A Cleaner Head

The present invention relates to a cleaner head, in particular a cleaner head for a vacuum cleaner.

There is a constant desire to improve the pickup performance of vacuum cleaners. The cleaner head of a vacuum cleaner plays an important role in the level of dirt pickup that can be achieved. There are a number of ways in which pickup performance can be improved, one of the most important of which is to maintain a decent pressure differential between the inside the cleaner head and the outside of the cleaner head.

However, when a vacuum cleaner is being used, the cleaner head is moved across the surface being cleaned in forwards and backwards strokes, and as the cleaner head moves it may be partially lifted away from the surface during each stroke. This has the effect of reducing the pressure differential, and therefore reducing the pickup performance. The reduction in pressure differential due to separation of the cleaner head from the surface being cleaned may be particularly pronounced if the cleaner head is travelling over uneven surfaces such as heavily textured hard surfaces, or floor transitions such as doorway threshold bars.

A first ~~aspect~~example of the present ~~invention~~disclosure provides a cleaner head for a cleaning appliance, the cleaner head comprising: a housing defining a suction chamber; and a sole plate defining a downwardly-directed opening through which dirt can enter the suction chamber. The cleaner head further comprises a hollow deformable seal extending from a rear portion of the housing, the hollow deformable seal having a width at least equal to a width of the opening in the sole plate, and having a lower sealing surface that extends in a downward and rearward direction from a rear edge of the housing such that, in use, the hollow deformable seal is biased against and conforms to a surface being cleaned in order to maintain a seal between the cleaner head and the surface being cleaned.

In one aspect, the present disclosure refers to a cleaner head for a cleaning appliance, the cleaner head comprising: a housing defining a suction chamber; and a sole plate defining a downwardly-directed opening through which dirt can enter the suction chamber; wherein the cleaner head further comprises a hollow deformable seal extending from a rear portion of the housing, the hollow deformable seal having a width at least equal to a width of the opening in the sole plate, and having a lower sealing surface that extends in a downward and rearward direction from a rear edge of the housing such that, in use, the hollow deformable seal is biased against and conforms to a surface being cleaned in order to maintain a seal between the cleaner head and the surface being cleaned.

As a result, during use on a floor surface it is easier to main a pressure differential inside the suction chamber compared with the ambient pressure, particularly if the floor surface is not completely flat. This, in turn, will improve the cleaner head's ability to

maintained, whilst reducing the likelihood that the seal lifts the suction opening away from the surface being cleaned.

The hollow deformable seal may extend partially around a side portion of the suction opening. As a result, the seal additionally conforms to the floor surface partially around the sides of the suction opening, and an even better seal with the surface being cleaned can be achieved.

When in use on a floor surface, the lower sealing surface may be deformed upwards by the floor surface, and the hollow deformable seal may be compressed such that the volume of a cavity within the hollow deformable seal is reduced. As a result, the deformed seal provides a downward force on the floor surface, and the seal can better conform to the floor surface.

The hollow deformable seal may comprise an angled surface extending from the rear edge of the lower sealing surface, the angled surface being angled upwards and rearwards. As a result, the cleaner head is better at passing over low objects such as larger debris, the edges of rugs or transitions between floor types when travelling in a rearward direction, for example during a backwards stroke.

The hollow deformable seal may be formed of thermoplastic polyurethane (TPU). A front edge of the opening of the sole plate may comprise at least one roller. The suction chamber may house a brush bar.

The present ~~invention~~disclosure further provides a vacuum cleaner comprising a cleaner head as described in any one of the preceding statements.

In order that the present invention may be more readily understood, embodiments of the invention will now be described, by way of example, with reference to the following accompanying drawings, in which:

Figure 1 shows a rear perspective view of a cleaner head;

Figure 2 shows a bottom view of the cleaner head of Figure 1;

CLAIMS

1. A cleaner head for a cleaning appliance, the cleaner head comprising:
   a housing defining a suction chamber; and
   a sole plate defining a downwardly-directed opening through which dirt can enter the suction chamber;
   wherein the cleaner head further comprises a hollow deformable seal extending from a rear portion of the housing, the hollow deformable seal having a width at least equal to a width of the opening in the sole plate, and having a lower sealing surface that extends in a downward and rearward direction from a rear edge of the housing such that, in use, the hollow deformable seal is biased against and conforms to a surface being cleaned in order to maintain a seal between the cleaner head and the surface being cleaned.

2. A cleaner head as claimed in claim 1, wherein the hollow deformable seal extends across the full width of the cleaner head.

3. A cleaner head as claimed in claim 1 or claim 2, wherein the hollow deformable seal together with a portion of the housing defines a cavity within the hollow deformable seal.

4. A cleaner head as claimed in any one of the preceding claims, wherein the hollow deformable seal is formed of a resilient material.

5. A cleaner head as claimed in any one of the preceding claims, wherein a perimeter edge of the seal is mounted to the housing.

6. A cleaner head as claimed in claim 5, wherein at least part of the perimeter edge of the seal is not fixed to the housing, such that air is able to enter into and escape from the hollow seal.

7. A cleaner head as claimed in any one of the preceding claims, wherein in an unbiased position the lower sealing surface lies at an angle of between 10° and 45° from a plane defined by the sole plate.

8. A cleaner head as claimed in claim 7, wherein in an unbiased position the lower sealing surface lies at an angle of between 20° and 35° from a plane defined by the sole plate.

9. A cleaner head as claimed in any one of the preceding claims, wherein the hollow deformable seal extends partially around a side portion of the suction opening.

10. A cleaner head as claimed in any one of the preceding claims, wherein, when in use on a floor surface, the lower sealing surface is deformed upwards by the floor surface, and the hollow deformable seal is compressed such that the volume of ~~a~~ the cavity within the hollow deformable seal is reduced.

11. A cleaner head as claimed in any one of the preceding claims, wherein the hollow deformable seal comprises an angled surface extending from the rear edge of the lower sealing surface, the angled surface being angled upwards and rearwards.

12. A cleaner head as claimed in any one of the preceding claims, wherein the hollow deformable seal is formed of thermoplastic polyurethane (TPU).

13. A cleaner head as claimed in any one of the preceding claims, wherein passive rollers are provided in a floor facing surface at the front ~~edge of the opening~~ of the sole plate ~~comprises at least one roller~~.

14. A cleaner head as claimed in any one of the preceding claims, wherein the suction chamber houses a brush bar.

15. A vacuum cleaner comprising a cleaner head as claimed in any one of the preceding claims.