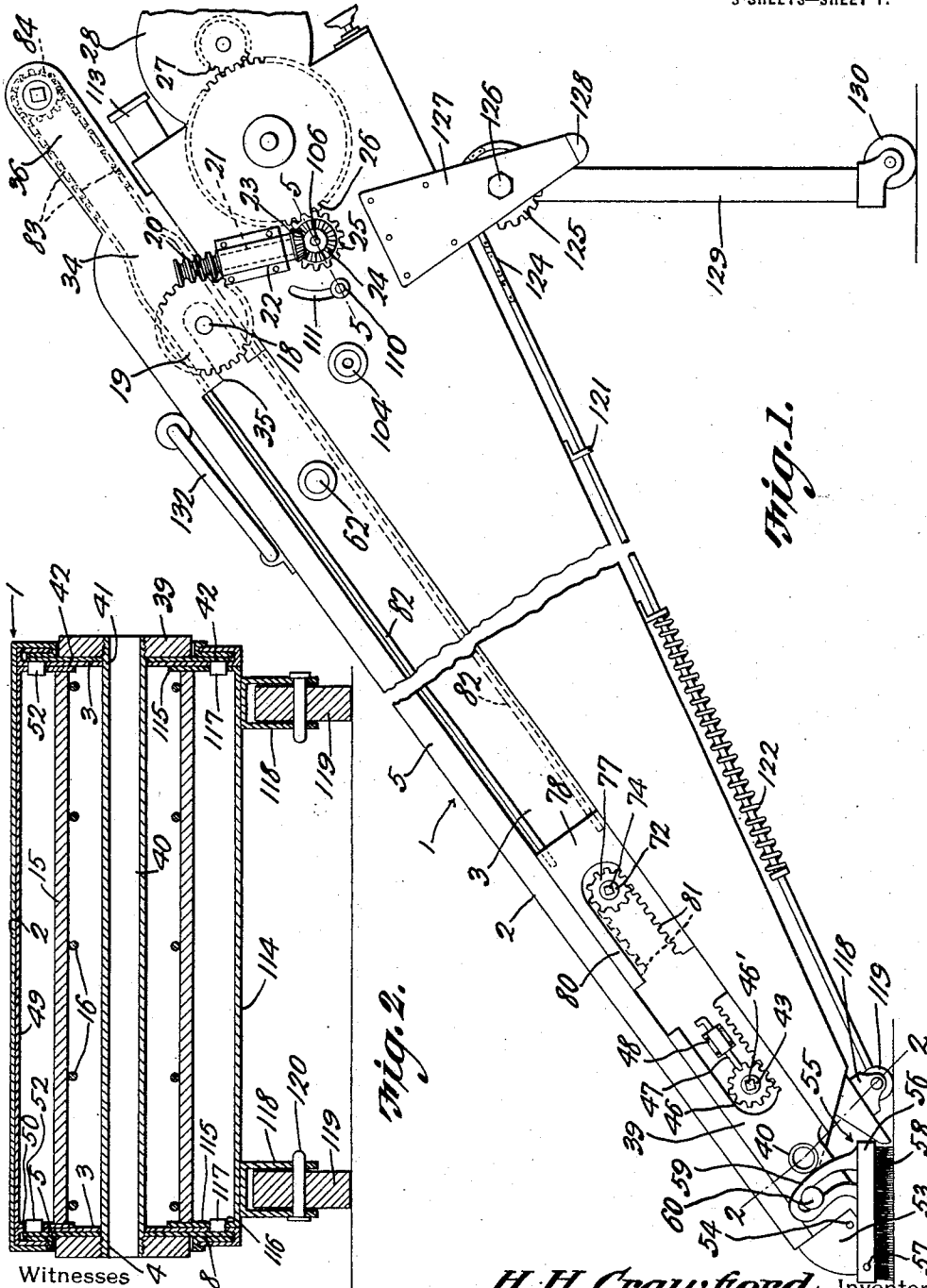


H. H. CRAWFORD.
FLOOR CLEANER.
APPLICATION FILED JUNE 20, 1916.

Patented Mar. 20, 1917.
3 SHEETS—SHEET 1.

1,220,074.



Witnesses

J. R. Tomlin
R. L. Parker

H. H. Crawford Inventor
by *C. A. Snow & Co.*
Attorneys

1,220,074.

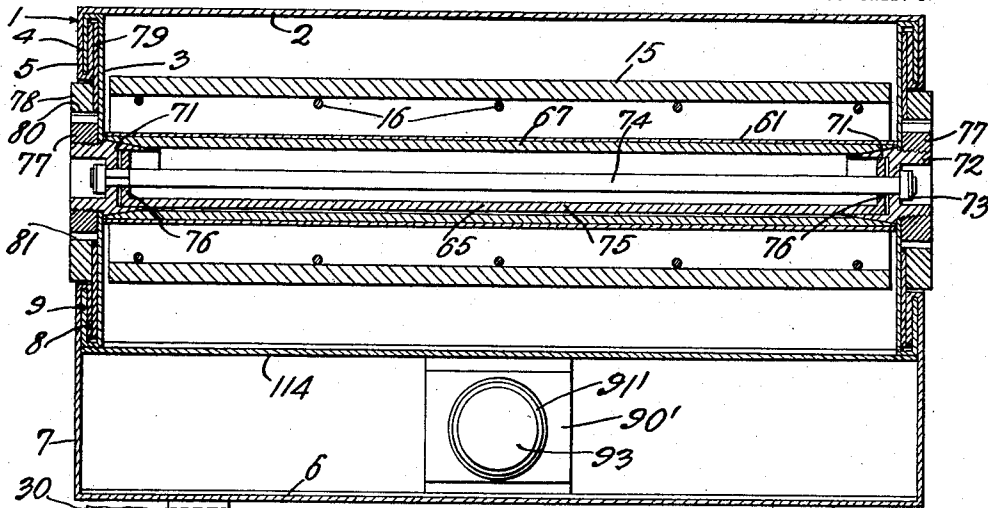
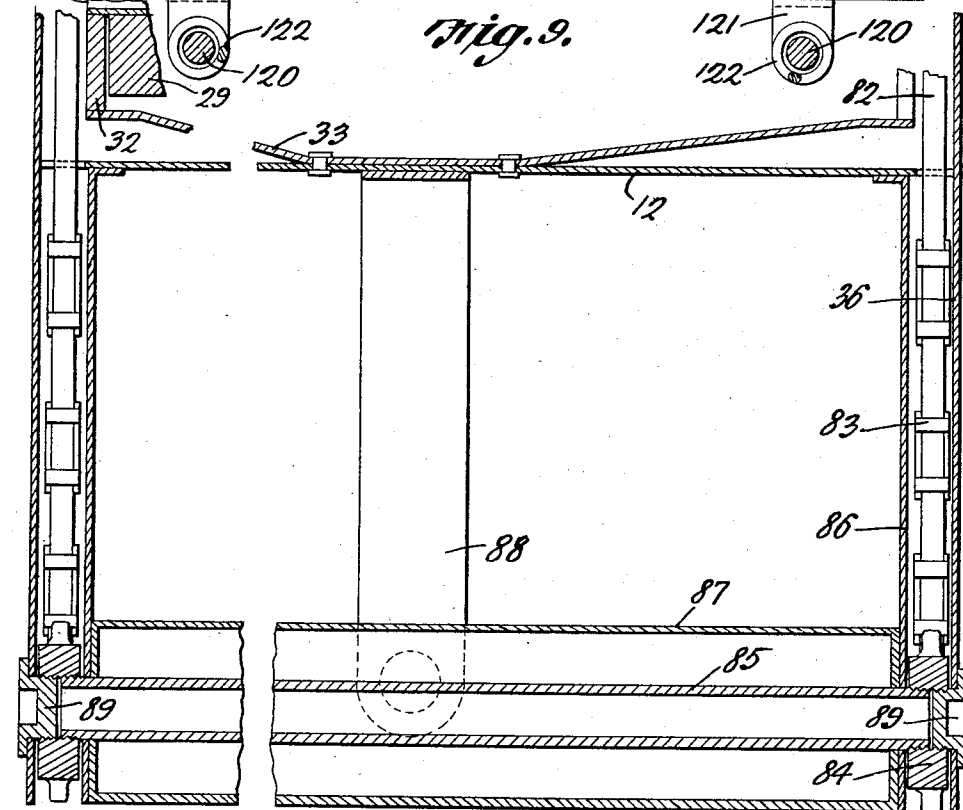
3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.



Witnesses

JR Tomey
RL Parker

RL Parker

Fig. 10.

H. H. Crawford Inventor

by

Chas. Snow & Co.

Attorneys

UNITED STATES PATENT OFFICE.

HEZIKIAH H. CRAWFORD, OF EL PASO, TEXAS.

FLOOR-CLEANER.

1,220,074.

Specification of Letters Patent.

Patented Mar. 20, 1917.

Application filed June 20, 1916. Serial No. 104,767.

To all whom it may concern:

Be it known that I, HEZIKIAH H. CRAWFORD, a citizen of the United States, residing at El Paso, in the county of El Paso and State of Texas, have invented a new and useful Floor-Cleaner, of which the following is a specification.

The present invention appertains to floor cleaners, and is particularly an improvement over the floor cleaners disclosed in my Patent No. 1,181,995, granted May 9, 1916.

It is the object of the invention to provide a novel and improved floor cleaner having an endless belt or apron for scrubbing the floor, means for tightening said belt and mounting it for proper movement, means for supplying clean water to said belt, and means for wringing the dirty water from the belt.

Another object of the invention is the provision in a floor cleaner of the nature indicated of novel means for controlling the clean water valve to control the spray of clean water onto the belt, from the handle.

Another object of the invention is the provision of novel means for catching the dirty water, and for discharging it.

A further object is the provision in a device of the nature indicated in combination with the scrubbing belt, novel means for creating an air suction to assist the cleaning action, said air suction means also being useful for the attachment of an air suction hose of an ordinary vacuum cleaner.

A still further object of the invention is to provide novel means for catching and collecting trash drawn into the device by the air suction fan.

It is another object of the invention to provide in a floor cleaner having the characteristics above noted, novel means, controlled by the angle of inclination of the casing, to regulate the air suction at the lower open end of the casing and the lower portion of the belt.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being noted that changes in the precise embodiment of the

invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a side elevation of the improved floor cleaner, portions being broken away.

Fig. 2 is an enlarged cross section taken on the line 2—2 of Fig. 1.

Fig. 3 is a longitudinal median section of the device, portions being broken away.

Fig. 4 is a detail view of the leg for supporting the upper end of the casing and accompanying parts, portions being broken away.

Fig. 5 is a sectional detail taken on the line 5—5 of Fig. 1.

Fig. 6 is a sectional detail taken on the line 6—6 of Fig. 3.

Fig. 7 is an elevation of one of the slides for carrying the lower belt roller.

Fig. 8 is a top view of the slide illustrated in Fig. 7.

Fig. 9 is an enlarged cross section taken on the line 9—9 of Fig. 3.

Fig. 10 is an enlarged sectional view illustrating the rotatable handle and sprocket chains attached thereto for the adjustment of the clean water valve.

The casing 1, which is constructed of sheet metal or other suitable material embodies a top 2 and side plates 3 which have their upper edges bent back outwardly, as at 4, and interlocked with the bent back and doubled edge portions 5 of the top plate 2. The casing also includes a bottom plate 6 provided at its side edges with upstanding side plates 7 having their upper edges bent back inwardly, as at 8, and interlocked with the lower edge portions 9 of the side plates 3 which are bent back outwardly. The side plates 3 and 7 constitute the sides of the casing, and the top and bottom plates diverge upwardly from the lower open end of the casing. A longitudinal partition 10 is provided in the casing between the top and bottom plates thereof, and the ends of the partition terminate short of the ends of the casing. The lower end of the bottom plate 6 terminates short of the lower end of the casing to provide

an opening 11 in the bottom of the casing extending from the lower open end thereof. The upper end of the casing is closed, as at 12.

5 Disposed within the casing adjacent the upper end thereof is a transverse roller 13, and a transverse roller 14 is disposed at the open end of the casing. An endless belt or apron 15 constructed of suitable fabric or
10 other appropriate absorbent material is trained around the rollers 13—14, and it is preferable to secure to the inner surface of the belt 15, endless cords or flexible elements 16, which run in annular grooves 17 of the
15 rollers 13—14, whereby to hold the belt in shape, since the cords 16 in fitting within the grooves 17 are prevented from shifting transversely. The cords 16 can also receive the strain when the rollers 13—14 are separated for tightening the belt.
20

The upper roller 13 is mounted upon a shaft 18 extending through the side plates 3, and said shaft 18 is operatively connected with a prime mover whereby the belt 15
25 can be operated mechanically, although if desired, the shaft 18 can be rotated manually by means of a crank or other suitable device. As illustrated, a worm wheel 19 is secured to one protruding end of the
30 shaft 18 and meshes with a worm 20 of a shaft 21 journaled in a bearing 22 secured to the respective side plate 7, and the lower end of the shaft 21 has a bevel gear 23 meshing with an idle bevel gear 24 having a spur
35 gear 25 meshing with a larger spur gear 26. The spur gear 26 meshes with a spur gear or pinion 27 attached to the armature or shaft of an electric motor or other prime mover 28. The prime mover 28, which may
40 be an electric motor, a spring motor or the like, when started, will therefore operate the belt 15. The belt can be operated in either direction, but as indicated by the arrow in Fig. 3, the lower run of the belt is moved
45 upwardly.

The water is wrung or squeezed from the upper portion of the belt 15 by means of a spring pressed roller 29 disposed between the end 12 of the casing and the roller 13 and
50 forming with the roller 13 a wringer. The rollers 13—29 as well as the roller 14 can be composed of rubber, wood faced with rubber, or other suitable material. The roller 29 is mounted on a transverse shaft
55 30 mounted for sliding movement relative to the roller 13. Thus, the side plates 3 have longitudinal slots 31 in which bearing blocks 32 are slidable longitudinally toward and away from the roller 13, the upper and
60 lower edges of the blocks 32 being moved to engage the edges of the slots 31 whereby to guide the blocks for proper rectilinear movement. The shaft 30 is journaled through the bearing blocks 32, and it is
65 preferable to provide similar bearing

blocks 32' in the slots 31 through which the shaft 18 is journaled, the blocks 32', however, remaining in place against the lower ends of the slots 31. The blocks 32 are moved downwardly toward the blocks 32' 70 by spring tension, and to this end a double leaf spring 33 is secured between its ends, by means of rivets or otherwise, to the end 12 of the casing and its free terminals bear against the upper ends of the blocks 32 to 75 force said blocks downwardly, whereby to press the roller 29 against the belt 15. Consequently, when the belt is operated, the water carried by the belt is wrung therefrom as the belt passes between the rollers 80 13—29.

The upper ends of the edge portions 5 of the top plate 2 are provided with wings 34 outside of and concealing the bearing blocks 32—32', said wings 34 having slots 35 for 85 accommodating the shaft 18, and said wings 34 are further provided with brackets 36 projecting longitudinally from the upper end of the casing.

The lower roller 14 is mounted upon a 90 transverse tubular shaft 37, the ends of which are disposed rotatably upon inwardly projecting lugs or studs 38 of slides 39. Said lugs 38 are disposed adjacent the forward ends of said slides 39, and said slides 95 are slidable longitudinally upon the outer sides of the side plates 3 within the longitudinal grooves provided by the reflexed portions 5 and 8. A transverse tubular stay 40 has its terminals threadedly or otherwise en- 100 gaged with the slides 39 between their ends, and the side plates 3 have slots 41 accommodating the stay 40 to permit said stay to move longitudinally with the slides 39. Said stay serves to brace the slides. At- 105 tached to the inner sides of the slides 39 are sheet metal plates 42, the upper and lower edges of which project beyond the upper and lower edges of the slides to work behind the reflexed portions 5 and 8, as seen in Fig. 110 2, whereby to guide the slides for proper longitudinal movement. A transverse shaft 43 is journaled through the side plates 3, and the slides 39 and their plates 42 are provided with recesses 44 extending from 115 their upper ends to accommodate the ends of the shaft 43, the slides 39 being provided with rack teeth 45 along the lower edges of the recesses 44. These rack teeth 45 mesh with gears 46 secured in any suitable man- 120 ner upon the ends of the shaft 43. One or both ends of the shaft 43 or one or both of the gears 46 can have a squared or other suitable portion 46' for the engagement of a wrench or other implement for rotating the 125 shaft 43 and its gears 46, whereby said gears in engaging the rack teeth 45, will move the slides longitudinally in one direction or the other, to thereby adjust the roller 14 carried by said slides, to loosen or tighten the 130

belt. The slides 39 can be held in any adjusted position by means of a latch pin 47 carried by a guide 48 attached to one side plate 3 within the recess 44 of the respective slide 39, said latch pin 47 being movable into and out of engagement with the respective gear 46. When the slides are moved to the desired position, the pin 47 can be moved into engagement with the respective gear 46, thereby preventing the gears from rotating, and therefore holding the slides 39 in place.

A yoke plate 49 is slidable under the top plate 2 adjacent the lower end thereof, and its protruding end is curved downwardly, the side edges of the plate 49 being provided with down turned flanges 50 slidably fitting the inner surfaces of the side plates 3. Said flanges 50 have longitudinal slots 51 receiving inwardly projecting lugs 52 of the side plates 3, to guide the plate 49 for longitudinal movement. The lower or outer ends of the flanges 50 terminate in wings 53, which are riveted or otherwise secured, as at 54, to the outer or lower ends of the slides 39, whereby the yoke plate 49 is movable with the slides 39. The yoke plate 49 carries a pair of side brushes 55, each of which embodies a back 56 disposed horizontally, and having its forward end pivotally connected, as at 57, to the respective wing 53. The backs 56 have downwardly projecting bristles 58 to contact with the floor, and said brushes trail from the pivots 57 and are disposed at the opposite sides of the mouth or lower open end of the casing. The backs 56 of the brushes have upwardly projecting arcuate slotted portions 59 adjacent their rear ends engaging headed studs 60 with which the slides 39 are provided, said studs projecting outwardly from the slides, and serving to prevent the lateral displacement of the brushes, but the brushes can swing upwardly and downwardly to remain upon the floor at the various inclinations of the casing 1. It is evident that when the slides 39 and yoke plate 49 are adjusted, the brushes 55 will be adjusted with them and the roller 14.

Disposed between the upper and lower runs of the belt 15 is a longitudinal clean or fresh water tank 61 of elongated form, provided with any suitable means 62 for filling it, which need not be considered in detail. The upper end of the tank 61 is provided with an air inlet member 63 of tubular form provided with a downwardly facing valve seat 64, and said member 63 houses a ball valve 65 which is seatable upwardly against the seat 64 to provide a check valve, permitting air to enter the upper end of the casing, but preventing the escape of air therefrom. The valve 65 is retained within the lower portion of the member 63 by a ring 66 secured therein. The lower end of the

tank 61 is provided with water spraying means for delivering the water either against the upper or the lower run of the belt 15. For this purpose, a transverse tubular valve casing 67 is secured within and forms a part of the lower end of the tank 61, and is provided at its rear side with an opening 68 for receiving water from the tank 61. The casing 67 is provided with apertures 69 directed toward the upper run of the belt 15, and with apertures 70 directed toward the lower run of the belt. Tapered members 71 fit within the tapered ends of the casing 61, to prevent leakage, and have outstanding portions 72 projecting through the side plates 3.

The members 71 have partitions 73 between their ends connected by a longitudinal rod 74 which holds the members 71 in place, said members being rotatable. A longitudinal valve 65 of arcuate cross section fits within the casing 67 and has its ends 76 engaged with the rod 74 within the members 71, whereby when said members are rotated, the valve 75 will be moved likewise. When the valve 75 is moved downwardly, it closes the apertures 70 so that the water passes through the apertures 69 in jets against the upper run of the belt 15, and when the valve 75 is moved to its uppermost position, it closes the apertures 69 and opens the apertures 70, whereby the water is delivered in jets onto the lower run of the belt. When the valve 75 is moved to an intermediate or foremost position, it closes both sets of apertures, to prevent the discharge of water from the tank 61.

As a convenient means for controlling the valve 65, gears 77 are secured upon the extensions 72 of the members 71, and slides 78 are provided for rotating said gears. Said slides 78 are slidable within the longitudinal grooves provided by the reflexed portions 5 and 8 upon the outer sides of the side plates 3, and plates 79 are secured to the inner sides of the slides 78 and their upper and lower edges project beyond the upper and lower edges of the said slides and work behind the reflexed portions 5 and 8, for guiding said slides for longitudinal movement. The slides 78 and their plates 79 are provided with longitudinal recesses 80 extending from their lower ends to accommodate the gears 77, and said slides have rack teeth 81 along certain edges of the recesses 80 meshing with the gears 77, whereby when the slides 78 are moved, this will rotate the valve 75, which can be rotated in either direction. A pair of longitudinal rods 82 adjacent the outer sides of the side plates 3 below the portions 5 have their lower ends attached to the slides 78, and said rods project between the side plates 3 and wings 34 and project along the inner sides of the brackets 36, having their upper ends attached to sprocket chains 83 which are secured to and adapted

to be partially wound upon sprocket wheels 84 threadedly or otherwise engaged upon the ends of a transverse shaft 85. Said shaft 85 has its terminals journaled through brackets 86 attached to the end 12 and disposed upon the inner sides of and parallel with the brackets 36. The sprocket chains 83 are disposed between the brackets 36 and 86, and a cylindrical handle 87 is secured upon the shaft 85. A spring or catch 88 is attached to the end 12 of the casing and is engageable with the handle 87 to hold it in any position to which it is rotated, and plugs 89 are engaged with the sprocket wheels 84 and have flanges overlapping the outer sides of the brackets 36 to hold the parts assembled. One chain 83 extends over its sprocket wheel 84 while the other sprocket chain 83 extends under its sprocket wheel, and the rack teeth 81 of the two slides 78 are in reversed position, whereby the slides 78 and rods 82 move in opposite directions when the handle 87 is rotated. By rotating the handle in one direction, the water spray valve can be rotated in one direction, and by rotating the handle in the opposite direction, the valve will be operated in the reverse direction, it being noted that as one chain 83 unwinds from its sprocket wheel the other chain is wound up, and through the medium of the rack and pinion connections between the rods 82 and valve, the valve will be operated positively from the handle. In this manner, by rotating the handle, the valve 75 can be adjusted as desired to spray the water onto the upper or lower run of the belt, or to establish or cut off the flow of water. The valve is thus readily controlled from the handle.

The lower end of the partition 10 is provided with a downturned portion 90' secured to the bottom plate 6, to provide a collecting chamber 133 for the dirty water, the lower end 90' of said chamber having a tapered or frusto-conical spout or nozzle 91' providing a seat for a conical or tapered valve 93. There is a plate 92 extending from the bottom plate 6 to the nozzle 91' whereby the water will drain readily from the chamber 133 through said nozzle when the valve 93 is unseated, said valve seating downwardly to normally prevent the discharge of the dirty water. When the valve 93 is unseated, the water from the chamber 133 can flow through the nozzle 91' onto the bottom plate 6 below the nozzle 91', and can flow from said plate 6 through the opening 11 into a receptacle for catching the dirty water. The valve 93 has a stem 94 projecting longitudinally above the bottom plate 6 and extending through the upper end 12 of the casing, being provided at its rear end with a knob or handle 95 for enabling the valve 93 to be unseated conveniently. The valve 93 is normally seated under the influence of a coiled wire expansion spring

96 surrounding the stem 94 and confined between the end 12 of the casing and a collar 97 secured upon the stem 94.

An arcuate plate 98 is secured within the casing adjacent the upper end 12 thereof, and a longitudinal plate 99 having apertures adjacent its lower end, is also secured within the casing adjacent but slightly above the bottom plate 6. The plate 98 extends from the end 12 of the casing to a point between the lower end of the chamber 133 and the end 12 of the casing, and the lower end of the plate 99 has an upturned portion 100 attached to the partition 10 and provided with apertures. There is an arcuate plate 101 opposite the plate 98 and projecting downwardly from the forward end of the partition 10, and the plate 99, partition 10, portion 100 and plate 101 define a trash collecting chamber 102, while the plates 98, 99 and 101 define a fan chamber 103. The chamber 102 is disposed within the upper portion of the chamber 133 and is adapted to catch and hold trash delivered into the chamber 102, while the water can drain from the chamber 102 into the chamber 133. The casing has a suitable outlet 104 communicating with the chamber 102, to permit of the escape of the air to the atmosphere, and said outlet means 104 is preferably such, that it is opened only when the pressure of air reaches a certain amount, whereby the air outlet will be closed in the absence of air pressure in the chamber 102.

Rotatable within the chamber 103 is a fan 105 having radial blades, and carried by a transverse shaft 106 journaled through the side plates 7 adjacent the upper end 12 of the casing, the gear 25 being secured upon one end of this shaft 106, whereby when the motor 28 is operated, the fan 105 will be rotated. The fan 105 normally rotates in the direction of the arrow in Fig. 3, when the machine is in operation. There is a longitudinal air passage 107 between the lower run of the belt 15 and the partition 10 extending from the upper portion of the fan 105 to the mouth or lower open end of the casing, and when the fan is rotated, air is sucked up the passage 107 along the lower run of the belt, whereby the air suction assists in the dirty water being carried upwardly into the casing as well as dirt and stray particles, the fan 105 delivering the water and trash into the chamber 102, from which the water percolates into the chamber 133.

The air suction is controlled by an arcuate shutter 108 disposed between the plate 101 and the fan 105, and having the radial ends 109 rotatably embracing the shaft 106 adjacent the sides of the casing, whereby the shutter 108 can be oscillated for opening and closing the upper end of the passage 107. A knob 110 works within an arcuate

slot 111 in one side plate 7 and is attached to one end 109 of the shutter 108, whereby said shutter can be readily adjusted from the exterior, to control the flow of air from the passage 107 into the chamber 103.

The plate 98 has a tubular extension 112 normally closed by a removable cap 113, and said tubular extension provides an air inlet, whereby when the cap 113 is removed, the hose of an ordinary vacuum cleaner can be attached to the extension 112, and by shutting the shutter 108, air will be sucked through the extension 112, permitting of the use of an ordinary vacuum cleaner.

A longitudinal throttle plate 114 has its upper end overlapping the lower end of the partition 10 and the lower end of the plate 114 extends to the floor in rear of the roller 14, the side edges of said throttle plate 114 having upturned flanges 115 provided with longitudinal slots 116 receiving guide lugs 117 projecting inwardly from the side plates 3 of the casing.

Attached to the lower surface of the plate 114 adjacent the lower end thereof is a pair of inverted U-shaped brackets 118 having rollers or wheels 119 mounted for rotation therein, to run upon the floor for supporting the lower portion of the plate 114. This throttle plate 114 is adjusted longitudinally whereby at any inclination of the casing, the lower end of the plate 114 will be arranged close adjacent to the floor, to confine the air suction to a limited area adjacent the roller 14.

In order to adjust the throttle plate 114, a pair of longitudinal rods 120 have their lower ends engaged with the brackets 118, and provide the axles for supporting the wheels 119, and said rods 120 are slidable through guide ears 121 depending from the bottom plate 6. The rods 120 are under spring tension, and to this end, coiled wire expansion springs 122 surround said rods and are confined between certain ears 121 and collars 123 secured upon the rods 120, whereby said springs tend to move said rods downwardly to move the lower end of the throttle plate 114 adjacent or against the floor. Attached to the upper or rear ends of the rods 120 are short sprocket chains 124 secured to and adapted to be wound partially upon sprocket wheels 125 secured upon a transverse rock shaft 126 adjacent the ends thereof, the ends of said rock shaft being journaled in hangers 127 secured to the side plates 7 near the upper or rear end of the casing. The hangers 127 have buffers 128 at their lower ends to rest upon the floor when the casing is let down, as when not in use. A leg 129 has its upper end attached to the rock shaft 126 between the ends thereof, and is provided at its lower end with a caster 130 to run upon the floor, for supporting the upper or rear portion of the casing. The

rock shaft 126 or the upper end of the leg 129 has a stop finger 131 to contact with the bottom plate 6 for limiting the movement of the leg 129 when swung into substantially a vertical position. When the device is not in use, the leg 129 can be swung forwardly and upwardly against the bottom plate 6 and when the leg 129 is swung downwardly and rearwardly, the sprocket wheels 125 are rotated to permit the chains 24 to unwind therefrom, whereby the rods 120 and shutter plate 114 are moved downwardly by the springs 122, but when the leg 129 is moved forwardly, the chains 124 are wound upon the sprocket wheels 125 to move the rods 120 and plate 114 upwardly or rearwardly. Consequently, when the upper end of the casing is supported by the leg 129, by depressing the upper end of the casing, the leg 129 will be swung forwardly, and this will result in the shutter plate 114 being retracted slightly, to permit of the downward movement of the casing, the plate 114 being moved proportional to the downward movement of the rear end of the casing, whereby the lower end of the plate 114 is maintained in close relation with the floor.

The operation of the machine will no doubt be obvious from the foregoing, taken in connection with the drawings, but briefly stated it is as follows: After the motor 28 is started, so that the belt 15 and fan 105 are operated, the valve 79 can be opened and properly positioned, by operating the handle 87, to spray the proper run of the belt 15, and said belt in being actuated and in resting upon the floor below the roller 114 will provide a scrubbing action. The wheels 119 and caster 130 permit the casing to be readily moved about upon the floor, fresh water being continually supplied to the belt, or intermittently as needed, and the dirty water being wrung from the belt by the roller 29. The fan 105 creates an air suction to assist in the removal of the water and trash from the floor, and the water and trash are delivered by the fan 105 into the chamber 102, the water passing on into the chamber 133. The chambers 102 and 133 can be emptied from time to time as necessary. The brushes 55 serve to confine the air suction between the ends of the rollers 14, and also prevent the water from running to the opposite sides from the roller. Said brushes 55 remain horizontal when the casing 1 is swung to different angles, and when the casing is swung to different inclinations, the shutter plate 114 is automatically adjusted as above described.

A suitable handle 132 can be attached to the top plate 2 for lifting or carrying the machine.

Having thus described the invention, what is claimed as new is:

1. A floor cleaner embodying a casing, up-

per and lower rollers carried thereby, an endless belt trained around said rollers and adapted to rest upon the floor below the lower roller, a water tank supported by the casing between the upper and lower runs of the belt, and spraying means carried by the lower portion of said tank including a valve, operable to direct the water toward either run of the belt.

2. A floor cleaner embodying a casing having an open end, rollers carried by the casing adjacent the ends thereof, an endless belt trained around said rollers, the belt being adapted to contact with the floor below that roller adjacent the open end of the casing, brushes pivotally connected with the open end of the casing and trailing from their pivots adjacent the ends of said roller, and means carried by the casing for closing the space between the lower end thereof and the floor behind said roller.

3. A floor cleaner embodying a casing having an open end, rollers carried by the casing adjacent the ends thereof, an endless belt trained around said rollers, the belt being adapted to contact with the floor below that roller adjacent the open end of the casing, brushes pivotally connected with the open end of the casing and trailing from their pivots adjacent the ends of said roller, a throttle-plate carried by the casing and adjustable to bring its lower end close adjacent to the floor in rear of said roller, and air suction creating means carried by the casing for sucking air from the floor between said roller and throttle-plate.

4. A floor cleaner embodying a casing, rollers carried thereby, one end of the casing being opened and one roller being disposed adjacent said open end, an endless belt trained around the rollers, an adjustable throttle-plate carried by the casing below the belt having its lower end arranged adjacent said roller, and air suction creating means carried by the casing for sucking air from the floor between said throttle plate and belt, and means carried by the casing for closing the space at the ends of said roller and throttle plate.

5. A floor cleaner embodying an inclined casing having its lower end open, rollers carried by the casing, one adjacent the open end of the casing, an endless belt trained around said rollers, a throttle-plate carried by the casing for adjustment to and from the floor adjacent said roller, air suction creating means carried by the casing for sucking air from the floor between the belt and throttle-plate, means carried by the casing to rest upon the floor operatively connected with the throttle-plate and operable when the angle of inclination of the casing is changed for adjusting the throttle-plate to maintain the lower end thereof in close relation with the floor, and means carried by

the casing for closing the space at the ends of said roller and throttle plate.

6. A floor cleaner, embodying an inclined casing having its lower end open, rollers carried by the casing, one adjacent the open end of the casing, an endless belt trained around said rollers, a throttle-plate carried by the casing for adjustment to and from the floor adjacent said roller, air suction creating means carried by the casing for sucking air from the floor between the belt and throttle-plate, a swinging leg connected to the casing for supporting the upper portion thereof, an operative connection between said leg and throttle-plate operable when said leg is swung upon the floor by the vertical movement of the casing to automatically adjust the throttle-plate to maintain the lower end thereof in close relation with the floor and means carried by the casing for closing the space at the ends of said roller and throttle plate.

7. A floor cleaner embodying a casing having an air suction passage, an endless belt mounted within the casing and adapted to contact at one portion with the floor at one end of the casing, said passage extending along the belt from said portion thereof, the casing having a collecting chamber, and a fan carried by the casing for sucking air from said passage and delivering air, water and trash into said chamber.

8. A floor cleaner embodying a casing having an air suction passage, an endless belt mounted within the casing and adapted to contact at one portion with the floor at one end of the casing, said passage extending along the belt from said portion thereof, the casing having a collecting chamber, a fan carried by the casing for sucking air from said passage and delivering air, water and trash into said chamber, and an oscillatory shutter movable partially around the fan into and out of said passage.

9. A floor cleaner embodying a casing having a lower open end, a pair of rollers carried by the casing one adjacent to the open end thereof, an endless belt trained around said rollers, said casing having a partition below the belt and defining an air suction passage between said partition and belt extending along the belt from said roller, the casing having a collecting chamber below the partition, a rotatable fan within the casing at the upper end of said passage for sucking air from said passage and delivering it into said chamber, said fan having a shaft journaled in the casing, and a shutter having portions pivotally engaging said shaft, the shutter being movable partially around the fan between it and said partition into and out of said passage.

10. A floor cleaner embodying an inclined casing having a lower open end, upper and lower rollers carried by the casing, the lower

roller being disposed adjacent the lower open end of the casing, an endless belt trained around the rollers, means for wringing the water from the belt adjacent the upper roller, means for supplying fresh water to the belt, the casing having a partition below the belt extending to the lower roller providing an air suction passage between said partition and belt, the casing having a collecting chamber below said partition, and a rotatable fan within the casing at the upper end of said partition below the upper roller for sucking air from said passage and delivering air, water and trash into said chamber, the casing having means closing the sides of said passage.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

HEZIKIAH H. CRAWFORD.

Witnesses:

ROSE HOWELL,
R. B. REDIC.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."