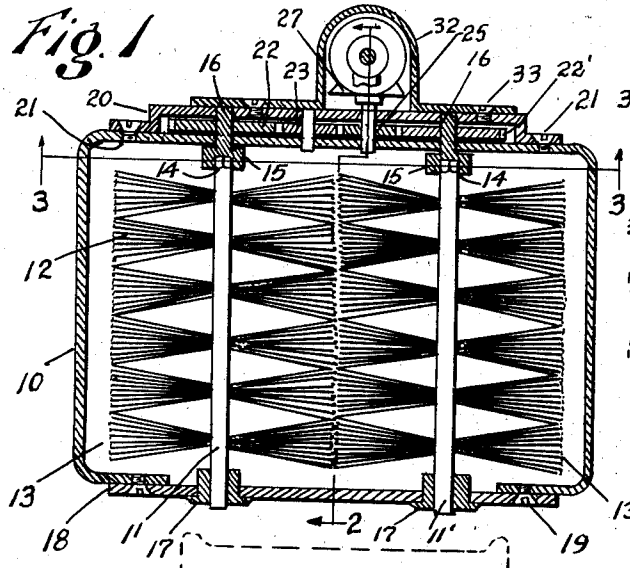
April 6, 1948. E. A. MILLER 2,439,344

MECHANICAL SCRUB BRUSH

Filed Feb. 7, 1945

Fig. 1



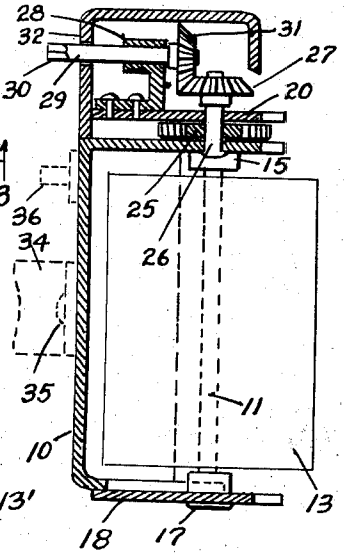


Fig. 2

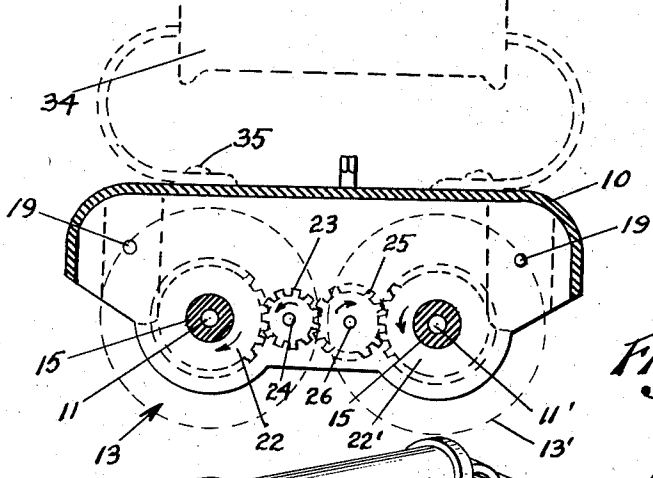


Fig. 3

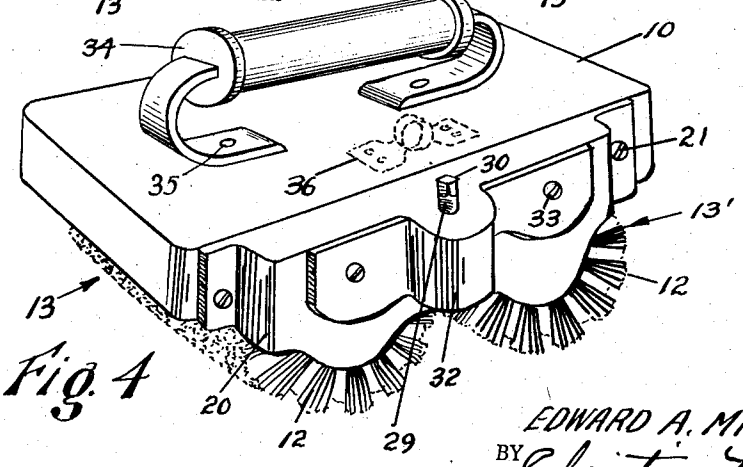


Fig. 4

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MECHANICAL SCRUB BRUSH

Edward A. Miller, Milwaukee, Wis.

Application February 7, 1945, Serial No. 576,543

1 Claim. (Cl. 15—23)

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My invention relates to scrub brushes, and more particularly to mechanical scrub brushes actuated by mechanical energy.

The object of my invention is to provide a device that has rotatably actuated brush members operating in opposite relation to one another, and in a manner that will permit their revolving outward from one another for use on cloth fabric or the like without the hazard of having the material crushed by the brushes during the operation.

Another object of my invention is to so construct the device as to enable its use with a flexible shaft, thereby eliminating the necessity of incorporating the actuating means within the devices where it would be subjected to possible moisture or liquid.

Still another object of my invention is to provide a device that may be suspended and counterbalanced, thereby eliminating the lifting of the device when placing it onto the surface to be scrubbed.

It is manifest to anyone familiar with the art that the manual effort required in hand scrubbing, as applied to the cleaning industry, makes it a tiresome operation. With the use of the device as illustrated, specified and claimed herein, it is only necessary to place the actuated device onto the surface to be scrubbed, and the amount of downward pressure exerted plus the type of bristles employed on the rotating brushes would determine the amount of scrubbing done, due to frictional contact of the ends of the bristles with the surface to be scrubbed. Then, also, with my device it is possible to replace and change the rotating brushes to comply with the requirements needed for the type of work to be done.

Other and further objects of my invention will become more apparent as the description proceeds when taken in conjunction with the drawing, in which:

Figure 1 is a partial, cross sectional view of the device taken in a horizontal plane.

Figure 2 is a partial, cross sectional view of the device taken in a vertical plane.

Figure 3 illustrates the driving mechanism and the spur gear arrangement relative to the revolving of the brushes, and

Figure 4 is a perspective view of the entire device taken from the driving side thereof.

Similar characters of reference indicate corresponding parts throughout the several views and referring now to the same, the character 10 shows a casing or enclosure in which are mounted shafts 11 and 11' supporting bristles 12 and con-

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stituting brush assemblies 13 and 13'. The shafts 11 and 11' have one end squared at 14 which engages sockets 15 on shaft extensions 16. The other ends of the shafts 11 and 11' are journalled in bearings 17, supported by a removable plate 18, forming a part of the casing or enclosure 10, and attached thereto by means of screws 19. The shaft extensions 16 are journalled into the wall of the casing 10 and into an auxiliary plate 20. This auxiliary plate 20 is attached to the vertical wall of the casing 10 by means of screws 21. There are spur gears 22 and 22' mounted onto the shaft extension 16 within the space provided by the auxiliary plate 20 and the vertical wall of the casing 10. Obviously, the spur gears 22 and 22' are of a dimension smaller than the peripheral diameter of the brush assembly 13 and 13' so that the outer edges of the bristles 12 of the brushes do not contact one another.

Intermittently disposed between the gears 22 and 22' are an auxiliary gear 23 mounted on a shaft 24 which is journalled within the vertical wall of the casing 10 and the auxiliary plate 20, and another drive gear 25 mounted on a shaft 26 is similarly journalled, the shaft 26 is provided with a beveled gear 27 on its outer end. Obviously, all of the spur gears 22 and 22', the auxiliary gear 23, and the driving gear 25 engage one another at their peripheral tooth arrangement, and as the beveled gear 27 is rotated, the entire assembly will rotate, bringing the brush assembly 13 to rotate in a clockwise direction. There is an auxiliary bracket 28 acting as a bearing for a vertical shaft 29 provided with a square end 30 at one end and another beveled gear 31 at the other end. This gear 31 meshes with the beveled gear 27, and when a flexible shaft, not shown, engages the square end 30 on the vertical shaft 29, the beveled gear 31 will cause the beveled gear 27 to rotate, thereby causing a rotation of the brush assemblies 13 and 13'. The entire beveled gear arrangement is covered by an enclosure 32 fastened to the auxiliary plate 20 by means of screws 33 as shown. The casing 10 is provided at its top by a handle assembly 34 fastened at 35, and a loop arrangement 36 is shown in phantom, and is to act as a means for supporting the entire assembly when a counterbalancing arrangement is employed for raising and lowering the brush. Obviously, the balance weight would offset the weight of the entire assembly so that the operator has but a very minimum of weight to lift when directing and placing the brush assembly onto the surface of the work to be scrubbed.

It sometimes becomes necessary to change the brushes 13 and 13' or replace them with brushes in which the bristles 12 are stiffer for certain jobs. This is very readily done by removing the screws 19, which will eliminate the bearings 17 at the ends of the shafts 11 and 11' permitting them to disengage the sockets 15 at the other end.

From the foregoing description, it is obvious that the device described will lend itself readily to the service for which it is intended. The changing and replacing of the brushes can be accomplished without previous mechanical skill, also, the operator may exert more or less pressure onto the device depending on the nature of the work to be done and the amount of frictional contact required by the ends of the bristles and the surface of the work.

While I have herein described with considerable particularity a single embodiment of my invention, it will be obvious that many changes in the general arrangement formed and configuration of the structure may be made and the parts thereof may be varied within the scope of the appended claim.

Having thus described my invention, what I claim and desire to secure by Letters Patent in the United States is:

A device of the character described comprising an enclosure open at its lower face and provided with vertical side walls, a handle horizontally attached at both ends to its upper face, a plurality of cylindrically shaped brushes, said brushes consisting of horizontal shafts provided with bristles extending outward therefrom, one end of each of said shafts provided with a flat surface thereon, an auxiliary plate longitudinally disposed and parallel to one of the vertical walls of said enclosure, a corresponding number of auxiliary shafts mounted within bearings, said bearings supported by one of the vertical walls of said

enclosure and said auxiliary plate, said auxiliary shafts provided with sockets adapted to receive the flat surface of said brush shafts, a detachable plate supported by another of the vertical walls of said enclosure, said detachable plate provided with bearings to support the other end of said shafts, spur gears mounted to said auxiliary shafts at a point between said auxiliary plate and the vertical wall of said enclosure, an intermediate gear, a shaft for supporting said intermediate gear in direct alignment and in engagement with one of said spur gears, a drive gear, said drive gear mounted on a shaft and engaging said auxiliary gear and one of said spur gears, the shaft supporting said drive gear provided at one of its ends with a beveled gear, a vertical shaft mounted to the outside of said auxiliary plate, said vertical shaft provided with a beveled gear for engagement with the beveled gear on said drive shaft, and means for rotatably actuating said vertical shaft thereby providing a rotating motion to said brushes, revolving said brushes in opposite relation to and away from one another at their point of contact of the bristles with the surface contacted.

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