

July 26, 1932.

A. H. ROOS

1,868,507

PORTABLE SANDER AND POLISHER

Filed Jan. 25, 1930

3 Sheets-Sheet 1

Fig. 1

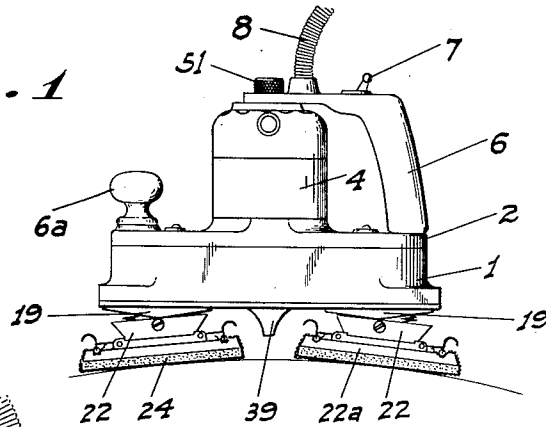


Fig. 3

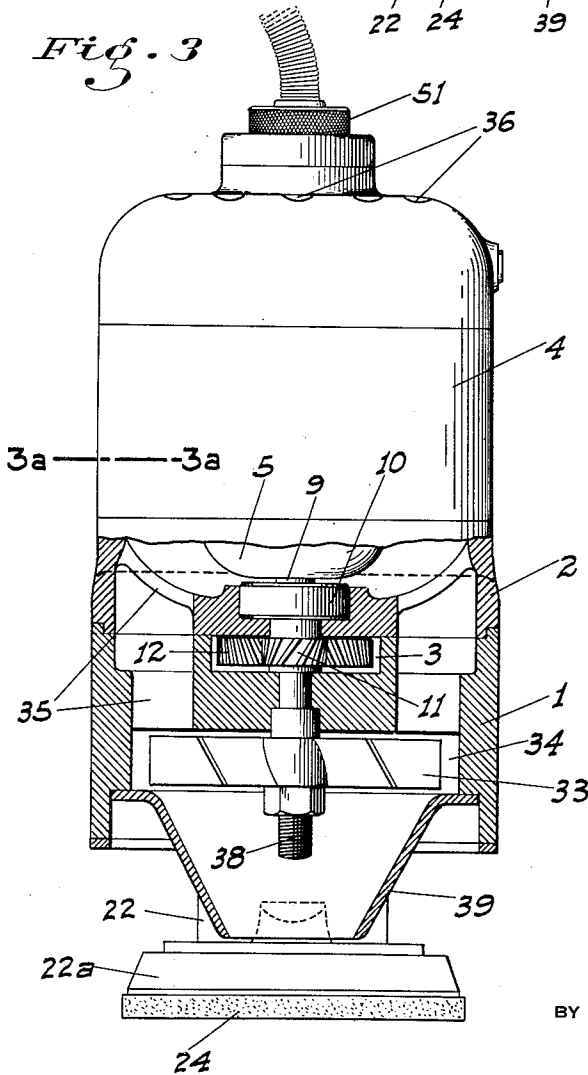


Fig. 3a

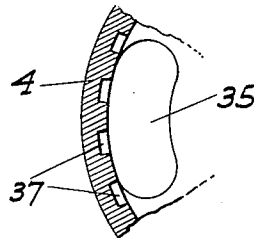
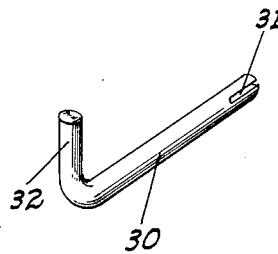


Fig. 4



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3 Sheets-Sheet 2

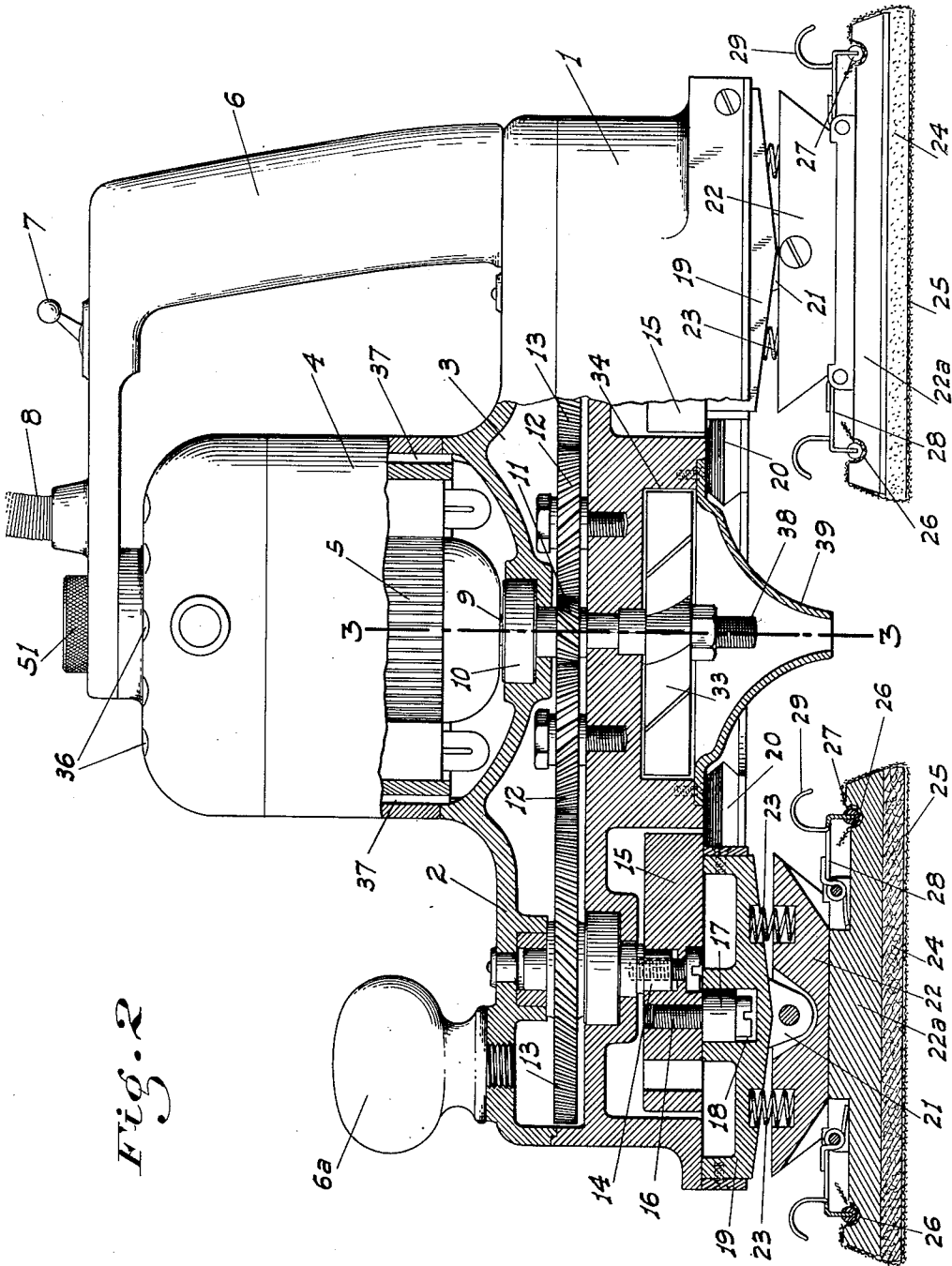


Fig. 2

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3 Sheets-Sheet 3

Fig. 5

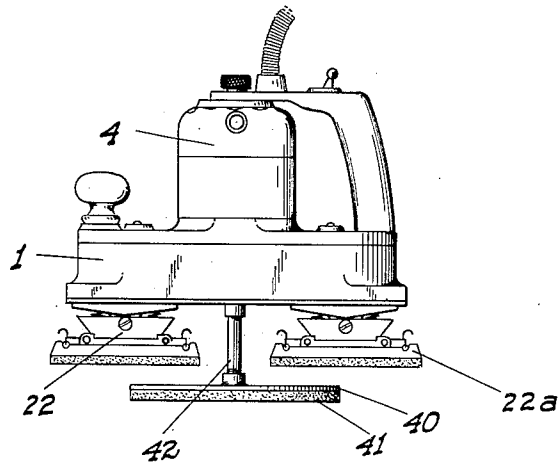


Fig. 6

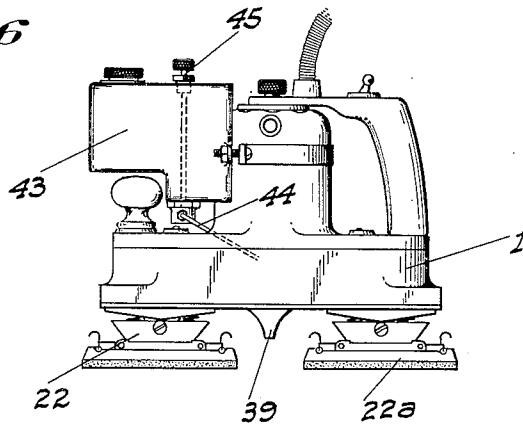
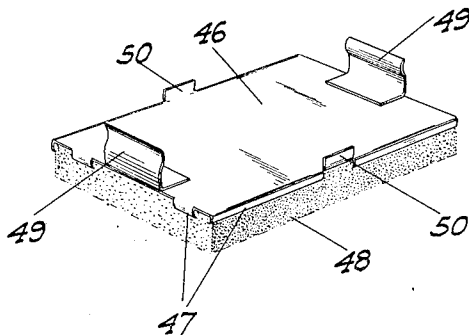


Fig. 7



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UNITED STATES PATENT OFFICE

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PORTABLE SANDER AND POLISHER

Application filed January 25, 1930. Serial No. 423,345.

This invention relates to sanding and polishing machines of that character in which the sanding or rubbing member is reciprocated through a certain distance by means of an electric motor mounted on the supporting frame of the machine, so that the only work the operator has to do is to guide the movement of the machine over the surface being worked on.

The principal objects of my invention are to provide a machine of this general character having a pair of sanding or rubbing blocks reciprocating together in such synchronized relation to each other that vibration is reduced to a negligible minimum and the operation of the machine is very steady; one in which said blocks are so mounted that they may follow the contours of curved surfaces, so that the machine is very useful for rubbing down the finish on automobiles and bodies of similar surface configuration; and one in which the dust as raised from the surface being sanded is immediately blown away while at the same time the motor is kept cool.

As further objects I have provided a novel clamping means for holding the sanding pads in place on the reciprocating blocks; a means for enabling moisture to be blown onto the surface being operated on; and arranged the machine so that a centrifugal or rotary rubbing or polishing disc may be easily mounted on the machine and driven by the motor thereof when it is desired to use a device of this character instead of the reciprocating elements.

The device is also so constructed as to be fool-proof, as there are no adjustments to be made at any time.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views.

Fig. 1 is a side elevation of my improved machine as operating on a curved surface.

Fig. 2 is a similar view somewhat enlarged and mainly in section.

Fig. 3 is a transverse section substantially on the line 3—3 of Fig. 2.

Fig. 3a is a fragmentary section of the motor housing taken on the line 3a—3a of Fig. 3.

Fig. 4 is a perspective view of a special clamp releasing tool.

Fig. 5 is a side elevation of the machine shown as equipped with a rotary polishing disc.

Fig. 6 is a similar view showing the machine equipped with a water spray tank.

Fig. 7 is a perspective view of a pad holding frame adapted for detachable engagement with the reciprocating blocks.

Referring now more particularly to the characters of reference on the drawings the numeral 1 denotes the supporting body of the machine—a metal casting of substantially rectangular form. Superimposed on and covering the body is a cap 2 which forms an enclosed chamber 3 with the top of the body. This cap forms part of an enclosing housing 4 for an electric motor 5 set on a vertical axis and disposed centrally of the length of the cap and body. A vertical control handle 6 for the machine extends between the top of the housing and one end of the cap and has the motor switch 7 mounted thereon in a convenient location. Another knob-like handle 6a is mounted on the opposite end of the cap. Current for the motor is obtained through a flexible extension cable 8 which projects the necessary distance from the top of the motor and is adapted for detachable connection with an outlet of standard form.

The motor shaft 9 below the motor is journaled in a ball bearing 10 mounted in the bottom housing portion of the cap and projects into the chamber 3, being there connected to a spiral pinion 11. This pinion meshes with opposed speed reducing gears 12 which mesh with other and larger gears 13 mounted in opposed relation to each other adjacent the opposite ends of the body. All these gears and their bearings are mounted in the enclosure 3 and may thus be easily kept in a properly lubricated condition. Also the bearings are protected by felt packings, so

that no grease can get out, and no dirt can get in. The shafts 14 of the gears 13 are journaled in suitable bearings in the body and cap and project downwardly through the body for axial driving connection with discs 15 disposed in circular recesses provided in said body. Pins 16 are fixed in and depend from these discs in cranked relation to the axial shafts. On their lower ends these pins carry rollers 17 riding in slots 18 cut transversely in the upper surfaces of carriages 19. These carriages are slidably supported in a suitable manner from tracks 20 provided along the sides of the body at the bottom. The rotation of the gears therefore causes the carriages to be reciprocated; the discs being set so that the pins thereof will be in opposed relation to each other, or so that the carriages are at the opposite ends of their strokes at the same time. The discs are therefore properly balanced in their reciprocative movements and vibration of the machine as a whole is reduced to a minimum.

The carriages are provided with depending side ears 21 disposed centrally of their length and which have pivotal connection with blocks 22, so that the latter can swing on transverse horizontal axes. Counteracting compressing springs 23 between the blocks and carriages on both sides of the swivel connections normally hold the blocks in horizontal positions. This swivel mounting of the blocks enables them to move relative to each other so that they may substantially follow the contour of a curved surface as shown in Fig. 1, thus making the device of more universal service than would be the case if said blocks were rigid and permanently horizontal or parallel to each other. The lower portions 22a of these blocks are both wider and longer than the upper portions 22. These lower portions are flat on the bottom and are faced with cushions such as pads 24 of felt or the like, which form backings for the sanding or other work sheets 25.

Each sheet is bent up against the ends of the corresponding block portion 22 and is then folded back along the top of said block portion a sufficient distance to extend over transversely extending semicircular grooves 26 cut in said top surface adjacent the ends of the block. Circular clamping bars 27 adapted to fit in the grooves are mounted in connection with spring pressed supports 28 pivoted on the blocks, said supports having inverted hook shaped handles 29 to enable the supports to be manipulated and the bars raised against the resistance of the springs. Since these handles are necessarily somewhat small and are also located in spaces of somewhat restricted size, I preferably provide a special tool for manipulating the same to attain the release of the clamping bars. This

tool comprises a straight shank 30 having a slot 31 in one end to receive the thickness of a handle member 29 and a handle 32 projecting at right angles to the shank from the end thereof opposite the slot. The length of the shank is such that when this slot is engaged with the handle 29 the handle 32 is disposed sufficiently clear of one side of the body 1 to enable the tool to be conveniently manipulated. The work sheet 25 may therefore be easily placed or removed in position on the supporting block and is firmly held against displacement by reason of the groove and clamping bar arrangement without danger of said sheet becoming loosened by being torn by the clamping means.

To cool the motor I mount a fan 33 in a chamber 34 provided in the body between the carriages, said fan chamber communicating with the interior of the motor housing by means of side passages 35 which are kept separate from the gear enclosing chamber 3, as shown in Fig. 3.

These passages in turn communicate with openings 36 in the top of the motor housing by means of vertically extending grooves 37 formed in and about the housing outwardly of or in surrounding relation to the motor. The fan is mounted on a direct extension 38 of the motor shaft which terminates in a threaded portion depending some distance below the fan for a purpose hereinafter seen. The bottom of the fan chamber is covered by a nozzle 39 which depends centrally between the reciprocating blocks and is of substantially rectangular form with its major axis extending transversely of the machine. By reason of this fan arrangement it will therefore be seen that air to cool the motor is drawn down through the top of the housing and is then discharged through the nozzle 39 directly against the surface being sanded; so that said surface is kept clear of the sanding dust as it accumulates, and such dust is kept from being again worked into the surface or from prematurely clogging up the sanding sheets.

Should it be desired to utilize a centrifugal rubbing element instead of the reciprocating blocks, I provide an attachment which can be used for this purpose. This attachment comprises a circular plate 40 having a suitable work pad 41 secured to its under-surface, and a centrally disposed stem 42 projecting upwardly therefrom and tapped on its upper end for connection to the lower end of the fan shaft 38. To thus attach the shank to said shaft it is only necessary to remove the fan nozzle 39; the length of the shank being such that the plate 40 is then below the reciprocating blocks a sufficient distance to properly clear the same.

I have also provided a means in the form of an attachment which enables the surface being worked on to be kept in a moistened

condition if desired. This attachment comprises a water tank 43 adapted to be detachably secured onto the machine in any suitable manner as by strapping the same onto the motor housing, as shown in Fig. 6. Small pipes 44 depend from the bottom of the tank and project through the cap so as to drip into the passages 35. A needle valve structure 45 of ordinary form controls the flow of water from the tank into the pipes 44. By means of this arrangement it will be seen that as the water drips into said passages the shaft revolving fan will act on the drops of water and substantially vaporize the same so that the air as blown onto the surface being worked on will be in the form of a very fine spray.

In order to utilize relatively thick polishing or rubbing pads in connection with the reciprocating blocks, and which cannot be bent over to engage the clamping bars, I have provided a special supporting means for such pads, which is shown in Fig. 7. This means comprises a flat plate 46 of substantially the same size as the bottom area of the block portions 22a, and having depending gripping flanges 47 to engage the work pad 48. Spring clip members 49 upstand from the ends of the plate and are adapted to project upwardly against and frictionally engage the ends of the block members 22a. Relatively small flanges 50 project upwardly from the plate at its sides to engage the sides of the block members 22a and thus prevent lateral displacement of the plate.

By using a liquid wax in the tank 43 instead of water, and by replacing the sanding sheets by rubbing pads, an efficient waxing machine is provided.

Should the motor stop when the crank pins 16 are in opposed dead center relation to each other, they may be initially turned beyond such relationship by means of a knurled finger nut 51 fixed on and turnable with the upper end of the motor shaft 9 above the housing.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention what I claim as new and useful and desire to secure by Letters Patent is:

1. A sanding machine including a portable body, a carriage slidably mounted on the body, power means mounted on the body for reciprocating the carriage, a block adapted to support a rubbing sheet supported from the carriage, means mounted in connection with

the body for directing an air blast onto the surface engaged by the rubbing sheet and additional means mounted in connection with the body for injecting drops of a liquid into the air blast.

2. A structure as in claim 1, with additional means mounted in connection with the body for injecting drops of a liquid into the air blast ahead of the nozzle.

3. A rubbing machine including a body, a block to support a rubbing element movably mounted in connection with the body, means to reciprocate said block mounted on the body, a driven fan mounted on the body and arranged in connection with air passage means to direct a blast of air against a surface engaged by the rubbing element and in the path of reciprocating movement of said element, and liquid passage means delivering into the air passage means ahead of the fan.

In testimony whereof I affixed my signature.

AXEL H. ROOS.