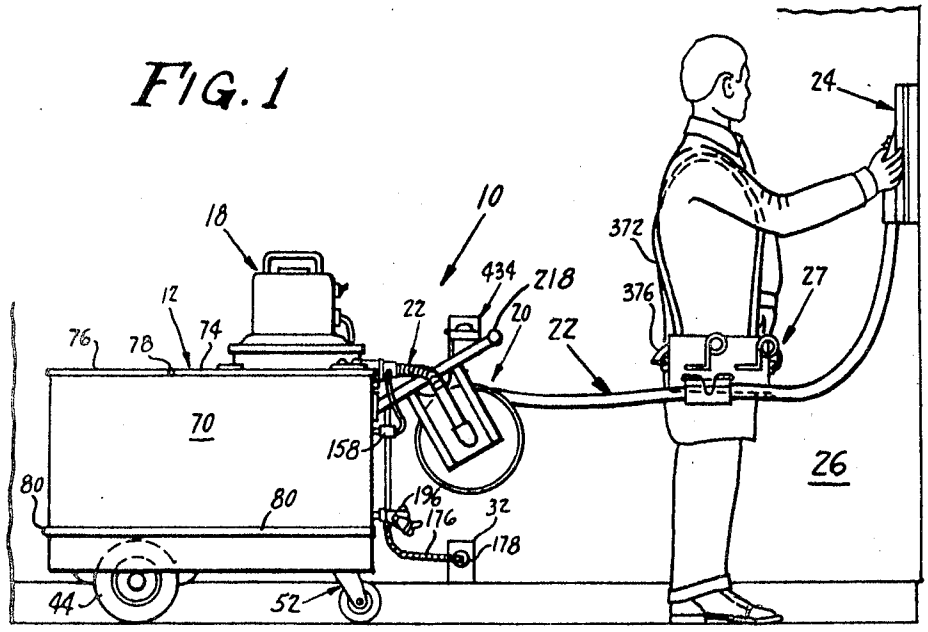
Sept. 2, 1969 J. A. WISNER 3,464,081

MOBILE WALL WASHING APPARATUS

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FIG. 1



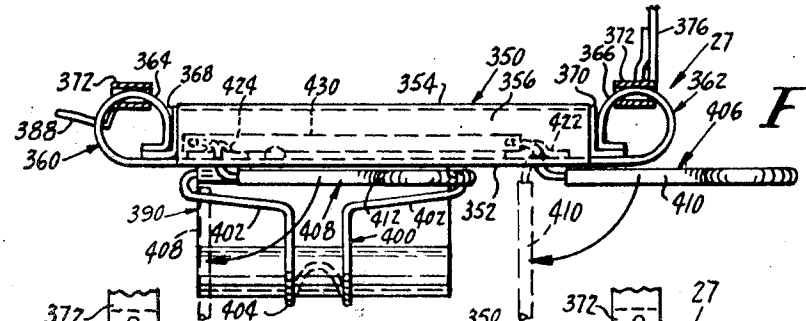


FIG. 10

FIG. 11

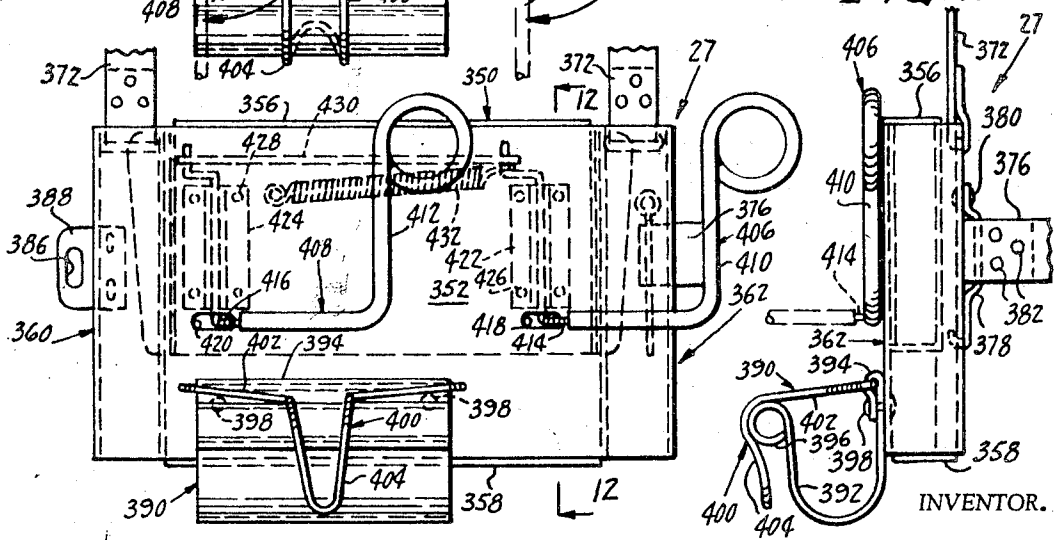


FIG. 9

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MOBILE WALL WASHING APPARATUS

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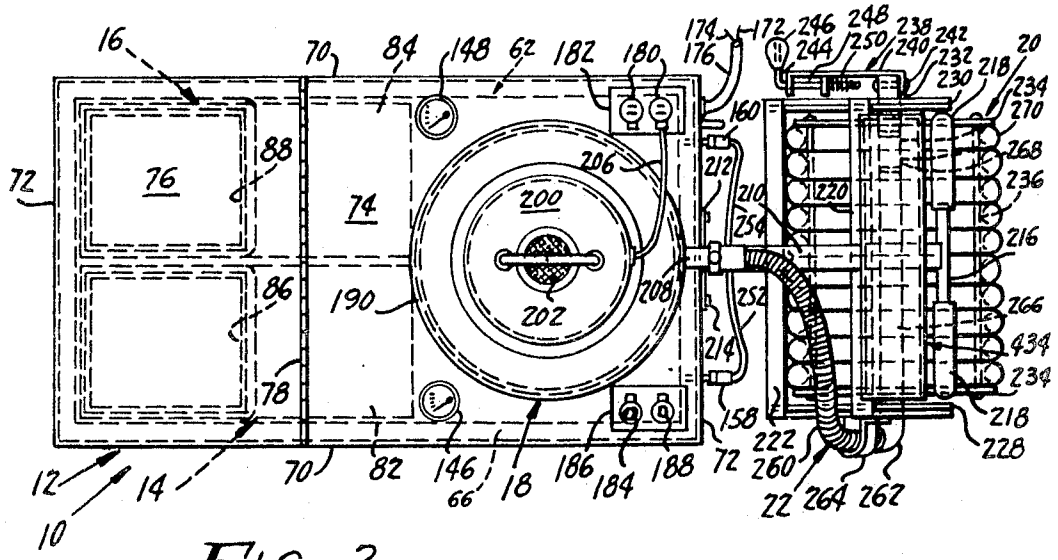


FIG. 3

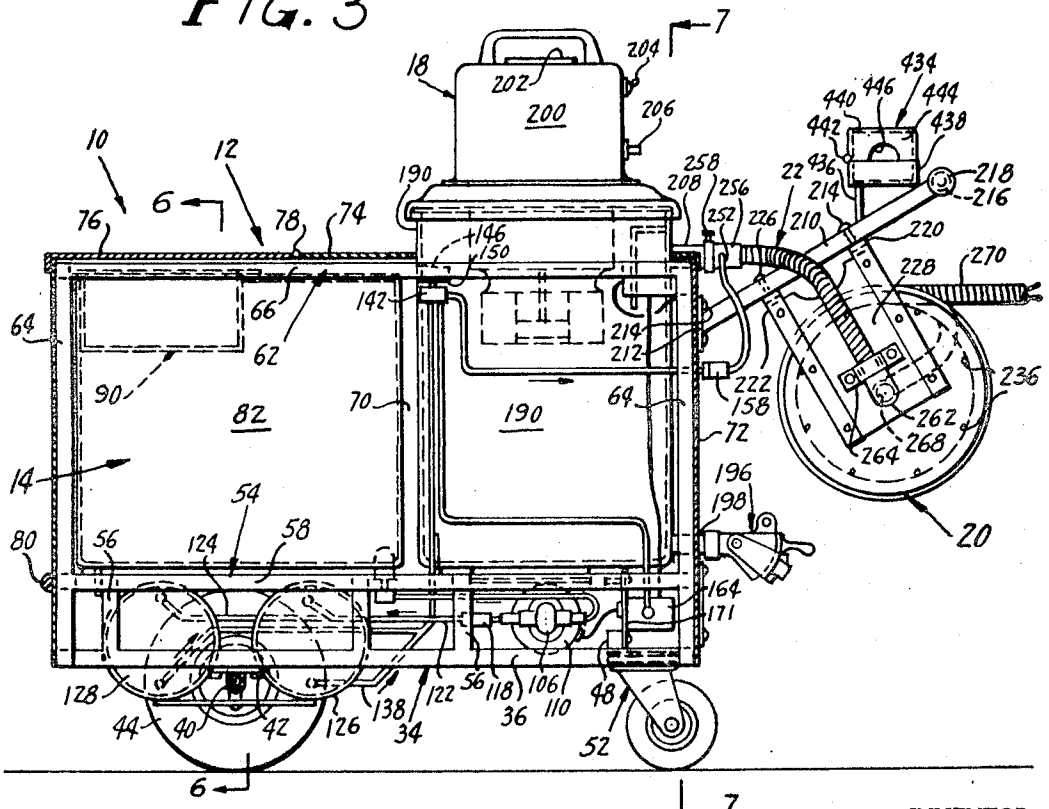


FIG. 2

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MOBILE WALL WASHING APPARATUS

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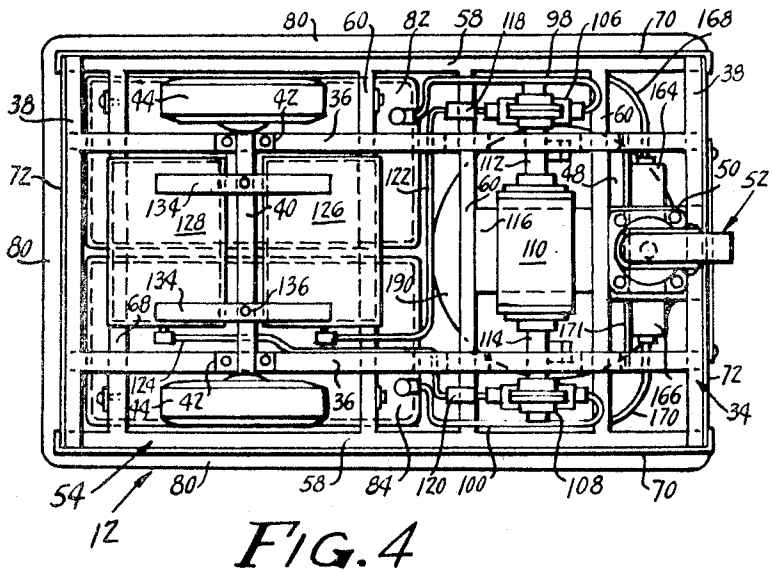


FIG. 4

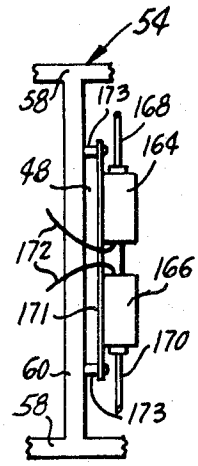


FIG. 5

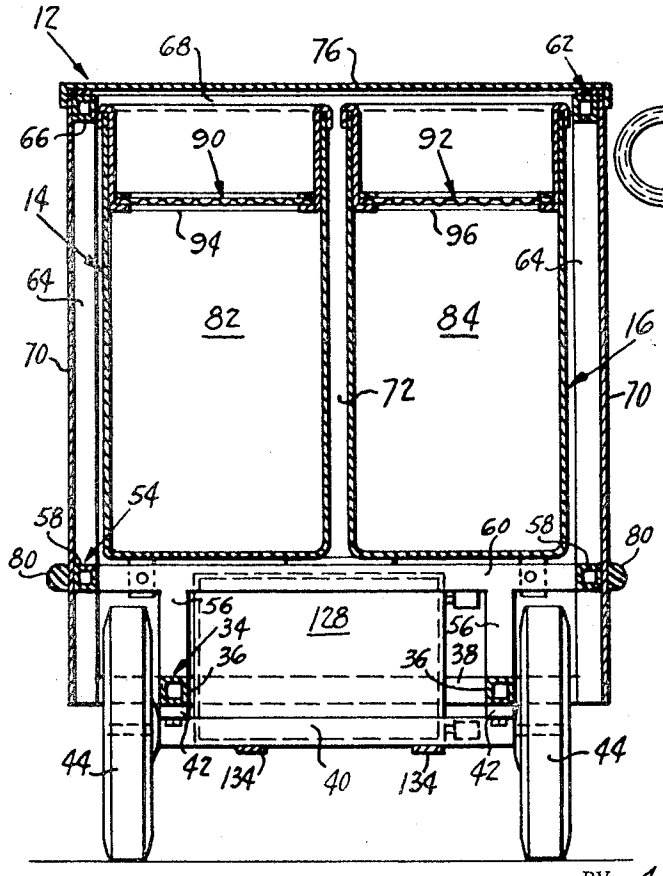


FIG. 6

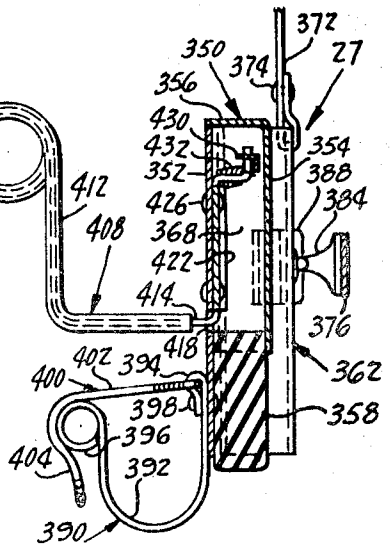


FIG. 12

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MOBILE WALL WASHING APPARATUS

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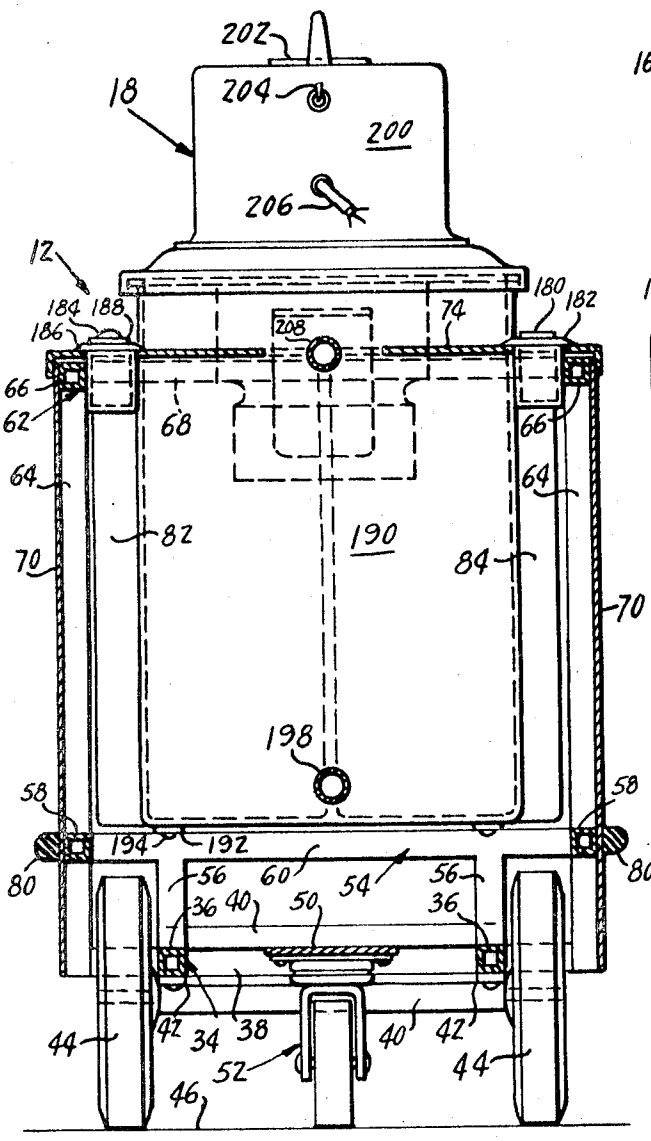


FIG. 7

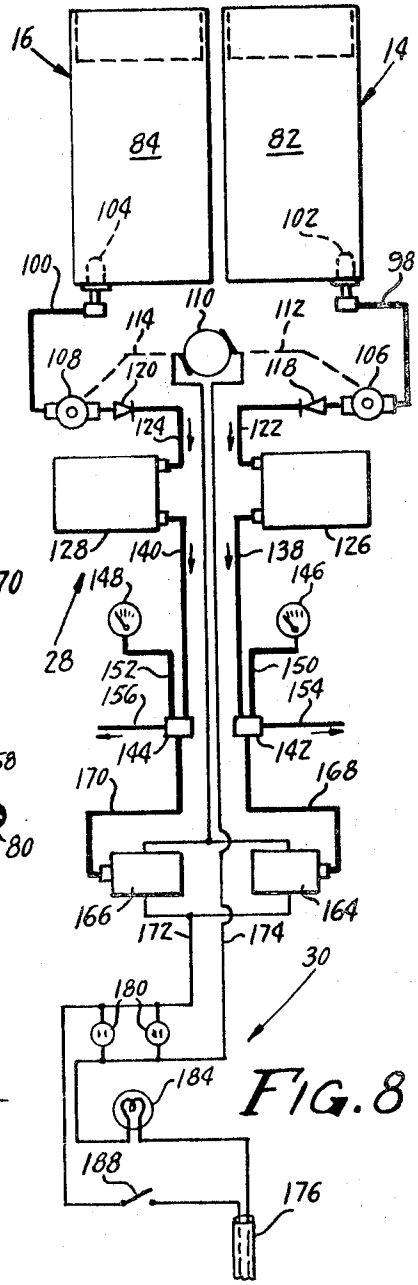


FIG. 8

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MOBILE WALL WASHING APPARATUS

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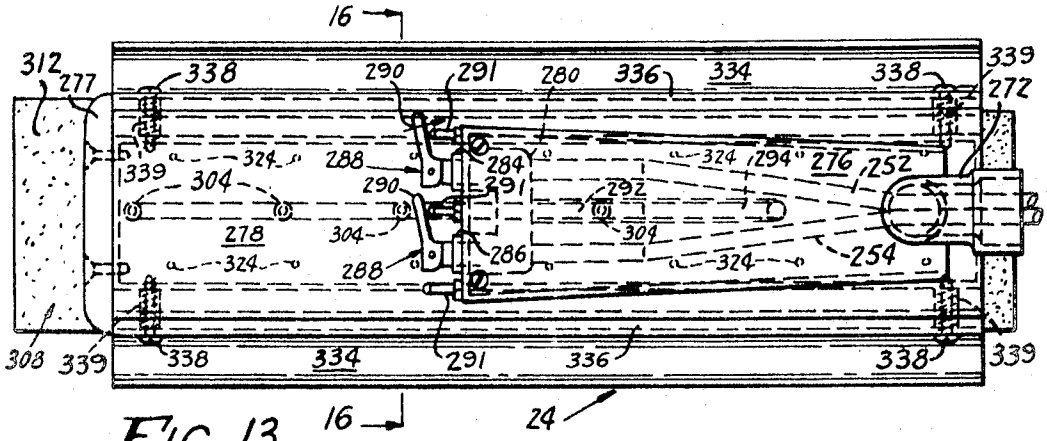


FIG. 13

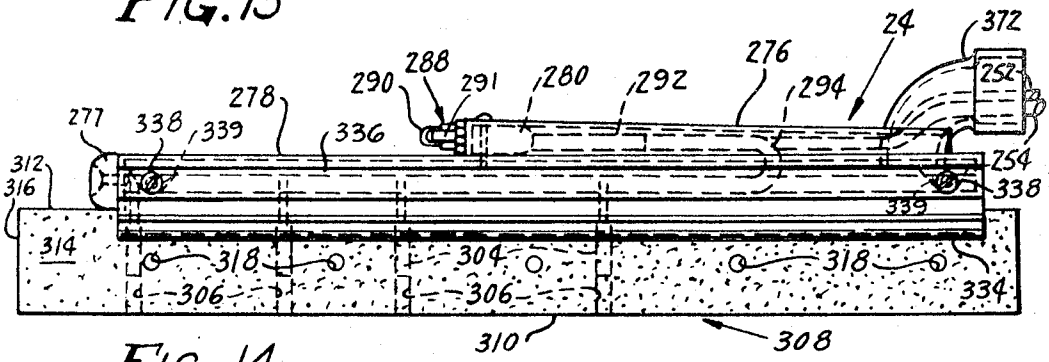


FIG. 14

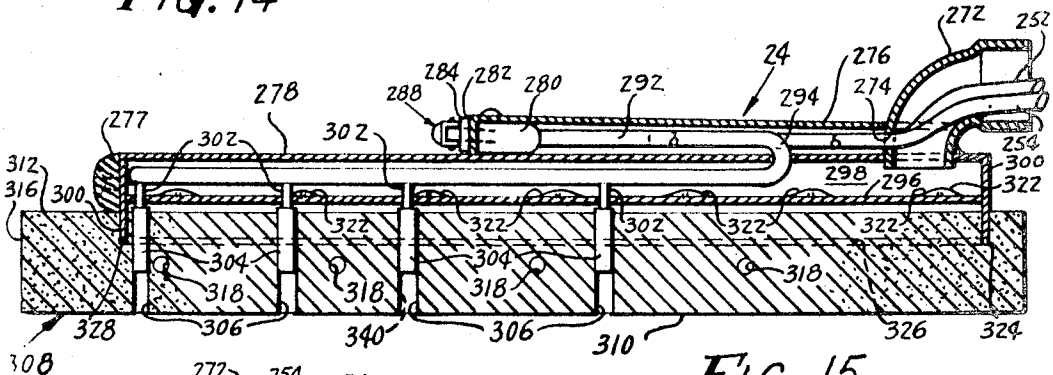


FIG. 15

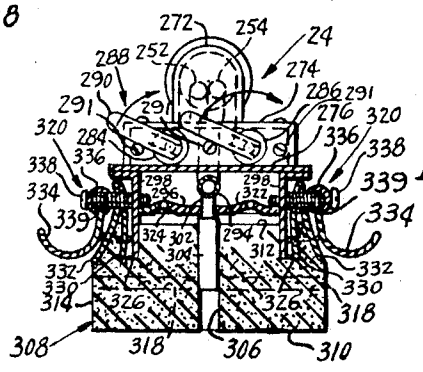


FIG. 16

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United States Patent Office 3,464,081 Patented Sept. 2, 1969

3,464,081

MOBILE WALL WASHING APPARATUS

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Filed June 24, 1966, Ser. No. 560,281
Int. Cl. A47l 7/00
U.S. Cl. 15—321 9 Claims

ABSTRACT OF THE DISCLOSURE

Wheel mounted wall washing apparatus including a frame supporting a plurality of tanks each containing a liquid under pressure, and liquid vacuum cleaning means; a wall engageable porous cleaning element; conduit means connecting, respectively, each tank and said liquid cleaning means in communication with said wall engageable means; valve means connected in each conduit means to selectively control fluid flow through the wall engageable means to a wall to be cleaned and operable to apply suction thereon to remove excess liquids from the wall therethrough.

This invention relates to a mobile wall washing apparatus, and more particularly to a device which may be used by maintenance personnel for washing, rinsing and sanitizing walls, ceiling, trim or the like, of any type with a cleaning solution.

It is an object of the instant invention to provide a mobile wall washing apparatus provided with at least two liquid holding tanks, a vacuum cleaner, conduit means providing communication between a wall washing attachment, the tanks and the vacuum cleaner, and a reel windably receiving the conduit for convenient storage.

Another object of the instant invention is to provide a mobile wall washing attachment of the character described provided with suitable ground engaging wheels for transporting the apparatus from one location to another.

Still another object of the instant invention is to provide a mobile wall washing apparatus equipped with a body supported hanger for temporarily holding the wall washing attachment on the body of the operator thereby freeing the operator's hands for other functions.

A further object of the instant invention is to provide a mobile wall washing apparatus of the type described which is compact, relatively inexpensive to manufacture, and convenient to use.

A still further object of the instant invention is to provide a mobile wall washing apparatus equipped with a liquid handling system including means for continually delivering a stream of high pressure liquid from either of the tanks.

Another object of the instant invention is to provide a mobile wall washing apparatus carrying an electrical circuit for transmitting electrical energy from a suitable exterior power source to the liquid handling system and to the vacuum cleaner.

Still another object of the instant invention is to provide an improved wall washing attachment having means thereon for selectively delivering either of two diverse liquids on the wall being cleaned.

Other objects and advantages of the instant invention reside in the combinations of elements, arrangements of parts, and features of construction and operation, all as will be more fully pointed out hereinafter and disclosed in the accompanying drawings wherein there is shown a preferred embodiment of this inventive concept.

In the drawings:

FIGURE 1 is a side elevational view of the mobile wall washing apparatus of the instant invention illustrating an individual in the process of cleaning an interior wall;

FIGURE 2 is an enlarged side elevational view of the wall washing apparatus of FIGURE 1, certain parts being broken away for clarity of illustrations to expose the interior working components;

FIGURE 3 is a top plan view of the device of FIGURE 1;

FIGURE 4 is a bottom view of the apparatus of FIGURES 2 and 3;

FIGURE 5 is a partial bottom view of the intermediate framework section illustrating the attachment of portions of the liquid system to the mobile cart;

FIGURE 6 is an enlarged transverse cross-sectional view of the mobile cart of FIGURE 2 taken substantially along line **6—6** thereof as viewed in the direction indicated by the arrows;

FIGURE 7 is an enlarged transverse cross-sectional view of the device of FIGURES 2 to 6 inclusive, taken substantially along lines **7—7** of FIGURE 2 as seen in the direction indicated by the arrows:

FIGURE 8 is a schematic view of the fluid and electrical system of the wall washing device of the instant invention;

FIGURE 9 is an enlarged side elevational view of the body supported hanger illustrated in FIGURE 1 as residing against the hip of the individual for supporting the wall washing attachment and the conduit;

FIGURE 10 is a top plan view of the hanger of FIGURE 9 illustrating the pivotal nature of the L-shaped arms that act to receive the wall washing attachment;

FIGURE 11 is an end elevational view of the hanger of FIGURES 9 and 10;

FIGURE 12 is a vertical cross-sectional view of the hanger of FIGURES 9 to 11 inclusive, taken substantially along line **12—12** of FIGURE 9 as viewed in the direction indicated by the arrows;

FIGURE 13 is a top plan view of the wall washing attachment, illustrated in FIGURE 1 as held by the individual, for applying the liquids from the pressurized tank onto the wall to be cleaned;

FIGURE 14 is a side elevational view of the wall washing attachment of FIGURE 13;

FIGURE 15 is a general longitudinal cross-sectional view of the wall washing attachment of FIGURES 13 and 14; and

FIGURE 16 is a transverse cross-sectional view of the wall washing attachment of FIGURES 13 to 15 inclusive, taken substantially along line **16—16** of FIGURE 13 as shown in the direction indicated by the arrows.

General construction and operation

Referring now to the drawings in detail, wherein like reference characters designate like elements throughout the several views thereof, and more particularly to FIGURES 1–7 inclusive, the mobile wall washing apparatus of the instant invention is shown generally at **10** having as its major components a mobile cart shown generally at **12** carrying a first liquid material tank shown generally at **14**, a second liquid material tank shown generally at **16**, and a wet vacuum cleaner shown generally at **18** and a reel shown generally at **20**. Cart **10** also includes a conduit means shown generally at **22** for transmitting liquids from tank **14** or tank **16** and also for transmitting a stream of air carrying waste water from a wall washing attachment shown generally at **24** to vacuum cleaner **18** and for applying and removing the liquids from tanks **14, 16** to an interior wall **26**. In addition, wall washing apparatus **10** includes a body-supported hanger shown generally at **27** illustrated as suspended from the body of the individual.

As will be explained more fully hereinafter, the individual will manipulate certain valves on attachment **24** to deliver pressurized liquids from tanks **14**, **16** through a pressurized liquid system shown generally at **28** in FIGURE 8. Liquid system **28** and vacuum cleaner **18** are energized by an electrical system shown generally at **30** (FIGURE 8), energized from a conventional electrical outlet **32** positioned in wall **26** in a conventional manner as shown in FIGURE 1. As the individual applies the appropriate cleaning and/or disinfecting solutions to wall **26**, the suction created by vacuum cleaner **18** is continuously applied to attachment **24** to remove the excess liquid accumulated thereon. Since attachment **24** is preferably provided with an absorptive wall contacting segment, it will be evident that the excess liquids from wall **26** may also be removed by the action of vacuum cleaner **18**. As will be explained more fully hereinafter, attachment **24** is of a new and improved type providing means for the operator to lessen the intensity of the vacuum applied to the soiled surface as the cleaning solution is being applied to loosen the soil thereon and to increase the intensity of the vacuum suction as the loosened soil and excess solution are being removed. Thus the wall cleaned by attachment **24** will be left in a damp-dry condition.

Mobile cart

Cart **12** is illustrated in FIGURES 1 to 7 inclusive and includes a peripheral rigid framework comprised of a lower section shown generally at **34** including a pair of spaced apart longitudinally extending beams **36** and front and rear beams **38**. A stationary axle **40** is transversely secured across longitudinal beams **36** by a pair of brackets **42** with a pair of wheels **44** journaled for rotation on axle **40** thereby providing for the transportation of cart **12** on an underlying surface **46**. Another transverse beam **48** is secured transversely across beams **36** and, in conjunction with forward transverse beam **38**, carries mounting plate **50** supporting a caster wheel shown generally at **52** providing for the steering of mobile cart **12**.

The framework of cart **12** also includes an intermediate section shown generally at **54** vertically spaced from lower section **34** by a plurality of vertical braces **56** and includes a pair of longitudinally extending beams **58** and a plurality of transverse supporting rods **60**. As will be pointed out more fully hereinafter, many of the components of liquid system **28** reside in the compartment formed between lower and intermediate framework sections **34**, **54**.

Cart **12** also includes an upper framework section shown generally at **62** supported from lower and intermediate sections **34**, **54** by a plurality of columns **64** placed at the corners of cart **12**. Upper section **62** includes a pair of spaced apart longitudinal beams **66** and a pair of spaced apart transverse beams **68**. A pair of side walls **70**, a pair of end walls **72** and top wall **74** are secured about framework sections **34**, **54**, **62**, to provide a protective covering as well as an attractive appearance for cart **12**. A closure **76** is secured to top wall **74** by a hinge **78** to provide a convenient means of access to tanks **14**, **16**. A resilient bumper **80** is affixed on the outside of side walls **70** and along the end wall **72** opposite from reel **20**. It will be readily apparent that bumper **80** will preclude cart **12** from marring walls or doors of the building in which apparatus **10** is utilized and also acts to prevent cart **12** from being marred.

Pressurized liquid system

The first components of liquid system **28** are tanks **14**, **16** which are illustrated as a pair of receptacles **82**, **84** each forming an inlet opening **86**, **88** receiving a strainer shown generally at **90**, **92** as shown best in FIGURE 6. Each of strainers **90**, **92** are arranged to be received in receptacles **82**, **84** and includes a filtering element **94**, **96** to remove undissolved material from the liquids placed in tanks **14**, **16**. In the use of the wall washing apparatus of the instant invention, it is contemplated that a liquid disinfectant will be placed in first tank **14** and a liquid cleansing solution will be placed in second tank **16**, although it should be understood that different types of liquids may be placed in tanks **14**, **16** in accordance with the cleaning operation to be performed.

Referring now to FIGURES 4 and 8, a fluid flow line **98**, **100** communicates with tanks **14**, **16** through a strainer **102**, **104** in the bottom of receptacles **82**, **84** to deliver liquids from each of the tanks to a conventional centrifugal pump **106**, **108**. Pumps **106**, **108** are driven by a common motor **110** operatively connected to pumps **106**, **108** by a conventional driving mechanism **112**, **114**. Electric motor **110** is secured to a plate **116** which is in turn fastened to supports **60** of intermediate framework section **54** as shown in FIGURE 4.

Immediately downstream of pumps **106**, **108** is a check valve **118**, **120** preventing back flow of liquid material through flow lines **122**, **124** which connect pumps **106**, **108** to pressure tanks **126**, **128**. As shown best in FIGURES 4 and 6, high pressure tanks **126**, **128** are mounted on stationary axle **40** by a pair of longitudinally extending braces **134** secured to axle **40** by a conventional fastener **136**. As shown best in FIGURES 2 and 8, a flow line **138**, **140** connects each of tanks **126**, **128** with a junction block **142**, **144**. A pressure gauge **146**, **148** is in communication with the fluid in junction block **142**, **144** through suitable conduits **150**, **152**, and as shown best in FIGURE 1, are visible through top wall **74** thereby providing the operator with visual means of determining the pressures in each of the high pressure tanks. Another pair of conduits **154**, **156** connects each of junction blocks **142**, **144** to a releasable connection **158**, **160** (FIGURES 1 to 3 inclusive) exterior of mobile cart **12** for connection with conduit means **22** as will be explained more fully hereinafter.

Electrical system

As previously mentioned, electrical system **30** acts to transmit sufficient electrical energy to motor **110** to operate pumps **106**, **108** and likewise provides for the operation of vacuum cleaner **18**. A first electrical wire **162** leads from operative engagement with motor **110** to each of a pair of pressure responsive switches **164**, **166**. As shown in FIGURE 5, switches **164**, **166** are affixed to a plate **171** which is in turn secured to transverse support **60** by a plurality of pins **173**. Pressure responsive switches **164**, **166** respectively sense the pressure in junction blocks **142**, **144** through suitable conduits **168**, **170**. Switches **164**, **166** are preferably of the high pressure cutoff-low pressure cut on type that delivers electrical current through wire **162** when the pressure in either of junction blocks **142**, **144** lies between the high pressure and low pressure limits. A wire **172** is connected to the opposite sides of switches **164**, **166** and a second wire **174** is operatively connected with motor **110** with the terminal ends of wires **172**, **174** encased in an insulating casing **176**.

A conventional male plug **178** (FIGURE 1) is connected to wires **172**, **174** and provides a removable connection with electrical outlet **32** to energize system **30**. A pair of female electrical outlets **180** are connected across wires **172**, **174** and are positioned in an electrical receptacle **182** mounted on top wall **74** of cart **12** as shown in FIGURES 3 and 7. A signal light **184** is in electrical connection with wire **174** and extends through an electrical receptacle **186** on top wall **74** as is also shown in FIGURES 3 and 7. A conventional on-off switch **188** is located in wire **172** and also extends through receptacle **186**.

It will be readily apparent that the depression of switch **188** will provide electrical energy to female outlets **180** providing for the energization of vacuum cleaner **18** as will be explained more fully hereinafter. Similarly, signal light **184** is illuminated upon the depression of

switch 188 and the utilization of energy either through outlets 180 or by motor 110. It will be noted that pressure responsive switches 164, 166 are in parallel such that the loss of pressure in either high pressure tank 126, 128 will result in the passage of electrical current to motor 110 thereby actuating pumps 106, 108. The loss of pressure in either of tanks 126, 128 is normally caused by the exhaustion of liquids therefrom through wall cleaning attachment 24. Accordingly, the actuation of motor 110 by the low pressure cut-on feature of switches 164, 166 will maintain sufficient pressure to operate wall cleaning attachment 24 in an efficient manner. It should be evident to those skilled in the art that the energization of motor 110 will also drive the pump associated with the reservoir of normal pressure. This has no detrimental affects since the pressure output capacity of the pump will soon be reached with the pump thereafter operating but not delivering additional liquids to this high pressure tank.

Vacuum system

Vacuum cleaner 18, of course, provides a source of suction which will be utilized as more fully explained hereinafter to withdraw excess liquids accumulated on attachment 24 and wall 26. Vacuum cleaner 18 includes an enlarged tank 190 received in a circular well in mobile cart 12 and is secured to transverse supports 60 of intermediate framework section 54 by a plurality of straps 192 secured to the bottom of tank 190 by fasteners 194, such as rivets or the like, with straps 192 being welded or the like, to transverse supports 60. A conventional drain valve shown generally at 196 communicates with a pipe 198 extending through end wall 172 into fluid transmitting relation with tank 190 for draining accumulated liquid from tank 190.

A conventional commercial vacuum cleaner unit 200 is removably received in the open top of tank 190 and is provided with a conventional exhaust air outlet 202, an on-off switch 204, and an electrical power cord 206 leading to one of female outlets 180. It should be understood that vacuum cleaner unit 200 is provided with a suitable electrical motor, a conventional fan and means for separating liquids and gases to deliver the exhaust gas out of outlet 202 while depositing the liquids previously entrained therein into tank 190. An air inlet pipe 208 communicates with the fan of vacuum cleaner 18 and is arranged for connection with conduit 22 as will be more fully explained hereinafter.

Conduit and reel

Reel 20 is supported from cart 12 by an elongate brace 210 angularly connected to end wall 72 by a mounting plate 212 and a plurality of fasteners 214. On the outer end of brace 210 is mounted a crossbar 216 carrying a pair of resilient sleeves 218 acting as a handle for pushing and guiding mobile cart 10. A pair of inverted U-shaped brackets 220, 222 are secured by fasteners 224, 226 to brace 210 with an end plate 228, 230 being secured to the arms of brackets 220, 222 as best shown in FIGURE 2 for supporting reel 20.

A central shaft 232 extends through end plates 228, 230 journalling a conventional hose spool for rotation. The reel comprises a pair of end plates 234 mounted on shaft 232 for rotation therewith. Plates 234 are interconnected by a plurality of circumferentially spaced rods 236 about which conduit means 22 is wound. A take-up handle shown generally at 238 in FIGURE 3 is provided to rotate the conduit receiving spool thereby winding conduit means 22 on reel 20. Handle 238 includes a first arm 240 affixed to the end of shaft 238 by a fastener 242 with the other end of arm 240 slidably receiving a second arm 244 carrying a convenient grasping means 246. An additional offset ear 248 extends outwardly of first arm 240 slidably receiving second arm 244 with a helical spring 250 biasing second arm 244 into the collapsed position shown. It should be evident that an individual may extend first arm 244 outwardly thereby creating an enlarged lever facilitating the winding of conduit means 22 on reel 20.

Conduit means 22 actually consists of three tubes for separately transmitting the liquids from tanks 14, 16 in the air to vacuum cleaner 18. In addition, conduit means 22 includes three distinct segments, the first leading from cart 12 to reel 22, the second comprising a part of shaft 232 and the third being the windable portion received by reel 20.

Conduit means 22 includes a pair of tubes 252, 254 respectively received in connections 158, 160 in fluid transmitting relation therewith. Tubes 252, 254 enter a collar 256 secured on the end of inlet pipe 208 by a releasable connection 258, such as a set screw or the like. Tubes 252, 254 pass through the first, second and third segments of conduit means 22 and are in fluid communication with a valve control on wall washing attachment 24 as will be more fully explained hereinafter.

The first segment of conduit means 22 includes an enlarged flexible hose 260 secured in the end of collar 256 and secured in an elbow 262 stationarily affixed in end plate 228 by a clamp 264. Elbow 262 rotatably mounts end plate 234 and is rotatably connected to an intermediate tubular shaft section 266. Shaft 266 forms a T 268 leading to a flexible hose 270 windably received on reel 20. It should be understood that tubes 252, 254 extend through hose 260, elbow 262, shaft section 266, T 268 and hose 270 to wall cleaning attachment 24.

Wall washing attachment

Wall washing attachment 24 comprises an improvement over United States Patent No. 3,195,166 and includes an elbow 272 through which tubes 252 pass and which is adapted to receive hose 270 of conduit means 22. Tubes 252, 254 exit through apertures 274 in the side of elbow 272 and extend into a compartment partially formed by spaced parallel walls 276, 278. As shown best in FIGURE 13, tubes 252, 254 diverge upon entry into the valve compartment formed by walls 276, 278 and are in fluid communication with a pair of valves in housing 280. A wall 282 perpendicularly connects walls 276, 278 and forms suitable apertures receiving the stems 284, 286 of a pair of valves mounted in housing 280.

A valve operator shown generally at 288 is mounted in each of stems 284, 286 and is equipped with a lever arm 290 which is depressed to actuate the valves within housing 280. An advantageous feature of valve operator 288 is that they may be rotated as shown by the arrows in FIGURE 16 to expose levers 290 on either side of attachment 24 thereby permitting the use of wall cleaning attachment 24 with either the right or the left hand. Stop pins 291 limit rotative movement of valve operator 288. A single outlet conduit extends from housing 280 and is in fluid communication with a substantially J-shaped tube 294 the long leg of which extends into a vacuum compartment, beneath the valve compartment, formed by wall 278, a second wall 296, a pair of spaced side walls 298 and a pair of spaced end walls 300. A rubber stop or bumper 277 is secured to the end wall 300 remote from elbow 272.

A plurality of feeder lines 302 extend downwardly from tube 294 through wall 296 and carry tubular enlargements 304 on the end thereof received in apertures 306 of a wall contacting sponge segment shown generally at 308. Sponge segment 308 includes a front face 310, a rear face 312, side faces 314 and end faces 316. As shown clearly in FIGURES 15 and 16, apertures 306 extend between front and rear faces 310, 312 while a plurality of transverse apertures 318 extend between side faces 314. As shown best in FIGURE 16, a pair of attaching means shown generally at 320 cooperate to secure sponge segment 308 to the remainder of wall washing attachment 24 as explained hereinafter.

It will be noted that elbow 272 extends into the vacuum compartment formed by walls 278, 296, 300 with wall 296 forming a plurality of dimples having apertures 324 extending therethrough. It will thus be apparent that the suction produced by vacuum cleaner 18 will be directed onto rear face 312 of sponge segment 308 to remove loosened soil and excess liquids from wall 26. For example, when wall 26 has been thoroughly washed with detergent solution from tank 14, and it is desired to remove any excess liquids on wall 26, the individual wipes wall 26 forcibly with sponge segment 308 thereby accumulating the liquids on the sponge. Since vacuum cleaner 18 is continuously actuated, air will be inducted through sponge 308 thereby carrying accumulated liquids into attachment 24. Further operation of vacuum cleaner 18 results in the movement of air and water through elbow 272 and conduit means 22 to vacuum cleaner 18. During the course of the cleaning operation, liquids will accumulate in receptacle 190 and may be drawn off through valve 196 in a conventional manner.

Sponge segment 308 has a pair of longitudinal slots 326 therein receiving the lower ends of side walls 298 and portions of attaching means 320 with transverse slots 328 receiving the lowermost portions of end walls 300 as shown in FIGURE 15. As shown best in FIGURE 16, attaching means 320 comprises a pair of substantially identical structures on each side of attachment 24 and includes an elongate arm 330 received in each of longitudinal slots 326, a curved elongate arcuate plate 332 substantially coextensive with each of arms 330, a curved shield 334 having a tube 336 secured to the upper end thereof and a screw 338 passing through tube 336 and the upper ends of arm 330 and plate 332 into registry with threaded apertures in side walls 238. It will be apparent that threadably advancing screws 338 will result in plate 332 advancing toward arm 330 thereby sandwiching the portion of sponge segment 308 therebetween to secure sponge segment 308 to attachment 24. Conversely, the withdrawing of screws 338 from side walls 298 releases sponge segment 308 from attaching means 320 whereby sponge segment 308 may be replaced. Springs 339 surround each of screws 338 between walls 298 and arm 330 to bias arm 330 outwardly for easy removal upon the release of screws 338.

In the replacement of sponge segment 308, it has been found that the insertion of tubular enlargements 304 into apertures 306 can be accomplished only with some difficulty. To facilitate the replacement of the sponge, segments 308 are assembled during manufacture to include a disposable sleeve 340 inserted through each of apertures 306 as shown in dashed lines in FIGURE 15. It will be evident that enlargements 304 may be inserted readily into sleeves 340, after attaching means 320 have been set to secure sponge segment 308 to attachment 24.

Body supported hanger

Referring now to FIGURES 1 and 9 to 12 inclusive, body supported hanger 27 is provided to receive conduit means 22 and body supported hanger 24 to prevent the individual from stumbling over conduit means 22 and to provide a convenient means for holding attachment 24 removed from cart 12 thereby freeing the hands of the individual for different types of work when cleaning wall 26. Hanger 27 includes a frame shown generally at 350 comprised of a front wall 352, a back wall 354, a top wall 356 and a rigid block 358 secured between front and rear walls 352, 354 as shown best in FIGURE 12. A pair of generally vertical tubes shown generally at 360, 362 are formed on each side of frame 350 by a curled extension 364, 366 of front wall 352. Each of extensions 364, 366 engages and is secured to an L-shaped side wall 368, 370 of frame 350.

A shoulder engaging strap 372 is looped through a slot in the upper ends of tubes 360, 362 with a fastener 374 (FIGURE 12) closing the loops. A waist-surrounding strip 376 is secured to a bracket 378 intermediate the height of tube 362 (FIGURE 11) and is secured thereto by an L-shaped hook at the lower end of bracket 378 extending through an aperture in tube 362 with the upper end of bracket 378 secured to tube 362 by a suitable fastener 380. The end of strap 376 is looped about bracket 378 and secured thereto by a plurality of fasteners 382. The other end of strap 376 is provided with a convenient hook-type connector 384 received in an aperture 386 provided by a bracket 388 on tube 360 as may be seen by a comparison of FIGURES 9 and 12. It will be evident to one skilled in the art that the individual may support hanger 27 from the shoulder and waist thereby providing a convenient means for temporarily holding conduit 22 and attachment 24.

A conduit retaining clamp shown generally at 390 includes a generally U-shaped trough 392 having one wall thereof reverted to form a loop 394 with the other end forming a rolled, generally circular outer edge 396. A plurality of suitable fasteners 398 secure the terminal end of loop 394 and an intermediate portion of trough 392 to front wall 352 of frame 350 as shown best in FIGURES 11 and 12. A wire retainer shown generally at 400 is provided with end portions received in loop 394 thereby affixing retainer 400 to trough 392. Retainer 400 also includes a pair of substantially planar portions 402 overlying the open top of trough 392 and a downwardly curved attaching segement 404 received over circular edge 396 thereby precluding movement of conduit means 22 other than through the open ends of trough 392. It will be readily apparent that wire retainer 400 is slightly resilient thereby allowing attaching segment 404 to engage and disengage circular edge 396.

Hanger 27 also includes a pair of substantially U-shaped arms shown generally at 406, 408, for receiving attachment 24 when the individual desires to use the hands for other purposes. Arms 406, 408 are preferably provided with the resilient covering 410, 412 for receiving attachment 24 without damage thereto. The outer ends of arms 406, 408 form a curled, substantially circular portion providing the operator with a convenient means of grasping and pivoting arms 406, 408 as will be explained more fully hereinafter. As shown best in FIGURES 9 and 12, a right-angle junction of supporting rods 414, 416 extends through elongate slots 418, 420 formed in front wall 352 with a vertical portion of rods 414, 416 residing against the inside surface of front wall 352. A bracket 422, 424 receives the vertical portion of supporting rods 414, 416 and is secured to front wall 352 by suitable fasteners 426, 428.

It will be readily apparent that each of arms 406, 408 is mounted for pivotal movement about the vertical axis of brackets 422, 424 thereby allowing wall cleaner attachment to be placed in the receiving trough formed by arms 406, 408 and front wall 352 (FIGURE 12) or to allow the collapse of arms 406, 408 as shown in solid lines in FIGURES 10 and 11. Providing for the simultaneous movement of arms 406, 408 is a connecting rod 430 securing the upper ends of supporting rods 414, 416 together. It should be noted, as shown in FIGURES 9 and 12, that the upper end of rods 414, 416 is offset with respect to bracket 422, 424 thereby producing the necessary moment arm to effect simultaneous movement. A spring 432 interconnects the upper end of rod 414 with frame 350 thereby biasing arms 406, 408 into the solid line position shown in FIGURES 9 to 11 inclusive. When the individual desires to place wall washing attachment on hanger 27, it is necessary only to grasp the outer circular end of either arm 406, 408 and pivot it into the dashed line position shown in FIGURES 10 and 11. Wall washer attachment 24 may comfortably be received therein so that the individual may use his hands for other purposes.

Storage box

As shown in FIGURES 1 to 3 inclusive, a storage box shown generally at 434 is positioned on brace 210 to receive attachment 24 when wall washing assembly 10 is

not in use. Storage box **434** includes a vertical brace **436** affixing receptacle **438** in a substantially horizontal plane with the other end of receptacle **438** being secured, as by welding or the like, to brace **210**. A top **440** is mounted by a hinge **442** on receptacle **432** providing for the opening of storage box **434**. Top **440** includes a side wall **444** forming a cutout **446** communicating with the lowermost edge of top **444** thereby providing a means for accommodating conduit means **22** when wall washing attachment **24** is disposed in box **434**.

It will be readily apparent that, at the cessation of the wall cleaning operation or at any other desirable time, the attendant may raise top **440**, position attachment **24** in receptacle **434** and close top **440** which results in a convenient storage place for attachment **24**. Since attachment **24** is often wet, a convenient receptacle is desirable rather than merely placing it on reel **20** to avoid dripping water or the like on the floor of the building which has just been cleaned. After wall washing attachment **24** is stored, it will be readily apparent that the individual may wind conduit means **22** onto reel **20** and loop straps **372**, **376** of hanger **27** about vacuum cleaner **18** or brace **210**.

It is now seen that there is herein provided an improved mobile wall washing apparatus which accomplishes all of the objects and advantages of the instant invention and others, including many advantages of great practical utility and commercial importance.

Since many embodiments may be made of the instant inventive concept, and since many modifications may be made of the embodiment hereinbefore shown and described, it should be understood that the foregoing is to be interpreted merely as illustrative and not in a limiting sense.

I claim:

1. A mobile wall washing apparatus comprising
- a frame having ground engaging means for transporting the frame along an underlying surface;
- a liquid handling system mounted on the frame and including a first and second liquid material tank;
- means communicating with each tank for receiving and pressurizing the liquids;
- a suction creating device carried on the frame;
- conduit means communicating with the pressurizing means and the suction creating device;
- a reel carried on the frame windably receiving the conduit means;
- a wall washing attachment communicating with the conduit means, said wall washing attachment including a wall contacting segment and means for selectively delivering the first liquid or the second liquid through the wall contacting segment for selectively applying a suction on the wall contacting segment for removing excess liquids therethrough;
- a holder for the wall washing attachment including:
  - a main body portion;
  - an individual surrounding strap secured to the main body portion for supporting the holder;
  - a bracket on the main body portion for receiving the wall washing attachment;
  - a pair of L-shaped arms each having a first substantially horizontal leg and a second upstanding leg;
  - means mounting each horizontal leg on the main body portion for pivotal movement;
  - means interconnecting the arms for simultaneous movement; and
  - biasing means interconnecting at least one of the arms and the main body portion to urge the L-shaped arms flat against the main body portion.

2. A mobile wall washing apparatus comprising
- a frame having ground engaging means for transporting the frame along an underlying surface;
- a liquid handling system mounted on the frame and including a first and second liquid material tank;
- means communicating with each tank for receiving and pressurizing the liquids;
- a suction creating device carried on the frame;
- conduit means communicating with the pressurizing means and the suction creating device;
- a reel carried on the frame windably receiving the conduit means;
- a wall washing attachment communicating with the conduit means, said wall washing attachment including a wall contacting segment and means for selectively delivering the first liquid or the second liquid through the wall contacting segment for selectively applying a suction on the wall contacting segment for removing excess liquids therethrough;
- a pump for each tank and connected therewith to deliver a high pressure liquid therefrom;
- means for driving each of the pumps;
- a high pressure tank receiving high pressure liquid from each pump, the conduit means being in fluid transmitting relation with each high pressure tank; and
- pressure sensitive means connected to the liquid handling system downstream of the pump for controlling the driving means.

3. The wall washing apparatus of claim **2** wherein the pressure responsive means includes
- a first high pressure cutoff-low pressure cuton switch operatively connected to the driving means and to the high pressure tank associated with the first liquid tank;
- a second high pressure cutoff-low pressure cuton switch, in parallel with the first switch, operatively connected to the driving means and to the high pressure tank associated with the second liquid tank; and further includes
- an electrical circuit, on the apparatus, connecting the switches and the driving means in operative relation.

4. The wall washing apparatus of claim **3** wherein the electrical circuit includes
- a male plug for insertion into a conventional wall outlet; and
- means connected to the suction creating device providing electrical energy thereto for operating the suction cleaning device.

5. A mobile wall washing apparatus comprising
- a frame having ground engaging means for transporting the frame along an underlying surface;
- a liquid handling system mounted on the frame and including a first and second liquid material tank;
- means communicating with each tank for receiving and pressurizing the liquids;
- a suction creating device carried on the frame;
- conduit means communicating with the pressurizing means and the suction creating device;
- a reel carried on the frame windably receiving the conduit means;
- a wall washing attachment communicating with the conduit means, said wall washing attachment including a wall contacting segment and means for selectively delivered the first liquid or the second liquid through the wall contacting segment for selectively applying a suction on the wall contacting segment for removing excess liquids therethrough;

said wall washing attachment comprising:
- a compressible liquid absorptive segment having a front surface, a rear surface, side surfaces and apertures communicating between said front and rear surfaces;
- a first conduit adjacent the rear surface and extending at least part way into selected ones of the apertures;

valve means on the rear surface of the segment having the first conduit as its outlet and providing a first valve for delivering material from the first tank and a second valve for delivering material from the second tank;

a compartment on the rear surface of the segment communicating therewith, the compartment enclosing the first conduit;

the conduit means including:

a second conduit communicating between the first valve and the first tank;

a third conduit communicating between the second valve and the second tank; and

a flexible hose surrounding the second and third conduits from the reel to the attachment, the flexible hose communicating between the compartment and the suction creating device.

6. The wall washing apparatus of claim **5** wherein each of the valves is of the push-to-operate type and includes a valve operator rotatably mounted for movement about the axis of the valve for conveniently positioning the operator.

7. A mobile wall washing apparatus comprising

a frame having ground engaging means for transporting the frame along an underlying surface;

a liquid supply system supported on the frame and including:

a first tank to receive a first liquid under pressure, a second tank to receive a second liquid under pressure, and a suction creating device;

a porous wall washing device having a wall engageable face;

individual conduit means connecting said first and second tanks, and said suction device, respectively, with

said wall washing device, and wherein one of said conduit receives the others thereof axially therethrough;

selectively operable valve means connected in each conduit means and being operable to deliver said first and second pressurized liquids through the selected one of said conduits, said wall washing device, its said face and onto said wall, and for selectively applying a suction on said wall to remove excess liquids thereform through said wall washing device;

means on said frame for pressurizing said first and second fluids; and

means responsive to predetermined high and low pressures in said first and second tanks, respectively, to activate and deactivate said pressurizing means.

8. Apparatus as defined in claim **7** and

a reel mounted on said frame windingly receiving said conduit means.

9. Apparatus as defined in claim **7** and

means on said frame releasably receiving and supporting said conduit means thereon.

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