

Sept. 29, 1942.

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2,297,107

ELECTRICALLY OPERATED FLOOR CLEANER

Filed Oct. 14, 1939

2 Sheets-Sheet 1

Fig-1

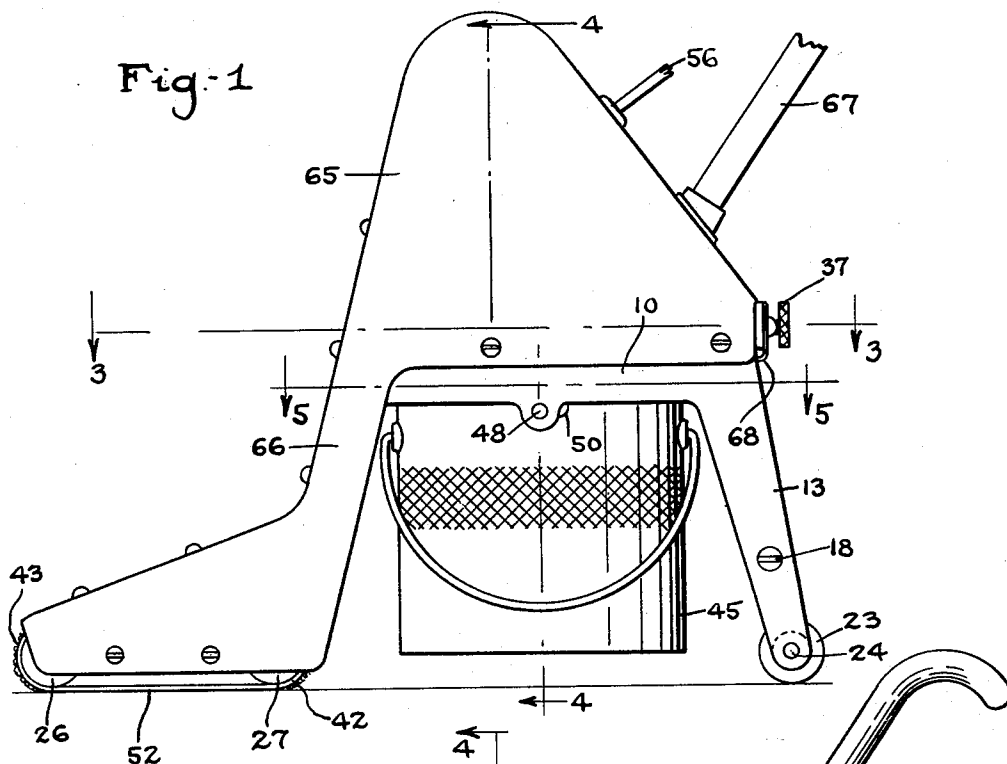
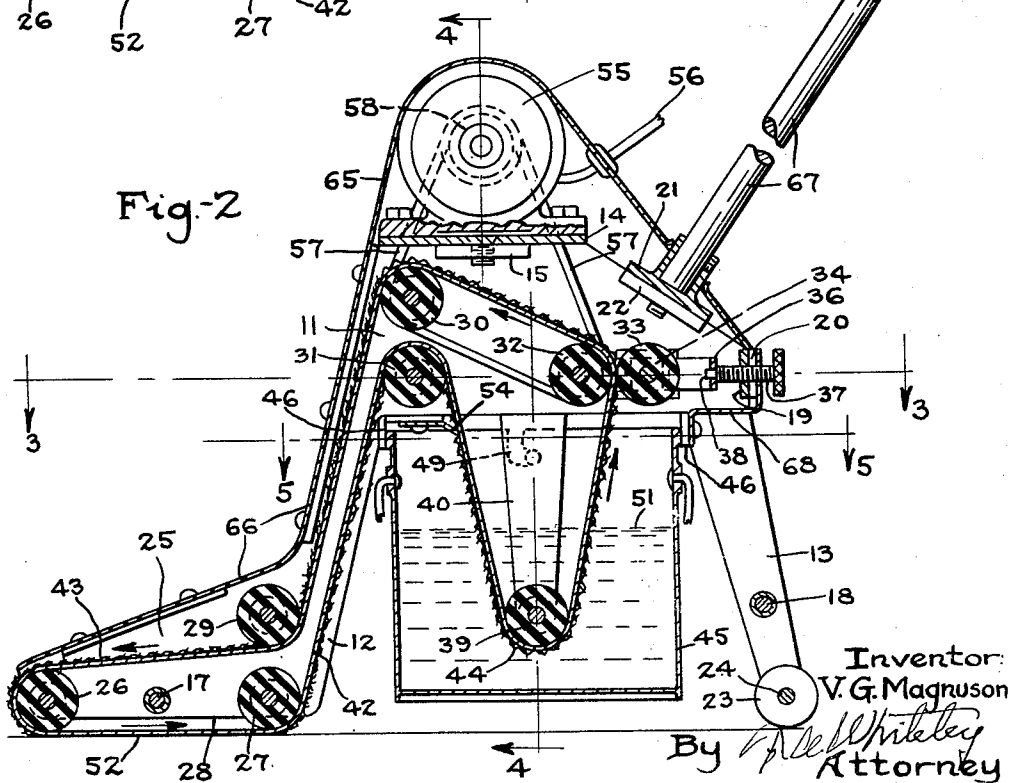


Fig-2



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2 Sheets-Sheet 2

Fig.-3

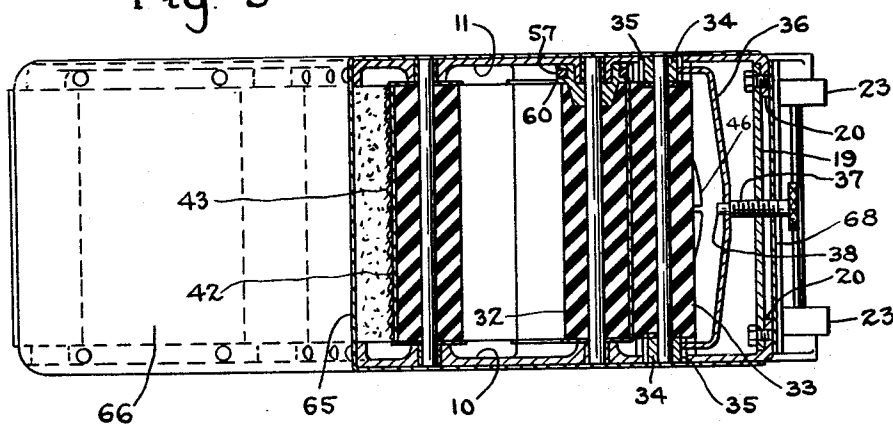
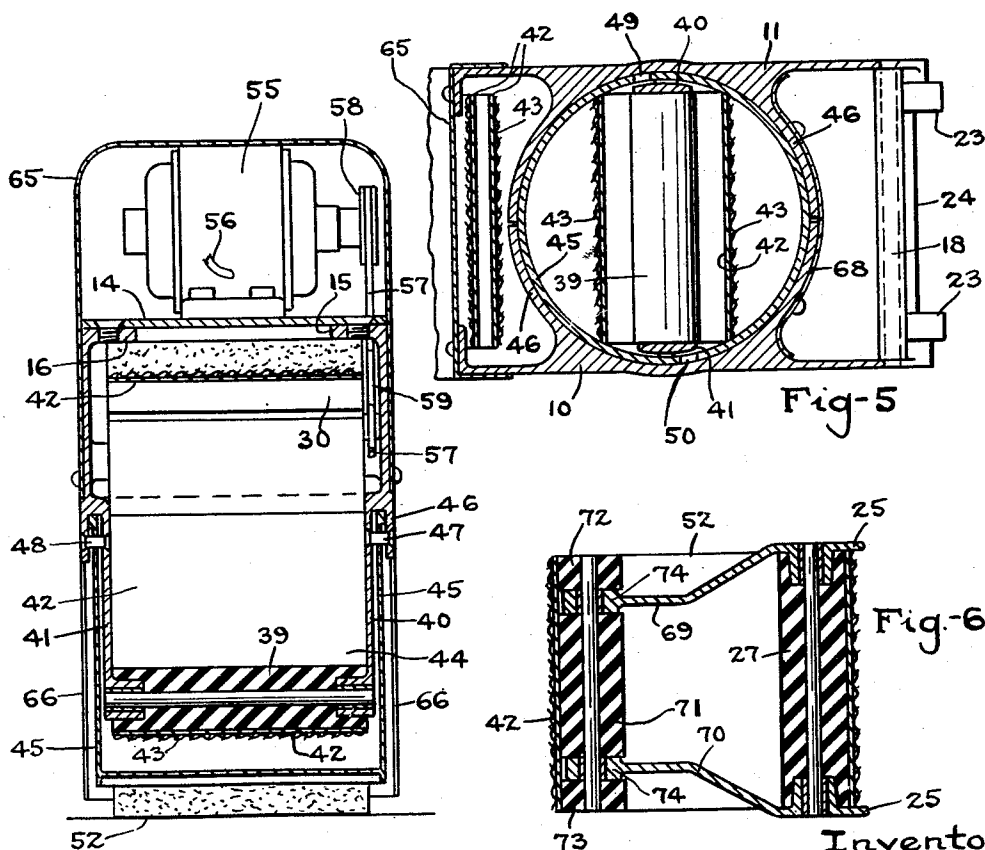


Fig.-4

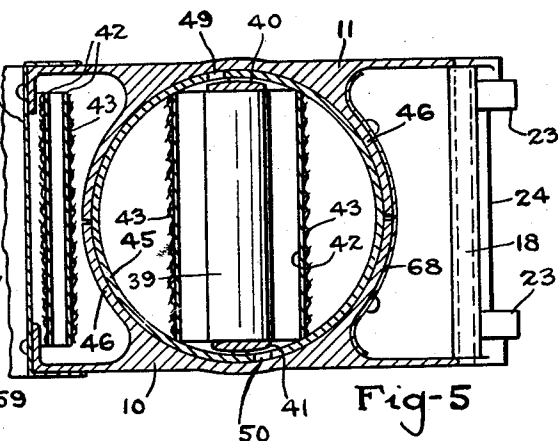


Fig-5

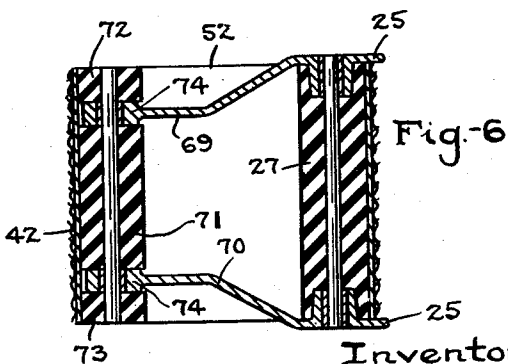


Fig.-6

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## UNITED STATES PATENT OFFICE

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ELECTRICALLY OPERATED FLOOR  
CLEANER

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Application October 14, 1939, Serial No. 299,491

2 Claims. (Cl. 15—99)

My invention relates to an electrically operated floor cleaner and has for its object to provide a floor cleaning device wherein a contact member is adapted continuously to move in engagement with the floor and continuously to be cleaned of its pick-up material and have applied thereto a fresh moisture content.

Various methods have been employed for cleaning floors, from the well known and familiar act of the operator getting down on his or her knees employing the manually operated scrubbing brush to different types of handle devices including mops, which may be operated from an erect position. In all these old and well known means of cleaning floors a pronounced difficulty has been found in eliminating the dirt picked up from the scrubbing member whether it be a brush, a mop or other kind of floor cleaning device. It is a principal object of my invention, therefore, to provide a floor cleaning device wherein the cleaning member, that is the member which contacts the floor and picks up the dirt, will be automatically subject to a cleaning operation for removing the dirt and extraneous material picked up from the floor.

It is a further object of my invention to provide a device of the above indicated character wherein the contact of the cleaning member with the floor will be effected continuously by motor driven means.

It is a further object of my invention to provide an endless belt mounted upon a system of rollers and driven by a motor wherein a portion of the belt will be so held as to contact the floor while it is driven, and thereafter to cause the belt to move through a changeable supply of water so the dirt and extraneous material picked up by the belt will be withdrawn in this water and a continuously cleaned and moistened portion of the belt is applied to the floor surface being cleaned.

It is a further object of my invention to carry the belt aforesaid through wringer rollers so that the excess water carried thereby from the pail or receptacle containing the water will be withdrawn from the belt before it is presented to the floor, thus furnishing sufficient water on the portion of the belt contacting the floor to effectively scrub and clean the floor and at the same time avoiding any considerable degree of wetting of the floor.

It is a further object of my invention to support the receptacle for water through which the endless belt is caused to move, in such a manner that it may be conveniently withdrawn from time

to time for emptying the dirty water and supplying with clean water.

The full objects and advantages of my invention will appear in connection with the detailed description thereof and the novel features by which the many advantageous results above indicated are secured are particularly pointed out in the claims.

In the drawings illustrating an application of my invention in one form:

Fig. 1 is a side elevation view of my floor cleaning device.

Fig. 2 is a sectional elevation view taken through the center of the machine as viewed in Fig. 1.

Fig. 3 is a sectional plan view taken on line 3—3 of Figs. 1 and 2.

Fig. 4 is a sectional view taken on line 4—4 of Figs. 1 and 2.

Fig. 5 is a sectional plan view taken on line 5—5 of Figs. 1 and 2.

Fig. 6 is a view taken on a horizontal sectional line through the two bottom rollers showing a modification of the method of support of the front one of those rollers.

As illustrated the frame of the machine comprises main side members 10 and 11, each with forwardly and downwardly depending portions 12 and rearwardly and downwardly extending portions 13. These side frame members are secured in fixed parallel relation by means of a top plate 14 which is screwed to inwardly extending projections 15, 16 of frame pieces 10 and 11, and by means of bolt and washer connections 17 between members 12, and 18 between members 13. Also the parts are further connected together by a transverse plate 19, Figs. 2 and 3, connected to ears 20 on the side members 10 and 11. Rear supporting rollers 23 upon a connecting shaft 24 are journaled in the depending frame portions or legs 13. Between the forwardly extending frame portion 25 of depending frame portion 12 are journaled a pair of rollers 26 and 27 having their axes substantially in a plane passing through the axis of roller 23 with portions projecting below the lower edge 28 of forward frame extension 25 as clearly shown in Fig. 2. A third roller 29 is journaled between members 11 and 12 immediately above roller 27 as shown in Fig. 2. Between the main portions of side frame members 10 and 11 are journaled a pair of rollers 30 and 31 toward the front thereof and one above the other, and a wringer roller 32 having its axis in the normally horizontal plane passing through the axis of roller 31. A second wringer

roller 33 is journaled in blocks 34, Fig. 3, slidable in slot openings 35 in frame members 10 and 11. A bridging member 36, Figs. 2 and 3, connects the blocks 34, and the wringer roller 33 is caused to engage the wringer roller 32 with a desired amount of pressure by means of a set screw 37 threaded through the frame piece 19 and having a bearing pintle 38 seated in an aperture of bridging member 36. By this means through turning of thumb screw 37, any desired pressure between wringer rollers 32 and 33 may be effected. A final roller 39 is journaled at the ends of depending arms 40 and 41, Figs. 2, 4 and 5, which arms are secured to the frame pieces 10 and 11, roller 39 thus being brought substantially into the horizontal plane of roller 29.

An endless belt 42 of any desirable material, preferably having a pile surfaced face, as indicated at 43 of Figs. 1 and 4, runs under roller 29, beneath rollers 26 and 27, over roller 31, over roller 39 in the lowered position indicated on Fig. 1. From there between wringer rolls 32 and 33 over roller 30 and back under roller 29, the belt being constrained to follow the line of travel in the direction indicated by the arrows, all clearly shown in Fig. 2.

From the above arrangement of the disposition of the belt 42 it will be apparent that it is provided with a depending loop 44 which is carried well down in the space located generally between sets of frame extensions 12 and 13. Within this space and adapted to surround the roller 39 and the depending loop of endless belt 40, is secured a pail 45, Figs. 2, 4 and 5. This pail may be secured in any desired manner. As shown a ring 46 is formed in connection with frame pieces 10 and 11, as shown in Fig. 5, the ring being spaced from arms 40 and 41, with pins 47 and 48 extending across this space. Bayonet slots 49 and 50 in the pail edge, as indicated in dotted lines of Fig. 2 are adapted to be carried over the pins 47 and 48 and hold the pail removably positioned within ring 46. The pail 45 is thus removably held in a position surrounding loop 44 of belt 42 which thus is brought well below the surface of the water in the pail indicated at 51, Fig. 2. From the above it will be seen that a section 52 of belt 42 extends horizontally in position to engage the floor from which, as the belt is driven by means herein-after described, the belt passes over roller 31 and down over roller 39 in the loop 44 where it passes through the water in pail 45 from where it goes through wringer rollers 32, 33 and excess water and dirt is removed therefrom. A scraper bar 54, Fig. 2, engages the surface of the belt as it goes down into the loop 44 loosening particles of dirt and extraneous matter held by the pile fabric so that it readily washes out as the belt goes through the water in pail 45.

The belt will be constantly driven by the following means; an electric motor 55 is secured to plate 14 and is furnished with electricity from an extension cord 56 in a customary manner. A belt 57 goes over drive pulley 58, Fig. 4, of the motor 55 and goes around a drive pulley 59 on roller 30 and around a second drive pulley 60, Fig. 3, on roller 32, all as indicated in full and dotted lines in Fig. 3. There is thus positively driven the base wringer roller 32 and the top roller 30 whereby the rollers and the belt which goes over them will be driven at suitable speed and caused to travel in the direction of arrows whenever electric current is connected to motor 55.

A casing member 65 of sheet metal having side portions 66 of the shape shown in Fig. 1, surrounds the frame and the parts carried thereby so as to enclose moving parts. A handle 67 of any desired construction may be secured directly to cross frame piece 21 by means of which the machine may be moved about. A special casing section 68, Figs. 2 and 3, effects protective closure in back of the wringer roller 35.

A modification of the front roller arrangement carrying the scrubbing section 52 of belt 42 is shown in Fig. 6. Here the forwardly extending frame portions 25 carry the roller 27 as in Fig. 2. But the frame portions 25 are drawn together, as indicated at 69 and 70 of Fig. 6, and in place of roller 26 there are three rollers 71, 72 and 73, the two rollers 72 and 73 being short extension rollers outside of bearing members 74 on contracted arms 69 and 70. With this arrangement the belt 42 has its edge carried at the outside limit of rollers 73, 74 with no frame portion outside of that, which enables the scrubbing portion 52 of belt 42 to be pushed into corners and close along wall limits.

In practical operation, the machine will be moved to the place where it is desired to operate it by swinging it backward so as to put the weight on rollers 23. When the place of operation has been reached the cord 56 will be plugged in to furnish current to the motor 55. The horizontal portion 52 of the belt 42 will be brought in engagement with the floor surface carrying a considerable part of the load of the machine. While in such engagement the belt 42 will be constantly driven in the direction indicated by the arrows. The operator will push the machine back and forth over the floor and at all times the belt will be frictionally engaged in rubbing action on the floor, carrying from it dirt, staining, and extraneous matter which will be removed in the water in pail 45. From time to time the pail and its water content will be removed, which may be conveniently effected by disconnecting the pail and letting it drop to the floor and then lifting the machine by the handle 67 upon a fulcrum at the front roller 26, thus withdrawing loop 44 from the pail. After the pail has been filled with a sufficient quantity of fresh water, the loop 44 will be introduced into the pail in the same manner, the pail re-secured to the pins 47 and 48 and the operation continued.

The advantages of my invention will be apparent from the foregoing description. With a device approximately as easily operated as an ordinary vacuum cleaner, floors may be scrubbed and cleaned more effectively than with the old type mop and scrubbing brush and with none of the back breaking labor attending such old efforts. Particularly it will be noted that all of the operations of scrubbing, mopping up, and wringing take place simultaneously. The floor is never excessively wet and is left in better condition to dry freely than from the old time mopping. All of the parts are encased and protected and yet easily accessible. Although the device is highly practical as a domestic floor cleaning device, it may be made in larger sizes applicable to the cleaning of floors of public buildings of various types.

I claim:

1. A floor washing machine comprising a frame having an upper body portion and two depending leg portions said frame portions being constructed and arranged so as to leave a space

below the upper portion open at the sides between the leg portions, supporting rollers mounted on both of said leg portions, a cleaning belt mounted to move over one set of supporting rollers to contact the floor beneath them, a readily transportable receptacle adapted to contain cleaning liquid removably held in the open space between the legs, means guiding the cleaning belt through the water in said receptacle when so held, and means including an electric motor mounted on said central frame portion for continuously moving the belt.

2. A floor washing machine comprising a frame having an upper body portion and two depending leg portions, said frame portions being constructed and arranged so as to leave a space below the upper portion open at the sides between the leg portions, supporting rollers

5 mounted on both of said leg portions, brackets and a roller carried thereon at a point toward the central lower portion of said space, a cleaning belt mounted to move over one set of said supporting rollers to contact the floor beneath them and over said roller within said space, a pail adapted to hold clean water and be removably positioned in said space with said last named roller immersed in the water in the pail, means 10 for removably supporting the pail when so positioned, and means including an electric motor mounted on said central frame portion for continuously moving the belt to cause it to contact the floor and then to be carried through the clean water in the pail, said removably mounted 15 pail permitting ready change of water to keep said water clean.

VERNIE G. MAGNUSON.