

SPECIFICATION

Floor care appliance

5 This invention relates to a floor care appliance.

Patent Specification No. 1,461,200 discloses a floor care appliance in the form of a carpet sweeper which has means to adjust the height of a cylindrical brush, which means requires an eccentric adjustment of a rigid shaft about which the cylindrical brush rotates. To effect the height adjustment of the brush, an extension of one of the shaft holders, which is mounted off its central axis in a wall of the appliance housing, is slotted. The user has to insert a tool (for example a coin) into this slot and to turn the shaft holder in the housing. By the rigid connection through the shaft, the extension of the shaft holder at the other end of the shaft is also turned and, due to the eccentricity of these extensions in relation to the shaft axis, the rigid shaft carrying the brush is caused either to be lowered or raised and thus the brush is lowered or raised relative to the floor. A disadvantage with this construction is that the slot, which is provided in one shaft holder extension, with the synthetic plastics material of which it is usually made, is in time destroyed. It is a further disadvantage that when, for example, coins are used as a tool, it is necessary to apply a force which, for a housewife, is considerable, in order to turn the shaft holder extensions.

According to the present invention, there is provided a floor care appliance including a housing and an elongate brush, this brush axially rotatably mounted within the housing about a shaft, which is provided at both ends with means to adjust the height of the brush in said housing, said means comprising a pawl-and-ratchet locking mechanism at each end of said shaft, each said locking mechanism being such as to allow said shaft to turn about an axis that is parallel to but is not its own axis to effect the brush height adjustment.

For a better understanding of the invention and to show how the same may be carried into effect, reference will now be made, by way of example, to the accompanying drawings, in which:-

Figure 1 is a perspective cut-away view of a floor care appliance, the example being a suction cleaner nozzle,

Figure 2 is a rear sectional view of part of the appliance shown in Figure 1,

Figure 3 is a side view, partly in section, of part of the appliance shown in Figures 1 and 2,

Figure 4 is a perspective view of a member shown in Figure 3, and

Figure 5 is a perspective view of a further member shown in Figure 3.

The drawings show a floor care appliance in the form of a carpet sweeper, which, in this example, is a nozzle, which can be attached to a conventional suction unit.

A cylindrical brush 7 is rotatably mounted in the front of a housing 25 and is driven by means of a belt drive 28. The mounting of the brush 27 is effected by releasable engagement at both ends thereof with brush holders 23 and 24, respectively, in side walls 4

and 5 of the housing 25. The brush surrounds a shaft 16, which extends between two eccentrics 17 and 18 and which forms the axis about which the brush 27 can rotate, the brush 27 resting on two internal bearings 30 disposed about the shaft 16. The shaft 16 is mounted in shaft holders 31 of the eccentrics 17, 18.

Rings 49, 50 respectively surround the eccentrics 17 and 18. Each eccentric 17, 18 has the form shown in Figure 4, viz. the form of a locking wheel with ratchet teeth 55, the central axis of the locking wheel being off-set relative to the axis of the shaft 16 (which is the axis of the shaft holders 31). The ring 50, which has an adjusting lever 53 for turning it, is rotatably mounted in the brush holder 24 in an aperture in the wall 5 of the housing 25, whilst the ring 49 is mounted in a fixed position in the brush holder 23 in an aperture in the wall 4 of the housing 25. Apart from the provision of the lever 53, the ring 50 is identical to the ring 49. The lever 53 serves to turn the ring 50 and thus to rotate the eccentric 18, about which it is mounted, due to the locking mechanism construction (see below).

The adjusting lever 53 is biased by a tension spring 54 (acting between the lever 53 and the housing 25) into a lowermost position so that it normally lies flush with or close to the adjacent contours of the housing 25. The inner periphery of the ring 50 comprises a resilient locking pawl 52, which can engage with the teeth 55 on the eccentric 18. The teeth 55 of the opposite eccentric 17 are likewise engagable by a resilient locking pawl (not shown) on the inner periphery of the fixed ring 49. The locking pawls are integral with their respective rings.

The direction of the teeth 55 and also of the locking pawls of the two locking mechanisms are the mirror image of one another.

If the lever 53 is moved upwardly (i.e. anticlockwise as viewed in Figure 3), then the ring 50 is rotated anticlockwise and its locking pawl 52 presses against one of the teeth 55 on the eccentric 18 to move this also anticlockwise. Since the two eccentrics 17 and 18 are connected to one another by the shaft 16, the eccentric 17 is also correspondingly rotated within the fixed ring 49, its pawl riding over the teeth 55 of the eccentric 17. Due to the eccentricity between the locking wheels of the eccentrics 17, 18 and the shaft holders 31, the brush member 1 is thus either raised or lowered during the rotation of the eccentrics.

When the adjusting lever 53 is released, the tension spring 54 pulls rotatably back into its initial position, with the pawl 52 riding over the teeth 55 on the eccentric 18 during this movement, the shaft 16 and eccentrics 17, 18 being restrained from such rotation by one of the teeth 55 on the eccentric 17 positively engaging with the pawl on the ring 49.

CLAIMS

1. A floor care appliance including a housing and an elongate brush, this brush being axially rotatably mounted within the housing about a shaft, which is provided at both ends with means to adjust the height of the brush in said housing, said means comprising a pawl-and-ratchet locking mechanism at each end of said shaft, each said locking mechanism being such as to allow said shaft to turn about an



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axis that is parallel to but is not its own axis to effect the brush height adjustment.

2. An appliance as claimed in claim 1, wherein said brush is cylindrical.

5 3. An appliance as claimed in claim 1 or 2, wherein said brush is mounted about said shaft with bearings interposed therebetween.

10 4. An appliance as claimed in claim 1, 2 or 3, wherein said brush is driven by means of a driving belt.

5. An appliance as claimed in any one of the preceding claims, wherein said locking mechanisms are mounted in respective opposed side walls of said housing.

15 6. An appliance as claimed in any one of the preceding claims, wherein each said locking mechanism comprises a wheel joined to a holder for the shaft, said wheel having ratchet teeth and being disposed about said axis that is not the shaft axis, there
20 being a ring with a pawl extending from its inner periphery, which ring surrounds said wheel so that said pawl can engage said ratchet teeth.

7. An appliance as claimed in claim 6, wherein said locking pawl is resilient.

25 8. An appliance as claimed in claim 7, wherein said pawl is integral with its ring.

9. An appliance as claimed in any one of the preceding claims, wherein one of said locking mechanisms includes a lever to actuate it.

30 10. An appliance as claimed in claims 6 and 9, wherein said lever is connected to one of said rings, which is part of said one locking mechanism, in order to actuate this locking mechanism by turning this ring.

35 11. An appliance as claimed in claim 10, wherein said lever is resiliently biased towards said housing by means of a tension spring.

40 12. An appliance as claimed in claim 10 or 11, wherein the other locking mechanism comprises the other ring, which is fixed relatively to said housing.

13. A floor care appliance, substantially as hereinbefore described with reference to the accompanying drawings.

45 14. A floor care appliance as claimed in any one of the preceding claims and being in the form of a carpet sweeper.

15. A floor care appliance as claimed in claim 14, wherein said carpet sweeper is in the form of a nozzle unit for a suction cleaner.

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