United States Patent [19]

Talbot et al.

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[45] **Dec. 4, 1973**

[54] **CAR-WASH INSTALLATIONS**

[76] Inventors: **Wilburn D. Talbot,** 1742 S. 145 East, Orem; **Willis Robert Dunkley, Jr.,** 2131 Condie Dr., Taylorsville, both of Utah

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[52] **U.S. Cl.** ..... **15/21 E,** 15/DIG. 2, 134/123

[51] **Int. Cl.** **B60s 3/06**

[58] **Field of Search** ..... 15/DIG. 2, 21 D, 15/21 E, 53, 97, 4; 134/123, 45

[56] **References Cited**

UNITED STATES PATENTS

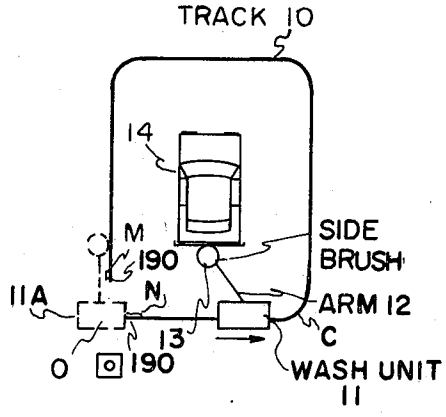
3,208,088	9/1965	Sulzberger et al.	15/21 E
3,641,606	2/1972	Lee	15/21 E
3,673,626	7/1972	Lieffring	15/97 R X

Primary Examiner—Edward L. Roberts
Attorney—M. Ralph Shaffer

[57] **ABSTRACT**

Improvements in car-wash installations wherein a track comprising contiguous J and L sections form a geometric figure similar to a rectangle having rounded corners, but which is open at one corner and a leg of which extends therebeyond for proper storage of the washing equipment. A wash, rinse-and-wax unit, hereinafter simply referred to as a "wash unit," travels about the track structure and, by its design, accommodates essentially all sizes of automobiles. The revolving side-brush structure associated with the wash unit is dragged or pulled, while in its revolving condition, about the periphery of a small car or compact, and this in both directions of travel relative to the wash and rinse cycle portions. For larger cars the revolving side-brush is alternately pulled by the wash unit during the wash portion of the cycle and then is pushed or leads the wash unit during the return portion of the cycle when the car is rinsed or rinsed-and-waxed. The system is designed such that water is sprayed at all times upon the vehicle, and the top and side-revolving brushes are in continuous motion. The side-brush structure is pivoted about a vertical axis so as to accommodate both lead and lag positions relative to the car-wash function. The track rails and cooperating roller unit guide the wash unit in its path about the vehicle. Numerous advantages are presented in the structure relating to the travel of the wash unit as well as the function and structure of the side-brush or brushes, the rail and travelling roller feature, counterweighting, and so forth.

10 Claims, 25 Drawing Figures



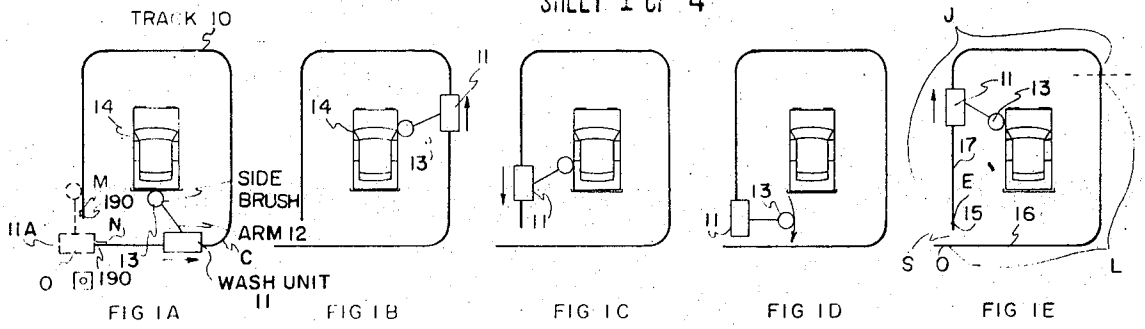


FIG 1A FIG 1B FIG 1C FIG 1D FIG 1E

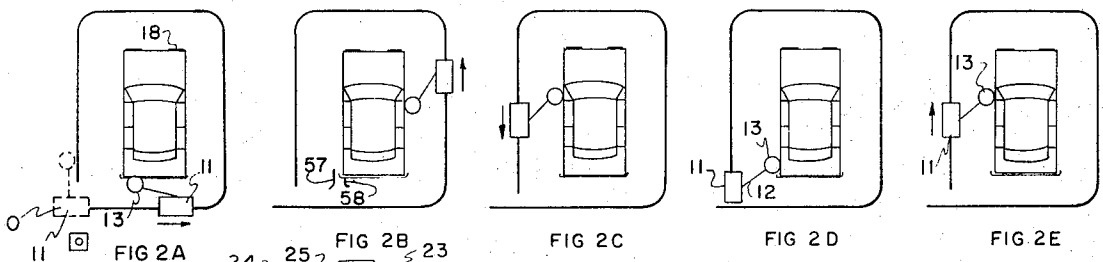


FIG 2A FIG 2B FIG 2C FIG 2D FIG 2E

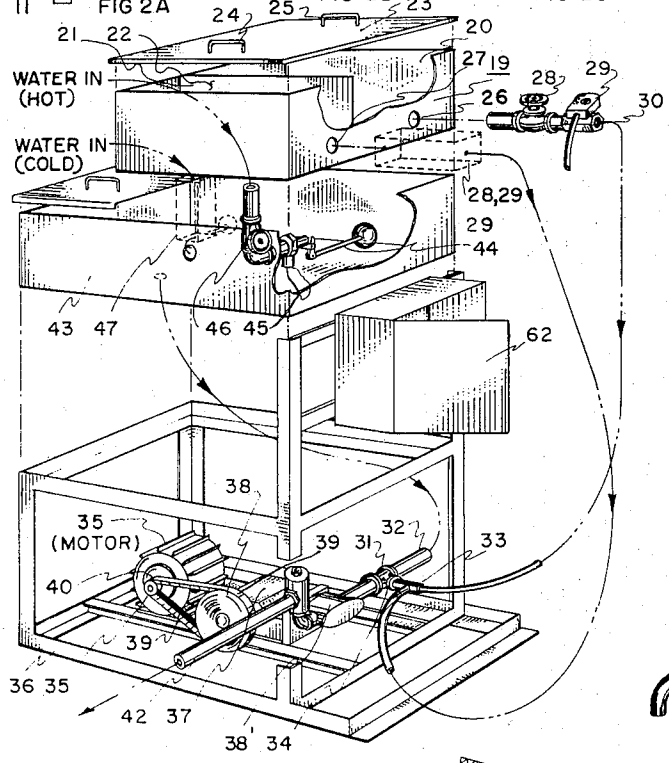


FIG 3

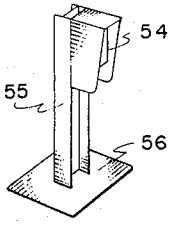


FIG 4

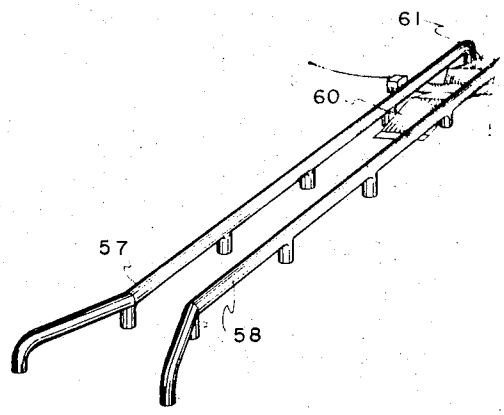


FIG 5

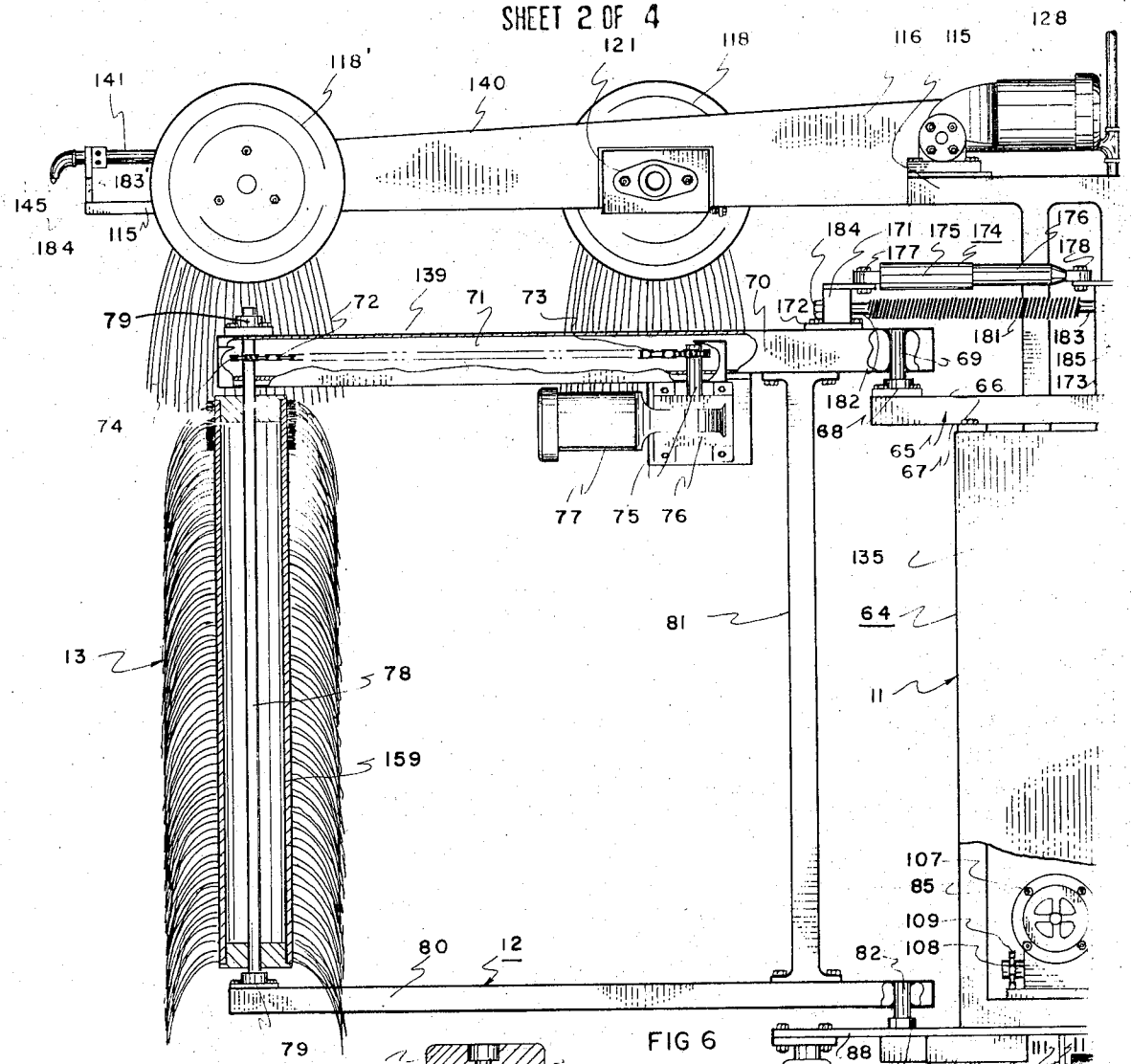


FIG 6

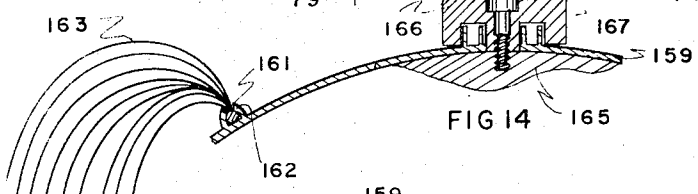


FIG 14

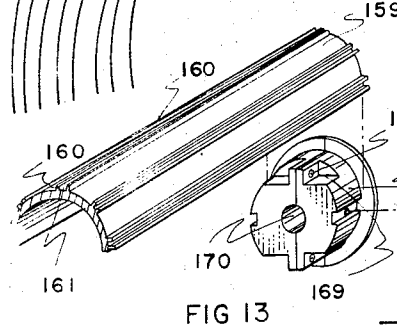


FIG 13

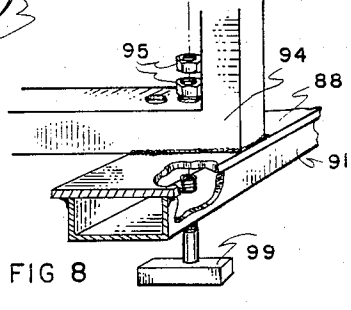


FIG 8

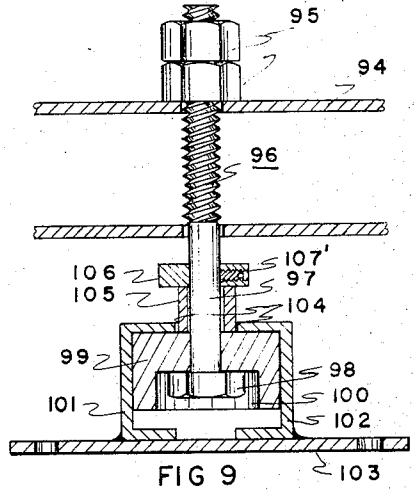


FIG 9

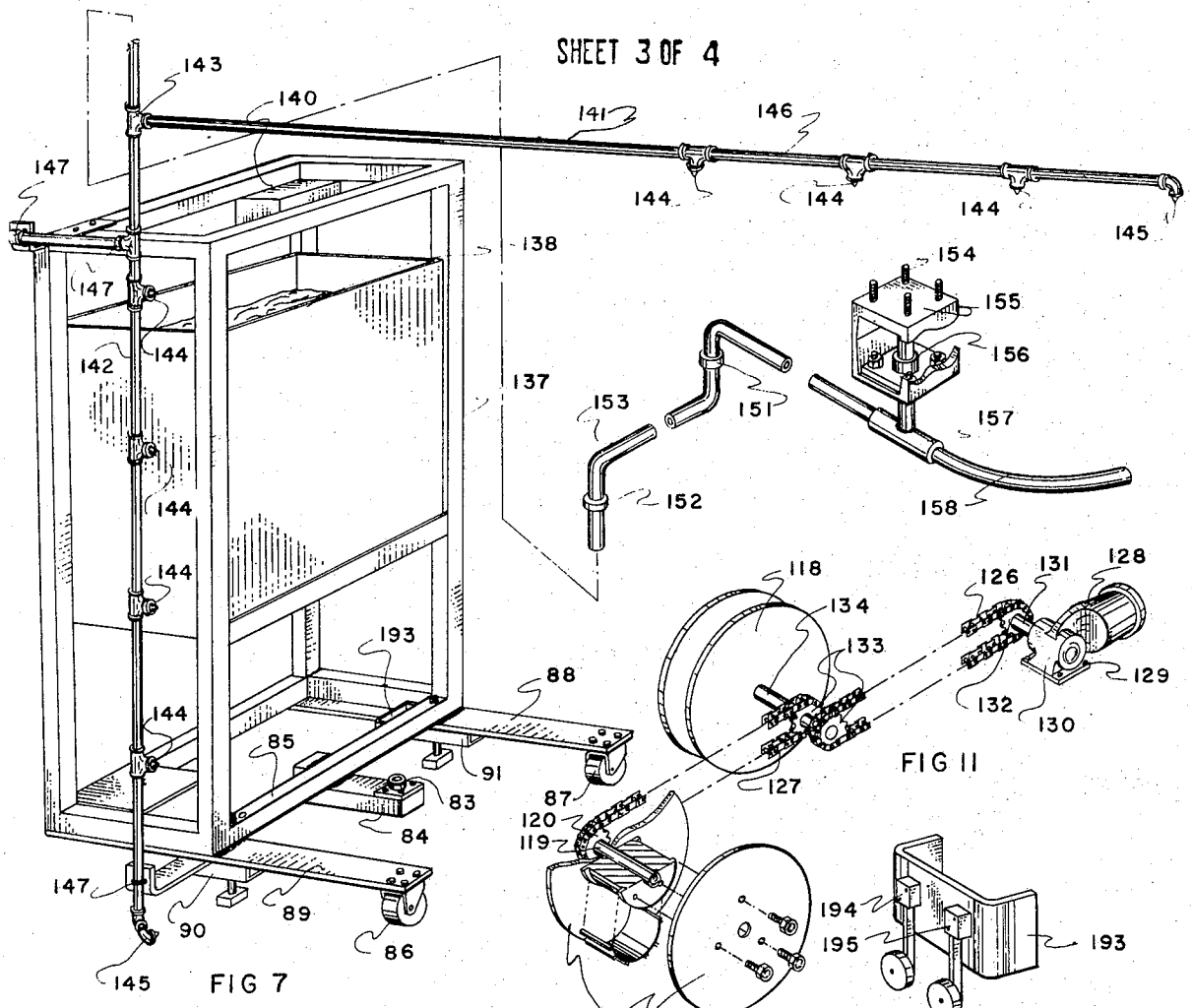


FIG 7

FIG 11

FIG 16

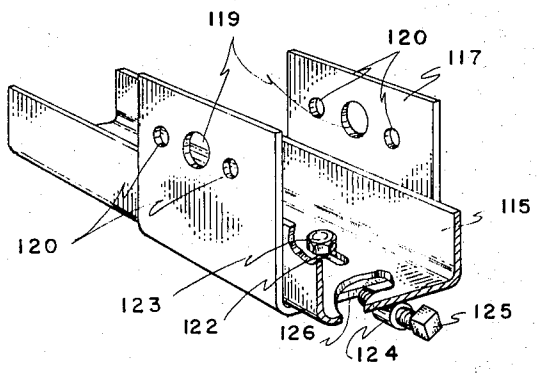


FIG 10

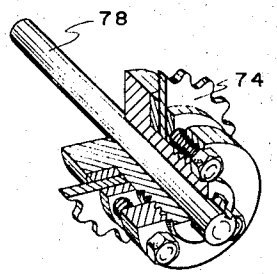


FIG 12

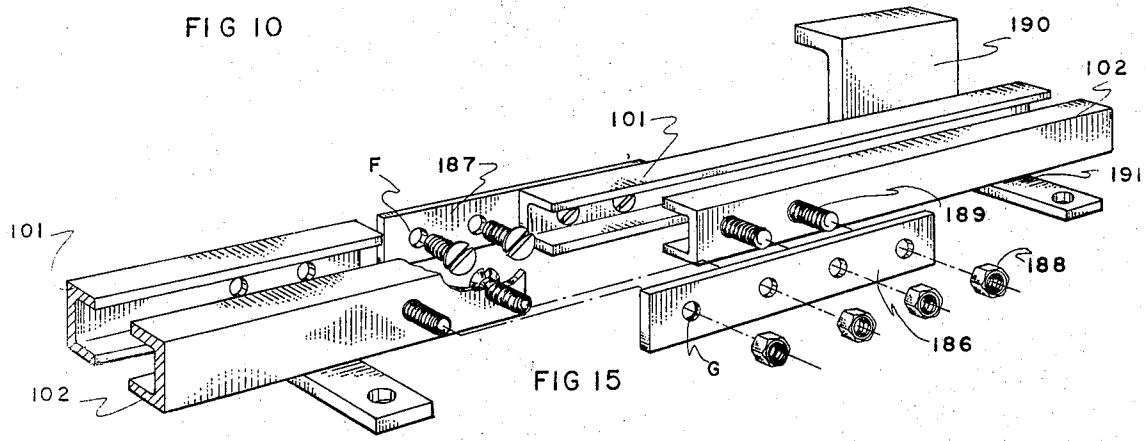


FIG 15

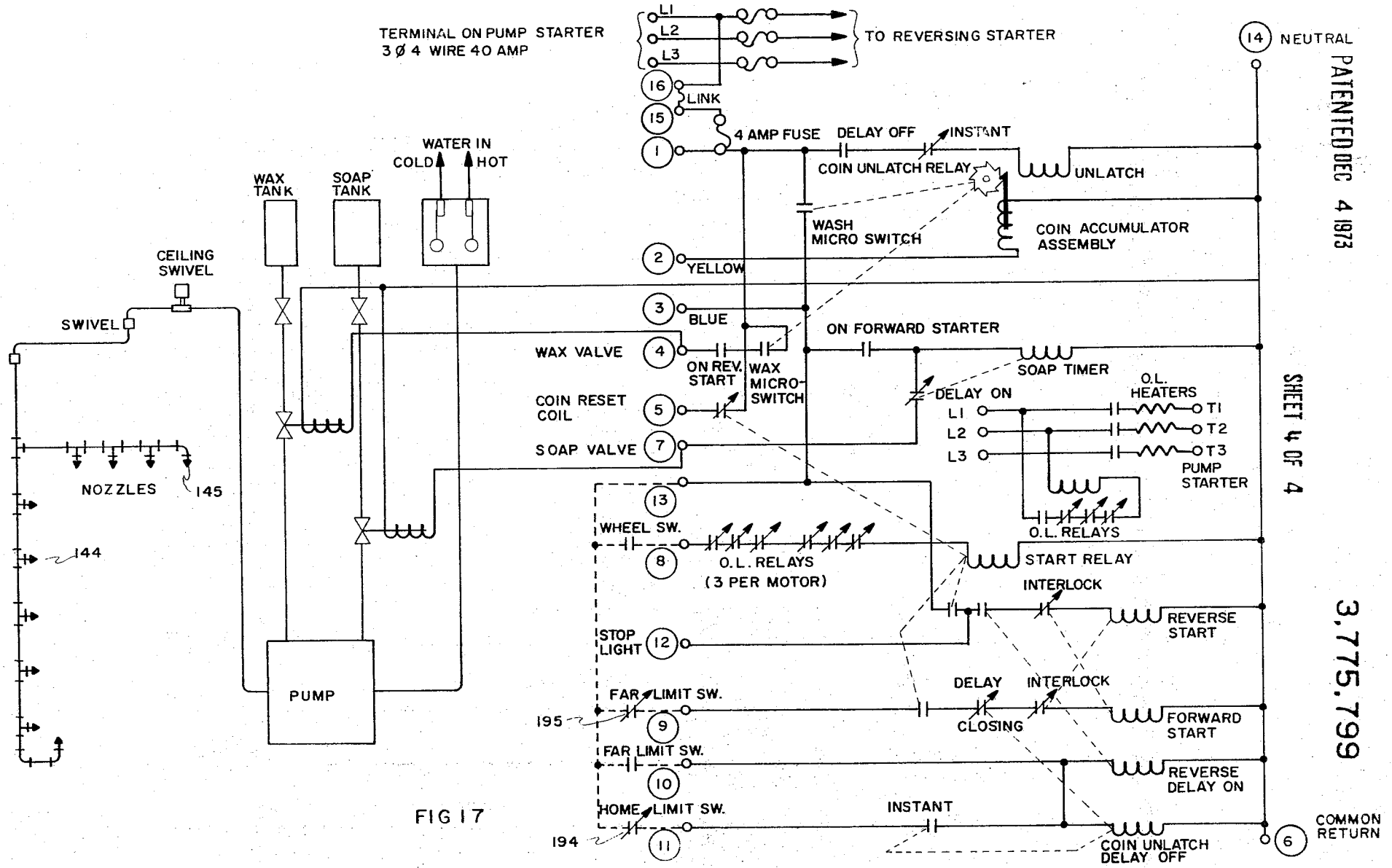

TERMINAL ON PUMP STARTER
3 Ø 4 WIRE 40 AMP
L1
L2
L3
TO REVERSING STARTER
14 NEUTRAL
16
LINK
15
1
4 AMP FUSE
DELAY OFF
INSTANT
COIN UNLATCH RELAY
UNLATCH
WASH MICRO SWITCH
COIN ACCUMULATOR ASSEMBLY
WATER IN
COLD
HOT
WAX TANK
SOAP TANK
CEILING SWIVEL
SWIVEL
2 YELLOW
3 BLUE
ON FORWARD STARTER
WAX VALVE
4
ON REV. START
WAX MICRO-SWITCH
SOAP TIMER
O.L. HEATERS
DELAY ON
L1
L2
L3
T1
T2
T3
PUMP STARTER
COIN RESET COIL
5
SOAP VALVE
7
NOZZLES
145
144
13
WHEEL SW.
8
O.L. RELAYS
(3 PER MOTOR)
O.L. RELAYS
START RELAY
INTERLOCK
REVERSE START
STOP LIGHT
12
PUMP
FAR LIMIT SW.
195
9
DELAY CLOSING
INTERLOCK
FORWARD START
FAR LIMIT SW.
10
REVERSE DELAY ON
HOME LIMIT SW.
194
11
INSTANT
COIN UNLATCH DELAY OFF
6
COMMON RETURN

FIG 17

CAR-WASH INSTALLATIONS

The present invention relates to car-wash installations and, more particularly, to improvements in such installations, by way of accommodating structures, wherein a vehicle such as an automobile is washed by a wash and rinse unit that travels about a track of unique configurement.

The present system is designed to be a low cost system intended for bays wherein the wash and rinse cycles are effectuated for vehicles at rest position. Thus, it is the wash and rinse unit, hereinafter referred to as the "wash unit," which travels about a track essentially circumscribing the parked vehicle, so as to clean the same.

Important features of the invention include the concept of having a travel track for the wash unit which resembles a rectangle, having essentially rounded corners, and forming in the aggregate an L portion contiguous with a J portion thereof. The ends of the track structure are not connected but rather are spaced apart, and one portion of the track, namely a leg of the L, is elongated laterally beyond the remaining, returning extremity of the track.

Accordingly, in the present invention the wash unit carries the side and top-brush structures which preferably continuously revolve during the wash and rinse cycle portions. The side-brush is carried by a pivoted arm structure that is suitably spring tensioned so that the side-brush is disposed in a central position, nominally, but is capable of thrusting against a vehicle being washed during both lead and lag positions. For small cars, such as many foreign makes including Volkswagens, the side-brush is pulled or trails the wash unit in its travel during the wash cycle portion and also during the rinse cycle portion. For large automobiles, in contrast, the revolving side-brush structure is pulled or dragged forwardly by the wash unit during the wash portion of the cycle, and then leads or is pushed in the reverse direction as the automobile is being rinsed-and-waxed. Structure is provided for incorporating chains or other drives for the top rollers, such drives preferably being encased in single housing structure. Exposed elements of the structure are either camium or nickle-plated, or include stainless steel covers. Guide structure is operably associated with the wash unit such that the same follows or is constrained by the pattern configuration of the track with which it is operably associated. Thus, one or preferably a pair of top-brushes clean the top of the vehicle being washed whereas the side-brush cleans the back, front and side areas of the vehicle.

Tension spring means is provided for exerting a thrusting force upon the side-brushes, whether in leading or lagging condition relative to the wash unit, and also for returning the same in a nominal central position in the absence of contact by the side-brush structure with a vehicle. Safety features are provided in the co-action between the guide or follower of the wash unit and the roller structure. Roller means is also incorporated for positioning between and in coaction with the oppositely facing edges of the split track structure used. Switch means is provided for starting the cycle as well as for reversing the wash unit at its forward extremity of travel and then of stopping the unit as it reaches its rest or original position. Appropriate drive means are utilized in connection with the brushes such that the drive means are actually incorporated in the moving wash unit structure.

Accordingly, a principal object of the present invention is to provide a new and improved car-wash installation.

An additional object is to provide improvements in car-wash installations.

A further object is to provide a car-wash installation wherein the wash and rinse structure travels about a parked vehicle being washed.

An additional object is to provide travelling car-wash and rinse structure wherein the essential side-brushes are dragged or pulled across the side surfaces of the vehicle when the same is of relatively small dimension, and, alternatively, for effecting a pull-push function in the event that large vehicles are being washed.

A further object is to provide a travelling wash unit for car-washes wherein the same follows a predetermined track pattern.

An additional object is to provide a car-wash installation of a travelling wash unit type, a track structure essentially resembling a rectangle but one corner of which is open, an extension of one extremity extending laterally beyond the leg of the remaining extremity.

A further object is to provide a track pattern for revolving wash units in car-washes wherein the travelling wash unit, including essential roller, is stored conveniently out of the way at rest position and in a manner such that the side-brushes cannot inadvertently engage a vehicle driving to the required area within the track.

A further object is to provide a unique track for travelling car-wash units wherein both wash and rinse functions, as well as out-of-the-way storage, can be effected.

A further object is to provide for counter-weighting and/or safety features in connection with the wash unit associated with car-wash installations.

The features of the present invention may best be understood by reference to the following description taken in connection with the accompanying drawings in which:

FIGS. 1A–1E illustrate in plan and in schematic form the basic car-wash installation of the present invention wherein the track structure is oriented in a pattern resembling a J portion contiguous with an L portion, one corner being open and one extremity being elongated, as indicated; FIGS. 1A–1E illustrate the forward and also return travel of the wash unit during the complete wash-rinse or wash, rinse-and-wax cycles for smaller vehicles.

FIGS. 2A–2E are similar to FIGS. 1A–1E but illustrate a larger of standard size vehicle being washed; thus, in FIG. 1A the small car is accommodated through a pull-pull operation of the wash unit relative to wash and rinse cycles, whereas in FIGS. 2A–2E the large car is accommodated by a pull-push function of the side-brush structure relative to wash and then rinse cycle.

FIG. 3 is an exploded view of reservoir structure including drive motor and pump, wherein water of desired temperature is stored and routed ultimately to the spray nozzles of the structures; in FIG. 3 wax and soap compartments are illustrated in addition to water storage or reservoir structure.

FIG. 4 is a perspective view of a standard coin box utilized in connection with the present invention; a coin

box is a conventional, off-the-shelf item and forms no part of the present invention.

FIG. 5 is a perspective view of vehicle wheel guide rails and switch structure associated therewith, wherein a vehicle may be guided to a proper position or area within track configuration and, by the switch structure illustrated, be operative in conjunction with the coin box to commence the wash portion of the cycle once the vehicle is at rest over the switch structure.

FIG. 6 is an enlarged, side view of the travelling wash unit of the invention, the same illustrating both top-brushes as well as a revolving side-brush structure; the latter is pivoted and spring tensioned for purposes hereinafter set forth.

FIG. 7 is a perspective view of the framework structure of FIG. 6, illustrating simply the manner of attachment of the spray nozzle equipment to the tubular structure of the wash unit; in FIG. 7 there is shown in fragmentary view the water conduit leading to the swivel and pivot connections within the structural bay accommodating the wash unit.

FIG. 8 is a fragmentary perspective view of the frame structure of FIG. 7, illustrating the structure which the wash unit is keyed to the track structure.

FIG. 9 is similar to FIG. 8 and illustrates the guide roller and safety structure of the wash unit as the same operates with the track rail structure; FIG. 9 is shown in transverse section for convenience of illustration.

FIG. 10 is a perspective view of a portion of the side arm structure of the wash unit in FIG. 6, the same illustrating the channel members by which a representative one of the two top-brushes may be revolvably attached to the channel and arm structure; adjustment and locking means are also provided as seen in FIG. 10, illustrating that the disposition or placement of the top-brushes may be adjusted for drive or other purposes.

FIG. 11 is an exploded view of the central reel structures of the top-brushes and illustrates the structure and means of drive of such top-brushes by the motor provided the fixed top arm of the travelling wash unit.

FIG. 12 is a fragmentary perspective view showing, principally in section, a clutch mechanism of conventional form that can be utilized to secure the side-brush structure to its drive shaft.

FIG. 13 is an exploded, fragmentary, perspective illustrating the makeup of a representative revolving brush, either side or top, utilizing the invention.

FIG. 14 is a transverse vertical cross-section, in fragmentary view, illustrating the method of attachment of bristle units to the core of a respective brush.

FIG. 15 is a fragmentary perspective view of a track juncture, illustrating that the track may be formed in sections and joined by the structure provided; a switch actuating plate is also seen in this figure and is operative to depress switch arms in their travel with the wash unit such as to reverse the direction of movement of the wash unit at one extremity of travel and also to stop the rinse cycle after the round trip of the wash unit has been completed.

FIG. 16 is a perspective view of a representative micro-switch-bracket construction that can be utilized.

FIG. 17 is a combination water flow and electrical schematic of a representative conventional circuit useable herein.

FIGS. 1A–1E illustrate in schematic view and in plan the general orientation of track 10 of the invention and the wash unit 11 coacting therewith. Wash unit 11 includes a general arm construction 12 provided with side-brush 13, and the arm construction 12 is suitably spring-biased such that the side-brush 13 will engage the side of a representative small car 14. FIG. 1A illustrates the wash unit 11 in dotted line at 11A, showing the unit at its start position 0.

In operation, as the wash unit proceeds to the right as shown by the arrow in FIG. 1A, such unit will travel along track 10 to the positions shown in the subsequent FIGS., i.e., FIGS. 1B–1E, illustrating the travel of the wash unit 11 about track 10. When the position for wash unit 11 is reached as shown in FIG. 1D, then the arm reverses a position so that during the return travel of wash unit 11, there will still be a drag or pull of the side-brush 13 relative to the new forward travel of unit 11. It will be noted throughout the entire progression of the washing and the operating sequence thereof that the side-brush is pulled forwardly to effect the washing of the small car 14 disposed medially of the configuration of track 10. It is seen that track 10 resembles in configurement the combination of an L portion, identified by L in FIG. 1E, with a contiguously placed J portion, labeled J also in FIG. 1E. It is noted that the head 15 of the J portion is spaced by space S from the leg 16 of the L portion. Furthermore, the leg L extends to the left a distance beyond the leg 17 of the J portion. This is important. It will be observed that the unit 11, when at rest or initial position, is disposed completely out of the way relative to the track. Thus, an automobile may be drawn into the central area of track 10 for washing purposes. It is noted that the wash unit 11 does not proceed uni-directionally around and round the track. Rather, it commences at its starting point as shown in dotted configuration in FIG. 1A and proceeds to the end of the track at E in FIG. 1E; thence it reverses direction as shown by the arrow indicated in FIG. 1E back to its original position at 0, as seen in FIGS. 1A and 1E. The circular indications 13 relating to the side-brush construction, hereinafter referred to in detail, shall be understood to include the entire revolving brush including core and bristles. In connection with the washing of the small car 14, however, it must be understood that there will not be a pressing contact via the core of the side-brush 13 until the wash unit 11 commences its travel about curve C. At this point the core under the pressure of the spring-biased arm 12 will thrust against the rear bumper and rear portion of the car so that there will be a scrubbing action at this point. Before the wash unit 11 reaches this travel position, however, then perhaps solely the bristles themselves will effect some cleansing action even upon the left rear portion of the vehicle in FIG. 1A. However, as to total cleansing, reliance is had upon the return trip of wash unit 11, see FIG. 1D, since there will be, or can be, an engagement of the bristles or even a thrusting engagement of the core and bristles upon the left rear portion of the small car.

It must be understood that the category "small car" and "compact" is very broad. The lengths of small cars can vary from that typified by current small Volkswagens to somewhat larger automobiles such as those of a Japanese make. Furthermore, and depending upon these and other factors, the track 10 itself may be somewhat elongated in a vertical direction relative to the viewer, that is, elongated along the longitudinal axis of the track, so as to accommodate a wide variety of car makes.

In sum, and regardless of the particular size of the small car being accommodated, it is important to note that there is a "pull-pull" action of the wash unit relative to the automobile being washed. Thus, the side-brush is effectively "dragged" about the car to complete the cleansing action of the same, and such dragging is effected in both directions of travel. There may or may not be an actual thrusting engagement of the core of the side-brush relative to the car at certain areas, this depending upon the size of the car.

FIGS. 2A–2E illustrate the operating sequence of the track and car-wash unit in conjunction with the washing of a large car, as indicated generally at **18.** It is seen that the washing at **11** again starts from its rest position at **0** and proceeds to the right and around the track so as to wash the car completely, beginning even at the rear left of the car as seen in FIG. 2A. There is thus immediately commenced a dragging or pull action upon the revolving side-brush **13** as the same proceeds in its travel in a counter-clockwise direction about the car. The wash unit continues its progress in the manner illustrated in FIGS. 2A–2D until the wash unit **11** reverses direction, see FIGS. 2D and 2E. At this point it is noted that instead of a dragging or a pulling action of the wash unit relative to the side-brush **13,** there is now a pushing action relative to the side-brush. This is to say, the arm **12** is in a forward direction relative to the wash unit **11** and the side-brush **13** in essence precedes wash unit **11** in its travel in a clockwise return direction about the car.

To summarize, for small compact automobiles of varying sizes, there may be a "pull-pull" action present relative to the pulling or dragging of side brush **13** about the car in both directions, via its wash unit **11.** In contrast, there is a pull-push action in the sequence shown in FIGS. 2A–2E relative to the washing and rinsing of large cars.

FIG. 3 illustrates certain tank structure **19** which may include soap and wax compartments **20** and **21,** respectively. These may be formed by way of a partition **22;** lid **23** is deposited thereover and includes handles **24** and **25.** Soap and wax compartments are provided with outlets **26** and **27;** each of the same will be provided with a manual metering valve **28** and also a solenoid valve **29.** Solenoid valve **29** is simply of the conventional on-off type, wherein an electrical circuit selectively opens a general conduit **30** leading to soap outlet **26** and connecting the same to tee **31** associated with outlet **32.** A corresponding combination of metering valve **28** and solenoid valve **29** will be operatively associated with wax outlet **27,** to offer selective and intermittent communication of the latter to tee **31,** this time by virtue of the inclusion of tee **33** connected to the leg **34** of main tee **31.**

A conventional motor **35** is provided, and is mounted upon framework **36.** Pump **37** is likewise mounted on such framework and includes a drive pulley **38** that is coupled by V-belt **39** to the output pulley shaft **40** of the motor. The operation of the pump **37** of course is to increase the output fluid pressure of water received thereby. Controls will be provided for selectively connecting the wax and, alternatively, the soap ingredients of respective compartments **20** and **21.** Pressure regulator **38'** may be inserted into the outlet line **39** of the pump so as to control pump pressure, to act as a safety device, and so forth.

Thus, outlet conduit **42,** provided with the aforementioned pressure regulator, is immediately equipped to supply water, either alone or in combination with soap and wax.

This leads to a brief discussion of water tank **43.** The water tank **43** acts as a reservoir or reserve tank and is provided with the usual float valve **44** and outlet **45** leading into the interior of the tank. Conduit **46** leading to the float valve construction at **44** may receive hot water coming in. A corresponding "water-in" and float valve construction at **47,** similar to that shown at **44** and **46,** can likewise be provided for the remaining water supply, namely for the cold tap water. Both incoming water supplies may be provided with a shut-off valve that can serve as a metering valve for appropriately mixing the two supplies to obtain the desired temperature. This is strictly within the purview of the judgement of the operator.

FIG. **3,** hence, illustrates structure that may be conveniently referred to as the power package for the entire system.

FIG. **4** illustrates a conventional coin box **54** provided with upright standard **55** and base **56.** There are numerous coin-operated boxes on the market, and the design of the same and particular choice thereof forms no part of the present invention.

FIG. **5** illustrates tire guide rails **57** and **58,** both of which may be conventional and both of which are in standard use of many types of car wash equipment. These rails **57** and **58** may be disposed in a position illustrated, by way of suggestion, in FIG. **2B,** and these rails are used simply to guide, by way of example, the left wheels of the car into appropriate position. Pressure switch **59** may operate on a toggle principle and is disposed between inclined ramps **60** and **61,** positioned between rails **57** and **58.** It is the pressure of the left front tire that depresses toggle switch **59** and commences the operating cycle. Starting units such as toggle switch **59** are conventional and form no part of the present invention.

In referring back briefly to FIG. **3,** it is noted that there may be provided an electrical box **62** having suitable electrical equipment contained therein as shown in sheet **4** of the drawings. The electrical box **62** may be mounted to the framework **36** by any conventional means such as nut and bolt attachments.

FIG. **6** illustrates in greater detail wash unit **11** with its additional equipment. The term "wash unit" as used herein shall refer to the travelling structure as pointed out in FIGS. 1A–1E and 2A–2E and this even though the "wash unit" in fact performs many functions, namely wash, rinse and wax. In any event, wash unit **11** includes a central structure **64** includes a super-structure **65** bolted by suitable bolt attachment means **66** to central structure **64.**

The super-structure **65** before referenced includes a side-arm support **67** which is bolted to the central structure **64.** Side-arm support **67** includes a bearing or bearing socket **68** receiving the lower end of stub shaft **69.** Stub shaft **69** is simply welded to or otherwise integral with cross-arm **70.** Cross-arm **70** is hollow at **71** and includes a sprocket chain **72** looped about drive and driven sprockets **73** and **74,** respectively. Drive sprocket **73** is mounted upon shaft **75** which comprises the outward shaft of gearbox **76** associated with motor **77.** The latter may be suitably mounted to the side-arm by any conventional means. Shaft **78** is journalled in

bearings **79**, and the latter is in turn mounted to side-arm **80**. It will be understood that cross-arm **70** and side-arm **80** are in the same vertical plane, are secured together by cross-brace **81**, and are pivoted, e.g., by stub shaft **82** to bearing **83**. Bearing **83** mounts upon a bracket plate **84**, see FIG. **7**, which in turn is fastened or made integral with frame **85**, as by welding or other means. Castors **86** and **87** are fastened in the manner indicated in FIG. **7** to castor plates **88** and **89**. Reinforcing channels **90** and **91** may be provided to add rigidity to plates **88** and **89**. For optimum operation, it is suggested that one of the castor plates **88, 89**, be longer than the other, this so that the castors will not exactly follow each other. Such a feature adds stability to the equipment and generally it will be the forward castor plate which will be longer than the rear castor plate.

In FIG. **8** a representative channel, **91**, is illustrated; the same includes, welded to the upper portion thereof, a plate **88**. The latter, in turn, is welded to frame **94**. Nut attachments **95** secure bolt **96** in place, see FIG. **9**, through tubular frame **94**. The bolt shank at **97** is smooth and cylindrical, and the usual bolt head is supplied at **98**. Safety block **99** is secured to bolt **96**, as indicated, and includes a recessed portion **100** for receiving bolt head **98**. Track halves **101** and **102** may be welded or otherwise secured to base plate **103** and, in any event, will be provided with open medial space **104** between the tracks. Roller **105** is dimensioned to fit in such and to be revolvable about bolt **96**. A retainer **106** includes a set screw lock **107'** for locking the retainer loosely over the roller so that the same will not proceed upwardly.

The reason for the inclusion of the two nuts **95** is so that the bolt may be adjusted in order that the safety block may not too tightly frictionally engage the upper portion of the opposite track halves. Retainer **106**, of course, may also be adjusted by set screw **107'** so that the roller **105** is always free to revolve. Drive motor **107** is mounted within and to the central structure **64** and includes an output shaft **108** coupled by sprocket **109** and sprocket chain **110** to driven sprocket **111'**. Stub shaft **111** is journaled by bearings **112** to depending ears **113** of the central structure at **64**. Drive wheel **114** is pinned to the stub shaft **111** and functions to drive the wash unit **11** along its path. Arm **115** may include opposite side coverings **116** and, in any event, includes a pair of brackets **117**, see FIG. **10**, one for each of the top brushes **118** and **118'**. Brackets **117**, one being shown as in FIG. **10**, include the usual central shaft apertures **119** and bearing mount apertures **120** for receiving plural bearings **121**. The brackets themselves may be adjustably mounted to arm **115** by means of the provision of respective slide apertures **122** and bolt and nut attachments **123**, see FIG. **10**. A threaded boss **124** may be secured to the underside of channel arm **115** to receive a tightening bolt **125** that tightens down onto the edge **126** of respective channel **117** and keeps the same pipe in place. It will be understood that the construction illustrated in FIG. **10** will apply to both of the top brushes **118** and **118'** in FIG. **6**. The channel construction at **115** is ideally suited to receive at endless drive sprocket chains **126** and **127** in FIG. **11**. Motor **128** thus may be provided with the arm **115** and be mounted thereto by attachments **129**. The motor will self-contain a gearbox **130** having output shaft **131** and sprocket **132** connected thereto. A pair of driven sprockets **133** are mounted upon shaft **134** which carries brush **118**. Solely the hub thereof is illustrated in FIG. **11**. Correspondingly, brush **118'**, the bristles not being shown for purposes of clarity, is provided with a shaft **119** pinned thereto and provided with sprocket **120**. Accordingly, a power actuation of motor **128** will produce a revolvement of the top brushes **118** and **118'** simultaneously. It will be noted that the channel construction of arm **115** ideally admits the inclusion therewithin of the drive sprocket chains seen in FIG. **11**.

If desired, shaft **78** in FIG. **6** may be provided with a conventional slip-clutch construction which accommodates for an overload slipping of sprocket **74**, see FIGS. **6** and **12**, in the event of such overload. The slip clutch illustrated in FIG. **12** is a standard part, is known under the trade name "Dodge Tamer" and forms in and of itself no part of the present invention.

FIG. **6** illustrates stainless steel covers **135** disposed over the framework **85**. Such framework **85** supports a container **137** that can be filled with a weighting material such as sand at **138**. This serves as a counterbalance or counter-weight for the equipment associated with the side arm structure at **70** and also at **115**. For long life, it is suggested that stainless steel covers at **139** and **140** be utilized as well as the cover at **135** with its integral top. Indeed, it is suggested, and the inventors prefer, that all exterior parts be either covered with stainless steel or chromium or camium plated. Disposed within the framework **85** is centrally positioned an electrical junction box **140** that contains all of the electrical connections leading to the several motors as before described.

In FIG. **7** it is seen that rigid conduit **141** and **142** are connected together by tee **143** and individually include a plurality of spray nozzles **144** and end spray nozzles **145**. The nozzles may be incorporated by any number of means as by separate tee connections and individual conduit segments **146**, if desired. Optionally, the conduit may be simply apertured and conventional nozzles threadedly inserted. U-bolts **147** may be used with their associated nut attachments to rigidly secure the spray equipment as illustrated in FIG. **7** to the primary structural framework at **85**. Disposed at the top of the bay incorporating the car-wash equipment will be the usual swivel connections **151** and **152**, with intermediate conduit **153**. Fastened by lugs **154** to the top of the bay will be a bearing housing **155**, the same including upper and lower bearings **156**, the lowermost one solely being shown.

A hollow tee configured holder **157** is journaled within bearings **156** for pivotal rotation and includes, centrally disposed therethrough, conduit **158** which leads to conduit **42** in FIG. **3**.

FIG. **13** illustrates a representative manner in which a brush, such as top-brushes **118, 118'**, or side-brush **13** may be constructed and may be attached to the shaft thereof. Core **159** is arcuate in form, preferably generally cylindrical, and includes upstanding longitudinal ribs **160** forming intermediate grooves **161**. These grooves **161** receive the longitudinal bead **162** associated with bristles **163**. The core itself may be fitted over end boss elements **165**, and be secured in place by keeper **166** and an attachment allen screw **167**. Allen screws accordingly will seat into threaded apertures **168** provided in corner-shaped recessed areas **169**. Central aperture **170** is provided for receiving representative shaft **78**. In fact, the boss structure may be

formed in two separate halves such that attachment screws cannot only secure the core thereto but also frictionally lock the shaft within aperture **170.**

The brushes of the present invention are standard off-the-shelf items and form, as to their individual selves alone, no part of the present invention.

FIG. **14** illustrates the attachment of the bristles to the core such as **159** and also a representative method of attaching the keeper **166** of FIG. **13** to the core via allen screws **167.**

In returning to FIG. **6,** there will be considered now the construction and attachments of the tension spring and shock absorber equipment. In FIG. **6** a bracket **171** is seen bolted or welded at **172** to arm **70.** Additionally, there is provided a bracket **173** that can be bolted or welded to the structure at **65** in FIG. **6.** Shock absorber **174** includes the usual cylinder **175** and piston rod **176** combination, the two being respectively secured by bolts **177** and **178** to brackets **171** and **173** in the manner indicated. The bolts **177** and **178** serve additionally as pivots for the ends of the shock absorber so that the same may adjust in accordance with the pivotal action of arms **70** and **80** of the pivotal frame structure **11** when the latter is at rest position. Accordingly, in the usual position, these units which hold the side-brush **13** in a laterally straight forward position, and when the equipment is operating, then a thrusting engagement of the side-brush with the parked automobile will be produced, by virtue of a pivotal action about pivot shafts **69** and **82.** Accordingly, the tension spring **181** will expand to accommodate such motion and in turn will provide a thrust force by the side-brush against the side, rear or front of the automobile being washed. When the brush passes operative engagement with the automobile, then tension spring **181** serves as a return spring for returning the side-brush equipment to the lateral, inwardly extending position. The purpose for the shock absorber **174** is to prevent rapid shock to the equipment during those intervals that the side-brush engages and alternatively disengages the car being washed.

In turning briefly to a consideration of FIGS. **6** and **7,** it will be seen that there may be provided a plate **183'** welded or bolted at **184** to the structure **115** in order to keep the spray equipment in central position relative to the arm structure **115.**

In FIG. **15,** the track structures **101** and **102** comprise the general track **10** in FIGS. **1A–1E** and **2A–2E** and, as shown, may be provided with tie plates **186** and **187** which are suitably apertured at F and G at a plural number of points to accomodate nut and bolt attachments **188** and **189** at such points. It will be understood that adjacent ends of the track sections **101** and **102** will butt against each other. Such a construction insures that the track may be made in convenient sections. Micro-switch actuating bracket **190** is welded at **191** to track sections **101** and **102** in the manner illustrated in FIG. **15,** on the outside of the track extremities at M and N in FIG. **1A,** by way of example. Micro-switch bracket **193** is welded to the inside of structure **85** in FIG. **7** and is also shown in FIG. **16.** Bracket **193** is thus equipped with conventional micro-switches **194** and **195.** It is these micro-switches **194** and **195** which engage the respective micro-switch actuating plates **190** at either extremity M or extremity N, which reverses or turns off the equipment. It will be recalled that it is the switch **59** in FIG. **5** which turns on the equipment by virtue of a car wheel riding thereover.

FIG. **17** illustrates in electrical schematic form a typical conventional circuit, standard in the art, which may be used to operate the equipment through the desired sequence. The specific circuit illustrated is simply representative of one of many circuits which may be used and forms no part of the present invention. The left of the drawing illustrates the water circuit flow of the equipment leading from the pump to the ceiling connection and swivel and nozzles mounted upon the structure, as seen in FIGS. **6** and **7.**

In briefly reviewing operation of the equipment, it will be the left front wheel that will start the equipment when the same rests upon switch **59** in FIG. **5.** Thus, so long as the coin is dropped into the coin box and a wheel rests upon switch **59** the unit will commence operating and will persist and complete its operating cycle until the equipment automatically shuts off as through the engagement of the respective microswitch **195** in FIG. **16** against plate **199** at position N in FIG. **1A.** The travel direction and push-and-pull actions have already been described with large and small cars in connection with FIGS. **1A–1E** and **2A–2E** and will not be repeated at this juncture. Suffice it to say that when the operation of the equipment commences, water is sprayed from the several jets **144** and **145** and the soap comes out with the water as the equipment proceeds forwardly in a counter-clockwise direction relative to FIGS. **1A–1E** and **2A–2E.** On the return cycle there is an automatic switching from wash to rinse or rinse plus wax. In the event the user had so previously selected as by dropping in additional coins in the meter box. It will be noted that at all times both the top-brushes **118, 118'** and the side-brush **13** will be revolving and operative. This as well as a continuous running of the high pressure water stream.

For certain types of installation, it may well be desirable to have the lower half of the side-brush system at **13** of slightly larger core diameter than the upper portion thereof. This may provide for a cleaner job and also accommodate the various types of bumper styles which are extant. In such event the bristles may well be shorter over that area of wide core that is present so that the over-all outer cross-sectional dimension of the brush will remain uniform throughout its length. 1A–It will be understood, referring to FIGS. **1A14 1E** and **2A–2E,** that the direction of car movement into and parked placement within the track area may be 90°, 180°, or 270° displaced relative to the car disposition illustrated.

While particular embodiments of the invention have been shown and described, it will be obvious to those skilled in the art the various changes and modifications which may be made without departing from the essential features of the present invention and, therefore, the aim in the appended claims is to cover all such changes and modifications as fall within the true spirit and scope of the invention.

We claim:

1. In a car-wash installation, track structure having a J-portion and an L-portion contiguous therewith and forming an essentially rectangular configuration having an open corner, a leg of said L-portion having an extremity extending laterally beyond said corner, and an operating brush and spray unit cooperatively mounted to said track structure and having means for powering the same therealong in forward and reverse directions

respectively from and back toward said extremity as a point of origin and unit storage.

2. The installation of claim **1** wherein said track structure includes three interior rounded corners.

3. The installation of claim **1** wherein said unit includes wheel means for enabling said unit to be rolled along a supporting surface, and means for powering said unit over such supporting surface.

4. The installation of claim **1** wherein said track structure is of split construction having a guide slot, and means slideably disposed within said guide slot and protruding through said guide slot for connecting to said unit.

5. The installation of claim **4** wherein track structure has an undercut interior, said connecting means including a block slideably disposed within said track structure and a shaft upstanding from said block, and roller means journaled upon said shaft and rollingly engaging said track structure at said slot.

6. The installation of claim **1** wherein said unit includes a laterally and inwardly extending arm structure provided with and carrying a revolvable side-brush structure, and means for revolving said side-brush structure connected thereto.

7. The installation of claim **6** wherein said unit includes pivot means for pivoting said arm structure about a vertical axis, and spring means connected to said unit and also to said arm structure for retaining said arm structure in a normal, laterally outward position and also, alternatively, for supplying a spring-thrust to said side-brush structure for both lead and lag side-brush structure positions relative to unit travel direction in response to car engagement thereby.

8. The installation of claim **6** wherein said unit includes upper arm structure disposed over said arm structure and including an inwardly extending arm, spray structure attached to the latter, and revolvable top-brush means also mounted and, specifically, journaled thereto, and means for powering said top-brush means connected thereto.

9. In a car-wash installation, an improvement comprising a generally loop-configured track having respective extremities mutually spaced, one of said extremities extending laterally, outwardly beyond the other extremity and constituting a spray unit storage area; a spray unit mounted to said track for travel forwardly from storage area and then, reversing direction, back to said storage area; means for so powering said spray unit along said track, said spray unit having upper and lower, respectively fixed and vertically pivoted arm structures; spray means and revolvable top-brush structure carried by said upper arm structure; revolvable side-brush structure carried by said lower arm structure, and spring means for spring biasing said side-brush structure toward and against a vehicle being washed in both lead and lag positions of said side-brush structure relative to the direction of spray unit travel.

10. The car-wash installation of claim **9** wherein said installation includes shock absorber structure disposed in shunting relationship across said spring means.

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