

United States Patent

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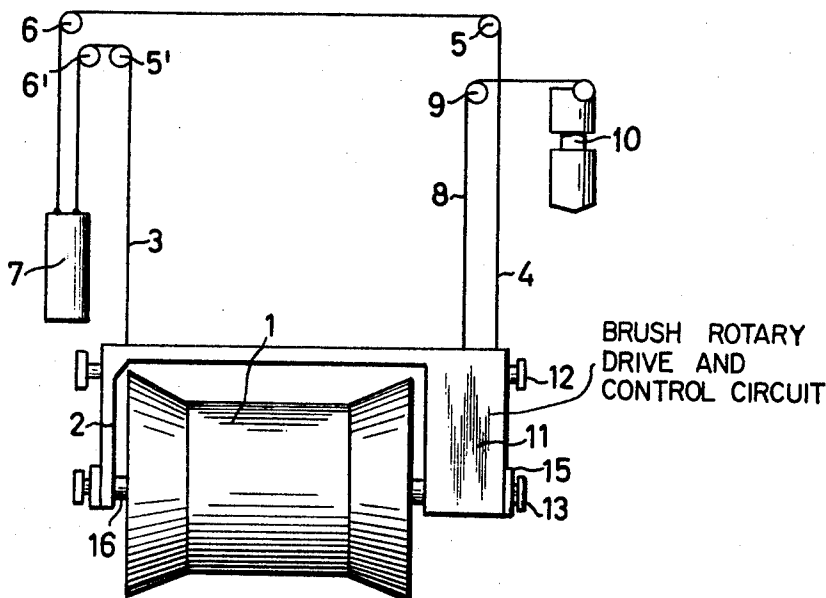
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**[54] SWITCH CONTROL MECHANISM FOR A
CARWASH INSTALLATION
6 Claims, 3 Drawing Figs.**

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[50]	Field of Search.....	15/21 C, 53.97

ABSTRACT: In a carwash installation, a roof brush is suspended on a rope for vertical movement in relation to a vehicle, and the brush and vehicle are movable in a horizontal direction in relation to each other. An actuating lever responsive to the movements of the brush and the rope actuates a switch into a first position wherein the relative horizontal movement of the brush and the vehicle is effectuated and a second position wherein the vertical movement of the brush is effectuated.



SWITCH CONTROL MECHANISM FOR A CARWASH INSTALLATION

BACKGROUND AND SUMMARY OF THE INVENTION

The present invention relates to a carwash installation, and more particularly to a mechanism for actuating a switch effectuating the up and down movement of a rotary roof brush mounted for pendulum movement about a substantially horizontal pivoting axis and suspended by rope means including a rope for moving the brush up and down in relation to a vehicle to be washed.

In installations of this type, the vehicle and the brush are movable in a substantially horizontal direction in relation to each other, i.e. either the vehicle is movable supported for movement past and underneath the roof brush or the roof brush is movable supported for movement past and above the vehicle while the same stands still. In such installations, it is conventional to provide switch means for alternately operating a control circuit for the one or the other movement, i.e. the relative horizontal movement between vehicle and brush is halted when the brush is moved up or down in relation to the vehicle, and this relative horizontal movement is resumed as soon as the brush is lifted out of contact with the vehicle.

The lifting motor for the roof brush may be reversed so that the brush executes an upward movement when the front of the vehicle is washed and downward movement when the rear of the vehicle is washed.

The switch means for the alternating operation of the horizontal and vertical movements is relatively complex in known carwash installations and it is accordingly the primary object of the present invention to simplify the switching arrangement without reducing the effectiveness or the speed of the switch actuation.

This object is accomplished in accordance with this invention by providing a switch-actuating lever which is operatively associated with the brush and the rope, being responsive to the pendulum movement of the brush and the up and down movement of the rope.

In the preferred embodiment, the rotary brush is mounted on a frame which carries a cam follower, such as roller, for pendulum movement with the frame, and two camming surfaces are provided on the switch-actuating lever for cooperation with the cam follower in respective directions of the pendulum movement of the frame. The rope may be anchored to a lever which is normally spring-biased against the switching actuating lever so that the tension or slackness of the rope constitutes switching positions.

With such a switch-actuating mechanism, it has become possible to actuate both switching positions with a single element. This is surprising and unexpected since two otherwise totally independent and different movements are used for the switch actuation, i.e. the pendulum movement of the brush and the tension of the rope which moves the brush up and down.

BRIEF DESCRIPTION OF DRAWING

The above and other objects, advantages and features of the present invention will become more apparent from the following description of a now preferred embodiment thereof, taken in conjunction with the accompanying drawing wherein

FIG. 1 is a schematic view of the suspension system for moving a roof brush up and down in a carwash installation;

FIG. 2 is a side view of the brush mounting; and

FIG. 3 is a view of the switch control arrangement according to this invention.

DETAILED DESCRIPTION

As seen in FIG. 1, the rotary roof-cleaning brush 1 is mounted for rotation on axle 16 in frame 2 and may be moved up and down, the frame being suspended on ropes 3 and 4 which are guided to counterweight 7 by respective pulleys 5, 6

and 5', 6'. The movement of the frame and the brush carried thereby is effected by guide or control rope 8 which is guided to lifting motor 10 by pulley 9. The rotary drive for the brush and the switch-operated control circuit for the upward and downward movement of the brush frame are well known, and are merely schematically indicated by box 11, this mechanism being carried by frame 2.

FIG. 2 shows the pivotal mounting of the brush frame 2, which enables the brush to execute a pendulum movement. Freely rotatable guide rollers 12 and 13 are shown running in a fixedly mounted guide rail 14. The upper guide roller 12 is fixedly mounted on brush frame 2 while the lower guide roller 13 is mounted on the free end of a pendulum lever 15 whose upper end is fulcrumed to frame 2 at pivot 17, the pivot of the pendulum lever being positioned above the rotary axle 16 of the brush 1.

When, as shown by arrow 18, a force is exerted upon the brush in the direction of the arrow, the brush frame and the brush swings about pivot 17. This pendulum movement is used to operate the switch for the control circuit by means of a roller or cam follower 20 mounted on the upwardly extending arm 19 of pendulum lever 15.

The switch operation is illustrated in FIG. 3. It includes a bellcrank lever 21 which is mounted for pivotal movement about fulcrum 22, this movement being limited by stop 23 mounted adjacent upwardly extending arm 30 of the bellcrank lever. The lower or horizontally extending arm 24 of the bellcrank lever has camming surfaces 25 and 26 for cooperation with cam follower 20 which is mounted on pendulum lever 15. In this manner, the swinging motion of the pendulum lever is transmitted to the bellcrank lever, as indicated in broken lines in FIG. 3.

Switch 27 of the operating mechanism 11 is connected to roller 28 in contact with the surface 29 of arm 24 so that the pivoting motions of pendulum lever 15 and of bellcrank lever 21 operate the switch for movement of the brush frame in respective, opposite directions.

The guide or control rope 8 has an eye or loops 36 connecting the rope to upper arm 35 of anchoring lever 33 whose lower arm 34 carries roller 32 in contact with surface 31 of arm 30 of the bellcrank lever. Arm 35 is biased about pivot 33' by spring 37 to hold the roller 32 normally against the surface 31.

When rope 8 is under tension, i.e. when the brush frame is lifted, for instance, the upper arm 35 of anchoring lever 33 is pulled against the bias of spring 37 against fixed stop 38, thus assuring a rigid connection between rope 8 and the brush frame 2 and the control mechanism. However, when the brush is in contact with, and supported, by the roof or other top surface of a vehicle being washed, the rope 8 is slack, and the tension spring 37 pulls the anchoring lever 33 clockwise, thus swinging arm 34 and roller 32 against the upper arm of bellcrank lever 21 into the operating position for switch 27. As the rope 8 is tensioned again, the actuating lever 21 resumes its initial position.

The switch 27 is operated by an adjustable pressure produced by the above-described pendulum movement of brush frame 2. Operation of the switch stops the relative movement of the vehicle and brush frame and actuates the lifting motor 10 to raise the brush frame and move the brush out of contact with the vehicle. As soon as this pressure is reduced below the adjusted operating level, the switch 27 is again in the position wherein it actuates the mechanism for moving either the vehicle or the brush frame relative to each other and the lifting motor for the brush frame is stopped. In this manner, the brush is kept in contact with the vehicle from the front to the back of the roof.

I claim:

1. In a carwash installation which comprises a roof brush mounted for pendulum movement about a substantially horizontal pivoting axis; rope means for suspending the brush; a vehicle to be washed and the brush being movable in a substantially horizontal direction in relation to each other, and

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the brush being movable up and down by a rope of the rope means in relation to the vehicle; a switch actuatable into a first position wherein the relative horizontal movement of the vehicle and brush is effectuated and a second position wherein the up and down movement of the brush is effectuated; and a mechanism for alternately actuating the switch into the first and second positions, the improvement of the switch-actuating mechanism including a switch-actuating lever operatively associated with the switch and responsive to the movements of the brush and the rope.

2. In the carwash installation of claim 1, a frame mounted for pendulum movement and supporting the brush, a cam follower mounted on the frame, and two camming surfaces on the switch-actuating lever and cooperating with the cam follower in respective directions of the pendulum movement of the frame.

3. In the carwash installation of claim 1, a movable anchoring means for the rope, and spring means for normally holding the anchoring means in contact with the switch-actuating lever.

4. In the carwash installation of claim 1, the switch-actuat-

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ing lever being a bellcrank lever having two arms, one of the bellcrank lever arms being operatively associated with, and responsive to the pendulum movement of, the brush, and the other bellcrank lever arm being operatively associated with, and responsive to the up and down movement of, the rope.

5. In the carwash installation of claim 1, a frame mounted for pendulum movement and supporting the brush, a cam follower pivotally mounted on the frame, the switch-actuating lever being a bellcrank lever having two arms, one of the bellcrank lever arms having two camming surfaces cooperating with the cam follower in respective directions of the pendulum movement of the frame, an anchoring means for the rope, and spring means for normally holding the anchoring means in contact with the other bellcrank lever arm.

6. In the carwash installation of claim 1, an anchoring lever for the rope, the rope being attached to one arm of the anchoring lever, and a spring means normally holding the other arm of the anchoring lever in contact with the switch-actuating lever.

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