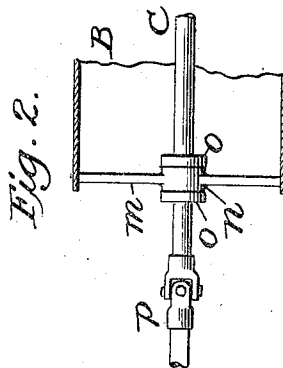
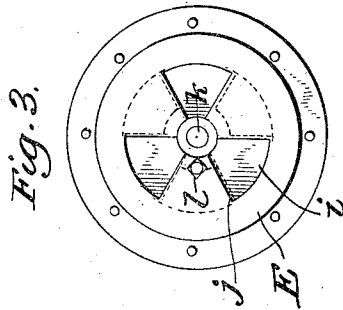
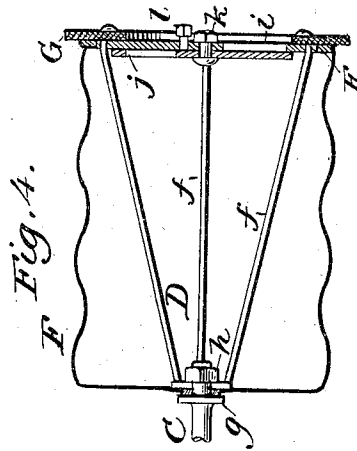
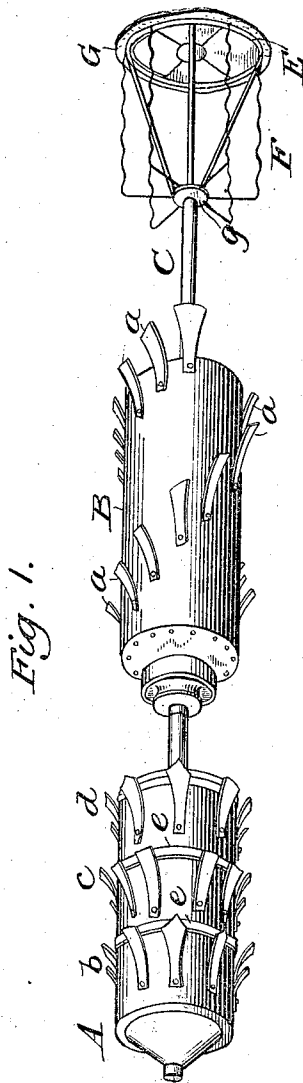


G. F. WHITNEY.
PIPE CLEANING DEVICE.
APPLICATION FILED NOV. 18, 1905.

944,710.

Patented Dec. 28, 1909.



WITNESSES:
James F. Duhamel
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UNITED STATES PATENT OFFICE.

GEORGE F. WHITNEY, OF EAST ORANGE, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO NATIONAL WATER MAIN CLEANING COMPANY, OF NEW YORK, N. Y., A CORPORATION OF MAINE.

PIPE-CLEANING DEVICE.

944,710.

Specification of Letters Patent.

Patented Dec. 28, 1909.

Application filed November 18, 1905. Serial No. 287,948.

To all whom it may concern:

Be it known that I, GEORGE F. WHITNEY, a citizen of the United States, and resident of East Orange, State of New Jersey, have invented a certain new and useful Improvement in Pipe-Cleaning Devices, of which the following is a specification.

This invention relates to devices for cleaning liquid carrying pipes and has in view more particularly the use of water under pressure in the pipes as the propelling agent, whereby other sources of power may be entirely dispensed with as will now be described, reference being had to the specification, the claims and the drawings in which—

Figure 1- is a perspective view of the complete device. Fig. 2- is a longitudinal sectional view of the scraping cylinder, showing the method of swiveling it to its carrying rod. Fig. 3- is a rear view of the propelling spindle. Fig. 4- is a longitudinal section of the same.

The device consists of two main parts, namely, the cleaning part and the propelling part.

The part of the device which effects the cleaning is made up of several spindles, two A and B in this instance being used, which consist of hollow cylinders of slightly less diameter than that of the pipe they are intended to clean and being provided on their exterior surfaces with cutters and scrapers respectively to cut, dislodge and remove sediment and incrustated matter from the interior of the pipe, the scrapers *a* on the spindle B being spirally arranged and adapted to give the latter a rotary movement as it is forced along the pipe. The cutters *b*, *c* and *d* on the spindle A are grouped in regular lines around the circumference of the spindle and adjusting rings *e* may be forced under the free ends of the cutters *b* and *c* to cause them to extend above the surface of the cylinder and increase the cutting diameter of the spindle.

The cutting spindle A is carried before the spindle B in order that the cutters may dig into and break the scale or sediment in the pipe, while the rotating spindle B releases the same. Through the axis of the cylinders extends a rod C which may be of one piece or flexibly jointed between the spindles as shown. The rear end of the rod

C is secured to a conical frame D composed of several rods *f* united at an apex through which the end of the rod passes and held thereto by means of the collar *g* and the nut *h*. The base of the frame D is a circular plate E having openings *i* which are closed to a greater or less degree by a pivoted plate *j* rotating about a stud *k* and held at any desired point by a set screw *l*.

Over the frame D is placed a second frame F made up of a number of stout wires of wavy outline, their front ends being clamped between the washer *g* and the nut *h*, while their rear ends are secured to the plate E. These wires, which are elastic, serve to guide the device through the pipes and keep the rod C properly centered. On the rear face of the plate E is secured a ring or washer G of leather, canvas or other flexible material of larger diameter than the pipe to be operated on, and when it is properly fitted and its ends dished it prevents the water in the pipe to be cleaned from passing between the plate E and the pipe, whereby a pressure is exerted on plate E which causes the apparatus to be propelled. The plate *j* serves to regulate this pressure and permit a suitable quantity of water to enter the pipe as the cleaning is progressing, and to wash out the sediment or incrusting matter that has been broken and dislodged by the cutters and scrapers.

The spindles A and B may be open or closed cylinders and at the point where they are secured to the rod C they may be provided with spokes *m* and a hub *n* to freely rotate on the rod between collars O.

When it is desired to operate this device after it has been placed in the pipe, water is permitted to enter the pipe in the rear of the frame D. The edges of the washer G are bent backward by the pressure of the water so that the washer G fits tightly in the pipe to be cleaned. The pressure of the water, however, as explained, moves the ring G and its frame forward, forcing in front of it the cutting and scraping spindles and causing the cutters in their forward movement to cut or break any scales or sediment which may be formed on the interior of the pipes, while the scrapers dislodge and remove the same. A universal joint *p* may be used between the spindles or between the frame D and a spindle to enable the device

to turn corners and at the same time to remain rigid in longitudinal movement.

What I claim as new is:

1. In a device for cleaning water pipes, the combination of a flexible shaft rigid when pushed longitudinally, a nonrotatable cutting device attached to the shaft and arranged to cut longitudinally, a scraping device arranged to be rotated by the movement of the device through the pipe to be cleaned, a propelling device adapted to push the cutting and scraping devices before it, and openings through the propelling device arranged to be adjustable to vary the pressure of water on the propelling device and the volume of water available for washing away the matter detached from the pipe by the cleaning device.
2. In a device for cleaning water pipes, the combination of a shaft carrying a nonrotatable cutting device and a scraping device arranged to be revolved by movement of the device through the pipe to be cleaned, a perforated disk carrying flexible material around its periphery and connected to said shaft, and means for regulating the area of the perforations to adjust the pressure on the disk and the water available for washing away matter detached from the pipe by the cleaning device to the particular conditions of the pipe line to be cleaned.
3. In a pipe cleaning device, the combination of a perforated disk, carrying flexible material around its periphery, means for regulating the area of the perforations, a

central shaft attached to the disk, an elastic guiding frame for the disk, and conically arranged rods connected with the disk and the shaft.

4. In a cleaning device for water pipes, the combination of a shaft, means mounted thereon arranged and constructed so as to remove incrustated matter from the water pipe, a piston adapted to propel said cleaning device through a pipe, means for adjusting the action of the device to the particular condition of the pipe to be cleaned by controlling the pressure upon the piston and the water available to carry away detached matter.

5. In a cleaning device for water pipes, the combination of a shaft, a cutter mounted thereon, a scraper mounted thereon, a propelling device adapted to propel the said cutter and scraper through a pipe and having an opening therethrough, and means for adjusting the size of said opening to adjust the action of the device to the particular condition of the pipe to be cleaned by controlling the pressure upon the propelling device and the water available to carry away detached matter.

Signed at New York in the county of New York and State of New York this 16th day of Nov. A. D. 1905.

GEORGE F. WHITNEY.

Witnesses:

C. A. O. ROSELL,
W. J. RAFFERTY.