I. P. STANFIELD.

WINDOW WASHING AND DRYING MACHINE.

APPLICATION FILED JUNE 10, 1919.

1,332,640.

Patented Mar. 2, 1920.

2 SHEETS—SHEET 1.

FIG. 1.

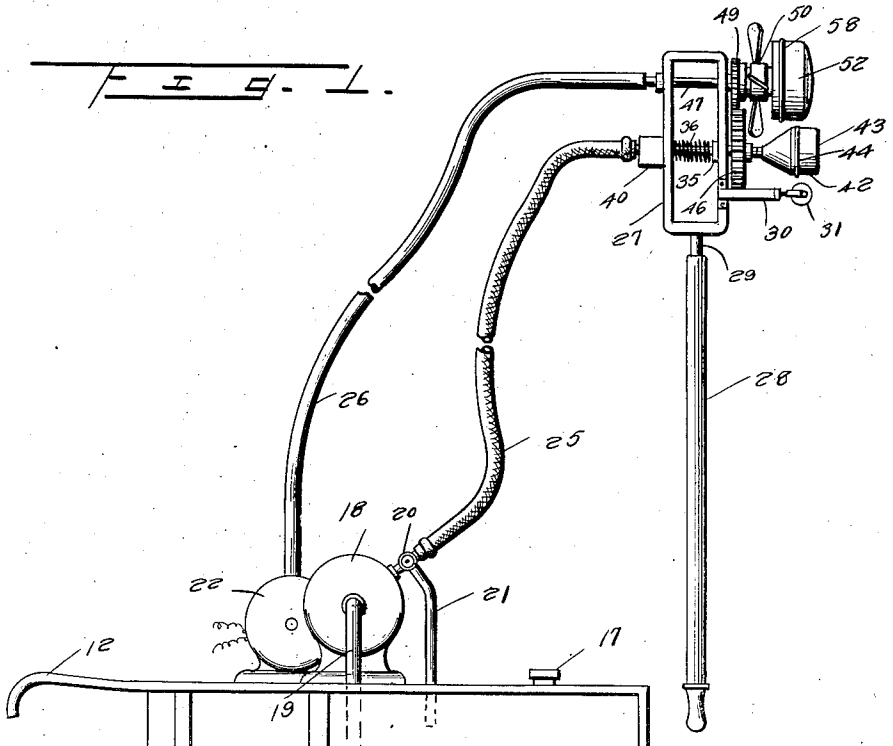
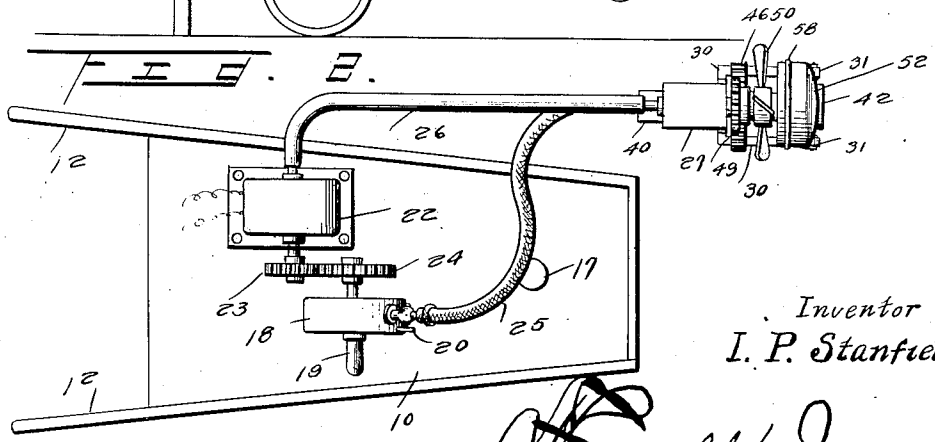


FIG. 2.



Inventor

I. P. Stanfield.

By A. Randolph Jr.,

Attorney

I. P. STANFIELD.

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2 SHEETS—SHEET 2.

FIG. 3.

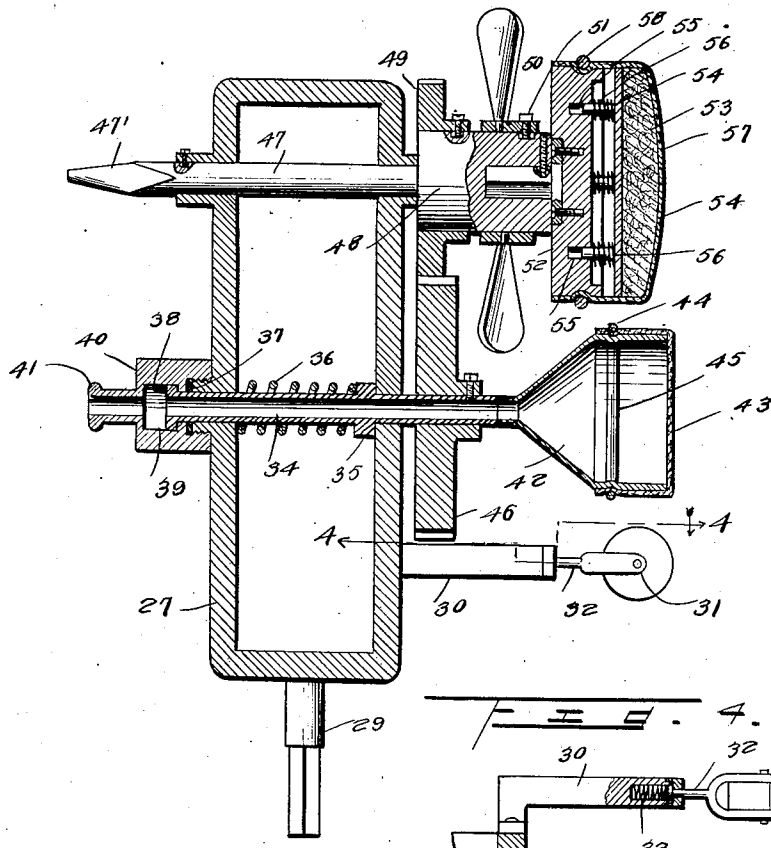


FIG. 4.

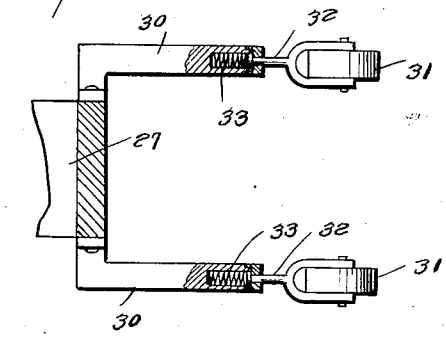
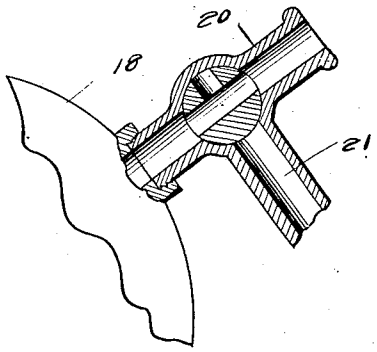


FIG. 5.



Inventor

I. P. Stanfield.

By Randolph & Co.

Attorney

UNITED STATES PATENT OFFICE.

ISAAC P. STANFIELD, OF WASHINGTON, DISTRICT OF COLUMBIA.

WINDOW WASHING AND DRYING MACHINE.

1,332,640. Specification of Letters Patent: Patented Mar. 2, 1920.

Application filed June 10, 1919. Serial No. 303,167.

To all whom it may concern:

Be it known that I, ISAAC P. STANFIELD, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Window Washing and Drying 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.

This invention relates to an improved window washing and drying machine and the principal object of the invention is to provide a machine in which there is combined a washing head and a drying head, the washing and drying heads being carried by a support and so mounted that the washing head may be used to bring the drying head into engagement with a window and to further so construct this machine that water may be carried in the body or vehicle forming part of the machine and supplied to the washing head through a flexible pipe and a motor for supplying power mounted upon the container or vehicle and connected with the drying element by a flexible shaft so that the drying element and washing head may be rotated.

Another object of the invention is to so construct this machine that it may be easily handled and held in proper engagement with the glass, supporting legs being carried by the frame carrying the washing and drying elements so that the washing and drying elements may be moved easily across the pane of glass.

Another object of the invention is to so construct this machine that water may be forced through the pipe leading to the cleaning head and, if desired, caused to pass through a branch pipe back into the container thus making it unnecessary to shut off the motor when a supply of water to the head is not necessary.

Another object of the invention is to so construct and mount these heads that they will be rotatably and slidably mounted and yieldably held in an extended position so that they will be retained under pressure in engagement with the pane of glass and thus a thorough cleaning and drying procured.

This invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a view showing the improved machine in side elevation,

Fig. 2 is a top plan view of the improved machine,

Fig. 3 is an enlarged vertical sectional view through the frame carrying the washing and cleaning head,

Fig. 4 is a fragmentary sectional view taken on the line 4—4 of Fig. 3,

Fig. 5 is a view showing the threeway valve of the water pipe in section.

This window washing machine is provided with a vehicle having a body or receptacle 10 about which is placed a frame 11 having handle extensions 12 and legs 13 and 14, the legs 14 carrying supporting wheels 15, and the legs 13 being extended, as shown in Fig. 1, to provide props upon which the body will be normally supported thus preventing the body from moving out of a set position when the machine is in use. A caster indicated in general by the numeral 16 is provided at the front of the machine so that when it is desired to move the machine from one place to another it can be tilted upon the wheels to bring the caster 16 into engagement with the floor or ground and the machine easily moved. An inlet 17 is provided in the upper wall of the body 10 so that water may be poured into the body through this inlet and the inlet then closed.

A rotary pump 18 is mounted upon the top of the receptacle 10 and is provided with a suction pipe 19 which extends into the receptacle to a point adjacent the bottom thereof, as indicated in Fig. 1, so that water may be forced from the receptacle when the pump is in operation. A threeway valve 20 is connected with the outlet of the pump housing and communicates with a return or branch pipe 21 so that water may be returned to the receptacle when it is not desired to supply water to the washing or cleaning head to be hereinafter described. An electric motor 22 for furnishing power is mounted upon the top of the receptacle and is provided with a relatively small gear

23 which meshes with a relatively large gear 24 mounted upon the shaft of the pump. It will thus be seen that while the motor will be run at a relatively high speed, the pump will be operated at a relatively low speed and therefore water will not be pumped too rapidly. A conduit or pipe 25 is connected with the threeway valve for conveying water to the cleaning element and a flexible shaft 26 is connected with the shaft of the motor for transmitting rotary movement to the drying element to be hereinafter described.

In order to support the cleaning and drying elements there is provided a rectangular head or frame 27 supported upon a handle 28 which will be of a desired length for convenience in use and which will be preferably detachably connected with the shank 29 of the frame 27 thereby permitting handles of different lengths to be connected with the frame according to whether the device is to be used for cleaning a small or a large window. Arms 30 extend from the sides of this frame adjacent the bottom thereof and carry rollers 31 which will engage the surface of the pane of glass and permit the cleaning and drying elements to be moved easily across the pane of glass. These rollers will preferably be provided with tires of rubber or other similar substance so that they will not scratch or otherwise mar the glass. The stems of the caster brackets 32 of these rollers extend into sockets formed in the free end portions of the arms 30 and are engaged by springs 33 thus permitting give which will permit the cleaning head and drying head to be brought into proper engagement with the windowpane. The cleaning element and drying element are mounted in the frame above the supporting arms 30 with the drying element in the upper portion of the frame and the cleaning element positioned beneath the drying element. It is to be understood, however, that this is optional with the manufacturer and that the relative positions of the cleaning element and drying element may be reversed if desired. The construction of the cleaning element and drying element is disclosed in detail in Fig. 3 and reference will now be had to this figure.

In constructing the cleaning element there is provided a hollow shaft 34 which is slidably and rotatably carried by the frame 27 and is provided with an abutment collar 35 which limits sliding movement of the shaft in one direction and is engaged by the spring 36 so that the shaft will be yieldably held against sliding movement. This shaft extends through the threaded neck 37 and terminates in an enlarged head 38 positioned in the internal chamber 39 of the coupling 40. This coupling 40 is screwed upon the threaded neck 37 and is provided with a reduced neck 41 upon which the hose 25 fits thus permitting water to pass from the hose into the hollow shaft and through the hollow shaft into the enlarged funnel-shaped head 42 at the forward end of the shaft. This head 42 carries a covering or jacket 43 which is formed of fabric or any suitable material which can be saturated with water. This jacket extends along the walls of the head and is engaged by a clamping band 44 which will be resilient and will clamp the jacket in the annular seat 45, thereby securely holding the jacket in place. A gear 46 is secured upon the forward end portion of the shaft 34, thereby providing means for permitting rotary movement to be transmitted to the shaft 34.

The drying element is provided with a shaft 47 which is rotatably mounted in the frame 27 and has a squared end portion 47' for engagement by the flexible shaft 26 thus causing the shaft 47 to rotate with the flexible shaft. This shaft 47 is provided with an enlarged outer end portion 48 which constitutes a socket and carries a relatively small gear 49 meshing with the gear 46 and with the gear transmitting rotary movement from the shaft 47 to the shaft 34. A fan 50 has its hub fitting upon the socket 48 and secured thereon by the set screw 51 and as this shaft 47 rotates the fan will rotate and direct a blast of air against the window which it is desired to dry and polish. This drying element is provided with a head 52 having a padded outer end portion 53 from which extend pins 54 fitting into sockets 55 formed in the head 52 and carrying springs 56 which tend to move the padded outer end portion 53 outwardly and into tight engagement with the jacket or covering 57 positioned about the head and held in place by the securing ring 58. This jacket will be formed of chamois or other similar substance which will produce a high polish upon the pane of glass.

When in use water will be placed in the receptacle or body 10 and if so desired ammonia, coal oil, or any other suitable cleaning agent may be placed in the receptacle with the water. The valve 20 will be turned to the position shown in Fig. 5 and when the motor is started this water will be pumped through the pipe 25 into the hollow shaft 34 through which it will pass into the head 42 of the cleaning element and saturate the covering 43 which will take the place of a cloth or swab for cleaning the window. After the covering has been saturated and it is no longer desired to have water pumped into the head, the threeway valve will be turned to register with the pipe 21 and water from the pump will then pass through the valve and pipe 21 back into the receptacle. After the water, which will accumulate in the head beneath the pipe 34, has been used, the valve can then be turned to permit a

fresh supply to be pumped to this head. The operating element will be held by the handle 28 and the head of the cleaning element brought into engagement with the windowpane, the wheels 31 engaging the pane for permitting the cleaning element to move easily about the pane thus thoroughly wetting and cleaning the pane of glass. The head of the cleaning element extends out beyond the polishing element and therefore when the cleaning element is in use, the polishing element may be held out of engagement with the pane of glass. After the glass has been thoroughly washed and it is desired to dry the glass, the handle will be actuated to move the frame closer to the glass and thus bring the head of the drying and polishing element into engagement with the glass. This drying and polishing element rotates and therefore the chamois covering of the head will engage the glass and be rotated thereon and thus the glass caused to be thoroughly dried and polished. As this drying and polishing element includes the fan 50 it will be readily seen that a draft of air will be directed upon the pane of glass thereby greatly aiding in the drying and polishing of the glass. When worn out, the coverings for the heads of the cleaning and drying elements may be quickly and easily removed and new ones put in place. I have therefore provided a machine for the purpose described which is so constructed that a pane of glass may be easily and quickly washed and dried and polished.

What is claimed is:

1. A window cleaning device comprising a receptacle, a pump carried by the receptacle and having an inlet pipe extending into the receptacle, a motor carried by the receptacle and having operative connection with the pump, a service pipe, a frame, a cleaning element rotatably mounted in the frame and including a hollow shaft connected with the service pipe, and a cleaning head carried by the hollow shaft, a drying and polishing element having a shaft rotatably mounted in the frame, an operating head carried by said shaft, a fan carried by said shaft, a flexible shaft connected with the shaft of the motor and with the shaft of the drying element, and means for transmitting rotary movement from the shaft of the drying element to the shaft of the cleaning element.

2. A window cleaning machine comprising a receptacle, a pump carried by the receptacle for withdrawing liquid therefrom, a conduit pipe having communication with the pump, a motor for operating said pump, a flexible driving shaft connected with the shaft of said motor, a frame, a cleaning element having a cleaner head and a hollow shaft rotatably mounted in the frame and having connection with the conduit pipe, a drying and polishing element having a head and a shaft rotatably mounted in the frame and having connection with the flexible shaft, and means for transmitting rotary movement from the shaft of the drying element to the shaft of the cleaning element.

3. A window washing machine comprising a receptacle, a pump carried by the receptacle, a motor for operating said pump, a frame, a cleaning element including a head and a shaft carrying said head and journaled in the frame, a conduit pipe leading from said pump and communicating with the shaft of the cleaning element, a drying element including a head and a shaft carrying the head and journaled in the frame, and means for transmitting rotary movement from the motor to the shaft of the drying element.

4. A window washing machine including a frame, a cleaning element having a head and a shaft carrying the head and rotatably and slidably mounted in the frame, an abutment upon the shaft intermediate its length, a spring positioned about the shaft and engaging the abutment and frame, a hose coupling carried by said frame and inclosing one end portion of the hollow shaft, a drying element having a shaft journaled in the frame, a fan carried by the shaft, a drying head connected with the shaft, and means for transmitting rotary movement from the shaft of the drying element to the shaft of the cleaner element.

5. A window washing machine including a frame, and a drying element having a shaft rotatably carried by the frame, a head having an inner section connected with the shaft, an outer padded section having pins fitting into sockets formed in the inner section, a jacket positioned about the outer section and connected with the inner section, and resilient means positioned about the pins and engaging the padded outer section to hold the same in tight engagement with the jacket.

6. A window washing machine including a frame, a drying element having a shaft journaled in the frame and provided with an enlarged outer end portion having a socket formed therein, a drying head having an inner section, a stem extending from the inner section into the socket of the shaft, an outer padded section, a jacket connected with the inner section and extending about the outer section, and resilient means between the sections for holding the outer section in tight engagement with the jacket.

7. A window washing machine including a frame, a handle for said frame, side arms extending from the frame, casters having their stems slidably connected with the side arms, resilient means yieldably holding the casters in an extended position, a cleaning

element having a head and a shaft for the head rotatably and slidably connected with the frame, means yieldingly holding the head in an extended position above the side arms, a drying element having a head and a shaft rotatably connected with the frame with its head terminating short of the plane of the outer end of the head of said cleaning element, means for transmitting rotary movement from the shaft of the drying element to the shaft of the cleaning element.

In testimony whereof I affix my signature.

ISAAC P. STANFIELD.