Oct. 7, 1952 S. P. LAGANT 2,612,648

CEILING WASHER

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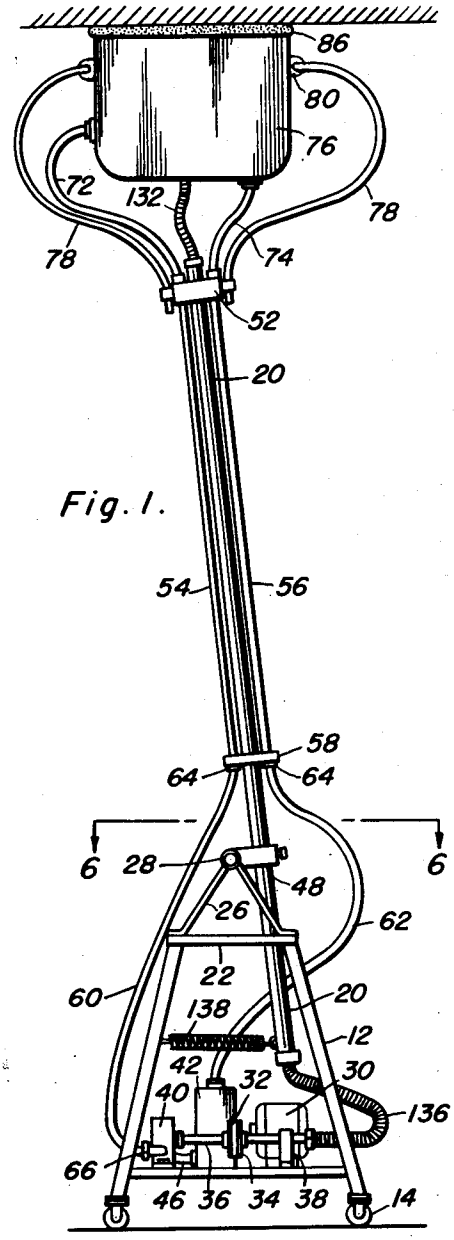


Fig. 1.

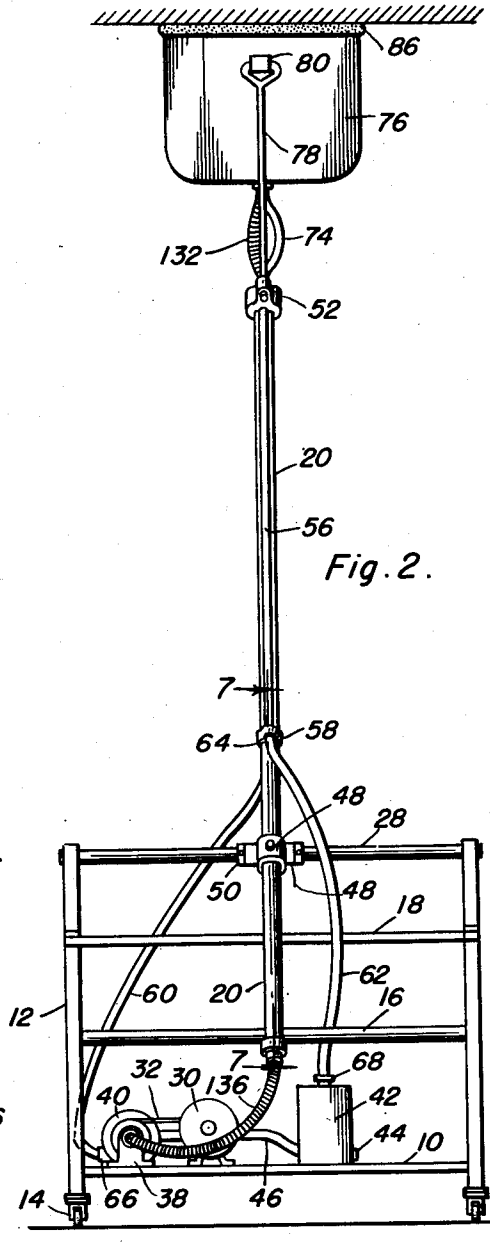


Fig. 2.

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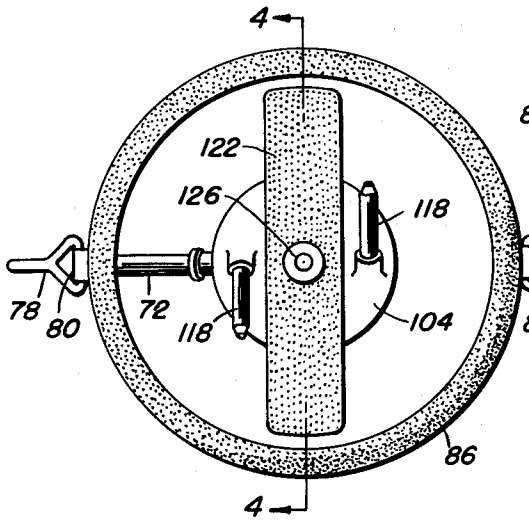


Fig. 3.

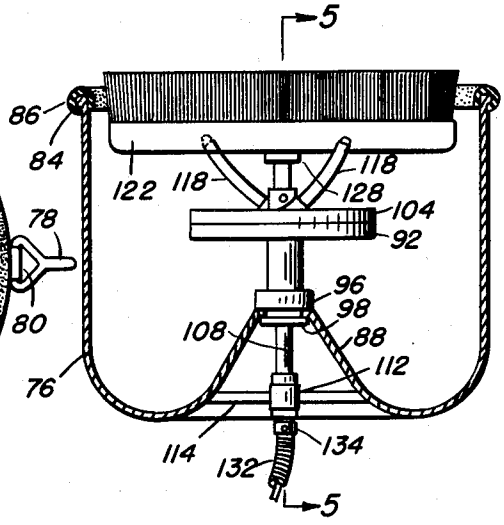


Fig. 4

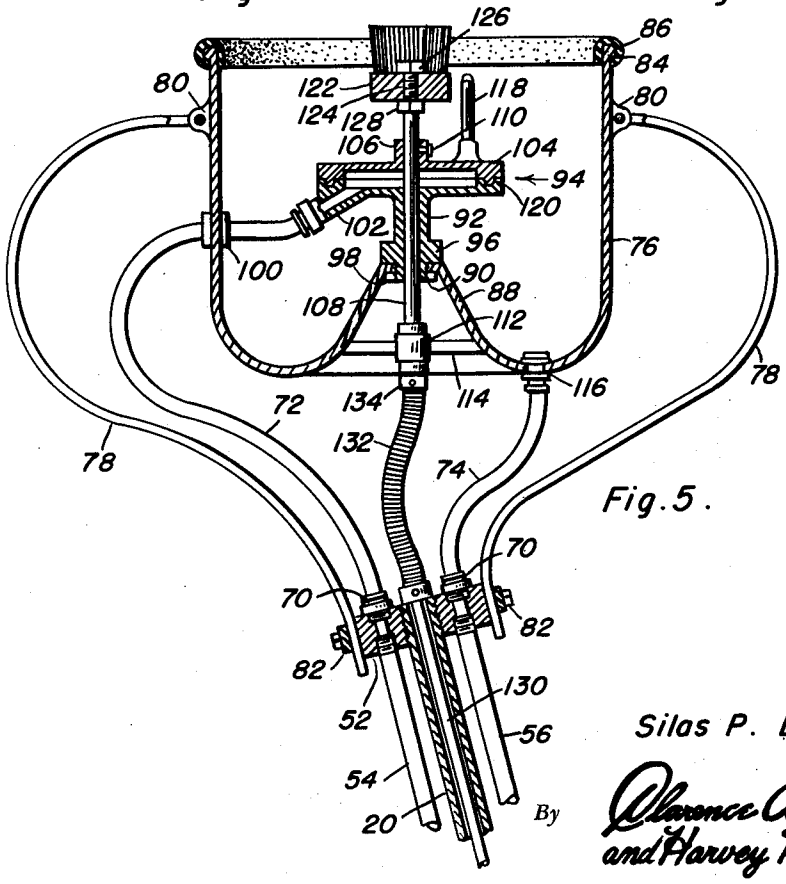


Fig. 5.

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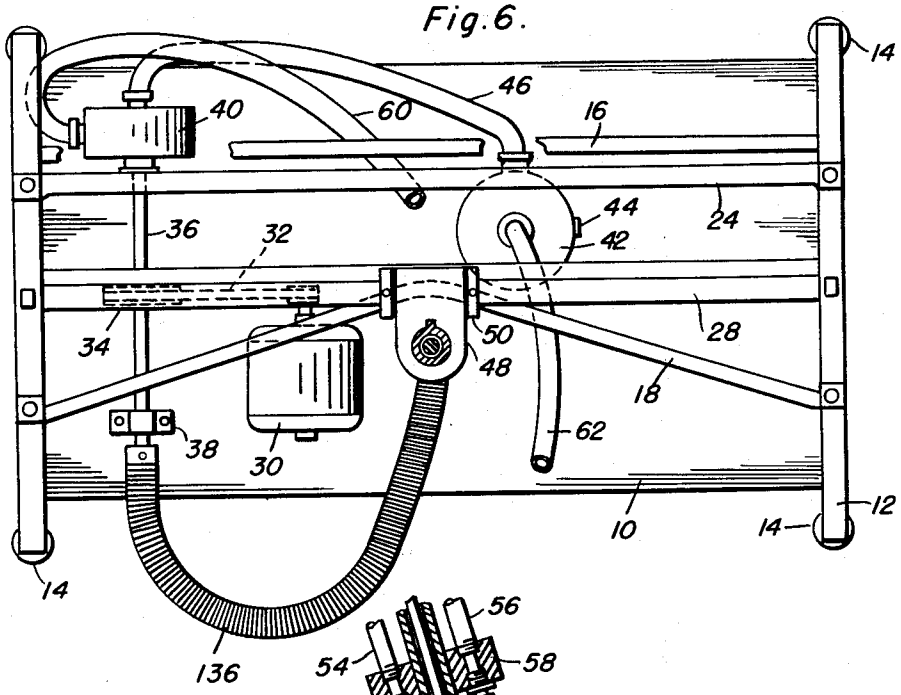
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CEILING WASHER

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Fig. 6.



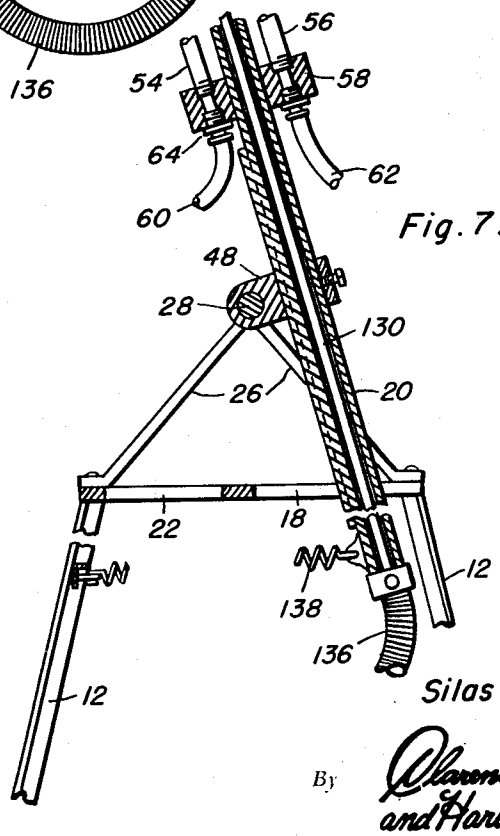


Fig. 7.

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UNITED STATES PATENT OFFICE

2,612,648

CEILING WASHER

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Application November 19, 1947, Serial No. 787,006

3 Claims. (Cl. 15—50)

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This invention relates generally to washing machines, and more particularly to a ceiling washer of the type having an ambulant carriage with an arm pivoted thereon and carrying a bucket which is moved on the ceiling, while a rotary brush within the bucket and jets of water perform the cleaning operation.

A primary object of this invention is to provide a ceiling washer which is freely ambulant and which can be adjusted in height by merely varying the angle of the bucket supporting arm, as well as by sliding this arm vertically within a pivoted slide bearing on the carriage.

Another object of this invention is to provide an improved bearing support for the rotary brush and to combine rotating nozzle means with this brush in a manner leading to improved efficiency in cleaning ceilings.

Still another object of this invention is to provide a ceiling washer in which a single motor is efficiently connected with a water pump and with a rotary brush, and the power transmission means is of ultimate simplicity.

And a last object to be specifically mentioned is to provide a ceiling washer which is relatively inexpensive and practicable to manufacture, which is safe, and extremely convenient to use, and which will give generally efficient and durable service.

With these objects definitely in view, together with other objects inherent in the structure of this device which will become apparent as this description proceeds, this invention resides in certain novel features of construction, combination and arrangement of parts and portions as will be hereinafter described in detail in the specification, particularly pointed out in the appended claims, and illustrated in the accompanying drawings which form a material part of this application, and in which:

Figure 1 is a side elevational view of the assembled machine;

Figure 2 is another elevational view of the assembled machine;

Figure 3 is an enlarged top plan view of the bucket, rotary brush and nozzle structure;

Figure 4 is a vertical transverse sectional view, of the structure shown in Figure 3, the view being taken on the line 4—4 in Figure 3;

Figure 5 is another view of the bucket, rotary brush and contiguous portions, the view being similar to Figure 4 and taken on line 5—5 thereof but showing the rotary brush and nozzle construction rotated through substantially 90° to show the construction thereof, and the bucket and parts more or less rigidly secured thereto

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being shown in vertical section and in elevation to facilitate the illustration of this invention and to amplify the disclosure thereof;

Figure 6 is an enlarged horizontal sectional view of the carriage with the elements mounted thereon, the view being taken on the line 6—6 in Figure 1 and the greater portion of the figure being in plan; and

Figure 7 is a fragmentary enlarged detailed view, on line 7—7 of Figure 2, of the lower portion of the bucket supporting arm, the upper portion of the carriage and contiguous portions, parts of the figure being shown in vertical section and other parts being shown in side elevation.

Similar characters of reference designate similar or identical parts and portions throughout the specification and throughout the several views of the drawings.

Referring now to the drawings in detail, this invention includes a carriage comprised of a horizontal base plate 10, inclined upright angle iron members 12 having casters 14 mounted on the lower ends thereof, cross braces 16 and 18, the cross brace 18 being near the top of the carriage and inclined inwardly at the center (see Figure 7) to accommodate the lower end of the bucket supporting arm 20. Another pair of cross members 22 and the member 24 complete the lower portion of the carriage, while the angularly disposed legs 26, secured to the lower portion of the frame, terminally support the rod 28.

Supported on the platform plate 10 are a motor 30 connected by a belt 32 with a pulley 34 carried on a shaft 36 which is mounted in bearings 38 mounted on the plate 10, and a fluid pump 40 which is driven by the shaft 36. This plate 10 also carries a water reservoir 42 which has a drain outlet 44 and which is connected to the pump 40 by a pipe 46.

The above mentioned bucket supporting arm 20 is slidably mounted within a slide bearing 48 which is pivoted on the bar 28, this slide bearing 48 being held against movement longitudinally of the bar 28 by any suitable means such as the collars 50. The upper end of the arm 20 may be threaded to receive a threaded collar 52 and this collar is bored and tapped to receive the upper ends of pipes 54 and 56, the lower ends of which are similarly secured in another collar 58. A pair of flexible tubes 60 and 62 are used to connect the lower ends of the pipes 54 and 56 with the pump 40 and the reservoir 42, respectively, a complement of attaching nipples 64 and 66 and 68 being used to effect proper connections.

The collar 52 at the upper end of the arm 20

is also provided with nipples 70 whereby flexible tubes 72 and 74 are connected to the collar 52 so as to communicate with the tubes 54 and 56, respectively. A bucket 76 is somewhat resiliently mounted upon the collar 52 by means of supporting rods 78 which are secured to lugs 80 on the sides of the bucket 76 at the upper ends and secured by any suitable clamp means 82 on the sides of the collar 52.

The bucket is formed with a rolled or enlarged rim 84 and a resilient collar member 86 fits over this enlarged rim 84 and is adapted for engagement with the ceiling when the device is being used. The base of the bucket is made with a conical portion 88 which may be apertured and threaded at the apex to receive the threaded extension 90 of the lower part 92 of the hollow bearing bracket which is generally indicated by the numeral 94. This lower portion 92 is formed with a shoulder 96 which bears upon the flattened upper end of the conical member 88 and a nut 98 screwed on the lower end of the threaded portion 90 is used to rigidly hold this structure in place.

The side of the bucket is apertured to receive the tube 72 and a water-tight grommet 100 prevents leakage of water from the bucket 76. The inner end of this tube 72 is secured to a nipple 102 which communicates with the hollow interior of the bearing member 94. The upper part of this bearing member, designated by the numeral 104 is provided with a collar 106 which receives the short shaft 108 and which is secured thereto by the set stud 110. The lower end of this shaft 108 is rotatably mounted in a bearing 112 supported centrally of the braces 114 which are terminally secured to the inner lower ends of the cone-shaped member 88. An outlet 116 connects the well at the bottom of the bucket 76 with the upper end of the tube 74, and a pair of nozzles 118 are secured in inclined relation on the upper surface of the upper part 104 of the hollow bearing member, each of these nozzles communicating with the hollow interior of the bearing, and since the parts of this bearing are formed with an annular tongue and groove represented at 120 it will be clear that the nozzles will turn with the upper part 104 and with the brush 122 which is secured to the upper end of the shaft 108, as by a threaded shank 124 on the upper end of the shaft and a nut 126, the base of the brush being apertured to receive the threaded shank 124 and a nut or shoulder 128 being provided on the shaft to limit the downward movement of the brush thereon.

The shaft 108 is operatively connected with a longer shaft 130 by means of a flexible connection 132 terminally secured, as indicated at 134, to these shafts, the latter shaft being rotatably mounted within the hollow arm 20, while the lower end of the shaft 130 is connected by another flexible coupling 136 to the end of the shaft 36 remote from the pump 40.

The spring 138 is terminally secured between one of the uprights 12 and the lower end of the arm 20, to bias the arm in one direction, that is, towards the vertical from the position illustrated in the figures, so that the bucket will be forced tightly against the ceiling. The brush 122 may be of any desired character, a preferred form being represented in the figures as of generally rectangular shape and of a length slightly less than the diameter of the bucket 76.

The operation of this invention will be clearly understood from the foregoing description of the mechanical details thereof, taken in connection with the above recitation of the objects sought to be achieved by this invention. In recapitulation, it need only be added that the arm 20 will be adjusted vertically in the slide bearing member 48 in order to bring the bucket 76 into engagement with the ceiling when the arm is slightly inclined, as shown in the figures, thereafter the spring 138 will automatically hold a resilient collar 86 tightly pressed against the ceiling at the successive positions thereon determined by the desires of the operator of the machine. Water, ordinarily burdened with chemicals or soap, will be forced by the pump 40 through the described connections to the nozzles 118 which will rotate around with the brush 122 to effect the cleaning of the ceiling. The water is returned through the tubes 74, 56 and 62 to the reservoir 42 which may be supplied with suitable screens according to conventional practice and from which the water is again conducted to the pump 40. It is clear that this invention will accomplish all the objects detailed above in a satisfactory manner, and further description is deemed unnecessary.

Obviously many minor variations may be made in the exact construction and proportionment of the various parts of this invention without departure from the spirit and scope thereof, and this invention should be limited only in accordance with a proper interpretation of the terms used in the appended claims.

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

1. A ceiling washer comprising a carriage, a motor mounted on said carriage, an arm pivotally mounted on said carriage, a pair of resilient rods secured adjacent the end of the arm, a bucket mounted on said rods, a bearing bracket in said bucket, an axial shaft mounted in said bracket, a brush mounted on said shaft within the bucket and supported thereby adjacent the mouth of the bucket, drive means extending through said arm and operatively connecting said motor to said axial shaft, a reservoir mounted on said carriage, said bearing bracket having a hollow interior portion, nozzle means connected to said hollow portion and laterally inclined to eject fluid along said brush, a tube extending from said reservoir to said hollow portion, a pump connected in series with said tube, and a return tube from said bucket to said reservoir.

2. A ceiling washer comprising a carriage, an arm adjustably mounted on said carriage, resilient rods secured adjacent the end of said arm, a bucket mounted on said rods, a bearing mounted axially in the bottom of the bucket, a shaft within said bucket rotatably mounted in said bearing, a brush fixed on the end of the shaft, said brush being adjacent the mouth of the bucket, a hollow portion in said bearing, a collar fixed on said shaft, an upper bearing member secured to said collar and closing said hollow portion, nozzles mounted on said upper bearing member and rotating with said brush, said nozzles being directed to eject fluid along said brush, a tube supplying fluid under pressure into said hollow portion.

3. A washer according to claim 2, and wherein said nozzles are carried by said plate and disposed to direct water laterally of the brush, said nozzles being inclined with reference to said shaft.

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