June 3, 1947. C. H. TAYLOR 2,421,661

SUCTION CLEANING NOZZLE

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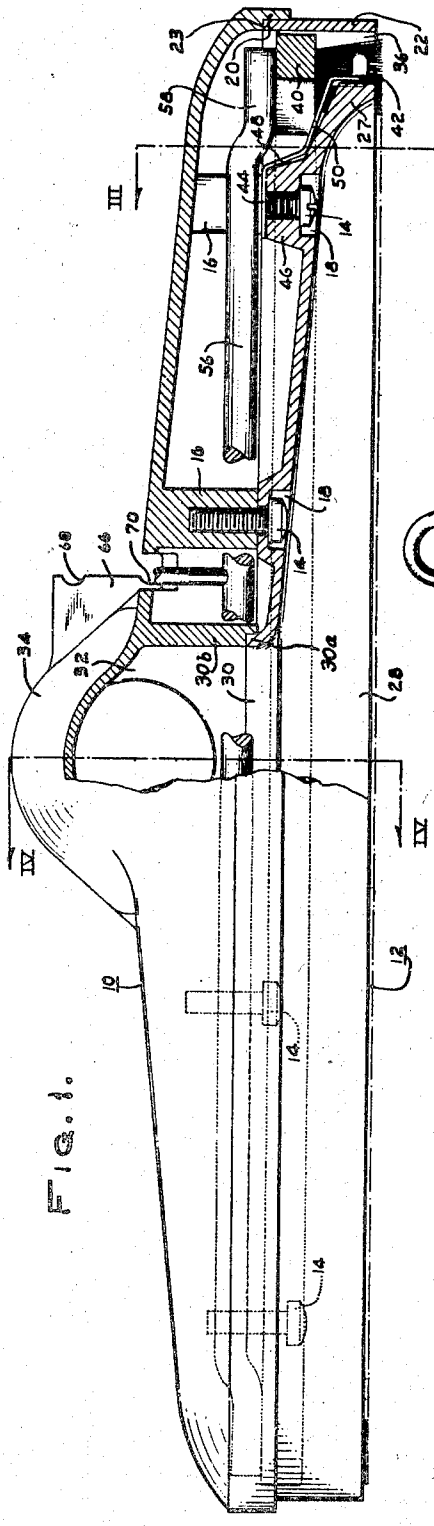


FIG. 1.

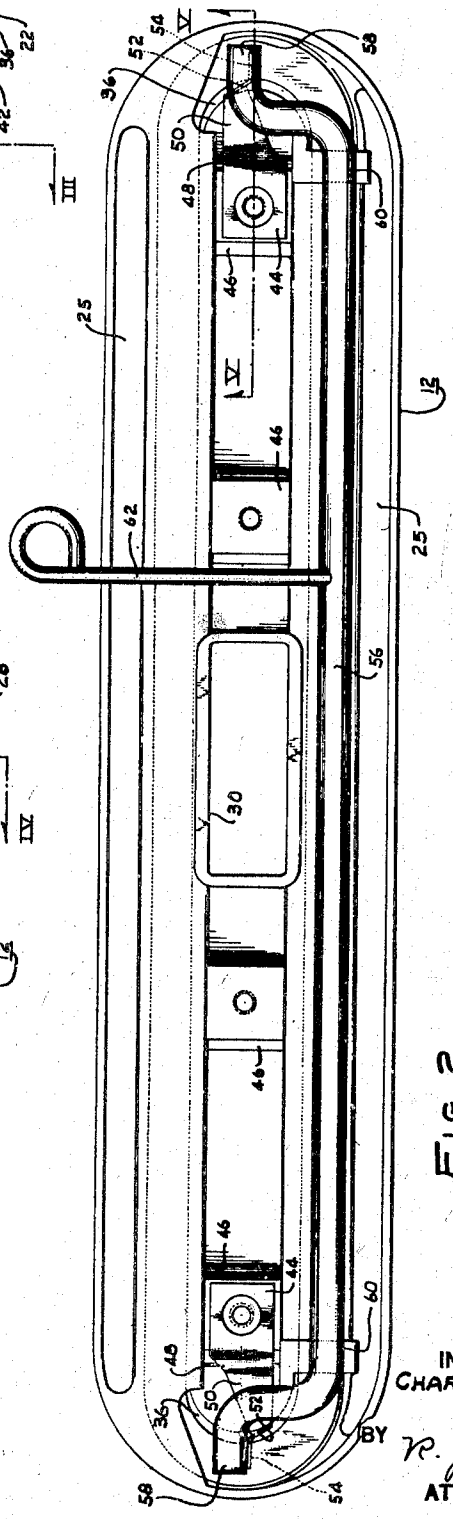


FIG. 2.

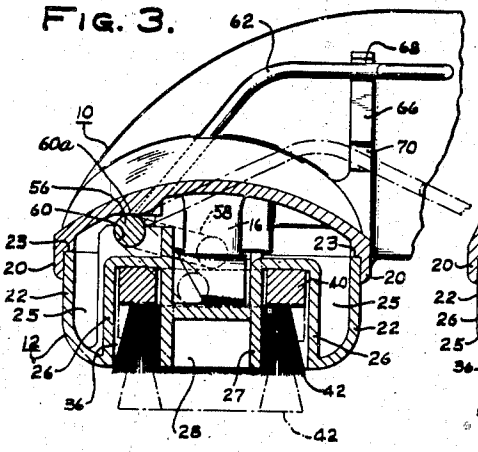
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SUCTION CLEANING NOZZLE

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FIG. 3.



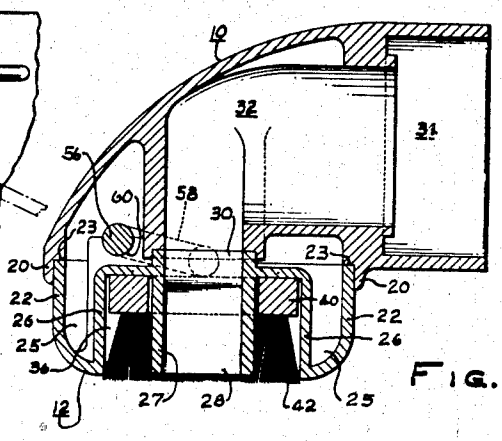
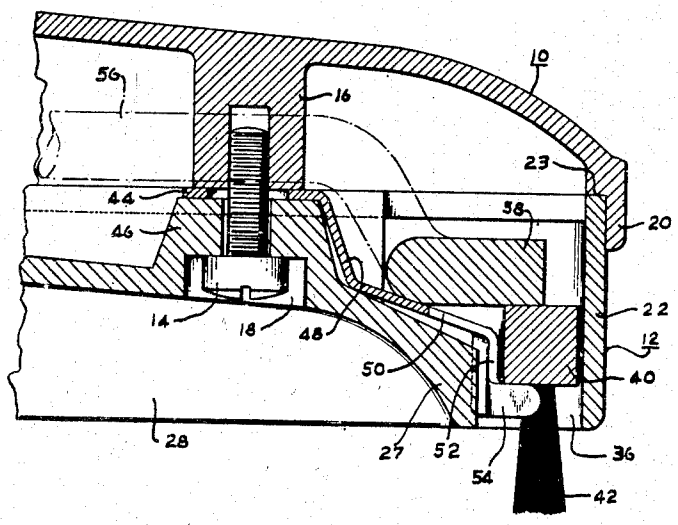


FIG. 4.

FIG. 5.



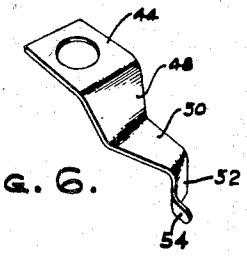


FIG. 6.

WITNESSES:

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SUCTION CLEANING NOZZLE

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2 Claims. (Cl. 15—158)

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This invention relates to a suction cleaner nozzle of the type provided with an agitator, such as a brush or the like, adapted to act upon the surface being cleaned.

One object of the invention is to produce an improved nozzle construction and brush mounting for a suction cleaner of the type set forth.

A suction cleaner may be used on a bare floor or on a floor having a covering such as a rug, and it is, therefore, a further object of the invention to produce an improved nozzle construction and brush mounting whereby the cleaner may be effectively used on both types of surfaces.

A still further object of the invention is to accomplish the foregoing objects by means of an improved construction which will be light, inexpensive, and easy to operate.

These and other objects are effected by my invention as will be apparent from the following description and claims taken in connection with the accompanying drawings, forming a part of this application, in which:

Fig. 1 is a view, partly in front elevation and partly in vertical section, of a suction cleaner nozzle embodying my invention, certain parts being broken away;

Fig. 2 is a top plan view of the nozzle shown in Fig. 1 with the upper part or cover removed;

Fig. 3 is a section on line III—III of Fig. 1;

Fig. 4 is a section on line IV—IV of Fig. 1;

Fig. 5 is an enlarged section on line V—V of Fig. 2; and

Fig. 6 is a perspective view of a clip forming part of the construction.

In the embodiment illustrated in the drawings, there is shown a suction cleaner nozzle which is made of two main parts, namely, an upper member 10 and a lower member 12. The upper and lower members are preferably die-cast of a light alloy such as aluminum or the like, or they may be made of a thermo-plastic material by pressure molding or by injection molding. The upper and lower members are secured together by any suitable means, such as a plurality of screws 14 which engage pendant bosses 16 forming part of, or carried by, the upper member 10. The heads of the screws 14 are preferably countersunk in recesses 18 formed in the underside of the lower member 12 of the nozzle.

The upper member 10 is provided with a pendant wall 20 which overlaps an outer wall 22 of the body 12, as clearly shown in the drawings. If desired, the pendant wall 20 may be shouldered, as at 23, so as to rest upon the upper edge of the wall 22. In order to make the nozzle light, and in order to economize in materials, the cover and body members are made as hollow as possible and the thicknesses of the various walls and of the bosses 16 are only such as to provide the necessary rigidity. Hollowing the lower member 12, for the purpose stated, provides elongated spaces 25 formed between the outer wall 22 and an intermediate wall 26, as best shown in Figs. 3 and 4.

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The lower member 12 is also provided with an inner wall 27 which defines a suction opening 28. The suction opening 28 communicates, through an opening 30, with an elbow passage 32 formed in the upper member 10. The lower and upper members 12 and 10 are formed with integral abutting wall elements 30a and 30b which bound the opening 30 and the passage 32. The elbow passage 32 terminates in an outlet opening 34 providing for connection directly to the low-pressure side of the fan of a handle-propelled cleaner, or, through a hollow wand or a hose, to the low-pressu e side of the fan of a tank-type cleaner.

The walls 27 and 26 define a channel or slot 36 for accommodating a brush or other agitator. The channel 36 is closed at its top and it preferably extends along the entire perimeter of the nozzle so as completely to surround the suction opening 28. The brush includes a backing or body portion 40 and bristles 42 and is preferably coextensive with the channel.

According to my invention, the brush may be locked in an outer position for use on a bare floor, so that the brush will contact the bare floor with a predetermined constant pressure. Also, according to my invention, the brush may be left free to move vertically relative to the channel 36 and nozzle opening 28 for use on floor coverings, such as rugs, so that the brush may contact such coverings with a pressure determined by the weight of the brush, the brush being free to move upwardly according to the height of the nap or pile of the particular floor covering being cleaned.

As illustrated, the brush is loosely mounted within the channel 36 so as to be free to move into and out of the channel, or up and down as viewed in the drawings. In order to limit the outward movement of the brush, I provide two clips, one of which is shown in Fig. 6. The clips are placed at either end of the nozzle so as to support the brush at opposite ends thereof and thus prevent the brush falling out of the channel 36. Each of the clips includes a body portion 44 which is adapted to rest on a boss 46, formed on or carried by the lower member 12 of the nozzle, and registering with one of the bosses 16. The body portion 44 of the clip is clamped between the bosses 46 and 16 and is provided with an aperture through which one of the fastening screws 14 extends. Each of the clips 44 further includes inclined and gradually tapering pendant portions 48 and 50 which conform to and are adapted to seat upon the upper surface of the adjacent portion of the wall 27 of the nozzle. The pendant portions 50 of the clips terminate in tapered, substantially vertical portions 52. The portions 52 have angularly-disposed tabs which, when the clips are assembled as shown in Figs. 1 and 5, extend transversely of the channel

36 so as to form stops 54 for limiting the outward or downward movement of the brush relative to the channel 36.

In order to maintain the brush in its outermost position, as shown in Fig. 5, I provide an elongated rod or shaft 56 having its ends offset to form crank arms 58. The shaft 56 seats in recesses 60 formed in the upper surface of the lower member 12, with the outer ends of the crank arms 58 thereof disposed in vertical alignment with, and adapted to bear upon, the backing or body portion 40 of the brush. The shaft is confined in the recesses or bearings by cooperating portions 60*a* of the upper member 10. The shaft 56 is provided with an operating handle 62 which extends upwardly through the upper member 10 so as to be accessible from without the nozzle. The upper member 10 of the nozzle is provided with a lug or bracket 66, having recesses 68 and 70 for engaging the handle 62 of the shaft 56, to retain it in one of its two operative positions, as best illustrated in Fig. 3. The shaft 56 and the manipulating handle 62 are so related that when the manipulating handle 62 engages the upper recess 68, the crank arms 58 are moved to the position shown in Fig. 1, and when the handle 62 engages the lower recess 70, the crank arms 58 are moved to the position indicated in Fig. 5.

Operation

When it is desired to use the nozzle on a bare floor, the handle 62 is depressed and engaged in the lower recess 70. The movement of the handle rotates the shaft 56 about its longitudinal axis so that the crank arms 58 thereof are moved to the position shown in Fig. 5, in which they move the brush outwardly of the channel until it abuts the stops 54. In this position, the brush is locked between the stops 54 and the ends of the crank arms 58 and, as shown in Fig. 5, the brush is in its outermost position.

When it is desired to use the nozzle on relatively thick floor coverings such as rugs having naps or piles or different heights, the handle 62 is disengaged from the lower recess 70 and is raised so as to engage the upper recess 68. The crank arms 58 of the shaft 56 are now moved out of contact with the brush and assume the position shown in Fig. 1 in which the brush is free to float or move freely vertically of the channel, according to the variation of the height of the surface of the covering being cleaned. The movement of the brush inwardly of the channel may be limited by contact of the brush backing 40 with the top wall of the channel 36, or by contact with the arms 58.

From the foregoing, it will be seen that I have devised a structure which is very simple, durable, inexpensive, and easy to operate, and by means of which the brush may be mounted in fixed position or by means of which the brush may be permitted to move relative to the nozzle opening. Also, the actuating parts, except for the handle 62, are concealed so as not to detract from the appearance of the nozzle.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications without departing from the spirit thereof.

What is claimed is:

1. In a suction cleaner, a nozzle construction including upper and lower members and fastening means for connecting the members in abutment relation, the lower member including an inner wall bounding the suction opening and an outer wall spaced from the inner wall to define a brush slot, said upper member covering the lower member and having inner and boundary abutment portions cooperating with abutment portions of the latter, the abutment portion of the lower member cooperating with said boundary abutment portion of the upper member being constituted by the adjacent edge of said outer wall, said inner abutment portions including abutting wall elements defining a suction passage communicating with the nozzle opening, a brush in the slot, stops for limiting outward movement of the brush in the slot, a shaft having end crank portions, means for positioning the shaft with the crank portions thereof disposed above the brush and including cooperating bearing portions provided on the upper and lower members, and means for turning the shaft to engage the crank portions with the brush to confine the latter in place with respect to said stops and to disengage the crank portions from the brush.

2. In a suction cleaner, a nozzle construction including upper and lower members and fastening means for connecting the members in abutment relation, the lower member including an inner wall bounding the suction opening and an outer wall spaced from the inner wall to define a brush slot, said inner wall having parallel side portions joined by rounded end portions to define a suction opening which is elongated and has rounded ends and the outer wall having parallel side portions and rounded end portions corresponding to the side and end portions of the inner wall to provide for the brush slot surrounding the suction opening, said upper member covering the lower member and having inner and boundary abutment portions cooperating with abutment portions of the latter, the abutment portion of the lower member cooperating with said boundary abutment portion of the upper member being constituted by the adjacent edge of the outer wall, said upper and lower members having abutting wall elements forming a suction passage communicating with the suction opening, a brush in the brush slot and having parallel side portions joined by rounded end portions, stops for limiting outward motion of the brush, a shaft having end crank portions, means for positioning the shaft above one side portion of the slot with the crank portions disposed above the brush substantially midway of the rounded end portions of the latter, the last-named means including cooperating bearing portions provided on the upper and lower members in order that the shaft may be positioned incident to assembly of the latter, and an actuating member operable externally of the nozzle construction for turning the shaft to engage the crank portions with the brush to hold the latter in position with respect to the stops and to disengage the crank portions from the brush.

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