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PORTABLE SANDING AND POLISHING DEVICE

Filed Jan. 19, 1929

Fig. 1

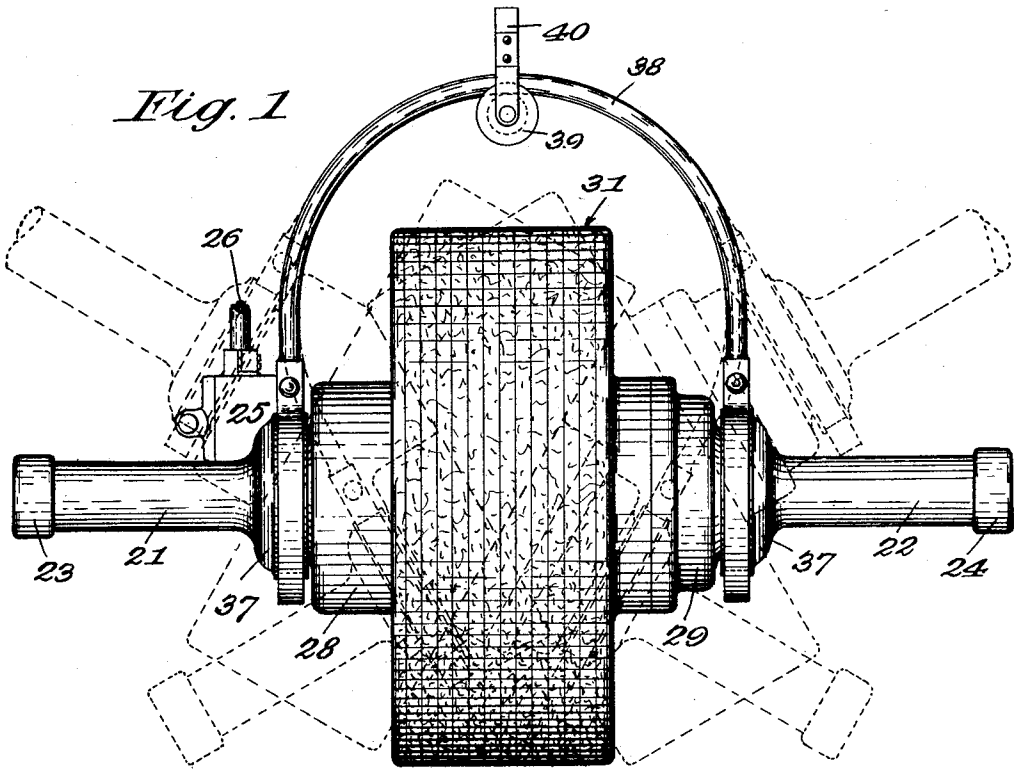
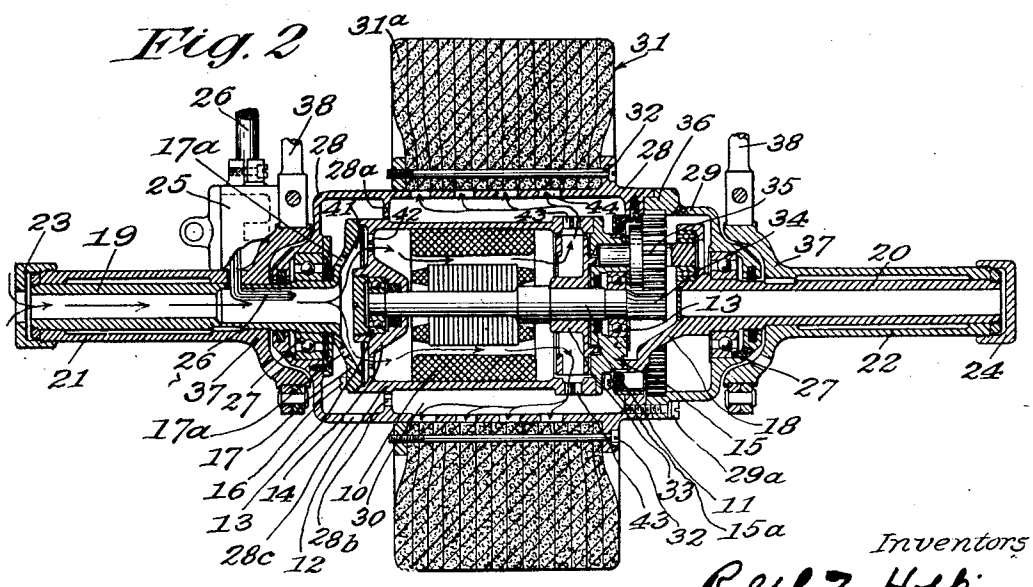


Fig. 2



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UNITED STATES PATENT OFFICE

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PORTABLE SANDING AND POLISHING DEVICE

Application filed January 19, 1929. Serial No. 333,571.

This invention relates to a portable sanding and polishing device and more particularly to means for cooling the driving motor and rubbing element of said device, and is an improvement upon the invention shown and described in our co-pending application, Serial No. 287,958, filed June 25, 1928.

An object of the invention is to provide means forming a part of the device for causing a circulation of air through the device to cool the motor and the rubbing element, the cooling of the latter causing a dissipation of the heat created through the frictional engagement of the rotating rubbing element with the surface being operated upon. Cooling is highly desirable for the reason that one of the important uses of the invention is that which relates to the finishing of automobile bodies such as operations of sanding and polishing the bodies. Obviously, a high degree of heat is created through the frictional contact of the rubbing element and surface being treated and it is desirable to dissipate this heat as far as possible to preserve the finish.

The invention will be more fully understood from the following description when taken in connection with the accompanying drawings and the novel features thereof will be pointed out and clearly defined in the claims at the close of this specification.

In said drawings:

Fig. 1 is an elevational view of the device and a portion of its supporting means, illustrating the manner in which it may be manipulated.

Fig. 2 is a longitudinal section of the device.

Before explaining in detail the present invention, and the method or mode of operation embodied therein, it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practised or carried out in various ways. Also it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation and it is not intended to limit the invention beyond the terms of the several claims hereto appended or the requirements of the prior art.

Referring now to the drawings, 10 designates an electric motor, preferably of the high cycle type, having a drive shaft 11 and a casing or housing 12. The shaft 11 is mounted in bearings 13, 13 positioned in the ends or heads 14 and 15 of the motor casing. The head 14 is integral with the casing whereas the head 15 is detachable and may be held in place by cap screws 15*a*. Secured, as by cap screws 16, to opposite ends of the motor casing are handle-carrying heads 17 and 18 having co-axial stems 19 and 20 which extend in opposite directions from said motor casing, the ends of the stems being enclosed by hollow handles 21 and 22 respectively. The head 17 is provided with a plurality of apertures 17*a* for a purpose to be described hereinafter.

The handle 21 is provided with a removable apertured cap 23 and the handle 22 with a removable cap 24. A switch box or casing 25 is preferably mounted upon the handle 21 and a flexible electric conductor 26 is connected with said switch box for supplying current to the motor.

Rotatably mounted, as by ball bearings 27, 27 upon the stems 19 and 20 is a hollow cylinder 28 having at one end a removable head 29 secured to the cylinder as by means of cap screws 29*a*. The cylinder serves to enclose the electric motor and associated parts.

The cylinder 28 is provided with an inner peripheral rib 28*a* having therein a series of spaced apertures 28*b*. The cylinder 28 is also provided with apertures 28*c*. Mounted upon the hollow cylinder 28 is an annular rubbing or polishing element or member 31 preferably formed of a plurality of rings of felt or any other suitable material 31*a*, clamped together and held in place upon the cylinder by means of bolts 32.

Mounted upon and fixed to the motor shaft 11, and positioned within the motor housing or casing 12 adjacent the head 15, is a centrifugal fan 33 which is driven by the motor. The end of the motor shaft beyond the head

15 is provided with a gear 34 in mesh with a pinion 35 which in turn engages an annular toothed rack or ring gear 36 carried by the head 29.

From the foregoing it will be seen that the hollow cylinder 28, head 29, and rubbing element 31 rotate relatively to the motor and its housing as well as the hollow handles 21 and 22 and their stems 19 and 20. These handles are provided with flanges or enlargements 37 having external annular grooves to receive the ends of a bail 38 connecting said handles and extending about the annular rubbing element. The bail 38, which is preferably of substantially semi-circular form, is engaged by a sheave 39 carried by a clevis 40 which is supported by any suitable suspending means.

When current is supplied to drive the motor the centrifugal fan 33 draws air into the device through the aperture in the cap 23, through the hollow stem 19 into the space 41, and also through apertures 28*c* and 17*a* into said space, from which it is drawn through apertures 42 provided in the motor casing head 14, between the coils and armature of the motor, to the fan, which fan forces the air radially outward through a series of annularly arranged apertures 43 into the space 30, from whence it escapes through a series of orifices 44 in the cylinder 28 to the rubbing element 31.

The centrifugal fan which sucks in the air forces it out radially at high velocity and it escapes from between the felt rings of the rubbing element, the air following the path shown by the arrows in Fig. 2. An additional escape for any excess air drawn in by the fan is provided by the apertures 28*b* and 28*c* in the cylinder 28.

From the foregoing it will be seen that air for cooling the motor coils and the rubbing element, the latter cooling serving to dissipate the heat created through the frictional contact of the rubbing element with the surface treated, is drawn or sucked in, in an axial direction, through one of the handles of the device and through the motor, and is forced out of the casing in a radial direction into the space between the motor casing and the cylinder from whence it escapes through the rubbing element as above described.

What we claim is:

1. A portable sanding and polishing device including, in combination, a motor, a casing for the motor having a head provided with apertures, a cylinder surrounding said casing and mounted for rotation relative thereto, said casing having peripheral apertures therein, driving connections between the motor and cylinder for rotating the latter, a rubbing element carried by the cylinder, handles connected with said device whereby it may be bodily manipulated, and means for drawing air into the device through one of said handles and through the apertures in said cylinder and casing head for cooling the motor and for forcing it out through said rubbing element to cool the same.

2. A portable sanding and polishing device including in combination, a motor, a casing for the motor having a head provided with apertures, a cylinder surrounding said casing and mounted for rotation relative thereto, said casing having peripheral apertures therein, driving connections between the motor and cylinder for rotating the cylinder, a rubbing element carried by the cylinder, handles connected with said device whereby it may be bodily manipulated, and means for drawing air into the device through the apertures in said cylinder and casing for cooling the motor and for forcing it out through said rubbing element to cool the same.

3. A portable sanding or polishing device including, in combination, a motor, a laminated rubbing element actuated thereby, a handle for said device whereby it may be bodily manipulated, and means for drawing air into the device to cool the motor and for forcing it out between the laminations of said rubbing element to cool the same.

4. A portable sanding or polishing device including, in combination, a motor, a laminated rubbing element actuated thereby, a handle for said device whereby it may be bodily manipulated, and a fan driven by said motor for drawing air into the device through said motor to cool the motor and for forcing it out between the laminations of said rubbing element to cool the same.

5. A portable sanding or polishing device including, in combination, a motor, a rubbing element actuated thereby, a handle for said device whereby it may be bodily manipulated, and means within the device driven by said motor for creating a circulation of air through said device and rubbing element for cooling the motor and rubbing element.

6. A portable sanding or polishing device including, in combination, a motor, a rubbing element actuated thereby, a handle for manipulating the device, and means operated by said motor for drawing air into the device through the motor and for forcing it out through said rubbing element to cool said motor and rubbing element.

7. A portable sanding or polishing device including, in combination, a motor, a housing for said motor, a concentric cylinder surrounding said housing, driving connections between the motor and cylinder for rotating the cylinder relatively to said housing, a rubbing element carried by the cylinder and rotatable therewith, and a centrifugal fan mounted on the shaft of said motor for drawing air axially into said device to cool the

motor and for forcing it out therefrom radially through said rubbing element.

8. A portable sanding and polishing device including, in combination, a motor, a casing for the motor having a head provided with apertures, a cylinder surrounding said casing and mounted for rotation relative thereto, said casing having peripheral apertures therein, driving connections between the motor and cylinder for rotating the cylinder, a laminated rubbing element carried by the cylinder, handles connected with said device whereby it may be bodily manipulated and means for drawing air into the device through the apertures in said cylinder and casing for cooling the motor and for forcing it out between the laminations of said rubbing element to cool the same.

In testimony whereof we affix our signatures.

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