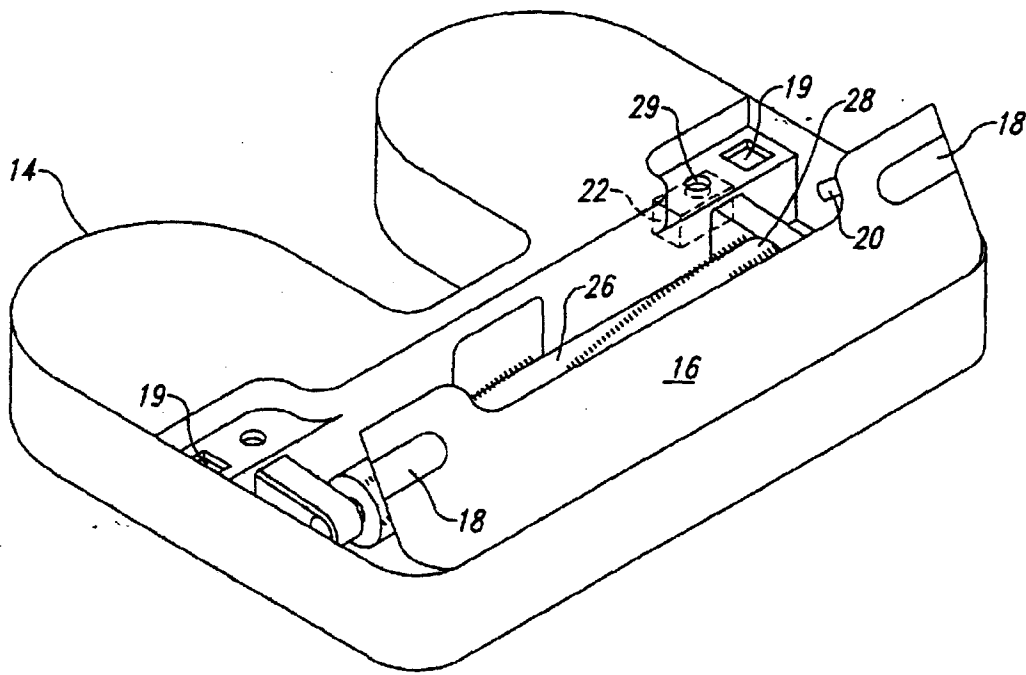
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*Fig. 1*





*Fig. 2*