

Oct. 26, 1954

I. HEISS

2,692,752

PIPING CLEAN-OUT TOOL

Filed Sept. 22, 1950

2 Sheets-Sheet 1

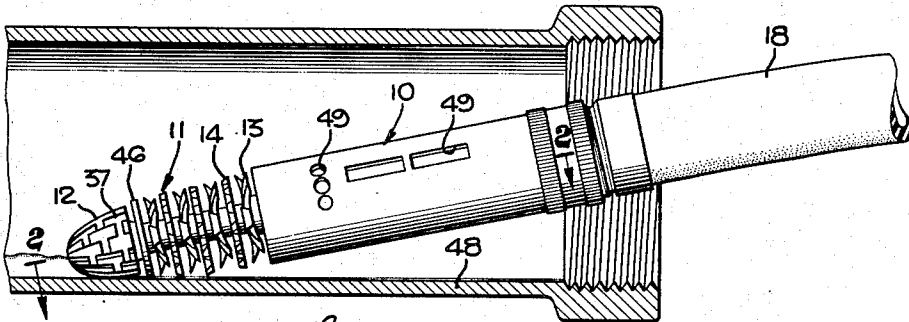


Fig. 1.

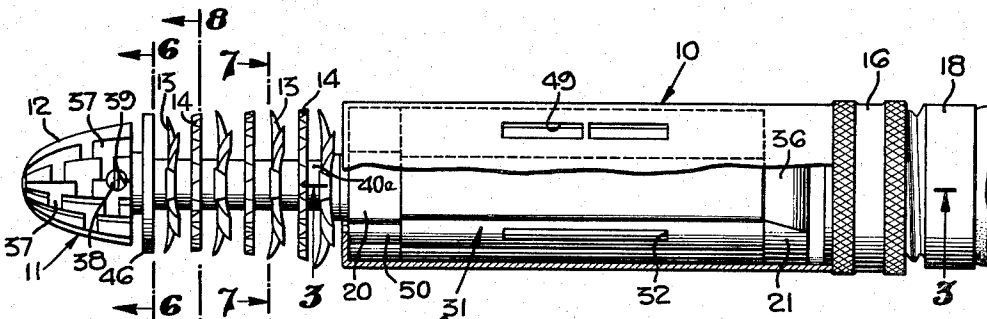


Fig. 2.

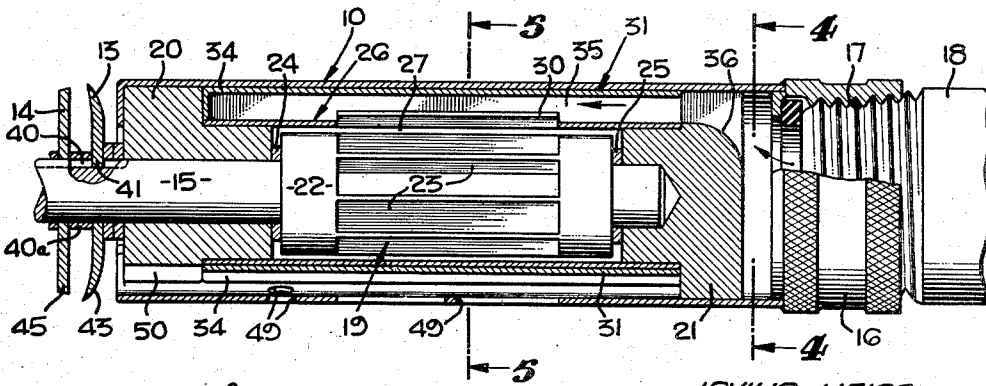


Fig. 3.

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2 Sheets-Sheet 2

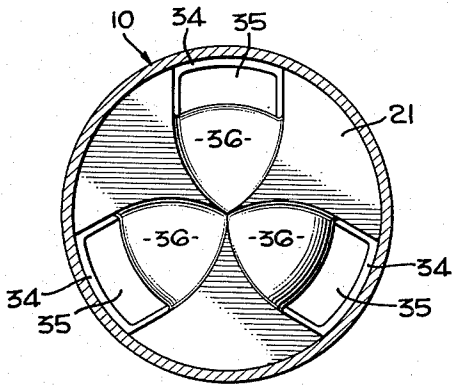


Fig. 4.

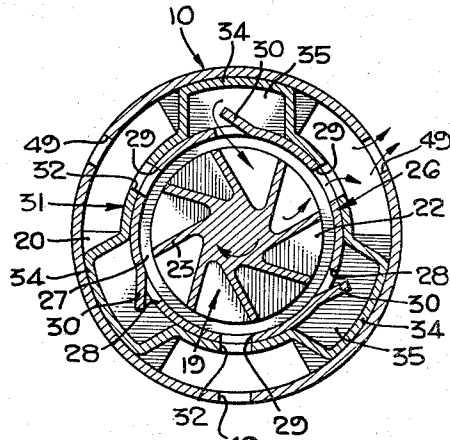


Fig. 5.

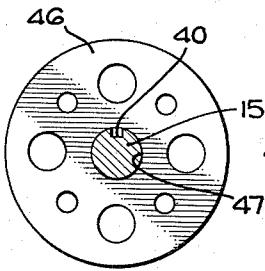


Fig. 6.

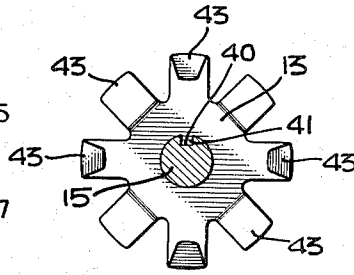


Fig. 7.

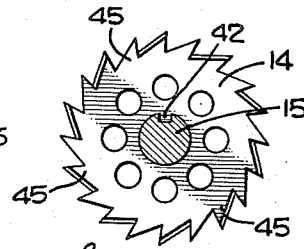


Fig. 8.

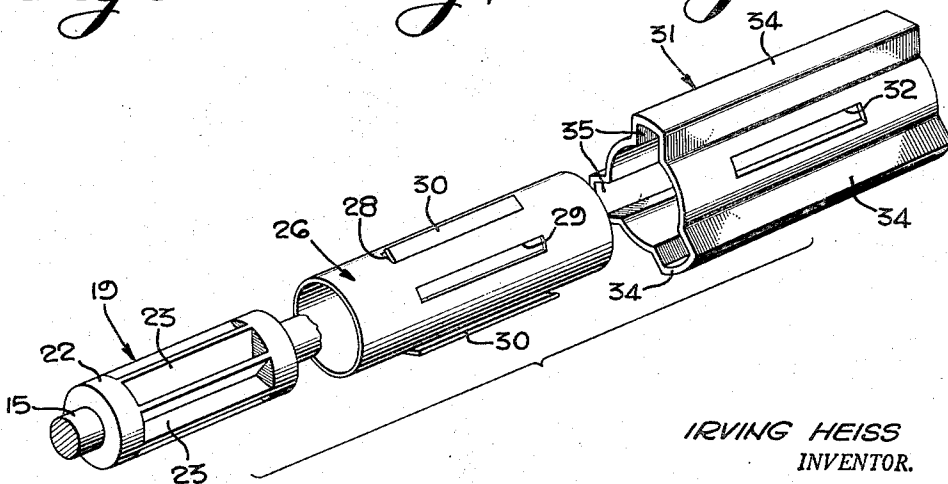


Fig. 9.

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2,692,752

PIPING CLEAN-OUT TOOL

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Application September 22, 1950, Serial No. 186,179

2 Claims. (Cl. 253-2)

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This invention relates to cleaning devices and has particular reference to a tool for opening and cleaning out clogged drain and sewer pipes and the like.

One of the principal objects of my invention is to provide novel power means for a tool for use in opening and cleaning piping or tubing clogged with grease and debris.

Another object of my invention is to provide a novel power unit for a tool having a rotating cutting head powered by fluid pressure, the tool being adapted to be attached to and manipulated by a fluid supply line.

A further object of my invention is to provide a power unit for a tool of the above described character which is simple and effective in operation and which may be constructed economically on a quantity basis.

Other objects and advantages of my invention it is believed will be readily apparent from the following detailed description of a preferred embodiment thereof when read in connection with the accompanying drawings.

In the drawings:

Figure 1 is a perspective elevation of a preferred embodiment of my invention, illustrating the tool in working position in a section of piping.

Figure 2 is a sectional elevation taken substantially on the line 2-2 of Figure 1, the head assembly being shown in elevation.

Figure 3 is a sectional elevation taken substantially on the line 3-3 of Figure 2.

Figure 4 is a sectional elevation taken substantially on the line 4-4 of Figure 3.

Figure 5 is a sectional elevation taken substantially on the line 5-5 of Figure 3.

Figure 6 is a sectional elevation taken substantially on the line 6-6 of Figure 2.

Figure 7 is a sectional elevation taken substantially on the line 7-7 of Figure 2.

Figure 8 is a sectional elevation taken substantially on the line 8-8 of Figure 2.

Figure 9 is an exploded perspective elevation of the fluid engine or turbine used to power the cutting head.

Referring now to the drawings, the clean-out tool which embodies my invention includes a body member 10 and a cutting head assembly 11 which comprises a nose member 12 and a plurality of knives 13 and 14 mounted for rotation on a shaft 15.

The body member 10 is preferably cylindrical in form and is provided at one end with a fitting 16 having internal threads 17 for the reception of the externally threaded end of a conventional

garden hose 18 or other fluid supply line. The body member 10 encloses the power means for driving the shaft 15 and head assembly 11, which means preferably comprises a water-driven turbine generally indicated as 19. The shaft 15 is journaled at one end in a bearing block 20 secured inwardly of the body member 10 adjacent one end thereof and also in a bearing block 21 secured at the other end of the body member.

Mounted for rotation on the shaft 15 and intermediate the bearings 20 and 21 is a rotor 22 provided with a plurality of angularly-disposed vanes 23. Washers 24 and 25 may be interposed between the ends of the rotor and the bearings. The rotor 22 is enclosed in a sleeve 26 secured at the ends thereof to the bearings 20 and 21, which cooperate with the sleeve to form a central chamber 27. The sleeve 26 is provided with fluid inlet ports 28 and outlet ports 29, the inlet ports being formed by cutting along a longitudinal line and then on circumferential lines so that flaps 30 may be bent outwardly. This construction permits fluid to enter the central chamber 27 substantially tangentially to the rotor 22 (see Figure 5).

Secured to and encompassing the sleeve 26 is a second sleeve 31 having fluid-outlet openings 32 aligned with the ports 29 and longitudinally raised portions 34 forming fluid inlet passages 35 leading to the inlet ports 28. As shown best in Figures 3 and 4, the bearing block 21 is provided with curved, radially extending grooves 36 communicating with the inlet passages 35.

The nose member 12 is generally parabolic in axial section and is provided with a plurality of staggered serrations or burrs 37. The nose member is secured to the shaft 15 for rotation therewith by means of a cotter pin 38 running through aperture 39 in the nose member and an aperture (not shown) in the shaft. The shaft 15 is provided with a keyway 40 for securing the plurality of knives 13 and 14 thereto by means of the key tabs 41 and 42. Spacers 40a are provided between the knives 13 and 14. The knives 13 are provided with radially extending, alternately edged blades 43 as shown best in Figure 7, while the knives 14 comprise a plurality of angularly-disposed saw teeth 45. While the particular design and arrangement of the cutting knives and the nose member 12 is not essential to the operation of my invention, I have found that the use of knives and the nose member having the structure shown is highly advantageous.

Means are provided to prevent stalling of the rotating head assembly against the sides of

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the piping and as shown in the drawings, this may include the annular collar or guard 46 which is mounted on the shaft 15 intermediate the knives and the nose member. Sufficient clearance is provided between the shaft 15 and the central aperture 47 of the guard 46 to permit the shaft to rotate while the guard remains stationary. As shown in the drawings, the guard member 46 is larger in diameter than the adjacent knives 13 and 14 as well as the nose member 12, so that when the head assembly approaches the pipe wall 48, as shown in Figure 1, the guard member makes contact first and acts as a bumper to prevent contact by the rotating nose and knives. It will be noted that the diameter of the knives 13 and 14 increases progressively towards the body member 10, carrying out the parabolic curve of the nose member 12.

The operation of the device is as follows:

The tool is secured to the end of the garden hose 18, or other fluid supply line, and inserted, nose first, into the clogged piping. Water or other fluid is fed through the supply line 18 and into the chamber 27 via the inlet grooves 36, passages 35 and ports 23 to cause the rotor 22 to turn, rotating the head assembly 11. The water is discharged through outlets 29 and 32 and ports 49 in the body member 10. The bearing block 20 may be provided with longitudinal grooves 50 through which a portion of the outlet fluid may pass to wash over the head assembly 11 and thus assist the action of the nose member and knife blades. The accumulation of grease in piping, especially in sink clean-out pipes, is generally caused by foreign matter, such as matches and other solid or semi-solid debris, which forms a foundation upon which the grease may collect to eventually clog or seal the pipe. I have found that the rotating nose member 12 and knives 13 and 14 effectively break up this foundation to permit the accumulation to be washed away.

While I have shown and described a specific embodiment of my invention, I do not limit myself to the exact details of the construction set forth, and the invention embraces such changes, modifications and equivalents of the parts and their formation and arrangement as come within the purview of the appended claims.

I claim:

1. In a piping clean-out tool, the combination of a cylindrical body member, a first bearing block mounted in one end of said body member, a second bearing block mounted in the other end of said body member, a shaft journaled in

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said bearing blocks and extending exteriorly from said body member at the end thereof having the first bearing block, a turbine rotor mounted on said shaft between said bearing blocks, a first sleeve enclosing said rotor, said sleeve having outwardly-directed longitudinal flaps defining inlet ports to said rotor and said sleeve having outlet ports leading from said rotor, a second sleeve encompassing said first sleeve, said second sleeve having a plurality of longitudinal raised portions forming fluid inlet passages leading to said inlet ports and said second sleeve having outlet passages aligned with said outlet ports, said second bearing block having grooved portions aligned with said fluid inlet passages, said first bearing block having outlet grooves leading from said outlet passages.

2. In a piping clean-out tool, the combination of a cylindrical body member, a first bearing block mounted in one end of said body member, a second bearing block mounted in the other end of said body member, a shaft journaled in said bearing blocks and extending exteriorly from said body member at the end thereof having the first bearing block, a turbine rotor mounted on said shaft between said bearing blocks, a first sleeve enclosing said rotor, said sleeve having means defining inlet ports to said rotor and said sleeve having outlet ports leading from said rotor, a second sleeve encompassing said first sleeve, said second sleeve having a plurality of longitudinal raised portions forming fluid inlet passages leading to said inlet ports and said second sleeve having outlet passages aligned with said outlet ports, said second bearing block having grooved portions aligned with said fluid inlet passages, said first bearing block having outlet grooves leading from said outlet passages.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
599,825	Bidwell	Mar. 1, 1893
838,088	Dean	Dec. 11, 1906
844,094	Bretscher	Feb. 12, 1907
932,209	Wiechmann	Aug. 24, 1909
966,998	Carlson	Aug. 9, 1910
1,156,594	Fiscus	Oct. 12, 1915
1,198,219	Hauer	Sept. 12, 1916
1,584,740	Denny	May 18, 1926
1,864,027	Pedersen	June 21, 1932
2,366,131	Spaulding	Dec. 26, 1944
2,411,209	Hail et al.	Nov. 19, 1946