

Oct. 30, 1923.

1,472,208

A. DAWER

FLOOR CLEANING MACHINE

Filed Jan. 3, 1922

2 Sheets-Sheet 1

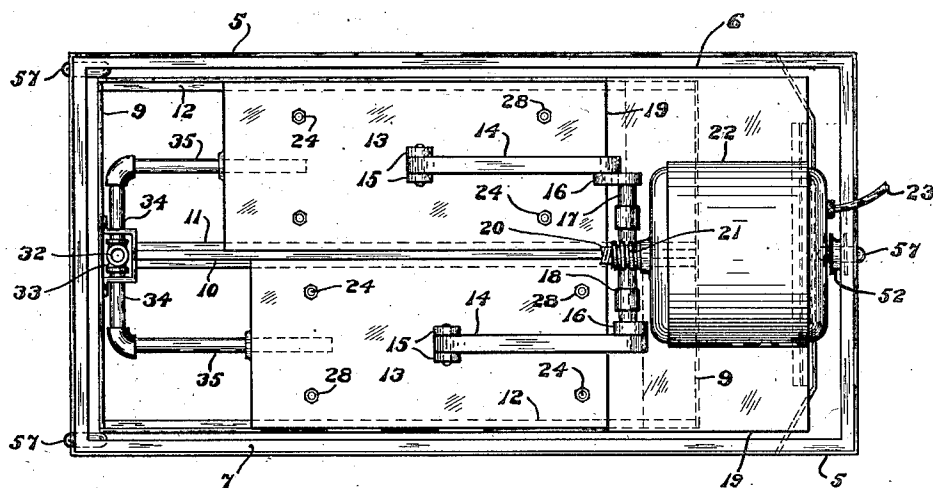


Fig. 1.

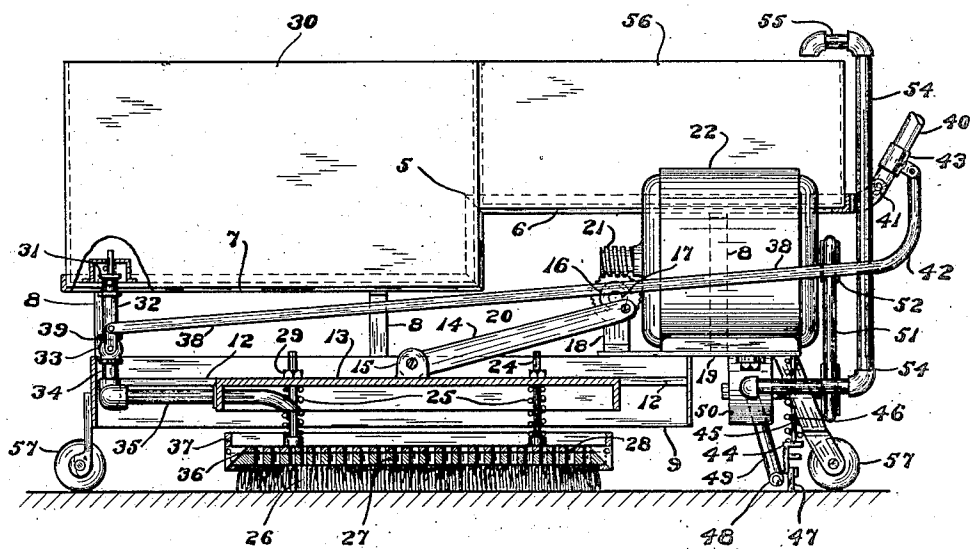


Fig. 2.

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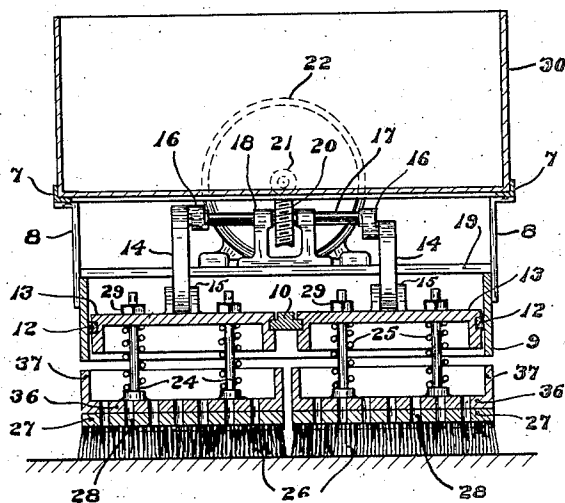


Fig. 3.

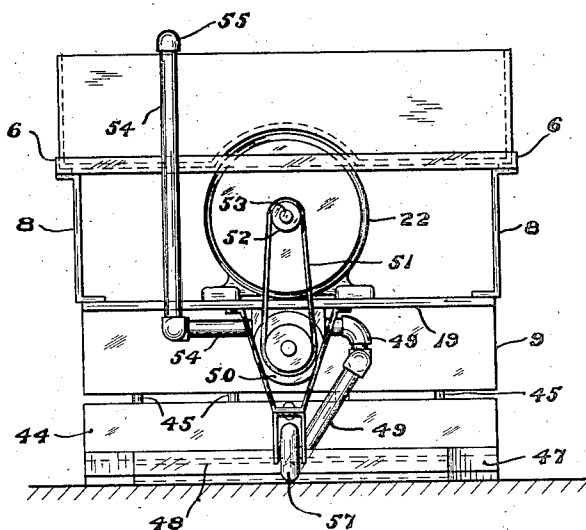


Fig. 4.

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UNITED STATES PATENT OFFICE.

ANTONIO DAWER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO RICHARD M. WRIGHT, OF PHILADELPHIA, PENNSYLVANIA.

FLOOR-CLEANING MACHINE.

Application filed January 3, 1922. Serial No. 526,721.

To all whom it may concern:

Be it known that I, ANTONIO DAWER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Floor-Cleaning Machines, of which the following is a specification.

This invention relates to means for cleaning floors and the like and it has more particular reference to machines which are of that type to effect the scrubbing, washing and swabbing or drying of wood, masonry, concrete and like floor surfaces with a minimum expenditure of manual labor.

The primary object of this invention is to provide a novel form of floor cleaning machine which is automatic in action, that is to say, a machine which when set in operation will automatically and simultaneously effect the operations of scrubbing, washing, and swabbing or drying.

Another object of my invention is to provide a machine of the type referred to in the preceding paragraph which is mechanically operated and only requires manual labor to move the same over the surface to be cleaned.

Further objects of this invention are to provide a floor cleaning machine which is simple in construction, comparatively cheap to manufacture, and withal very effective for the purposes had in view.

With the foregoing and other objects in view as will become more apparent from the following description, this invention consists essentially in the novel features of construction, combinations and arrangements of parts hereinafter fully described and more specifically defined by the appended claims.

In the further disclosure of the invention reference is to be had to the accompanying sheets of explanatory drawings constituting a part of this specification and in which like characters of reference designate the same or corresponding parts in all the views.

Figure 1 is a top plan view of my novel floor cleaning machine with the tanks removed for a clearer understanding of the underlying structure.

Figure 2 is a side elevation of the machine with parts broken away or in section for the sake of clearness.

Figure 3 is a transverse section of the same; and,

Figure 4 is an end elevation looking towards the left hand of Figure 2.

Referring more particularly to the views and in accordance with the embodiment of my invention shown I construct a rectangular framework or skeleton platform 5 from angle iron, the same being stepped intermediate its ends to provide upper and lower portions 6, 7 respectively, that is to say, said portions are disposed in different horizontal planes. Rigidly secured to and supported beneath the aforesaid skeleton platform by means of hangers or brackets 8 is a second rectangular or plate frame 9 which is longitudinally divided by a centrally disposed inverted T-bar or brace 10 and in transverse parallelism with the lateral portion 11 thereof are guide bars 12 that are securely attached to the inner longitudinal walls of the said frame 9. These guide bars 12 and the lateral portion 11 of the T-bar or brace 10 serve as runners for the reciprocable support of rectangular and inverted dished frames 13, said frames 13 being adapted for reciprocation by means of pitmen or connecting rods 14 pivotally connected between upstanding spaced lugs 15 thereon. These pitmen or connecting rods 14 in turn are connected at their opposed ends to cranks 16 mounted on or securely attached to a transverse shaft 17 journaled in bearings 18 supported by a transverse platform 19 appropriately mounted on the upper edge and overhanging the rear end of the aforesaid rectangular frame 9. Centrally of and securely keyed or attached on the transverse shaft 17 is a worm wheel 20 driven directly by a worm 21 on the armature shaft of a direct or alternating current motor 22 arranged for connection to a suitable source of electric power by means of a flexible cable or the like 23—Figure 1.

Resiliently supported beneath each of the aforesaid dished frames 13 by means vertical bolts or rods 24 under the action of compression springs 25 is a scrubbing brush 26 of appropriate and durable nature, the back 27 whereof is apertured with nested vertical perforations 28 for a purpose later on explained, and it will be readily seen that said brushes 26 may be adjusted relative to the frames 13 by means of the lock nuts 29.

Seated in the lower portion 7 of the aforesaid skeleton platform 5 is a sheet

metal or other appropriate material tank 30 that serves to contain an adequate quantity of water and—or—cleansing fluid to be used for cleaning purposes, and said tank 30 is provided with an appropriate non-return lift valve or the like 31 connecting into a pipe 32 and with a shut-off cock 33 therein, said cock having a T discharge pipe 34 connecting into horizontally disposed branch pipes 35 entering the forward flanged ends 13' of the dished frames 13. It will of course be readily understood that the apertures or holes in the flanged ends 13' of the dished frames 13 where the branch pipes 35 pass therethrough are of a diameter to permit the easy reciprocation of said frames 13 and superincumbent brushes 26, whilst the outlet ends of said branch pipes 35 may be slightly and downwardly curved as shown in Figure 2 so that the water and,—or—cleansing fluid may be ejected or flow downwardly direct on to the perforated backs 27 of the scrubbing brushes 26. Still further it is to be here particularly noted that the aforesaid scrubbing brushes 26 are preferably fitted on their backs 27 with dished or tray-like members 36 having perforate bottoms in register with the perforations 28 and circumscribing upstanding peripheral flanges 37—Figures 2 and 3—whereby any wastage or slopping over of the water and—or—cleansing fluid is prevented, whilst it will be observed that the brushes 26 are of a width such that—when the device is in use or loaded with water and cleansing material the bristles thereof will effectively clean all wall edges adjoining the surface under the cleaning operation.

The shut-off cock 33 is under the control of the operator and to this end it is connected by means of a rod or bar 38 pivoted to a key 39 on its stem with the manipulating handle 40—Figure 2—the latter having a frictional connection 41 on the skeleton frame 5. This rod or bar 38 is elbowed or bent at 42 and attached to the manipulating handle 40 by an appropriate clamping sleeve 43, and it will be readily seen that when the handle 40 is lowered to move the machine about when in use the rod or bar 38 will effect the opening of the cock 33 and thereby permitting the water and—or—cleansing fluid to flow into the tray-like members 36 from whence it will percolate or drain through the brush backs 27 and brushes 26 to the surface under course of cleaning.

In order to provide an effective means for swabbing up and removing the dirty water and cleansing fluid from the floor as the scrubbing and cleaning operation progresses I arrange a transverse angle iron or fender 44 in the rear of the machine, said angle iron or fender 44 being supported from the underside of the platform 19 by

rods or bolts 45 under the action of compression springs 46—Figure 2. This angle iron or shoe 44 is provided along its pendent flange with a rubber or similar material strip 47 which acts as a squeegee for moving or sweeping forward the dirty water against or towards a suction pipe 48. This suction pipe 48 is disposed transversely of the machine in front of the squeegee 47 and slightly raised relative to the surface or floor over which the machine operates so that the dirty water is impelled thereagainst whilst the said squeegee 47 cannot foul or contact therewith. The suction pipe 48 is joined by an appropriate pipe connection 49 to the suction end of a rotary pump 50 suitably mounted or supported from the underside of the platform 19 and it is driven by a belt drive 51 direct from the aforesaid motor 22 by means of a pulley 52 on the armature shaft 53 thereof. Leading from the outlet end of the rotary pump 50 is a pipe 54 which is upwardly directed to have its elbowed free end 55 arranged to discharge into a waste water tank or receptacle 56 seating snugly on the upper part 6 of the hereinbefore described skeleton frame or platform 5.

The entire machine is suitably supported on casters 57 whereby it may be easily moved about from place to place, and it will be readily understood that the tanks 30 and 56 may be provided with handles or the like whereby they may be conveniently removed for replenishment or emptying respectively.

In use and assuming that the machine has been connected up to an electric light or wall socket, and that the tank 30 has been filled with water, or water and cleansing fluid or composition, the operator will lower the manipulating handle 40 which will by means of the rod or bar 39 effect the opening of the shut-off cock 33 and lift-valve 31. This opening of the valve 31 allows the water and—or—cleansing fluid to flow through the branch pipes 35 onto and through the brushes 26 which are being simultaneously reciprocated by the pitmen or connecting rods 14 being actuated from the motor 22 through the worm drive 21, 20, shaft 17 and cranks 16. Concurrently with the aforesaid movement of the brushes 26 it will be understood that the rotary pump 50 will be driven by the belt drive 51 from the motor 22, thus creating a suction through the pipes 49, 48 and as the machine is moved forwardly the slop being moved forwardly by the squeegee will be automatically sucked up and discharged into the waste tank 56. In practice it will be found that my improved floor cleaning machine will effect a thorough cleansing of a floor by being slowly traveled forwardly thereover, and thereby effecting a great economy in time and labor.

Whilst I have shown and carefully described one practical embodiment of my invention the same is not to be conservatively construed in that it will be obvious the same is susceptible of considerable variation in structural details and the combination of the several parts without departing from its spirit or essential features; the right is therefore hereby reserved to make such structural changes or variations as fairly fall within the scope of the appended claims.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A machine for cleaning floors comprising superposed frames the lower of which is mounted on casters, reciprocable scrubbing brushes carried in said lower frame, cleaning and waste fluid tanks supported by the upper frame, means for automatically opening a supply connection from the cleaning fluid tank to the scrubbing brushes when the machine is in use, means for effecting the reciprocation of the aforesaid scrubbing brushes, and suction means for removing the waste fluid from the floor after the cleaning operation and forcing same into the waste fluid tank.

2. A machine for cleaning floors comprising upper and lower connected frames the lower of which is mounted on casters, spring influenced parallel floor scrubbing brushes slidably mounted in the lower frame, cleaning and waste fluid tanks supported by the upper frame, means for automatically opening a supply connection from the cleaning fluid tank to the scrubbing brushes when the machine is in use, means for effecting the reciprocation of the aforesaid scrubbing brushes, and suction means for removing

the waste fluid from the floor after the cleaning operation and forcing same into the waste fluid tank.

3. A machine for cleaning floors comprising upper and lower connected frames the lower of which is mounted on casters, spring influenced parallel floor scrubbing brushes slidably mounted in the lower frame, each of said brushes having a perforate back and upstanding surrounding flange, cleaning and waste fluid tanks supported by the upper frame, means for automatically opening a supply connection from the cleaning fluid tank to the scrubbing brushes when the machine is in use, means for effecting the reciprocation of the aforesaid scrubbing brushes, and suction means for removing the waste fluid from the floor after the cleaning operation and forcing same into the waste fluid tank.

4. A machine for cleaning floors comprising upper and lower connected frames the lower of which is mounted on casters, inverted dished frames slidably mounted in the lower frame, a spring influenced floor scrubbing brush having a perforate back and upstanding surrounding flange suspended below each of the aforesaid dished frames, cleaning and waste fluid tanks supported by the upper frame, means for automatically opening a supply connection from the cleaning fluid tank to the scrubbing brushes when the machine is in use, means for effecting the reciprocation of the aforesaid scrubbing brushes, and suction means for removing the waste fluid from the floor after the cleaning operation and forcing same into the waste fluid tank.

In testimony whereof I affix my signature.
ANTONIO DAWER.