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SCRUBBER AND SCRAPER DISK WITH ROPE WIPER ELEMENT

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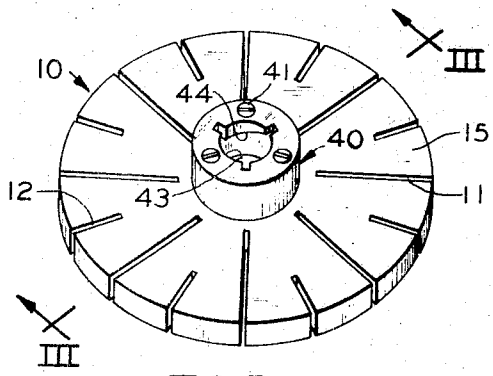


FIG. 1

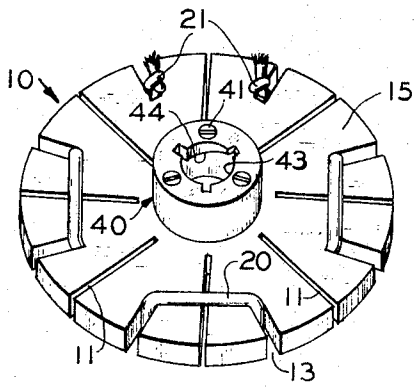


FIG. 4

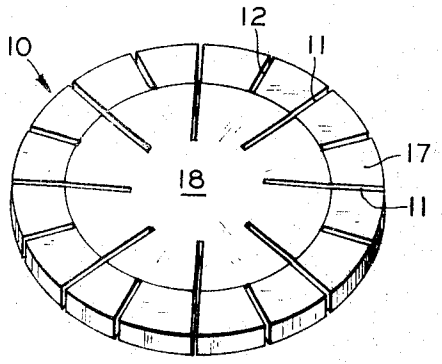


FIG. 2

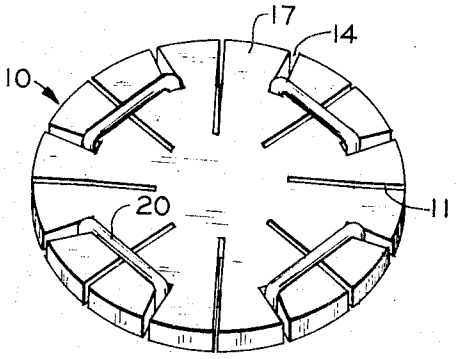


FIG. 5

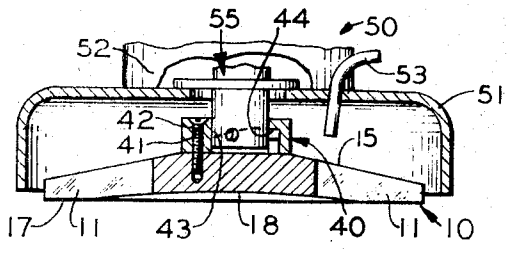


FIG. 3

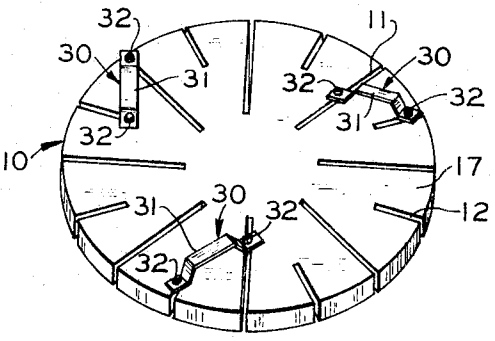


FIG. 6

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SCRUBBER AND SCRAPER DISK WITH ROPE WIPER ELEMENT

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ABSTRACT OF THE DISCLOSURE

A detachable plate or rotary disk-type rug or carpet scrubber and/or floor scraper for a floor-type scrubbing machine, which scrubber comprises a rigid plate which has on its bottom surface at least a peripheral marginal flat portion and may also have a central concave portion, and also has spaced slots. A locking hub may be centrally or eccentrically mounted on the top surface of the plate or disk for removable attachment to a moving or rotating means on the scrubbing machine. An easily replaceable rope may be interwoven in between some of the slots of the plate or disk to provide scouring ribs on its bottom surface. Also rigid U-shaped blades or scrapers with cutting edges substantially parallel to the floor or surface being scraped may be removably attached to the disk through the slots.

BACKGROUND OF THE INVENTION

Previously such plates or disks for carpet or floor scrubbing and scouring machines comprised brushes with bristles which are comparatively expensive and, when rotated, all their pile or bristles soon became directed in substantially the same direction, thus reducing their effective scrubbing or scouring action.

SUMMARY OF THE INVENTION

Generally speaking, the scrubbing member of this invention comprises a comparatively non-flexible, rigid plate or disk which may be made out of a metal such as aluminum or a glass fibers reinforced plastic, and may be rectangular, polygonal, or circular in shape. This plate contains slots which completely pass through the plate or disk and extend inwardly from the edges of the plates or disks so that these slots act as scrubbing edges, means for removing the dirt scrubbed from the carpets or other surfaces, and/or means for permitting a cleaning liquid to pass from the upper surface of the plate to its lower surface inwardly from the periphery of the plate. These scrubber members may have on the upper surface of the plate or disk a hub for removably fastening or locking the plate or disk onto a scrubbing machine for imparting a scrubbing action to the lower surface of the plate or disk, which action may be rotary, reciprocating, oscillatory, or a combination of two or more such movements in a plane parallel to the surface to be scrubbed. These scrubbing machines may be portable floor treatment machines, including those for household use in which several different accessories are provided, such as in buffers, polishers, scrapers, brushes, etc. for floors including cleaning carpets. The scrubbing action of the present device may be accentuated by interweaving between the slots in its plate a rope to provide tight and easily replaceable fabric ridges on the bottom or scrubbing surface of the plate. The slots may be divergent or radial in disk plate so as the rope is intertwined between them the angle between the slots will prevent the rope from being forced therefrom by the motion of the disk or centrifugal force when the disk is rotated. Rigid U-shaped scraper blades may be removably fastened by bolts in the slots to the plate or disk at angles to its motion for cutting and scraping matter which adheres to hard floors. Furthermore, the slots may be arranged eccentrically of the disk and/or the hub on the disk may be eccentric to provide an additional scrubbing action for the slots in the surface of the disk, the segments of rope, or the scrapers anchored to the disk in the slots.

Accordingly, it is an object of the present invention to provide a simple, efficient, economic, effective, easily replaceable, and inexpensive detachable scrubber plate or member for floor treatment machines.

BRIEF DESCRIPTION OF THE DRAWINGS

The above mentioned and other features, objects, and advantages and a manner of attaining them are described more specifically below by reference to embodiments of this invention shown in the accompanying drawings, wherein:

FIG. 1 is a top perspective view of one embodiment of the present invention comprising a rigid slotted floor scrubbing disk;

FIG. 2 is a bottom perspective view of the embodiment shown in FIG. 1;

FIG. 3 is a sectional view of the disk shown in FIG. 1 taken along line III—III thereof, showing it installed in a home type floor or carpet scrubbing machine with parts thereof being broken away, but showing a housing for the disk, its connection to a driving means, and a tube for application of cleaning fluid to the upper surface of the disk;

FIG. 4 is a top perspective view, similar to FIG. 1, showing the addition of a fabric rope intertwined between some of the slots of the disk;

FIG . 5 is a bottom perspective view of the embodiment shown in FIG. 4, with the scrubbing segment ribs or rope on its bottom surface; and

FIG. 6 is a bottom perspective view similar to FIG. 5, but showing still another embodiment of this invention, with a plurality of U-shaped cutting scrapers bolted through the slots to the disk.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Although the plate or scrubbing member of this invention may be polygonal, rectangular, or other shaped, the particular embodiment disclosed herein, by way of example, is a rigid circular disk **10** provided with radial slots **11** and **12**, or as in FIGS. 4 and 5, slots **13** and **14**, respectively, of different widths. It is desirable that the slots **11**, **12**, **13** and **14** extend completely through the thickness of the plate or disk so that dirt which is picked up in them will not remain in them to decrease their scrubbing action or hinder the flow or dispersion of cleaning liquid through them. The top or surface portion **15** of the disk **10** may be tapered or frusto-conical as shown in FIG. 3, or it may be parallel to that portion of the bottom surface **17** which is substantially parallel to the floor or surface to be scrubbed. Furthermore, the central bottom surface of the disk **10** may be concave as shown at **18** in FIGS. 2 and 3.

If desired, as shown in the embodiments of FIGS. 4 and 5, the wider radial slots **13** and **14** are provided for the insertion and inter-weaving of a length of plastic or fabric rope **20**. The fact that these radial slots are closer together at their inner ends than at their outer ends prevents the rope from sliding out of the slots after it had its ends knotted at **21** as shown on the upper surface of the disk **10** in FIG. 4. Since the slip knots **21** are away from the bottom or lower scrubbing surface, they are prevented from being untied by motion between them and the floor. Also the rope **20** may be easily removed by cutting or untying at least one of the knots **21**, and then inserting a new piece of rope. Furthermore, if desired,

the slots **14** may be tapered to have narrower outlets as shown in FIG. 5 which further prevents the rope **20** from sliding out of the slots.

In FIG. 6 the plate or disk **10** may have diagonally anchored thereto three or more U-shaped blades or scrapers **30** with cutting edges **31** substantially parallel to the surface to be scraped, and at an angle to the radial slots **11** and **12**. These blades **30** may be removably attached by bolts **32** through these slots **11** and **12**.

Removably fastened to the upper surface of the scrubbing member or disk **10** there may be provided a hub, driving connector, or locking means **40** as shown in FIGS. 1, 3, and 4, which may be removably attached to the upper surface **15** of the scrubbing plate **10** such as by means of countersunk screws **41** through apertures **42** in the hub portion **40**. The center of this hub portion **40** may be hollow to form a socket **43** with upper inwardly notched flanges **44** for easy engagement with and disengagement from a cooperating bayonet-type end on a driving means **55** of a floor treatment machine **50** as shown in FIG. 3.

Further in FIG. 3 there is schematically shown a housing **51** on the machine **50** for the rotating plate or disk **10**, upon which housing **51** may be mounted a motor housing **52** and through the top of which housing **51** there may be provided a liquid tube **53** which may be connected to a reservoir (not shown) of cleaning liquid that may be employed with the scrubber member **10** of this invention. This liquid is preferably dropped or intermittently applied to the top of the plate or disk **10** near its center, and because of the length of the slots **11**, it can run through these slots to the scrubbing bottom surface **17** of the disk **10** for immediate action.

Furthermore, if desired, the hub **40** may be placed eccentric of the disk **10** to increase its scrubbing action, and/or the radial slots **11**, **12**, **13**, and **14** may be eccentrically offset for the same reason.

I claim:

1. A scrubbing disk for a floor treating machine, said disk comprising:

(a) a rigid circular plate having:

(1) a bottom surface with a substantially flat portion,

(2) a top surface,

(3) a first plurality of angularly spaced radial slots between said surfaces and extending from the periphery of said plate more than half way towards its center, and

(4) a second plurality of equal angularly spaced radial slots between adjacent ones of said first plurality of slots and extending from the periphery of said plate less than half way toward its center, said slots being adapted to receive a rope and having narrower inlets than inner ends to form a plurality of wedge shaped disk sections to retain the rope in said slots, and

(b) hub means mounted on the top surface of said plate having means for releasably attaching said disk to said machine for imparting a scrubbing action to said flat portion of said plate.

2. A scrubbing disk according to claim **1** wherein said circular plate is composed of glass fiber reinforced plastic material.

3. A scrubbing disk according to claim **1** wherein said plate has a central concave portion on said bottom surface having a diameter of at least about half the diameter of said disk.

4. A scrubbing disk according to claim **1** including a replaceable rope means interwoven between at least some of said slots for providing segments of scrubbing fabric ribs on said one side of said disk.

5. A scrubbing disk according to claim **4** wherein the ends of said rope means are fastened to said other surface of said disk by knots therein.

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U.S. Cl. X.R.

15—93, 98, 230.18