United States Patent [19]

Semple

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[54] **SLURRY PUMP CLEANOUT MECHANISM**

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[52] **U.S. Cl.** **417/454,** 417/900

[51] **Int. Cl.** .. **F04b 15/02,** F04b 21/00, F04b 39/12

[58] **Field of Search** 417/454, 900, 345

[56] **References Cited**

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Primary Examiner—William L. Freeh

[57] **ABSTRACT**

Concrete slurry pumps, particularly a mechanism enabling separation of the valve housing from the pumping cylinders, to enable a washing cleanout of the cylinders and pumping pistons therein.

7 Claims, 2 Drawing Figures

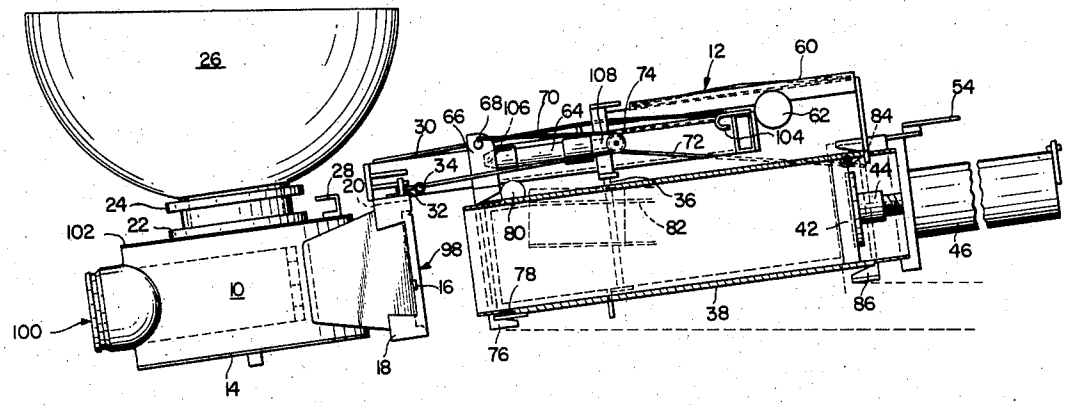
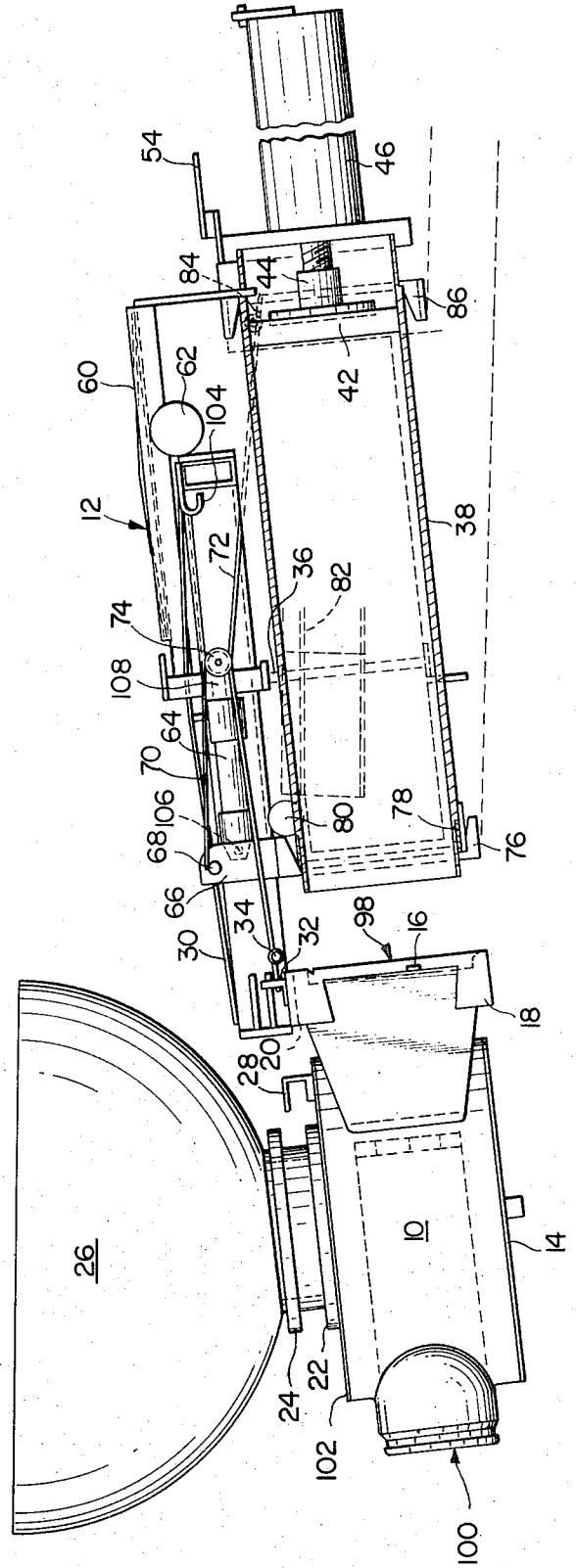


FIG. 1


54
46
84
44
86
60
62
104
42
12
38
72
36
82
74
108
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106
68
80
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102
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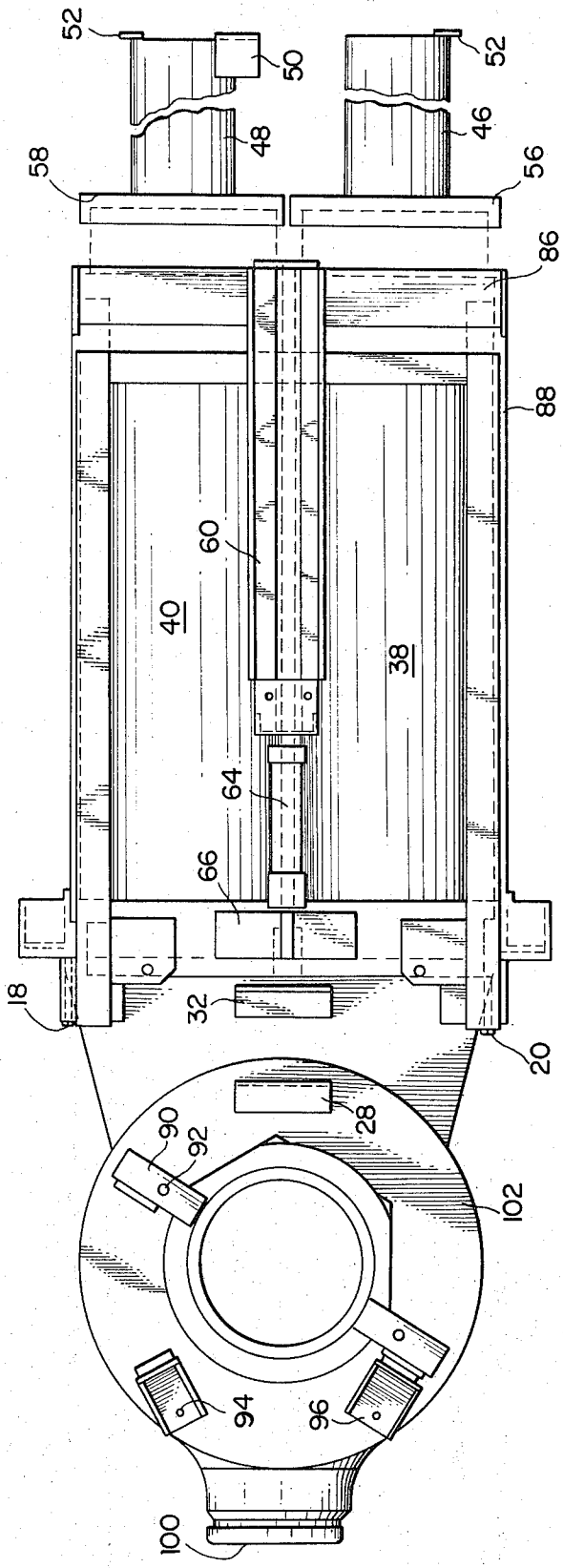

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88
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38
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102
94
96
100

FIG. 2

SLURRY PUMP CLEANOUT MECHANISM

BACKGROUND OF THE INVENTION

1. Field of the Invention

Concrete or slurry pumps of the type which pump aggregate mixtures, subject to hardening even when completely submerged in water. Such pumps are required to be cleaned out by periodic hosing with water. In earlier slurry pumps this cleanout has been difficult, necessitating breaking apart or unbolting of the pumping and valving components with resultant down-time and increased labor costs.

2. Description of the Prior Art

U.S. Pat. No. 3,326,135, is typical of the cement or slurry pumps in present use. Cleanout by hosing can only be effected by manual dismantling of those parts illustrated.

SUMMARY OF THE INVENTION

According to the present invention, a slurry pump cleanout mechanism is comprised of a base stationary frame with a slideable frame reciprocably supported in the base frame. One or more concrete pumping cylinders are supported in the base frame and are communicable with a valving housing and receiving hopper which are attached to the free end of the slideable frame. As pumping of slurry is completed through the cylinders and into the valve housing and it is desired to clean out the pumping cylinder's interior, the valve housing is disconnected from the pumping cylinders by reciprocating the slideable frame outwardly of the base frame, such that the pumping cylinder interiors are exposed for hosing cleanout. A guide track and suitable cam elements are interposed between the slideable frame and base frame so as to assist horizontal reciprocation of the slideable frame with respect to the base frame.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a fragmentary side elevation, partially in section, showing at the left the hopper and valving housing disengaged and extended apart from the pumping cylinders by means of the slideable frame and so as to enable cleanout of the cylinders; and

FIG. **2** is a fragmentary top plan, showing the valve housing connected to the pumping cylinders in slurry pumping position, as the slideable frame is retracted within the stationary base frame.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In FIG. **1** valve housing **10** is shown supported apart from pumping housing, generally designated as **12.** The valve housing includes a suitable lower bearing carrier bar **14** and a top plate **22,** supporting bearing retainer plate **102** which in turn supports yoke **24** in which the slurry or cement hopper **26** is removeably positioned. The valve housing **10** may include entry port **98,** connectable with the interiors of the individual pumping cylinders **38** and **40,** as well as discharge port **100.**

A suitable limit switch bracket **28** is shown illustrated in FIG. **1** and in FIG. **2,** individual bushings **90** and support bolts **92** are shown together with bumper pad supports **94** and **96.**

The base stationary frame **88** is rectangular in configuration and includes a comcrete pump back frame **76**

at its open end and a concrete pump cylinder frame **86** at its closed end. The valve housing entry port **98** is connectable to the concrete pump back frame **76** by means of four or more bolts **18** and **20.** A pry block **16** may also assist in disengagement, as the bolts **18** and **20** are pulled. The individual pumping cylinders **38** and **40** each may include piston assembly piston rod **44** with piston head **42** pressurized by means of hydraulic cylinders **46** shown in fragment. The individual hydraulic cylinders **46** and **48** amy include suitable lube-rod brackets **52** and limit switch brackets **50.** Also, individual limit switch brackets **56** and **58** may be positioned at the rear end of the pumping cylinders.

A top track **60** may be positioned so as to guide cam **62** secured to slideable frame **30** at its rear. Similarly, an inner truck frame **82** may be secured in the base frame intermediate the pumping cylinders **38** and **40** with moveable cam element **80** supported at its forward end in between the truck frame **82** and the slideable frame **30.**

The slideable frame **30** includes at its forward end bracket **32** supporting eye-bolt **34** such that a suitable cable **70** might extend from rod **68** mounted in forward bracket **66** around median pulley **74** secured to the hydraulic cylinder **64** piston, thence to the eye-bolt **34.** Similarly, second cable **72** may extend from hook **104** secured to the inner end of sliding frame **30** around pulley **74** and to a suitable eye-bolt **84,** illustrated in phantom and secured to the base stationary frame **86.**

As will be apparent, the hydraulic cylinder **64** may be pivoted in bracket **66** by means of pin **106** such that extension of the piston rod **108** and pulley **74** causes a movement of the slideable frame to the right and inwardly of the base frame **86,** so that valving housing entry port **98** abuts the open ends of the pumping cylinders **38** and **40.** The fix bolts **18** and **20** may then be secured. As pumping is completed and it is desired to hose or clean out the pumping cylinder interiors, the hydraulic cylinder **64** is activated to retract piston **108** and pulley **74** such that the cable **72** and slideable frame **30** are pulled to the left and outwardly of the base frame **86** to the position illustrated in FIG. **1,** and guided by engagement of cam **60** on the top and cam **80** on the bottom.

Manifestly, variations in pumping cylinder and valve housing construction may be included without departing from the spirit of invention.

I claim:

1. A slurry pump cleanout mechanism comprising:

A. a base stationary frame;

B. a slideable frame reciprocably supported within said base frame, and including cam followers engageable with said stationary frame;

C. a receiver hopper and valve housing including receiving and discharge ports, removeably secured to a free end of said slideable frame;

D. at least one concrete pumping cylinder including a pumping piston, supported in said base frame so that its discharge end is removably connectable to said receiving port in said valve housing, as said sliding frame is nestled within said base frame; and

E. a drive unit interconnecting said base frame and said slideable frame, so as to slide said slideable frame longitudinally with respect to said base frame, so as to disengage said valve housing from said cylinder, said drive unit including a hydraulic

piston having a pulley mounted upon its piston rod and cable means interconnecting opposite ends of said slideable frame with said pulley, such that said movement of said piston reciprocates said slideable frame with respect to said base frame.

2. A slurry pump cleanout mechanism as in claim **1,** including at least two concrete pumping cylinders mounted in said base frame and connectable to said receiving port in said valve housing.

3. A slurry pump cleanout mechanism as in claim **2,** said stationary frame including an upper track, said cam follower being supported intermediate said slideable frame and said upper track.

4. A slurry pump cleanout mechanism as in claim **3,** including a lower truck frame positioned between said pumping cylinders and a cam follower interposed between said slideable frame and said lower truck frame.

5. A slurry pump cleanout mechanism as in claim **4,** including limit switch means mounted upon said base frame, so as to disengage said hydraulic cylinder as said slideable frame is nestled within said base frame.

6. A slurry pump cleanout mechanism as in claim **5,** said valve housing including a pry block adjacent said receiving port and connectable to said concrete pumping cylinders.

7. A slurry pump cleanout mechanism as in claim **6,** said receiver hopper being mounted above said valve housing intermediate said receiving and discharge ports.

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