

May 22, 1928.

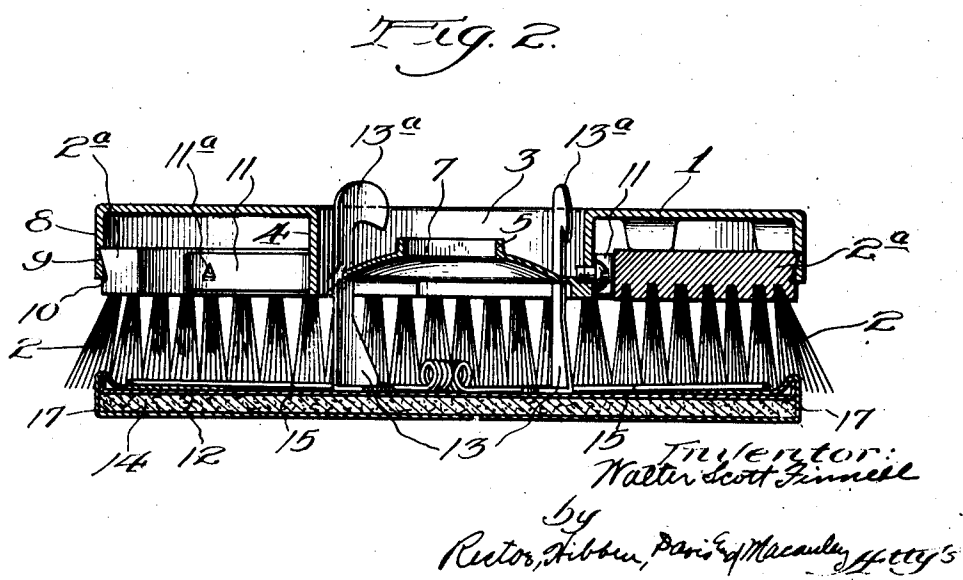
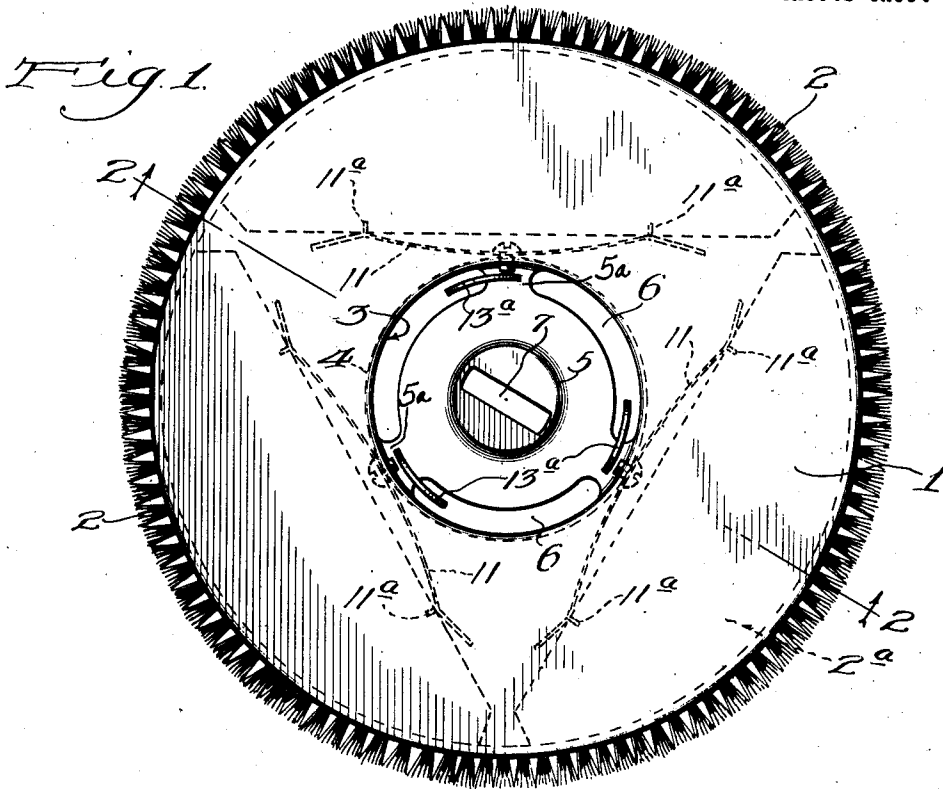
1,670,302

W. S. FINNELL

FLOOR TREATING MACHINE

Filed June 14, 1926

2 Sheets-Sheet 1



Inventor:
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by
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2 Sheets-Sheet 2

Fig. 3.

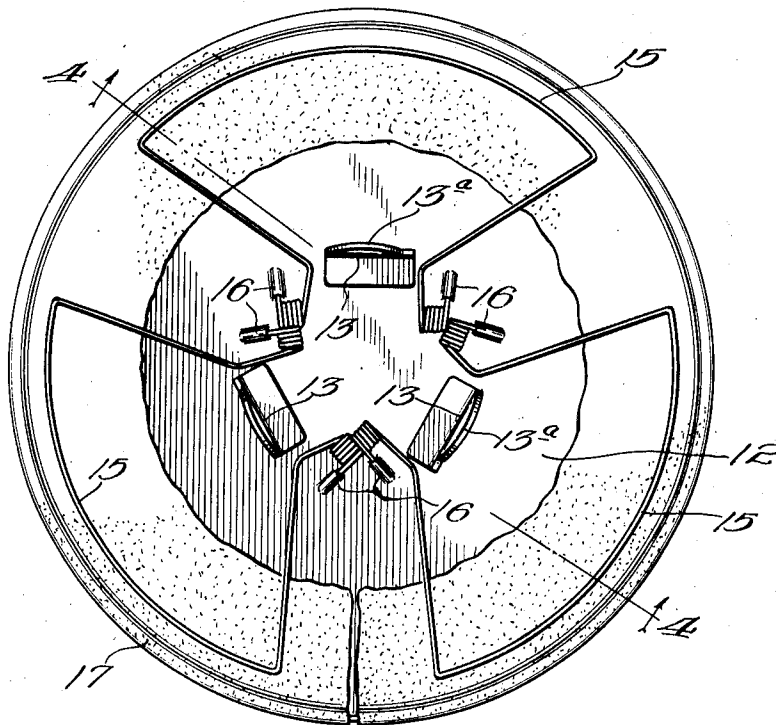
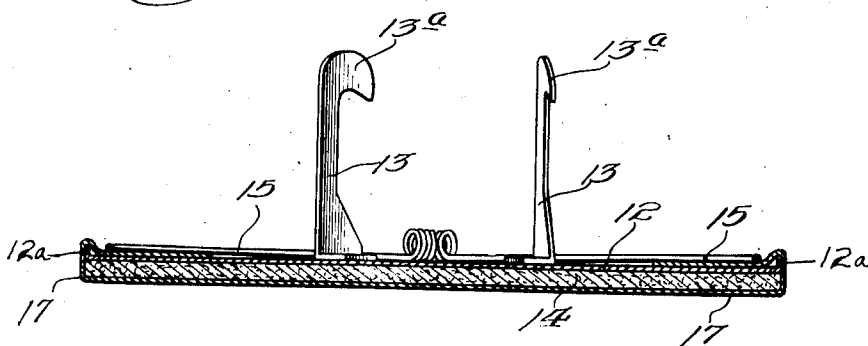


Fig. 4.



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UNITED STATES PATENT OFFICE.

WALTER SCOTT FINNELL, OF HANNIBAL, MISSOURI, ASSIGNOR TO FINNELL SYSTEM, INC., OF HANNIBAL, MISSOURI, A CORPORATION OF DELAWARE.

FLOOR-TREATING MACHINE.

Application filed June 14, 1926. Serial No. 115,775.

My invention relates to floor treating machines and has to do particularly with means whereby machines of this class may be readily converted and adapted to a variety of floor treatment uses such as scrubbing, removing wax and polished surfaces, applying wax or other polishing substance to such surfaces and polishing the same to various degrees.

Floor treating machines have come into common use in the home for domestic use, and, as a natural result, compactness, neatness and simplicity are important factors. Machines may be used for scrubbing or sand papering or waxing and polishing purposes, and another important factor in the use of a floor treating machine in the home and elsewhere is the adaptability of the same to perform a variety of the foregoing, and probably other, operations to reduce, as far as possible, the amount of equipment required.

One of the objects of my invention is to provide a floor treating machine adapted to a variety of uses and which is cheap to manufacture, compact, simple in construction and easy to convert and adapt and operate in connection with the particular requirements of use.

Another object of my invention is to provide means for readily and quickly adapting a floor treating machine to a variety of uses, such adaptation being accomplished without disassembling of the main machine parts.

Other and further objects and advantages will appear hereinafter as this description progresses and by reference to the drawings wherein,—

Fig. 1 is a top plan view of the so-called brush ring structure of a floor treating machine embodying my invention.

Fig. 2 is a vertical section taken on line 2—2 of Fig. 1.

Fig. 3 is a top plan view of means which may be readily applied to the brush ring structure of Figs. 1 and 2 to convert the floor treating machine with which it may be used for sand papering, waxing, polishing, and the like.

Fig. 4 is a vertical section taken on line 4—4 of Fig. 3.

It is to be understood that my invention may be applied to a variety of floor treating machines, and preferably, to that class of

machines which have the portion adapted to contact with the floor designed to take a rotary motion relative thereto. Furthermore, although the structure shown in the drawings may be particularly adaptable to a machine which may be put to a domestic use, yet it is obvious that my invention may be applied to other and larger machines suitable, such as scrubbing machines, for use in treating the floors of public, or otherwise, buildings and the like.

Referring particularly to the drawings, the structure shown thereby may comprise a rotary brush ring structure, (Figs. 1 and 2) consisting of an annular brush ring 1 adapted to carry a plurality of removable brushes 2, the contour of the brushes being such as to approximate the inner contour of the brush ring 1. The brush ring 1 is provided with a centrally disposed opening 3, the walls of which are formed by the annular depending flange 4. The bottom of the opening 3 is spanned by a dome-shaped boss member 5 which has a plurality, preferably three, supporting arms 5^a formed integral with the annular flange 4 and, in this manner, the slots 6 are formed. The opening 3 and boss member 5 are so arranged that a scrubbing solution may be delivered from a suitably disposed tank and discharge pipe (not shown) and slots 6 directly to the surface being treated interiorly of the ring of brushes 2. The central portion of the boss member 5 is provided with a rectangular shaped slot 7 which is adapted to receive a similarly shaped portion of the mechanism (not shown) for driving the brush ring, this arrangement being such that the driving mechanism may be operatively connected to the brush ring structure so as to cause the brush ring structure to rotate upon operation of such driving mechanism. I preferably employ a universal connection (not shown) between the driving mechanism and the brush ring structure so that the brush ring structure may have free movement in all directions and may at all times assume a uniform and even contact with the surface being treated regardless of irregularities in such surface.

As will be noted by reference to Fig. 2 the inner wall of the outer depending annular flange 8 of the brush ring structure is provided with an annular groove 9 and the outer edge of each of the semicircularly

shaped brushes 2 is provided with a groove 10 corresponding in size and shape to the groove 9, this arrangement being such that when the brushes are in place, as shown in Fig. 2, movement of the same directly away from the brush ring structure 1 is prevented. It will also be noted that suitable leaf springs 11 are mounted on the downwardly depending inner flange 4 in such a manner that they ride and bear against the straight and inner surface of the brushes 2 so as to hold them in engagement with the slot 9 as above explained, this entire construction being such that, at all times, any tendency for the brushes 2 to drop out of place is prevented, this action being further assisted by the sharp projections 11^a formed on the springs 11. The brushes themselves may comprise, preferably, a wooden body portion 2^a adapted to support the brush bristles. These brushes may be of any desired kind, dependent upon the particular work to be done. For example, a rather stiff brush such as a stiff straw or fiber or steel may be applied for scrubbing purposes while a softer bristle brush may be employed for polishing purposes as will be explained hereinafter. The portion of the machine so far described is adapted particularly for scrubbing and polishing operations, dependent on the particular kind of brushes employed.

In order to readily and quickly adapt the brush ring structure for waxing, sand papering, and other polishing operations, without removing the brush ring structure, I employ a removable adapter such as shown in Figs. 3 and 4. This adapter may comprise preferably a metal plate 12 which is circular in shape approximating the diameter of the brush ring structure and having an annular peripheral upstanding flange 12^a for adding strength and rigidity and maintaining the disc-like shape of the same. The plate 12 is provided with a plurality, preferably three (corresponding to the number of slots 6) centrally disposed upstanding connecting lugs 13 which are semi-circular in cross-section and which are so positioned and of such shape and length as to freely pass and extend up through the slots 6 in the bottom of the opening 3. Each of these lugs 13 terminates in a hook portion 13^a. The hook portions 13^a of the lugs 13, when the adapter is applied to the brush ring structure, are turned in a direction opposite to the direction of rotation of the brush ring structure so that the hook-like portions of the lugs 13 are disposed and hooked over the adjacent arms 5^a of the boss member 5 whereby the lugs 13 will not become disengaged from the slots 6 during the operation of the machine, or when the brush ring structure is moved or raised up from the floor. The lugs 13 are of sufficient length that the hook por-

tions 13^a project above the arms 5^a whereby the adapter is free to move in any direction tiltably so that it will readily adjust itself to the floor regardless of any irregularities therein. The adapter may be connected to the brush ring structure by merely holding the machine (not shown) carrying the brush ring structure so as to carry the brush ring structure up from the floor and then passing the lugs 13 through the slots 6 and turning the adapter as a whole in a direction opposite to the direction of rotation of the brush ring structure. In this manner the adapter is held in a fixed rotary position relative to the brush ring structure during operation.

A pad 14, of some suitable material, preferably felt material, is attached to the under side of the adapter plate 12, such pad serving as a cushion in the manner to be explained. A plurality of radially disposed spring clips 15, the outer portion of which approximates the contour of the outer portion of the adapter plate 12 are mounted on the top portion of such plate (Fig. 3). Each of these spring clips 15 has its inner ends terminating in spring coils, the free ends of which engage the angularly disposed slots formed in raised portions 16 of the plate 12, the entire spring arrangement being such that the outer portion of each spring clip is resiliently held against the upper surface of such plate. These spring clips 15 are adapted to clamp and hold sand paper, waxing cloths, polishing cloths, or other floor treating materials, to the plate 12 in the manner and for the purpose to be referred to later. The peripheral flange 12^a is of such shape and so located that the springs 15 take and hold a firm grip on the floor treatment materials carried by the disc 12.

With my invention, when it is desired to scrub the floor, suitable scrubbing brushes are inserted in place in the brush ring structure and the ring of brushes is caused to bear against the surface to be treated, water and the proper cleaning solution being applied to the surface under treatment. When it is desired to prepare the floor for the application of a new coat of varnish, or shellac or the like used in effecting a highly polished floor, it may be desired first to remove the old coat of varnish or shellac or whatever it may be. In this instance, the adapter shown particularly in Figs. 3 and 4 may have a sandpapering cover or a sheet of sand paper applied thereto as indicated by the numeral 17 in Fig. 4. In this instance the sand paper is applied so that the sand paper surface will be beneath the pad 14 carried by the plate 12 with the sand paper surface exposed to the floor to be treated. The sand paper which is preferably circular in shape, similar to the adapter plate 12, is held in place by folding the edges of the

same so that they lap up over the outer edges of the pad 14, flange 12^a and the upper surface of the plate 12, after which such edges are placed under and held in place by the spring clips 15. The brush ring structure is next caused to rotate with the sand paper in contact with the floor and the floor is made smooth and free from old varnish, shellac or the like, and the new varnish, shellac, or the like, may be applied in the ordinary manner. When the floor is in condition to be waxed and polished, the sheet of sand paper previously carried by the adapter plate 12 may be replaced by two or more layers of burlap material, or other suitably porous material, wax in paste, or other suitable form being disposed between the layers of the burlap. The burlap material, in this instance, is held in place on the adapter plate 12 by turning the edges of the same up over the adapter plate so that they will lie under and be held in place by the spring clips 15 in a manner similar to the manner in which the sand paper was held in place. The brush ring structure is again caused to rotate upon the surface to be treated, thus causing the burlap material to rotate thereon with the result that the wax oozes through the burlap material and is uniformly applied to the floor. This action is aided by the heat developed by the frictional contact between the rotating burlap and the surface under treatment. The application of the wax, as just stated, is followed by the removal of the burlap material and the adapter plate is also removed from the brush ring structure by rotating the same so that the hook portions 13^a are disengaged from the arms 5^a to permit the lugs 13 to readily pass downward through the slots 6. The brushes which are carried by the brush ring structure at this time should be, preferably, soft bristle polishing brushes and the floor may now be given a polish by causing such brushes to rotate thereon.

It will be seen that when the adapter is connected to the brush ring structure and such structure is in position on the floor, the brushes 2 bear upon the top of the adapter plate 12. The brushes 2 in this manner serve as a cushion for the adapter plate 12 and provide such a resilient support for the same that the adapter plate will readily adjust itself to irregularities in the floor with the result that all surfaces with which the adapter plate comes in contact are uniformly treated. The ready adjustment of the adapter plate to the surface under treatment is further effected by the relative shapes of the disc lugs 13 and the slots 6. The slots 6 are of sufficient width to permit the disc 12 and the lugs 13 to tilt in any direction and the lugs 13 are of such length as to permit a desired reciprocatory move-

ment of the disc relative to the brush ring 1. The foregoing provides, so to speak, a universal movement.

After the floor has been waxed and then polished by the use of the brushes 2, an ordinary polishing cloth, if desired, may be placed upon the floor beneath the brushes 2 and the brush ring structure rotated, thereby giving the floor a high polish; or the adapter may remain in place upon or be placed upon the brush ring structure again and may, at this time, carry a polishing rag similarly to the sandpaper and burlap to produce the effect just stated.

From the foregoing it will be seen that I have provided a compact structure which is simple in construction for readily converting and adapting a floor treating machine to a variety of uses. With my invention floor treating machines may be used for domestic purposes, or otherwise, with a minimum of attention and a minimum of equipment, all of this being effected very readily and without resorting to removal or changing of any of the main operating parts of the machine as a whole. My invention further provides inexpensive construction for accomplishing the foregoing advantages.

Having thus described my invention, what I claim is:

1. In a floor treating machine, the combination with a brush holder having an annular series of centrally disposed slots, of means for adapting said brush holder for sand papering, waxing, polishing, and the like, which comprises a disc having a plurality of projecting lugs approximating and engageable with said slots and movable therein in all directions, said lugs terminating in hook-like portions engageable with the ends of said slots for effecting rotative engagement of said disc with said brush holder, and a floor treating member carried by said disc.

2. In a floor treating machine, the combination with a brush holder having an annular series of centrally-disposed slots and a brush carried by said holder, of means for adapting said brush holder for sandpapering, polishing and the like, which comprises a disc removably and rotatably engageable with said brush holder slots and adapted to carry a floor treating member, said disc and said member being yieldingly supported in floor treating position by said brush to cushion the same against irregularities in the surface under treatment.

3. In a floor treating machine, the combination with a brush holder and brush means carried thereby, of means for adapting said apparatus for sand papering, waxing, polishing and the like, which comprises a disc removably engageable and rotatable with said brush holder and adapted to be yieldably supported by said brush means, a floor

treating member carried by said disc in contact with the surface under treatment and a plurality of spring members carried by said disc and engageable with said floor
5 treating member.

4. In a floor treating machine, the combination with a brush holder having an annular series of centrally disposed slots, of means for adapting said brush holder for
10 sand papering, waxing, polishing and the like, which comprises a disc, an annular series of hook-like attaching lugs carried by said disc and engageable with said brush holder through said slots for effecting re-
15 movable rotative engagement of said discs with said brush holder, a floor treating member carried by said disc adjacent the surface under treatment, a pad carried between said disc and member, and spring
20 means carried by said disc and embracing said member.

5. In a floor treating machine, a brush structure adapted to carry brush means, and means removably carried by said brush
25 structure for adapting the machine for sand papering, waxing, polishing and the like, said means comprising a disc adapted to bear against said brush, a floor treating member carried by said disc in contact with
30 the surface under treatment, a pad carried between said disc and the floor treating member, yieldable means carried by said disc for holding said floor treatment member in a fixed position thereon, and a plurality of
35 lugs carried by said disc for removably engaging the disc with said brush structure, said lugs being engageable with said brush structure by passing the same through openings therein and by turning the disc in a di-
40 rection opposite to the direction of rotation of the brush structure.

6. In combination with a brush structure for floor treating machines, an adapter attachment for polishing, waxing, sandpapering, and the like, comprising a disc, a floor
45 treating member carried by said disc, a pad carried by said disc between said disc and said member, upstanding lugs carried by said disc and terminating in hook-like por-
50 tions adapted to loosely engage said brush structure for effecting an operative connection between said disc and said brush structure to cause said disc to rotate therewith and to permit it to adjust itself relative to
55 said brush structure, and spring means carried by said disc and engaging said member for removably securing said member in place thereon.

7. An attachment for floor treating machines embodying brush structure comprising a member having means for loosely and
60 removably engaging and supporting the same on said brush structure and for rendering said member self-adjustable relative

to said structure during operation, a floor
65 treating element normally carried in engagement with the surface under treatment, cushioning means between said member and element, and spring clamps for securing
70 said element to said member.

8. An attachment for floor treating machines embodying brush structure comprising a member having means for removably
75 engaging and supporting the same on said brush structure for movement tiltably and vertically, said means permitting vertical and tiltable movement of said member, a removable floor treating element normally carried by said member in engagement with the
80 surface under treatment, cushioning means between and engaging said member and element, and flexible fastening means carried by said member for securing said element thereto.

9. An attachment for floor treating machines embodying brush means, said attachment comprising a member adapted to be
85 supported and cushioned by said brush means, means for effecting removable vertical and wobble connection between said
90 brush member and said brush structure, a floor treating element, cushioning means between said member and said element, and self-gripping means carried by said member for securing said element thereto and in
95 position for floor treatment.

10. An attachment for floor treating machines embodying brush means, said attachment comprising a member adapted to be
100 supported and cushioned by said brush means, connectors carried by said member for effecting removable connection between said member and brush structure, said connectors effecting a reciprocating and uni-
105 versal connection between said member and means, a flexible floor treating element, cushioning means between said member and element, and spring clips carried by said member and engageable with said element for
110 securing said element to said member over said cushioning means and in position for floor treatment.

11. An attachment for floor treating machines comprising a member having means
115 for effecting removable engagement with said machine, and having an upstanding peripheral flange, a floor treating element, pad means between said member and element, said element being so shaped as to en-
120 close said pad means and lap over said flange, and yieldable clamp means carried by said member and engaging the lapped portion of said element to draw and lock the same tightly in place over said flange.

In testimony whereof, I have subscribed
125 my name.

WALTER SCOTT FINNELL.