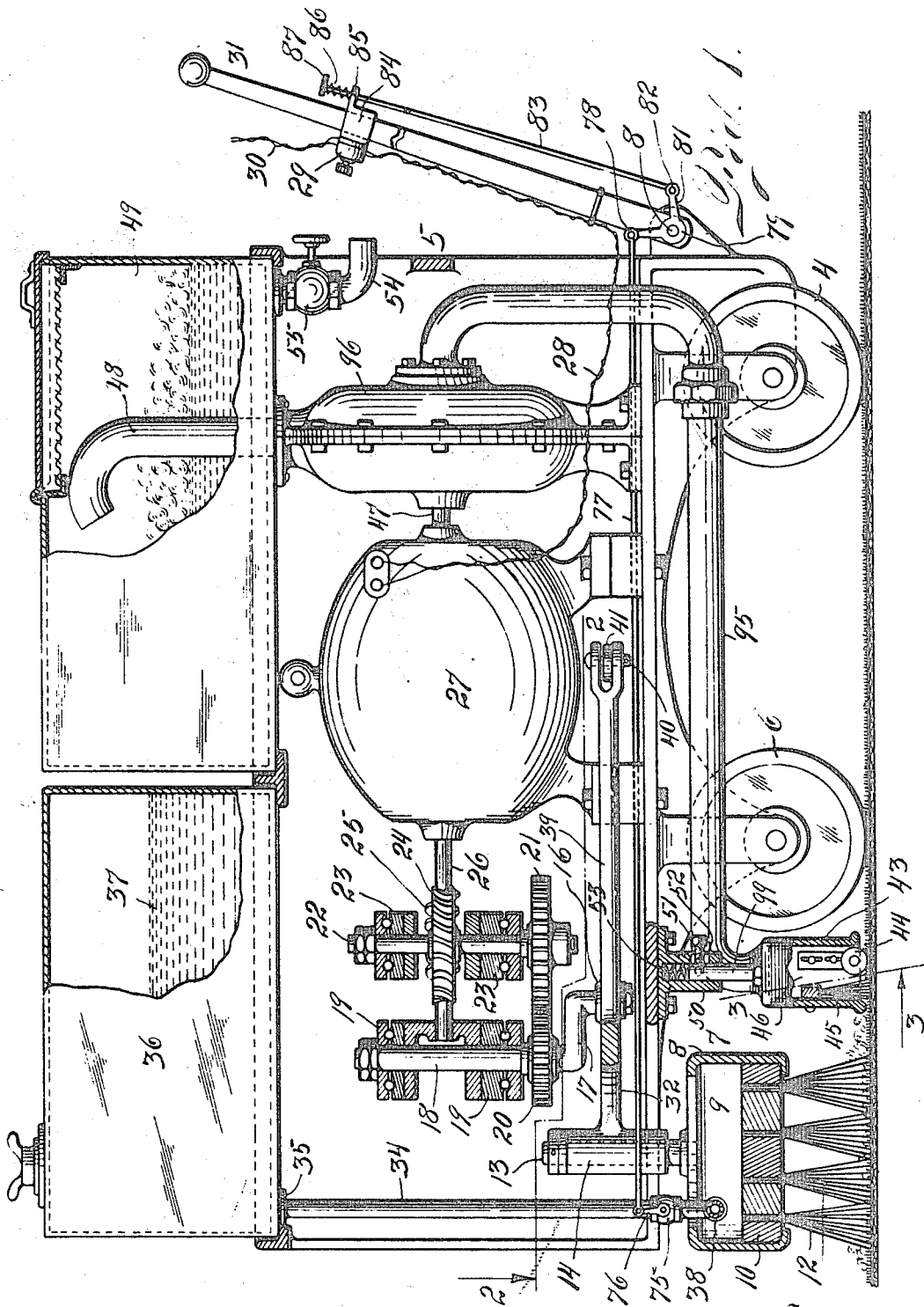


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3 SHEETS—SHEET 1.



Inventor

H. F. Gray.

A. J. Brown  
Attorney

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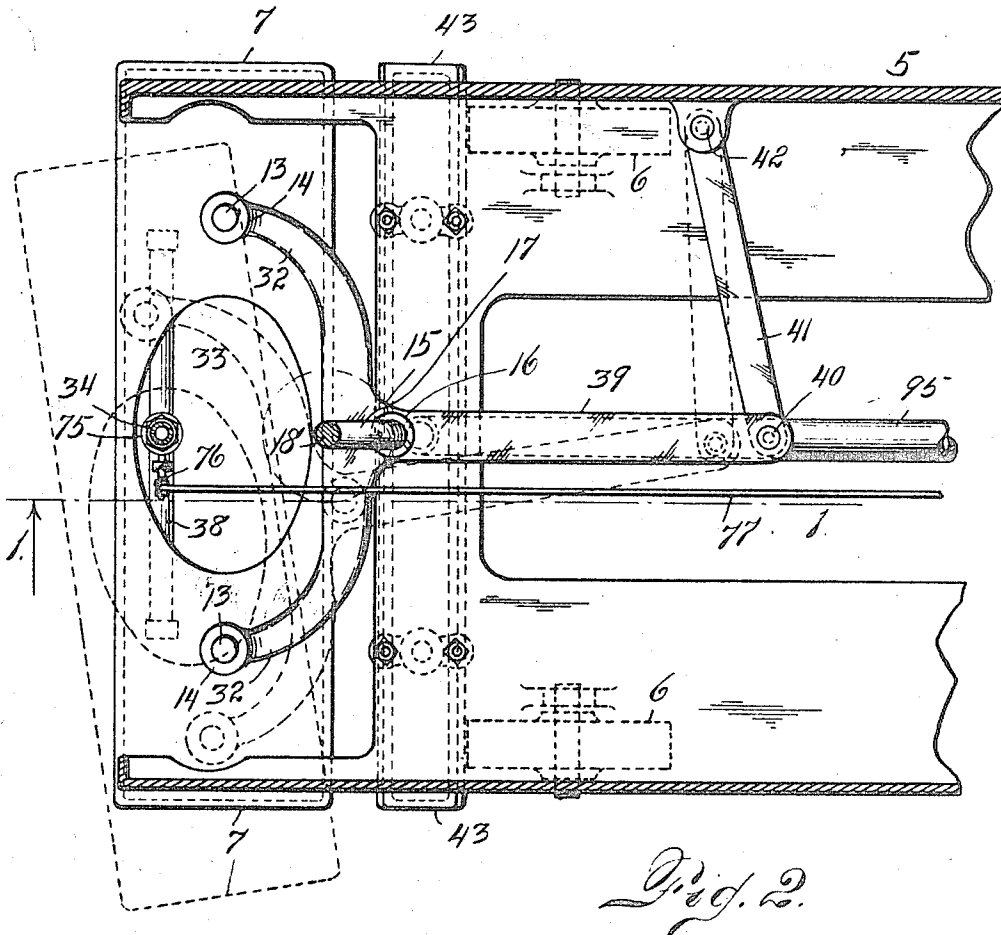
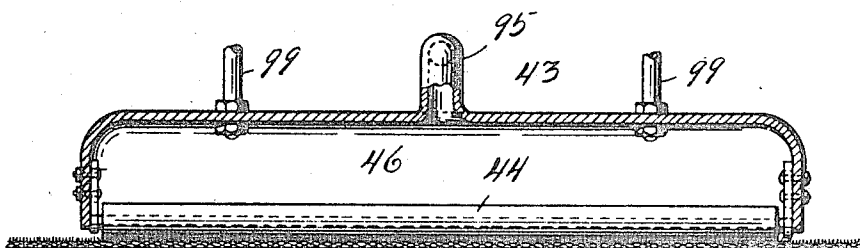


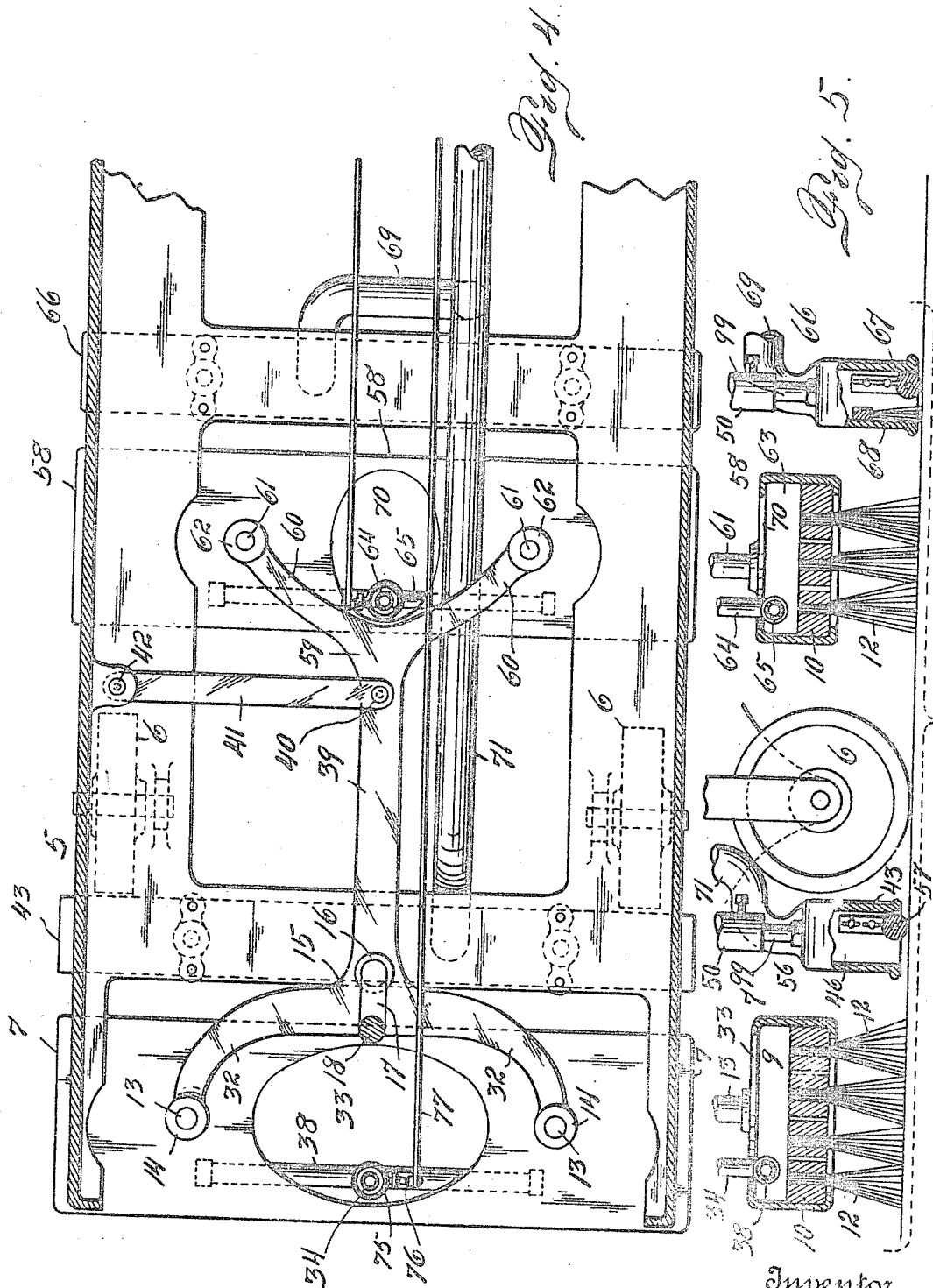
*Fig. 3.*

Inventor  
H. F. Gray.  
By *A. J. Bonin* Attorney

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H. F. Gray.

By

*[Signature]*  
Attorney

# UNITED STATES PATENT OFFICE.

HALLA F. GRAY, OF DENVER, COLORADO, ASSIGNOR TO THE BON AURORA MANUFACTURING AND MACHINE COMPANY, OF DENVER, COLORADO, A CORPORATION OF COLORADO.

## CARPET WASHING AND RINSING MACHINE.

1,240,799.

Specification of Letters Patent.

Patented Sept. 18, 1917.

Application filed January 30, 1917. Serial No. 145,351.

*To all whom it may concern:*

Be it known that I, HALLA F. GRAY, a citizen of the United States, residing at the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Carpet Washing and Rinsing Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in carpet washing and rinsing machines, my object being to provide an apparatus of this character which shall be comparatively simple in construction, economical in cost, reliable, durable and efficient in use.

In my improved machine, I employ a forwardly located brush to which is imparted a sort of gyratory movement. This brush is of the fountain type; and cleaning liquid as a soapy water is fed thereto and percolates through the brush head into the lower bristle portion thereof and supplies the necessary liquid for carpet washing purposes. The peculiar movement which is imparted to this brush, produces a suds upon the carpet and is, therefore, adapted to thoroughly remove the dirt from the woven fabric. In the rear of this gyratory brush, I provide a second cleaning member which consists of a head which extends transversely of the direction of the travel of the machine. This head carries a roller and a small brush, the latter being located in front of the roller and which serves to comb out the nap of the carpet, it being desirable to leave the nap all lying in one direction. The roller of this member of the device engages the carpet with sufficient force to squeeze out the soapy substance which has been left by the forwardly located brush. This member is also connected in any suitable manner with a suction producing apparatus which as illustrated in the drawing, consists of a centrifugal device as a fan which is rotated in a direction to produce a vacuum pull upon the said member, whereby the dirty soapy substance which has been formed by the forwardly located brush by reason of its action upon the carpet, is removed and is

discharged into a tank or receptacle on the machine. The gyratory movement is imparted to the forwardly located brush through the medium of any suitable mechanism, that illustrated in the drawing being an electrical motor which has a speed reducing gearing connection with the brush.

If desired, I may employ between the forwardly located brush and the rearwardly located cleaning member, a rinsing brush, through the medium of which rinsing water is delivered to the carpet and serves by the action of the second brush to thoroughly remove the soapy liquid which has been delivered to the carpet through the medium of the first named brush. Between these two brushes is a roller which acts upon the carpet to squeeze the soapy liquid therefrom, this roller being mounted in a hollow holder and connected with the suction apparatus in any suitable manner.

Having briefly outlined my improvement, I will proceed to describe the same in detail, reference being made to the accompanying drawing in which is illustrated an embodiment thereof. In this drawing:—

Figure 1 is a side elevation partly in section showing my improved machine. The sectional part of this view is taken approximately on the line 1—1 Fig. 2.

Fig. 2 is a section taken on the line 2—2 Fig. 1 looking downwardly.

Fig. 3 is a section taken on the line 3—3 Fig. 1 looking toward the right.

Fig. 4 is a view similar to Fig. 2, but showing a modified form of construction whereby provision is made for rinsing as well as washing the carpet at a single movement of the machine over the carpet.

Fig. 5 is a sort of diagrammatic view illustrating the arrangement of the several members of the structure in the form shown in Fig. 4.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate a suitable frame work which is mounted on front and rear wheels 6 and 4, these wheels being arranged within the limits of the area of the structure so as not to interfere with close work at the corners of the room where the carpet to be cleaned is located. It will be understood that this machine is adapted for cleaning carpets without removing them from from the floor if it is desirable so to do.

It is equally advantageous, however, in cleaning loose rugs which, of course, may be cleaned on both sides if it is preferred to do so. Mounted on the forward part of the frame work of the structure, is a fountain brush which I will designate in its entirety by the numeral 4. This brush consists of a head 8, in the upper portion of which is a chamber 9, the bottom of which consists of a perforated holder 10, in which the bristles' portion 12 of the brush are anchored. The top of the part 8 is equipped with upright posts or spindles 13, each of which engages a sleeve 14 mounted upon a forked or bifurcated member 15 which is pivotally connected, as shown at 16 with a crank 17 formed on an operating shaft 18, the latter being journaled in suitable bearings 19. This shaft 18 is equipped with a fast gear 20 which meshes with a gear 21 fast on a shaft 22 journaled in bearings 23. Mounted on the shaft 22 is a worm wheel 24 which is engaged by a worm 25, carried by a shaft 26 which is the shaft of an electric motor 27, which receives current through the medium of conductors 28 which lead to a switch 29 from which the conductors 30 lead to a suitable source of electricity not shown. The conductors 30 may carry a plug, which when inserted in a socket will supply current to the motor, the current being turned on and cut off through the medium of switch 29 which is mounted on the handle 31 which extends upwardly from the rear extremity of the machine and is grasped by the operator or person handling the machine. It will be understood that this machine when used is moved forwardly over the carpet, preferably in one direction only, in order that the nap of the entire area of the carpet may all be caused to lie in one direction.

The connection 16 of the crank 17 with the bifurcated member 15, is located at the junction of the two arms 32 of the said member. Between the upright posts or spindles 13 of the brush, is located an opening 33 which is preferably elliptical in form. A conduit 34 whose upper extremity is connected as shown in 35 with a tank 36 containing cleaning liquid 37, projects into the chamber 9 of the brush, through the opening 33. As this pipe 34 is relatively stationary on the frame of the machine, the opening 33 must be of sufficient area and of proper shape, to permit the gyratory movement of the brush without interfering with the conduit 34 which supplies the cleaning liquid. The lower extremity of this conduit is preferably equipped with a horizontally disposed member 38 which is located within the chamber 9 and extends lengthwise of the brush for distributing purposes, its lower portion being perforated in order to supply the cleaning liquid in suitable volume for the purpose.

The bifurcated operating member 15, is equipped with a rearwardly extending arm 39 whose rear extremity is pivotally connected as shown at 40 with a link 41, the extremity of the latter remote from the arm 39 being pivotally connected as shown in 42 with the stationary frame work of the machine. This link maintains the bifurcated member 15 in proper coöperative relation with the rest of the structure. Claims covering the brush operating mechanism disclosed in this application are incorporated in my simultaneously pending application, Serial No. 176670.

In the rear of the brush 7 is located a member which consists of a hollow head which carries a roller 44 and a relatively small brush 45. It should be explained that this description applies more particularly to the structure disclosed in Figs. 1 and 2 of the drawing. The hollow head 43, is slightly raised from the nap of the carpet, and the roller 44 which is vertically adjustable is adapted to press downwardly into the nap of the carpet whereby the soapy cleaning liquid is squeezed out of the carpet and brought into position to be removed through the suction producing apparatus with which the hollow head is connected. As shown in the drawing, this structure consists of a conduit 95 whose forward extremity is in communication with the hollow 46 of this member, while the opposite extremity of the conduit is in communication with a centrifugal fan or suction producing member 96 which is operated from the motor 27 through the medium of a shaft 47. A conduit 48 extends upwardly from the casing of the suction producing member 96 and discharges the soapy liquid substance into a tank 49 which is also mounted on the machine. The cleaning member 43 is further connected with the structure by means of two upright posts 99 which enter sockets 50 secured to the frame work of the machine, the posts being connected with the sleeves of the sockets by set screws 51 which pass through openings 52 which allow a slight vertical vibration of the member 43, springs 53 being located in the sockets above the upper extremities of the posts. When the machine is in use, there will be a slight or limited vertical vibration of the member 43, which as illustrated is connected to the forward extremity of the conduit 95.

When this form of my improvement is employed, as the machine is moved forwardly over the carpet or toward the left, referring to Fig. 1, the brush is given a gyratory movement, as indicated by dotted line in Fig. 2, with the result that the cleaning liquid which is supplied to the brush through the medium of the conduit 34 is worked into the carpet forming a soapy lather, whereby the carpet is thoroughly scrubbed, and the

dirt and foreign matter therein loosened. As the machine moves forwardly, the small brush 45 of the cleaning member 43, projects into the bristles or nap of the carpet and combs the latter causing the nap to lie in one direction. The roller 44 also presses into the nap of the carpet and squeezes out the liquid substance which is removed through the conduit 95, the suction producing member 96 and the conduit 48, the latter discharging it into the receptacle 49. The contents of the receptacle 49 will be removed at intervals through an outlet member 54, controlled by a valve 55. When the form of construction illustrated in Figs. 4 and 5 is employed, a member 56 is located in the rear of the brush 7, and carries a roller 57. This member 56 and its roller 57 are substantially of the same construction as the member 43 and the roller 44 heretofore described. This member 56, however, need not be equipped with a brush. In the rear of the member 56 is a second brush 58, which is somewhat smaller than the brush 7. For the operation of this brush 58, the arm 39 is bifurcated at its rear extremity 59, where it branches into 2 arms 60 whose extremities are connected with upright posts 61 which engage sleeves 62 formed on the arms 60, this structure being substantially the same as the connection of the brush 7 with the forward bifurcated extremity of the arm 39. The brush 58 is substantially of the same construction as the brush 7 and the chamber 63 of the brush 58 is supplied with rinsing water through the medium of a conduit 64 which is connected with any suitable source of supply, the lower extremity of the conduit being equipped with a horizontally disposed perforated member 65. In the rear of the brush 58 is located a member 66 which is of the same construction as the member 43 of the construction shown in Fig. 1. In other words, the machine is equipped with apparatus for rinsing as well as cleaning the carpet, so that the entire operation may be accomplished by a single movement of the machine across the carpet. The member 66 is equipped with a roller 67 and a brush 68. These members correspond with the members 44 and 45 of the other form of construction. The member 66 is connected with the suction producing apparatus through the medium of a conduit 69. The conduit 64 which supplies rinsing water to the brush 58, leads from a suitable source of supply and enters the cavity 63 of the brush through an elliptical opening 70 which is elongated in the direction of the travel of the machine, while the opening 33 in the brush 7 is elongated in the opposite direction or transversely of the traveling machine.

When this last form of construction is employed, the brush 7 performs the same

function as heretofore described. The member 56 which is equipped with the roller 57, acts upon the carpet to squeeze out the soapy substance which is removed through the conduit 71 connected with suitable suction producing apparatus. As the machine proceeds, the brush 58 to which is imparted a gyratory movement and which is supplied with rinsing water, serves to remove all of the soapy substance which has been left in the carpet and mixes the same therewith, and the latter is finally removed through the medium of the suction conduit 69 in a manner that will be readily understood from the explanation heretofore given.

Attention is called to the fact that the conduit 34 which supplies washing liquid to the fountain brush 7, is equipped with a valve 75 for controlling the passage of liquid to the said brush. Any suitable means readily accessible to the operator may be employed for regulating this valve. As shown in the drawing the stem of the valve is provided with a crank arm 76 with which is connected the forward extremity of a rod 77, the rear extremity of said rod being pivotally connected as shown at 78 with one arm of a bell crank lever 79, fulcrumed on the frame as shown at 80, the opposite arm 81 of said lever being pivotally connected as shown at 82 with the lower end of an operating rod 83, the latter passing through an opening formed in a bracket 84 mounted on the operating handle 31. Above the rear extremity 85 of the bracket through which the rod 83 passes, a spiral spring 86 is mounted on the rod and located between the part 85 and a stop member 87 located at the top of the rod. This spring places the rod under tension in order to maintain the valve in a predetermined position of adjustment.

Having thus described my invention, what I claim is:—

1. A portable machine for washing carpets and the like comprising a framework adapted to be moved over the carpet or rug to be cleaned and having mounted thereon a fountain scrubber, a squeegee, and a suction nozzle in close proximity and coöperating with the squeegee, the nozzle and squeegee being substantially of the same length and located in the rear of the scrubber.

2. A portable machine comprising a frame, a scrubber movably mounted thereon, means for imparting the scrubbing movement thereto, a suction nozzle mounted on the frame and acting on the carpet in the rear of the scrubber, and a squeegee mounted on the frame, arranged in the rear of the scrubber and in coöperative relation with the nozzle, the squeegee and nozzle being substantially of the same length.

3. A portable machine for washing carpets and the like comprising a framework adapted to be moved over the carpet or rug

to be cleaned and having mounted thereon a fountain scrubber, a squeegee, a suction nozzle substantially coextensive in length with the squeegee, and a nap combing device, the squeegee, the nozzle and the nap combing device being arranged in the rear of the scrubber.

4. A portable machine for washing carpets and the like, comprising a frame movable over the carpet or rug to be cleaned and having mounted thereon a fountain scrubber, a squeegee, and a suction nozzle means in close proximity to and cooperating with the squeegee, the nozzle means and squeegee being located in the rear of the scrubber and the nozzle means being shaped to draw the refuse mixture from approximately all of the scrubbed portion of the carpet or rug engaged by the scrubber and adjacent thereto.

5. A portable machine for washing carpets and the like, comprising a frame, a scrubber movably mounted thereon, means for imparting a scrubbing movement to the scrubber, a suction nozzle means carried by the frame and acting on approximately all of the scrubbed portion of the carpet adjacent the rear of the scrubber, and a squeegee carried by the frame and in the rear of the scrubber and in close proximity to the nozzle and cooperating with the nozzle to force and draw the refuse mixture from the scrubbed portion of the carpet or rug engaged by the scrubber.

6. A portable carpet cleaning machine, comprising a movable frame, a scrubbing brush carried thereby, means for imparting an oscillatory scrubbing movement to the brush, means for feeding a cleansing medium to the brush, a refuse medium receptacle carried by the frame, a suction nozzle means carried by the frame adjacent the rear of the brush for drawing the refuse-cleansing medium from approximately all

of the scrubbed portion of the carpet adjacent the rear of the brush and depositing it in the receptacle, and a squeegee carried by the frame and engaging the carpet at the rear of the brush for forcing the refuse medium from the scrubbed portion of the carpet to the surface thereof and into the path of suction of the nozzle.

7. A portable carpet cleaning machine, comprising a portable frame, a scrubbing brush carried thereby, means for imparting a scrubbing movement to the brush, means for feeding a cleansing medium to the brush, a refuse medium receptacle carried by the frame, a suction nozzle means carried by the frame for drawing the refuse cleansing medium from approximately all of the scrubbed portion of the carpet adjacent and in the path of movement of the brush and depositing it in the receptacle, and a roller means carried by the frame and engaging the carpet for forcing the refuse medium from the nap of the carpet to the surface thereof and into the path of suction of the nozzle means.

8. A portable machine for washing carpets and the like, comprising a frame movable over the carpet or rug to be cleaned, a fountain brush carried by the frame, a suction means carried by the frame and having a nozzle means for drawing the refuse mixture from approximately all of the scrubbed portion of the carpet in a line approximately transverse to the path of travel of the machine, and means carried by the frame for forcing the refuse mixture from the carpet to the surface thereof and into the path of suction of the nozzle means.

In testimony whereof I affix my signature, in presence of a witness.

HALLA F. GRAY.

Witness:

A. EBERT O'BRIEN.