Jan. 15, 1935. E. EDSTRÖM 1,988,193

FLOOR TREATING MACHINE

Filed June 16, 1931

Fig. 1.

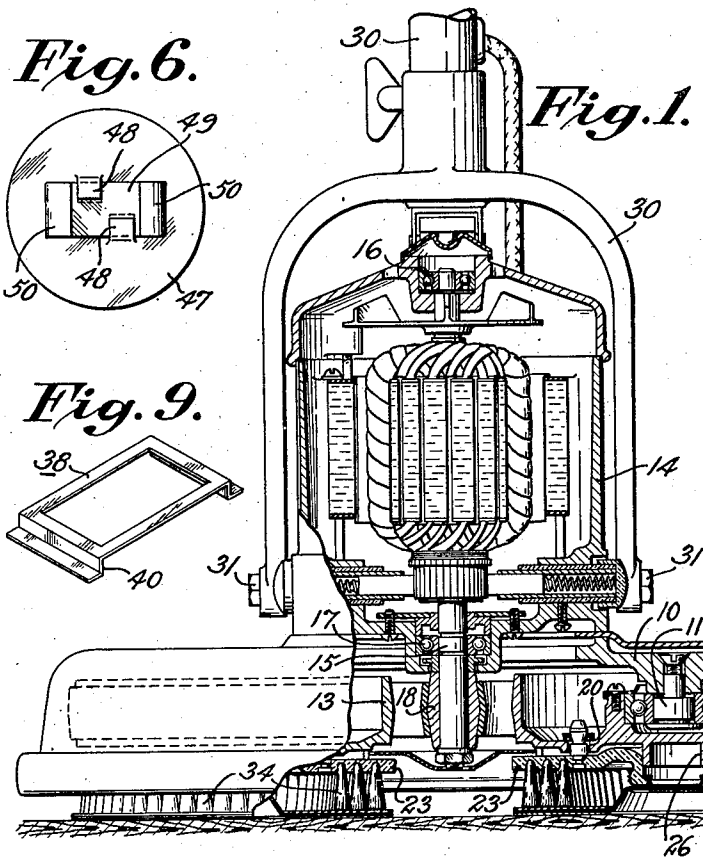


Fig. 2.

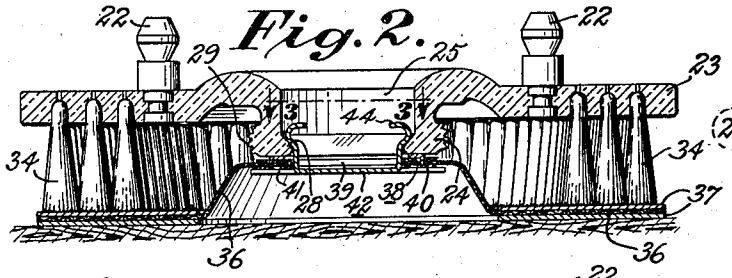


Fig. 3.

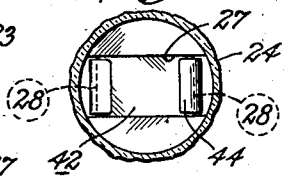


Fig. 4.

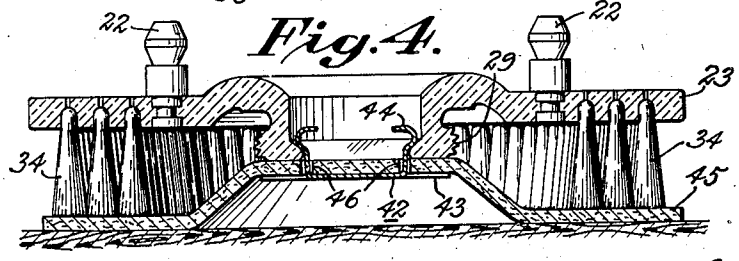


Fig. 5.

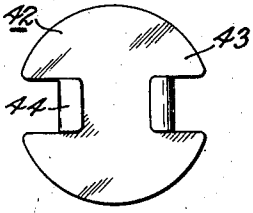


Fig. 6.




Fig. 7.

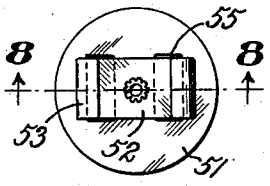


Fig. 8.

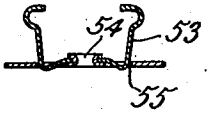


Fig. 9.




INVENTOR
Eric Edström
BY
Geo. T. Hedlund
his ATTORNEY

Patented Jan. 15, 1935 1,988,193

# UNITED STATES PATENT OFFICE

1,988,193

## FLOOR TREATING MACHINE

Eric Edström, Stockholm, Sweden, assignor to Inventia Patent - Verwertungs - Gesellschaft, Schaffhausen, Switzerland, a corporation of Switzerland

Application June 16, 1931, Serial No. 544,798
In Germany July 18, 1930

15 Claims. (Cl. 51—177)

My invention relates to floor polishers and particularly to electrically operated polishers provided with one or more rotatable discs arranged to contact the surface to be treated. In floor polishers of this type these discs are ordinarily provided with brush bristles which, when rotated in contact with the floor, serve to polish the same. My invention contemplates the provision of attachments for floor polishers of this type whereby other operations, such as grinding, waxing and polishing with a cloth, may be performed. The implements made in accordance with my invention may be readily clamped to the brush disc and supported and rotated thereby, even though the bristles thereof have become worn down a substantial extent.

A further object of my invention is to provide an implement of this type having two operating surfaces and so arranged that it may be reversed when one surface becomes worn.

Further objects and advantages of my invention will be apparent from the following description read in connection with the accompanying drawing, which is to be considered a part of this specification and on which:

Fig. 1 is a front view, chiefly in cross-section, of a floor polisher including my invention;

Fig. 2 is a cross-sectional view of a brush disc provided with a floor treating implement embodying my invention;

Fig. 3 is a cross-sectional view of a portion of the device shown in Fig. 2 and is taken on the line 3—3 of Fig. 2;

Fig. 4 is a cross-sectional view of a brush disc provided with a somewhat modified embodiment of a floor treating implement;

Fig. 5 is a top view of a clamp shown in each of the preceding figures;

Fig. 6 is a top view of a somewhat modified form of clamp;

Fig. 7 is a top view of a still further modified form of clamp;

Fig. 8 is a cross-sectional view taken on the line 8—8 of Fig. 7; and

Fig. 9 is a perspective view of a reinforcing member shown in Figs. 1 and 2.

Referring more particularly to Fig. 1, reference character 10 designates the frame of a floor polisher. Rotatably mounted on frame 10 by means of spindles 11 and bearings 12 is a plurality of carrier discs 13. In Fig. 1 there are shown two such carrier discs but it will be understood that any suitable number might be employed. The type of floor polisher shown is that disclosed in application Serial No. 286,663, filed June 19, 1928, by Engberg et al., Patent No. 1,901,497 issued March 14, 1933, but it will be understood that the invention may be embodied in various types of machines.

Mounted on frame 10 is an electric motor 14 arranged with its axis in a vertical direction. Motor 14 is provided with the usual armature shaft 15 rotatably mounted in bearings 16 and 17. Shaft 15 extends below bearing 17 and is provided with a pulley wheel 18. A belt 19 passes around pulley 18 and around the rims of carrier discs 13.

Carrier discs 13 are formed with two or more apertures 20. Mounted on discs 13 adjacent to apertures 20 are spring fastening devices 21 adapted to engage members 22 and to releasably hold said members in position. Members 22 are secured to a brush disc 23, which disc is provided with an annular ring of brush bristles 34 which extend from the disc in the opposite direction from members 22. In the center of disc 23 is a downwardly extending portion 24 having an aperture 25 extending therethrough. The upper portion of aperture 25 is cylindrical in order to engage a cylindrical member 26 on carrier disc 13. The lower part of aperture 25 is rectangular, as shown at 27 in Fig. 3. Both ends of rectangular opening 27 are provided with projections 28. The outside of member 24 is preferably knurled, as is shown at 29, in order to provide a hand grip surface. The under side of projection 24 constitutes a bearing surface.

To secure brush disc 23 to carrier disc 13, the brush disc is grasped by hand grip 29 and the members 22 are inserted into apertures 20 and are forced past spring fastening devices 21, which devices retain members 22 and discs 23 in position. Projection 26 engages the circular wall of aperture 25 and serves to steady the disc. Upon rotation of carrier discs 13 by motor 14 through the medium of belt 19, brush discs 23 are caused to rotate.

Any convenient form of handle 30 is pivotally secured to the housing of motor 14 by means of bolts 31. A shield 32 is secured between motor 14 and frame 10 and has a skirt portion 33 which encloses carrier discs 13 and a portion of brush discs 23. Bristles 34 protrude below the bottom of skirt 33 in order that they may contact the surface of the floor. A band of rubber 35, or other soft material, is provided around the lower edge of skirt 33 in order that the floor polisher will not damage articles of furniture or the like with which it might accidentally be brought into contact.

It is often desirable to use a floor polisher of this type for other purposes than polishing a floor by means of the bristles 34. With suitable attachments the above described polisher may be used to grind or sandpaper the floor, to wax it, or to polish it with material other than the brush bristles. To this end I have provided attachments or implements which may be readily secured to the above described brush discs. A preferred embodiment of such an implement is shown in Figs. 1, 2 and 3. The implement comprises a circular piece of flexible material 36, such as cloth or the like. Secured to cloth 36 in any suitable manner are a pair of annular floor treating members 37. Members 37 may be provided with sandpaper or other abrasive material and may be comparatively rigid and have an outside diameter substantially the same as the outside diameter of the annular ring of bristles 34. Secured to the central portion of cloth 36 is a rigid rectangular reinforcing member 38, shown in perspective in Fig. 9, having a rectangular opening therethrough of substantially the same size as the rectangular opening 27 in member 24. The cloth 36 is likewise provided with a similar opening 39. The ends of member 38 are each bent to form a Z-shaped bar 40 which extends through elongated slots formed in the cloth adjacent to the opening 39 therethrough. Cloth 36 is preferably folded back upon itself, as is shown at 41, to form a reenforcement around opening 39 and particularly where the cloth is engaged by the Z-shaped bars 40. In place of the reinforcing member 38, shown particularly in Fig. 9, there may be employed a grooved rectangular frame clamped over the edges of the material of cloth 36 surrounding opening 39.

Rigid member 38 is releasably secured to brush disc 23 by means of a clamping device 42. Device 42 comprises a circular plate 43 from which extend two resilient arms 44. When in position, plate 43 bears against the lower side of rigid member 38 and arms 44 extend through the opening therein and protrude into the rectangular opening 27 formed in brush disc 23. Arms 44 are formed with hook-shaped ends which engage the projections 28 at the ends of opening 27.

It will thus be seen that with the parts assembled as previously described, device 42 secures the central portion of cloth 36 to the brush disc. Grinding devices 37 are held in a flat position against the floor by means of the bristles 34. Inasmuch as opening 27 is rectangular, rotation of disc 23 will cause rotation of clamping device 42 which, together with bristles 34, causes cloth 36 and the grinding devices 37 to rotate therewith. If one of the grinding devices 37 becomes worn, clamping device 42 may be removed, which releases the cloth 36 from the brush disc. The cloth may then be turned over and clamping device 42 replaced, whereupon the implement is ready for use with the other grinding device presented to the floor. This reversal may be effected because of the flexible nature of cloth 36 between the grinding devices 37 and the central rigid member 38. This annular flexible ring of material also permits the implement to be used with brushes the bristles of which have been worn down an appreciable amount. If desired, a knob or handle may be placed on the under side of member 42 to facilitate its removal.

A somewhat modified embodiment of my invention is shown in Fig. 4. Reference character 45 designates a circular piece of felt or the like which may be used to polish a floor. Felt 45 is provided with a pair of slots 46 adjacent the central portion thereof through which may extend arms 44 of clamping device 42. The central portion may be stiffened and reinforced by being impregnated with oil or shellac. Clamping device 42 is the same as that previously described in connection with Fig. 2. Inasmuch as felt 45 is flexible, it may be removed and turned over so that the other side is presented to the floor. Rotation of brush disc 23 imparts rotation to felt 45 through the medium of clamping device 42 in the same manner as described in connection with the implement shown in Fig. 2. The outer annular portion of felt 45 may be impregnated with wax if it is desired to use the device for waxing a floor.

In Fig. 6 there is shown a somewhat modified form of clamping device which may be employed in connection with any of the embodiments previously described. The clamping device comprises a circular disc 47 having tabs 48 struck therefrom as shown. Tabs 48 engage a member 49 provided with resilient arms 50. Arms 50 are similar to and serve the same purpose as arms 44 on the clamping device 42.

A still further modification of clamping device is shown in Figs. 7 and 8. This device comprises a circular disc 51 to which is secured a member 52 provided with resilient arms 53. Arms 53 are similar to the arms 50 shown in Fig. 6 or the arms 44 shown in Fig. 5. Member 52 is secured to disc 51 in the manner shown in Fig. 8 which comprises the formation of a hole 54 in the center of the disc and the bending of the material surrounding the hole back around the edges of a somewhat larger hole formed in member 52. Member 52 is, in effect, riveted to disc 51, but the material of the rivet is part of the material of the disc. Slots 55 are formed in disc 51 in order that arms 53 may have greater freedom of movement when inserted into or removed from the opening in the brush disc.

While I have shown and described a limited number of embodiments of my invention, it is to be understood that they are for purposes of illustration only and that my invention is to be given the broadest scope commensurable with the appended claims when viewed in the light of the prior art.

What I claim is:

1. In a floor polisher, a circular brush disc, means for rotating said disc, an annular ring of bristles carried by said disc, said disc having a central opening therein, a flexible reversible floor treating implement adapted to be carried by said disc in contact with the ends of the bristles and provided with a central opening, and a resilient member extending through the opening in said implement and releasably engaging the walls of the opening in said disc for securing said implement to said disc.

2. In a floor polisher, a circular brush disc, means for rotating said disc, an annular ring of bristles carried by said disc, said disc having a central opening therein surrounded by a bearing surface, a circular floor treating implement adapted to be carried by said disc and comprising a rigid outer annular portion, a rigid central portion provided with an aperture and a flexible annular portion connecting the two rigid portions, and a resilient member extending through the opening in said rigid central portion and releasably engaging the walls of the opening in

said disc for clamping said rigid central portion against said bearing surface.

3. In a floor polisher, a circular brush disc, means for rotating said disc, an annular ring of bristles carried by and extending from said disc, said disc having a central opening therein surrounded by a bearing surface, a circular floor treating implement adapted to be carried by said disc and comprising a rigid outer annular portion having substantially the same outer diameter as said annular ring of bristles, a rigid central portion provided with an aperture and a flexible annular portion connecting the two rigid portions, and a resilient member extending through the opening in said rigid central portion and releasably engaging the walls of the opening in said disc for clamping said rigid central portion against said bearing surface, said flexible portion retaining said rigid outer annular portion in substantial alignment with said annular ring of bristles.

4. In a floor polisher, a circular brush disc, means for rotating said disc, an annular ring of bristles carried by said disc, said disc having a central non-circular opening therein, a floor treating implement comprising a sheet of flexible fibrous material adapted to be carried by said disc in contact with the ends of the bristles and provided with a non-circular opening, and a non-circular resilient member extending through the opening in said implement and releasably engaging the walls of the opening in said disc for securing said implement in fixed relationship to said disc.

5. In a floor polisher, a circular brush disc, means for rotating said disc, an annular ring of bristles carried by said disc, said disc having a central opening therein, a floor treating implement adapted to be carried by said disc and comprising a circular piece of flexible material, an annular ring of floor treating material having substantially the same outer diameter as said annular ring of bristles secured on either side of said flexible material and a rigid member secured to the central part of said flexible material, said rigid member and flexible material having an opening formed therethrough, and a resilient member extending through the last-mentioned opening and releasably engaging the walls of the opening in said disc for securing said implement to said disc.

6. In a floor polisher, a circular brush disc, means for rotating said disc, an annular ring of bristles carried by said disc, said disc having a central opening therein, a floor treating implement adapted to be carried by said disc and comprising a circular member of felt provided with a pair of slots adjacent to its central portion, and a fastening member comprising a flat plate and a pair of resilient arms attached thereto, said arms extending through the slots in said felt member and releasably engaging the walls of the opening in said disc.

7. In a floor polisher, a circular brush disc, means for rotating said disc, an annular ring of bristles carried by said disc, said disc having a central opening therein, a floor treating implement adapted to be carried by said disc and comprising a circular member of felt having its central portion impregnated with a stiffening material and provided with a pair of slots, and a fastening member comprising a flat plate and a pair of resilient arms attached thereto, said arms extending through the slots in said felt member and releasably engaging the walls of the opening in said disc.

8. Apparatus for treating floors and the like comprising an annular disc having a downwardly extending central projection, bristles secured in said disc and projecting downwardly therefrom around and extending beyond said central projection, a member of soft material adapted to have a part resting against the ends of the bristles, a part adjacent said central projection and an intermediate part inclined to the first-mentioned part, and means for releasably holding said member in such position comprising a resilient element adapted to extend through said material and yieldably engage said central projection.

9. Apparatus for treating floors and the like comprising an annular disc having a downwardly extending central projection, bristles secured in said disc and projecting downwardly therefrom around and extending beyond said central projection, a member of soft material adapted to have a part resting against the ends of the bristles, a part adjacent said central projection and an intermediate part inclined to the first-mentioned part and reversible to have a like reciprocal position, and means for releasably holding said member in such positions comprising a resilient element adapted to extend through said material and yieldably engage said central projection.

10. Apparatus for treating floors and the like comprising an annular disc having a downwardly extending central projection, bristles secured in said disc and projecting downwardly therefrom around and extending beyond said central projection, a member of soft material adapted to have a part resting against the ends of the bristles, a part adjacent said central projection and an intermediate part inclined to the first-mentioned part and reversible to have a like reciprocal position, and means for releasably holding said member in such positions comprising an element having resilient projections adapted to extend through said material in either direction and yieldably engage said central projection.

11. Apparatus for treating floors and the like comprising an annular disc having a downwardly extending central projection, bristles secured in said disc and projecting downwardly therefrom around and extending beyond said central projection, a piece of felt adapted to have a part resting against the ends of the bristles, a part adjacent said central projection and an intermediate part inclined to the first-mentioned part, and means for releasably holding said felt in such position comprising a resilient element adapted to extend through said felt and yieldably engage said disc.

12. Apparatus for treating floors and the like comprising an annular disc having a downwardly extending central projection, bristles secured in said disc and projecting downwardly therefrom around and extending beyond said central projection, a member of soft material adapted to have a part resting against the ends of the bristles, a part adjacent said central projection and an intermediate part inclined to the first-mentioned part, and means for releasably holding said member in such position comprising a resilient element adapted to extend through said material and yieldably engage said central projection, said disc, member and element being formed to prevent relative rotational movement between them when the parts are held together.

13. Apparatus for treating floors and the like comprising an annular disc having a downwardly extending central projection, bristles secured in said disc and projecting downwardly therefrom around and extending beyond said central projection, a piece of felt adapted to have a part resting against the ends of the bristles, a part adjacent said central projection and an intermediate part inclined to the first-mentioned part, said felt being reversible to have a like reciprocal position, and means for releasably holding said felt in such positions comprising an element having resilient projections adapted to extend through said felt in either direction and yieldably engage said central projection.

14. In a floor polisher, the combination with a disc having a central non-circular portion and bristles around the central portion, of a sheet of flexible fibrous material adapted to contact the ends of the bristles and means to secure said sheet to said disc comprising a member adapted to pass through said sheet and engage said non-circular portion.

15. In a floor polisher, the combination with a disc having a central non-circular portion and bristles around said central portion, of a reversible sheet of flexible fibrous material adapted to contact the ends of the bristles and means to secure said sheet to said disc comprising a member adapted to pass through the sheet and engage said non-circular portion.

ERIC EDSTRÖM.