Nov. 13, 1928.

1,691,263

R. ALVARADO

FLOOR WASHING MACHINE

Filed Nov. 30, 1925

2 Sheets-Sheet 1

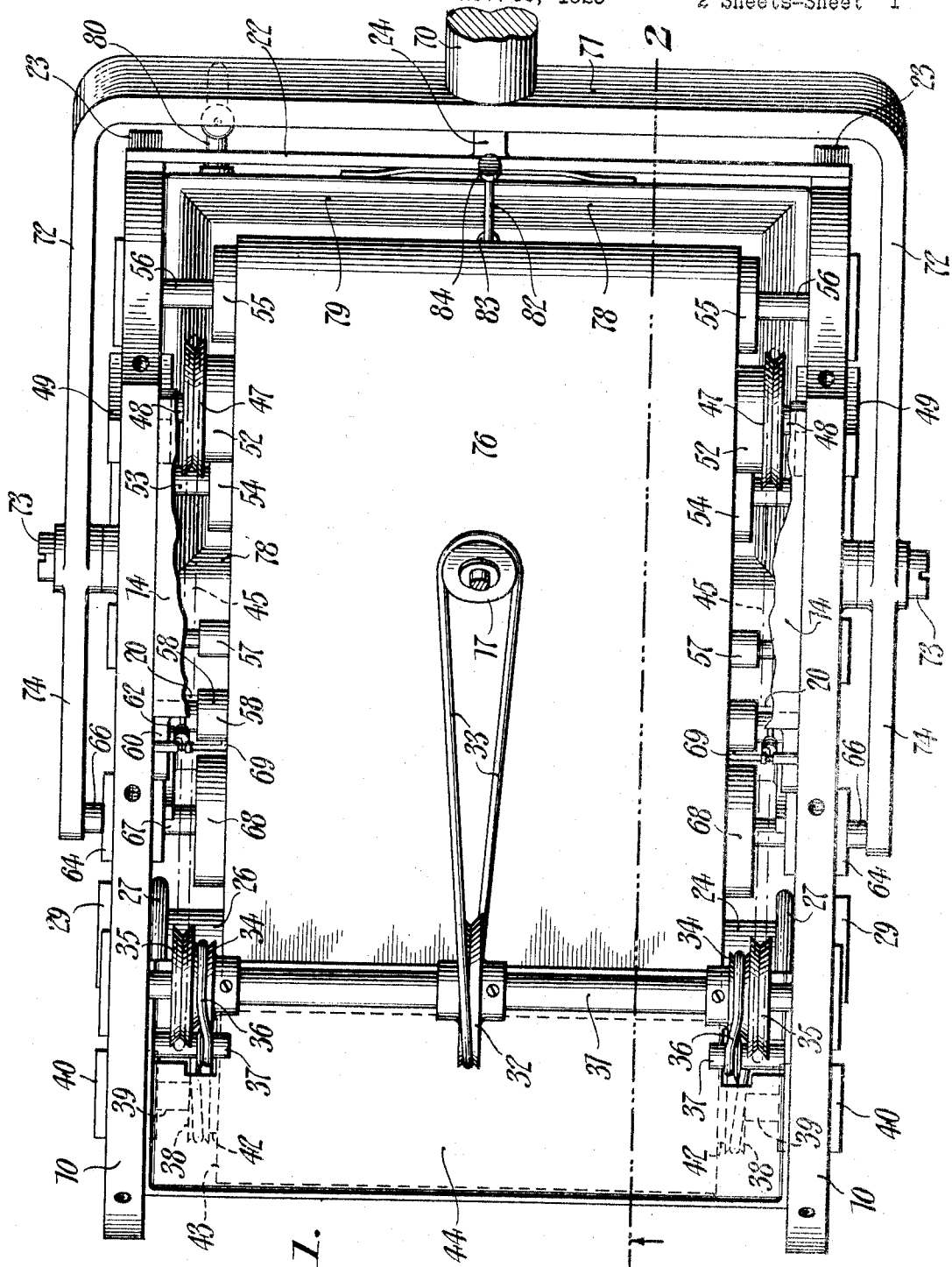


Fig. 1.

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Fig. 2.

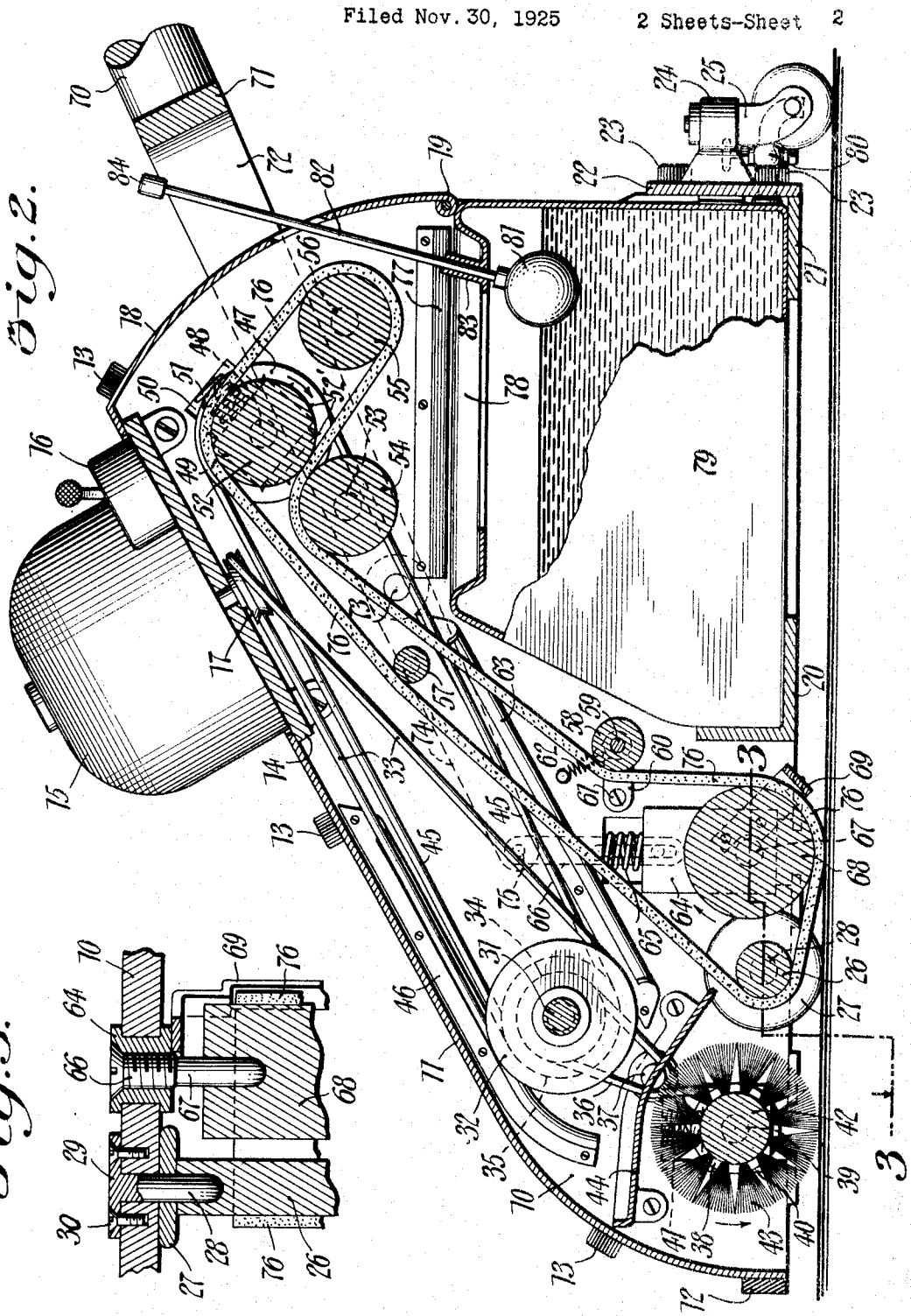


Fig. 3.

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Patented Nov. 13, 1928. 1,691,263

UNITED STATES PATENT OFFICE.

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FLOOR-WASHING MACHINE.

Application filed November 30, 1925. Serial No. 72,149.

This invention relates to floor cleaning apparatus and has as one of its objects to provide a manually propelled device easily movable over a level surface and having combined with it a motor for driving the cleaning and scrubbing elements.

It is a further feature to provide a brush, driven by the motor, and also an endless mop having means for discharging water, gathered from the surface undergoing cleaning, directly into a tank carried by the apparatus, said tank being removable and provided with a faucet for drawing of contents.

Another aim is in the provision of a handle arranged to control the mop element whereby its effectiveness is under the control of an operator, the handle being adapted to raise the mop from the floor to let the brush operate, the mop thereafter wiping and collecting the water.

Another object is to provide slidable, spring pressed blocks which automatically adjust the mop and brush, permitting its use effectively on an uneven surface, and also to regulate the tension of the squeezing rolls.

A further purpose is in the provision of a removable girdle of soft material to prevent abrasion of furniture, etc., and to use specially designed headed studs and screws which permit readily removing the mop rollers and like parts from the apparatus when desired.

These and other objects, such as maintaining the driving connections under desirable tension, guarding the same from moisture, ascertaining the height of water in the tank, providing cushion devices on the apparatus to prevent abrasion of adjacent objects, and the like, are accomplished by the novel construction and combination of parts hereinafter described and shown in the accompanying drawings, forming a material part of this disclosure, and in which:—

Figure 1 is a top plan view showing an embodiment of the apparatus, parts, including the motor, and cover being omitted.

Figure 2 is a longitudinal sectional view taken on line 2—2 of Figure 1.

Figure 3 is a fragmentary sectional view taken on line 3—3 of Figure 2.

The apparatus includes a frame composed of two similar side plates 10, generally triangular in shape with the base towards the rear. Secured to the upper edges of these plates is a thin metallic removable cover 11, curved downwardly at the front where it is provided with a circumjacent strip or band 12 of rubber or like cushioning material, the cover being removably engaged by screws 13 having knurled heads.

At the upper part of the sides 10 is fixed a transverse bracket 14 inclined downwardly towards the front, on which is mounted an electric motor 15, current to which may be controlled by the lever switch 16, this motor having a driving pulley 17 at the end of its shaft which projects through the bracket into the casing.

A curved plate 18 is removably connected by a hinge 19 to the side plates at the rear and extending between the sides, at the bottom, midway in the length of the apparatus, is an angle strip 20, which, with a plate 21 at the rear forms a partial flooring, the same being partially enclosed by an end plate 22 removably secured to the sides by screws, and holds the tank in place; this plate also carries the rear wheels.

Carried by the plate 22, at its ends, is a rearwardly extending bracket 24 in which is pivotally mounted a castor 25 supporting the apparatus at the rear.

Near the front a spool 26 having heads 27 to rest upon the surface over which the apparatus is moved, is held between the sides 10 by specially designed studs 28 having enlarged heads 29 secured against the outer surfaces of the sides by screws 30, the spools revolving freely on the inreaching studs, as best shown in Figure 3, and supporting the forward portion of the structure, the body of the spool carrying the spread or full width of the mop with absorbed water as received from the floor, the arrangement being such as to allow removal of the spool in an easy manner from the outside of the apparatus.

Above and further towards the front, is revolubly mounted a spindle or countershaft 31 for transmitting power from the motor to the entire mechanism; it has its reduced ends journalled in the sides 10 and fixed at the center of the spindle is a pulley 32 driven by a belt 33 trained over the motor pulley 17.

On the shouldered ends of the spindle 31, are fixed a pair of pulleys having steps 34 and 35, the inner, smaller steps driving belts 36, crossed and guided by anti-friction studs 37 fixed in the adjacent sides and trained

over pulleys 38 secured on the ends of a shaft 39.

This shaft is mounted at its ends in blocks 40, slidable in recesses in the frame sides 10 and pressed normally downward by coiled springs 41; these springs pressing the brush against the floor but permitting it to rise on uneven surfaces; the shaft also forms the center of a roll 42 in which brush tufts 43 are set, the same constituting a cylindrical brush disposed near the front of the structure and arranged to operate on a surface in advance of the spool 26.

A guard plate 44, held by end flanges to the inner surfaces of the frame sides, prevents throwing water and dirt from the brush in an upward direction.

The larger steps 35 of the pulleys on the spindle 31 drive belts 45, arranged closely adjacent the frame sides, below guards 46, and trained over the pulleys 47, fixed on the ends of a shaft 48, journalled in blocks 49, movable in recesses 50 in the frame sides and pressed inwardly by springs 51 which regulate the pressure of the mop squeezing rolls and avoid manual adjustment.

Fixed on the shaft 48 is a roll 52 set with pins 52′, the rolls acting as a squeezer and the pins to prevent slipping of the mop when in operation, the pulleys 47 being disposed at its ends; adjacent the shaft 48, and in line with the directions of movement of the block 49, is a shaft 53 on which is a roll 54, and rearwardly is an idle roll 55 fixed on a shaft 56, both shafts 53 and 56 being journalled direct in the frame sides.

A guide roll 57 is likewise disposed between the frame sides and also a pressure roll 58 to maintain the mop in a taut condition, its spindle 59 being mounted in brackets 60 pivoted at 61 to the sides and drawn upwardly by tension springs 62 as best seen in Figure 2.

Another pair of guards 63 are arranged below the belts 45 to protect them from moisture and dirt.

A pair of blocks 64 are slidably mounted to move vertically in the frame side in advance of the angle element 20, these blocks being pressed downwardly by springs 65 to keep the mop under certain pressure necessary when moving over an uneven surface, the blocks being connected with slotted links 66.

Set in the blocks 64 are screws 66 having inreaching plain point stems 67 on which are revolubly mounted a roll 68, and carried by the blocks is a guard 69 which prevents the mop from running sidewise.

An operating handle 70 is fixed centrally in a yoke bar 71 having forked extensions 72 held by pivot screws 73 to the outer surfaces of the frame sides, and provided with projecting arms 74 connected by pivots 75 with the upper ends of the links 66.

Trained over the driving spool 52 is an endless mop 76, such as a strip of felt or the like, the same passing over the roll 55, then between the roll 54 and spool 52, then over the tension roll 58, under roll 68, spool 26 and guide rolls 57 to the driving spool 52, where the lower side is constantly compressed by action of the springs 51 against the roll 54.

Any moisture from the mop is directed by guards 77 to enter the depressed cover portion 78 of a receiving tank 79, resting on the angle 20 and end plate 21 at the rear of the structure.

The tank is supplied with a faucet 80 to draw off its contents and also a float 81 operating a stem 82, guided at 83 at the top of the tank and provided with a head 84, visibly indicating the height of the water in the tank.

In operation, the motor being in operation, and the floor or like surface having been previously wet, the apparatus may be moved over the floor, whereupon the brush operates to clean the surface, moving the dirt and moisture rearwardly to be gathered by the mop, which is squeezed to cause the adhering moisture and dirt to fall into the tank.

By suitable manipulation of the handle 70, the structure is readily guided and moved upon any level surface, and furthermore pressure to any desired degree may be applied to the mop below the roll 68.

Having thus described my invention and set forth the manner of its construction and application, what I claim as new and desire to secure by Letters Patent, is:—

In a floor scrubber, the combination with a casing having a motor on its upper surface, of a tank in said casing having a wringing means thereover, a counter shaft within the forward end of said casing belt driven by said motor, a rotary brush at the front of the casing driven by a belt from said counter shaft, a plurality of rolls journalled in the casing sides, including a drive roll near the top of said casing and a spring pressed roll at the bottom, pulleys on the ends of the drive roll belt driven by said counter shaft, an endless mop trained over said rolls and held in contact with the floor by the spring pressed roll, a handle pivoted on the sides of said casing, and means combined with said handle for retracting the spring pressed roll.

In witness whereof I have affixed my signature.

ROMULO ALVARADO.