May 15, 1923. 1,455,746

Q. FAUSTINI

SCRUBBING MACHINE

Filed Jan. 26, 1921 2 Sheets-Sheet 1

FIG. 1.

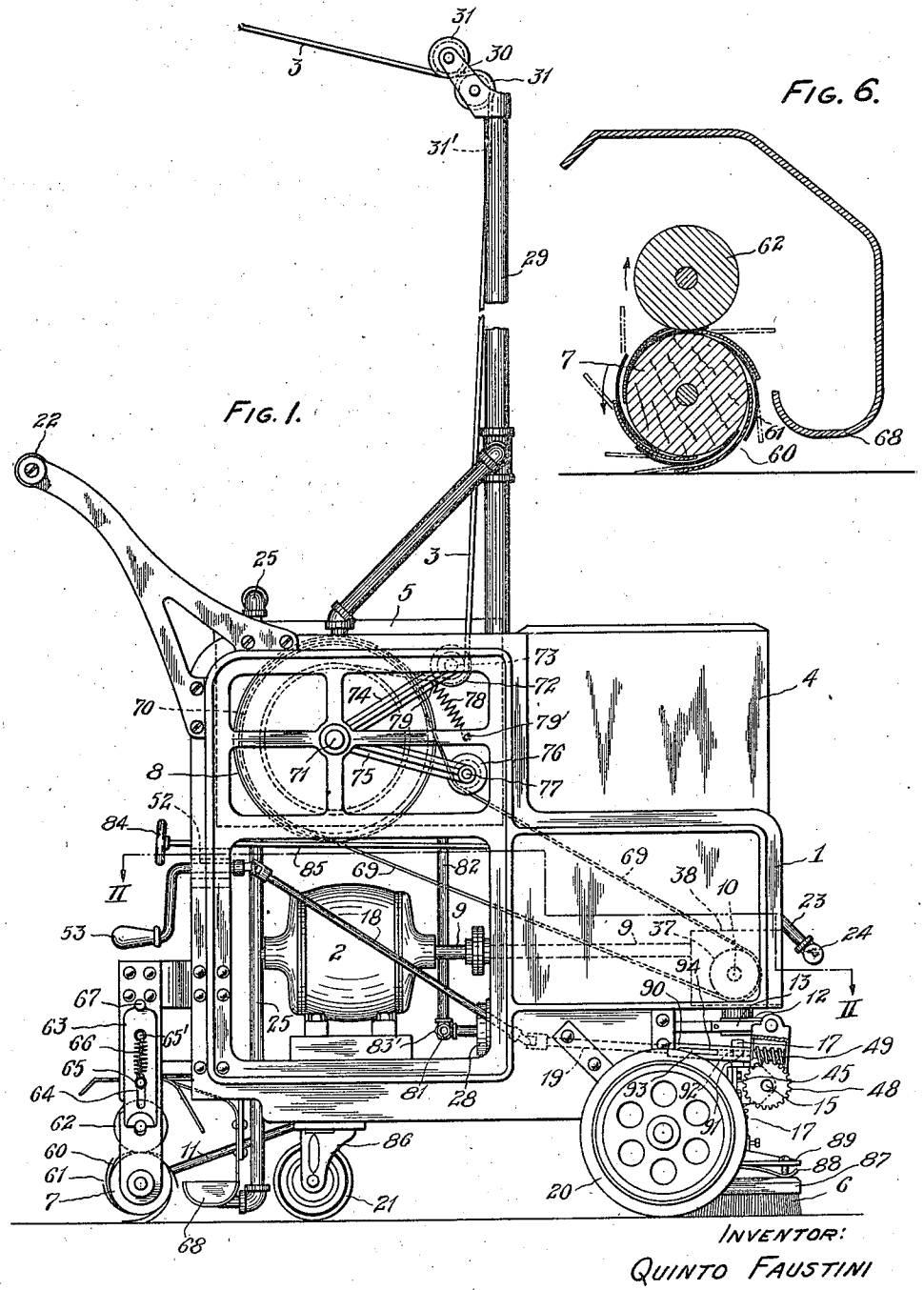


FIG. 6.

INVENTOR:
QUINTO FAUSTINI
BY
Frease, Merkel and Sayrell
ATTORNEYS

May 15, 1923. 1,455,746

Q. FAUSTINI

SCRUBBING MACHINE

Filed Jan. 26, 1921 2 Sheets-Sheet 2

FIG. 2.

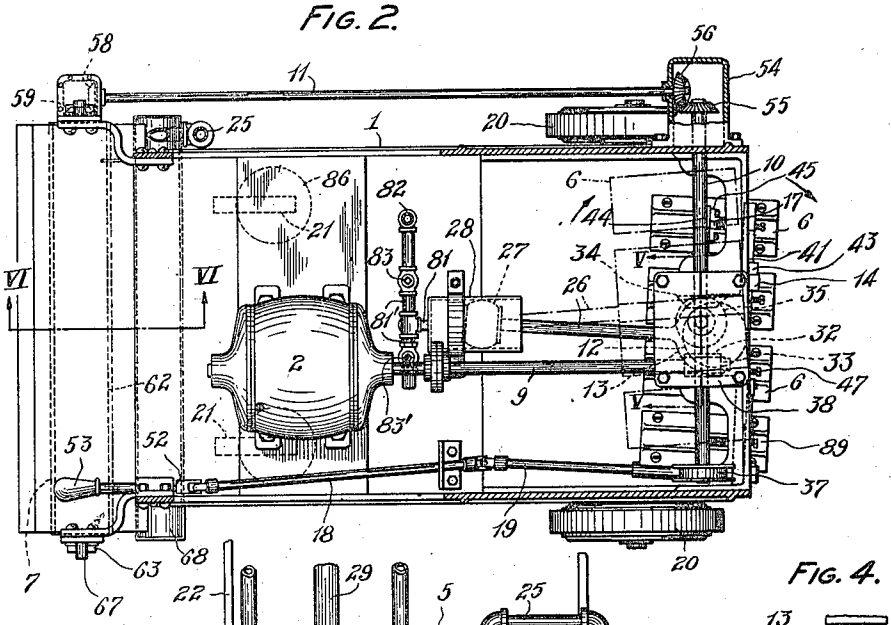


FIG. 3.

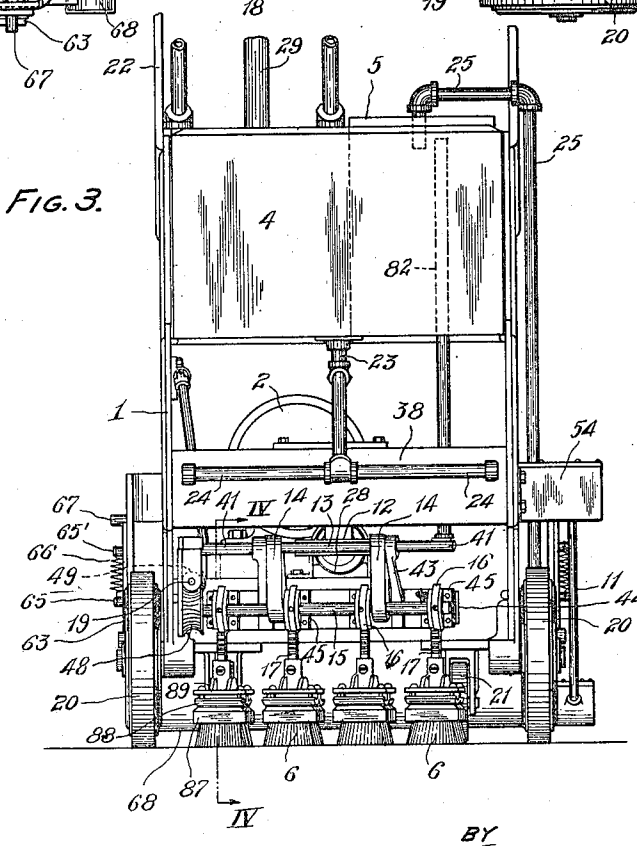


FIG. 4.

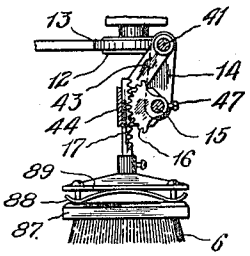
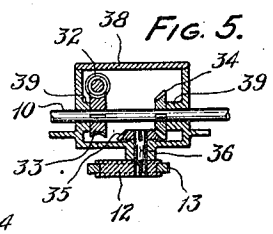


FIG. 5.



INVENTOR:
QUINTO FAUSTINI

BY
Crease, Merkel & Daywell
ATTORNEYS

Patented May 15, 1923. 1,455,746

UNITED STATES PATENT OFFICE.

QUINTO FAUSTINI, OF CLEVELAND, OHIO.

SCRUBBING MACHINE.

Application filed January 26, 1921. Serial No. 440,076.

To all whom it may concern:

Be it known that I, QUINTO FAUSTINI, a citizen of the United States, resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented new and useful Improvements in Scrubbing Machines, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

This invention relates to scrubbing machines, and particularly to that class of such machines which are electrically driven and are especially designed for duty in hotels, office buildings, apartments and other buildings provided with large floor spaces. More particularly, this improved machine is designed to be self-contained as to all of the functions required of such a machine, and to be thoroughly efficient in its operation, economical in cost of operating the same, and includes essential improvements over the Letters Patent granted to me under date of April 23, 1918, No. 1,263,396.

The annexed drawings and the following description set forth in detail certain means embodying my invention, the disclosed means, however, constituting but one of various mechanical forms in which the principle of the invention may be applied.

In said annexed drawings:

Figure 1 represents a side elevation of the improved machine embodying the invention;

Figure 2 represents a horizontal section, taken in the planes indicated by the line II—II, Figure 1;

Figure 3 represents a front elevation of the machine;

Figure 4 represents a vertical section of a fragmentary portion, taken in the plane indicated by the line IV—IV, Figure 3;

Figure 5 represents a vertical section of a fragmentary portion, taken in the plane indicated by the line V—V, Figure 2; and

Figure 6 represents, upon an enlarged scale, a vertical section of a fragmentary portion, taken in the plane indicated by the line VI—VI, Figure 2.

Referring to the annexed drawings, I shall first refer by reference numerals to a number of the main parts of my improved machine, which are a frame 1, provided with suitable sub-divisions properly designed to support and aline the various operating parts, as will be hereafter fully explained; a motor 2; an extension cord or power cable 3; a fresh water tank 4; a tank 5 used for dirty water; a plurality of scrubbing brushes 6; a wiping roller 7; a drum 8 upon which the power cable is automatically wound or from which it is automatically unwound; a main longitudinal driving shaft 9 leading from the motor; a transversely arranged driven shaft 10, from which the cable drum 8 is driven by a belt 69; a longitudinal shaft 11, for driving the wiping roller; 12 an eccentric for driving the scrubbing devices; 13 an eccentric strap with integral depending members 14 adapted to support the scrubbing devices; 15 a transverse stub shaft supported by said depending members; a plurality of gear sectors 16, fixedly secured to said stub shaft, each gear 16 being adapted to engage with a rack 17 which extends vertically from each brush head; a universally jointed shaft 18, connected with a shaft 19 adapted to actuate the transversely disposed stub shaft 15 to vertically adjust the scrubbing brushes in their proper relation with respect to the floor; two comparatively large front wheels 20 and two comparatively small casters 21 for supporting the front and rear of the machine, respectively, and upon which wheels and casters the machine is designed to be rolled about easily by means of a handle 22, a main pipe 23 from the fresh water tank 4 connected with the fresh water distributing pipes 24; a main pipe 25 leading into the tank 5 designed to receive the dirty water; one end 26 of the eccentric strap being connected to a suitable piston 27 adapted to be reciprocated in a pump cylinder 28 for conveying the dirty water through pipe 25 and into the dirty water tank; a trolley pole 29 with the swiveled arm 30 carrying trolley wheels 31, said pole 29 being mounted upon the top of the frame 1.

Other features with various details will now be filled into the several main parts hereinbefore mentioned to connect the same up into an operative whole comprising my improved and novel scrubbing device.

The motor 2 is provided with the main longitudinal driving shaft 9 upon the outer end of which is mounted a worm 32 which engages with a worm gear wheel 33 fixedly mounted upon the transverse shaft 10, and fixedly secured to said shaft 10 is a bevel gear wheel 34 adapted to mesh with a bevel gear wheel 35 rigidly mounted upon one

end of a vertically disposed stub shaft 36, and to the other end of said shaft 36 is fixedly secured the eccentric 12 to which a rotary motion is imparted by the said stub shaft, for the purpose hereinafter described. The worm 32, worm gear wheel 33, bevel gear wheel 34, and bevel gear wheel 35 are contained within a metallic casing 38 suitably supported by the frame, said casing having opposite inward extensions 39 forming bearings for the shaft 10, and a depending extension constituting a bearing for the stub shaft 36, as clearly shown in Figure 5.

Fitted to the eccentric 12 is an eccentric strap 13, provided with lateral integral extensions 41 and integral depending extensions 14 and 43, said extensions 43 being adapted to support a plate 44, to which plate is suitably and fixedly secured a plurality of smaller plates 45, each of said plates 45 being adapted to receive an upright toothed rack member 17, to the lower end of which is secured a scrubbing brush, while its upper end is adapted to engage with the gear sector 16, each of said sectors being mounted upon the transverse stub shaft 15, and fixedly secured thereto by a set screw 47, said stub shaft being suitably supported by the depending extensions 14, as shown in Figure 3, hence it will be readily perceived that when a rotary motion is imparted to the eccentric by means of the main drive shaft, the transverse shaft 10 and stub shaft 36, a rotary movement will be imparted to the eccentric strap, thereby transmitting a rotary movement to the scrubbing brushes through the depending extensions integrally connected to the eccentric strap which extensions indirectly support and carry the said brushes, said rotary movement being imparted to the brushes and their supports in unison.

Fixedly secured to one end of the stub shaft 15 is a worm gear wheel 48 adapted to mesh with a worm 49 secured to one end of the universally-mounted shaft 19, the other end of said shaft 19 being secured by a universal joint to one end of the shaft 18 while the other end of the latter is joined in a similar manner to a shaft 52, provided at its outer end with a handle 53, and by the proper manipulation of said handle the scrubbing brushes are vertically adjusted into the desired position with respect to their contact with the floor, by means of the movement of said stub shaft 15, which imparts movement to the gear sectors 16 meshing with the toothed rack members 17, and thereby regulating the position of the brushes with relation to the floor, as will be readily understood.

Secured to one end of the transverse shaft 10, and within a casing 54 carried by the frame, is fixedly secured a bevel gear wheel 55 meshing with a similar bevel gear wheel 56, also positioned within said casing and fixedly mounted upon one end of the longitudinal shaft 11, and to the other end of said shaft 11, is secured a gear wheel 58, adapted to mesh with a gear wheel 59 mounted at one end of the axial support of the wiping roller 7, by which means it will be obvious that a rotary motion is imparted to the said wiping roller 7.

The construction, shape and arrangement of the wiping roller as plainly shown in Figures 1, 2 and 6, is widened out to comprehend a space somewhat more than the width of the machine so that the dirty water which usually spreads beyond the brushes may be gathered as the machine is propelled. The said wiping roller is of cylindrical shape, the periphery of which is covered with a series of alternate strips or sections of rubber 60 and cloth or felt 61, suitably secured thereto, the cloth or felt being adapted to absorb all of the dirty water and moisture as the machine is propelled and the roller caused to rotate adjacent the floor, said rubber sections being adapted to prevent the said cloth or felt sections from sticking or adhering to each other. Suitably supported by the frame directly above the roller 7 and in contact therewith is a pressure roll 62 and resting in contact with each outer end portion of said roll 62 is a vertically movable plate 63 having an elongated slot 64 through which projects a stationary pin 65 to which one end of a coiled tension spring 66 is secured, the other end of the spring being secured to a pin 65′ carried by said plate, while the upper end of the plate 63 is provided with a suitable handle 67 by which the plate is raised against the tension of said spring and the tension on the pressure roll is thereby relieved.

By reference to Figure 6, it will be seen that the pressure roller 62 is so positioned with relation to the wiping roller 7 that when the proper pressure is applied thereto it will force out all the dirty water and liquid matter absorbed by the wiping roller and throw it over into a receiving trough 68 properly supported by the frame, from which trough it is pumped into the dirty water tank in the manner hereinafter described.

The shaft 10 from which the cable drum 8 is driven is provided at one end with a pulley 37 fixedly secured thereto, and running over said pulley is a belt 69 which also runs over an enlarged cylindrical extension 70 formed to one side of the cable drum 8, said drum being rotatably mounted on a shaft 71 supported by the frame. The extension cord or power cable 3 after passing between the two trolley wheels 31, emerges from a slot 31′ in the pole 29, and is passed to and under a wheel 72 loosely mounted upon a shaft 73 and thence said power

cable is wound upon the cable drum 8. Said wheel 72 and shaft 73 are supported by one arm 74 of a triangular casting pivoted to and supported by the shaft 71, the other arm 75 of said casting being also provided at its outer end portion with a wheel 76 loosely mounted upon a shaft 77, and secured to a pin 79 fixed to the arm 74 is one end of a coiled tension spring 78, the other end of said spring being secured to a pin 79′ carried by the frame, thus constituting belt tightening and loosening means, whereby so long as there is slack in the power cable to be taken up, the wheel 76, acting under the tension of spring 78, will remain in contact with the belt 69, thereby tightening the belt, causing the same to automatically transmit a rotary motion to the cable drum to wind the slack cable thereon, but as soon as the slack shall have been taken up and the cable becomes taut, said cable will cause the wheel 72 to be lifted against the tension of the spring 78, thereby lifting the wheel 76 from contact with said belt, thus allowing the belt to rest loosely around the pulley 68 and drum extension 70 and automatically causing the drum to remain idle until additional slack occurs, as plainly shown in Figure 1.

Secured to one end portion 26 of the eccentric strap 13 is a suitable piston 27 of a pump, to which a reciprocating movement is imparted by the movement of said strap, said movement of the piston causing a suction in the pipe 81 and the connecting pipe 82 terminating adjacent the top of the dirty water tank 5. Secured in lateral branch pipes 81′ of the pipe 81 are check valves 83 and 83′, Figure 2, of which valve 83 opens inwardly and valve 83′ outwardly, so that it will readily be understood that an outward movement of the piston 27 will create a suction above the pipe 82 in the dirty water tank 5, and an inward movement of the piston 27 will force air out by the valve 83′, the branch pipe 81′ in which this valve is located being open to the atmosphere.

Secured at a suitable point in the pipe 23 leading from the fresh water tank is a suitable discharge regulating valve (not shown) which is operated by a hand wheel 84 connected to a shaft 85, said pipe 23 communicating with the fresh water distributing pipes 24. It will be understood that any suitable or desirable means may be employed for filling the fresh water tank and for draining off or emptying the dirty water tank.

The front wheels 20 are mounted in suitable bearings supported by the frame, and the rear wheels or casters 21 are supported on axles mounted in swivel brackets 86, which brackets support the main frame 1 at the rear portion thereof.

The scrubbing portion proper of the brushes 6 is resiliently held to the floor by means of a curved flat spring 88 mounted between an upper part 89 and a lower part 87 of the head of the brush.

The detail of the connection between the shaft 19 and the worm 49 consists in the following elements: The forward end of the shaft 19 slides in a sleeve 90, said sleeve 90 being secured by means of a pin 91 to the rear end of a shaft 92 upon which the worm 49 is formed. By means of elongated slots 93 formed in the sleeve 90 into which a pin 94 extends, provision is made for the reciprocating movements of the eccentric 12, and hence the pin 94, relatively to the sleeve 90.

What I claim is:

1. A scrubbing machine of the character described, comprising a main frame provided with wheels; a motor mounted therein; a longitudinal driving shaft connected with said motor; a transverse shaft supported at the front portion of the machine actuated by said driving shaft; an eccentric connected with said transverse shaft; an eccentric strap fitted to the eccentric; scrubbing devices; and means connected with said strap adapted to actuate said scrubbing devices in unison.

2. A scrubbing machine of the character described, comprising a main frame; a motor mounted therein; a longitudinal driving shaft connected with said motor; a transverse shaft actuated by said driving shaft; an eccentric mounted below and connected with said transverse shaft; an eccentric strap fitted to the eccentric; scrubbing devices; means carried by the frame for adjusting the scrubbing devices with relation to the floor, and means connected with said strap adapted to actuate the scrubbing devices in unison.

3. A scrubbing machine of the character described, comprising a main frame; a motor mounted therein having a longitudinal driving shaft connected therewith, a transverse shaft actuated by said driving shaft, an eccentric and eccentric strap supported within the frame, means connected with said transverse shaft for actuating said eccentric and strap; scrubbing devices; and means adapted to actuate said scrubbing devices in unison.

4. A scrubbing machine, comprising a main frame; a motor mounted therein provided with a driving shaft; a transverse shaft actuated by said driving shaft; a stub shaft actuated by said transverse shaft; an eccentric secured to the stub shaft; scrubbing devices; and an eccentric strap fitted to said eccentric and provided with means adapted to actuate said scrubbing devices in unison.

5. A scrubbing machine, comprising a main frame; a motor mounted therein provided with a driving shaft; a transverse shaft actuated by said driving shaft; a vertically disposed stub shaft actuated by said transverse shaft; an eccentric secured to the stub shaft; scrubbing devices; an eccentric

strap actuated by said eccentric and provided with integral means adapted to support and actuate said scrubbing devices in unison.

6. A scrubbing machine, comprising a main frame; a motor mounted therein having a driving shaft; a transverse shaft mounted in the frame and actuated by said driving shaft; a shaft with an eccentric secured thereto actuated by the transverse shaft; scrubbing devices; and an eccentric strap actuated by the eccentric, said strap having integral depending means adapted to support, and to actuate said scrubbing devices in unison.

7. A scrubbing machine, comprising a main frame; a motor mounted therein having a driving shaft; a pump carried by the frame; a transverse shaft actuated by the driving shaft; an eccentric actuated by said transverse shaft; scrubbing devices; and an eccentric strap actuated by said eccentric and adapted to actuate said pump and to support, and to actuate said scrubbing devices in unison.

8. A scrubbing machine, comprising a main frame; a motor mounted therein having a driving shaft; a pump carried by the frame; a transverse shaft actuated by said driving shaft; a wiping roller supported at the rear of the machine; means connected to said roller and transverse shaft for actuating the wiping roll; an eccentric and eccentric strap; means connected with said transverse shaft for actuating said eccentric strap; scrubbing devices; means connected to the strap adapted to actuate the pump; and means connected with said strap adapted to support and to actuate said scrubbing devices in unison.

9. A scrubbing machine, comprising a main frame; a motor mounted therein; a transverse shaft actuated by said motor; scrubbing devices; means for supporting the same; an eccentric; gearing for connecting the eccentric with said transverse shaft; an eccentric strap fitted to said eccentric; connections between said strap and said supporting means; and means carried by the frame and connected to the scrubbing supporting means for adjusting the scrubbing devices with respect to the floor.

10. A scrubbing machine, comprising a main frame; a motor mounted therein; scrubbing devices; an eccentric actuated by said motor; an eccentric strap fitted to said eccentric and provided with integral means for supporting and actuating said scrubbing devices; and means connected with said integral means for adjusting said scrubbing devices with relation to the floor.

Signed by me, this 28th day of December, 1920.

QUINTO FAUSTINI.