Nov. 1, 1949 W. P. HILGER 2,486,947

SURFACE FINISHING DEVICE

Filed Dec. 2, 1946

FIG. 1

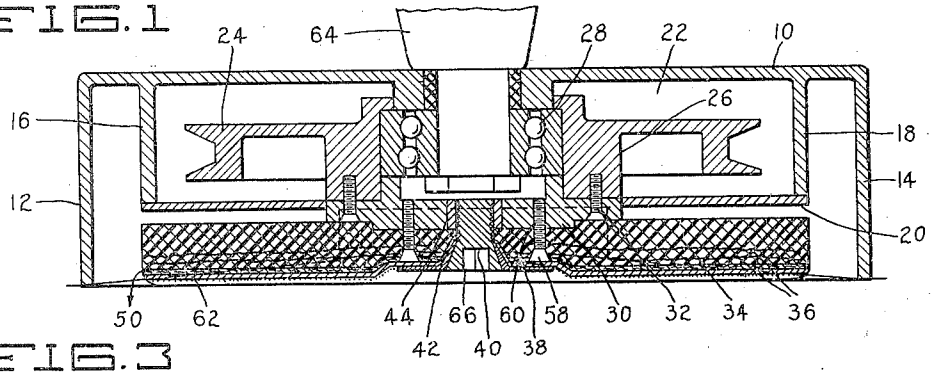


FIG. 3

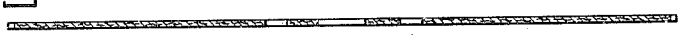


FIG. 2

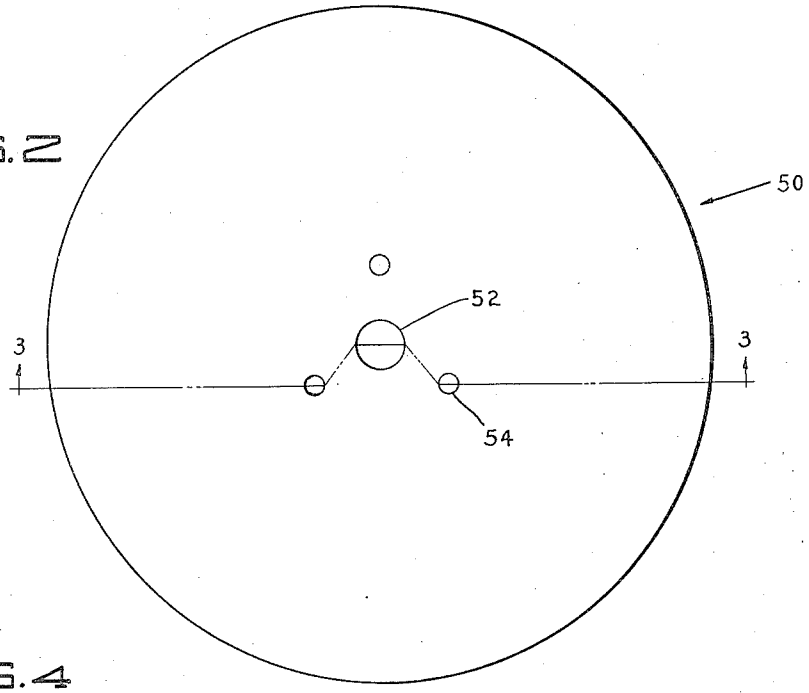
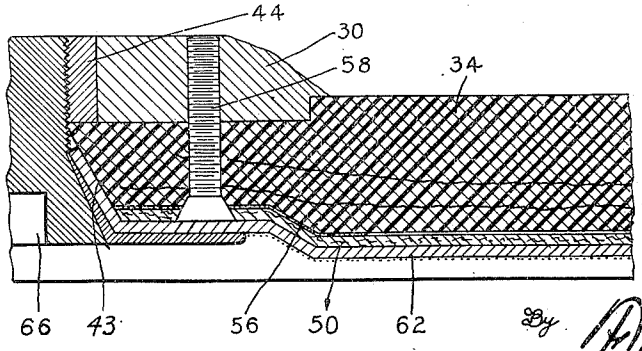


FIG. 4



Inventor

WILLIAM P. HILGER

By P. A. Whitley

Attorney

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SURFACE FINISHING DEVICE

William P. Hilger, St. Cloud, Minn.

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2 Claims. (Cl. 51—197)

1

My invention relates to an improvement in a surface finishing device. In particular it relates to means for reducing and dissipating heat generated between co-operating surfaces of the finishing device, and heat generated by frictional contact between the surface finishing portion of the device and the work to which it is being applied.

The present application is an improvement over the structure shown and described in my co-pending application Serial No. 702,229 filed October 9, 1946. In the above mentioned co-pending application, I have shown and described a surface finishing device in the form of a sanding edger which is used in finishing surfaces such as wood floors and the like. In devices of this general class it is customary to provide, among other things, a flexible driven disk formed of rubber, or the like, to which is attached a surface reducing disk such as sandpaper.

In devices of this general nature considerable heat is generated by the work surface of the sanding disk, and also between the rubber disk and the non-abrasive surface of the sanding disk which is generally formed of paper faced with a granular grit. Unless this undesirably high amount of heat is suitably dissipated, the sanding disk will cause injury to the work surface to the extent of causing burns on the same if it is made of wood or some like combustible material.

Furthermore, when the surface under treatment is coated with varnish or paint, the heat present in the sanding disk tends to cause its abrasive surface to be clogged with the coating substance, since the latter tends to become gummy under the influence of the frictional heat.

I have discovered that if an intermediate member is positioned between the rubber disk and the sanding disk, a considerable amount of heat can be avoided and much of the remaining heat can be easily dissipated. This effect is brought about principally by the inherent qualities of the intermediate member. I have discovered that if the intermediate member is of a flexible and compressible nature such as felt, it tends to cushion the shocks received by the abrasive material and also tends to admit a certain amount of air between the rubber disk and the paper surface of the sanding disk.

By thus separating the rubber disk from the sanding disk, the intermediate member, when formed of suitable material, acts as a form of lubricant, in that it prevents the friction of rubber against paper which generates more heat than between the respective surfaces of the rubber and paper members and the intermediate member. Thus the intermediate member reduces the over-all amount of heat present at the abrading surface of the sanding disk, and the abrading surface tends to gum up less easily when used for removing varnish or paint; therefore the disk may be used for a much longer period of time which provides a substantial economy.

2

An object of my invention is to provide an improved surface finishing device, which includes means for reducing heat generated within the device and between the device and the surface of the work being treated.

Another object is to provide a resilient intermediate member between a driven element and a surface reducing element of a surface finishing device, to cushion shocks received by the surface reducing element and to lessen friction between said elements.

A further object is to provide an intermediate member, such as a layer of felt, between a driven element and a surface reducing element of a surface finishing device which is capable of dissipating frictional heat to the extent of prolonging the period of usefulness of the surface reducing element.

A further object of my invention is to provide an intermediate member in the form of a felt disk having an inner circumferential portion glued or otherwise permanently secured to the rubber disk and having its outer circumferential portion unattached and free.

Other and further objects will become apparent from the following description and claims, and from the appended drawing in which:

Fig. 1 is a cross-section in side elevation of a surface finishing device;

Fig. 2 is a plan view of an intermediate member which is positioned between a driven element and a surface finishing element of the structure shown in Fig. 1;

Fig. 3 is a cross-section taken on the lines 3—3 of Fig. 2; and,

Fig. 4 is a greatly enlarged detailed view of a portion of the device shown in Fig. 1.

Referring to the drawings and in particular to Fig. 1 thereof, a base member 10 has depending flanges 12 and 14 at its opposite sides. There are flange members 16 and 18 depending from base 10, which are shorter in length than mem-

bers 12 and 14, being spaced inwardly of the flanges 12 and 14. There are flange members (not shown) at both ends of the base uniting the side flanges 12 and 14 with each other. There are also flanges at both ends of the device for uniting the flanges 16 and 18 to each other.

A plate 20 is secured throughout its extent upon the bottom edges of flanges 16, 18 and the end flanges (not shown). The plate 20 is thereby secured in air-tight relationship by appropriate means to the bottom edges of the flanges 16 and 18 and the end flanges (not shown), forming a sealed chamber 22. Chamber 22 houses a large V-pulley 24 having a hub 26, which is removably held upon roller bearings 28 by means of a plate 30 held upon the hub 26 by means of screws 32. The hub 26 has removably secured thereto a sanding edger disk 34 which is formed of rubber having reinforcing non-stretchable layers of material 36, such as canvas, vulcanized into the rubber to prevent disk 34 from stretching as a result of centrifugal force when the disk is being rapidly rotated.

The body of disk 34 which is dished or convexed downwardly is provided with a central recess or socket 38 and is adapted to receive the broad flat head of a threaded bolt 40. Bolt 40 passes through an opening 42 having oblique sides 43 in the central portion of disk 34 and is secured in a threaded bushing 44 held by plate 30.

As shown in various ways in Figs. 1–4, a member indicated by general reference numeral 50 having a central aperture 52 and a series of radial apertures 54 is positioned on the lower surface of disk 34. Member 50 which constitutes the principal novelty of the present invention is formed of material which has resilient, flexible, and compressible qualities, preferably of felt around $\frac{1}{32}$ of an inch thick. It may be formed of any suitable material which has the desired qualities and in a preferred form it may be constituted of a cloth fabric such as hair felt, or any other material which has the desired qualities set forth hereinbefore.

As best shown in Figs. 1 and 4, member 50 is secured to the lower surface of disk 34 by a layer of cement 56 and a plurality of bolts 58 which are engageable in threaded apertures 60 that extend through disk 34 into plate 30. The layer of cement 56 which is best shown in Fig. 4, extends radially about aperture 52 for a short distance beyond apertures 54 so that member 50 is secured to disk 34 only adjacent its center portion and remains unsecured at areas adjacent the outer periphery.

A surface finishing member 62 which may be an abrasive disk made of sandpaper or the like, is formed in the general shape of member 50, and is provided with a central aperture similar to aperture 52 of member 50, is positioned on the lower side of member 50 and secured thereto by the broad-headed bolt 40. As clearly shown in Figs. 1 and 4, the abrasive disk 62 has its central portion supported between the bolt 40 and the oblique surfaces 43 of disk 34. The abrasive disk 62 is removably fastened to disk 34 adjacent member 50 by engaging bolt 40, which is provided with a tool receiving recess 66, with a threaded bushing 44 held by plate 30.

A hand knob 64 is secured to base 10 and may be grasped by the hand of the user of the device so that the device may be tipped forward as shown in Fig. 1, to engage the front edge of sanding disk 62 with the surface of the floor for sanding the same.

When the surface finishing device is being operated and the same is in contact with the floor, disk 34 is being rotated rapidly under the influence of a source of power (not shown) which is applied to pulley 24. The power is transmitted through disk 34 to the abrasive disk 62 and although this is principally applied through bolts 40 and 58, a certain amount of friction occurs between the circular faces of the several members.

With the member 50 in an intermediate position between disk 34 and disk 62, shocks received by disk 62 through its abrasive surface contacting irregularities in the floor, will be cushioned by member 50 and thus eliminate a certain amount of friction between the rubber surface of disk 34 and the inner paper surface of disk 62. Furthermore, through the loose fit between member 50 and disks 34 and 62 about their outer peripheries, the space thus formed will cause a certain amount of air to be drawn in between the outer surfaces of the several disks so that heat which is generated between the surfaces of the disks is dissipated by the air current.

Member 50 also has another characteristic of acting as a form of "lubricating surface" between disks 34 and 62. When the sand paper disk 62 is positioned in direct contact with the rubber disk 34, the paper surface which mates with the rubber surface generates considerable heat because of the continuous flexing of disk 34 which takes place with each rotation of the two members. This heat is, however, greatly reduced through the felt member acting as a sort of lubricating surface between the mating surfaces of the paper and the rubber.

It will be apparent to those skilled in the art that numerous substitutions may be made in my invention and, therefore, I do not wish to be restricted to the single illustration but rather to the extent of the appended claims.

I claim:

1. A surface finishing device comprising, a circular driven disc adapted for rotative movement, a circular surface finishing disc carried by said driven disk, and a circular intermediate disk formed of cloth and positioned between said driven disk and said surface finishing disk each of said disks having substantially the same diameter, said intermediate disk being cemented to said driven disk through an annular area adjacent the center of said disks with the outer periphery of said disks being unattached to each other in such a manner as to permit air to be drawn in between the outer cooperating surfaces of the several disks when the driven member is rotated.

2. A surface finishing device consisting of a driving member, a flat rubber disk positioned under the driving member, a surfacing finishing disk carried by said rubber disk, an intermediate disk formed of felt and positioned between the rubber disk and the surface finishing disk, fastening means passing through the center of said three disks for securing the same to the driving member, each of said disks being circular in outline and having their outer peripheries separated from each other to establish air channels between the disks when they are rotated, and a layer of cement between the felt disk and the rubber disk extending through an annular area

extending beyond the fastening means to rigidly secure the felt disk to the rubber disk adjacent their centers.

WILLIAM P. HILGER.

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