

W. D. REID.  
SCRUBBING MACHINE.  
APPLICATION FILED AUG. 5, 1910.

990,775.

Patented Apr. 25, 1911.

3 SHEETS—SHEET 1.

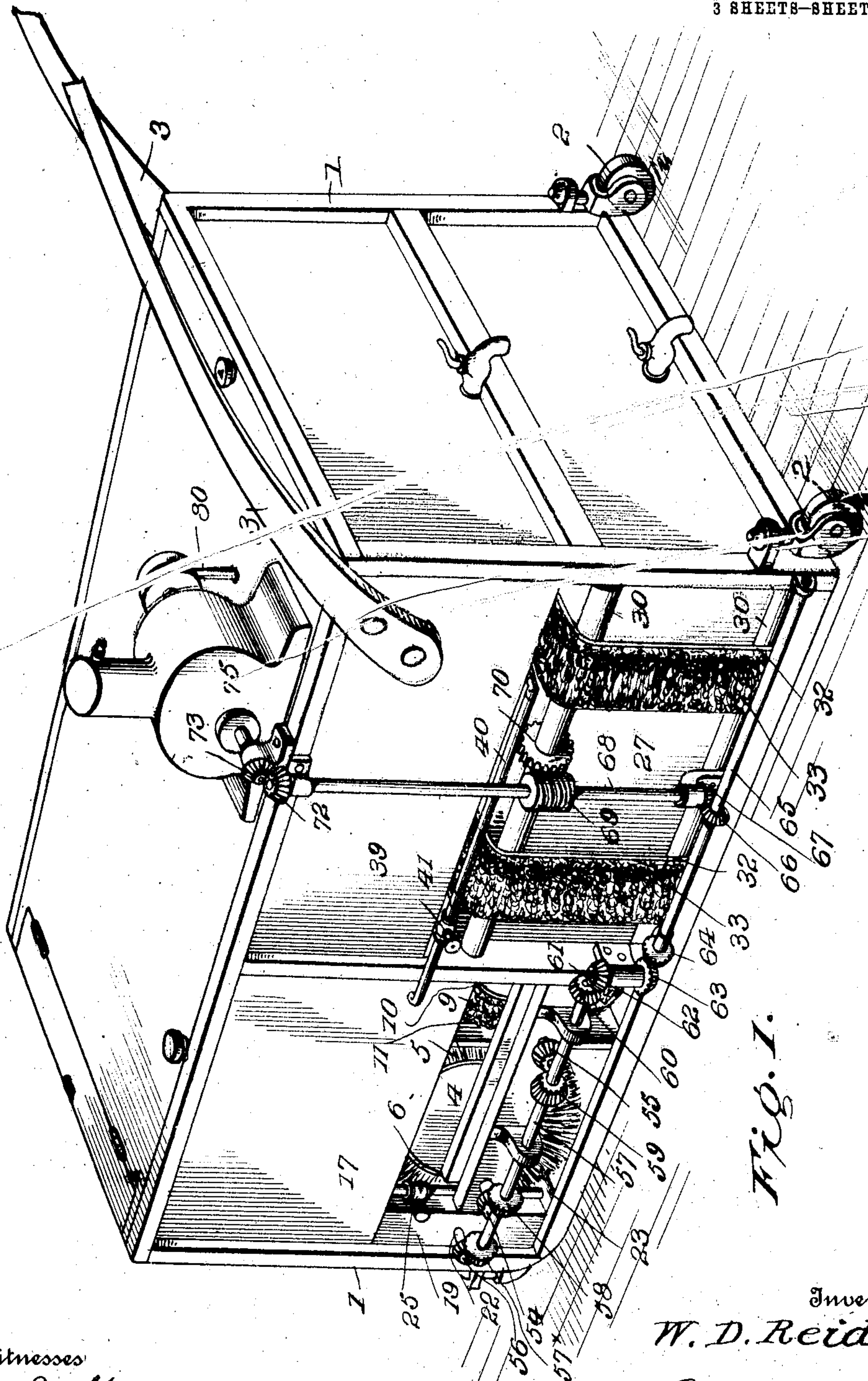


Fig. 1.

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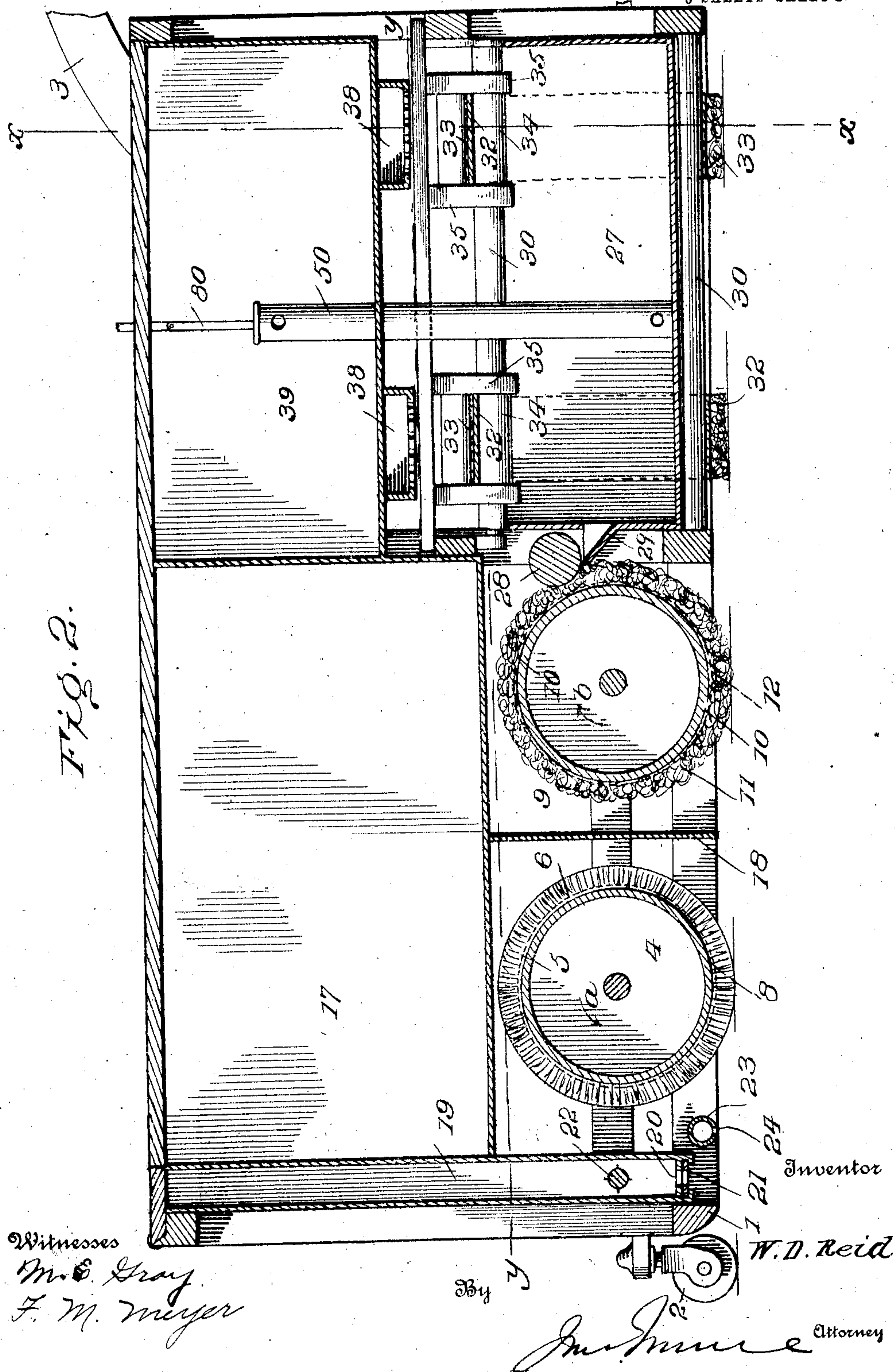
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3 SHEETS—SHEET 3.

Fig. 3

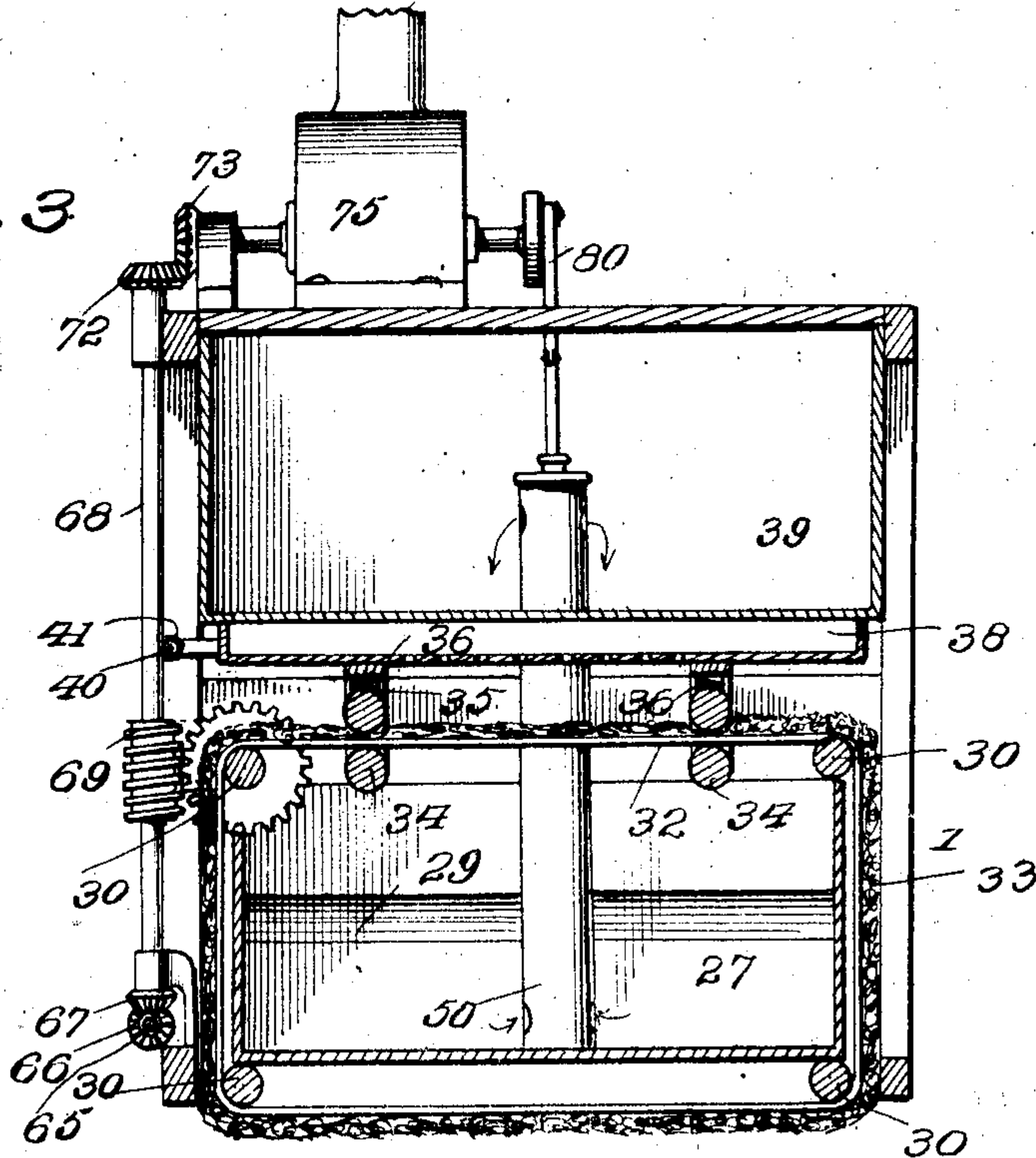
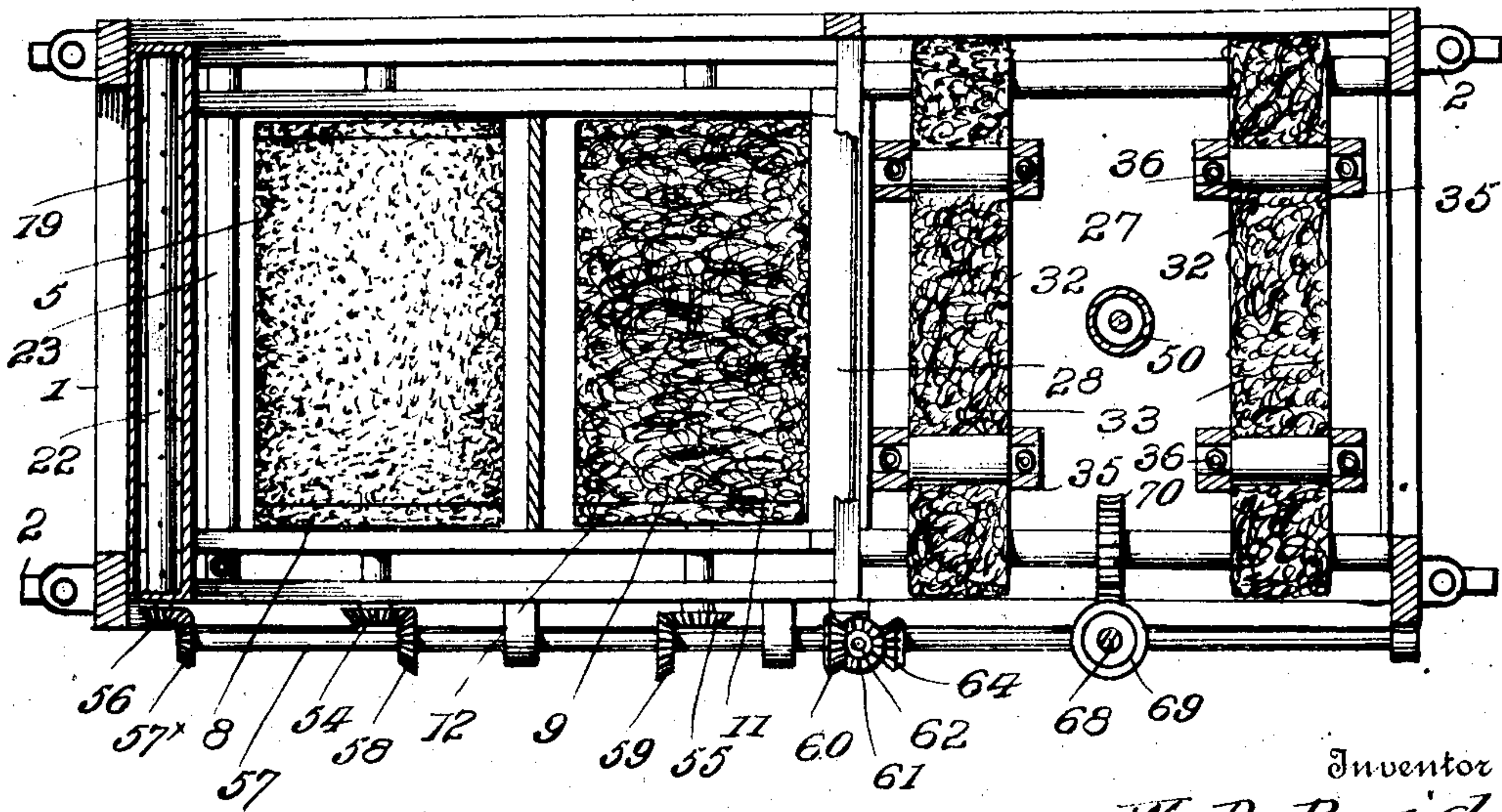


Fig. 4.



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# UNITED STATES PATENT OFFICE.

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SCRUBBING-MACHINE.

990,775.

Specification of Letters Patent.

Patented Apr. 25, 1911.

Application filed August 5, 1910. Serial No. 575,850.

*To all whom it may concern:*

Be it known that I, WALKER DEE REID, a citizen of the United States, residing at Jackson, in the county of Madison and State of Tennessee, have invented certain new and useful Improvements in Scrubbing-Machines; and I do hereby 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 letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in a scrubbing apparatus.

The object of the invention is to provide means for distributing on the surface or floor to be cleaned, a powder, and I provide a brush to scrub the floor to loosen the dirt, and locate mops to subsequently mop the surfaces to effectually remove the dirt.

A further object of the invention is to provide an apparatus to scrub and mop floors, and associate therewith tanks for supplying the brush and mops with water, and tanks to receive the dirty water after the scrubbing operation is completed.

The invention also relates to the specific details of construction and arrangement of parts which will be hereinafter described, and particularly pointed out in the claims.

In the drawings: Figure 1 is a perspective view of my invention. Fig. 2 is a longitudinal central section of the same. Fig. 3, is a transverse section approximately on the line  $x-x$ , Fig. 2. Fig. 4 is a horizontal section on the line  $y-y$ , Fig. 2.

The same numerals refer to like parts in all the figures.

1 indicates a frame of suitable construction, supported on casters 2, and provided with a handle 3. In the forward part of the frame, and near the bottom of the latter is a drum 4, over which fits a brush 5. The brush is preferably in the form of a flexible base 6, from which the bristles extend, and is clamped on the periphery of the drum 4, by an appropriate fastening means, bands 8, being shown in the drawings. In rear of the drum 4, is a revoluble mop 9, comprising a drum around which is a flexible base 10, having attached thereto a sponge 11. The flexible base 10, is secured to the drum 9, by

clamps or other suitable means indicated at 12.

The purpose of forming the brush and mop detachable, is to permit of the ready and convenient removal, and substitution of another, should either become worn or injured.

A partition 18, extends across the frame between the brush and mop to prevent the water from the brush splattering to the mop, or vice versa.

Located between the front of the frame 1, and the front of a clear water tank 17, is a compartment 19, to receive cleaning powder or the like agent used in scrubbing. In the bottom of this compartment are outlet openings 20, for the passage of the powder, and controlled by a valve 21. A short distance above the bottom of the compartment is a rotary agitator 22, to assist in forcing the powder to the bottom and thereby prevent clogging or choking of the openings.

Between the bottom of the compartment 19, and the rotary brush 5, and close to the plane of the floor, is a horizontally disposed pipe 23, provided with numerous perforations 24, and connected with the clear water tank 17. The water passing through the pipe drops on the floor and mixes with the powder preparatory to the scrubbing action by the brush, 5. The water passing through the pipe is controlled by a cock 25.

In rear of the revoluble mop 9, and the clear water tank 17, is a main dirty water tank 27, designed to receive the dirty water from the mops. Between the revoluble mop and the main dirty water receiving tank is a horizontal roll 28, which impinges the mop to squeeze the dirty water from the mop sponge. From the underside of the roll 28, leads an inclined trough 29, leading into the main dirty water receiving tank 27.

Mounted above and below the main dirty water receiving tank are rollers 30, around which pass two transversely movable mops 32—32, in the form of endless belts, to which are attached sponges indicated at 33. Each endless mop passes under and over the main dirty water receiving tank, and to insure of the squeezing of the water from the belt, and to direct it to the tank, I provide two pairs of rolls 34—34 for each mop. Each pair of rolls is supported in a hanger 35, the lower roller being supported in stationary bear-



ings, while the upper roller is yieldingly mounted. Springs 36 normally force the bearings of the upper roll downwardly with sufficient pressure to compress the sponge mop and thereby squeeze the water therefrom. If, perchance the first pair of rolls do not squeeze the water from the sponge the second set will, so as to insure ejecting the dirty water upon each complete cycle of movement of the mops.

To augment the cleansing of the transversely operable mops, they are each sprinkled with clear water from small tanks 38-38, located above the mops, and in planes between the respective pairs of squeezing rolls. These small tanks are attached to the bottom of an auxiliary dirty water receiving tank 39, and the bottoms of these tanks are perforated for the free passage of the water, and they, that is the small tanks, are connected to the fresh water tank 17, by a pipe 40, having a valve 41 to control the passage of the water.

Supported in the bottom of the auxiliary dirty water receiving tank and extending into the main dirty water receiving tank, is a pump 50, designed to pump water from the main dirty water receiving tank to the auxiliary dirty water receiving tank. This I find necessary because of the economy it will enable me to practice, in that the transversely operated mops will not have to be so large and have such a great distance to travel. Therefore, to offset the necessarily small size of the main dirty water receiving tank, I pump the water therefrom into the auxiliary dirty water receiving tank. It will be observed that the water mopped by the revoluble mop 9, in rear of the rotary brush 5, as well as the water mopped by the transversely arranged mops in rear of the apparatus, is all directed into the main dirty water receiving tank, so that ample provision must be made to accommodate all of the water and dirt discharged therein.

On the spindle of the revolving brush is a beveled gear wheel 54, and on the spindle of the revolving mop is a beveled pinion 55, and on the end of the agitator 22 is a beveled pinion 56. Mounted in suitable bearings in the main frame is a horizontally disposed shaft 57 provided with beveled gear wheels 57\*, 58, and 59, which mesh with the beveled gear wheels 54, 55, and 56, whereby to impart the necessary motion to the agitator, brush, and mop. On the end of the horizontally disposed shaft is another gear wheel 60 which meshes with a beveled gear wheel 61 on a short shaft 62 provided on its lower end with a gear wheel 63 which meshes with a gear wheel 64 on a horizontal shaft 65 mounted in the main frame. On the rear end of the shaft 65 is a gear wheel 66 which meshes with a gear wheel 67 mounted on a

shaft 68, adjacent the main and auxiliary dirty water receiving tanks. This shaft is provided with a worm 69 which meshes with a worm gear 70, on one of the horizontally mounted rolls 30, over which the transversely movable mops are mounted. On the upper end of the shaft 68, is a beveled gear wheel 72 meshing with a beveled gear wheel 73 on the main shaft of a gasoline engine conventionally indicated at 75 and mounted on the main frame above the auxiliary dirty water receiving tank.

In operation, the motor is started and through the train of gearing, the agitator in the compartment 19 is revolved and the valve 21 is opened to permit a sufficient supply of powder to drop to the floor. The cock 25 is turned on and the water flows from the pipe 23 to the floor to mix the powdered cleansing material which is in front of the revoluble brush. The revoluble brush 5, revolves in a forward direction indicated by the arrows *a* and scrubs the floor sufficiently to loosen the dirt, and upon further movement of the apparatus the revoluble mop 9 takes up or absorbs the dirty water and sediment, and as the mop revolves in the direction of the arrow *b*, the roller 28 tends to squeeze the sponge and forces the water and dirt therefrom. As the apparatus passes over the surface, the gearing causes the transversely operated mops to move in a plane transverse of the direction of the travel of the machine and the first mop will take up such dirt, or remove the streaks from the floor, as may be left by the action of the revoluble mop, and any moisture or dirty water taken up by the sponge of the first transverse mop will be squeezed out by the first set of transverse rollers 34. The sponge on the transverse mop is thereby cleansed and at the same time, the water passing through the small tanks 38, falls on the sponge, and cleans any dirt or sediment which may remain in the sponge after having passed through the first set of transverse rollers. Upon further movement of the first transverse mop, the second set of rolls cleans the water therefrom and leaves them in a moistened condition, whereby to mop the floor and remove any streaks left thereon by the revoluble mop. This same operation is repeated by the second or rearmost transverse mop, so the floor is effectually cleaned, and by reason of the numerous passes of the sponges they tend to polish the floor or surface as well as clean it. During the time the apparatus is working as described, the motor is operating the pump through a connection indicated at 80, and the dirty water is pumped from the main to the auxiliary receiving tank into which all of the dirty water will eventually be directed.

With a scrubbing machine such as described, considerable time and labor may be



saved, as the entire apparatus is simply pushed over the surface to be scrubbed, and as the motor operates the brush and mops, it will be obvious that the operation will be positive and effective.

The tanks are so arranged as will prevent splashing of the water and will take up the dirty water after the scrubbing operation is completed. Each of the tanks are provided with draw-off cocks and inlet openings for convenience in filling and discharging water when desired.

What I claim is:

1. In a scrubbing apparatus of the class described, the combination of a frame, a revolving scrubber mounted in the frame, a revolving mop mounted in the frame in rear of the revolving scrubber, means for supplying cleansing powder and water in advance of the revolving scrubber, means for squeezing the revolving mop, a dirty water receiving tank in rear of the revolving mop, a trough from the squeezing device to the dirty water tank, and transversely movable mops mounted to pass over and around the dirty water receiving tank.

2. In a scrubbing apparatus of the class described, the combination of a frame, a revolving scrubber mounted in the frame, a revolving mop mounted in the frame in rear of the revolving scrubber, means for supplying cleansing powder and water in advance of the revolving scrubber, means for squeezing the mop, a dirty water receiving tank in rear of the revolving mop, a trough from the squeezing device to the dirty water receiving tank, transversely arranged mops, each of which pass around the dirty water receiving tank, two squeezing devices for each transverse mop located over the dirty water receiving tank, a tank provided with a perforated bottom over each of the transversely arranged mops and between the planes of the squeezing devices, and gearing for operating the revolving brush and the mops.

3. In a scrubbing device of the character described, the combination of a frame, a revolving scrubbing device mounted in the frame, a revolving mop mounted in the frame in rear of the revolving scrubbing device, a compartment in advance of the revolving scrubber to receive a cleansing powder, means for controlling the exit of the cleansing powder, a perforated supply pipe supported in the frame between the compartment and the revolving scrubber, a tank located above the revolving scrubber, a pipe connecting the tank and the aforesaid pipe, a dirty water receiving tank in rear of the revolving mop, squeezing devices interposed between the dirty water receiving tank and the revolving mop, a trough from the squeezing device to the dirty water receiving tank, one or more transversely movable mops pass-

ing around the dirty water receiving tank, squeezing devices for squeezing the mops, said squeezing devices being located over the dirty water receiving tank, means for supplying the transversely movable mops with clear water above the tank, a pipe connecting the latter means with the clear water tank, an auxiliary water receiving tank in the frame, a pump for pumping the water from the main to the auxiliary dirty water receiving tanks, and means for operating the brush, the mops, and the pump.

4. In a scrubbing device of the class described, the combination of a frame, a scrubbing brush, a mop cooperating therewith, a clear water receiving tank above the brush and the aforesaid mop, means in advance of the brush for spreading a cleansing powder to the surface to be cleaned, a pipe interposed between the aforesaid means and the brush for sprinkling the surface with water, said pipe being connected to the clear water tank, a mop in rear of the aforesaid mop which moves in a transverse plane, means for squeezing the latter mop, a tank to receive the dirty water from the mops, and means for operating the mops and the brush.

5. In a scrubbing apparatus of the class described, the combination of a frame, a revolving mop, a fresh water receiving tank, means connecting therewith for sprinkling water in advance of the revolving brush, two endless mops located in rear of the revolving mop, the operative surface of the latter mops being parallel with the axis of the revolving mop, means for squeezing the dirty water from the latter mop, a tank to receive said dirty water, and means for operating the mops and the revolving brush.

6. In a scrubbing apparatus of the class described, the combination of a frame, a scrubbing brush mounted therein, a clear water receiving tank mounted above the scrubbing brush, a compartment in advance of the clear water tank, a transversely arranged perforated pipe in rear of the compartment, means for operating the brush, a dirty water receiving tank supported in the frame in rear of the brush, a series of rolls mounted adjacent the dirty water receiving tank, an endless mop passing over the rolls and around the dirty water receiving tank, two sets of squeezing rolls for the endless mop, one of each set of rolls being yieldably mounted, a tank located above the transversely movable mop, a pipe connecting said latter tank with the clear water receiving tank and means for operating the transversely movable mop.

7. In a scrubbing apparatus of the class described, the combination of a frame, a revolving brush mounted in the frame, a revolving mop in rear of the brush, a partition between the revolving brush and the revolving mop, means for revolving the brush and



the revolving mop in opposite directions, a pipe for sprinkling the surface to be scrubbed in advance of the revolving brush, a clear water receiving tank located above the brush and connected with the pipe, a dirty water receiving tank in rear of the revolving mop, means for squeezing the revolving mop, a trough leading therefrom to the dirty water receiving tank, and a mop moving transversely of the plane of the movement of the apparatus in rear of the revolving mop, means for squeezing the transversely movable mop, and means for moving the mop.

8. In a scrubbing apparatus of the character described, the combination of a frame, a revolving brush mounted therein means for sprinkling powder to the surface to be

cleaned in advance of the revolving brush, a pipe for supplying the surface to be cleaned with water in advance of the brush, a dirty water receiving tank, a mop operable in a plane transverse to the movement of the apparatus, means for squeezing the mop to cause the dirty water to fall into the dirty water receiving tank, and means for operating the mop.

In testimony whereof have signed name to this specification in the presence of two subscribing witnesses.

WALKER DEE REID.

Witnesses:

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JNO. IMIRIE.