United States Patent

Ballard

[15] **3,656,491**

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[54] CLEANING MACHINE WITH TURNTABLE TROLLEY ALIGNMENT MEANS

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[52] **U.S. Cl.** .....**134/56 R,** 134/112, 134/139, 134/148, 134/165

[51] **Int. Cl.**.....**B08b 3/02**

[58] **Field of Search** .....134/80, 147, 148, 165, 56 R, 134/56 D, 134, 138, 139, 141, 112

[56] **References Cited**

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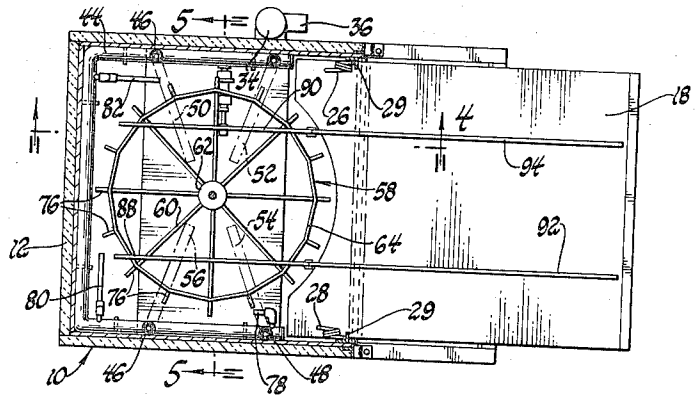
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[57] **ABSTRACT**

A cleaning machine including a front opening cabinet or housing having an upper cleaning chamber and a lower fluid reservoir and a fluid pumping system for transferring fluid from the reservoir to the cleaning chamber through a system of fluid conduits. Operation of the pumping system simultaneously sprays hot cleaning fluid over the objects to be cleaned, rotates a turntable supporting the objects, and operates a latch mechanism to free the turntable for rotation from a predetermined working position. Sediment collection devices may be disposed in the reservoir.

25 Claims, 5 Drawing Figures



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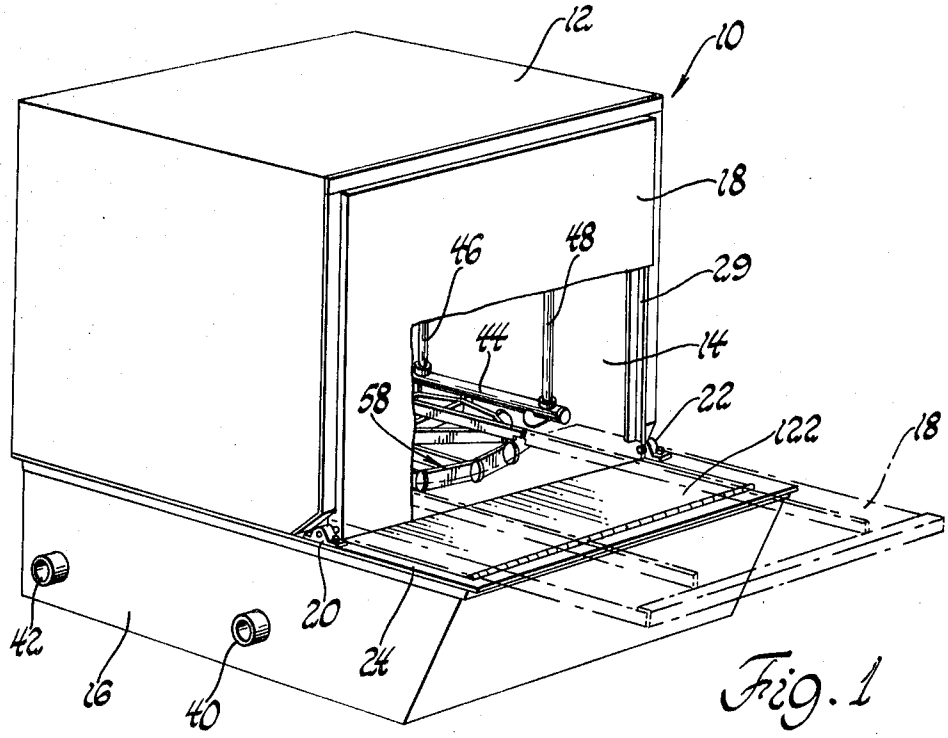


Fig. 1

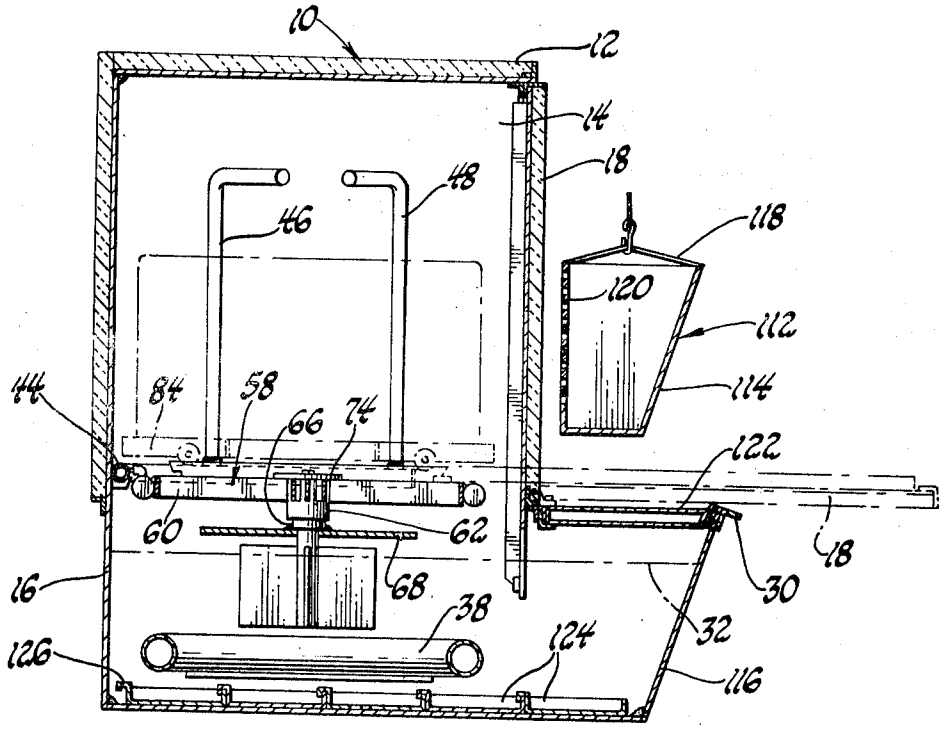


Fig. 2

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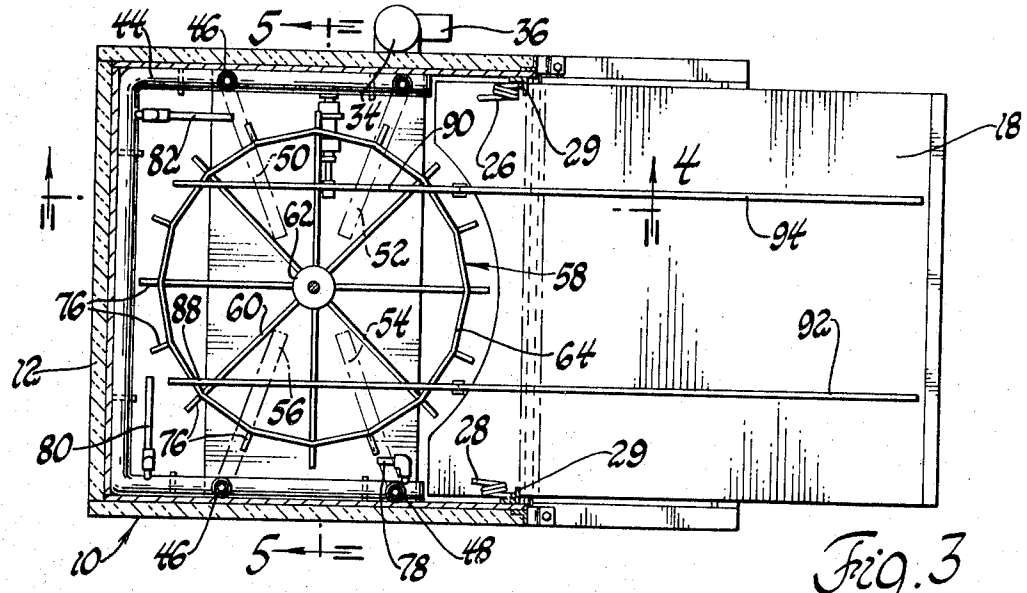


Fig. 3

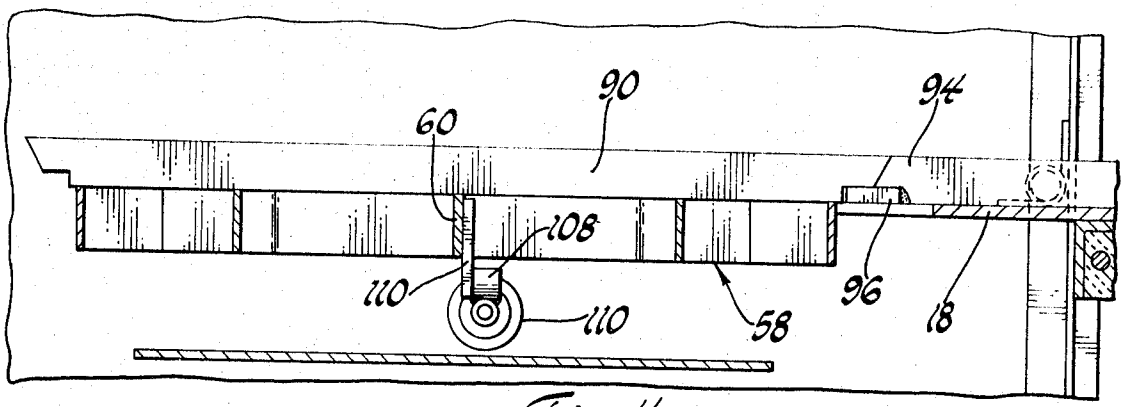


Fig. 4

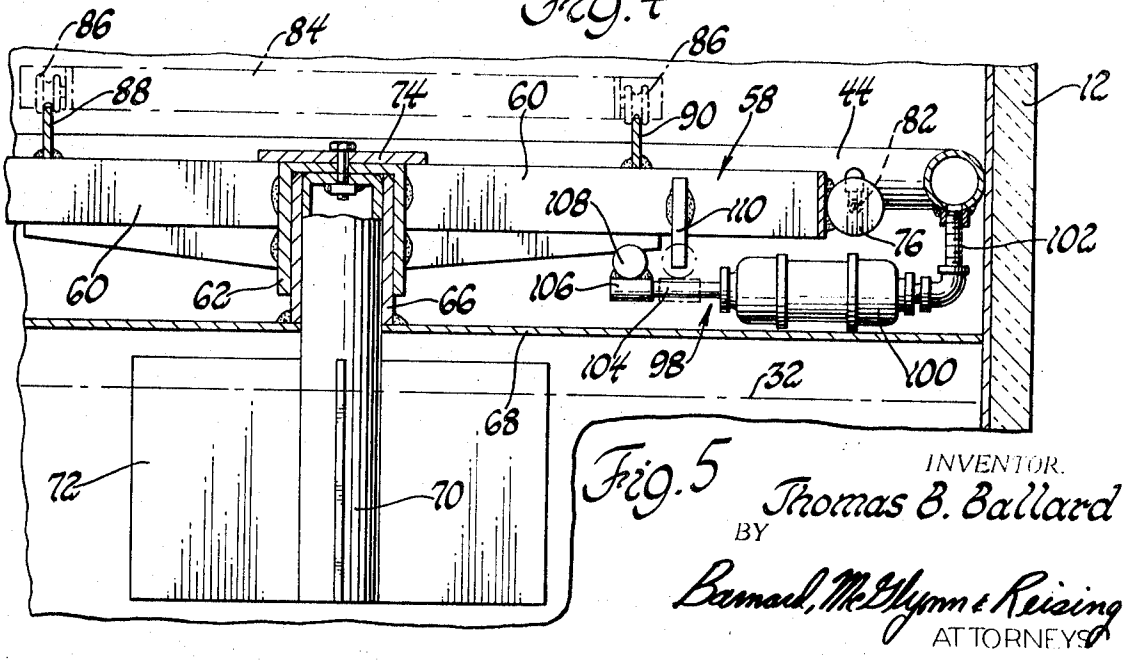


Fig. 5

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CLEANING MACHINE WITH TURNTABLE TROLLEY ALIGNMENT MEANS

This invention relates to cleaning apparatus for engine components and other heavy objects and more particularly to improvements to cleaning apparatus of the type having a turntable support for the objects to be cleaned.

Engine components, machinery, and other heavy objects subject to scaling and heavy dirt accumulation may be cleaned by means of a machine which supports the objects in a cleaning chamber and directs a spray of heated cleaning fluid against the objects during a cleaning operation. Such a machine normally includes a housing which defines a cleaning chamber as well as a cleaning fluid reservoir and a selectively actuable pumping system for transferring the cleaning fluid from the reservoir to the cleaning chamber via a system of nozzles. A turntable may be rotatably disposed within the cleaning chamber for receiving and supporting the objects to be cleaned and for rotating the objects during the cleaning operation so as to ensure the impingement of the cleaning solution spray against the object from various angles. Such machines are disclosed in the U.S. Pat. Nos. 3,246,659, issued Apr. 19, 1966, 3,422,826, issued Jan. 21, 1969, and 3,452,763, issued July 1, 1969 all in the name of Thomas B. Ballard.

The present invention relates to improvements to such machines and, more specifically, provides a means by which the turntable is caused to be stopped and maintained in a predetermined position relative to the cleaning chamber at the conclusion of each cleaning operation. Accordingly, the objects as well as the turntable are returned to the same orientation relative to the housing after the operation as they occupied at the beginning of the cleaning operation. This orients any object removal apparatus employed in combination with the turntable in a given position to facilitate the removal of objects from the turntable after the cleaning operation.

In general, this is accomplished by means of an apparatus including a cleaning chamber, a cleaning fluid reservoir, and a pumping system to transfer fluid from the reservoir to the cleaning chamber, a turntable rotatably mounted in the cleaning chamber for supporting the objects to be cleaned, and a latch apparatus which is operable at the end of the cleaning operation for stopping the turntable in a predetermined position.

In a more specific embodiment of the invention, the cleaning chamber and fluid reservoir are defined by a machine housing of the type having a forwardly disposed horizontally hinged door for a so-called front-loading operation. In this device a trolley-type carriage arrangement having tracks on the turntable is employed to roll the objects to be cleaned on and off of the turntable in a convenient fashion. Since the tracks on the turntable determine the direction in which the trolly-type carriage apparatus may be loaded onto and removed from the turntable, it is important to ensure a constant relative orientation of the turntable both before and after the cleaning operation. Accordingly, the present invention, in stopping the turntable in a given position relative to the housing at the conclusion of the cleaning cycle, ensures that the trolley-type carriage may be immediately and quickly removed from the cleaning chamber without the necessity of manually reorienting and aligning the turntable relative to the housing or the door as may be the case.

In general, this specific embodiment of the invention includes a hinged drop-down door on the front of the housing, which door drops to a horizontal position to form a loading surface. The interior surface of the door is provided with a pair of track rails which, when the turntable is in the proper position, are contiguously aligned with similar track rails on the turntable. A latch means carried partially by the turntable and partially by the housing responds to the deactivation of the pumping system which transfers the cleaning fluid from the reservoir chamber to the cleaning chamber to automatically stop the turntable in the aligned orientation and to maintain it in this orientation during the loading and unloading operation.

In the preferred embodiment, the latch means of the subject invention is a fluid pressure operated plunger device carrying a magnet which, when the plunger is in a first position, is disposed in interfering relationship with a turntable component so as to prevent rotation of a turntable and to hold the turntable relative to the plunger by magnetic action. However, when fluid pressure is applied to the plunger or the actuator which carries the plunger, the plunger and magnet are caused to be displaced out of the interfering relationship with the turntable, thus, to permit the turntable to rotate during the cleaning operation.

Also disclosed herein for use in combination with an apparatus of the type described is a first sediment collection device in the form of a comparatively deep bucket which is adapted to fit into the cleaning fluid reservoir to catch and effectively strain cleaning fluid as it drains away from the object being cleaned. In another embodiment, the sediment collection means employs a series of shallow pans which preferably rest in interlinking relationship in the floor of the cleaning fluid reservoir so as to catch fine sediment and other foreign material which is preferably not recirculated with the cleaning fluid.

Various other features and advantages of the subject invention will become apparent upon reading the following specification which describes an embodiment of the invention in detail. This specification is to be taken with the accompanying drawings of which:

FIG. 1 is a perspective view of a cleaning machine employing the present invention;

FIG. 2 is a side view in cross-section of the machine of FIG. 1;

FIG. 3 is a plan view partly in cross-section of the machine of FIG. 1;

FIG. 4 is an enlarged detail of the apparatus of FIG. 3 and taken along a section line 4—4 of FIG. 3; and,

FIG. 5 is an enlarged view of a second detail of the FIG. 3 machine taken along a section line 5—5 of FIG. 3.

Referring to FIGS. 1 through 3, there is shown a cleaning machine 10 for heavy objects subject to scaling and heavy accumulation of dirt such as engine blocks, engine components, and other metal objects. The machine 10 comprises an insulated, sheet steel housing 12 defining a cubical cleaning compartment 14 and a cleaning fluid reservoir 16 which is disposed beneath the cleaning chamber 14. Housing 12 is of the front loading type and, accordingly, is provided with a door 18 which is connected to the housing 12 for pivotal rotation about a horizontal axis by means of pillow blocks 20 and 22, the pillow blocks being suitably secured to a horizontal flange 24 which forms part of the housing 12.

The door 18 closes the cleaning chamber 14 when in a vertical orientation and opens the cleaning chamber for access thereto when pivoted to a horizontal position as illustrated by phantom lines in FIGS. 1 and 2. Coil-type helper springs 26 and 28 may be disposed between the innermost surface of the door 18 and vertical angle irons 29 which form part of the housing structure as shown in FIGS. 1 and 3. The springs 26 and 28 provide assistance in raising and lowering the door 18 by providing a partial bias on the door 18 in the direction of closure, that is, toward the vertical orientation shown in FIG. 1. The weight of the door 18 maintains it in the horizontal or open position against the bias of the springs 26 and 28. No legs are required to support the door 18 since it rests on the forward edge of a forwardly projecting portion of the housing 12 as defined by a lip 30 shown in FIG. 2.

The reservoir 16 in the base of the housing 12 is a fluid-tight compartment containing a suitable cleaning fluid 32 such as a water solution of caustic soap. When the machine 10 is in operation, the fluid 32 is pumped from the reservoir 16 and transferred into the cleaning chamber 14 via a system of pipes and nozzles to be described. Pumping force is provided by a positive displacement pump 34 which is mounted on the exterior of the housing 12 as shown in FIG. 3. A suitable control 36 including circuit breakers and switches is provided for initiating and terminating the operation of the pump 34. Such a

pumping and distribution system is disclosed in the United States Patents to Thomas B. Ballard U.S. Pat. Nos. 3,422,826 and 3,452,763. Accordingly, no detailed description is believed to be necessary in this specification and none will be given. Suffice it to say that the pumping apparatus of FIG. 4 in the U.S. Pat. No. 3,452,763 will operate in accordance with this invention when applied in the embodiment illustrated herein.

The cleaning fluid **32** is preferably heated to a relatively high temperature, e.g., 170° F, by an immersion-type heater including a heavy hollow iron tube **38** which is disposed in the reservoir **16** and which extends through the sidewall of the housing **12** as shown in FIGS. **1** and **2**. The tube **38** has an inlet end **40** which is adapted to be connected to a suitable heater and blower and an outlet end **42** which is typically exhausted to the atmosphere. Oil or gas burner units may be employed with the heater tube **38** of FIGS. **1** and **2** and are generally operated so as to blow a stream of heated air through the tube, thus, heating it to a high temperature. Alternatively, electrical heating units may also be employed. Again, such a heating system is well known in the prior art and is specifically disclosed in U.S. Pat. No. 3,422,826, previously mentioned.

The cleaning fluid distribution system which is activated by the pump **34** of FIG. **3** includes a U-shaped distribution conduit **44** which is disposed within the cleaning chamber **14** which generally follows the interior walls thereof as best shown in the plan view of FIG. **3**. The conduit **44** is provided with several vertical and horizontal extensions including the vertically oriented stand pipes **46** and **48** which extend upwardly from conduit **44** parallel to the sidewalls of housing **12**. Pipes **46** and **48** are suitably perforated so as to direct a number of fluid sprays toward the center of the cleaning chamber **14** whenever pressurized fluid is pumped into the distribution conduit **44** by the pump **34**. Stand pipes **46** and **48** are preferably provided with right angle bends at the upper portions thereof so as to form horizontal lengths which extend over and into the center of the cleaning chamber **14** as shown in FIGS. **2** and **3**.

The cleaning fluid distribution system in the cleaning chamber **14** further includes a series of four radially inwardly projecting horizontal conduits **50**, **52**, **54**, and **56** best shown in FIG. **3** which lie in a horizontal plane adjacent the bottom of the cleaning chamber **14** so as to direct sprays of the cleaning fluid upwardly against the objects to be cleaned.

The objects to be cleaned are supported within the cleaning chamber **14** on a turntable generally designated by the reference character **58**. The turntable **58** is constructed from a plurality of radially extending steel spokes **60** which are secured at the inner ends to a central cylindrical hub **62** and at the outer ends to a continuously formed steel ring **64**. The turntable **58** is supported within the cleaning chamber **14** for rotation about a central vertical axis by means of a cylindrical sleeve bearing **66** which is telescopically received within the cylindrical hub **62** as best shown in FIG. **5**. Bearing **66** is secured such as by welding to a horizontal baffle plate **68** which extends across the housing **12** from one side wall to the other so as to at least partially separate the cleaning chamber **14** from the fluid reservoir **16**. A shaft **70** is secured to the turntable **58** for rotation therewith and extends vertically into the fluid reservoir **16** so as to immersed in the cleaning fluid **32**. Shaft **70** which may be of hollow cylindrical construction as shown in FIG. **5** has mounted thereon a series of uniformly spaced paddles **72** which react with the cleaning fluid **32** in the reservoir **16** to retard or damp the rotation of the turntable **58** for purposes to be described. A top plate **74** is placed over the hub **62** and is bolted to the shaft **70** to complete the turntable rotational bearing support apparatus as shown in FIG. **5**.

Turntable **58** has secured to the outer periphery thereof a series of uniformly spaced fins **76** which are radially oriented with respect to the turntable and which cause the turntable to be rotated whenever the pump **34** is actuated to pressurize the fluid distribution conduit **44**. To accomplish this rotation of turntable **58**, conduit **44** is provided with a series of outlets to which are connected fluid nozzles **78**, **80**, and **82**, as best shown in FIG. **3**. Nozzle **78** is disposed in the front left corner of the machine **10** as viewed from the front and is oriented so as to direct a jet of fluid rearwardly and horizontally along the sidewall of the cleaning chamber **14**. Nozzle **80** is oriented so as to direct a jet of fluid transversely from left to right across the rear wall of the cleaning chamber **14** again viewed from a position directly in front of the machine **10**. Nozzle **82** is oriented so as to direct a jet of fluid horizontally and forwardly along the right hand sidewall of the machine **10**, again, as viewed from the front of the machine. The three jets of fluid produced by the nozzels **78**, **80**, and **82** impinge directly upon the drive fins **76** which are radially disposed on the turntable **58** so as to cause the turntable to be rotated in a clockwise direction as viewed in FIG. **3**. The turntable rotation is controlled by the reaction of the paddles **72** with the cleaning fluid **32** so as to produce a slow and reasonably uniform rotation of the turntable **58**.

To summarize briefly, the objects to be cleaned are placed on the turntable **58** after which the door **18** is raised to the closed or vertical orientation to seal the cleaning compartment **14**. Control **36** is operated to actuate pump **34** which pressurizes the distribution conduit **44** to accomplish two results: first, the fluid spray system including stand pipes **46** and **48** and horizontal pipes **50**, **52**, **54**, and **56** are pressurized so as to direct a plurality of fluid sprays against the objects carried by the turntable **58** from various directions; second, the nozzles **78**, **80**, and **82** are actuated so as to cause jets of cleaning fluid to impinge against the fins **76** thereby to drive the turntable **58** in a turbine fashion. This causes the turntable **58** to rotate within the spray system in a clockwise direction exposing the objects to be cleaned to various fluid sprays from various directions. The paddles **72** which extend into the fluid reservoir **16** react with the cleaning fluid **32** so as to control the angular rotation of the turntable **58**. Whenever the pump **34** is deactivated, the drive force for the turntable **58** is terminated along with the pressurization of the fluid spray distribution system.

For the purpose of loading the object to be cleaned onto and off of the turntable **58** a steel latice work carriage **84** having spool-type wheels **86** is provided along with a system of tracks which extend over the interior surface of the door **18** and the upper surface of the turntable **58** so as to permit the carriage **84** to be rolled into and out of the cleaning chamber **14**. The carriage **84** is rolled not only over turntable **58** but also over the door **18** when it is lowered to the horizontal position shown in FIG. **3**.

More specifically, this carriage track system is shown to include a pair of spaced, parallel steel rails **88** and **90** which are secured to the upper surface of the turntable components. The rails **88** and **90** may be welded to various points along the spokes **60** and the ring **64** as shown in FIGS. **3** and **5**. Rails **88** and **90** are spaced apart in parallel fashion so as to receive the spool-type wheels **86** of the carriage **84** for fore-and-aft rolling support as generally indicated in FIG. **5**.

Cooperating with the track rail **88** and **90** on the turntable **58** are a second similar parallel spaced set of rails **92** and **94** which are secured such as by welding to the interior surface of the door **18**. Track rails **92** and **94** are parallel and spaced apart by the same distance as the rails **88** and **90** on the turntable **58**. Accordingly, when the door **18** is in the opened, horizontal position, shown in FIG. **3**, track rails **92** and **94** are aligned with track rails **88** and **90** so as to form a substantially continuous set of track rails over which the carriage **84** may be rolled for the purpose of loading objects to be cleaned into an out of the cleaning chamber **14**. As best shown in FIG. **4**, the track rails **90** and **94**, for example, are complementally beveled at the mating surfaces, that is, the end surface of rail **90** toward the door **18** is angularly cut inwardly from top to bottom whereas the end surface of the door mounted rail **94** is angularly cut in a complementary fashion. Accordingly, the door **18** is permitted to be lowered such that the track rails **92** and **94** pivot clockwise and upwardly into mating engagement

with the rails 88 and 90 without the interference which would be experienced if the end surfaces of the track rails were squarely cut. In addition, the rails 94 and 90, for example, are undercut with a slight notch and an L-shaped stop guard 96 is welded into the notch in the rail 94. The stop guard 96, thus, comes up beneath the rail 90 when the door 18 is opened to provide vertical support for the turntable 58 when the loaded carriage 84 is rolled from the turntable to the door 18. This eliminates any tendency for the turntable 58 to tilt slightly under load when the carriage 84 is withdrawn.

To stop the turntable 58 in such a position as to align the track rails 88 and 90 with the track rails 92 and 94 a latch means 98 which is responsive to the actuation and deactuation of the pump 36 is provided. Latch means 98 comprises a fluid pressure actuator 100 having an inlet conduit 102 in fluid pressure communication with the fluid distribution conduit 44 as best shown in FIG. 5. Accordingly, when the pump 34 is actuated to pressurize the conduit 44, fluid pressure is also simultaneously applied to actuator 100 by way of conduit 102. The application of fluid pressure to the conduit 102 displaces a piston in the actuator 100 against the force of a bias spring, not shown, to produce a displacement of a plunger shaft 104. The actuator 100 is oriented such that plunger shaft 104 is displaced in a generally radial direction with reference to the turntable 58.

Mounted on the end of the plunger shaft 104 is a fixture 106 which carries a rod-type permanent magnet 108. When no fluid pressure is applied to the actuator 100, the bias spring maintains the plunger shaft 104 and the magnet 108 in a withdrawn position relative to actuator 100 where the magnet 108 is directly in the circular path of travel of a depending steel stop bar 110 which is welded to one of the radial spokes 60 of the turntable 58. The spoke is, of course, selected such that when the stop 110 is attached by magnetic force to the magnet 108, the track rails 88 and 90 are aligned with the track rails 92 and 94 as shown in FIG. 3.

When the fluid pump 34 is actuated to pressurize the conduit 44 and to apply fluid pressure to the actuator 100, the piston in the actuator moves the plunger shaft 104 outwardly relative to the actuator body 100 so as to move the magnet 108 out of the circular path of travel of the depending stop bar 110. This permits the turntable 58 to rotate freely. However, when the pump 34 is deactivated, the fluid pressure gradually diminishes in the actuator 100 and the bias spring draws the plunger 104 and the magnet 108 back into the path of travel of the stop bar 110. Accordingly, as soon as the spoke 60 which carries the stop bar 110 rotates around to an interfering position with the magnet 108, the turntable 58 is stopped. Magnetic attraction between the metallic stop bar 110 and the permanent magnet 108 prevents the turntable 58 from rebounding and causes the turntable to be maintained in a position wherein the track rails are aligned, as shown in FIG. 3.

The actuator 100 is a well known device employing a piston which is movable against the axial or opposing force of a bias spring in response to fluid pressure. Any hydraulic fluid linear actuator device is satisfactory for this purpose.

Summarizing the operation of the apparatus as thus far described, the objects to be cleaned are placed on the carriage 84 and rolled into the cleaning chamber 14 along the continuous track formed by the spaced rails 92 and 94 on the door 18 and the rails 88 and 90 on the turntable 58. Door 18 is then raised to the closed position with the assistance of springs 26 and 28. Pump 34 is turned on to pressurize the spray system including the conduit 44 and the stand pipes 46 and 48. Pressure in plunger actuator 100 moves magnet 108 out to unlatch turntable 58. In addition, pressurization of the conduit 44 causes spray jets of cleaning fluid to immerge from the nozzles 78, 80, and 82 and to drive the turntable 58 in the clockwise direction as viewed in FIG. 3. At the conclusion of the cleaning operation the control 36 is manipulated to shut down the pump 34. This causes a gradual relaxation of pressure in the conduit 44 which in turn results in a termination of the fluid spray not only from the stand pipes 46 and 48 but also from the nozzles 78, 80, and 82 which drive the turntable 58. Accordingly, the turntable 58 decelerates toward a stopped condition. Relaxation of fluid pressure in the conduit 44 also permits the bias spring in the actuator 100 to draw the plunger shaft 104 and the magnet 108 inwardly into interfering relationship with the depending stop bar 110 on the turntable spoke 60. Accordingly, when the turntable 58 rotates to the point where the stop bar 110 engages the magnet 108, the turntable 58 is immediately stopped. Rebound of the turntable 58 is prevented by a combination of the magnetic force between the permanent magnet 108 and the steel stop bar 110 and by the momentum of the fluid 32 in the reservoir 16 which is set up by action of the paddles 72 on the depending shaft 70. With the turntable 58 properly aligned in the predetermined position wherein the track rails 88 and 90 line up with the track rails 92 and 94, the door 18 is opened bringing the angularly cut track rail surfaces into engagement with one another as shown in FIG. 4. At this time the carriage 84 may be withdrawn over the track rails and over the door 18 to a convenient unloading position on the door 18.

It will be appreciated that the cleaning of heavily scaled objects such as engine blocks and other heavy steel parts will eventually contaminate the cleaning fluid 32 with scale and sediment and like foreign material. Being fairly heavy, this material tends to settle to the bottom of the reservoir 16. FIG. 2 illustrates two alternative or complementary devices for collecting scale and sediment and permitting such foreign material to be periodically emptied from the reservoir 16. The first device for sediment collection is the sludge bucket 112 which is a generally rectangular steel container having a forwardly angled front wall 114 to correspond to the forwardly angled front wall 116 of the reservoir portion of the housing 12. Sludge bucket 112 may be provided with a steel handle 118 to permit it to be withdrawn from the reservoir 16 by means of a chain hoist. The sludge bucket 112 is preferably solid on three sides and the bottom but is provided with a perforated rear wall 120 such that a strainer-type operation can be accomplished. The perforations terminate approximately 5 inches upwardly from the bottom of the bucket so as to provide for the accumulation of sludge and scale in the bottom of the bucket.

The housing 12 is provided with a front access door 122 which is hinged at the forward lip 30 for pivotal rotation relative to the housing 12. Sludge bucket 18 may be lowered through the opening provided by the door 122 and dropped directly into the fluid reservoir 16 where it is immersed in the cleaning fluid 32. Where the sludge bucket 112 is used, the baffle plate 68 is preferably extended both forwardly and rearwardly and angled slightly forwardly such that the cleaning fluid which drains away from the objects to be cleaned on the turntable 58 flows forwardly and into the sludge bucket 112. After the bucket 112 is filled up past the solid rear wall section, fluid may escape through the perforations the sludge and scale being strained therefrom during such flow through the rear wall. In this embodiment, a drain or runoff trough may also be provided in the forwardly extended baffle plate 68, this modification being fully described in U.S. Pat. No. 3,452,763.

An alternative or complementally usable sediment collection means involves interlinked pans 124 which are disposed on the floor of the housing 12 defining the reservoir 16. Each of the pans 124 is shallow enough to fit under the heating tube 38 and is of such depth and width as to permit direct insertion and removal through the opening provided by the hatch or door 122. Each pan is provided with a rear wall and two sidewalls of uniform height and a front wall of increased height and having a bent-over lip portion 126. This lip portion is adapted to fit over the rear wall of the next adjacent pan so as to provide an interlinking effect. Therefore, the pans may be inserted and removed from the reservoir 16 one at a time each pan which is inserted being linked with the next rearmost pan by means of the bent-over lip 126. The pans are then manually shoved back into the housing 12 beneath the tubes 38 until the entire bottom surface or floor of the housing is

covered with pans. On removal, the pans are simply pulled forwardly and lifted out one at a time, the interlinking of the pans permitting them to be pulled forwardly as a unit and yet removed one at a time for cleaning purposes. Obviously, the pans must be removed through the opening provided by hatch 122 in a level condition so as to prevent spillage of the sediment back into the reservoir 16. Accordingly, the pans are sized in accordance with the size of the opening provided by hatch 122 as previously described. Pans 124 may be provided with suitable casters and lateral guide wheels if desired to facilitate the rolling motion relative to housing 12.

It is to be understood that the foregoing description relates to an illustrative embodiment of the invention and it is not to be construed in a limiting sense.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. In a heavy duty, industrial cleaning apparatus of the type having a cleaning chamber, a cleaning fluid reservoir, and a pumping system to transfer fluid under pressure from the reservoir to the cleaning chamber; a turntable rotatably mounted in the cleaning chamber for supporting objects to be cleaned during a cleaning operation, and latch means automatically operable in response to a change in fluid pressure due to deactivation of the pumping system for stopping the turntable in a predetermined position.

2. Apparatus as defined in claim 1 wherein the latch means includes respective interfering stop members, one such member being mounted on the turntable and the other being disposed in the chamber, and actuator means for displacing said other member out of interfering relation with the one member in response to actuation of the pump means.

3. Apparatus as defined in claim 2 wherein the actuator means includes a displaceable plunger carrying said other member, bias means to urge the plunger into a first position wherein the stop members interfere, the actuator means being responsive to fluid pressure to displace the plunger away from said first position.

4. Apparatus as defined in claim 3 including means to prevent rebound of said one stop member from said other stop member.

5. Apparatus as defined in claim 4 wherein the means to prevent rebound includes a permanent magnet.

6. Apparatus as defined in claim 1 including a housing defining the cleaning chamber, a panel pivotally connected to the housing for rotation about a horizontal axis proximate the lower boundary of the panel to provide access to the chamber and to provide a horizontal surface exteriorly adjacent the chamber when lowered, first track means on the interior surface of the panel, and second track means on the turntable, the first and second track means being contiguously aligned when the turntable is in the predetermined position.

7. Apparatus as defined in claim 6 wherein the first and second track means include spaced rail members for supporting a wheeled carriage.

8. Apparatus as defined in claim 7 wherein the rail members of the first and second track means are provided with angularly complementary mating end surfaces.

9. Apparatus as defined in claim 8 including drive means responsive to the actuation of the pumping system to rotate the turntable.

10. Apparatus as defined in claim 9 wherein the drive means includes at least one nozzle operatively connected to the pumping system to direct fluid from the reservoir against the turntable.

11. Apparatus as defined in claim 10 including radial fins on the turntable and reactive with the fluid from the nozzle to impel the turntable by fluid reaction.

12. Apparatus as defined in claim 11 including at least one paddle operatively connected to the turntable for rotation therewith and extending into the reservoir to retard rotation of the turntable.

13. Apparatus as defined in claim 11 including a baffle disposed beneath the turntable and separating the cleaning compartment from the reservoir.

14. Apparatus as defined in claim 13 including a container disposed in the reservoir for catching fluid draining from the baffle, the container having at least one perforated wall portion for straining fluid released back into the reservoir.

15. Apparatus as defined in claim 14 wherein the housing is provided with a forwardly extending lower compartment defining the reservoir, an opening at the upper boundary of the compartment, a cover on the opening, the container being disposed in the compartment for removal through the opening.

16. Apparatus as defined in claim 11 including at least one shallow pan disposed on the floor of the reservoir to catch sediment and like matter entering the reservoir.

17. Apparatus as defined in claim 16 including a plurality of said pans, each pan having means interlinking it with an adjacent pan.

18. Apparatus as defined in claim 9 wherein the latch means is operatively connected to the pumping system to be actuated in response to the deactuation of the pumping system.

19. Apparatus as defined in claim 18 wherein the latch means includes respective interfering stop members, one such member being mounted on the turntable and the other being disposed in the chamber, and actuator means for displacing said other member out of interfering relation with the one member in response to actuation of the pump means.

20. Apparatus as defined in claim 19 wherein the actuator means includes a displaceable plunger carrying said other member, bias means to urge the plunger into a first position wherein the stop members interfere, the actuator means being responsive to fluid pressure to displace the plunger away from said first position.

21. Apparatus as defined in claim 20 including means to prevent rebound of said one stop member from said other stop member.

22. Apparatus as defined in claim 21 wherein the means to prevent rebound includes a permanent magnet.

23. Cleaning apparatus comprising a housing having a cleaning chamber and a reservoir chamber, a turntable in the cleaning chamber for receiving parts to be cleaned, a latch for maintaining the turntable in a given position, and a selectively actuated fluid pressure system for transferring cleaning fluid from the reservoir chamber to the cleaning chamber and simultaneously unlatching and rotating the turntable.

24. Apparatus as defined in claim 23 wherein the fluid pressure system includes a pump mounted on the housing and having an inlet in the fluid reservoir chamber and at least one outlet in the cleaning chamber.

25. Apparatus as defined in claim 23 including means carried by the housing for heating fluid in the reservoir chamber.

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