July 6, 1926. 1,591,282

E. M. CECH

SCRUBBING MACHINE

Filed March 19, 1923

Fig. 1

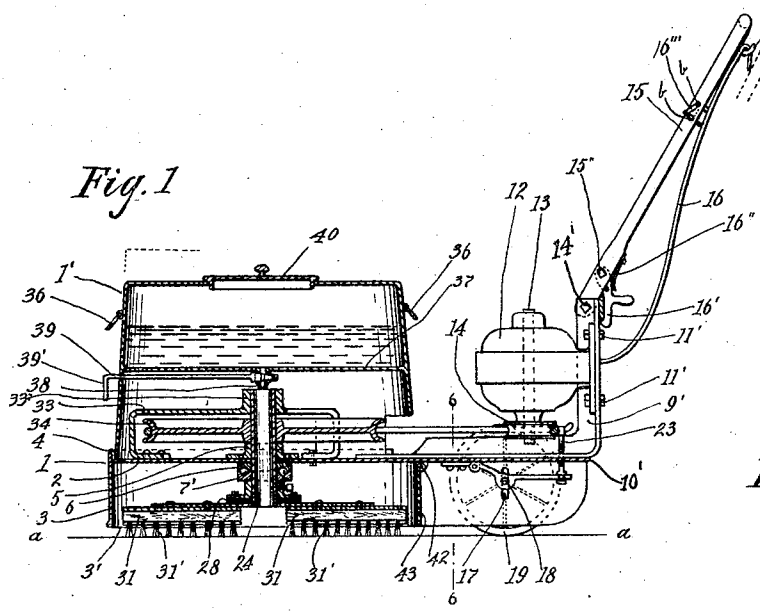


Fig. 4

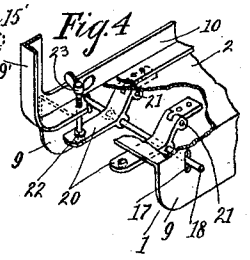


Fig. 6

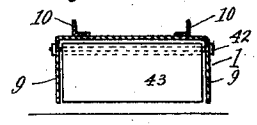


Fig. 7

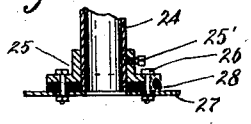


Fig. 2

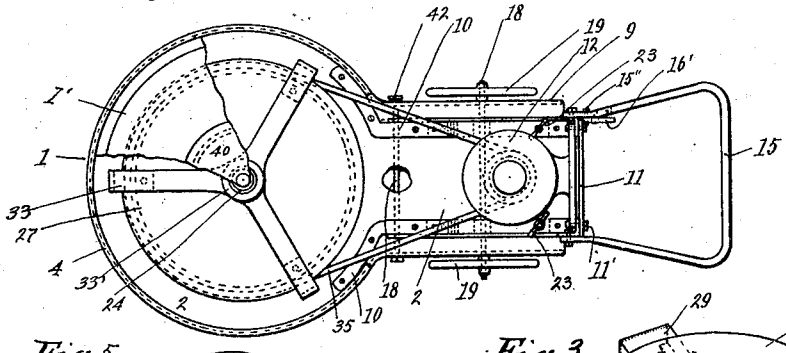


Fig. 5

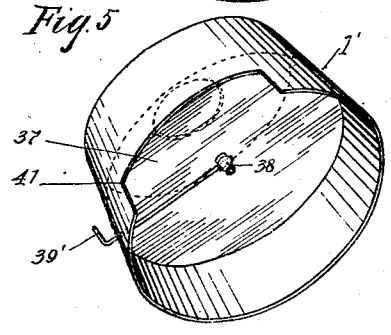
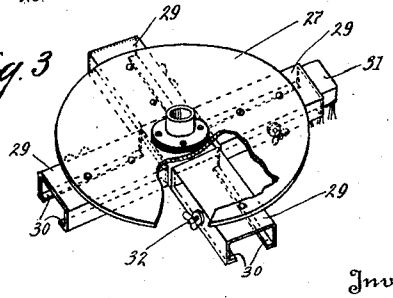


Fig. 3



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UNITED STATES PATENT OFFICE.

EDWARD M. CECH, OF LONG PRAIRIE, MINNESOTA.

SCRUBBING MACHINE.

Application filed March 19, 1923. Serial No. 626,034.

This invention relates to floor scrubbing machines, and has for one of its objects to provide an improved arrangement and organization of the important functioning parts whereby the general efficiency of the device is increased, and the structural requirements are rendered simple, compact, and cheap of manufacture, while the manipulation thereof is rendered safe and convenient.

Other objects and advantages of the invention will be pointed out as this specification progresses, the invention consisting in the construction, combination, and arrangement of parts, shown in the accompanying drawings, and hereinafter described and claimed.

In the drawings:

Figure 1, is a side view of one form of a scrubbing machine embodying my invention, a part thereof being shown in vertical section on a central longitudinal line.

Figure 2, is a top view of same, the water container being shown partly broken away.

Figure 3, is a perspective view of the brush holding device.

Figure 4, is a fragmentary perspective view of the vertical adjusting mechanism.

Figure 5, is a perspective view of the underside of the water container.

Figure 6, is a sectional view on line 6—6 of Figure 1; and

Figure 7, is a vertical sectional view of a detail.

In the drawings, 1 represents a base or housing, formed with a top plate 2, forming the top of a cylindrical open bottom portion, having a circular side wall 3 extending downwardly short of the floor line *a—a* so as to have its lower edge 3′ spaced slightly therefrom. The circular housing portion is further formed with a surrounding shoulder or bead 4, extending slightly above the top plate 2 around the outer edge thereof. Centrally the cylindrical portion of the housing is formed with a vertical journal as by means of an angle ring 5 secured to the top plate 2, and an upper half 6 of a vertically disposed ball bearing 7, said ball bearing being provided with a lower half 7′, between the upper and lower halves of which are the usual balls 8 which run in races formed in said upper and lower halves, thus forming collectively an end thrust bearing. Extending laterally from the cylindrical portion of the hollow base 1, is an extension formed by a pair of parallel side walls 9, preferably extending to the lower edge 3′ of the housing.

For the purpose of reinforcing the top plate 2 and forming a motor support, a pair of side frame members 10 are provided. These frame members are preferably formed of angle iron, each extending rearwardly parallel to the side walls 9 and being spaced slightly respectively inwardly therefrom and being bent at right angles to form a pair of vertically disposed parallel uprights 9′ located at the rearmost transverse edge 10′ of the top plate, which latter also forms the top of the extension portion of the housing.

Extending between the uprights at the upper extremities of the latter and secured thereto, is the frame cross member 11. Suitably secured to the uprights by means of the bolts 11′ is an electric motor 12, having a vertical drive shaft 13, which carries at its lower end a drive pulley 14, said pulley being spaced slightly from the top plate 2. Pivoted by means of the pivot bolt 14′ at the top of the uprights to swing in a vertical longitudinal plane, is a propelling handle 15, equipped with a suitable hook 15′, upon which may be hung the electric conductors 16 leading to the motor to supply the power to drive the latter. The two electric conductors represented by 16, may terminate at *b—b* on the handle and be electrically connected by the switch lever 16‴ to set the motor in motion. The handle pivotally carries by means of the pivot bolt 15″ a depending hook 16′ adapted to engage the lower half of the frame cross member 11 whereby the handle is held against a swinging movement. The hook is engaged under stress by a suitable blade spring 16″ to hold it in constant engagement with the frame, the hook being formed with a finger piece whereby it may be lifted out of engagement to permit the handle to be swung forwardly and rest upon the reservoir 1 of the machine when the machine is out of use.

Extending transversely of the housing extension, and spaced slightly below the top plate thereof, and extending with its ends respectively through vertically disposed slotted openings 17 in the side walls 9 of the housing, is the axle 18. Secured one to each of the outer ends of the axle on the outside of the housing are supporting wheels 19. The axle is supported for rotation in a pair

of adjustably mounted supports 20, each of said supports having a hinge connection 21 with the under side of the top plate 2, and extending rearwardly beyond the axle, each having swivel connection 22 with a vertically disposed thumb screw 23, said thumb screw extending preferably above the level of the top plate to be conveniently accessible for manipulation. The thumb screws are threaded in the horizontal leg of the reinforcing members 10, whereby, when said screws are actuated, the axle may be bodily moved vertically to change the level of the housing with respect to the floor, for a purpose to be hereinafter explained.

Rotatable in the central bearing 5 of the cylindrical housing portion is a hollow or tubular shaft 24, which shaft has open ends and extends downwardly into the interior of the cylindrical portion and carries rigidly thereat a flanged sleeve 25, which is preferably removably secured, as by means of the set screw 25′, to the lower end of said shaft and is formed with a radial flange through which extend a plurality of fastening bolts 26, said bolts extending also through a horizontally disposed, circular supporting plate 27, whereby the plate and flange may be bolted together. Between the plate and flange is placed preferably, a soft rubber washer 28 to lend resiliency to the mounting of the plate. The plate carries on its under side, preferably four elongated, radially disposed sockets 29, here shown rectangular in cross section and open longitudinally centrally at the bottom to form slideways 30, one at the lower edge of each of the side walls. Each socket is adapted to slidably receive a scrubbing brush 31, the scrubbing brushes, as here shown, being ordinary, standard scrubbing brushes with parallel sides and being adapted to be inserted in said sockets, respectively, to be flush with the outer ends of the latter. Each socket is further provided with a set screw 32, preferably passing through a side wall thereof, whereby the brushes may be held against radial movement when the disk is rotated. The adjacent inner corners of the several sockets are in close proximity to each other so as to form a square, open area centrally of the plate 27 and between the latter and the floor.

The lower ball bearing member 7′ is seated upon the upper edge of the flanged sleeve 25, and is secured to the hollow shaft, so that the base 1 carrying the ball bearing portion 6, is supported in spaced relation to the floor solely by the bristles 31′ of the several brushes, inasmuch as said ball bearing forms a thrust bearing. Secured to the top plate 2 is the spider or shaft support 33, formed with a central journal bearing 33′, wherein is journaled the upper end of the hollow shaft 24. Secured to the shaft and bodily placed within the spider and rotating in the plane of the pulley 14, is the sheave wheel 34, which has belt connection 35 with the pulley 14, so that a rotary movement of the latter will communicate a rotary movement to the shaft and thus rotate the disk 27, which latter in turn carries the brushes frictionally over the surface of the floor.

The liquid container 1 is preferably circular in form and is seated with its lower edge upon the top plate 2, and removably fits circumferentially inside and close to the bead 4, so that it is prevented from shifting on the housing, but may be conveniently lifted therefrom, as by means of the handles 36. The container is a device formed with an inset bottom 37, thus forming a chamber, said bottom being spaced from the bearing 33′ of the spider and carrying centrally, directly over the hollow of the shaft 24, a stop cock 38, said stop cock having a suitable handle 39 extending through the side wall of the reservoir and being parallel with the floor thereof and having a suitable hand piece 39′ whereby the stop cock may be opened and closed at will. A suitable cover 40 is provided and is appreciably smaller than the diameter of the container to prevent overflow of the container when the latter is tilted and enables the refilling of the reservoir. The side wall of the reservoir is suitably cut away below the floor 37 as at 41, to clear the belt 35, as is best indicated in Figure 2 of the drawings. Extending transversely between the side walls 9 and preferably through same, is the pintle 42, upon which is swingingly supported the closure plate or splash gate 43, to prevent water from being thrown outwardly through the open end of the base. The gate extends to the lower edge 3′ of the base and is adapted to be swung rearwardly to render the brushes 31 accessible to be withdrawn from the sockets 29 when desired.

In operation, water is permitted to enter the hollow shaft 24 by opening the stop cock 38. The water will fall into the area surrounded by the inner ends of the several brushes and thus spread uniformly outwardly simultaneously in circular formation to the bristles of all of the brushes. The motor is now energized by closing the switch 16‴ to set the brushes in motion, as described in the foregoing, while at the same time the operator propels the device over the floor surface by means of the handle 15. When it is desired to shift position, a downward movement of the handle will fulcrum the device on its wheels and thus elevate the scrubbing instrumentalities from the floor. The structure is designed in a manner to distribute the weight of the water symmetrically about and in direct vertical alinement with the shaft 24, to bring the pressure squarely onto the scrub-

bing element. The weight of the water and that of the machine proper thus supplies the pressure to effect a scouring operation.

When it is desired to transport the machine without a scrubbing operation, the handle 15 may be depressed, thus fulcruming the machine upon the wheels 19, when it may be conveniently and easily rolled about.

A plate 27 and the sockets 29, together with the sleeve 25, may be termed as a whole a rotary scrubbing element which is resiliently mounted upon a driving shaft in a manner to be enabled to yield to inaccuracies of the floor surface.

When the bristles of the brushes become worn and materially shortened from long use, the space 3′ between the housing and the floor will obviously become reduced at the outer end furthest removed from the wheels. In order to keep this space uniform, regardless of the wearing of the bristles, the vertical adjustment for the wheel axle is provided. This adjustment is effected by a turning of the thumb screw 23, whereby the supports 20 are swung upon their respective hinge connections 21 to any desired degree.

I claim:

1. In a scrubbing machine of the class described, comprising in combination, a hollow, downwardly opening, elongated base; wheel supports at one end of said base; a propelling handle for the base; driving means, rotary floor scrubbing instrumentalities opposite said wheel supports in the hollow of said base and extending through the top thereof and having operative connection thereat with said driving means to be driven thereby, said instrumentalities including a vertical, hollow, open-ended shaft and a plurality of scrub brushes arranged around the lower end thereof; and a liquid container having manually controlled means for discharging the liquid at will into the hollow of said shaft and constructed to loosely cup over and enclose a part of said instrumentalities and be removably seated on said base.

2. A scrubbing machine of the character described, comprising a base, vertically adjustable wheel supports connected to an end thereof, driving means mounted on the base, a vertical tubular shaft mounted for rotation in the frame, and having operative connection with the driving means, brush means operatively associated with the shaft to be driven thereby, a reservoir removably supported upon the base, said reservoir having a cupped lower portion to enclose the tubular shaft and its associated parts, and controlled liquid discharge means mounted to discharge liquid from the reservoir into the tubular shaft.

In testimony whereof I affix my signature.

EDWARD M. CECH.