April 21, 1953 G. M. KELLY 2,635,279

VACUUM CLEANER TOOL WITH ADJUSTABLE BRUSH

Filed Jan. 20, 1947

Fig. 1

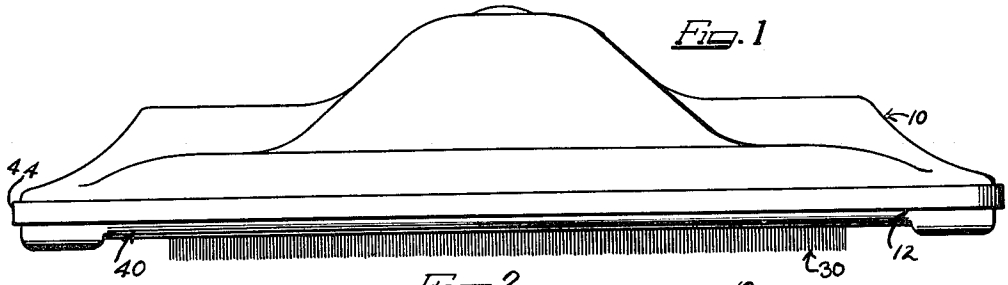


Fig. 2

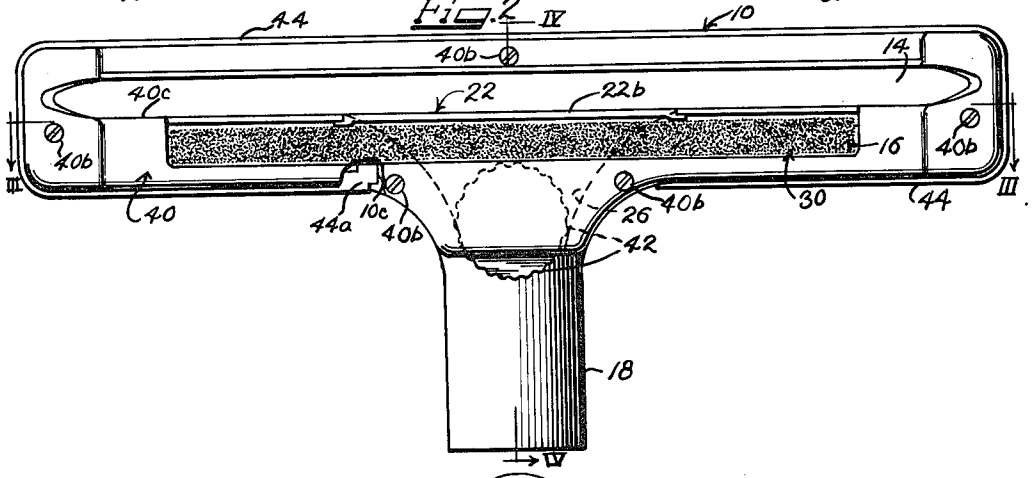


Fig. 3

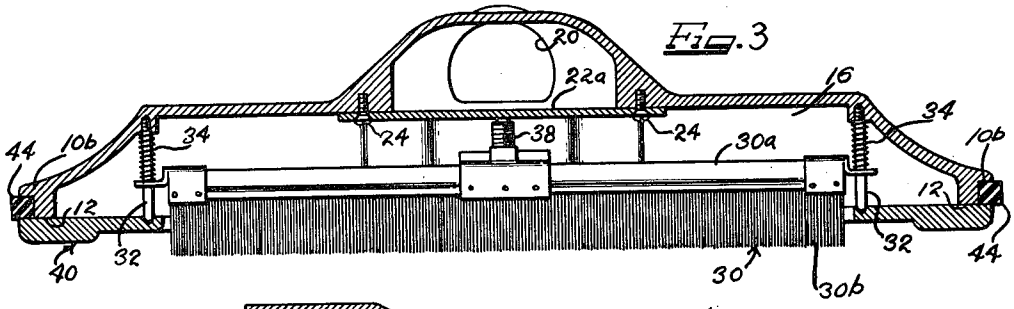
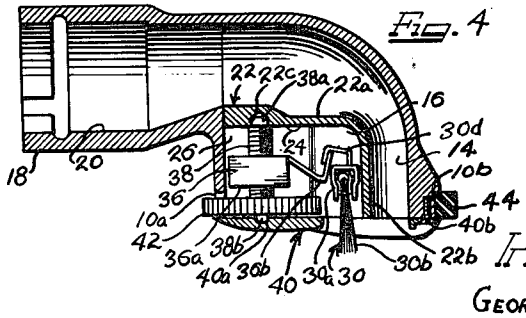


Fig. 4



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VACUUM CLEANER TOOL WITH ADJUSTABLE BRUSH

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3 Claims. (Cl. 15—371)

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This invention relates to a cleaning tool, and particularly to a cleaning tool wherein a surface cleaning member, such as a brush, agitator, abrader, polisher, or the like, is adjustably positioned with respect to the working face of the tool.

While not limited thereto, this invention finds particular application in floor cleaning type suction nozzles commonly utilized in connection with vacuum cleaners.

In accordance with this invention, the surface cleaning member of a cleaning tool, such as a brush of a floor nozzle, is movably mounted in a recess in the working face of such cleaning tool so that it may occupy any one of a plurality of positions of varying extents of projection relative to such working face. Suitable resilient members are provided to urge the surface cleaning member to one of its extreme positions of projection relative to the working face of the cleaning tool. In a communicating recess, a positioning member is disposed which is engageable with the shiftable surface cleaning member to position such member in any selected one of a plurality of positions of varying extents of projection. The positioning member is, in turn, controlled by a screw, or similar threaded member, which is also mounted in the communicating recess.

A cover member is provided which is detachably securable to the working face of the cleaning tool, overlying the communicating recess and providing positioning support for the adjusting screw, maintaining such screw in a fixed position with respect to the cleaning tool but permitting the rotation of such screw. Such rotation is then accomplished by manual operation of a knob formed on the screw which has a peripheral portion projecting outwardly through a slot in one of the walls defining the communicating recess.

Accordingly, it is an object of this invention to provide an improved cleaning tool, particularly, an improved cleaning tool of the type wherein the surface cleaning member, such as a brush, is adjustable in its extent of projection with respect to the working face of the tool.

A further object of this invention is to provide an improved cleaning tool characterized by the simplicity of its components and the ease of manufacture and assembly thereof, and wherein a single detachable cover member for the working face of the cleaning tool performs the double function of securing a resilient bumper on the cleaning tool and maintaining the positioning control element for the adjustable brush or other

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surface cleaning member in operative assembly.

The specific nature of the invention as well as other objects and advantages thereof will become apparent to those skilled in the art from the following detailed description of the annexed sheet of drawings which, by way of a preferred example only, illustrates one specific embodiment of the invention.

On the drawings:

Figure 1 is a front elevational view of an assembled cleaning tool embodying this invention.

Figure 2 is a bottom elevational view of the cleaning tool of Figure 1.

Figure 3 is a longitudinal sectional view taken along the plane III—III of Figure 2.

Figure 4 is a transverse sectional view taken along the plane IV—IV of Figure 2.

As shown on the drawings:

While my invention will be described and illustrated in connection with its application to an adjustable brush suction cleaning tool, it should be distinctly understood that the principles thereof are equally applicable to any form of cleaning tool wherein it is desired to provide an adjustable mounting of a surface cleaning member with respect to the working face of the tool.

Referring to Figure 1, a nozzle casing 10 of conventional configuration is employed having a bottom working face 12 and a pair of elongated recesses 14 and 16 respectively opening in such working face, the elongated recess 14 forming a suction slot. An integral hollow tubular portion 18 is formed on the back side of nozzle casing 10 and the bore 20 of such tubular portion is in communication with the elongated recess 14. The tubular member 18 permits connection of the nozzle casing 10 in conventional manner to an air hose (not shown) which in turn is connected to a suitable suction source so as to produce a flow of air past the working face 12 into the recess 14 and thence into the tubular portion 18, carrying along all dust and debris loosened by the operation of the cleaning tool. To facilitate the casting of the nozzle casing 10, the elongated recess 16 is preferably originally cast so as to be in communication at its central portion with recess 14 and the bore 20 of tubular portion 18. Recess 16 is thereafter isolated from the air flow through recess 14 and tubular portion 18 by the assemblage of an angle plate 22 into the interior of the casting 10, as by screws 24. One horizontal arm 22a of angle plate 22 separates recess 16 from communication with the passage through tubular portion 18 while the other vertical arm

22b divides recess 16 from elongated recess 14. The assemblage of angle plate 22 in the casing 10 then results in the two spaced parallel elongated recesses 14 and 16 opening in the working face 12 of the nozzle casing plus a transversely extending recess 26 communicating only with the central portion of elongated recess 16.

An elongated surface cleaning member 30, here shown as comprising a brush having a frame 30a and bristles 30b secured thereto, is movably mounted in elongated recess 16 so that such cleaning member 30 may be positioned in recess 16 in any one of a plurality of positions of different extents of projection of the bristles 30b outwardly from the working face 12 of the nozzle casing. Such mounting may be conveniently accomplished by the assemblage of a pair of support posts 32 in opposite ends of the recess 16 which are disposed in generally parallel relationship with the depth axis of the recess 16. Apertured ears 30c are then provided on each end of the brush frame 30a to slidably mount the brush on the support post 32. A spring 34 is also mounted on each of the support posts 32 and arranged to resiliently urge the brush 30 toward one extreme position of projection with respect to the working face 12. In the particular example illustrated, the springs 34 urge the brush 30 outwardly with respect to the working face 12.

The actual vertical position of the brush 30 in the recess 16 is controlled by a positioning member 36 which is loosely insertable in the transverse recess 26. The positioning member 36 comprises a block-like body portion 36a having a threaded hole (not shown) therethrough and an integral, projecting hook portion 36b, the end of which is disposed adjacent the central portion of the brush frame 30a. A cooperating hook portion 30d is formed on the center of the brush frame 30a and is engaged by the hook portion 36b of the positioning member 36 to adjustably position the brush 30 in its recess 16 in any selected one of a plurality of positions of varying extents of projection with respect to the working face of the cleaning tool.

The depth position of the positioning member 36 in recess 26 is in turn determined by a screw 38 or similar threaded member. The screw 38 is threadably engaged in the threaded hole of the positioning members 36 and has bearing surface end portions 38a and 38b. The end portion 38a is receivable in bearing relationship in a hole 22c provided in the horizontal arm 22a of the angle member 22. The other bearing surface end portion 38b is receivable in a hole 40a provided in the top surface of a cover member 40 which is detachably secured to the working face 12 of the nozzle casing by a plurality of screws 40b.

From the foregoing description, it is apparent that all of the elements of the brush-positioning mechanism are merely loosely retained within the nozzle casing 10 until the assemblage of the cover member 40 thereto. The assemblage of cover member 40 effects the positioning of adjusting screw 38 in a fixed axial position within the transverse recess 26, prevents axial displacement of the screw 38, and yet permits rotation of such screw. It is therefore apparent that rotation of screw 38 will adjust the depth position of the positioning member 36 in the transverse recess 26 which in turn effects adjustment of the depth position of the brush 30 in recess 16.

A notch 10a is provided in that portion of the rear wall of nozzle casing 10 which defines the rear wall of the transverse recess 26. Manual rotation of adjusting screw 38 may then be conveniently accomplished by the provision of a positioning disk 42 which may be integrally formed with the adjusting screw 38 and has a peripheral portion thereof projecting out of nozzle casing 10 through the notch 10a. Such projecting peripheral portion of disk 42 may be readily manipulated by the fingers of the operator to effect adjustment of the extent of projection of the brush 30 with respect to the working face of the cleaning tool.

The cover plate 40 is a flat sheet-like member having a peripheral configuration conforming substantially to that of the working face 12 of the cleaning tool and provided with a central aperture 40c to permit the brush bristles 30b to project therethrough and to expose the open face of recess 14 for unimpeded air flow therein.

In addition to effecting the operative assemblage of the positioning mechanism for the brush 30, the cover plate 40 is also utilized to effect the attachment of a resilient bumper member 44 to the periphery of the nozzle casing 10. The nozzle casing 10 is provided with a peripheral flange 10b which extends substantially around the entire periphery of the nozzle casing, terminating, however, adjacent the juncture of tubular portion 18 with the main body portion of the nozzle. At the two termination points of flange 10b notches 10c are cut into the end face 12 of the casing to effectively extend the flange 10b into communication with the brush recess 16. In Figure 2, a portion of the cover member 40 has been broken away to illustrate one of the notches 10c. The resilient bumper member 44 is preformed to conform to the shape of the peripheral flange 10b and the ends of such bumper member are provided with integral transversely offset portions 44a which are respectively shaped to be snugly insertable in the notches 10c. The ends 44a of the resilient bumper 44 are thus effectively secured to the nozzle casing 10 so far as lateral displacement thereof is concerned. The detachable cover member 40 has a peripheral edge portion 40d which overlies a portion of the width of the bumper 44 and hence exerts a clamping action on the bumper 44 against the casing flange 10b to adequately secure the bumper to the nozzle casing.

From the foregoing descriptions it is apparent that a cleaning tool embodying this invention is characterized by unusual simplicity of its various components which permits such components to be economically manufactured and readily assembled. Such simplicity is in a large measure attributable to the double functional employment of the cover member 40 which concurrently effects a securing of the resilient bumper to the casing plus the maintaining of the brush position-adjusting element in operative assembly.

It will, of course, be understood that various details of construction may be varied through a wide range without departing from the principles of this invention and it is, therefore, not the purpose to limit the patent granted hereon otherwise than necessitated by the scope of the appended claims.

I claim as my invention:

1. A suction cleaning tool comprising a nozzle member having a working face provided with a suction slot, said nozzle member also having an

elongated recess opening in said working face and a second offset recess in said nozzle member communicating therewith, an elongated brush member, means supporting said brush member in said elongated recess for movement between positions of varying extent of projection relative to said working face, resilient means urging said brush toward one extreme position with respect to said working face, a positioning member in said second recess and engaging said brush to position said brush against the bias of said resilient means, threaded means in said second recess for adjusting the position of said positioning member, a cover detachably secured to said working face and underlying said second recess, and means on said cover for securing said threaded means in a fixed position in said second recess but permitting rotation thereof to adjust the degree of projection of said brush.

2. A suction cleaning tool comprising a nozzle member having a working face provided with a suction slot, said nozzle member also having an elongated recess opening in said working face and a second recess communicating therewith, an elongated brush member, means supporting said brush member in said elongated recess for movement between positions of varying extents of projection relative to said working face, resilient means urging said brush toward one extreme projecting position with respect to said working face, a positioning member in said second recess and engaging said brush to position the brush against the bias of said resilient means, a screw in said second recess and threadably engaging said positioning member for adjusting the position thereof, a cover detachably secured to said working face, means on said cover for securing said screw in a fixed position in said second recess but permitting rotation thereof, said casing having a slot in a wall defining said second recess, and a disk-shaped operating knob rotatable with

said screw and having a peripheral portion thereof projecting out of said nozzle member through said slot, thereby permitting manual rotation of said screw to adjust the extent of projection of said brush.

3. A suction tool comprising a body member having a working face provided with a suction slot and an elongated recess adjacent thereto, a post in each end of said elongated recess, a brush member extending across said elongated recess and slidably supported on said posts, a coil spring on each post bottomed against said body member and biasing said brush member outwardly of said working face, a positioning member engaging a medial portion of said brush member to position said brush member inwardly of said working face against the bias of said springs, a cover member underlying a portion of said elongated recess, and an adjusting screw having its opposite ends journaled in said body member and in said cover member and being threaded through said positioning member, said screw having a knob extending into an accessible location outside of said body member for manually positioning said brush member relative to said working face upon rotation of said knob.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,091,383	Oblosser	Mar. 24, 1914
1,695,246	Gammeter	Dec. 11, 1928
1,772,530	Whitlock	Aug. 12, 1930
2,099,172	McCabe	Nov. 16, 1937
2,128,525	Dyer	Aug. 30, 1938
2,153,457	Fechtenburg	Apr. 4, 1939
2,421,661	Taylor	June 3, 1947
2,536,443	Hammell	Jan. 2, 1951