Dec. 7, 1943. C. B. PLETCHER 2,336,293

CLEANING DEVICE

Filed Aug. 14, 1939

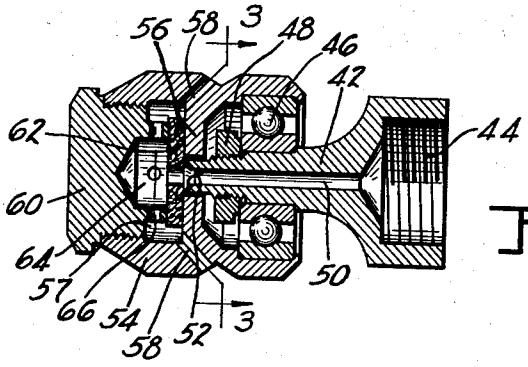


FIG. 2

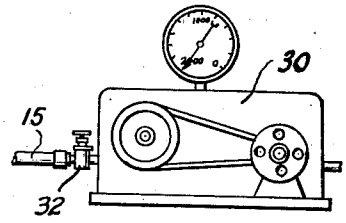


FIG. 4

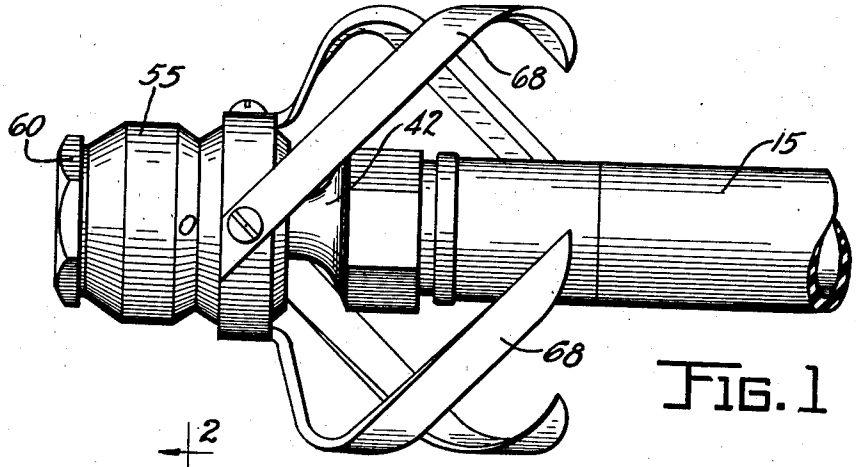


FIG. 1

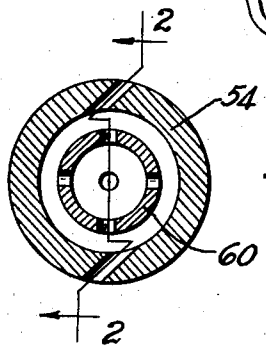


FIG. 3

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CLEANING DEVICE

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1 Claim. (Cl. 15—104.12)

This invention relates to apparatus for cleaning pipes, conduits, and hollow bodies of all kinds.

An object of the invention is to provide a pipe cleaning apparatus which is simple and easy to use, and which operates rapidly and at low cost both for materials and apparatus.

Still another object is to provide a nozzle with a rotatable head to which cutter blades may be secured to cut roots in sewers or the like.

The above and other objects and advantages of the invention will be more readily apparent from the following dscription when read in connection with the accompanying drawing in which—

Figure 1 is a side view of a cleaning nozzle embodying the invention;

Figure 2 is an axial section through the nozzle of Figure 1 on the line 2—2 of Figure 3;

Figure 3 is a transverse section on the line 3—3 of Figure 2; and

Figure 4 is a diagrammatic view of a pumping apparatus.

In the construction shown, the cleaning nozzle may comprise a pivot member 42 having a threaded socket 44 at its rear end to receive a suitable hose fitting and having a reduced diameter portion at its forward end upon which is secured, by means of a nut 48, the inner race of a ball bearing 46.

The member 42 extends beyond the nut 48 and a passage 50 extending therethrough is tapered outwardly at the forward end as shown at 52 to provide a thin circular edge. A nozzle member 54 having a central partition 56 is recessed at its rear end to pass over the ball bearing 46 and be rotatably secured thereto, and is recessed at its forward end to form a water chamber 57 from which two or more jet discharge passages 58 may extend spirally and backwardly. The forward end of the member 42 projects through a central opening in the partition 56 and terminates substantially flush with the forward surface thereof. A plug 60 adapted to close the forward end of the water chamber 57 presses a sealing washer 62 against the forward surface of the partition 56 and the thin angular forward edge of the member 42 to prevent leakage of water. The plug 60 is provided with a central recess 64, receiving water from the passage 50, and is also provided with lateral passages 66 permitting the water to flow into water chamber 57 and thence to the jet discharge openings 58.

As shown in Figure 1, the nozzle may be provided with a plurality of spirally formed blades 68 secured to the rotatable member 55 for cleaning sewers and the like in which fibers, such as roots, are likely to be found. In the operation of this device, the reaction of the backwardly and spirally directed jets will draw it through the pipe and around numerous bends and elbows and at the same time rotate the nozzle head and cutters at high speed. The jets engage the soil in the pipe before the blades reach it and wash it out, leaving only the fibers or roots to be cut by the blades. Preferably the rearward ends of the blades are curved inwardly toward the axis of the nozzle proper in order to facilitate rearward withdrawal of the nozzle from the pipe sewer.

Figure 4 illustrates diagrammatically a pump 30 to which the nozzle may be attached and which is of a character capable of delivering water or other fluids at pressures up to 2,000 pounds. The pump is preferably provided with a pressure regulator and bypass so that any desired pressure up to the maximum may be obtained. This regulating device is not shown but is well known in the art of building pumps. A suitable shutoff valve 32 may be provided where the hose is connected to the pump or in any other suitable position. The pressure regulator should be of a type permitting the valve 32 to be closed without stopping the pump, although this is not essential. To clean a pipe it is only necessary to start the pump 30, insert the nozzle into the pipe, open the valve 32, and feed the hose gradually into the pipe under the pull of the nozzle.

Water, or water mixed with air, is the preferred fluid for use in my novel process and apparatus because of its effectiveness and because of its ready availability and cheapness, but other fluids may be useful for particular applications and I do not wish to be limited solely to the use of water.

While one embodiment of the invention has been shown and described in detail herein, it will be understood that this is for the purpose of illustration only and is not intended to be taken as a definition of the scope of the invention, reference for this purpose being had to the appended claim.

I claim:

Apparatus for cleaning pipes comprising a nozzle head of small diameter relative to the diameter of the pipe to be cleaned and terminating in a closed forward end, a flexible hose connected to the other end of the nozzle head to conduct liquid under pressure thereto, means connecting the hose and the nozzle head for relative rotation, said nozzle head being formed adjacent said closed end with an annular series of elongated nozzle openings directed substantially tangential therefrom to direct liquid outwardly from the nozzle head in a series of fine jets and to create a reaction rotating the nozzle head relative to the hose, and a spiral elongated cutting blade secured to the nozzle head rearwardly of said jets and engageable with the surface of a pipe to cut roots or the like therefrom.

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