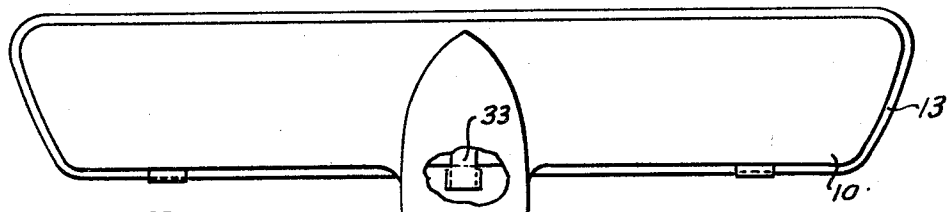
April 20, 1954 D. M. DOW 2,675,575

ADJUSTABLE AGITATOR FOR VACUUM CLEANERS

Filed Feb. 11, 1950

FIG. 1.



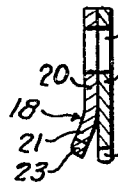


FIG. 7.

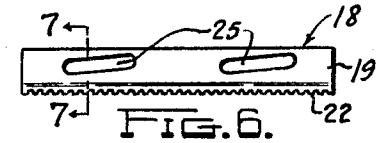


FIG. 6.

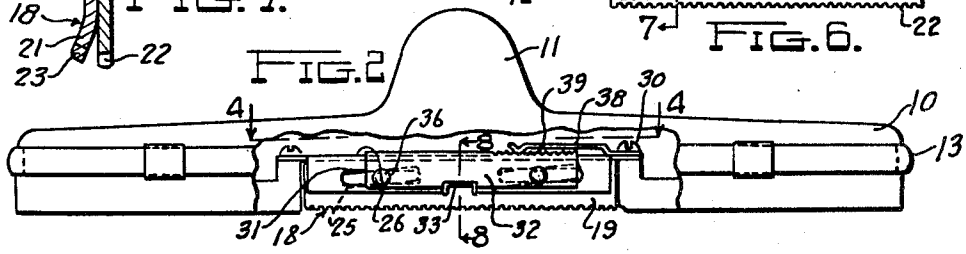


FIG. 2.

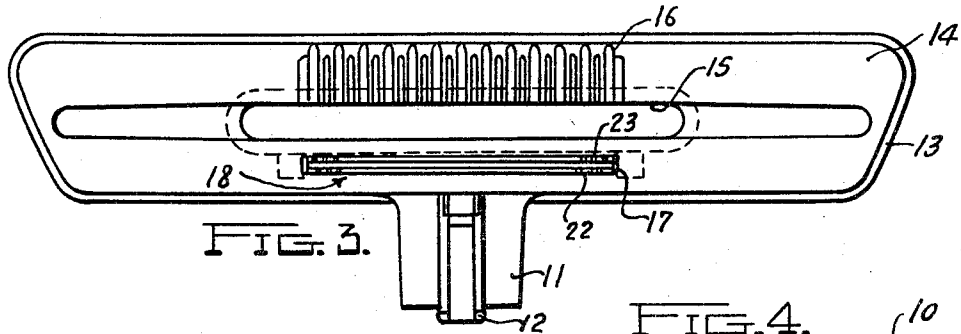
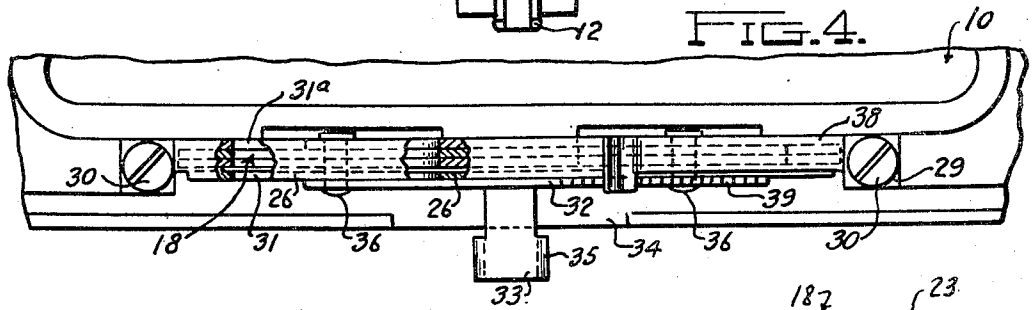


FIG. 3.

FIG. 4.



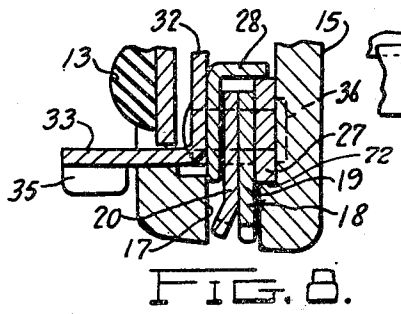


FIG. 8.

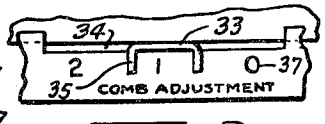


FIG. 9.

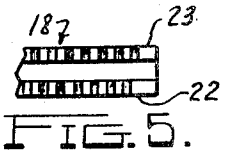


FIG. 5.

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Patented Apr. 20, 1954 2,675,575

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ADJUSTABLE AGITATOR FOR VACUUM CLEANERS

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Application February 11, 1950, Serial No. 143,649

3 Claims. (Cl. 15—373)

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This invention relates to suction cleaners of the type in which cleaning is effected by the action of air currents passing into the floor tool, and an object is to produce an agitator for a floor tool having provision for depth adjustment to adapt it for efficient cleaning of either plain surfaces, or rugs and carpets having relatively thick naps, or those having relatively thin naps.

A further object is to produce a vacuum cleaner floor tool provided with an agitator which can be readily and conveniently adjusted toward and away from the floor surface in order to adapt the agitator to the kind of surface to be cleaned.

A still further object is to produce an agitator assembly which can be readily and conveniently mounted in position of use on a floor tool but can be removed as a unit without difficulty so that, for example, it can be replaced by another agitator assembly of a different type.

Other objects and advantages of the invention will hereinafter appear, and, for purposes of illustration but not of limitation, an embodiment of the invention is shown in the accompanying drawings, in which

Figure 1 is a top plan view of a vacuum cleaner floor tool with a portion broken away for the purpose of clarity;

Figure 2 is a front end elevation of the floor tool shown in Figure 1, with the parts broken away to show the comb type agitator and associated structure;

Figure 3 is a bottom plan view of the floor tool shown in Figure 1;

Figure 4 is an enlarged longitudinal sectional elevation substantially on the line 4—4 of Figure 2;

Figure 5 is an enlarged fragmentary bottom plan view of the comb agitator showing the rows of teeth and their staggered relation;

Figure 6 is a side elevation of the comb agitator;

Figure 7 is an enlarged transverse sectional view on the line 7—7 of Figure 6;

Figure 8 is an enlarged transverse sectional view substantially on the line 8—8 of Figure 2; and

Figure 9 is a fragmentary elevational view of the rear portion of the floor tool showing the agitator adjusting arm and an associated calibrated scale.

The illustrated embodiment of the invention comprises a floor tool for vacuum cleaners and consists of a body portion 10, which is of two parts or sections divided longitudinally and detachably held together in air tight relationship, for example, by latch mechanism shown and described in my co-pending application Serial No. 138,557, filed January 14, 1950. The floor tool is provided with a rearwardly extending nozzle portion 11 for the reception of a tube or wand (not shown) of the usual design, the latter being

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connected by a flexible hose (not shown) to the power driven vacuum or suction cleaning machine. The wand is releasably attached to the nozzle portion 11 by a suitable pivotally mounted spring-tensioned catch lever 12. Bounding the floor tool body is a rubber bumper strip 13 for preventing the floor tool from marring furniture when in use. The base 14 of the bottom plate or section has a longitudinally extending elongate suction slot or mouth 15 and arranged in front of the slot 15 is a series of grooves 16 which open at their rear ends into the mouth or slot 15.

Directly in rear of the suction mouth 15 is a longitudinally elongate slot 17 parallel to the slot 15 but of shorter length. Arranged within the slot 17 for vertical movement therein is an agitator unit 18 which, in this instance, is in the form of a comb. It will be recognized that, depending upon the surface on which the floor tool is used, the comb should project a greater or less distance from the floor tool. For example, with a floor covering having a relatively deep nap, the comb agitator 18 should project a greater distance than in the case of a short nap carpet or rug, and in the case of a bare floor, the comb should be retracted to an inoperative position. As will hereinafter appear, provision is made to enable the position of the comb to be determined at the will of the operator.

In this instance, the comb agitator consists of a pair of elongate plates 19 and 20 of sheet material, such as sheet metal, which are rigidly secured together as by spot welding. The plate 19 is straight up and down whereas the lower portion 21 of the plate 20 inclines downwardly and inwardly away from the adjacent portion of the plate 19. Forming the working surface of the lower edge portion of the plate 19 is a row of teeth 22 and in the lower edge portion of the plate 20 is a row of teeth 23. As shown particularly in Figure 5, the teeth 22 are in staggered relation with respect to the teeth 23 thereby to enhance the efficiency of the comb and insure that all portions of the floor covering will be combed by the teeth so that no threads, lint or the like will escape the comb action. Formed in each of the comb plates 19 and 20 is a pair of laterally spaced registering slots 25 which incline downwardly from the upper portion of the comb plates.

The agitator comb unit 18 is arranged between a back plate 26 and a front plate 27 and the back plate 26 has an integral top flange 28, which extends at substantially right angles with the free edge portion resting on the upper edge of the front plate 27. Plate 27 rests on ledge 72 on suction mouth 15, and is held down by top flange 28 on back plate 26. The flange 28 has end terminals 29 to receive screws 30 for securing the assembly to the upper edge of the lower part or section of the floor tool. In the plate 26

is a pair of laterally spaced horizontally elongate slots 31 and in the plate 27 is a similar pair of horizontally elongate slots 31*a*, which register with the slots 31 respectively. The pairs of horizontally elongate slots 31 and 31*a* are juxtaposed to the inclined slots 25 in the comb plate assembly. In rear of the rear plate 26 and in abutting relation to it is an elongate operating plate 32, which has a rearwardly extending actuator arm 33 projecting through a horizontally elongate slot 34 in the rear wall of the floor tool. Downwardly extending flanges 35 are formed on opposite sides of the outer end portion of the arm 33 for a purpose which will be hereinafter described. A pair of rivets 36 extend through the horizontal slots 31 and 31*a* and also through the inclined slots 25. The arrangement is such that when the actuating arm 33 is moved in one direction, the agitator comb unit 18 is cammed or forced downwardly toward the supporting surface and movement thereof in the opposite direction causes the comb unit to move upwardly away from the supporting surface.

On the rear wall of the floor tool, as shown in Fig. 10, may be calibrations designated at 37 to designate the agitator comb adjustment. By moving the actuator arm 33 to the zero mark, the comb will have been retracted out of operative position. From this position, by moving the actuator arm 33 to the left of the figure, the comb will be moved progressively downwardly a greater distance for operative use.

The comb agitator is retained in position of adjustment by a spring arm 38 which is secured at one end by one of the screws 30, the opposite end having a substantially V-shaped end portion to enter one or another of the notches between the teeth 39 formed on the upper edge portion of the operating plate 32. The arm 38 only exerts sufficient tension to militate against accidental movement of the device but does not interfere with desired adjusting movement of the plate.

From the above description, it will be understood that the agitator comb assembly can be very easily adjusted to the desired position of use by horizontally shifting the agitator arm 33. This may be accomplished by hand or more conveniently, by the operator's foot, pushing laterally in one direction or the other against one or the other of the downturned flanges 35. Inasmuch as the comb assembly is retained in place by the two screws 30, the entire unit can be conveniently removed and replaced by different types of agitators, for example, a single comb, a brush, a rubber strip, or by a new unit in the event of wear.

It is to be understood that numerous changes in details of construction, arrangement and operation may be effected without departing from the spirit of the invention especially as defined in the appended claims.

What I claim is:

1. In a vacuum cleaner floor tool having a suction mouth in the bottom wall thereof and a juxtaposed agitator receiving slot, an agitator unit in the slot, said agitator unit comprising a pair of upright laterally spaced supporting plates each having registering horizontally elongate slots, an agitator having a working surface at the lower edge thereof, said agitator being disposed between said supporting plates and having vertically inclined slot means substantially registering with said horizontal slots, longitudinally etxending end flanges on one of said supporting plates, fasteners securing said flanges to the floor tool, operating means associated with one of said supporting plates having a longitudinally extending series of notches, said last means being shiftable laterally of the associated supporting plate pin means carried by said operating means, said pin means extending through said slots and camming said agitator unit vertically upon lateral shifting of said operating means, and a spring arm secured by one of said fasteners for engaging in one of said notches for releasably retaining said agitator unit in a selected position of depth adjustment.

2. In a vacuum cleaner floor tool having a suction mouth in the bottom wall thereof and a juxtaposed agitator receiving slot, an agitator unit in the slot, said agitator unit comprising a pair of upright laterally spaced supporting plates each having registering horizontally elongate slots, an agitator having a working surface at the lower edge thereof, said agitator being disposed between said supporting plates and having vertically inclined slot means substantially registering with said horizontal slots, a flange integral with one supporting plate covering the upper edge of the agitator and overlapping the upper edge of the other supporting plate, longitudinally extending end flanges on the ends of said integral flange, fasteners securing said flanges to the floor tool, operating means associated with one of said supporting plates having a longitudinally extending series of notches, said last means being shiftable laterally of the associated supporting plate and having pin means thereon extending through said slots and camming said agitator unit vertically upon lateral shifting of said operating means, manual means on the outside of the floor tool for actuating said last means, and a spring arm secured by one of said fasteners for engaging in one of said notches for releasably retaining said agitator unit in a selected position of depth adjustment.

3. A floor tool for vacuum cleaners comprising a suction nozzle having a body portion, a rigid agitator unit carried by said body portion for vertical movement relative to the surface to be cleaned, guideway means on said body portion for preventing lateral shifting movement of said rigid agitator unit relative to said body portion, a laterally adjustable, adjusting member movably supported on said body portion, cam slot means in said rigid agitator unit, camming pin means affixed on said adjusting member and extending into said cam slot means whereby to shift said rigid agitator unit vertically in response to lateral shifting movements of said adjusting member, and spring detent means on said body engaging with said adjusting member for releasably retaining the same in laterally adjusted position whereby positively to retain said rigid agitator unit in vertically adjusted position.

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