significant amount of energy being imparted to the dust. With the brush bar rotating in such a direction that the bristles move from the front edge of the suction inlet towards the rear edge, the rotating bristles sweep dust rearwardly through the suction inlet and into the suction chamber. The suction of air causes air to flow underneath the sole plate and around the brush bar to help lift the dirt and dust from the surface of the carpet and then carry it from the suction inlet through the cleaner head towards the separating apparatus.

It is known to provide a cleaner head which includes a pair of contra-rotating brush bars. For example, WO 2018/127680 describes a cleaner head which includes a front brush bar located at a front of the cleaner head, and a rear brush bar located at the rear of the cleaner head. The brush bars rotate in opposite angular directions so that the bristles of the front brush bar are swept rearwardly over the floor surface, and the bristles of the rear brush bar are swept forwardly over the floor surface. A suction chamber is located between the brush bars, and a suction port is located centrally at the top of the suction chamber.

In use, as such a cleaner head is moved forwards over a floor surface large debris, such as rice or Cheerios® which have become entrained within the air drawn towards the cleaner head, is unable to pass beneath the brush bar, due to its contact with the floor surface, and so enters the suction chamber from around the ends of the front brush bar. From there, the large debris passes along suction chamber, from both ends of the front agitator, towards the suction port. As the movement of the cleaner head is reversed, such debris enters the suction chamber from around the ends of the rear agitator, and passes along the suction chamber, from both ends of the rear agitator, towards the suction port.

SUMMARY

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

a housing defining a suction chamber, the suction chamber having a suction inlet;

a front agitator supported for rotation relative to the housing in a first rotational direction;

through 90° towards the suction port. The baffle may be curved, or may be conical in shape. In a preferred example, the baffle is substantially pyramidal in shape, with each face of the baffle arranged to guide a respective airflow towards the suction port. During use, air tends to enter the cleaner head from the ends of the agitators and move, in opposing directions, towards the suction port. In the absence of a baffle, there is a risk that the opposing airflows can collide within the suction chamber and generate a “dead zone” of low airflow velocity and high turbulence directly below the suction chamber. Within such a deadzone, there may be insufficient airflow velocity to evacuate any debris that gets trapped within the dead zone, with the result that the debris will lie stagnant on the floor surface, leaving an accumulation of debris on the floor surface. The presence of the baffle inhibits the formation of such a dead zone by guiding the air within the suction chamber to turn upwardly towards the suction port, promoting smooth coalescence of the opposing airflows within the suction chamber and movement of the entrained debris towards the suction port.

The cleaner head may comprise front guide members attached to the housing for, during use, guiding the debris from the ends of the front agitator towards the suction chamber, and rear guide members attached to the housing for, during use, guiding debris from the ends of the rear agitator towards the suction chamber. However, such guide members can be omitted without affecting the performance of the cleaner head.

We have found that the use of guide members to guide debris, particularly, but not exclusively, large debris such as rice and Cheerios®, towards the suction chamber can reduce the risk of blockage of the pathways extending inwardly from the ends of the agitators towards the suction chamber. Any blocking of those pathways can inhibit the passage of larger debris into the suction chamber, with the result that the debris remains on the floor surface when the appliance is switched off.

The front and rear guide members are preferably located between the agitators. Each of the front guide members is preferably located adjacent a respective end of the front agitator. Each of the front guide members is preferably located immediately behind the

wheel. For example, whilst the support may be formed from a relatively rigid material, for example a plastics material such as a polycarbonate, the guide member may be formed from a relatively flexible material, for example a polyurethane such as TPU. Providing the guide member as a separate component to the support for the wheel can enable a greater degree of control of the direction and/or speed at which the impacting debris moves away from the guide member, through selection of the shape and/or material from which the guide member is formed.

The front and/or rear guide members may be used in other types of cleaner head to guide debris towards the suction chamber. For example, a passive cleaner head, that is, a cleaner head which does not include any moving agitators for agitating debris from a floor surface, may include an arrangement of wheels and guide members for guiding debris towards the suction chamber. The wheels may be mounted on a sole plate which defines a suction inlet of the cleaner head. For example, a pair of front wheels may be located adjacent a front edge of the cleaner head, and a pair of rear wheels may be located adjacent a rear edge of the cleaner head. Each wheel may be located adjacent a front corner of the cleaner head, with each wheel being associated with a guide member which rotates with the wheel relative to the housing to guide debris towards the suction inlet. As another example, a cleaner head may comprise a single agitator or brush bar, which may be located towards the front of the cleaner head, with front and rear wheels, and so front and rear guide members, located rearwardly of the agitator.

In a second aspect, the present disclosure refers to a cleaner head for a vacuum cleaning appliance, the cleaner head comprising:

a housing defining a suction chamber, the suction chamber having a suction inlet;

a front agitator supported for rotation relative to the housing in a first rotational direction;

a rear agitator supported for rotation relative to the housing in a second rotational direction opposite to the first rotational direction; and

a plurality of wheels located between the agitators for supporting the cleaner head.

The plurality of wheels support the cleaner head so as to allow a change in the direction in which the cleaner head is moved over a surface. Each wheel is arranged to rotate relative to the housing about a first axis which is perpendicular to the suction inlet. Each wheel may be further rotatable relative to the housing about a second axis which is parallel to the first axis. The wheels may mounted directly on the housing of the cleaner head for rotation relative thereto. Alternatively, the wheels may be rotatably mounted on one or more cartridges which are connected to the housing. For example, the cleaner head may comprise a first cartridge located on one side of the suction inlet, and a second cartridge located on the other side of the suction inlet. Each cartridge may comprise a respective one of the front wheels and a respective one of the rear wheels.

In an example where the cleaner head comprises both a front agitator and a rear agitator, each cartridge preferably comprises a respective one of each of the front guide members and the rear guide members. Each cartridge is preferably located between the front agitator and the rear agitator, and is preferably located on a respective side of the suction chamber. Each cartridge preferably comprises a plurality of apertures, each being located adjacent a respective one of the agitators, and through which entrained debris enters a respective one of the channels along which debris is guided towards the suction chamber.

Where the cleaner comprises a single agitator, each cartridge also preferably comprises a pair of wheels and a pair of guide members which are each rotatable relative to the cartridge with a respective one of the wheels. Each cartridge is preferably located rearwardly of the agitator, and is preferably disposed on a respective side of the suction chamber.

Each cartridge is preferably arranged such that the first axes of the wheels of that cartridge are located in a plane which is orthogonal to the suction inlet. Where the cleaner head comprises an agitator which rotates about an axis which extends in a direction which is parallel to the suction inlet, this plane is preferably orthogonal to the rotational axis of the agitator.

Features described above in connection with the first aspect of the disclosure are equally applicable to the second aspect of the disclosure, and vice versa. The terms “horizontal”, “vertical”, “front”, and “rear” are used in the context of the present application to refer to relative orientations or positions of components of the cleaner head when in normal use.

BRIEF DESCRIPTION OF THE DRAWINGS

Preferred features of the present invention will now be described by way of example only with reference to the accompanying drawings, in which:

Figure 1 is an angled view of a cleaner head;

Figure 2 is a perspective view, from below, of the cleaner head;

Figure 3 is a front view of the cleaner head;

Figure 4 is a rear view of the cleaner head;

Figure 5 is a top view of the cleaner head;

Figure 6 is a bottom view of the cleaner head, with casters of the cleaner head in a first orientation relative to a housing of the cleaner head;

Figure 7 is a section view of the part of the cleaner head, taken along line A-A in Figure 6;

Figure 8 is a section view of the part of the cleaner head, taken along line B-B in Figure 6;

Figure 9 is a section view of the part of the cleaner head, taken along line C-C in Figure 6;