H. S. HUNT.

DEVICE FOR CLEANING SCREENS.

APPLICATION FILED MAR. 29, 1920.

1,357,499. **Patented Nov. 2, 1920.**

2 SHEETS—SHEET 1.

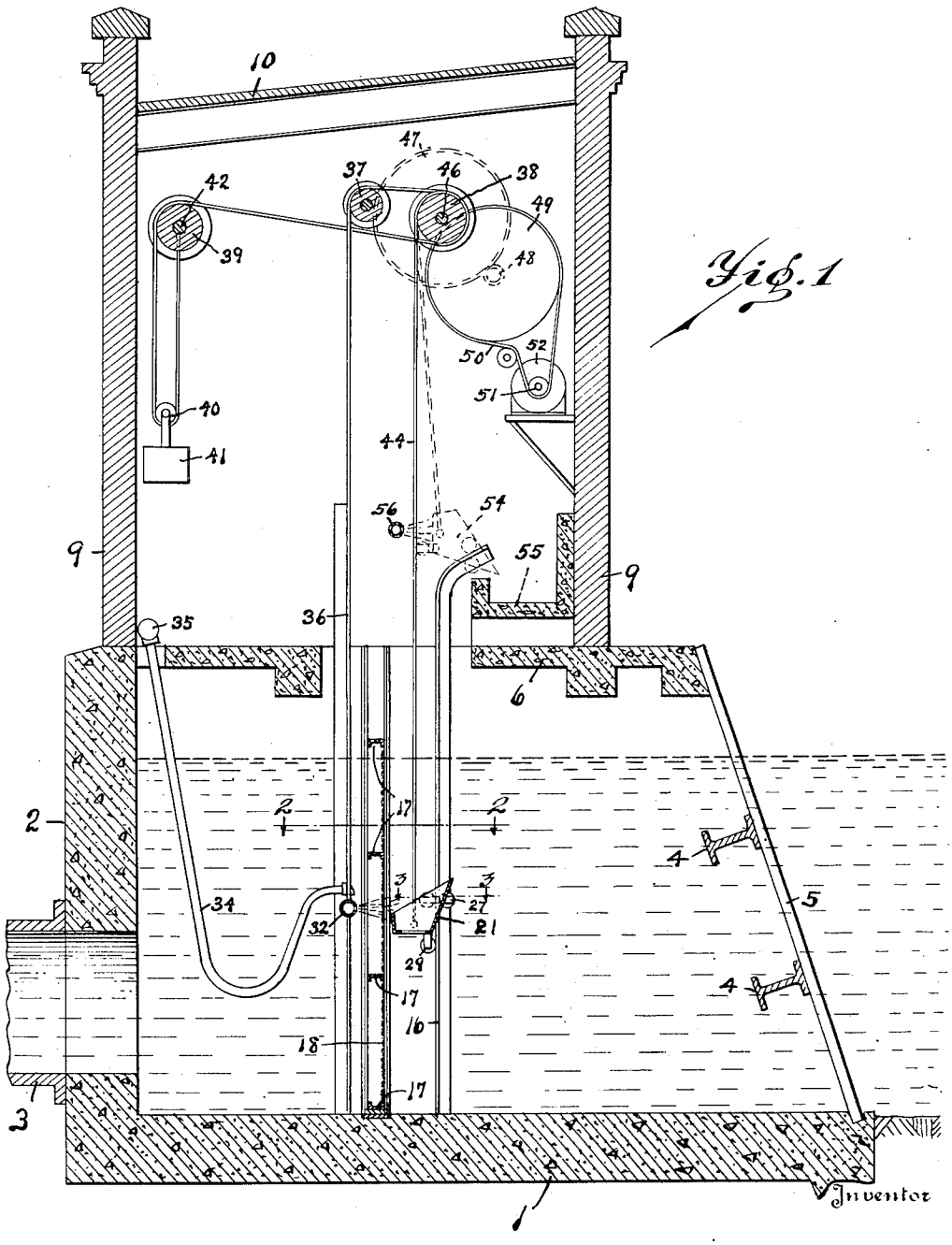


Fig. 1

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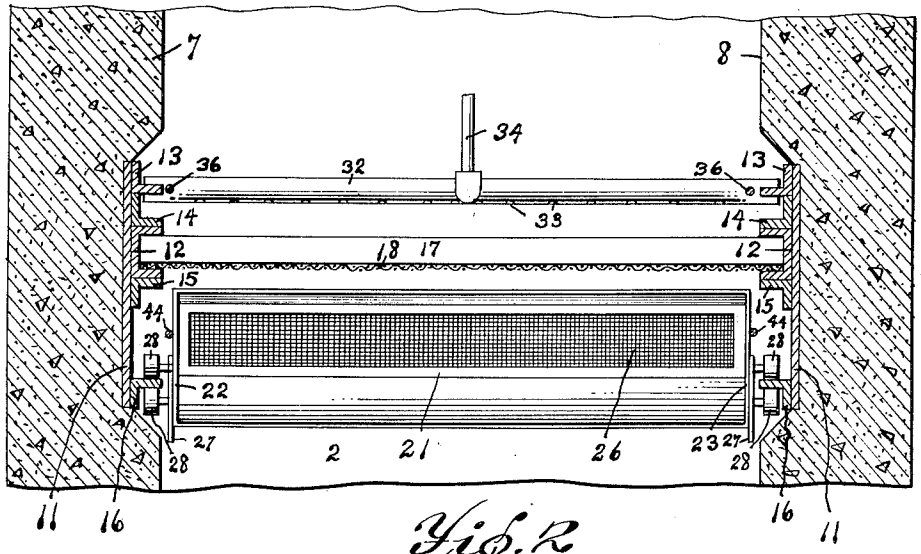


Fig. 2

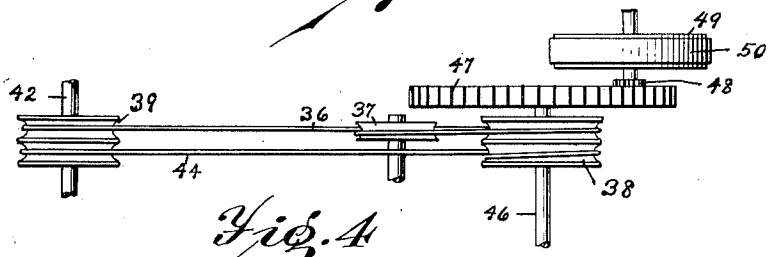


Fig. 4

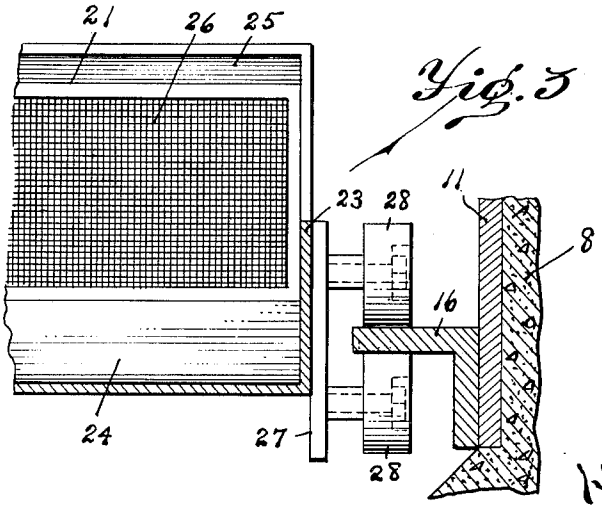


Fig. 3

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UNITED STATES PATENT OFFICE.

HORACE S. HUNT, OF JACKSON, MICHIGAN.

DEVICE FOR CLEANING SCREENS.

1,357,499. Specification of Letters Patent. Patented Nov. 2, 1920.

Application filed March 29, 1920. Serial No. 369,729.

To all whom it may concern:

Be it known that I, HORACE S. HUNT, a citizen of the United States, and residing at Jackson, in the county of Jackson and State of Michigan, have invented a new and Improved Device for Cleaning Screens, of which the following is a specification.

This invention relates to means for cleaning the screens used to remove the coarser particles from water entering the pumping stations for municipal and other water supply, or from sewage passing to settling basins, and its object is to provide a cleaning mechanism which can be used without discontinuing the operation of the screen.

This invention consists in combination with an upright screen through which the water flows, of a mud receptacle on one side of the screen, and preferably on the up-stream side thereof, and means to raise and lower the receptacle, and of a preferably horizontal vertically-movable pipe extending transversely of the screen and on the opposite side thereof from the mud receptacle and provided with perforations on the side toward the receptacle, and means for raising and lowering this pipe so as to keep it opposite the mud receptacle, and means for forcing a fluid into said pipe and out through the discharge perforations so as to cause the mud which clings to the up-stream side of the screen to be blown off and into the mud receptacle. It will be understood that instead of a single movable pipe, a series of stationary pipes may be employed, means being provided to direct fluid through the particular pipe opposite the receptacle.

It also consists in providing an automatic dumping mechanism for the mud receptacle and means for washing this receptacle after it has been dumped.

It also consists in the details of construction illustrated in the accompanying drawings and particularly pointed out in the claims.

In the drawings, Figure 1 is a vertical section of the screen and the chamber in which it is mounted, the section being longitudinally of the stream flowing through said screen. Fig. 2 is a section on the line 2—2 of Fig. 1 on a larger scale. Fig. 3 is a section on the line 3—3 of Fig. 1 on a still larger scale. Fig. 4 is a plan of the operating mechanism.

Similar reference characters refer to like parts throughout the several views.

The drawings show a water chamber having a base 1, a rear wall 2 provided with a discharge pipe 3, transverse I-beams 4 which support the upright bars 5 which constitute the means for preventing the entrance to the water chamber of large pieces of wood and other bulky objects, a top 6 and sides 7 and 8. Above the water chamber is a room for the operating mechanism consisting of walls 9 and a roof 10. It will be understood that these several parts are merely shown conventionally, as they may be varied as desired, forming as they do no part of this invention.

Extending uprightly along the walls 7 and 8 are plates 11 which support channel bars 12 and angle bars 13, 14, 15 and 16. Extending across between the channel bars 12 are smaller channel bars 17 and to them is secured the screen 18. This screen is preferably vertical and as wide as the stream which passes through this water chamber. Any other desired means may be employed to support the screen.

The angle bars 16 constitute the guides for the mud receptacle 21 which is composed of the ends 22 and 23, the sides 24 and 25 and a perforated bottom 26. Cross bars 27 at the ends of this mud receptacle carry the guide rollers 28 which engage flanges on the angle bars 16 as shown in Figs. 1, 2 and 3. Other guide rollers 29 extend down from the bottom of the receptacle and also engage the angle bars 16, except when the mud receptacle is being dumped.

On the opposite side of the screen from this mud receptacle is a transverse pipe 32 provided with discharge openings 33, as indicated in Fig. 2, and having a flexible hose 34 connected to it and extending from a main 35 from which it may conduct water or air under pressure to the pipe 32. The pipe is vertically movable and is guided by the angle bars 13. Extending upwardly from the ends of this pipe 32 are cables 36 which extend around an idler pulley 37 and around a drum 38, then around a second idler pulley 39, around a small pulley 40 to which a weight 41 is attached, and then connect to the shaft 42 on which the idler 39 is mounted. Similarly, cables 44 extend up from the ends of the mud receptacle, around the pulleys 38, 39 and 40 and up to the shaft 42. On the shaft 46 on which the pulleys 38 are mounted is a gear wheel 47 shown conventionally in Fig. 1, which meshes with a

pinion 48 which is connected to a pulley 49 on which a belt 50 from the pulley 51 on the armature shaft of the motor 52 extends. When this motor is driven in either direction, the pipe 32 and the mud receptacle 21 are raised or lowered, as may be desired.

When this device is to be operated, the mud receptacle and the pipe 32 are lowered to the bottom of the water chamber, after which air or water is turned on through the hose 34, which blows the accumulated mud and refuse from the up-stream face of the screen into this mud receptacle 21. The motor 52 is energized and causes the cables 36 and 44 to be wound up and this results in the pipe and the mud receptacle rising slowly together up through the water until the parts reach the position 54 shown in dotted lines in Fig. 1. The upper end of the channel 16 is curved and this causes the mud receptacle to discharge into the trough 55. While it is in this position, air or water is caused to flow from the pipe 56 and below through the perforated bottom 26 of this mud receptacle, and not only is the entire load of this mud receptacle caused to be discharged, but the water cleans it thoroughly.

It will be understood that the operating mechanism for raising and lowering this mud receptacle and the pipe 32 are shown conventionally and that any other desired mechanism may be substituted therefor. The details of construction form no part of this invention, which consists broadly in means for cleaning upright screens without removing them from their operative positions by blowing water or other fluids through said screens and providing a mud receptacle to receive the impurities and other foreign bodies as they are blown from the screen, the pipe and the receptacle moving up and down so that every part of the surface of the screen will be evenly treated.

I claim:—

1. In a device for cleaning screens, the combination of a perforated pipe and means to supply fluids under pressure thereto, means for moving said pipe across the screen so that the fluids issuing from the perforations may pass through every portion of the screen, a receptacle to receive the impurities removed from the screen by said fluids, and means to move the receptacle transversely of the screen in accordance with the movement of said pipe.

2. In a device for cleaning screens, the combination of a perforated pipe and means to supply fluids under pressure thereto, means for moving said pipe across the screen so that the fluids issuing from the perforations may pass through every portion of the screen, a receptacle to receive the impurities removed from the screen by said fluids, means to move the receptacle transversely of the screen in accordance with the movement of said pipe, said pipe and said receptacle being positioned on opposite sides of the sereen.

3. In a device for cleaning screens, the combination of a perforated pipe and means to supply fluids under pressure thereto, means for moving said pipe across the screen so that the fluids issuing from the perforations may pass through every portion of the screen, a receptacle to receive the impurities removed from the screen by said fluids, means to move the receptacle transversely of the screen in accordance with the movement of said pipe, means to discharge the contents of said receptacle, and means to clean the receptacle at the time of such discharge.

4. In a device for cleaning screens, the combination of a vertical screen, a substantially horizontally perforated pipe and means to raise and lower said pipe adjacent said screen, means to supply fluids under pressure to said pipe so as to blow foreign matter from the screen, a receptacle for said impurities on the opposite side of the screen from the pipe, means to raise and lower said receptacle simultaneously with said pipe, and means to guide the receptacle and to tilt it to discharging position at the upper limit of its travel.

5. In a device for cleaning screens, the combination of a perforated pipe and means to supply fluids under pressure thereto, means for moving said pipe across the screen so that the fluids issuing from the perforations may pass through every portion of the screen, a receptacle to receive the impurities removed from the screen by said fluids, means to move the receptacle transversely of the screen in accordance with the movement of said pipe, said receptacle having a perforated bottom, means to discharge the contents of the receptacle, and means to direct sprays of water against the bottom of the receptacle to wash out the adhering impurities.

HORACE S. HUNT.