Dec. 26, 1944. J. E. WARREN 2,365,984

PIPE CLEANING MACHINE

Filed Aug. 27, 1942 3 Sheets-Sheet 1

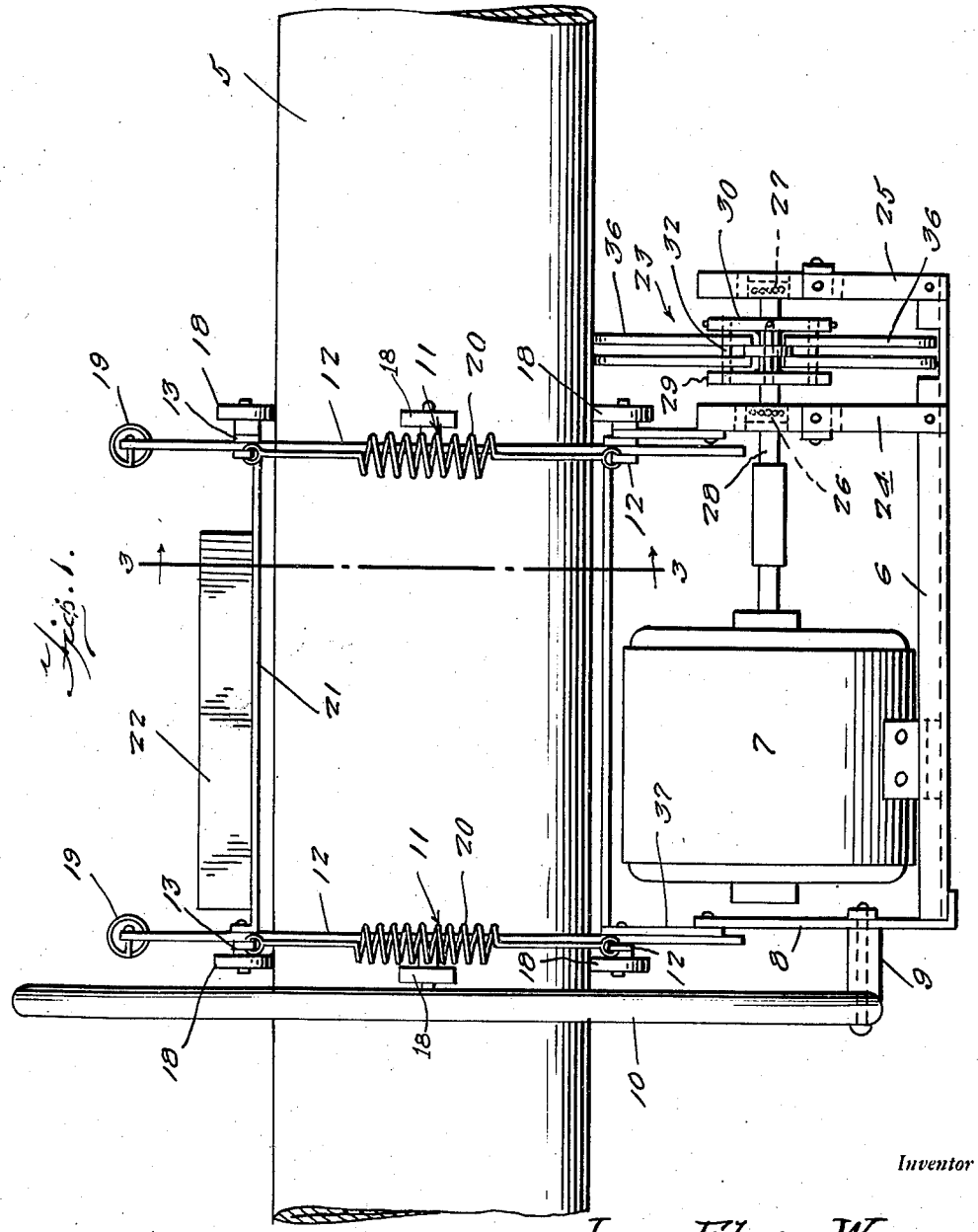


Fig. 1.

Inventor

Jesse Elvin Warren

By Clarence A. O'Brien

and Harvey B. Jacobson

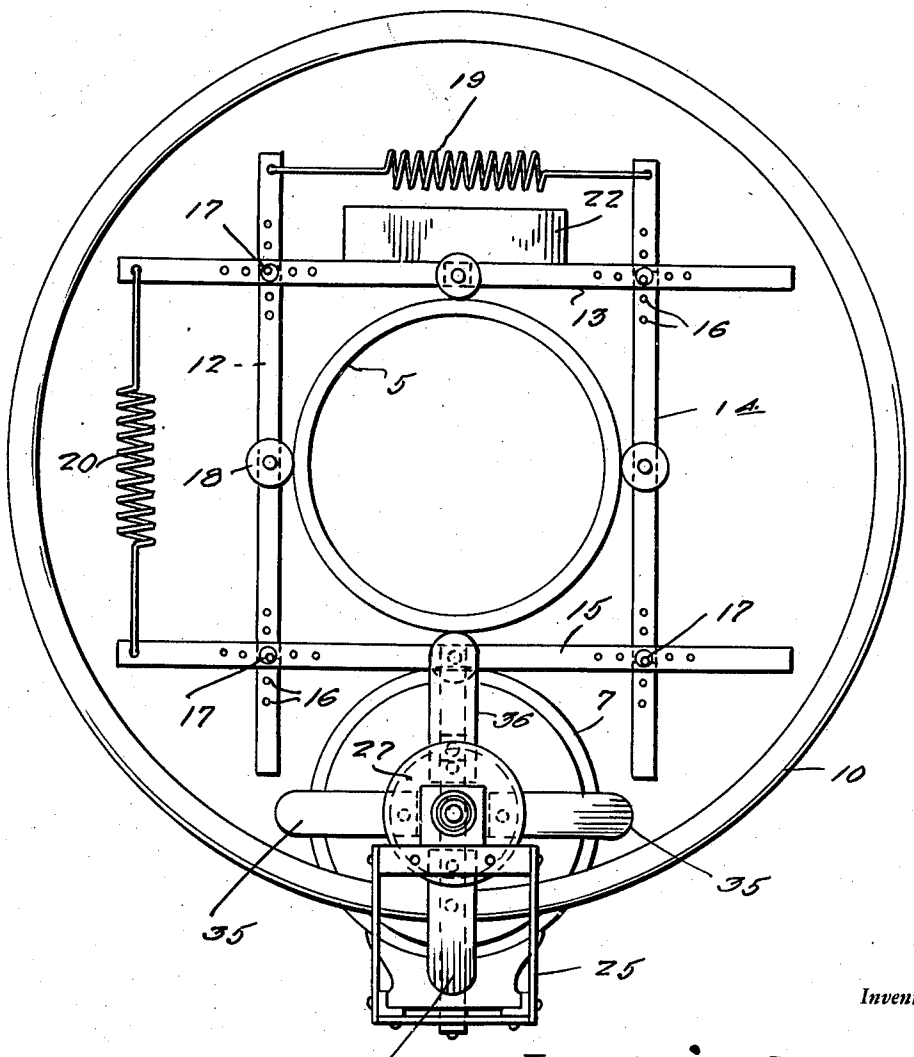
Attorneys

Dec. 26, 1944. J. E. WARREN 2,365,984

PIPE CLEANING MACHINE

Filed Aug. 27, 1942 3 Sheets-Sheet 2

Fig. 2.



Inventor

Jesse Elvin Warren

By Clarence A. O'Brien and Harvey B. Jacobson Attorneys

Dec. 26, 1944. J. E. WARREN 2,365,984

PIPE CLEANING MACHINE

Filed Aug. 27, 1942 3 Sheets-Sheet 3

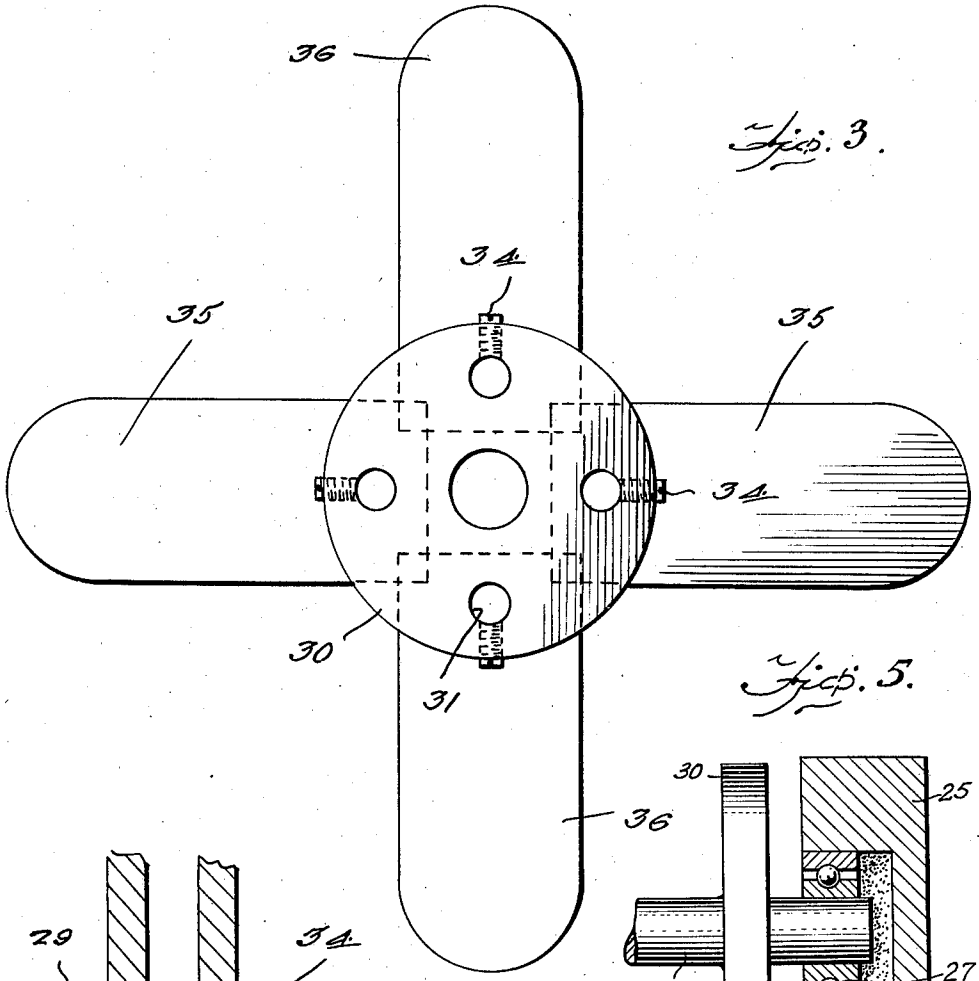


Fig. 3.

Fig. 5.

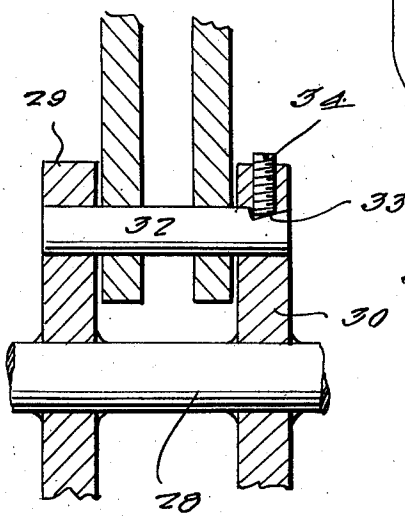


Fig. 4.

Inventor

Jesse Elvin Warren

By Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

Patented Dec. 26, 1944

2,365,984

UNITED STATES PATENT OFFICE

2,365,984

PIPE CLEANING MACHINE

Jesse Elvin Warren, Mulvane, Kans.

Application August 27, 1942, Serial No. 456,407

1 Claim. (Cl. 15—104.03)

This invention relates to new and useful improvements in apparatus for cleaning pipes.

The principal object of the present invention is to provide a pipe cleaning apparatus which employs a mechanism adapted to intermittently tap the pipes being cleaned for the purpose of loosening internal and/or external scale and other foreign matter.

Another important object of the invention is to provide a pipe cleaning machine which can be easily and conveniently handled on a pipe.

Another important object of the invention is to provide an apparatus for loosening scale and other foreign matter on the inside of a pipe by external application of force.

Other objects and advantages of the invention will become apparent to the reader of the following description.

In the drawings:

Figure 1 represents a side elevational view of a machine shown applied to a pipe.

Figure 2 is an end elevational view of the apparatus.

Figure 3 is an elevational view of the hammer assembly.

Figure 4 is a fragmentary detailed sectional view through the hammer assembly.

Figure 5 is a fragmentary detailed sectional view of one of the bearings.

Referring to the drawings wherein like numerals designate like parts, it can be seen in Figure 1, that numeral 5 denotes a pipe to be cleaned.

In carrying out the present invention, the apparatus involves a frame including a pair of parallel angle bars 6 sufficiently spaced to support an electric motor 7, which motor is suitably secured to the bar 6. A wall 8 is provided at one end of the frame and to this is attached by suitable connecting means 9, a substantially large hand wheel 10 which circumscribes the pipe 5 to be cleaned.

The mechanism involves a pair of carriage assemblies generally referred to by numeral 11, each comprising elongated bars 12, 13, 14 and 15, crossing each other to form a square and at their crossed portions formed with openings 16 through certain pre-selected openings of which bolts 17 are disposed. This is to define a substantially snug square structure for the pipe 5 to be cleaned.

The intermediate portion of each bar 12, 13, 14 and 15 is equipped with a roller 18 for riding contact with the outside of the pipe 5.

The assemblies 11, 11 are connected by a bridge structure 21 on which is suitably secured a weight 22 corresponding to the weight of the motor 7, frame 6, and a hammer mechanism generally referred to by numeral 23. This is so that the apparatus is counterbalanced and can be easily rotated on the pipe 5 by the hand wheel 10.

Extending toward the pipe 5 from the frame 6 and at the opposite end of the frame 6 from the wall 8 are posts 24, 25 serving to support the bearing structures 26, 27. A drive shaft 28 from the motor 7 extends through the bearing 26 and into the bearing 27 and carries the hammer mechanism 23 between these bearings.

The hammer structure 23 is made up of a pair of disks 29, 30 suitably secured as by welding to the shaft 28. These disks 30 are formed preferably with four openings 31 each and pins 32 bridge the disks 29, 30 with their ends disposed in the openings 31. Each pin 32 has a notched end portion, notched as at 33 to receive a corresponding set screw 34 driven inwardly of the periphery of the corresponding disk 30.

A pair of diametrically opposed pins 32 carry a single hammer blade 35, while the remaining two pins 32 carry double hammer blades 36. In other words, on these latter pins two hammer blades are provided as is apparent in Figure 1.

As is apparent in Figure 1, the guide assemblies 11, 11 are connected by straps 37 to the frame wall 8 and the bearing structure 26.

In operation, when the motor 7 has been started, the shaft 28 will rotate the hammer mechanism 23. The tendency of the hammer blades 35, 36 will be to straighten out as the mechanism rotates, but in striking the pipe 5 will yield in order to pass by the pipe. This intermittent striking of the outside of the pipe will have an efficient tendency to loosen up any scale or other foreign matter on the inside of the pipe.

The apparatus is fed or rotated around the periphery of the pipe by manipulation of the hand wheel 10.

The machine is adapted to remove scale on either the interior or exterior of a pipe and is constructed and arranged to follow along on clean pipe with the hammers operating ahead. Due to the fact that the machine is of small proportions, it will revolve around a pipe after digging only a small ditch to expose the circumference thereof. Further, the machine is adapted to be adjusted readily to various pipe diameters.

While the foregoing specification sets forth the invention in specific terms, it is to be understood that numerous changes in the shape, size and materials may be resorted to without departing

from the spirit and scope of the invention as claimed hereinafter.

Having described the invention, what is claimed as new is:

A pipe cleaning apparatus comprising a carriage, said carriage consisting of a pair of end frames, each end frame being arranged in a substantially square form made up of crossing bars, rollers carried by the frames for engaging a pipe to be cleaned, said rollers being rotatably disposed about axes substantially parallel to the axis of said pipe, bridge members between the frames, a platform supported by the carriage, a motor on the platform, a cleaning element driven by the motor and adapted to operatively engage said pipe, a rotating wheel for the carriage, said wheel circumscribing the pipe and having a portion thereof secured to the carriage.

JESSE ELVIN WARREN.