

Feb. 5, 1952

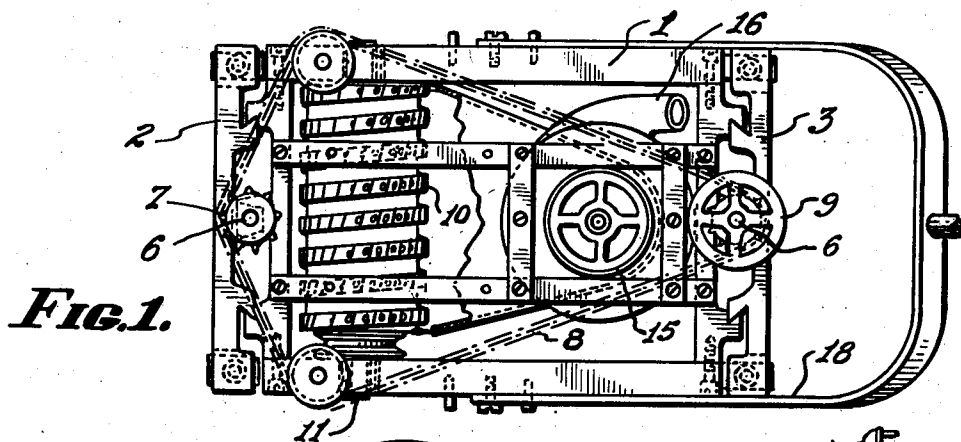
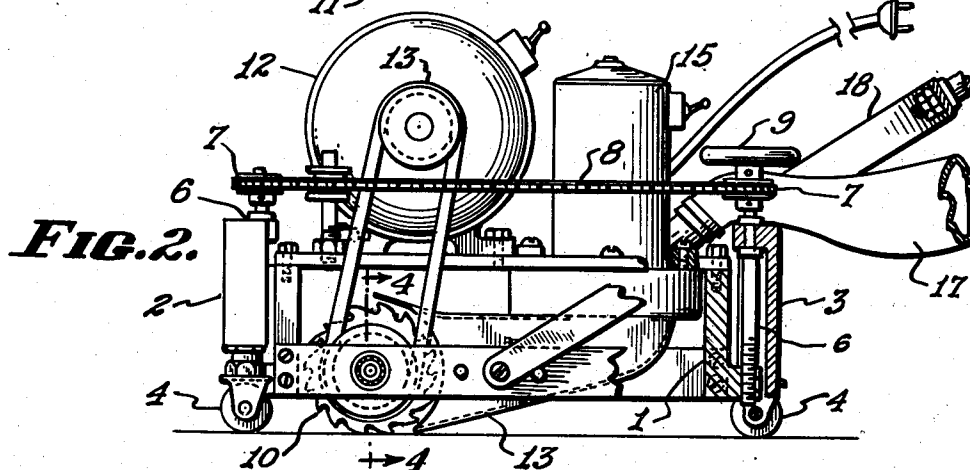
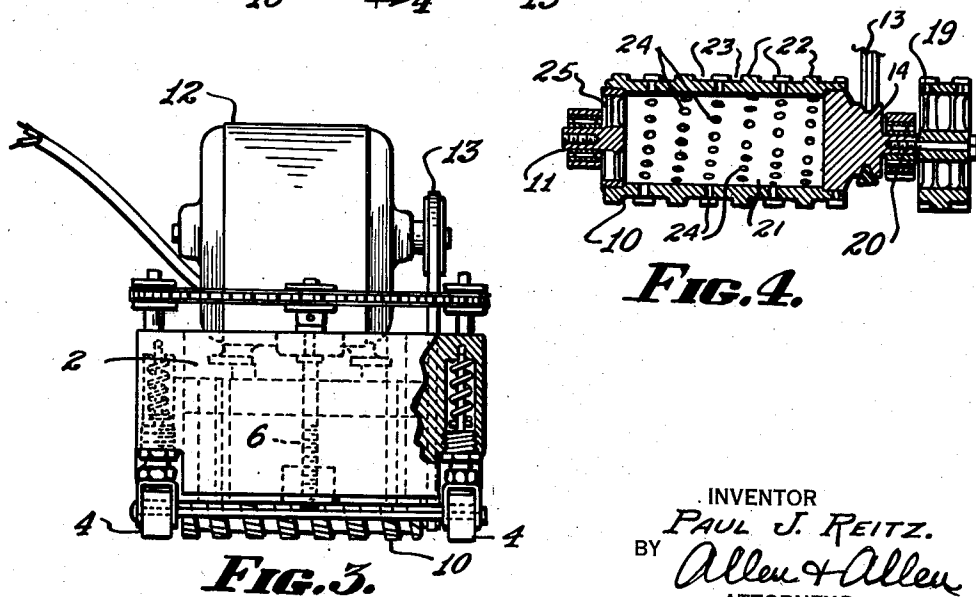
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2,584,738

PORTABLE POWER-OPERATED SURFACE ABRADER

Filed June 28, 1946

2 SHEETS--SHEET 1



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2 SHEETS—SHEET 2

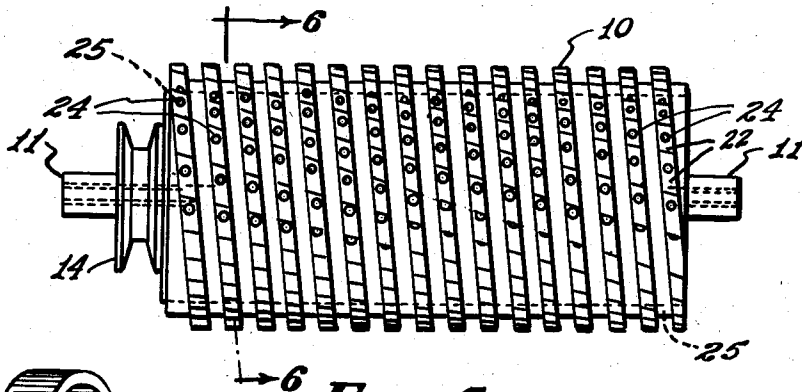


FIG. 5.

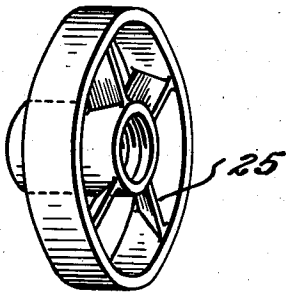


FIG. 7.

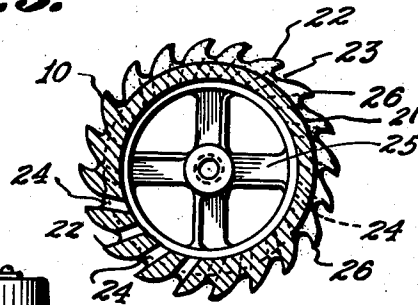


FIG. 6.

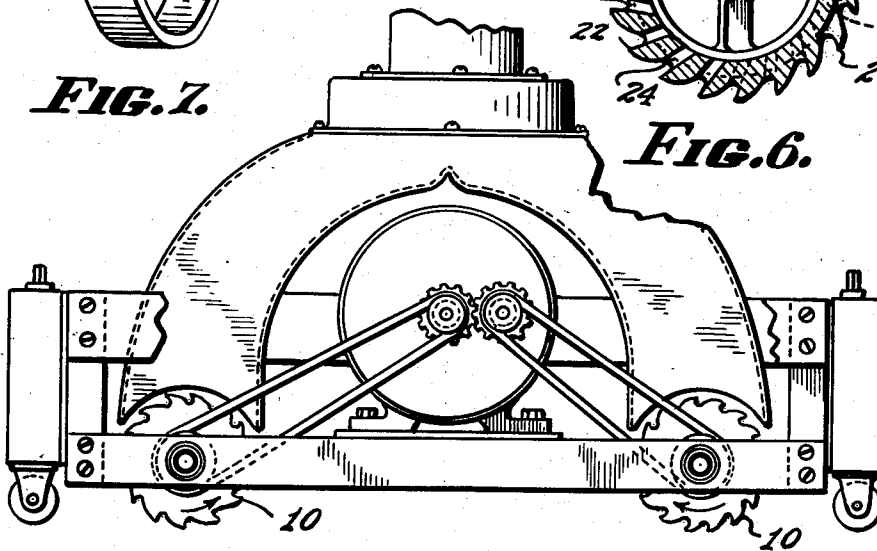


FIG. 8.

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PORTABLE POWER-OPERATED SURFACE
ABRADER

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Application June 28, 1946, Serial No. 680,202

1 Claim. (Cl. 144—115)

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My invention relates to a surface abrader for taking down and smoothing surfaces, such as floors, walls or the like, or any surface which is relatively flat.

The usual surface abrader uses as the abrasive a sanding disc or the like which must be renewed when worn and which tends to scar or mark the finished surface. A sand abrasive cuts relatively slowly and shallowly and thus necessitates repeated abrasion in order appreciably to take down the surface being abraded.

It is an object of my invention to provide a surface abrader which may be used on a wooden, composition, linoleum, or any surface having a hardness less than the tempered teeth of my abrader.

It is a further object of my invention to provide an abrader which is not interfered with by scattered nail heads or hardened spots, but which will cut the nail heads or the spots to the same plane and with substantially the same ease as the remaining portions of the surface.

It is a further object of my invention to provide an abrading cylinder which has an abrading surface which does not ridge or mark the surface being abraded, but gives a smooth, flat finish.

It is a further object of my invention to provide such an abrader wherein the material abraded from the surface is exhausted from the abrading cylinder and stored in a container such as a bag.

A further object of my invention is to provide a surface abrading machine which may abrade completely up to the edge of a surface such as a floor, so that the surface will be smooth and flat all the way to the walls.

It is a further object of my invention to provide an abrader wherein the abrasive element or mechanism will wear out extremely slowly even when used upon the hardest surfaces.

These and other objects of my invention, which will be set forth hereinafter or will be apparent to one skilled in the art upon reading these specifications, I accomplish by that certain construction and arrangement of parts, of which I shall now describe an exemplary embodiment. Reference is now made to the drawings which form a part hereof and in which:

Figure 1 is a plan view of my abrading machine with portions broken to indicate hidden parts.

Figure 2 is a side elevation of my abrading machine with portions broken away to show internal mechanism.

Figure 3 is a front elevation of my abrading

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machine with portions cut away and shown in section to indicate concealed mechanism.

Figure 4 is a cross-section of my novel abrading cylinder taken on the section line 4—4 of Figure 2.

Figure 5 is a side elevation of my abrading cylinder.

Figure 6 is a cross-section of the abrading cylinder taken on the section line 6—6 of Figure 5.

Figure 7 is a perspective view of the fan blades positioned within the abrading cylinder.

Figure 8 is a side elevation with portions broken away of a modified abrading machine.

In the drawings and the description which follow, I have shown an abrading machine primarily for use in abrading floors. However, it is within the contemplation of my invention to provide an abrading machine which may be used on walls or vertical surfaces or even on ceilings.

Briefly, in the practice of my invention, I provide a frame carrying a driven abrading cylinder. The abrading cylinder carries teeth upon its peripheral surface arranged in a spiral and with the spacing between teeth forming a line non-axial with the cylinder. The cylinder is hollow and there are apertures between each tooth through which the material removed from the surface is sucked by fan blades within the cylindrical abrader. Vacuum means are applied to the cylinder and its surface for removing abrading material and storing it in a sack.

Referring to the drawings, I provide a rectangularly shaped frame 1 with opposite ends 2 and 3 dove-tailed into the frame 1 so as to be slidable in reference to the frame. Positioned on the bottom of the slides 2 and 3 are casters 4 which ride on the surface being abraded. A screw member 6 is positioned between the slides 2 and 3 and the frame 1 and by means of sprockets 7 and a chain 8 actuated by a hand wheel 9, the slides 2 and 3 carrying the casters 4 may be moved in reference to the frame 1.

Journalled in the frame 1, I provide an abrading cylinder 10. The cylinder is mounted on an axle 11 which rides in journals on the side of the frame 1.

Mounted on the frame 1, I provide a motor 12 having a belt 13 which runs over a pulley 14 attached to the abrading cylinder 10.

A chute 13 is adjacent a portion of the periphery of the abrading cylinder 10 and is attached to the intake of an exhaust pump 15. The exhaust pump 15 is driven by a separate motor and discharges through the aperture 16 which may be attached to a bag 17.

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The frame 1 with the mechanism carried thereby is moved about the surface by means of the usual handle terminating in a bail 18 which is attached to the frame 1.

The periphery of the abrading cylinder 10 is positioned slightly below the surface to be abraded by adjusting the plane determined by the casters 4 by means of the hand wheel 9.

The ends of the axle 11 run through the frame 1 and I provide a similar screw in each end of the axle 11. The threads of one end are right-handed, while the threads of the other are left-handed. I provide a supplemental abrading cylinder 19 having a screw 20 which may be attached to the axle of the abrader 19 and screwed into the axle 11 so as to position the abrader 19 on the outside of the frame 1.

From the above it is apparent that the motor 12 revolves the abrading cylinder 10 as well as the supplementary abrading cylinder 19 and cuts the surface to be abraded directly under the main cylinder 10 and the supplementary cylinder 19. Due to the fact that the supplementary abrading cylinder 19 is outside of the frame 1, corners of floors or surfaces next to the wall may be abraded.

The novel abrading cylinder which I provide is shown in Figures 4 and 5 and consists of a hollow cylinder 21, upon the periphery of which is positioned a plurality of teeth 22. These teeth are spaced apart, as at 23, and follow each other around the periphery of the cylinder in a spiral, as shown in Figure 5. The spacing of the following teeth is such that the spacing line lengthwise of the abrading cylinder 10 will be non-axial to the cylinder 10. This positioning of the teeth 22 is quite important since it insures a tooth cutting each portion of the surface being abraded and not following each other to form ridges or grooves in the surface.

Between each of the teeth 22, I provide apertures 24 in the wall of the cylinder 21. Within the cylinder 21, I provide fan blades 25 of such configuration that upon revolving the cylinder 21, the fan blades 25 will intake through the apertures 24 and exhaust through the end of the cylinder 21.

The abrading cylinder 10 is revolved in a predetermined direction at all times, and the teeth 22 have a cutting edge 26 which cuts and abrades the surface upon which the machine is mounted.

In practice, the teeth of the abrading cylinder 10 cut material from the surface being abraded which is either picked up by the vacuum intake 15 through the hood 13, or is sucked through the apertures 24 and discharged from the end of the cylinder 21 into the hood 13.

I have shown in the figures a machine having one abrading cylinder 10. However, it may be desirable to provide two or more abrading cylinders, as shown in Figure 8. In this case the abrading cylinders 10 are revolved in opposite directions to prevent the crawling of the abrading machine.

The abrading teeth 22 are preferably hardened in any manner well known in the art, and their cutting edge 26 will remain sharp and usable

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for a relatively long time. Due to the sharpness of the teeth and their configuration and positioning on the periphery of the abrading cylinder, relatively hard surfaces may be cut and smoothed. In planing or abrading soft material, such as wooden floors, the teeth will shear off any nails which they contact and easily cut down any hardened portion, such as a knot.

The machine does not throw the material removed from the surface about, but picks it up in the vacuum pump and places it in the bag 17 or an appropriate container.

From the above it is apparent that I have provided an abrading cylinder having a definitely configured abrading surface which not only cuts through the surface treated, but also forms a flat surface due to the positioning of the teeth on the periphery of the cylinder. It is also apparent that I have provided a machine for actuating and driving as well as positioning my novel abrading cylinder.

It is to be understood that modifications may be made in my invention without departing from the spirit thereof, and I do not intend to limit myself otherwise than as pointed out in the claim which follows:

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

An abrading device comprising a hollow cylinder with at least one open end mounted on a longitudinal axle spaced away from said cylinder by spokes, said spokes being configured as fan blades and a pulley on said axle for driving said cylinder, said cylinder having an abrading surface and a plurality of apertures communicating with said surface and the hollow interior, said abrading surface comprising a plurality of teeth having cutting edges and arranged in a spiral about the surface of the cylinder, said apertures being located between successive teeth on said spiral.

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