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3,115,322

ROTARY BACK SCRUBBER

Filed May 19, 1961

2 Sheets-Sheet 1

FIG. 3.
FIG. 8.

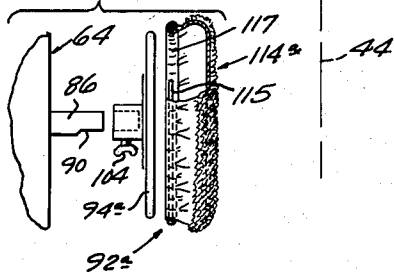


FIG. 2.

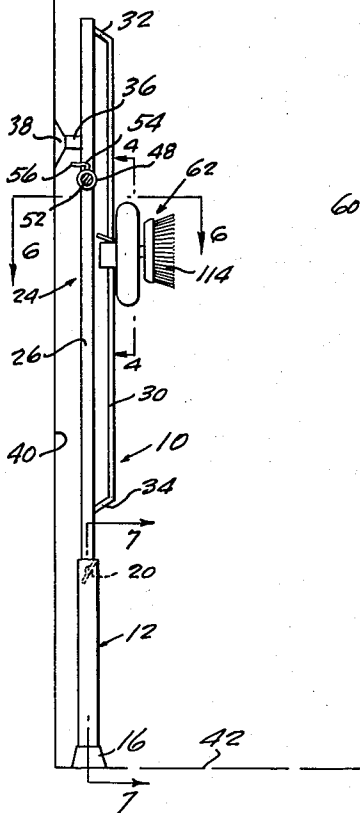
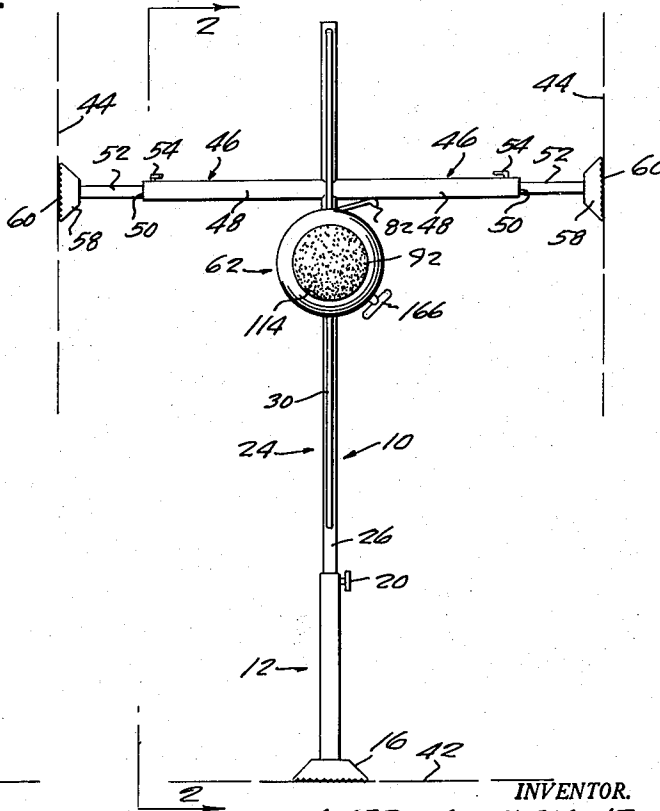


FIG. 1.



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FIG. 4.

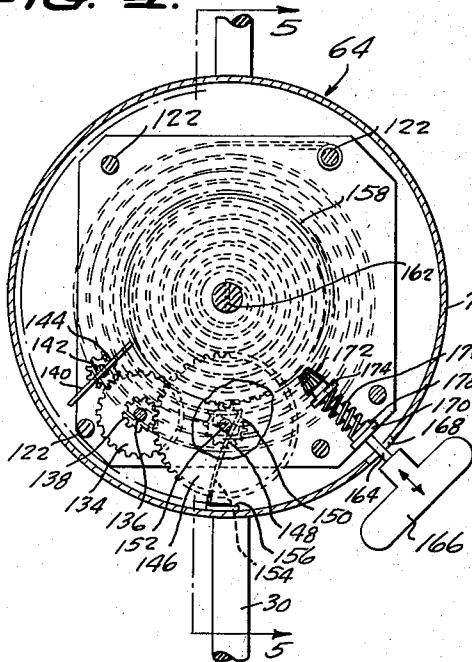


FIG. 5.

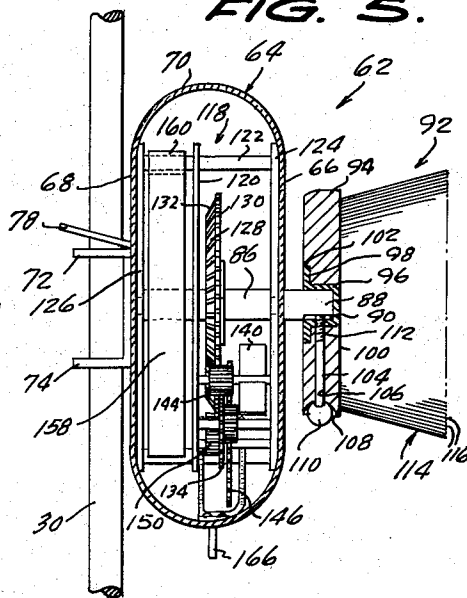


FIG. 7.

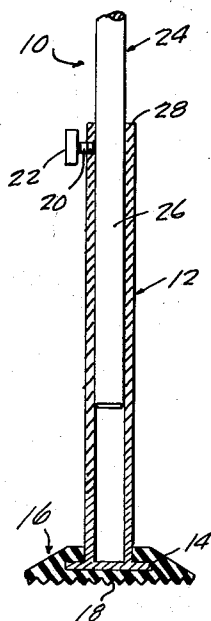
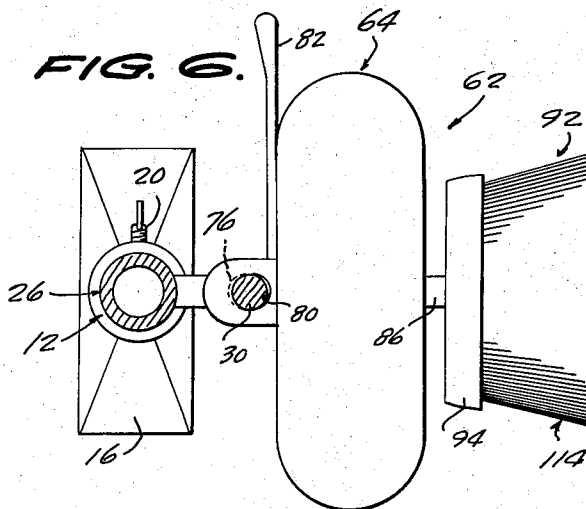


FIG. 6.



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ROTARY BACK SCRUBBER

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6 Claims. (Cl. 248-1)

This invention relates to a novel rotary back scrubber for installation in bathtub and shower stalls.

The primary object of the invention is the provision of a practical and efficient device of the kind indicated, which can be easily adjusted and installed, either temporarily or permanently, in tub or shower stalls of different dimensions, and which has a driven rotary scrubber head which can be vertically adjusted to different positions of use.

Another object of the invention is the provision of a device of the character indicated above, wherein the scrubber head is driven by a hand-wind spring motor, whereby risks of shocks from inadequately insulated and inadequately enclosed electric motors are eliminated.

A further object of the invention is the provision of a simple device of the character indicated above, which is composed of a small number of uncomplicated and easily assembled parts, and which can be made in rugged, serviceable, and well-finished forms, at relatively low cost, of such materials as plastics and lightweight metals.

Other important objects and advantageous features of the invention will be apparent from the following description and the accompanying drawings, wherein, for purposes of illustration only, a specific form of the invention is set forth in detail.

In the drawings:

FIGURE 1 is a front elevation of a device of the invention installed in a tub or shower stall, portions of which are shown in phantom lines;

FIGURE 2 is a vertical transverse section taken on the line 2-2 of FIGURE 1;

FIGURE 3 is a top plan view of FIGURE 1;

FIGURE 4 is an enlarged vertical longitudinal section taken on the line 4-4 of FIGURE 2;

FIGURE 5 is a vertical transverse section taken on the line 5-5 of FIGURE 4;

FIGURE 6 is a horizontal section taken on the line 6-6 of FIGURE 2;

FIGURE 7 is an enlarged fragmentary vertical transverse section taken on the line 7-7 of FIGURE 2; and

FIGURE 8 is a fragmentary exploded side elevation of a modified form of scrubber head, partly broken away and in section.

Referring in detail to the drawings, wherein like and related numerals designate like and related parts throughout the several views, and first to FIGURES 1 to 7, the back scrubber device therein shown, comprises a vertically elongated standard 10, which comprises a tubular lower section 12 which is closed, at its lower end, by an enlarged diameter disc 14. An enlarged cross section, transversely elongated rectangular flexible and resilient foot 16 is secured around the disc 14 and has a roughened non-skid undersurface 18. A locking screw 20 is threaded through the sidewall of the section 12, at its upper end, and has an enlarged diameter knurled head 22.

The standard 10 further comprises an upper section 24, which comprises a rod 26, which can be tubular, which has a lower end portion engaged in the lower section 12, through the open upper end 28 thereof, and is adapted to be locked in vertically adjusted positions by means of the locking screw 20. A vertically elongated scrubber head mounting bar 30, which can be smaller in diameter than the rod 26, is spaced forwardly from and parallel to the rod 26, and has oppositely angled upper and lower terminals 32 and 34 which extend rearwardly to and fix the

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rod 30 to the rod 26, so that the upper end of the mounting bar 30 is near to the upper end of the rod 26, as shown in FIGURE 2.

The upper standard section 24 further comprises a short rearwardly extending arm 36, fixed to the upper part of the rod 30, which has a suction cup 38, on its rear end, to be securably engaged with an end wall 40 of a stall S, with the standard foot 16 engaged with the stall floor 42, so as to install the standard 10 in parallel spaced relation to the wall, in laterally spaced relationship to side walls 44 of the stall S.

The upper standard section 24 further comprises similar opposed and diametrically aligned horizontal arms 46, which comprise tubular inner sections 48, affixed, at their inner ends, to related sides of the rod 26, and having open outer ends 50, in which are engaged sliding outer sections 52, and are adapted to be locked, in adjusted positions by means of set-screws 54, threaded through the sidewalls of the inner sections 48, at their outer ends, and having lateral handles 56. The arms 46 are preferably located above the midheight of the rod 26, near its upper end. The outer arm sections 52 have enlarged cross section, vertically elongated rectangular resilient and flexible feet 58 fixed thereon, which have roughened outer surfaces 60, for non-slip engagement with the stall sidewalls 44.

A scrubber head assembly 62 is mounted on the mounting bar 30, and comprises a circular hollow casing 64 having parallel spaced front and back walls 66 and 68, respectively, and a preferably convex sidewall 70. A pair of vertically spaced, centrally located upper and lower horizontal ears 72 and 74, respectively, are fixed to and extend rearwardly from the back wall 68 and have vertically aligned openings 76 which slidably receive the mounting bar 30. An adjustment locking plate 78 has an oval opening 80, receiving the mounting bar 30, and has a laterally extending operating lever 82.

A horizontal axial shaft 86 extends through the casing 64, reaches forwardly beyond the casing front wall 66, and has a forward end 88 which is provided with a keyway 90. An interchangeable scrubber head 92 comprises a circular disc 94, of substantial cross section, having an axial bore 96 having a counterbore 98, at its rear end. A socket 100 is secured in the bore 96 and has a lateral flange 102, around its rear end, which is seated in the counterbore 98. A set-screw 104 extends through a radial bore 106, provided in the disc 94 with a concave recess 108 at its outer end. The set-screw has a wing 110, on its outer end, to seat protectively within the recess 108, and a threaded inner end 112 which is threaded through the sidewall of the socket 100 to engage in the keyway 90 of the shaft 86 for locking the scrubber head 92 on the shaft, as shown in FIGURE 5.

The scrubber head 92 further comprises a forwardly flaring cylindrical brush 114, preferably composed of closely related bristles 116, to which soap is adapted to be applied for scrubbing the back of a user of the device, standing or setting in the stall S.

Another form of scrubber head, shown in FIGURE 8, and generally designated 92^a, is similar to the head 92, except that the disc 94 is replaced by a relatively thin, resilient and flexible disc 94^a, and the brush 114 is replaced by a hollow, pan-shaped textile brush 114^a, preferably of terry cloth, and having a drawstring or contractile rubber band 115 in a tube 117 extending around the edge of its open side, for securing the brush 114^a around the disc 94^a.

The scrubber head shaft 86 is rotated by a spring motor 118 which is enclosed within the casing 64. The motor 118 can comprise an intermediate vertical plate 120 which is supported in spaced relation to the front and back casing walls 66 and 68, respectively, on horizontal rods 122,

which extend between a vertical front plate 124 and a back plate 126, secured to the front and back walls, respectively. The shaft 86 is journaled through the plates 120, 124, and 126 and has fixed thereon a main gear wheel 123, which is located close to the front side of the intermediate plate 120. The gear wheel 123 has peripheral ratchet teeth 130 and bevel teeth 132, behind the teeth 130. A smaller gear wheel 134, located at one side of the main gear wheel 123, is fixed on a shaft 136 extending between and journaled in the plates 120 and 124. The shaft 136 carries a reduced diameter pinion 138. A butterfly 140 is fixed on a shaft 142 journaled on the plates 120 and 124 and carries a pinion 144 which is in mesh with the gear wheel 134. A further gear wheel 146 on a shaft 148, journaled in the plates 120 and 124, at one side of the shaft 136, is in mesh with the pinion 138. A laterally movable pinion 150 has a diametrical slot 152 which receives a polygonal part of the shaft 148, and is in mesh with the peripheral teeth 130 of the main gear wheel 123. A leaf spring 154 is fixed, at one end, to the casing sidewall 70, as indicated at 156, and has a free end engaged with a side of the movable pinion 150, whereby the movable pinion 150 is yieldably urged into mesh with the ratchet teeth 130 of the main gear wheel 123, in an arrangement wherein the movable pinion 150 serves as a ratchet dog which enables the main gear wheel 123 to be rotated, in a direction to wind a spiral driving spring 153 which surrounds the shaft 86, between the intermediate plate 120 and the rear plate 126, and is fixed, at one end, to a rod 122, as indicated at 160, and, at its other end, to the shaft 86, as indicated at 162. The pinion 150 is adapted to move away from the gear wheel 123, against the resistance of the leaf spring 154, as the main gear wheel is rotated, in the opposite direction, as the driving spring 153 unwinds.

Winding of the motor driving spring 153 is produced by pushing in and then rotating a winding shaft 164 which has a key 166 on its outer end. As shown in FIGURE 4, the winding shaft 164 extends through an opening 168, provided in the casing sidewall 70, and is journaled through an ear 170, which extends forwardly from the intermediate plate 120. The winding shaft 164 has a bevel pinion 172, on its inner end, and is journaled through an inner ear 174 on the plate 120 behind the pinion 172, and a coil spring 176 is circumposed on the shaft 164 and is compressed between the ear 174 and an outer collar 178, on the shaft, whereby the bevel pinion 172 is normally retracted out of engagement with the bevel teeth 132 of the main gear wheel 123. To wind the driving spring 153, the winding shaft 164 is pushed inwardly, against the resistance of the spring 176, to engage the bevel pinion 172 with the bevel teeth 132, whereat the key 166 is rotated. The above described ratchet arrangement serves to preclude retrograde rotation of the main gear wheel 123, and hence unwinding of the spring 153, as the key 166 is alternately grasped and turned and released to be grasped and turned again for completing the tightening of the driving spring 153.

In use and operation, the spring motor 113 having been wound up, as above described, and the winding shaft released, the motor rotates the scrubber head 92 until the driving spring 153 of the motor runs down.

Although there has been shown and described herein a preferred form of the invention, it is to be understood that the invention is not necessarily confined thereto, and that any change or changes in the structure of and in the relative arrangements of components thereof are contemplated as being within the scope of the invention as defined by the claims appended hereto.

What is claimed is:

1. A support for a rotary back scrubber comprising a vertically elongated standard, means for mounting a scrubber head assembly on and extending laterally from said standard, said standard having a floor engaging foot on

its lower end, means on the side of the standard remote from said mounting means for securement to an end wall of a tub or shower stall, and horizontal arms extending from opposite sides of the standard having feet for engagement with the side walls of a stall.

2. A support for a rotary back scrubber comprising a vertically elongated standard, means for mounting a scrubber head assembly on and extending laterally from said standard, said standard having a floor engaging foot on its lower end, means on the side of the standard remote from said mounting means for securement to an end wall of a tub or shower stall, and horizontal arms extending from opposite sides of the standard having feet for engagement with the side walls of a stall, said standard comprising a lower section having the floor-engaging foot on its lower end, and an upper section which is vertically adjustable relative to the lower section, said mounting means being on the upper section.

3. A support for a rotary back scrubber comprising a vertically elongated standard, means for mounting a scrubber head assembly on and extending laterally from said standard, said standard having a floor engaging foot on its lower end, means on the side of the standard remote from said mounting means for securement to an end wall of a tub or shower stall, and horizontal arms extending from opposite sides of the standard having feet for engagement with the side walls of a stall, said standard comprising a lower section having the floor-engaging foot on its lower end, and an upper section which is vertically adjustable relative to the lower section, said mounting means being on the upper section, said arms being fixed to the upper standard section.

4. A support for a rotary back scrubber comprising a vertically elongated standard, means for mounting a scrubber head assembly on and extending laterally from said standard, said standard having a floor engaging foot on its lower end, means on the side of the standard remote from said mounting means for securement to an end wall of a tub or shower stall, and horizontal arms extending from opposite sides of the standard having feet for engagement with the side walls of a stall, said standard comprising a lower section having the floor-engaging foot on its lower end, and an upper section which is vertically adjustable relative to the lower section, said mounting means being on the upper section, said arms being fixed to the upper standard section, said arms comprising inner sections fixed to the upper standard section and outer sections which are lengthwise adjustable relative to the inner sections, the side wall engaging feet being on the outer ends of the outer sections.

5. A support for a rotary back scrubber comprising a vertically elongated standard, means for mounting a scrubber head assembly on and extending laterally from said standard, said standard having a floor engaging foot on its lower end, means on the side of the standard remote from said mounting means for securement to an end wall of a tub or shower stall, and horizontal arms extending from opposite sides of the standard having feet for engagement with the side walls of a stall, a vertically elongated mounting bar mounted on and spaced parallel to said upper standard section, said mounting means being on the mounting bar.

6. A support for a rotary back scrubber comprising a vertically elongated standard, means for mounting a scrubber head assembly on and extending laterally from said standard, said standard having a floor engaging foot on its lower end, means on the side of the standard remote from said mounting means for securement to an end wall of a tub or shower stall, and horizontal arms extending from opposite sides of the standard having feet for engagement with the side walls of a stall, a vertically elongated mounting bar mounted on and spaced parallel to said upper standard section, said mounting means being on the mounting bar, having apertured means receiving

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the mounting bar, releasable locking means associated with the mounting means and the mounting bar for locking the mounting means in adjusted positions on the mounting bar.

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