Aug. 7, 1934. C. O. ANDERSON-SMEDBERG 1,969,674

SCRUBBING AND MOPPING DEVICE

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Fig. 8.

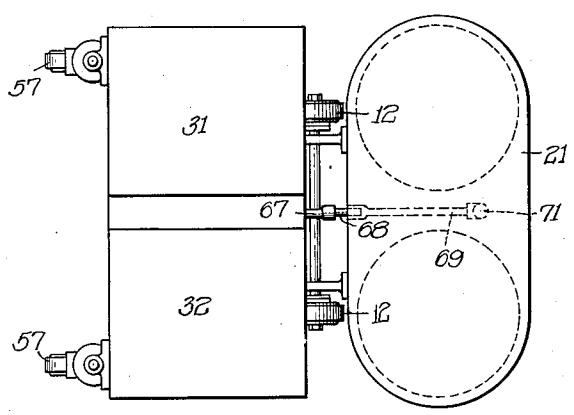


Fig. 1.

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Fig. 2.

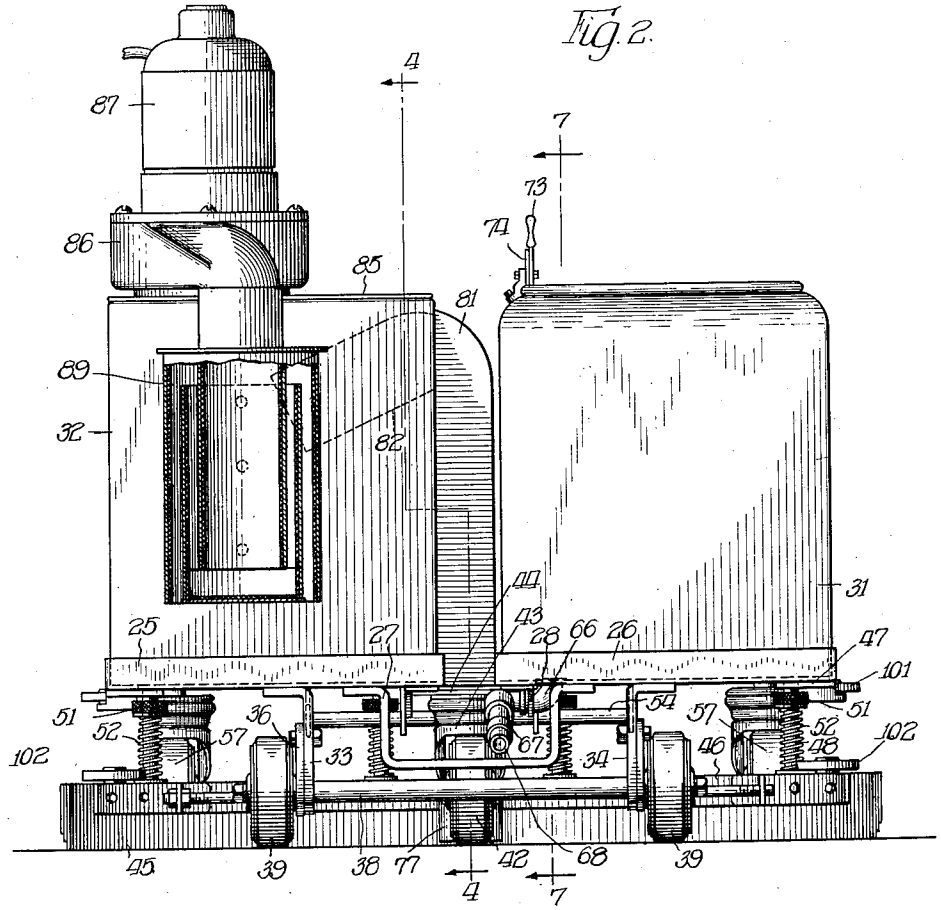
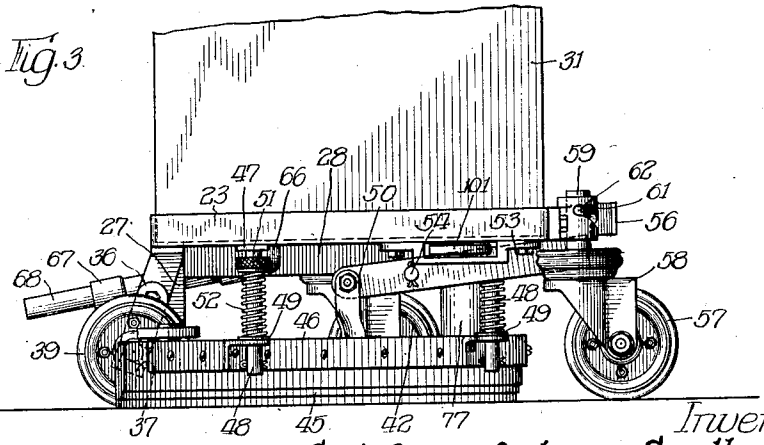


Fig. 3.



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Fig. 4

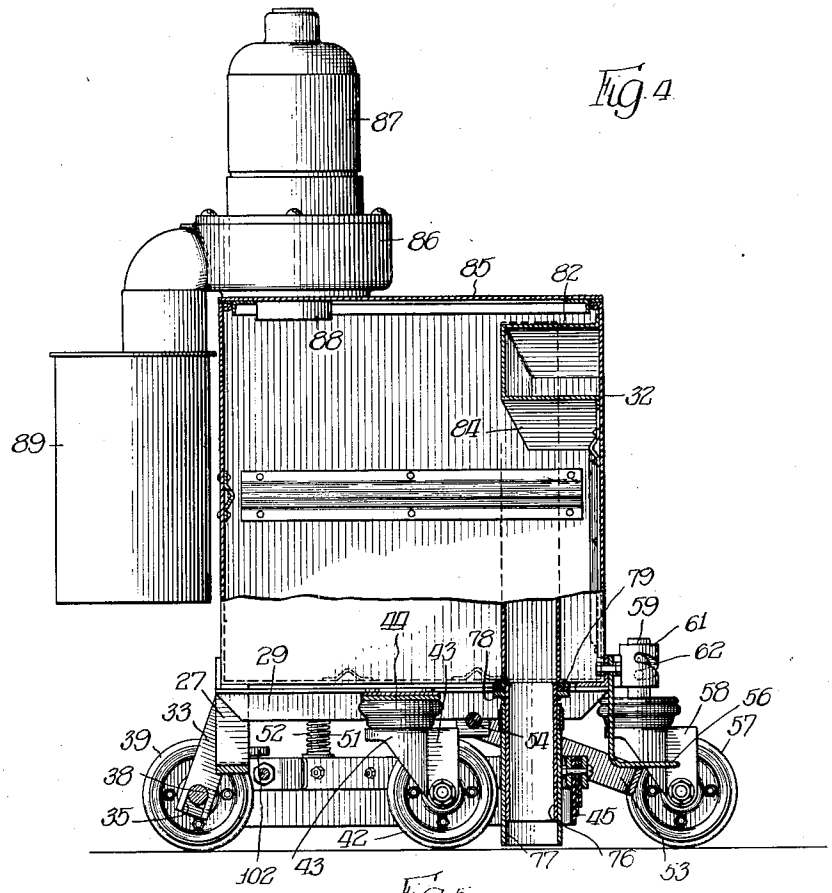
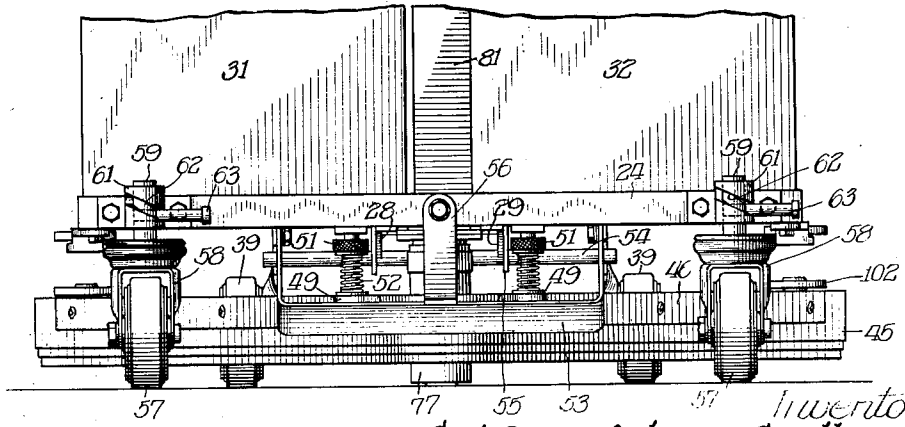


Fig. 5



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Fig. 6.

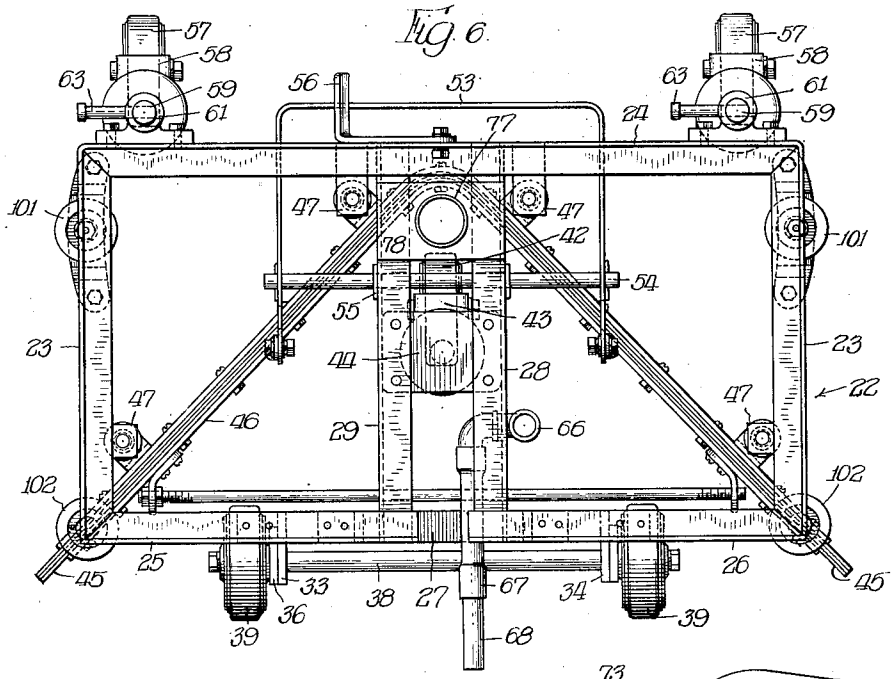


Fig. 7.

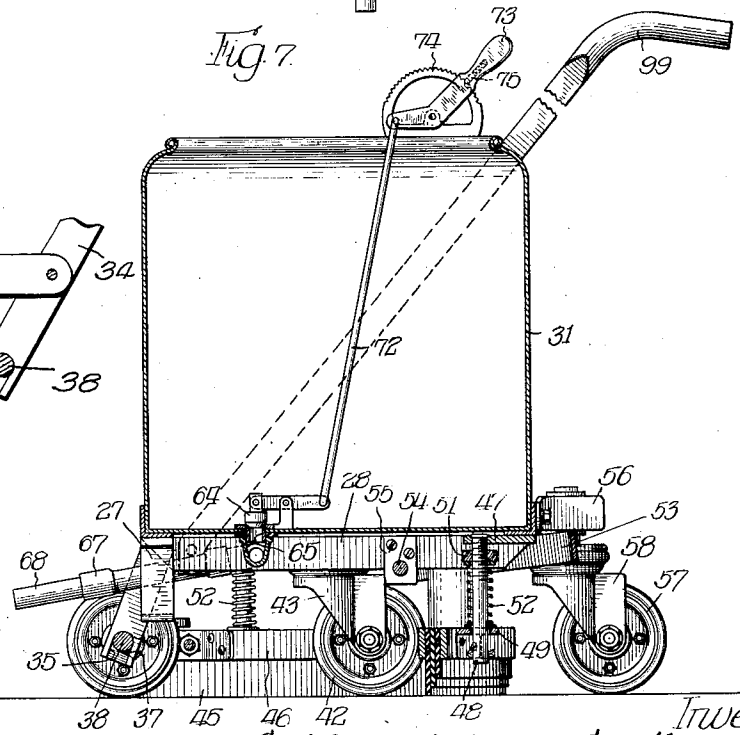
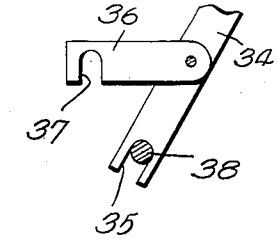


Fig. 7.a



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Patented Aug. 7, 1934 1,969,674

UNITED STATES PATENT OFFICE

1,969,674

SCRUBBING AND MOPPING DEVICE

Carl Oscar Anderson-Smedberg, Chicago, Ill., assignor to Lincoln-Schlueter Floor-Machinery Co., Inc., a corporation of Illinois

Application May 18, 1931, Serial No. 538,086

7 Claims. (Cl. 15—50)

My invention relates to a scrubbing and mopping machine and particularly to such a machine in which the scrubbing and mopping portions may be separated and used as independent units.

An object of the invention is to provide a new and improved scrubbing and mopping machine.

A further object is to provide a mopping machine which is so constructed that it may be used as an independent unit or attached to a scrubbing machine without making the combination too awkward or cumbersome to handle.

A further object is to provide a mopping machine which will not leave tracks on the floor.

A further object is to provide a squeegee having means for regulating the pressure thereof against the floor.

A further object is to provide readily removable tanks for the carriage which have flush bottoms so that they may be set level on the floor when removed from the carriage.

Other objects and advantages will appear as the description proceeds.

Referring to the drawings,

Fig. 1 is a perspective view of a scrubbing and mopping machine embodying the invention,

Fig. 2 is a front elevation partly in section of the mopping machine detached from the scrubbing machine,

Fig. 3 is a fragmentary side elevation of the mopping machine,

Fig. 4 is a sectional view of the mopping machine taken on line 4—4 of Fig. 2,

Fig. 5 is a fragmentary rear elevation of the mopping machine,

Fig. 6 is a plan view of the carriage of the mopping machine with the tanks removed,

Fig. 7 is a sectional view of the mopping machine taken on line 7—7 of Fig. 2, and

Fig. 7*a* is a fragmentary view of the coupling means for removably supporting a wheel axle and wheels for the mopping unit, or coupling the mopping unit to a scrubbing unit.

Fig. 8 is a bottom view of a portion of the scrubbing machine.

Referring now more in detail to the drawings, the scrubbing and mopping machine is shown as a single unit in Fig. 1. The scrubbing machine comprises a frame 11 supported on wheels 12, a pair of brushes 13 are carried by the frame and are driven by a motor 14. The upper portion of frame 11 carries a reel 15 upon which the cord 16 is wound. The end of the cord is provided with a plug 17 and when the plug is inserted in an electric socket, the machine may be moved over the floor, while the reel winds and unwinds the cord 16 as the machine is moved toward or away from the plug. For this purpose the reel has a spring box 18 mounted on the shaft of the reel to maintain a constant tension on the cord. In order to prevent the scrubbing machine from scratching or marring the wall along which it is moved, a roller 19 is mounted on each side of the gear housing 21 for the brushes.

The mopping machine comprises a carriage which consists of a rectangular frame 22 having side angle bars 23, a rear angle bar 24, and front angle bars 25 and 26. These angle bars have a portion lying in a horizontal plane, and an upturned portion forming a flange surrounding the frame. The front side of the bar, which is made of two pieces 25 and 26 has these pieces connected by a U shaped support 27 secured to each of the pieces. Two angle bars 28 and 29 are connected between the rear bar 24 and the front bars 25 and 26, dividing the frame into two parts, one of which is adapted to support a tank 31 for holding clean water and the other of which supports a tank 32 for receiving used water. The frame 22 is mounted upon a number of wheels. Secured to the front bars 25 and 26 of the frame are downwardly extending arms 33 and 34. These arms have longitudinal slots 35 (Fig. 7*a*) in their lower ends to fit over an axle as 38 and each arm has a latch 36 with a transverse slot 37, said latch 36 being pivotally mounted on the arm so that the slot 37 swings over the axle 38 to hold it with its wheels 39 on the arms 33—34. When the mopping machine is used as a separate unit as shown in Figs. 2 to 7, the wheels 39 and axle 38 are applied as a separate unit to the arms 33—34 as shown in Fig. 2. However, when using the mopping machine with the scrubbing machine, as shown in Fig. 1, the arms 33—34 are connected to the axle 41 of the scrubbing machine which axle carries the wheels 12, and in the latter case the axles 38 together with the wheels 39, of course, are not used. Thus the mopping machine may be detachably coupled directly behind the scrubbing machine with the arms and latches locked over the axle 41 allowing for vertical pivotal movement of the scrubbing unit in relation to the mopping unit as the combined apparatus is pushed along over uneven floors, ridges, etc.

In addition to the wheels 39, the machine has a wheel 42 located substantially centrally of the mopping unit, but back of the center of gravity of the mopping unit, due to the fact that the motor of the scrubbing machine is located for-

wardly of this wheel. Wheel 42 has a caster bearing 43, which is connected to a plate 44 so as to permit rotation of the wheel about a vertical axis. The plate 44 is secured to the cross-bars 28 and 29.

The mopping of the floor is accomplished by means of a V shaped squeegee which is shown as having three plys of resilient material such as rubber and is secured to a V shaped reinforcing frame 46. The frame 22 is provided with four supports 47 (Fig. 6) which carry downwardly extending threaded pins 48. These pins extend through four supports 49 carried by the squeegee frame 46. Each of the pins 48 has a knurled nut 51 and between this nut and a support 49 is a spring 52 for urging the squeegee downwardly against the floor. The downward tension of the squeegee may be adjusted by the nuts 51. It will be seen that this connection of the squeegee with the frame causes the squeegee to move horizontally with the floor but permits vertical movement with respect to the frame and floor. When the mopping device is not being used it is desirable to raise the squeegee from the floor. In order to elevate the squeegee, the frame 46 is provided with two upwardly extending arms 50 which are attached to the frame substantially midway along the sides of the frame. A U shaped lever 53 is pivotally connected to the upper ends of these arms and is fulcrumed on a pivot pin 54 which is journaled in downwardly extending arms 55 carried by the frame. The rear bar 24 of the frame carries a latch 56 which may be depressed with the foot to hold the lever in a position in which the squeegee is elevated from the floor.

In addition to the wheels 39 and wheel 42, the carriage of the mopping device is provided with wheels 57. These wheels are mounted in caster arms 58 and the wheels are rotatable about vertical pins 59. These wheels are used chiefly when the mopping machine is transported with the squeegee in elevated position.

When the machine is used for mopping, these wheels 57 are elevated from the floor, because it has been found that they invariably leave tracks on the floor when left in contact with the floor. In order to elevate these wheels, the bearings 61 for pins 59 are provided with a helical slot 62. Extending through this slot and into pin 59 is a lever 63. By shifting this lever through an angle of 180 degrees, the wheels 57 may be raised or lowered from the floor. The carriage is adapted to support two tanks 31 and 32. The tank 31 is a clean water tank and has a valve 64 for regulating the flow of water from the outlet 65 of the tank. This outlet is substantially flush with the bottom of the tank and fits into the inlet 66 of a conduit 67. The end of this conduit is reduced as shown at 68 and fits into a conduit 69 on the scrubbing machine, which leads to an outlet 71 carrying the water to the front of the rotating brushes. The connection between conduits 68 and 69 may be rather loose, since there is no appreciable pressure on the water therein, and a slight leakage does no harm.

The valve 64 of the tank is controlled by an arm 72 attached to a bell crank lever 73. This lever is pivotally mounted on a toothed secant 74 and has a detent 75 for retaining the lever in the position in which it is placed. On account of the fact that the control means for the valve is mounted on the tank, the tank may be removed from the carriage without disconnecting any parts. The outlet 65 of the tank, which is substantially flush with the bottom of the tank, fits frictionally into the inlet 66 of conduit 67.

The tank 32 is designed to receive the used or waste water. Secured to the frame of the carriage is a pipe 76 which has a resilient hose of rubber or the like 77, secured thereto so as to form an extension which reaches into close proximity to the floor. The upper end of the pipe 76 is secured to a plate 78 attached to the cross-bars 28 and 29, and a rubber washer 79 is placed over the plate and around the pipe. The tank 32 has a downwardly extending pipe or conduit 81 running along the outside of the tank and fitting over the opening of pipe 76 when the tank is in position on the carriage. The upper end of the pipe, as shown at 82, extends into the tank and is at such an angle as to direct the water downwardly. In order to prevent splashing of the water in the tank, the lateral side of the pipe is formed at an angle as shown at 84 in Fig. 4 to direct the water against the side of the tank, thereby preventing splashing of the water. In order for the water to be drawn into the tank 32, the lid 85 of the tank is provided with a vacuum pump 86 operated by a motor 87. This pump and motor are mounted on the lid in such a way as to hold the lid in position by gravity, and in order to empty the tank the motor and pump as well as the lid may be removed therefrom, and the tank may then be lifted from the carriage and emptied. The inlet 88 to this pump is positioned on the opposite side of the tank as the inlet of pipe 81 so that no water will be drawn into the pump. The exhaust side of the pump is preferably provided with a muffler 89 for deadening the sound of the pump.

The motor 87 may be operated from a plug 91 on the switch box 92 on the scrubbing machine from which a conductor 93 also leads to motor 14 of the scrubbing machine. In operating the apparatus, the latch 56 is moved laterally with the foot to allow the springs 52 to engage the squeegee with the floor. The motors for the brushes and the vacuum tank are then started and the valve 64 is adjusted to supply the proper amount of water to the brushes. The brushes rotate in such a direction that the water supplied forwardly of the brushes is washed rearwardly between the brushes as the machine is pushed forwardly over the water, and thus the water is brushed toward the squeegee of the mopping device. The squeegee on acount of its V shape collects the water at the apex of the V, where it is picked up by the sleeve 77, which is in close proximity to the floor and is drawn into the vacuum tank.

The combined scrubbing and mopping machine may be propelled by means of a handle 94, which is pivotally connected to the bottom of the frame at 95, (Fig. 1) and a pair of arms 96 are pivotally connected to the upper portion of the frame 11. These arms are adjustably connected to handle 94 by a clamp and screw 97 so that the height of the handle bars 98 may be adjusted to any desired position. When the mopping machine is used separately, a pair of handles 99 are provided, which are attached to the side bars 23 of the carriage frame.

In order to prevent the mopping machine from scratching or marring the wall, a pair of rollers 101 are rotatably mounted on the side bars 23 of the carriage frame.

In addition to these rollers, a pair of rollers 102 are mounted on the ends of the squeegee support frame 46. These rollers extend laterally slightly beyond the ends of the squeegee frame

to prevent the frame from scraping against the wall. The squeegee itself extends beyond the end of the frame so that the machine may be moved along a wall with the squeegee in contact with the wall to insure that no water will be left on the floor in the corner along the wall.

It will be understood that the nature and embodiment of the invention herein described and illustrated is merely a convenient and useful form of the invention, and that many changes may be made therein without departing from the spirit and scope of the invention, which is to be limited only by the appended claims.

What I claim as new and desire to protect by Letters Patent of the United States is:—

1. In an apparatus of the class described, a mopping device including a carriage, a squeegee carried by said carriage, wheels for supporting the carriage and spacing it from the floor, some of said wheels being in advance of the squeegee and some being to the rear of the squeegee, and means for elevating the wheels to the rear of the squeegee, while the device is in operation to prevent the leaving of tracks.

2. The combination with an independently operable scrubbing unit including a carriage and a motor driven brush rotatably mounted thereon, an independently operable mopping unit including a carriage with squeegee and water collecting means supported thereon, means for readily removably attaching said mopping unit carriage to the frame of the scrubbing unit whereby said units may be operated individually and separately, said means including a separable pivotal connection between the units to permit independent pivotal movement of the units.

3. The combination with an independently operable scrubbing unit including a carriage and a motor driven brush rotatably mounted thereon and an axle carried rearwardly of said carriage, an independently operable mopping unit including a carriage with a squeegee and water collecting means supported thereon, means for readily removably connecting the mopping unit to the scrubbing unit whereby said units may be operated individually and separately, said means including a coupling assembly carried on the mopping unit adapted for detachably locking on said axle of the mopping machine to provide a pivotal connection between the units to permit relative pivotal movement thereof.

4. A mopping device for use as an independent unit or in combination with a scrubbing machine, comprising a frame with a V-shaped squeegee mounted beneath said frame and a guiding wheel mounted beneath the frame inside the apex of the squeegee, a pair of wheels mounted at the rear of the frame adapted to be raised and lowered, means for raising and lowering the latter wheels for use independent of the guiding wheel when the device is used as an independent unit, and a support at the front end of the frame for receiving guiding wheels for using the device as an independent unit or for connection to the rear end of a scrubbing machine for using the mopping device in combination therewith.

5. A mopping device for use as an independent unit or in combination with a scrubbing machine, comprising a frame with a squeegee mounted beneath said frame, wheels for supporting said frame, and means for receiving an axle with additional supporting wheels when the device is used as an independent mopping unit and for detachably connecting the mopping device to a scrubbing device when used in combination with the latter, said means including notched arms and latches pivotally secured thereto cooperable to detachably carry the wheel supporting axle, when the mopping device is used as an independent unit, and to detachably couple the mopping and scrubbing devices when these units are used in combination.

6. In an apparatus of the class described, a mopping device including a carriage, a water receiving tank having an opening in the bottom thereof mounted on said carriage, a suction tube secured to said carriage and extending downwardly into close proximity to the floor, a suction tube mounted in said tank terminating one end at the bottom of said tank, means for receiving the tank on the carriage to position said tank tube in abutting alignment with the suction tube on the carriage with the upper end of the tank tube terminating within said tank, a removable lid for said tank and a suction pump mounted on said lid and communicating through said lid with the water receiving tank when the lid is in position on the tank with said suction pump adapted to draw the water from the floor through the suction tube and tank tube into said tank.

7. In a floor mopping machine of the class described, a rectangular frame for supporting a water collecting tank, floor rollers for supporting the frame a predetermined distance above the floor, a squeegee positioned beneath the frame, means for yieldingly suspending the squeegee from the frame whereby the squeegee is maintained in contact with undulating or flat surfaced floors, said means comprising a plurality of studs fixedly depending from the frame and slidably extending through openings in the squeegee with a spring surrounding each stud and positioned between the frame and squeegee to yieldingly press the squeegee against the floor, and a treadle extending from the squeegee to the rear of the frame to lift the squeegee independently of the movement of the frame and studs and maintain the squeegee out of contact with the floor.

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