July 22, 1952 A. P. ROBINSON 2,603,919

SURFACE FINISHING MACHINE

Filed March 28, 1950 2 SHEETS—SHEET 1

Fig. 1

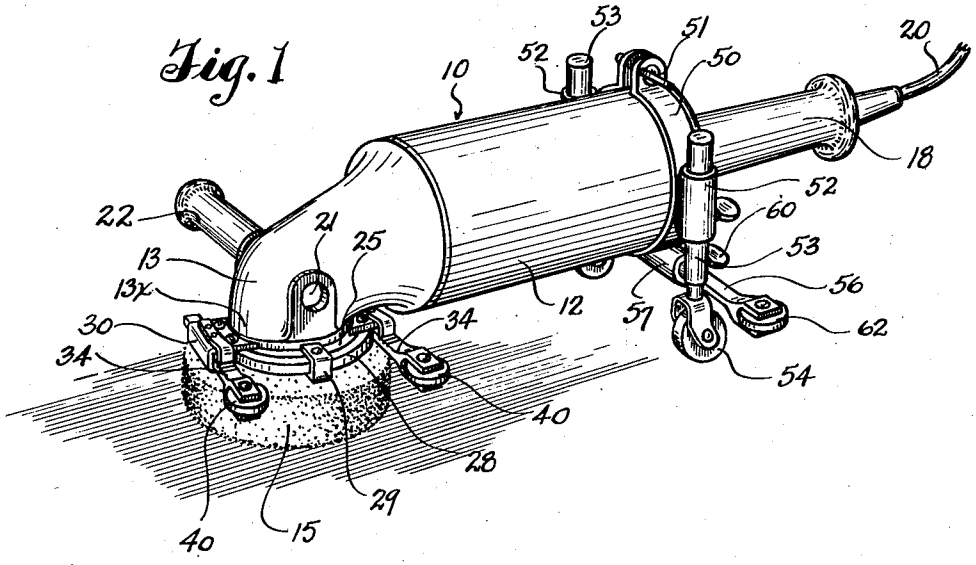


Fig. 2

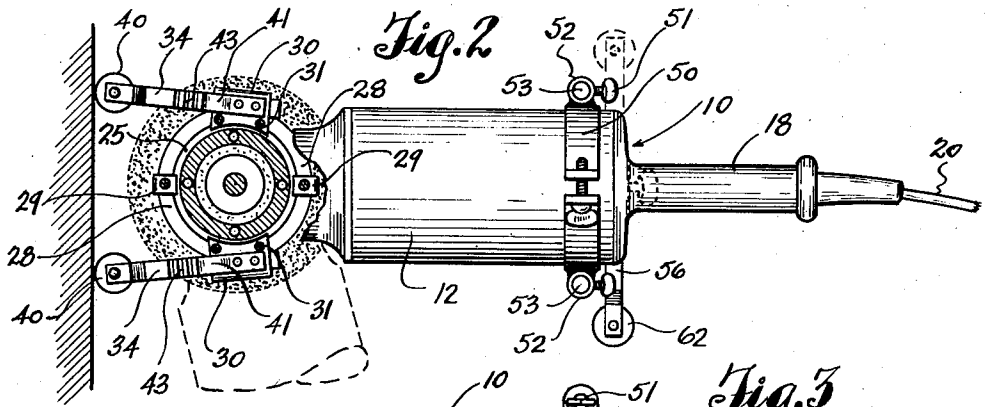
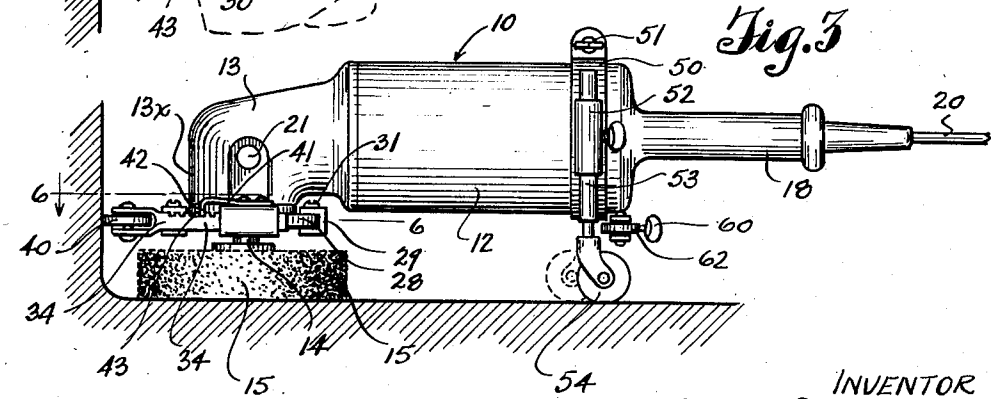


Fig. 3



INVENTOR
ALBERT P. ROBINSON
BY Cook & Robinson
ATTORNEYS

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Fig. 4

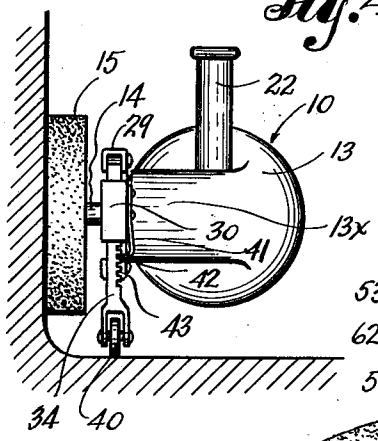


Fig. 5

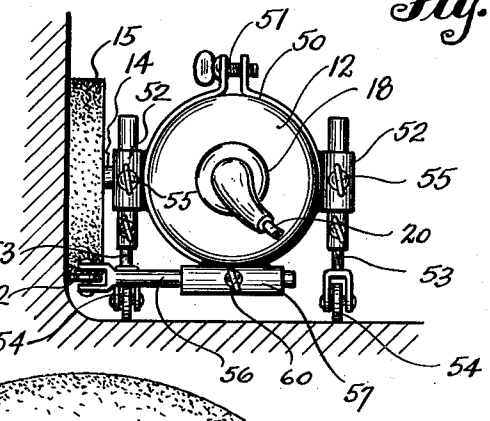


Fig. 6

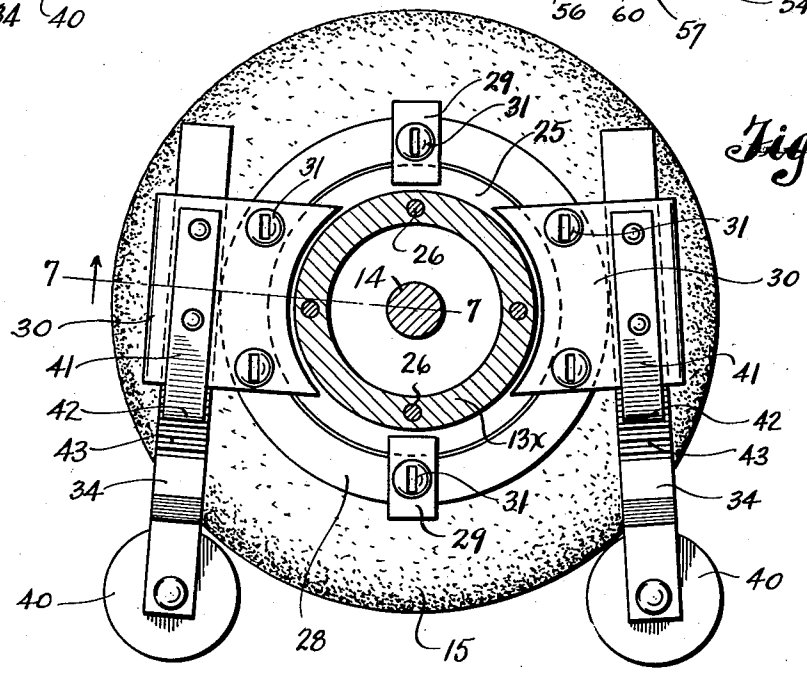
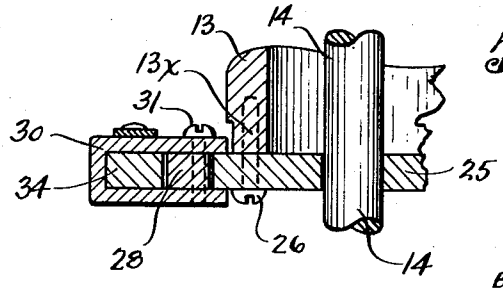


Fig. 7



INVENTOR
ALBERT P. ROBINSON
BY Cook & Robinson
ATTORNEYS

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SURFACE FINISHING MACHINE

Albert P. Robinson, Seattle, Wash.

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3 Claims. (Cl. 51—177)

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This invention relates to improvements in machines of those kinds now quite generally used for the grinding and finishing of floor surfaces, base moldings, stairs, etc., that are made of terrazzo, cement and like materials. More particularly the present invention has to do with the provision and use of means, which might be applied as attachments, on a common type of hand supported motor driven grinding machine designed to aid in the support and guidance of the machine in its ordinary uses.

It is the principal object of this invention to provide, in connection with a grinding machine of the above kind, a guide and guard means that can be engaged in rolling or sliding contact with a side surface, such as a base molding, stair riser or side wall, to limit the extent toward which the grinding disk or head can approach that surface.

More specifically stated, the present invention resides in the provision of adjustable gauging or guiding arms, and roller equipped supports on hand operated grinding machines designed to protect surfaces against being grooved, gouged or marred by the grinding disk to relieve the user of the weight of the machine and strain required to be exerted to hold it level or otherwise properly handle it, and to insure more satisfactory work being done.

It is also an object to provide simplified and practical means for mounting the grinding and supporting means on the grinding machine.

In accomplishing these and other objects of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein—

Fig. 1 is a perspective view of a common type of hand supported floor surfacing or grinding machine, equipped with adjustable supports and guides embodied by the present invention.

Fig. 2 is a plan view of the machine, with a part of the head broken away for purpose of better understanding; this view illustrating particularly the guiding and gauging functions of the head attachment.

Fig. 3 is a side view of the machine as shown in Fig. 2, particularly illustrating the manner of supporting the machine for ordinary floor grinding work.

Fig. 4 is a front end view of the machine as turned to a position for surfacing a base molding or other vertical surface.

Fig. 5 is a rear end view of the machine as seen in Fig. 4.

Fig. 6 is an enlarged, horizontal section through the head of the machine, as on line 6—6 in Fig.

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3, showing the means for attachment of the guiding and gauging rollers.

Fig. 7 is a cross-section on line 7—7 in Fig. 6.

Referring more in detail to the drawings—

10 designates, in its entirety, a common type of grinding machine now generally used for the grinding and surface finishing of terrazzo floors, base moldings, and the like. It comprises an electric motor, not shown, enclosed within a cylindrical housing 12, to the forward end of which housing is secured a gear case or housing 13 from which a motor driven shaft 14 extends, and which shaft mounts a grinding or surfacing disk 15 thereon. The shaft 14 is mounted at a right angle to the axial line of the motor housing, and the grinding disk 15 is of that kind generally used for floor grinding purposes and usually is made of carborundum. Disks used might assume other forms than that shown, but regardless of form, would be operated and used in the same or substantially the same manner as has been illustrated.

At the rear end of the housing 12 is a tubular, axial extension or handle 18 through which the electric circuit wires lead to the motor. A cable containing the circuit wires is designated at 20. The gear housing 13 is formed at opposite sides with threaded holes as at 21 in Fig. 1, into one or the other of which a handle, as at 22 in Fig. 1, may be threaded. In the ordinary use of the machine, the operator grasps the handles 18 and 22, and holds the machine in such position that the face of the disk 15 flatly engages the surface that is to be smoothed or ground.

Due to the weight of the machine and manner in which it is required to be used, it is difficult and tiring to handle with accuracy. It is essential that the grinding disk be held flatly against the surface being worked on, and that it shall not be gouged into the base moldings. Therefore, it has been the object of the invention to provide means for positively limiting the distance to which the disk 15 can approach the baseboard when the machine is used as in Fig. 3, and also to provide adjustable supports for the machine to relieve the operator of the machine's weight, so that work is made easier and therefore can be better accomplished.

As shown best in Figs. 2 and 3, the present guiding and gauging means are applied to the gear housing 13. This housing, as seen in Fig. 3, has a cylindrically shaped, downwardly opening neck 13x, over the lower end of which a disk 25 is fixed by a plurality of screw bolts 26, as has been shown best in Fig. 7. The shaft 14 by which the grinder disk 15 is mounted extends centrally

through disk 25. The periphery of the disk 25 extends slightly beyond the periphery of neck 13x, and fitted rotatably thereabout is a ring 28. This ring is held in place and for rotation by two pairs of U-shaped clips, 29 and 30. Clips of the same pair are applied at diametrically opposite points and are secured by screws 31 that are passed through the leg portions of the clips and ring. The inner end portion of the legs of the clips overlap top and bottom faces of the edge of the disk 25 thus to retain that relationship of ring 28 and disk 25 shown in Fig. 7. The U-shaped clips 29 are relatively small, while the clips 30, which are spaced 90° from clips 29 are relatively large and their base portions extend well beyond the ring 28 to provide parts to serve as mounting bearings for paired guiding and supporting arms 34—34 which are well shown in Figs. 2 and 4 as serving these functions.

The arms 34—34 are in the form of straight bars, slidably contained in the clips 30 for extension or retraction. They extend from opposite sides of the head 13 substantially in the same direction, and at their outer ends are preferably equipped with rollers 40 or with suitable skids designed to engage in contact with a base surface when the machine is used as in Fig. 3, or to engage in supporting contact with a floor surface when the machine is used as in Fig. 4.

The arms 34—34 are adapted to be secured in different positions of adjustment by spring latch clips 41 having ends secured to the clips 30—30 and their opposite ends turned downwardly, as seen at 41 in Fig. 3 to engage in notches 43 that are formed along the arms. Adjustment of an arm is made by merely disengaging the clip 41 therefrom, then shifting the arm to a desired position, and then releasing the locking clips for re-seating in one of the notches 43 thereof.

The arms 34—34 are used primarily to prevent the base moldings being gouged or marred by the grinding disk. It is possible to adjust these arms so that both can be maintained in rolling contact with a base molding, as in Fig. 2, while the operator moves the machine back and forth.

In order to hold the grinding disk level with a floor surface and to relieve the operator of the weight of the machine, I have equipped the outer end of the housing 12 with adjustable supports. These are well shown in Figs. 1 and 3. For their mounting, I apply a strap or band 50 tightly about the housing 12 and secure its ends together by means of a clamp bolt 51. Fixed to the band at opposite sides of the machine, are tubular bearings 52—52, and slidably adjustable within these are legs 53—53, which preferably are equipped at their lower ends with supporting rollers 54—54. Set screws 55 are threaded into the bearings 52 to engage the legs to secure them at positions to which they may be adjusted. It is the intent that the legs 53 shall coact with the disk 15 for support of the machine, and shall operate to retain the machine in a level position, as has been indicated by Fig. 2.

If it is desired to grind a vertical base surface, the machine is turned on its side, as to the position of Figs. 4 and 5. In this position the gauging arms 34—34 are turned to position to serve as supports for the machine and they are supplemented by a supporting leg 56 located at the outer end of the machine. A leg 56 is slidably adjustable for extension or retraction in a bearing 57 fixed to the band 50. This leg extends at a right angle to the supporting legs 53 and it can be reversed in the bearing 57 so as to be extended to either side of the machine. A set screw 60 is threaded into the bearing 57 to engage and secure the leg 56 at any position of adjustment. At its outer end the leg mounts a roller 62 for rolling contact with a supporting surface. It will be understood that when the machine is being used as in Fig. 5, this leg engages the vertical or side surface to maintain the grinding disk in proper relationship to the surface being worked on. While the arms 34—34 are at that time used as shown in Fig. 4, to support the forward end of the machine. The other end of the machine, at this time, is supported by the legs 53—53, as shown in Fig. 5.

The present type of machine is thus characterized by the application thereto of supports and guides that serve to support the machine in a level working position, and to insure against gouging, grooving or otherwise causing the surfaces worked on to be marred. The adjustably mounted arms 34—34 serve, as in Fig. 3, to definitely limit the approach of the disk 15 toward the base or side wall surface. Due to the fact that the arms 34 are mounted on a ring that is rotatable about the axis of the neck 13x and grinder shaft 14, as in Fig. 2, the machine, as grasped by handles 18 and 22, can be oscillated back and forth with the rollers 40 in rolling contact with the base or other side wall surface.

The adjustability of the arms 34—34, legs 53—53 and 56, provides for taking care of various sizes and types of grinding disks. The main advantage, however, resides in the fact that a workman can speed up his work without danger of causing damage to surfaces and without causing any extra effort for support or grinding of the machine.

In the use of the term "grinding disk" as used in the claims which terminate this specification, I intend to include grinding disks or heads of various kinds and shapes, the use of which are not inconsistent with the invention as herein described.

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

1. A hand portable machine of the character described comprising a motor housing, a motor driven shaft extended therefrom, a grinding disk mounted on the shaft to flatly engage a surface to be finished thereby, a ring of lesser diameter than the disk mounted on the housing for free rotation, coaxially of the disk mounting shaft and closely adjacent the top side of the disk, a pair of arms mounted on the ring at opposite sides of the shaft and extended therefrom beyond the periphery of the disk at one side thereof, and rollers mounted at the outer ends of the arms; said arm being arranged to serve as wheeled supports for the machine when used for surfacing a side wall surface, and to serve as guiding and guarding means for a side wall surface when used for surfacing a floor adjacent said side wall surface.

2. A floor surfacing machine of the character described comprising a motor housing, equipped with handles for the functional manipulation of the machine in use, a motor driven shaft extended downwardly from the housing at one end thereof, a grinding disk mounted on the shaft end to flatly engage a floor surface, a collar of substantially lesser diameter than the grinding disk rotatably fitted to the housing immediately above the disk and coaxially thereof, arms adjustably fixed to the collar at opposite sides and

extended therefrom in spaced relationship and in the same general direction and beyond the periphery of the disk at the same side thereof to engage at their ends with a side wall surface as a means of limiting the approach toward the wall of that portion of the periphery of the disk that is between the ends of the said arms.

3. A surfacing machine as recited in claim 2 wherein a clamping band is applied about the end of the housing opposite that mounting the disk, and supports are extended therefrom to support the machine for easy movement on a floor surface and retain the working position of the disk surface, said clamping band being rotatably adjustable about the housing and said supports extend therefrom at opposite sides of the housing

ALBERT P. ROBINSON.

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