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CLEANING DEVICE FOR SHOES, UPHOLSTERY AND THE LIKE

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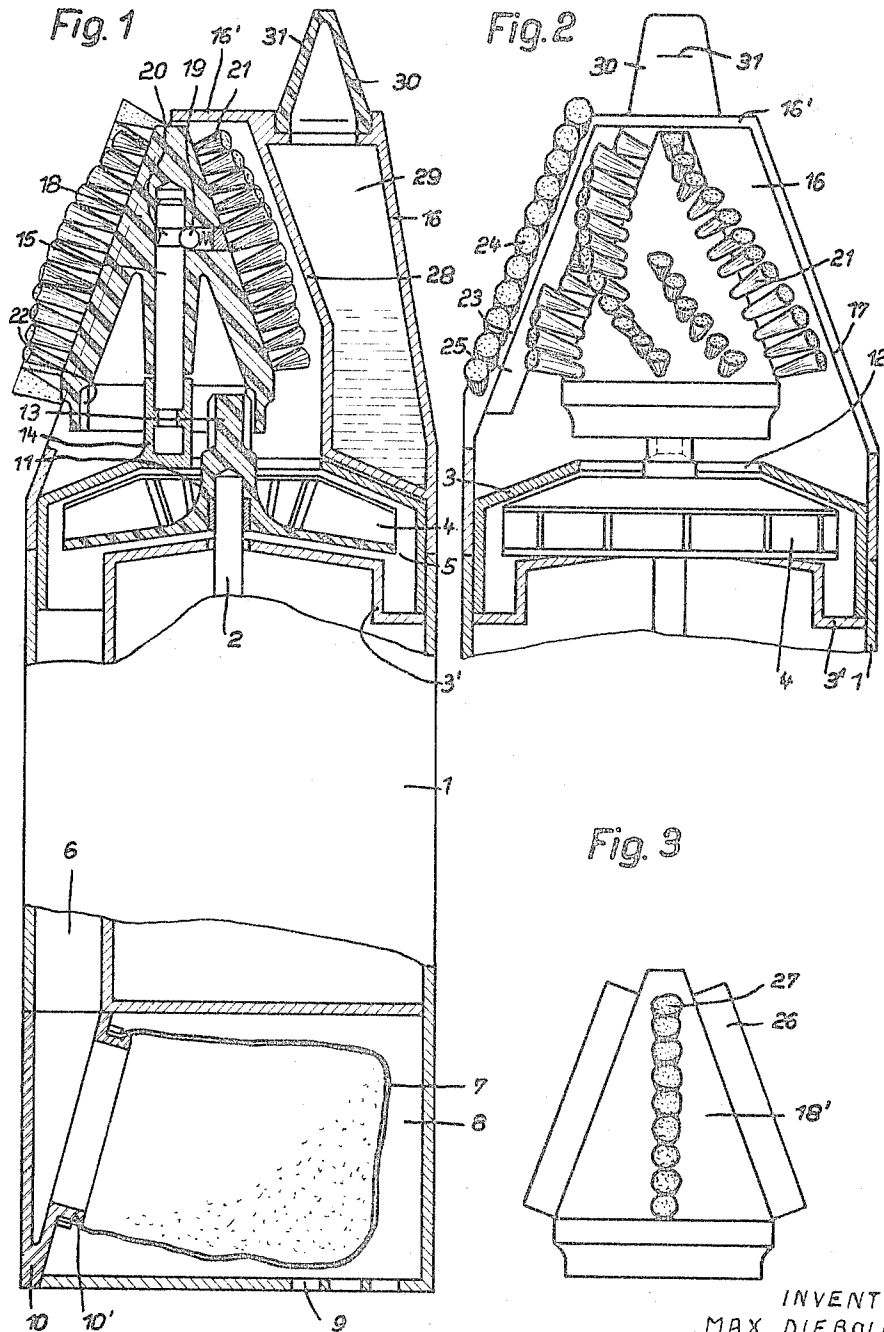


Fig. 3

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1

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CLEANING DEVICE FOR SHOES, UPHOLSTERY AND THE LIKE

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This invention relates to hand held cleaning devices of the motor operated-type and, more particularly, to a novel and improved cleaning device of this type for cleaning shoes, upholstery and the like and preferably provided with interchangeable components particularly adapting it to the specific cleaning operation.

Various devices have been proposed for particularly cleaning and polishing shoes. However, known devices have not been successful practically or commercially, either because their construction was too complicated or the manner of use was too complicated. Thus, there is a present need for a shoe polishing device or the like by which daily cleaning and shining of shoes at home or on the road can be effected simply and inexpensively by combining all necessary equipment in a simple and compact unit.

An object of the present invention is to provide a cleaning device, particularly adapted to the cleaning and polishing of shoes, in which the entire cleaning and shining procedure can be effected without any change of equipment and in a single continuous operation.

A further object of the invention is to provide such a cleaning device which may be used also for cleaning upholstery, textile material and the like.

Another object of the invention is to provide such a device including interchangeable components whereby it may be adapted to the particular cleaning operation to be performed.

Still another object of the invention is to provide such a device including a rotary brush member having bristles projecting laterally therefrom for a cleaning and polishing operation.

Yet a further object of the invention is to provide a rotary brush device of the foregoing type including relatively hard bristles and relatively soft bristles, with the relatively hard bristles preferably being shorter than the relatively soft bristles so that, by a variation in the pressure with which the device is pressed against the surface to be cleaned, either the relatively hard bristles may be brought into contact with such surface for a thorough cleaning operation by high pressure or, with a lighter pressure, only the relatively softer bristles will engage the part to be cleaned, whereby to effect a polishing action.

A still further object of the invention is to provide a rotary brush-type of shoe cleaning and polishing device, which is electrically motor driven, and which has a compartment or container receiving a fluid treating composition which may be applied to the shoes during the cleaning and polishing operation.

Another object of the invention is to provide a device of the foregoing type in which the casing exterior is provided with stationary bristles to augment the cleaning operation.

A still further object of the invention is to provide a cleaning device of the mentioned type including motor driven blower means for providing suction through the cleaning means and delivering the removed dirt or soil to a dust bag or the like.

In accordance with the invention, a cleaning device is provided with comprises a relatively elongated casing

2

containing an electric motor which may receive its power supply from the usual convenience outlet through the usual utility cord. The electric motor drives a blower within the casing to provide a suction effect, and the sucked in soil and dirt may be delivered into a removable dust bag or the like, such as commonly used in vacuum cleaners.

The casing is further provided with an interior compartment arranged to hold a fluid cleaning substance, and means may be provided to effect a controlled discharge of this cleaning substance during the brushing or cleaning operation.

In one form of the invention, there is a shaft extending in parallel but radially offset relation to the motor axis and this shaft interchangeably mounts a brush having a ring gear engaged with a pinion on the motor axis, this brush projecting through a lateral opening in the casing. Ledge means, as well as stationary bristle means, may be provided on the exterior of the casing for cooperation with the rotatable brush, and further to facilitate cleaning of the brush bristles.

For an understanding of the principles of the invention, reference is made to the following description of typical embodiments thereof as illustrated in the accompanying drawings.

In the drawings:

FIG. 1 is an outside elevation view, partly in section, of one form of the device embodying the invention;

FIG. 2 is a view looking from the left of FIG. 1 and illustrating the bristle arrangement; and

FIG. 3 is a side elevation view illustrating a modified form of rotary brush useable with the device shown in FIGS. 1 and 2;

Referring to that embodiment of the invention shown in FIGS. 1 and 2, an electric motor is mounted in a relatively elongated case 1, only the shaft 2 of this motor being illustrated in FIG. 1. The dimensions of casing 1, and its general contours, are so chosen that the casing can be easily grasped by one hand and guided. Interiorly thereof, casing 1 is provided with inserts or partitions 3 and 3' defining a compartment receiving a suitable draft creating means, such as a fan or blower 4 secured on motor shaft 2. A passage 6 extends longitudinally within the casing laterally to one side of the motor, and connects space 5 to the mouth of a removable dust bag 7 mounted within a compartment 8. Apertures 9 provide for discharge of air from compartment 8 after flow through bag 7. As indicated by the double sectioning, casing 1 is provided, at the area of compartment 8, with a removable lid or cover 10 which is preferably formed as a supporting or carrier ring 10' for dust bag 7. Thus, bag 7 can be removed along with lid 10.

The hub 11 of blower or fan 4 is secured on the end of motor shaft 2. An air inlet opening 12, as best seen in FIG. 2, is provided in partition member 3 and is substantially coaxial with motor shaft 2. Hub 11 of fan or blower 4 projects upwardly through air opening 12 and has a pinion 13 on its upper end. Pinion 13 may be formed integrally with hub 11, or may be a separate pinion secured to the hub. Preferably, the parts 4, 11 and 13 are made of a suitable synthetic resin or plastic composition material.

Partition 3 is formed with a generally tubular projection 14 extending in parallel laterally offset relation to motor shaft 2, and a shaft 15 is secured within projection 14. If the parts are formed of a synthetic resin composition material, as mentioned, shaft 15 may be formed integrally with projection 14. A cap 16, which is substantially frusto-conical in form, is disengageably telescoped over partition 3 and is provided with a side opening 17, as seen in FIG. 2. When cap 16 is removed, a tool body 18

can be disengageably secured on shaft 15, the tool body being held in position by means of a spring biased ball 19 engageable in a circumferential groove 20 in shaft 15.

As best seen in FIGS 1 and 2, tool body 18 is provided with several rows of bristle bundles 21, which rows may extend laterally or helically. The larger lower or inner end of body 18, which body is preferably formed of a synthetic resin composition material and has a generally frusto-conical shape, is formed with an internal ring gear 22 meshing with pinion 13. Body 18 is at least partially hollow in order to enable interengagement of ring gear 22 with pinion 13. If, for any reason, a greater degree of eccentricity of the tool body is required or desired, the larger inner end of the tool body could be provided with an external ring gear for cooperation with pinion 13.

The rim 23 of opening 17 may also be provided with a row of bristle bundles 24. Furthermore, in the direction of rotation of the tool, a ledge 25 may be formed behind bristle row 24 or further toward the interior of cap 16. This ledge extends into the path of movement of bristles 21 and serves to remove dirt from the bristles by beating. All of the dirt and dust particles within the cap 16 are withdrawn by the suction flow through fan or blower 4 and delivered into dust bag 7.

Tool body 18 is interchangeable with other tool bodies. Referring to FIG. 3, a tool body 18' is shown, which is provided with beating ledges 26 which are spaced uniformly over the entire circumference of body 18'. Body 18' also may be provided with rows of bristles 27.

Referring again to FIGS. 1 and 2, cap 16 has an interior partition 28 which serves to define a compartment 29 to receive a cleaning, polishing or the like agent in fluid form. A dispenser nozzle 30, formed of elastic or resilient material, is disengageably inserted into an opening in the end wall 16' or cap 16, and the wall of dispenser nozzle 30 is formed with a slot 31 which is closed, under normal circumstances, due to the inherent elasticity of the material of dispenser 30. The interior of the dispenser is in communication with space 29, and dispenser 30 further acts as a closure member for a filling opening for compartment 29.

When used for shining shoes, the device shown in FIGS. 1 and 2 may be held in either the vertical, the inclined, or horizontal position. By means of the brushing tool which is driven at a reduced angular velocity with respect to the angular velocity of motor shaft 2, the first operation is the removal of dirt from the shoes, and this dirt is sucked through the fan or blower and delivered to dust bag 7. During this particular cleaning operation, the device may be partially supported by resting bristles 24 on the shoe, or the device may be moved to obtain a further cleaning action by the bristles 24. After the initial cleaning, the device is pressed against the shoe to compress dispensing means 30 so that slot or gap 31 will open and polishing fluid will be discharged onto the shoe. This is done at different areas of the shoe. The shining or polishing is then effected using the brush tool. It is possible to provide the casing or cap with a rigid or fixed projection in order to provide means for removing incrustations or hard dirt from the shoe.

The rotating brush bristles are freed from dirt by stripping ledge 25. The frusto-conical shape of cap 16 and of tool 18 facilitates use of the device, as it prevents the hand holding the casing from coming into contact with the shoe.

The tool body 18' of FIG. 3 is substituted for tool body 18 when it is desired to use the cleaning device for cleaning upholstery, textile material, curtains and the like or for brushing wearing apparel and the like. Cap 16, having exterior bristles 24, may be used alone without the rotating tool 18 or 18' as a vacuum-type brush.

For particular purposes, tool carrier bodies 18 or 18' may be provided with bristles of different hardness or of different materials. In this case, the bristles of greater hardness are used primarily for scraping off dirt, and the

bristles of lesser hardness are used for the polishing or shining operation. A particularly efficient arrangement is obtained if the harder bristles are somewhat shorter than the softer bristles. In such event, only a slight pressure is exerted during the polishing while, during the dirt removal operation, the device is pressed firmly against the surface to be cleaned so that the hard bristles will come into effective action. Furthermore, if it is desired to use the device as a grinding or polishing tool, tool body 18' or 18 may be constructed in the form of a grinding or polishing disc or cone.

While specific embodiments of the invention have been shown and described in detail to illustrate the application of the principles of the invention, it will be understood that the invention may be embodied otherwise without departing from such principles.

What is claimed is:

1. A hand held electric motor operated cleaning device comprising, in combination, a relatively elongated hollow casing; an electric motor within said casing with its axis extending substantially longitudinally of the latter; draft creating means including a rotor secured on one end of the motor shaft within said casing; dust collector means within said casing in communication with said draft creating means; a relatively hollow head disengageably secured to one end of said casing, said head being formed with a relatively elongated air inlet aperture communicating with the inlet of said draft creating means; a row of first bristles extending along one edge of said aperture; a relatively elongated dirt stripping ledge extending from the inner surface of said hollow head; a brush element rotatably mounted within said head; and driving means interconnecting said motor and said brush element for rotating said brush element; said brush element including second bristles, said second bristles comprising bundles of bristles, said bundles of bristles being of different length and different strength, the relatively soft bristles being longer than the relatively stronger bristles and projecting outwardly beyond the relatively stronger bristles whereby, when said brush element is pressed firmly against a surface to be cleaned, the surface will be contacted by said relatively stronger bristles for removal of dirt therefrom and, when said brush element is pressed less firmly against the surface to be cleaned, only said relatively soft bristles will contact the surface for polishing thereof; said second bristles continuously beating against said stripping ledge for removal of dirt from said second bristles.

2. A hand held electric motor operated cleaning device, as claimed in claim 1, including a stationary shaft extending from said one end of said casing into said head and disposed in laterally spaced substantially parallel relation to the motor axis, said brush element being rotatably mounted on said shaft and being substantially hollow; said driving means comprising a drive pinion on the motor shaft extending into said hollow brush element and meshing with an internal ring gear on said hollow brush element.

3. A hand held cleaning device, as claimed in claim 1, in which said brush element has rows of bristles and longitudinally extending beaters arranged in alternation around its exterior surface in substantially uniformly angularly spaced relation.

4. A hand held electric motor operated cleaning device, as claimed in claim 1, and which is intended for cleaning and polishing of shoes; said head having an interior reservoir adjacent said brush element containing a fluid cleaning composition; and means for controllably discharging said fluid cleaning composition from said reservoir onto the shoe adjacent said brush element.

5. A hand held electric motor operated cleaning device, as claimed in claim 4, including a manually operable normally closed valve controlling discharge of fluid cleaning composition from said reservoir.

5

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