March 16, 1954 W. S. FINNELL 2,671,920

FLOOR-PROCESSING APPARATUS

Filed June 18, 1949 2 Sheets-Sheet 1

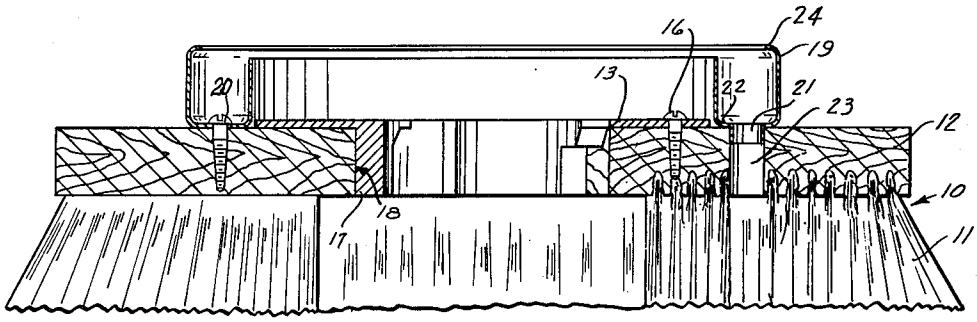


FIG. 1

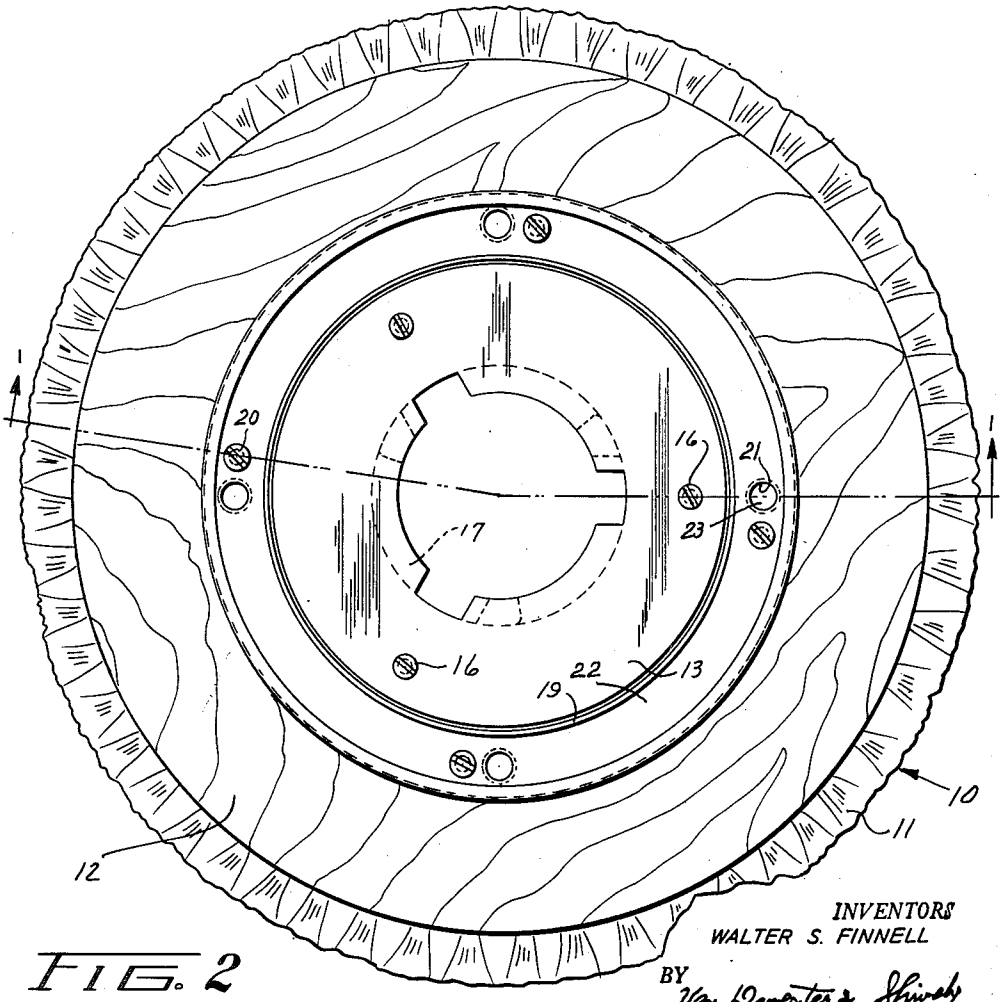


FIG. 2

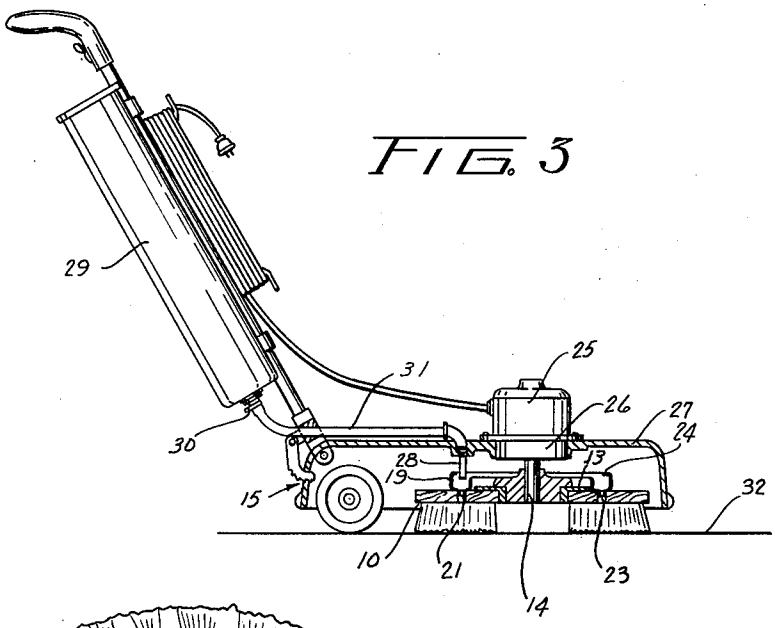
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March 16, 1954 W. S. FINNELL 2,671,920

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Filed June 18, 1949 2 Sheets-Sheet 2

FIG. 3



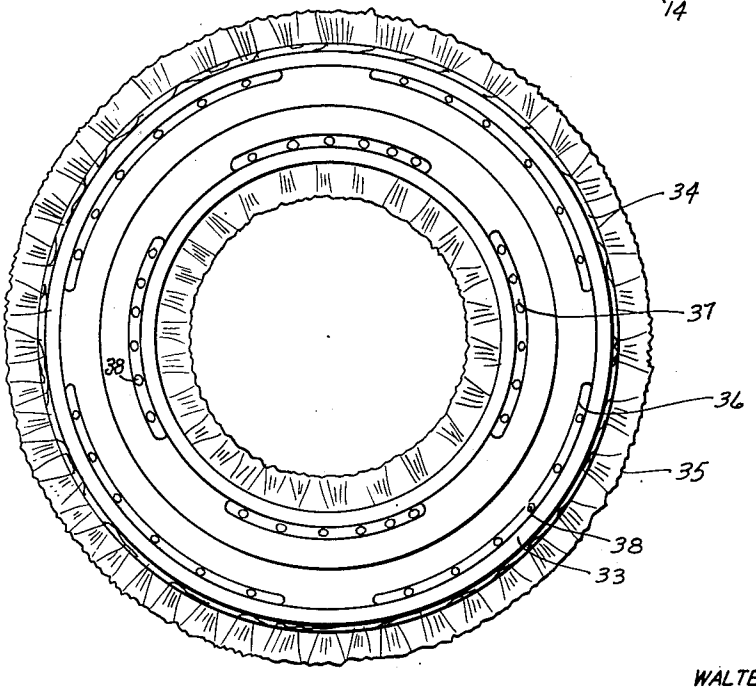


FIG. 4

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FLOOR-PROCESSING APPARATUS

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4 Claims. (Cl. 15—180)

1

The present invention pertains to improvements in floor-processing apparatus.

An object of the invention is to provide a rotary floor-scrubbing device including improved means to apply processing fluids to the floor.

A further object is to provide an improved brush ring adapted to conduct fluid downward among the bristles thereof.

Another object is to provide a ring of the above type including an upper fluid-distributing channel member detachably secured to a lower bristle-holding member, the channel member being of durable construction adapted to be attached to successive lower members when the bristles of preceding lower members have become worn out.

A further object is to provide a ring of the above type wherein the wetting of the upper surface of the detachable lower member by the processing fluid is avoided, thereby preventing warping and rapid deterioration of the lower member.

A still further object is to provide a ring of the above description wherein the channel member has downwardly projecting outlet conduits adapted to extend into delivery holes through the back of the lower member.

Another object is to provide a ring of the above type in which a minimum number of bristles are displaced by the fluid delivery passages.

Another object is to provide a ring of the above type which is adapted to cheap manufacture, allowing the use of wood-backed construction of the lower member, but which provides maximum life of the lower member and easy replacement thereof.

The means of accomplishing the above objects and related advantages are fully set forth in the course of the following description in connection with the accompanying drawings, in which:

Figure 1 is a sectional view of a preferred form of the brush ring combination on the lines 1—1, Fig. 2;

Figure 2 is a plan view of the same;

Figure 3 illustrates the ring applied to a suitable scrubbing machine; and

Figure 4 is a plan view of a typical fluid-distributing ring of the prior art, being included to illustrate the advantages of the present invention.

Referring to Figures 1 and 2, the numeral 10 generally designates an annular brush having bristles 11 set in a wooden back 12. An attachment plate 13 for securing the device to the drive spindle 14 of a floor-scrubbing machine 15, Figure 3, is fastened to the brush back 12 by means of screws 16. A generally cylindrical downward extension 17 of the plate 13 fits a central hole 18 in the brush back 12, thus establishing a concentricity of the assembly. It will be understood that the precise method of coupling the brush assembly 10 to the spindle 14, Fig. 3, does not comprise per se a feature of the present invention, as any suitable means may be used, the plate 13 being illustrated herein as adapted to bayonet-joint coupling.

2

An annular channel member 19, preferably of sheet metal, is secured to the back 12 by screws 20, being disposed concentrically around the outside of the plate 13 and overlying the bristles 11. Four outlet conduits 21, depending from the bottom 22 of the channel member 19, project downward in holes 23 in the brush back 12.

An inwardly turned rim 24 is provided at the top of the outer wall of the channel member 19, in order to prevent loss of fluid by centrifugal action as hereinafter set forth. To further assist in this retaining action, the depth of the channel member 19 may advantageously be made greater than its width, as shown in Figure 1.

Referring to Figure 3, the numeral 25 indicates a motor adapted to drive the spindle 14 via a planetary reduction gear combination 26, the motor being mounted on the main casing 27 of the machine 15. A delivery pipe 28, secured in the casing 27, projects downward into registry with the channel member 19. The pipe 28 is adapted to deliver scrubbing fluid from any suitable source such as a handle-mounted tank 29 connected to the pipe 28 through a manually operable valve 30 and a flexible hose 31.

In operation, as the motor 25 revolves the brush ring assembly 10 and the device is pushed along the floor 32, the pipe 28 delivers fluid to the interior of the channel 19. Rotation of the ring distributes the fluid and causes it to flow downward through conduits 21 and holes 23 to the bristles 11 and floor 32. Thus the fluid is delivered to the floor directly among the bristles themselves and is spread evenly on the floor during the scrubbing action, avoiding the splashing, uneven spread, and waste of fluid liable to occur with devices feeding fluid outside the brush area.

By the provision of the conduits 21 extending downward from the otherwise solid bottom of the channel member 19, all contact of the fluid with the upper surface of the wooden back 12 is avoided, so that this surface remains dry at all times. This provision is a point of utmost

importance in the present invention, as it permits the successful use of cheap solid wood-backed brushes by eliminating the difficulties due to warpage and rapid deterioration which have resulted from wetting the top backing surface in prior combinations. Figure 4 shows a typical example of a prior structure for illustration of the above and related points.

Referring to Figure 4, this typical prior structure includes a channel frame or ring 33 screwed to the wooden back 34 of an annular brush 35. The frame 33 has eight arcuate slots 36 arranged in two over-lapping rows and exposing the surface 37 of the wooden back 34 directly to the interior of the channel. Large numbers of small holes 38 are drilled through the back 34 in registry with the slots 36, to permit fluid to flow down from the channel to the bristles and floor.

When fluid is applied by a device such as that shown in Figure 4, the continual exposure of the upper backing surface 37 to fluid in the slots 36, together with the large absorbing surface of the numerous small holes 38, causes the back 34 to rapidly become liquid soaked, resulting in warpage. The initial warpage further opens the joint between the ring 33 and the back 34, thus admitting more fluid to this joint to cause accelerated soaking, warping and general deterioration. As a result of these difficulties the brush-rings wobble so as to give unsatisfactory operation, and the backs deteriorate so rapidly as to require the brush to be discarded before the bristles are worn out, thus causing waste and frequent changing of brushes.

With the present invention the above difficulties are eliminated as previously noted. The conduits 21 insure that no fluid can reach the top of the wooden back 12 from the bottom of the channel member 19, while the comparatively great depth of the channel and the provision of the inwardly directed rim 24 prevent any centrifugal escape of fluid. Thus the top of the back 12 remains dry at all times, avoiding the soaking and warpage noted above. The provision of a small number of comparatively large holes 23 instead of a large number of small holes 38 as in the illustrated prior structure, is advantageous both in presenting minimum inner surface for a given delivery area and in minimizing the displacement of bristles. It will be obvious that if desired the conduits 21 may be made long enough to extend entirely through the back 12. However, in practice it has been determined that once the fluid has been led below the surface of the back 12 by the short conduits 21, any absorption of fluid by the comparatively small remaining interior surfaces of the widely spaced holes 23 is so small as to have no effect on the operation and life of the brush. With the present invention, therefore, cheap wooden-backed brushes may be operated satisfactorily until the bristles 11 are entirely worn out, giving a high degree of economy in low first cost as well as in long life and infrequent replacement. The channel member 19 may be used with an indefinite number of successive brushes. It is obvious that the channel member itself is light, simple, and of low cost.

With the sheet metal construction of the channel member 19 illustrated, the conduits 21 are preferably die-formed integrally with the channel itself. In production the holes 23 are jig-drilled in the brush back 12 in properly spaced relation. The conduits 21, in addition to their function of delivering fluid, also serve as dowels engaging the pre-drilled holes 23, thus facilitating assembly and insuring concentric location of the channel member 19.

While the invention has been described in preferred form, it is not limited to the exact structures illustrated, as obviously various changes and modifications may be made without departing from the scope of the appended claims.

What is claimed is:

1. A fluid distributing device for attachment to an annular brush back comprising an annular U-shaped channel member having a substantially unobstructed annular inner surface, downwardly extending outlet conduits on the bottom of said member and adapted to engage holes in said brush back, said conduits comprising the sole orifices for fluid through said bottom, an inwardly directed rim on the outer wall of said member, and means extending through the bottom of said U-shaped member for securing same to said brush.

2. A device as claimed in claim 1 wherein the vertical distance from said rim to said bottom of said channel member is greater than the width of said channel member.

3. A fluid-distributing brush for rotary floor scrubbers comprising, a unitary annular wooden brush back, floor-engaging bristles secured to the bottom of said back, said back having a plurality of holes extending from the upper surface thereof through the bottom thereof among said bristles in widely spaced circumferential relation, an upwardly directed annular member concentrically mounted on the upper surface of said wooden brush back and forming a substantially unobstructed annular channel, means lying between the upstanding walls of said annular member for securing same to said brush back, and means on said member forming conduits extending downward from the bottom of said member to zones in said holes below said upper surface of said back, said conduits comprising the sole orifices for fluid through said bottom.

4. A device as claimed in claim 3 wherein said holes closely embrace said conduits in dowel relationship.

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