for the motor to be coupled to the agitator by a suitable drive linkage such as a belt or gear mechanism, although it is also known for the motor to be housed within the agitator which F

In both examples, the powered agitator serves to wipe and beat the floor surface in order to improve the capability of the cleaner head to remove dirt from that surface. A common configuration is for the agitator to carry an array of bristles that extend radially outward from the surface of the agitator. The bristles are typically relatively stiff so that they engage the floor surface aggressively as the agitator rotates, thereby serving as a means to scrape and strike the floor surface to loosen embedded particles. Other strips of material such as rubber and carbon fibre filaments may be used to provide complementary characteristics to the agitator. By way of example, US8782851 B2 describes an agitator that may be provided with a combination of relatively stiff bristles, carbon filaments and rubber strips.

One particular design challenge relates to the use of cleaner heads with cordless vacuum cleaners. The effectiveness of the cleaner head is a key factor in pickup performance together with the suction power generated by the vacuum motor. Although pickup performance can generally be improved by using high power settings, this compromises battery run time severely and is undesirable from the perspective of the user. Therefore a great deal of attention is given to how to improve or at least maintain desirable pickup performance of a cleaner head whilst reducing energy consumption of the vacuum cleaner.

It is against this background that the invention has been devised.

SUMMARY ~~OF THE INVENTION~~

According to a first ~~aspect~~ example of the ~~invention~~disclosure, there is provided a cleaner head (10) for a vacuum cleaning appliance, the cleaner head (10) comprising: a main body (12) supporting an agitator (36), the agitator (36) comprising a rotatable cylindrical body (42) that bears an elongate agitator formation (44) for engaging a surface, for example a floor surface, as the cylindrical body (42) rotates, wherein the elongate agitator formation (44) includes: a first agitator row (46) that extends around the cylindrical body (42) in a direction from a respective first edge (L) of the cylindrical body (42) towards a respective second edge (R) in a first helical direction, the first agitator row (46) extending from a position proximate the first edge (L) towards or beyond a centre (C) of the cylindrical body, and a second agitator row (47) that extends around

the cylindrical body (42) in a direction from the second edge (R) of the cylindrical body (42) towards the first edge (L) in a second helical direction that is counter to the first helical direction, the second agitator row (47) extending from a position proximate the second edge (R) towards or beyond the centre (C) of the cylindrical body, the first (46) and second (47) agitator rows extend axially along the cylindrical body (42) such that they do not overlap with one another, wherein the first agitator row (46) comprises agitators of a first material and wherein the second agitator row (47) comprises agitators of a second material that is different to the first material.

In a first aspect, the present disclosure refers to a cleaner head (10) for a vacuum cleaning appliance, the cleaner head (10) comprising:

a main body (12) supporting an agitator (36), the agitator (36) comprising a rotatable cylindrical body (42) that bears an elongate agitator formation (44) for engaging a surface as the cylindrical body (42) rotates,

wherein the elongate agitator formation (44) includes:

a first agitator row (46) that extends around the cylindrical body (42) in a direction from a respective first edge (L) of the cylindrical body (42) towards a respective second edge (R) in a first helical direction, the first agitator row (46) extending from a position proximate the first edge (L) towards or beyond a centre (C) of the cylindrical body, and a second agitator row (47) that extends around the cylindrical body (42) in a direction from the second edge (R) of the cylindrical body (42) towards the first edge (L) in a second helical direction that is counter to the first helical direction, the second agitator row (47) extending from a position proximate the second edge (R) towards or beyond the centre (C) of the cylindrical body, the first (46) and second (47) agitator rows extend axially along the cylindrical body (42) such that they do not overlap with one another, wherein the first agitator row (46) comprises agitators of a first material and wherein the second agitator row (47) comprises agitators of a second material that is different to the first material.

By not overlapping, it is meant that the agitator rows do not cross to occupy the same portions of the cylindrical body, ensuring a single point of contact is achieved either side of the cylindrical body between the floor surface and each of the first and second materials regardless of the rotational position of the cylindrical body. This arrangement helps maintain a regular distribution of the friction created between the agitator and the floor surface during rotation of the agitator.

As used herein the term “proximate” shall be taken to mean at or near to. In this ~~embodiment~~example “near to” may mean within 10mm of the edge, for example from 1, or 2, or 4, or 6, 8 or 10mm from the respective edge of the cylindrical body. In a most preferred ~~embodiment~~example the agitator rows extend from the edge.

Preferably, the first agitator row and the second agitator row meet to define an apex. This arrangement serves to guide the airflow through the cleaner head, improving the effectiveness of the cleaner head.

Preferably, the apex is located at approximately the centre of the agitator. Positioning the apex at the centre of the agitator further improves the effectiveness of the cleaner head since the pick-up of dirt and dust particles from the floor surface over time is more uniform across the length of the agitator. The apex may however be positioned closer to one edge than the other edge.

Preferably, in use the apex points in the direction of rotation of the agitator. Alternatively in use the apex may point away from the direction of rotation of the agitator.

Preferably, in an ~~embodiment~~example with four agitator rows, each row circumferentially extends around the cylindrical body for half a rotation, or 180 degrees. This arrangement ensures that there will be only a single contact point between each row and the floor surface at any time throughout the rotation of the agitator.

Preferably, the third and fourth agitator rows meet to define an apex.

Preferably, the apex is located at approximately the centre of the agitator. Alternatively the apex may be position closer to one edge than the other edge.

Alternatively, an axially inner end of the third agitator row and an axially inner end of the fourth agitator row are angularly offset from one another, defining a radial gap therebetween.

Preferably, the elongate agitator formation is configured such that, during use, a single point of contact is formed between the floor surface and each of the first and second materials during rotation of the cylindrical body.

According to a second ~~aspect~~ example of the ~~invention~~disclosure, there is provided a vacuum cleaning appliance comprising the cleaner head according to the previous ~~aspect~~example.

In a second aspect, the present disclosure refers to a vacuum cleaning appliance comprising the cleaner head (10) as disclosed herein.

Within the scope of this application it is expressly intended that the various aspects, ~~embodiments,~~ examples and alternatives set out in the preceding paragraphs, in the claims and/ or in the following description and drawings, and in particular the individual features thereof, may be taken independently or in any combination. That is, all ~~embodiment~~examples and/ or features of any ~~embodiment~~example can be combined in any way and/ or combination, unless such features are incompatible. The applicant reserves the right to change any originally filed claim or file any new claim accordingly, including the right to amend any originally filed claim to depend from and/ or incorporate any feature of any other claim although not originally claimed in that manner.