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3,061,859

RUG SCRUBBING MACHINE

Filed July 17, 1959

2 Sheets-Sheet 1

FIG. 3

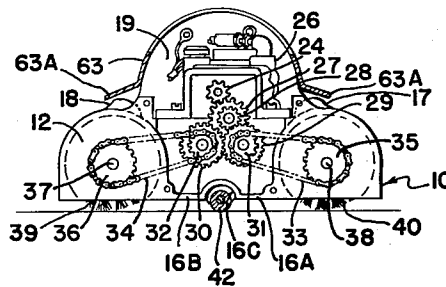


FIG. 1

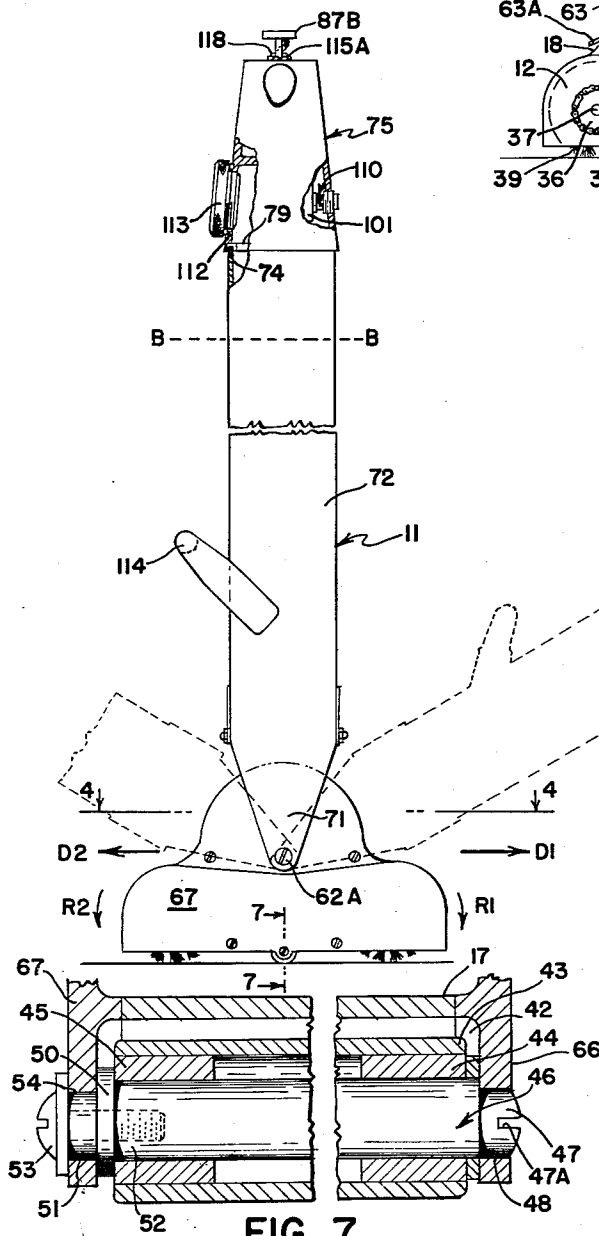


FIG. 7

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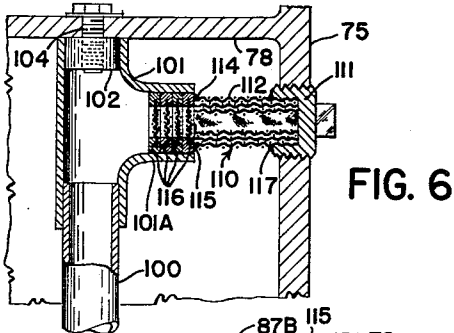


FIG. 6

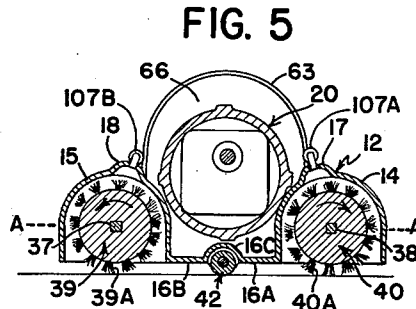


FIG. 5

FIG. 2

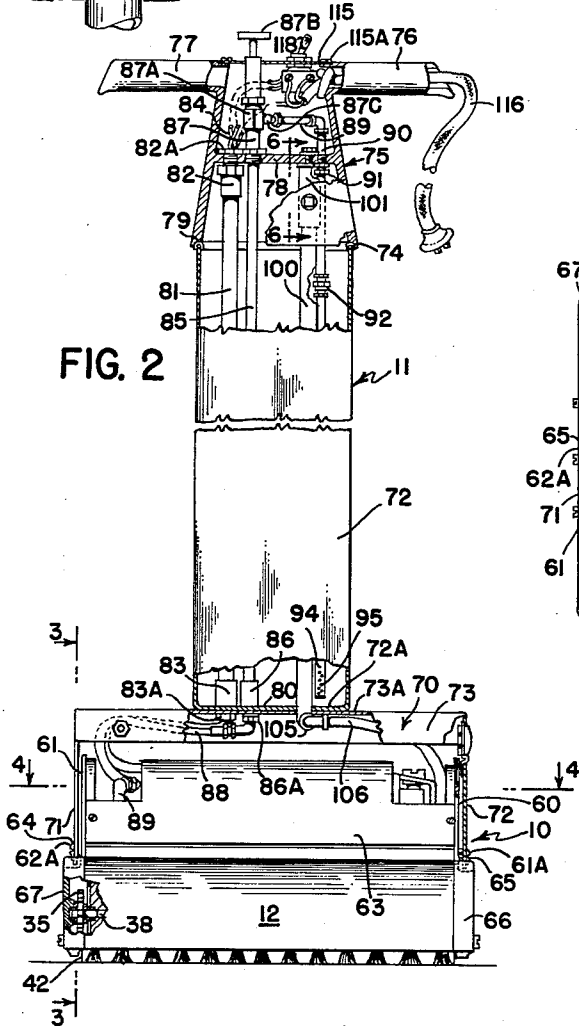
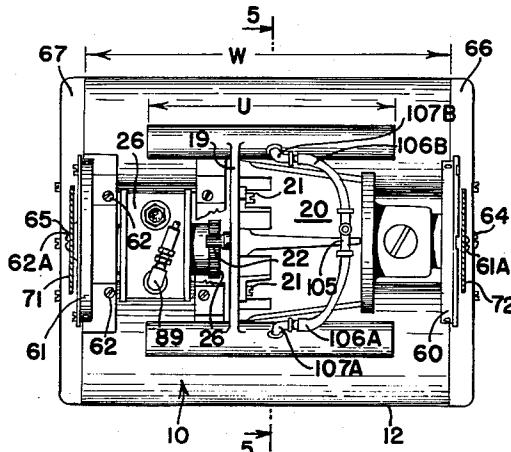


FIG. 4



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3,061,859

RUG SCRUBBING MACHINE

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15 Claims. (Cl. 15-50)

This invention relates to a rug scrubbing machine and more particularly to a machine of that type of low silhouette and relatively light weight which can be used in cramped quarters, and under low devices such as seats, for scrubbing a rug, without removing the rug from the floor space to which it is attached.

It is an object of the present invention to provide an improved rug scrubbing machine of low silhouette and so made as to be capable of being used under low devices such as seats and in cramped quarters. It is another object of the invention to provide a rug scrubbing machine wherein the rug is scrubbed with a foam that is composed of minute bubbles and which is substantially freed from discreet moisture. It is another object of the invention to provide an improved rug scrubbing machine which is capable of being operated in close quarters and closely adjacent the sides of a rug and into square corners. It is another object of the invention to provide an improved rug scrubbing machine having a self-contained foam generating and distributing device.

Other and further objects are those inherent in the invention herein illustrated, described and claimed and will be apparent as the description proceeds.

To the accomplishment of the foregoing and related ends this invention then comprises the features hereinafter fully described and particularly pointed out in the claims, the following description setting forth in detail certain illustrative embodiments of the invention, these being indicative, however, of but a few of the various ways in which the principles of the invention may be employed.

The invention is illustrated with reference to the drawings wherein:

FIGURE 1 is a side elevational view of the machine of the invention partly broken away and in section;

FIGURE 2 is a front elevational view of the machine, some portions being shown broken away and in section;

FIGURE 3 is a vertical side sectional view of the lower portion of the machine, partly broken away and partly in section, this view being taken along the line and in the direction of arrows 3-3 of FIGURE 2;

FIGURE 4 is a horizontal plan view of the lower portion of the machine taken along the line and in the direction of arrows 4-4 of FIGURES 1 and 2. In this view the cover over the motor, pump, and various other mechanisms has been removed;

FIGURE 5 is a vertical sectional view taken along the line and in the direction of arrow 5-5 of FIGURE 4;

FIGURE 6 is an enlarged fragmentary sectional view taken along the line and in the direction of arrows 6-6 of FIGURE 2;

FIGURE 7 is an enlarged fragmentary vertical transverse sectional view taken along the line and in the direction of arrows 7-7 of FIGURE 1.

Referring to the drawings, the machine comprises generally a base housing generally designated 10 and an upper tank and handle housing generally designated 11. Referring to the base housing 10 this comprises a casting generally designated 12, which is preferably made of aluminum or magnesium alloy. The base housing has two spaced transverse spaced open-bottomed recesses 14 and 15 which receive brushes 39 and 40 and a smaller intermediate parallel recess 16C which receives roller 42. The recesses 14 and 15 are in the shape of half-cylinders down to the level of line A-A, and below this level the

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walls of the recesses 14 and 15 are vertical. The recess 14 is connected by web 16A to recess 16C, and the latter is connected by web 16B to recess 15. The casting, thus including recesses 14, web 16A, recess 16C, web 16B, and recess 15 forms a complete cover. The housing portions 14 and 15 are also provided with antrums 17 and 18 which extend throughout the width U of the housing, which is approximately 40-80% of the total effective working width W of the machine. The base casting 10 is provided with endplates 66 and 67 that close the ends of the recesses 14, 16C, and 15. The endplates are fastened by suitable screws. Endplates 66 and 67 form bearings for the axles of brushes 39 and 40 and roller 42.

Adjacent the center line of the machine, there is an upwardly extending mounting web 19, see FIGURE 4, which serves to stiffen the housing, and also serves as a plate for mounting the motor generally designated 20, see FIGURE 4. The motor assembly is bolted directly to the web 19 by means of the bolt 21-21. Web 19 serves as an endplate for the motor. The motor shaft has drive pinions at each end, one of which, i.e. the pinion 22, is shown in FIGURE 4, the other pinion 24 being illustrated in FIGURE 3. The pinion 22 operates directly upon the driven gear 25 which is the input power gear for the air pump 26. The pinion 24, FIGURE 3, drives a reduction spur gear 27 which has a smaller diameter gear 28 integral therewith that in turn drives the driving gear 29, the latter gear being meshed in driving relationship with the companion driving gear 30. Each of the driving gears 29 and 30 is provided with an integral smaller diameter chain sprocket, sprocket 31 being on gear 29 and sprocket 32 being on gear 30. The two gears 29 and 30 are driven in opposite directions and by virtue of the roller-chains 33 and 34 which run on sprockets 31 and 32 respectively, they drive the sprockets 35 and 36 on the brush shafts 37 and 38 respectively. Brush shaft 37 which is journaled in endplates 66 and 67 serves as a mounting for the brush 39 and the brush shaft 38, likewise journaled in endplates 66 and 67, serves as a mounting for the brush 40.

Each of these brushes is composed of a central hub, keyed to operate on the shaft which supports it. In the form illustrated the portion of the shaft which engages the brush hub may be non-circular (square) as illustrated in FIGURE 5. Bristles 39A and 40A are set into the brush hub in any desired manner and they extend outwardly therefrom thus providing an effective cylindrical brushing diameter. Since the brushes 39 and 40 must operate under wet conditions it is desirable that the brush construction be such that the hubs and bristles are not seriously affected by moisture.

Referring to FIGURES 2 and 4, the main casting 10 which serves to form the housing for the brushes also serves to form a housing for the smaller roller generally designated 42. This roller is made so that its axis of rotation can be adjusted up and down. This is best shown in FIGURE 7. The roller arrangement consists of an aluminum or stainless steel tube 43 into which at opposite ends there are pressed the oilless bearings 44 and 45. The roller 42 turns on a shaft generally designated 46 which has the characteristic that it has reduced eccentric end portions 47 and 51 which are of the same size and which have their axes aligned. The eccentric end 47 has a screw slot 47A by which the whole shaft 46 can be turned whereas the eccentric end 51 is spaced from the main portion of the shaft 46 by a flange 50. The eccentric end 51 also is centrally threaded to receive a locking screw 53 having a large head. The end 47 fits into a bearing aperture 48 in endplate 66 of the machine whereas the end 51 of the shaft fits into an aperture 54 in the other endplate 67 of the machine. By loosening

the locking screw 53 and by inserting a screw driver in the slot 47A, the shaft 46 can be rotated for adjusting the vertical position at which the roller 42 operates. When the adjustment is made, the screw 53 is pulled up tight and the shaft 46 thereafter does not rotate, and the roller 42 runs on the shaft. This arrangement permits the vertical height of the roller 42 to be easily adjusted relative to the tips of the bristles on the brushes 39 and 40. The roller 42 is adjusted so that it is positioned down far enough to sustain an appreciable part of the weight when the machine is propelled over the surface being cleaned. When the machine is used on carpeting or rugs, the roller is set lower than when the machine is used on a hard floor such as one covered with plastic tile or the like. For either use the bristle tips should of course engage the floor covering, whether carpet or hard covering, such as tile. The preferred positioning of the roller 42 permits the machine to rock very slightly on the roller 42 and in the direction of forward motion. Thus, as shown in FIGURE 1, when the machine is pushed (by the handles) in direction of arrow D1, it will rock slightly in the direction of arrow R1 and when pulled back in direction of arrow D2, it will rock very slightly in the direction of arrow R2. This amount of rocking is hardly appreciable and should not lift the trailing roller from the surface being cleaned. The objective is merely to increase the brush pressure slightly on the forward roller and decrease the pressure slightly on the rearward roller when the rotation of the brushes 39 and 40 is in the direction of the roller 42 (as shown by the arrows in FIGURE 5). This slight increase of pressure on the forward brush will give that brush increased traction and the machine tends to pull itself along in the direction it is being pushed. This provides the effect of self-propulsion. To stop such propulsive motion, it is only necessary to push (or pull) on the handle in a direction opposite to the direction of motion and this will provide a sufficient "reverse rocking" to stop the motion or even start it in the opposite direction. The net result is a machine motion which is linear, partially self-propulsive and very easy to control.

The endplates 66 and 67 of the machine have an upwardly extending end wall 60 (on endplate 66) and a similar end wall 61 at the opposite end (on endplate 67). A removable sheet metal cover 63 is attached to these end walls. The cover has outwardly bent lower edges 63A which are spaced a little above the recess portions 14 and 15 of the base casting so as to allow ventilation. These end walls also serve to provide the pivots 64 and 65 upon which the lower bifurcated end of the tank and handle structure 11 can pivot.

A tank and handle structure comprises the bifurcated lower end piece generally designated 70 which has downwardly extending portions 71 and 72 which extend down to and are pivoted upon the frame members 60 and 61 and are held in place by the pivot screws 61A and 62A. This bifurcated end 70 has an upper sheet metal portion at 73 which is generally curved at the top but which is open at the bottom. Upon the central portion 73A of this member is flattened and to it there is bolted an up-standing rectangular tank 72 having a closed bottom 72A and closed sidewalls but an open top. The tank extends upwardly and is provided with a gasket 74 at its upper edge. The portion 72 is essentially an open-topped tank of rectangular cross section.

The top of this tank is arranged to be closed by a cap and handle casting generally designated 75 which serves not only as a cap for the tank but also it is provided with the handle pieces 76—77 by which the operator may grip this portion of the machine for guiding the entire device. The cap and handle casting is of generally pyramidal form having walls which slope downwardly and outwardly in all directions. At its lower edge these walls are provided with a recess at 79 so shaped that it will

engage upon the gasket 74 which is in place upon the upper edge of the tank 72.

The tank 72 is provided with a plurality of vertical pipes which also serve to clamp the cap 75 down on the gasket 74 and serve to hold the tank 72 onto member 70. These are as follows: One vertical pipe at 81. This is sweat-soldered to coupling 83, having a threaded end which passes through matching holes in the bottom 72A of tank 72 and member 70. The coupling is either brazed to the tank bottom or adequately gasketed and is held in place by nut 83A. The coupling 83 serves the dual purpose of a coupling on pipe 81 and as one of the fastenings by which tank 72 is held in place. At the top, pipe 81 is sweat-soldered into similar coupling 82 which has a threaded end that passes upwardly through web 78 and is held in place by nut 82A. This serves as one of the pipe attachments by which the cap 75 is held in place. Pipe 81 serves as an electrical conduit for the electric wires 84 which extend down to the motor 20.

In addition there is provided a vertical pipe at 85 which likewise is fitted in fluid tight connection to a coupling at 86 in the bottom 80 of the tank 72 and with another cooperating coupling at 87 which is threaded into the wall 78 of cap 75. Couplings 86 have a threaded end which extends down through apertures in tank bottom 72A and portion 73A and is held in place by nut 86A. This serves as another fastening for tank 72 to member 70. This pipe 85 is connected by means of the connection pipe 88 to the outlet 89 of the air pump 26 and it conveys air under pressure from the pump up through the tank 72 to the coupling 87 which is the bottom end, of a control valve 87A, the handle on the valve being at 87B. The outlet from the valve is at 87C and connects via the pipe 89 to another pipe 90 which extends downwardly through the squeeze coupling at 91 in the wall 78 and thence through an intermediate coupling 92 to a lower end 94, which is elevated slightly above the bottom 72A of the tank 72. This lower end of the pipe 94 is closed off at its bottom end but is provided with a plurality of small holes 95 in the sidewalls of the pipe. Accordingly, air under pressure after being throttled to a desired amount in the valve 87 will pass downwardly through the pipes 96—94 and be ejected out of the little holes 95 into a liquid within the tank 72. The liquid in tank 72 is introduced through filler hole 112 (see FIGURE 1) up to about line B—B, and is a detergent liquid capable of foaming when air is blown through it. The bubbles cause the foam which rises above level B—B to entirely fill the tank 72 and that portion of the cap and handle casting 75 which forms the top closure.

There is still another pipe in the tank 72, this being the pipe 100 (FIGURE 2), which is provided with a sweat T 101 at its upper end (see FIGURES 1, 2, and 6). The upper portion of the T 101 is provided with a plug 102 which is sweat-soldered in place, the plug being threaded to receive a cap screw 104 which passes through the wall 78 of cap-handle casting 75. By tightening on the screw 104 the sweat coupling 101 and hence the pipe 100 are held tightly in place. The lower end of the pipe 100 passes down through the coupling 105 which is fitted in liquid tight relationship in the bottom 80 of the tank 72 and extends down via the pipe 106 which then branches into the two leads 106A and 106B, see FIGURE 4. These branches 106A and 106B extend to and enter into the amtrums at the couplings 107A and 107B, respectively.

Referring to FIGURE 6, at the upper end of the pipe 100 the side opening of the sweat T 101 is engaged by a fitting generally designated 110 which is composed of a screw plug 111 into which a tube, made of woven wire 112, rolled into the form of a tube. The tube 112 is soldered at 114 to the first one of a plurality of washers 115 which are stacked together, and between these washers are little discs of finer gauge woven wire 116. The

washers 115 all are the same size and the discs of (finer mesh) woven wire 116 are placed between them. They are all then pressed solidly together so as to form a tube and enough solder is placed on their exterior surface so as to hold them together. The exterior is then finished tubular. The tube 112 (of somewhat coarser woven wire) is then attached by soldering at 114. The entire arrangement is then fitted into the plug 111 and can be soldered along the line of entrance at 117, if desired. The plug 111 thus becomes integral with the tube 112 which is in turn integral with the tubular arrangement made up of the washers and wire discs 115—116. The entire arrangement is then entered smoothly into the side branch 101A of the sweat T 101 and by screwing it tight on the plug, the assembly is made fast. A neat fit between the exterior surface of the washers 115 and the sweat T prevents leakage.

On another surface of the cap and handle casting 75 there is provided a filler inlet opening 112 which is capped by the removable cap 113.

The tank portion 72 is provided with handles 76 and 77. The upper portion of the casting 75 is closed by a cover plate 115 that is held in place by screws 115A. An electrical cord 116 enters one of the handles 76 and into the space enclosed by the cover plate 115. An electrical switch 118 mounted in the cover plate serves to control the circuit from the electric cord, and to the wire 84 which leads down to the motor 20.

Referring to FIGURE 1, it will be noted that the portions 71 and 72 of the member 70 are tapered at their lower ends and that the entire tank and handle structure can be moved about the pivots 61A, 62A to extreme positions, which are shown in dotted line in FIGURE 1, the other being similar but in the opposite direction.

In use, the motor is turned on by operation of the switch 118 and the valve 87—87A—87B is open enough so as to allow air, which is compressed by the compressor 26 and conveyed upwardly by the pipe 85, to pass through the valve and then downwardly through the pipe 90—94. The compressed air causes bubbles to form in the foamable liquid within the tank 72 and these bubbles rise and as a foam completely fill the tank composed of the portion 72 and the lower portion of the cap and handle structure 75. ward drainage of the discrete liquid will occur, and the liquid in the tank portion 72—75, to a position above the liquid level B—B in said tank, a certain amount of downward drainage of the discrete liquid will occur, and the varying sized bubbles will become dryer as they rise above the liquid level B—B. However, the resultant foam is still quite wet. The foam then passes into the fitting 110 (see FIGURE 6), first passing through the coarser screen portion 112 and thence axially through the plurality of spaced, finer screen portions 116 and finally into the sweat T 101 and thence downwardly into the pipe and through the two pipes 106A and -06B and into the antrums 17 and 18, whereupon the foam is distributed along a portion "U" of the upper surface of the revolving brushes 39 and 40, which represents approximately 40 to 70% of the length of the brushes. A goodly amount of foam is thus spread on the brushes as they revolve. It will be noted that the tips of the bristles 39A and 49A of the brushes, revolve in close proximity to the housing portions 14 and 15 and in sweeping past the antrums 17 and 18 respectively, the bristles will gather the foam that fills these antrums and draw it one direction or the other, depending upon the direction of rotation of the brushes into contact with the surface being scrubbed.

I have discovered that the direction of rotation of the brushes may be in either direction, thus towards each other as shown by the arrows in FIGURE 5, or in the opposite direction. In each case, however, the brushes work in opposite directions relative to each other, either both toward the center roller 42 or both away from the center roller 42. For best results I prefer to have the two brushes rotate toward the center roller 42 since this

tends to confine the foam under the housing 10—66—67 a little better than when the brushes rotate outwardly from the center roller 42, although excellent cleaning results are obtained for either direction of rotation. The adjustment of the center roller 42 permits the machine to be set a little higher or a little lower, and in so doing vary the amount of pressure which the brushes exert upon the nap of the rug being cleaned may be varied.

I have found that the machine can be worked to within approximately three-quarters of an inch of a baseboard around a wall and due to the rectangular design of the machine, there are substantially no corners left uncleaned when working into a rectangular corner. Also, because of the low silhouette, the entire machine can be moved, by dropping the handle downwardly, to a position which is under a seat in, for example, an aircraft, thereby permitting the rug under a seat to be cleaned as effectively as though it was in the open. The temporary lowering of the handle to the dotted positions does not adversely effect the operation.

By use of the present invention, a foam is produced which is so dry that it does not possess tactile moisture, i.e. discrete particles of moisture which are discernible by touch. The foam as made by the machine will remain for hours at a time. A handful of foam will disappear when worked between the palms of one's hands and the hands will not feel more moist than one's hands would outside in a fog. The foam produced by the mechanism of the present invention by first generating the foam in a tall tank, whereby the bubbles are permitted to dry as they rise, and by then causing the foam to move under slight pressure and while confined through a plurality of spaced successively finer screens, will provide a foam as above described, in which there is no moisture apparent to the touch and none which can be seen.

This foam is then delivered under slight pressure to the antrum of the machine where it is directly engaged by the brushes and spread and used upon the surface being cleaned. The machine can be used for cleaning rugs or hard surface floors, and exceptional cleaning results. Any excess foam can be picked up by a vacuum cleaner. Five minutes later traffic can be permitted on the rug or floor, without bad results.

I prefer that the screen 112, which is a first screen in the succession of screens should have a mesh of from 20 to 60 mesh per square inch and that the space successive screens 116 should preferably have a mesh of from 80 to 140 mesh. In an exemplary device screen 112 was 40 mesh and screens 116 were 120 mesh. This gave excellent results. By spacing the screens from each other and by providing successively finer mesh screens, and moving the foam under slight pressure through the system, the foam becomes very dry and has no moisture that can be seen or that is apparent to touch. Yet the foam is long-lasting. Under some conditions, the foam will last for as much as eight or ten hours.

By use of the machine, excellent carpet, rug and smooth floor cleaning results are obtained.

As many widely apparent different embodiments of this invention may be made without departing from the spirit and scope thereof, it is to be understood that I do not limit myself to the specific embodiments herein.

What I claim is:

1. A carpet and floor cleaning machine comprising a base housing having a linear axis of motion during use, spaced parallel open-bottom compartments in said housing transverse to said axis of motion, a cylindrical brush journaled for rotation in each compartment, motor means on the housing and connected to the brushes for rotating them, a handle attached to the housing for guiding it, said handle being hollow and constructed to form a liquid container, foam generating means in said hollow handle, a take off tube having an inlet opening into the interior of the container above the level of the liquid

in said container and means connected to said tube for conveying foam into said compartments and onto said brushes.

2. A carpet and floor cleaning machine comprising a base housing having a linear axis of motion during use, spaced parallel open-bottomed compartments, in said housing, transverse to said axis of motion, a cylindrical brush journaled for rotation in each compartment, motor means on the housing and connected to the brushes for rotating them, a tall tank having its lower end pivotally connected to the base housing for swinging movement about a pivot axis transverse to said axis of motion, said tank being provided with handles at its upper end whereby the tank can be used as a handle for guiding the base housing, an air compressor on the base housing and connected to the motor so as to be driven thereby, a nozzle near the bottom of said tank connected to said air compressor, and a foam dispensing conduit connected to the upper part of the tank and to the compartments of the base housing for conveying foam from the tank to the compartments and thence onto said brushes.

3. A carpet and floor cleaning machine comprising a base housing of generally rectangular plan having on the bottom thereof two parallel spaced open-bottomed recesses, cylindrical brushes journaled in each of said recesses for rotation therein, the diameter of said brushes being such in relation to the recesses in which they operate that the tips of the bristles will be below the lower edge of the housing, a motor mounted on the housing and connected to the brushes for simultaneously rotating them in opposite directions, a roller pivotally mounted on the housing along an axis which is parallel to and between the axes of the brushes, said roller being mounted for vertical adjustment relative to said housing and a handle in the form of a tall hollow closed tank having its lower end pivotally attached to the base housing for swinging movement about an axis parallel to said roller axis, air compressor means on the housing, nozzle means in the lower part of the tank, a connection between the nozzle and the air compressor for discharging a stream of air through the nozzle into the lower part of said tank and a foam conduit connecting the upper part of said tank and connected to discharge ports in said recesses for delivering foam from the tank onto said brushes as they rotate.

4. A carpet and floor cleaning machine comprising a base housing of generally rectangular plan having on the bottom thereof two parallel spaced open-bottomed recesses, cylindrical brushes journaled in each of said recesses for rotation therein, the diameter of said brushes being such in relation to the recesses in which they operate that the tips of the bristles will be below the lower edge of the housing, a motor mounted on the housing and connected to the brushes for simultaneously rotating them in opposite directions, roller means mounted on the housing along an axis which is parallel to and between the axes of the brushes for at least in part retaining the central portion of the housing at any one of a plurality of preslected elevations above the floor with at least the brush in engagement with the floor as said housing is moved relative to the floor and a handle in the form of a tall hollow closed tank having its lower end pivotally attached to the base housing for swinging movement about an axis parallel to said roller axis, air compressor means on the housing, nozzle means in the lower part of the tank, a connection between the nozzle and the air compressor for discharging a stream of air through the nozzle into the lower part of said tank, a foam conduit connecting the upper part of said tank and connected to discharge ports in said recesses for delivering foam from the tank onto said brushes as they rotate, said conduit including a screen inlet within said tank.

5. The machine specified as claim 4 further character-

ized in that said foam conduit includes several spaced screens in succession.

6. The machine specified in claim 4 further characterized in that said foam conduit includes several successively finer screens in succession therein.

7. A carpet and floor cleaning machine comprising a base housing of generally rectangular plan having on the bottom thereof two parallel spaced open-bottomed recesses, cylindrical brushes journaled in each of said recesses for rotation therein, the diameter of said brushes being such in relation to the recesses in which they operate that the tips of the bristles will be below the lower edge of the housing, a motor mounted on an upper part of the housing, said motor having a drive connection to said brushes for simultaneously rotating them in opposite directions, an air compressor on said housing connected to the motor so as to be driven thereby, a combined tank and handle structure comprising a tall closed tank having handles extending from the upper end thereof, the lower end of said tank being pivotally connected to said base housing along an axis which is parallel to and between the axes of said brushes, a plurality of conduits vertically through said housing, and an electrical power cord connected to the upper end of said tank and extending through switch means on the upper part of said tank and thence downwardly through one of said conduits and connected to said motor on the base housing, another of said conduits being connected at its lower end to said air compressor, and connected at its upper end to a valve mounted in the upper portion of said tank and handle structure, an outlet from said valve extending downwardly into the tank portion of said tank and handle structure, and terminating in a discharge port, a foam tube extending into the tank portion of said tank and handle structure, a screen inlet into said foam tube, said foam tube extending downwardly in respect to said tank and handle structure and having its lower end connected to said recesses for delivering foam into said recesses adjacent the said brushes.

8. The machine specified in claim 7 further characterized in that an antrum is provided on the upper portion of the housing above each of the recesses, each of the antrums being connected to the foam tube.

9. The machine specified in claim 7 further characterized in that the tank and handle structure includes an open-topped sheet metal tank and a cap and handle portion axially connected together in pressure-type relationship.

10. The machine specified in claim 9 further characterized in that said conduits form connections between said tank portion of the tank and handle structure and the cap and handle portion thereof for mechanically connecting them together.

11. A carpet and floor cleaning machine having a source of compressed air comprising a base housing having on the bottom thereof an open bottom compartment, a brush journaled in said compartment for rotation therein, the diameter of said brush being in such relation to the compartment in which it operates that the tips of the bristles will be below the lower edge of the housing, a motor mounted on the housing and connected to the brush for rotating said brush, a control handle for controlling the direction of movement of the housing, and means on the machine and connected to the housing for generating and delivering foam into the compartment and onto the brush, said means including a tank for containing a liquid, a plurality of vertically extending conduits, one of said conduits having one end portion opening into the bottom of the tank, and an opposite end connected to the source of compressed air, said one end portion having a plurality of small apertures formed therein to form a multitude of minute bubbles in the liquid in the tank as air is exhausted from the first conduit through said apertures, a second con-

duit having one end portion opening to the interior of the top of said tank above the liquid in the tank, said second conduit terminating in a discharge port that opens into said housing compartment and means in said second conduit adjacent the open end thereof for screening said minute bubbles, said control handle being connected to said means.

12. A carpet and floor cleaning machine comprising a base housing of low silhouette having a linear direction of motion when in use, an open bottomed compartment in said housing generally transverse to said direction of motion, a cylindrical brush journaled in said compartment on an axis transverse to said linear direction of motion and positioned so as to have bristles extending below the walls of said housing, motor means on the housing connected to the brush for rotating said brush, means on the housing for controlling the direction of movement of the housing and generating foam, said last mentioned means including an elongated closed liquid container pivotally attached to the housing at the bottom of said container, the upper part of said container forming a guide handle, air compressor means on the housing and connected to the motor means, foam generating means having a flexible connection to the compressor and extending into said container in the lower part thereof, and conduit means connected to the upper part of the container and extending down to and connected to the compartment in the base housing for delivering foam directly thereinto.

13. The machine specified in claim 12 further characterized in that a plurality of successively finer screens are provided in the conduit means.

14. A scrubbing device for floors, rugs, carpets and the like comprising a brush housing of low silhouette

having a normal direction of motion, a downwardly opening brush compartment therein set transverse to said normal direction of motion, a cylindrical bristle brush rotatably mounted in said compartment so that its bristles brush downwardly below the compartment, a foam generator tank having a normal liquid level and closable filler opening pivoted on the housing on an axis generally parallel to the brush axis, said tank being tall enough to form a guide handle for the housing, hand grips at the top of the tank, an air compressor on the housing a motor on the housing connected to the air compressor and brush for driving them, an air delivery conduit connecting the air compressor and tank and terminating at a foam nozzle in the tank below the liquid level thereof, a foam delivery conduit extending from the upper part of the tank to the brush compartment, said air delivery and foam conduits being sufficiently flexible to permit swinging movement of the tank relative to the housing.

15. The device specified in claim 14 further characterized in that said compartment is shaped to provide a foam delivery orifice along a major portion of the length of the brush.

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