April 7, 1936. N. D. BAKER 2,036,789

SUCTION CLEANER TOOL

Filed Jan. 29, 1935

Fig. 1.

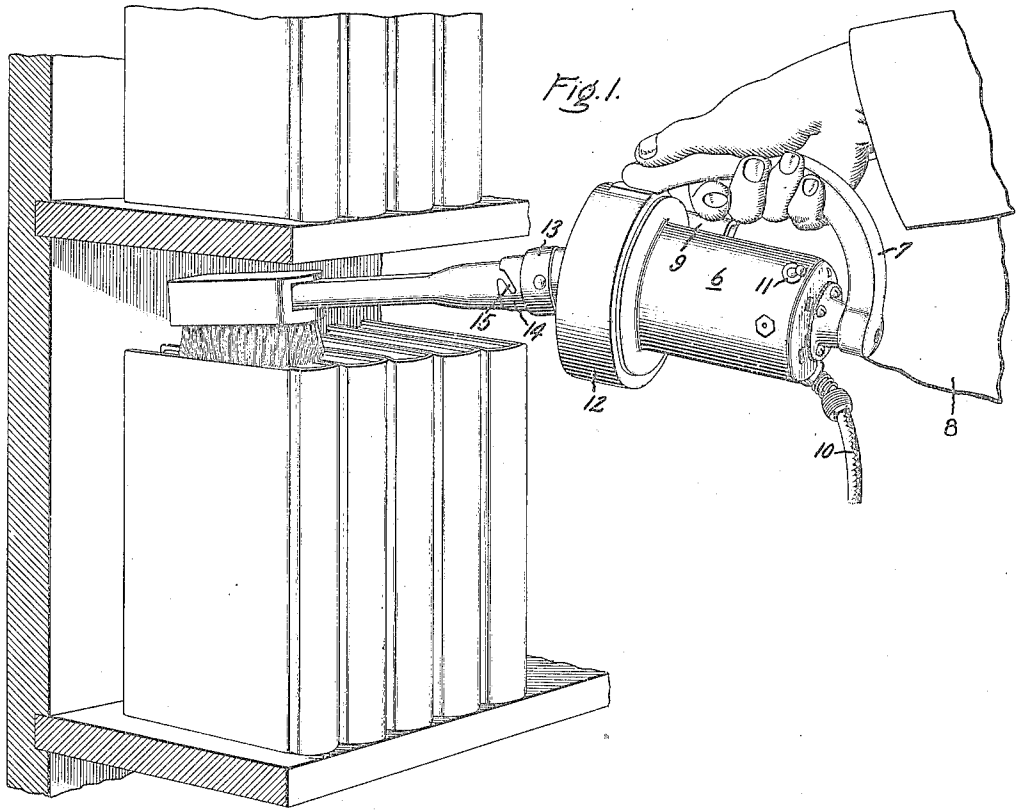


Fig. 2.

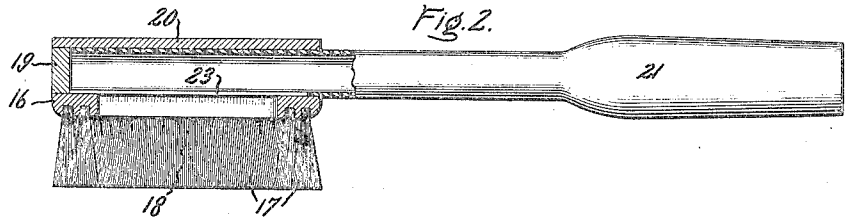


Fig. 3.

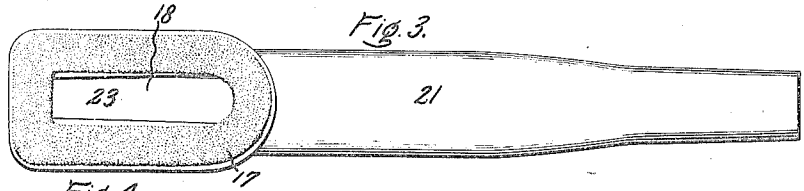


Fig. 4.

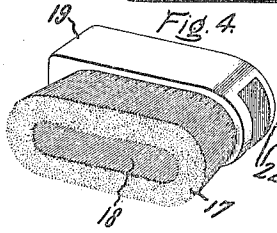
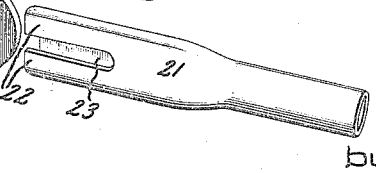


Fig. 5.



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2,036,789

UNITED STATES PATENT OFFICE

2,036,789

SUCTION CLEANER TOOL

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Application January 29, 1935, Serial No. 3,923

1 Claim. (Cl. 15—158)

One of the problems in maintaining libraries, both personal and public, is the cleaning of the books. One way to do this is to remove each book from its shelf, dust it and return it to place. Such a procedure requires a good deal of time and in large libraries is a substantial item of expense. Furthermore, to clean the books in the open causes a considerable amount of floating dust which settles on other objects in the room and to some extent on the books which have already been cleaned and replaced on the shelves. The principal place for dust to collect on books standing vertically on shelves is along their top edges. Even though the edges of the leaves of the books are cut smooth, it is rather difficult to properly clean them, and if the edges are relatively rough, the difficulty is greatly increased. Wiping with a cloth is satisfactory in some cases while in others, it is necessary to brush the edges, which usually results in clouds of dust being dissipated into the air of the room.

My invention has for its object the provision of a simple and effective suction cleaner tool for cleaning the tops of books without removing them from the shelves.

For a consideration of what I believe to be novel and my invention, attention is directed to the accompanying description and the claim appended thereto.

In the accompanying drawing, which is illustrative of my invention, Fig. 1 is a perspective view of a section of book shelves and a vacuum cleaner with my improved cleaning attachment; Fig. 2 is a view partly in side elevation and partly in section of the attachment or tool; Fig. 3 is a bottom plan view of the attachment; Fig. 4 is a perspective view of the brush, and Fig. 5 is a perspective view of the brush supporting tube.

6 indicates a small vacuum cleaner which may be of usual construction, provided it is relatively light and capable of exerting a substantial suction effect. It is provided with a handle 7 arranged on the upper side of the cleaner whereby the latter may be manipulated. The handle is so shaped and positioned that a portion of the weight of the complete device is carried by the bristles of the brush, as will appear more fully later on. 8 indicates the dust bag for collecting the dust discharged through the outlet conduit 9 of the cleaner. Current is admitted to the electric driving motor of the cleaner by the flexible conductors 10, subject to the control of a small switch having an actuating handle 11.

In the front wall of the fan casing 12 in line with the axis of the fan and forming an integral part of the casing is a tubular member 13 inside of which and rigidly fastened in place therein is a thin metal sleeve 14 having a pair of diagonal slots 15, one of which is shown, by means of which an ordinary nozzle may be secured to the cleaner for general work. The sleeve 14 may in some cases be omitted and the tubular member 13 utilized as a support for my improved cleaning tool.

As previously indicated, it is necessary to brush the tops of the books in order effectively to clean them. Since the space between the tops of the books on one shelf and the shelf immediately above it is usually rather small, and since the covers extend above the leaves or pages, an ordinary nozzle is not suitable for the purpose. To meet this problem, I provide a special form of brush and mounting therefor. The brush has a back made of wood or other light material. As shown, it comprises a thin flat plate 16 of substantially rectangular form to which rows of relatively soft bristles 17 are attached in any suitable way. The reason for making the bristles relatively soft is to permit them to follow the irregular surfaces of the tops of the books. On the other hand, they must be stiff enough to support a small part of the weight of the cleaner as a whole. The bristles are so arranged as to leave a central opening 18 of rectangular shape which extends longitudinally of the brush and tubular support thereof, and through which dust ladened air flows. Rising above the back and completely enclosing it, except at the rear, is a thin vertically disposed wall 19 which with the cover 20 defines a chamber. The chamber in the brush back is in free communication with the rectangular opening 18 defined by the rows of bristles.

The brush is supported by a member comprising a thin walled tube 21 made of fiber or equivalent light weight material extending in an approximately axial direction from the cleaner. The right hand end portion of the member makes a good friction fit with the thin walled sleeve 14 on the cleaner or with the member 13, and for that purpose is slightly tapered for a portion of its length. The fit should be tight enough to hold the member in its intended position and yet permit the ready removal of the handle and brush when desired. The opposite end portion of the member is fitted into the back of the brush and completely enclosed thereby. In order to reduce the vertical dimension, because the

space between the tops of the books and the next upper shelf is small, the tube is flattened at the brush end as best shown in Fig. 5. The sides 22 of the flattened end make a friction fit with the vertical walls 19 of the brush back and for this purpose either the tube or the walls may be slightly tapered. The point is to insure a good friction fit between the tubular member and the brush, yet one permitting the parts to be separated by a reasonably strong pull. The brush end of the tubular member is also provided with a rectangular axially extending slot 23 which when the parts are assembled registers with the central opening 18 defined by the bristles and the opening in the bristle supporting plate. The parts of the member adjacent the edges of the slot should make a good sliding fit with the bristle supporting plate so as to prevent air from leaking into the member from the outside of the brush back since any such leakage would reduce the effective suction action of the cleaner. The end of the tubular member may be left open because it is closed by the end brush wall 19. As shown in Fig. 2, that portion of the tubular member within the brush is well supported throughout its length.

The cleaner, its handle 7 and brush are so balanced or arranged that the major part of the weight is taken by the hand of the operator and a small but definite part of the weight is supported by the bristles which is sufficient to cause them effectively to brush dirt from the tops of the books and from between the leaves. A greater pressure may be exerted on the brush by the operator exerting a downward forward pressure on the handle 7, or by grasping the handle nearer the rear end thereof. The suction effect exerted by the fan of the cleaner causes the dust or dirt disturbed by the bristles of the brush to pass through the opening 18 and bristle plate, thence through the slot 23 into the tubular member and from the latter into and through the cleaner to the dust bag 8.

As used in practice, the brush is permanently left on the tubular member and the latter connected to and disconnected from the cleaner as occasion demands. Having the brush mounted directly on the cleaner by means of said member reduces the number of parts and results in a simple effective cleaning means. Also the arrangement permits of the ready removal of the brush and its supporting member and the substitution therefor of an ordinary cleaner nozzle, whereupon the cleaner can be used for various other kinds of work.

What I claim as new and desire to secure by Letters Patent of the United States is:

A vacuum cleaner tool including a brush comprising back and front plates and a connecting wall extending therebetween forming an open ended chamber of substantially uniform and non-circular cross section along its length, said front plate being provided with an aperture therein and a row of bristles thereabout, and a tubular suction member inserted into the open ended chamber formed in said brush through the open end thereof, the exterior of said tubular member corresponding in cross section along its length to that of said chamber such that the brush is firmly supported and reenforced substantially throughout its entire length by said tubular suction member, said tubular suction member being provided with an aperture in one wall thereof coincident with the aperture provided in the front plate of said brush such that there is provided a free passage for dust laden air, from the bristles about the aperture in the front plate of said brush, into the interior of the tubular suction member.

NEWTON D. BAKER.