

REPLACED SHEETS		SG
☒	Description : paged 1 to paged 26	
☒	Claim(s) : paged 27 to paged 28	
☒	Drawing(s) : paged 29 to paged 30	
☒	Abstract : paged 31 to paged 32	
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PORTABLE CLEANING APPARATUS

The invention relates to portable cleaning apparatus particularly, but not exclusively, to a cylinder-type vacuum cleaner.

A major problem whilst using vacuum cleaners occurs when vacuuming stairs. Ideally, vacuum cleaners would incorporate a very long hose so that the machine can be left at the bottom of the stairs with the hose reaching all the way to the top of the stairs. This is impractical because such a long hose would be heavy and unwieldy as well as expensive to manufacture and fit. Under normal circumstances, users of vacuum cleaners balance the machine on the stairs at various positions along the flight but this puts the machine in a very unstable position. Upright-type machines, or machines which are convertible between upright use and cylinder use, are slightly more stable when used on stairs than cylinder machines because of the location of their centre of gravity but, in general, vacuum cleaners are positioned very precariously when they are used on stairs. It is common for the user to support the machine with one hand which gives only one hand free for operation of the hose. Also, because upright-type machines are supported on wheels which contact the stair

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treads when used in this manner, the vacuum cleaner can roll off the stair tread when the operator's attention is directed elsewhere. This can be dangerous.

It is an object of the present invention to provide portable cleaning apparatus which can be positioned stably on a flight of stairs. It is a further object of the invention to provide portable cleaning apparatus which does not roll off a stair tread when in use on stairs.

The invention provides portable cleaning apparatus as set out in Claim 1. Preferable and advantageous features are set out in the subsidiary claims.

The provision of an upwardly extending recess within the lower surface of the body of the portable cleaning apparatus means that, when the apparatus is positioned on the stairs, the corner of a stair tread can project into the recess with the apparatus being supported by two adjacent stair treads. This allows the apparatus to be positioned so that the centre of gravity of the body of the apparatus is adequately spaced from the lowest point of support of the apparatus. Portable cleaning apparatus according to the invention is thus more stable than prior art apparatus when used on stairs. The provision of means for preventing relative movement between the apparatus and a stair tread avoids the problem of the apparatus rolling off the stair tread.

An embodiment of the present invention will now be

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described with reference to the accompanying drawings wherein:

Figure 1 is a schematic side view of portable cleaning apparatus according to the present invention; and

Figure 2 is a schematic view of the lower surface of the apparatus shown in Figure 1.

Figure 1 shows, in schematic side view, a vacuum cleaner 10 according to the present invention and sitting on a flight of stairs 20. The vacuum cleaner 10 shown in the drawings is a cylinder-type vacuum cleaner, ie the only air inlet to dust separating apparatus is via a head or tool connected to the machine by means of a hose. In the embodiment shown, the vacuum cleaner 10 has a body 12 having an inlet 14 connectable to a hose (not shown). The nature of the dust separating apparatus housed within the body 12 is immaterial to the present invention and therefore will not be described in any detail. However, the dust separating apparatus of the cleaner 10 shown in Figure 1 is preferably cyclonic in nature.

The body 12 of the cleaner 10 has a lower surface 16. Also, wheels 18a and 18b are positioned on the body 12 so that the rims of the wheels 18a, 18b project beneath the plane of the lower surface 16. The wheels 18a, 18b form support means for the vacuum cleaner 10 when it is being used on a flat surface. It will be



appreciated that the wheels 18a, 18b could be replaced by any other form of support means for the vacuum cleaner 10 although these support means are preferably of such a nature as to allow the vacuum cleaner 10 to be easily dragged across a flat surface. The wheels 18a, 18b could be replaced by rollers, castors, skids or skis and, equally, could be of any desirable size. It is not necessary for the wheels 18a, 18b to differ in size.

The lower surface 16 is shaped so that it incorporates an upwardly extending recess 30 extending across the entire width of the lower surface 16 (see Figure 2). The recess 30 is formed by inclined portions 32, 34 of the lower surface 16, the inclined portions 32, 34 meeting at an apex 36. The general shape of the recess 30 shown in Figure 1 is triangular with the inclined portion 32 meeting the inclined portion 34 substantially at a right angle. The inclined portions 32, 34 need not be of equal length although a substantial difference in length of these inclined portions 32, 34 would be detrimental. Furthermore, the angle at the apex 36 need not be a right angle although substantial deviations from 90° would be undesirable.

The lower portion 16 is shaped so that, when the vacuum cleaner 10 is tilted to an appropriate angle and placed on consecutive stair treads, portions of the lower surface 16 or body 12 come into direct contact with the upper surfaces of the respective stair treads.

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The wheels 18a, 18b are thus maintained out of contact with the stairs 20. As shown in Figure 1, the points of contact of the lower surface 16 with the stair treads 20 when the vacuum cleaner 10 is placed on the stairs are preferably angular portions. This assists the vacuum cleaner 10 in gripping the upper surfaces of the stair treads 20 and minimises the risk of the vacuum cleaner 10 slipping from the desired position. Although not shown in the figures, grip-enhancing means can be provided on the appropriate areas of the lower surface 16; for example, pads of rubber or plastics material having non-slip surfaces can be provided at the points of contact.

It is also possible to dimension the body 12 and lower surface 16 such that the inclined portions 32, 34 abut directly against the horizontal and vertical walls of the stair 20. With such an arrangement, slip-resistant materials could be used to coat or cover either or both of the inclined portions 32, 34.

It is naturally essential that the centre of gravity of the vacuum cleaner 10 be arranged so that, when the vacuum cleaner 10 is positioned in an inclined manner as shown in Figure 1, the centre of gravity acts along a line located to the left of the point of contact of the cleaner 10 with the lower stair. Otherwise, the cleaner will be unstable and will tend to topple.

Preferably, the body 12 of the vacuum cleaner 10 is

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provided with a handle (not shown) to assist the user in positioning the vacuum cleaner 10 onto appropriate stairs 20. Ideally, the handle will be arranged so that it is convenient for use when the vacuum cleaner 10 is being used on stairs and on a flat surface.

Although the above embodiment relates to a vacuum cleaner, the portable cleaning apparatus in accordance with the invention may be shampoo apparatus (e.g. operating with wet detergent or dry powder), wet pick-up apparatus, a steam cleaner, or any similar portable apparatus for use on stairs.

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CLAIMS

1. Portable cleaning apparatus comprising a body having a lower surface and first and second support means located at or adjacent opposing sides of the lower surface, wherein, between the first and second support means, the lower surface has an upwardly extending recess for accommodating a stair tread.
2. Apparatus as claimed in Claim 1, wherein the recess is substantially triangular in cross section.
3. Apparatus as claimed in Claim 2, wherein the apex of the triangle is positioned substantially centrally of the recess and comprises a right angle.
4. Apparatus as claimed in any one of the preceding claims, wherein, in use on stairs, the body is supported on two adjacent stair treads.
5. Apparatus as claimed in any one of the preceding claims, wherein the lower surface incorporates means for preventing relative movement between the apparatus and the stair tread when in use on stairs.
6. Apparatus as claimed in any one of the preceding claims, wherein the first and second support means



comprise wheels.

7. Apparatus as claimed in any one of the preceding claims, wherein the apparatus is a cyclonic vacuum cleaner.

8. Apparatus as claimed in any one of the preceding claims, wherein the apparatus is a cylinder-type vacuum cleaner.

9. Portable cleaning apparatus substantially as hereinbefore described with reference to the accompanying drawings.

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