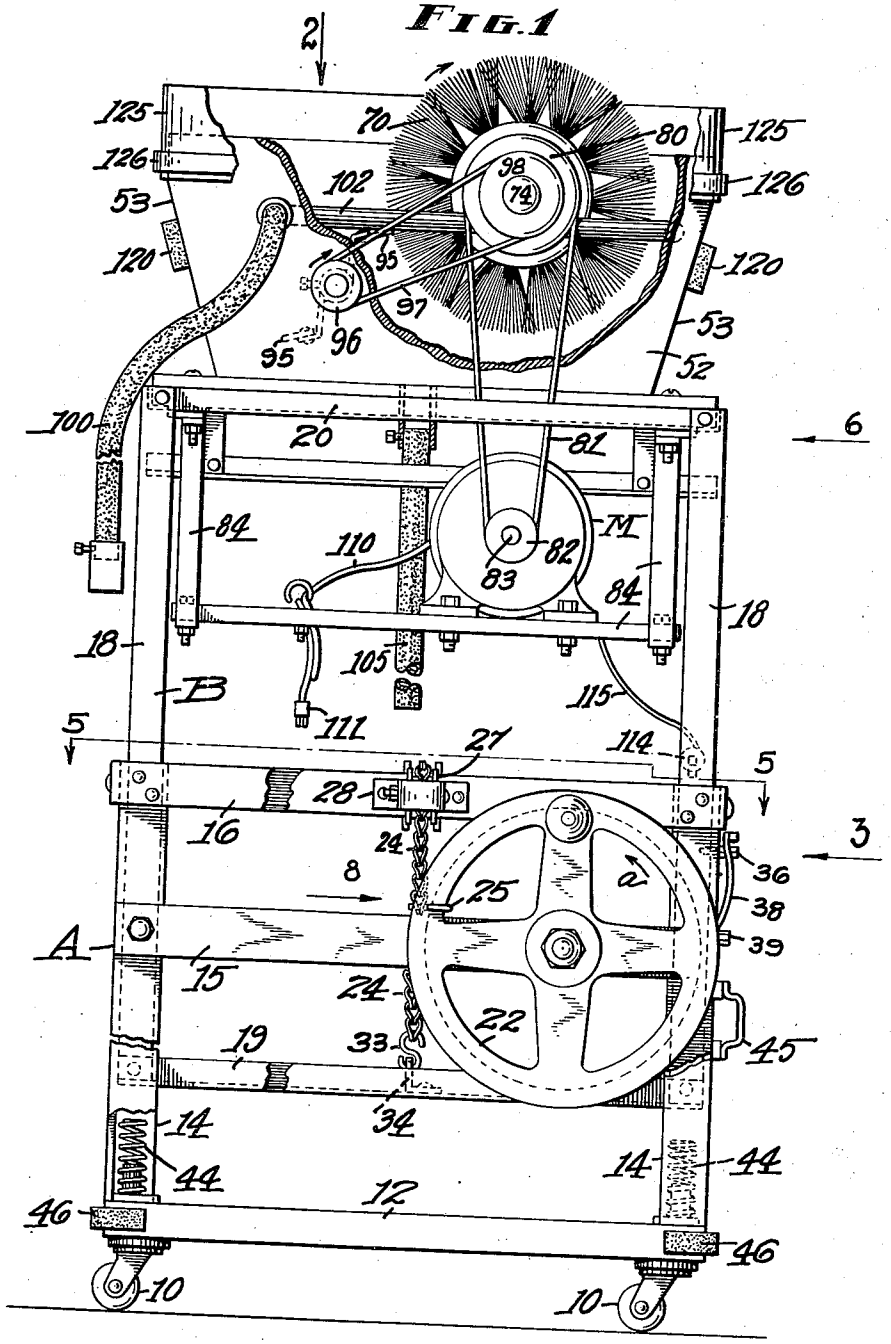
Sept. 23, 1941. H. J. LIKSHIS 2,256,986

CEILING WASHER

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FIG. 1



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FIG. 2

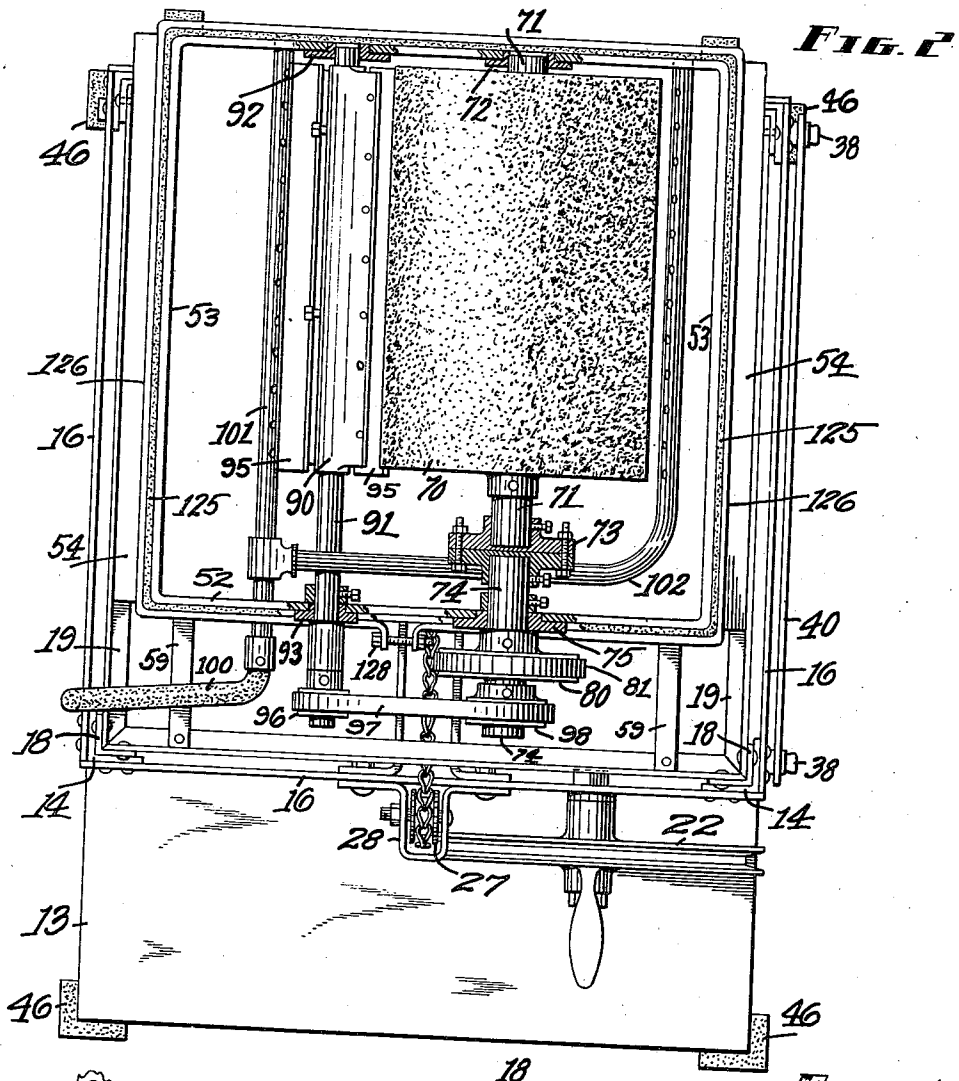


FIG. 3

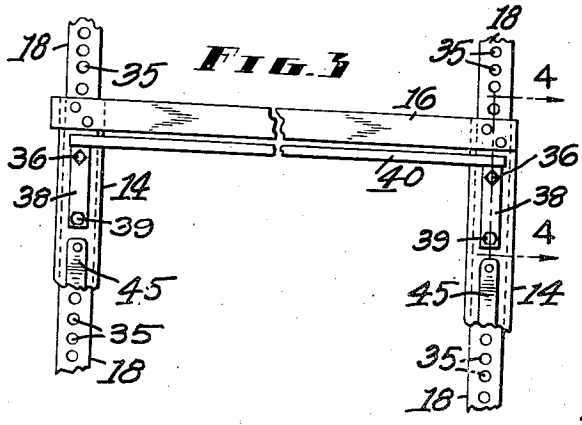
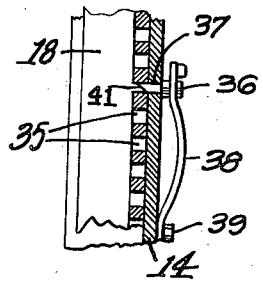


FIG. 4



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FIG. 5

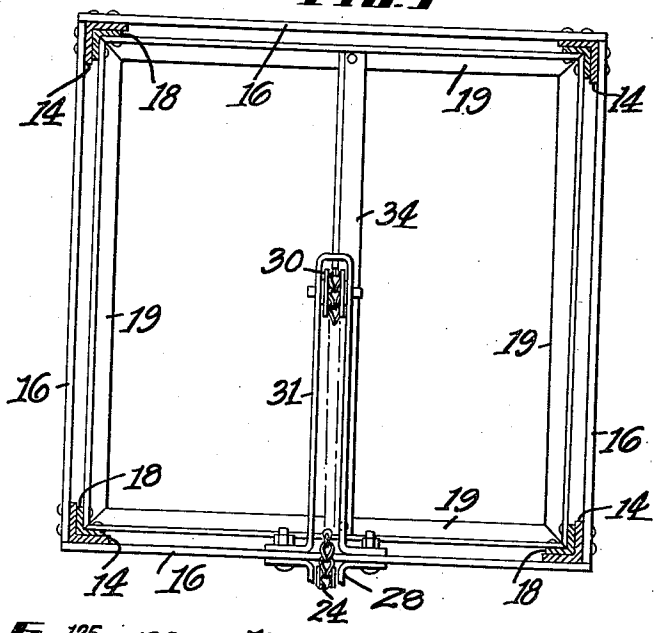


FIG. 6

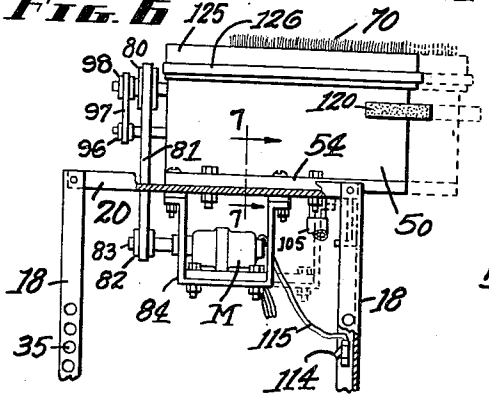


FIG. 7

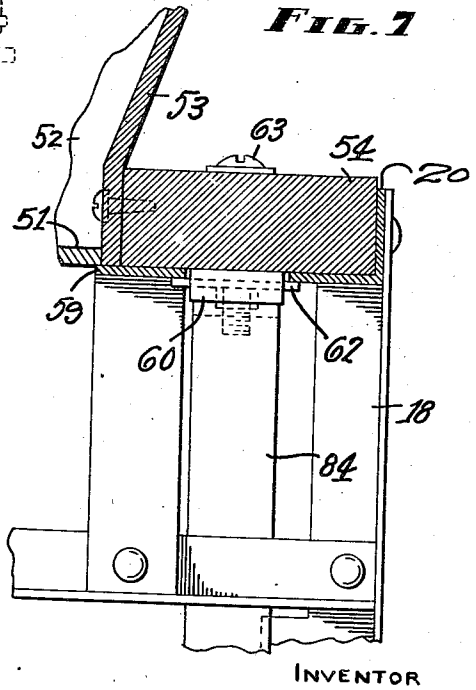
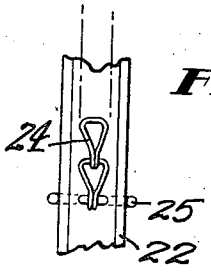


FIG. 8



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UNITED STATES PATENT OFFICE

2,256,986

CEILING WASHER

Harry J. Likshis, Worcester, Mass.

Application June 24, 1940, Serial No. 342,056

1 Claim. (Cl. 15—50)

This invention relates to a machine for washing ceilings and for removing water-paint or other coatings therefrom.

It is the general object of my invention to improve the construction of such machines, as heretofore known, to the intent that they may be more economical to manufacture and more convenient and satisfactory in use.

To the attainment of this object, important features of the invention relate to an improved mechanism for raising and lowering the washing unit; to means providing transverse adjustment of the washing unit relative to its supporting frame; to an improved device for cleaning the washing brush, and to shielding means adapted for use with brushes of different diameters.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claim.

A preferred form of the invention is shown in the drawings, in which

Fig. 1 is a front elevation of my improved machine;

Fig. 2 is a plan view, looking in the direction of the arrow 2 in Fig. 1 and with certain parts shown in section;

Fig. 3 is a detail side elevation, looking in the direction of the arrow 3 in Fig. 1;

Fig. 4 is a detail sectional view, taken along the line 4—4 in Fig. 3;

Fig. 5 is a sectional plan view, taken along the line 5—5 in Fig. 1;

Fig. 6 is a partial side elevation, looking in the direction of the arrow 6 in Fig. 1 and with certain parts shown in section;

Fig. 7 is an enlarged detail sectional view, taken along the line 7—7 in Fig. 6; and

Fig. 8 is a detail view, looking in the direction of the arrow 8 in Fig. 1.

Referring to the drawings, my improved ceiling washer comprises an outer and lower frame unit A which may be supported on rolls or castors 10 (Fig. 1), and an inner and upper frame unit B which is vertically slidable in the lower frame unit A.

The lower frame unit A comprises a base or platform 12 (Fig. 1) having an extension 13 (Fig. 2) at one side thereof and provided with four fixed upright guide members 14, each preferably formed from an angle-bar and firmly secured to the base 12. The members 14 are also connected together by a plurality of cross bars 15 and 16 to form a rigid rectangular structure.

The upper frame unit B similarly comprises four angle bar guide members 18 (Fig. 1), rigidly secured together by cross angle bars 19 and 20 to form a second rigid rectangular structure which is slidable within the guide members 14 of the lower frame unit A.

A grooved hand wheel 22 (Fig. 1) is pivotally mounted on one of the cross bars 15 of the lower unit A, and a chain 24 is connected to the hand wheel 22 in any convenient manner, as by a bent cotter-pin 25 (Figs. 1 and 8). The chain 24 extends upward from the wheel 22 to a guide pulley 27 mounted in a bracket 28 (Fig. 2) and thence inward horizontally to a guide pulley 30 (Fig. 5) mounted in a second bracket 31. The brackets 28 and 31 are secured at opposite sides of one of the fixed cross bars 16 (Fig. 2).

From the guide pulley 30, the chain 24 extends downward approximately at the center of the frame units A and B and is secured by a hook 33 to an angle bar 34 (Figs. 1 and 5) which extends crosswise of the upper frame unit B, and is supported at its ends by two of the lower cross angle bars 19 of said unit B. By rotating the hand wheel 22 anti-clockwise or in the direction of the arrow *a* in Fig. 1, the upper frame unit B may be lifted relative to the fixed outer and lower frame unit A.

Two of the inner upright guide members 18 are each provided with a vertical series of openings 35 (Fig. 3) adapted to receive the inner ends of locking studs 36 (Fig. 4) which project loosely through openings 37 in the associated fixed outer guide members 14.

Each stud 36 is mounted near the upper end of a flat spring 38, secured to one of the members 14 by a clamping screw 39. The springs 38 normally advance the studs 36 to the locking position shown in Fig. 4. A cross bar 40 (Fig. 3) connects the two springs 38 and provides convenient means for simultaneously withdrawing both studs 36 when desired.

The locking studs 36 are preferably beveled on their lower surfaces, as indicated at 41, (Fig. 4) so that they have a ratchet action and will be moved yieldingly outward as the inner frame members 18 are moved upward, but will thereafter lock the frame members 18 firmly against downward displacement until the studs 36 are manually withdrawn.

I have thus provided convenient means for raising the inner and upper frame unit B and for automatically locking the unit B at any desired elevation by the studs 36. When it is desired to lower the frame unit B, the studs 36 may be simultaneously withdrawn by means of the bar 40,

and the downward motion may be controlled by manually opposing clockwise rotation of the hand wheel 22. Cushion springs 44 (Fig. 1) are preferably mounted in the lower corners of the lower frame unit A to absorb shock, if the movable upper unit is allowed to descend too rapidly. Handles 45 on two of the guide members 14 provide convenient means for moving the machine over the floor to desired positions. The base or platform 12 is preferably provided with corner cushions or buffers 46 to prevent injury to furniture or woodwork.

The washing unit in my improved machine comprises an open tank or pan 50 made of sheet metal or other suitable material, and having a bottom 51 (Fig. 7), upright end walls 52 (Fig. 1), and outwardly inclined side walls 53. The tank 50 is preferably provided with side bars 54 (Fig. 7), which rest on the inner flanges of certain of the upper cross bars 20 and on intermediate cross bars 59, the ends of which are supported on the regular cross bars 20 as shown in Fig. 1.

A guide strip 60 (Fig. 7) is secured to the under side of each side bar 54 and is loosely slidable in a guideway formed between one of the cross frame bars 20 and its associated intermediate cross bar 59. Washers 62 are secured by bolts 63 in recesses in the guide-bars 60 and extend under the bars 20 and 59, thus preventing upward displacement or tipping of the tank 52 and associated parts.

A brush 70 (Fig. 2) is mounted on a shaft 71, one end of which is rotatable in a bearing 72 fixed to an end wall of the tank 50. The other end of the shaft 71 is connected by a coupling 73 to a short shaft 74 rotatable in a bearing 75 mounted in the opposite end wall of the tank 50.

A grooved pulley 80 is fixed to the shaft 74 and is connected by a belt 81 (Fig. 1) to a small driving pulley 82 on the armature shaft 83 of an electric motor M. The motor M is supported by a frame-work 84 (Fig. 6) depending from and secured to the side bars 54 of the tank 50. The washing unit, including the motor M and the brush 80, are thus slidable horizontally on the upper end portion of the upper frame B, which is a substantial advantage, as the washing unit can thus be moved over close to a vertical side wall, even if the supporting frames are held away from the wall by some obstruction, such as a steam radiator.

A wiping device 90 (Figs. 1 and 2) is mounted on a shaft 91 rotatable in bearings 92 and 93 in the side walls of the tank 50 and is provided with rubber wiping blades 95 (Fig. 1) adapted to engage the ends of the bristles of the brush 70 and to keep them clear of dirt or paste or other material removed from the ceiling. This material is dislodged from the bristles by the blades 95 and falls to the bottom of the tank 50, the wiper blades being self-cleaning.

The wiper shaft 91 is driven by a small grooved pulley 96, connected by a belt 97 to a pulley 98 on the outer end of the short shaft 74 and continuously rotated by the motor M. The brush 70 and wiping device 90 both rotate in a clockwise direction, as indicated by the arrows in Fig. 1, so that the blades 95 of the wiper are moving in the opposite direction from the bristles in the brush 70 at their point of engagement.

Water is supplied through a hose 100 to a spray pipe 101 (Fig. 2) by which jets of water are directed against an adjacent portion of the ceiling to be cleaned. A branch pipe 102 is connected to the pipe 101 and directs a second series of jets against the rotating brush 70. The waste water and dirt is removed from the tank 50 through a hose 105 connected to an outlet in the bottom of the tank, as shown in Fig. 1. The hose 100 may be coupled to any suitable supply pipe from which water may be drawn, and the hose 105 may extend down into a pail supported on the platform 12 or on the extension 13 thereof shown in Fig. 2 or may extend to a suitable drain.

The motor M is provided with a cord 110 and attachment plug 111, so that it may be plugged in to any convenient outlet. The motor is preferably controlled through a manually operated switch 114 mounted on one of the frame members 18 and connected by a cord 115 which has sufficient slack to permit horizontal adjustment of the motor M with the washing unit, as previously described.

A rubber-covered frame or buffer 120 (Figs. 1 and 6) is secured to the sides of the tank 50 and projects laterally therefrom, as shown in Fig. 6, to engage a side wall of a room and prevent injury thereto by the washing unit when projected beyond the side of the supporting frame and platform.

A flexible and preferably rubberized flange or sleeve 125 (Fig. 1) is secured to a metal band 126 which embraces the upper part of the tank 50. The sleeve 125 is designed to closely engage the ceiling to prevent water from being spattered about by the rotating brush 70 and the spray pipes 101 and 102. The sleeve 125 is held in position on the tank by a clamping bolt 128 (Fig. 2). By loosening the bolt, the sleeve may be vertically adjusted to take care of variations in the effective diameter of the brush 70.

Having described the details of construction of my improved machine, the use and advantages thereof are believed to be readily apparent. When the machine is not in use, the upper frame unit B is nested within the lower frame unit A and the washing unit is adjusted horizontally to the position shown in Fig. 2, where it is substantially over the frame units.

When the machine is to be used, the upper frame unit B is raised by manual rotation of the hand wheel 22, and is held in vertically adjusted position by the locking studs 36, which have a ratchet action during upward movement of the unit B. The sleeve 125 is adjusted, if necessary, to closely engage the ceiling when the bristles of the brush 70 have operative relation thereto. Water is admitted through the hose 100 and pipes 101 and 102, and the motor M is started to rotate the brush 70 and wiping device 90.

The machine is then moved about under the ceiling to bring the brush 70 into contact with successive portions thereof, and the washing unit may be adjusted horizontally to the dotted line position in Fig. 6 if a radiator or other obstruction prevents moving the machine close to a side wall.

As the machine continues to operate, the waste water and dirt flows out through the pipe 105 to a suitable container or to any available waste outlet or drain.

At the end of the cleaning operation, the frame unit B may be lowered by grasping the cross bar 40 and withdrawing the locking studs 36, at the same time retarding the downward movement by a firm hold on the hand wheel 22.

Having thus described my invention and the advantages thereof, I do not wish to be limited

to the details herein disclosed, otherwise than as set forth in the claim, but what I claim is:

A ceiling washer comprising a two-part vertically-adjustable rectangular supporting frame having spaced horizontal guiding members fixed on its top surface, a washing unit comprising a tank having side bars slidable horizontally in said guiding members and a washing element movably mounted in said tank, and a motor to drive said washing element, said motor being mounted below said tank and within said frame and being supported from said side bars, said washing unit normally overlying said supporting frame in substantial vertical alignment therewith, and said washing unit and motor being together slidable on said guiding members and relative to said supporting frame to advance said washing unit to an overhanging operative position substantially offset horizontally from said supporting frame to coact with the extreme edge portions of the ceiling, and said motor being effective to counterbalance in part the overhanging portion of said washing unit.

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