(No Model.)

J. GEYSER.

ARROW FOR PASSING CORD THROUGH PIPE LINES.

No. 382,257. Patented May 1, 1888.

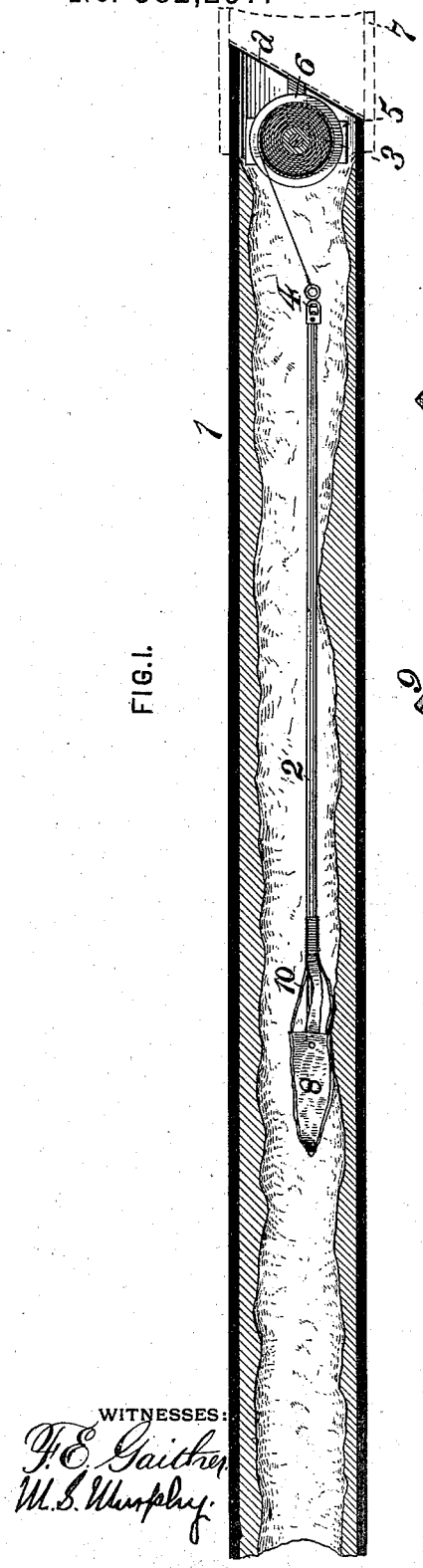

FIG. 1.

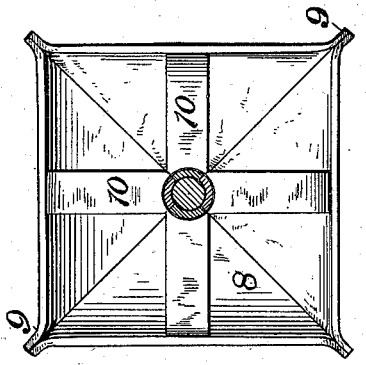

FIG. 3.

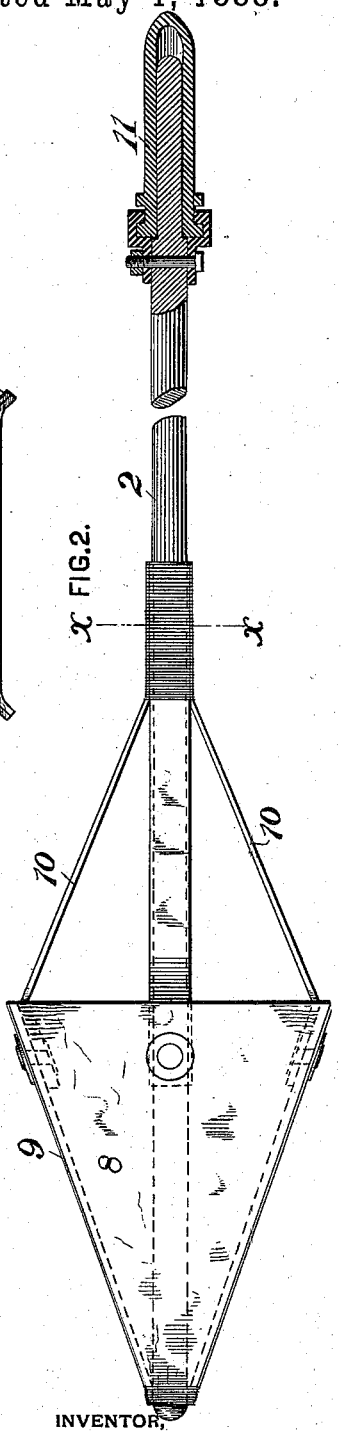

FIG. 2.

WITNESSES:

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ARROW FOR PASSING CORD THROUGH PIPE-LINES.

SPECIFICATION forming part of Letters Patent No. 382,257, dated May 1, 1888.

Application filed October 27, 1887. Serial No. 253,492. (No model.)

To all whom it may concern:

Be it known that I, JACOB GEYSER, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Arrows for Passing Cord through Pipe-Lines, of which improvements the following is a specification.

It is frequently desirable and sometimes necessary to remove accumulations of sediment in and incrustations on the sides of water and other pipes. To effect this cleansing it has been heretofore customary to cut the line of pipe at two points between three and four hundred feet apart and then to draw the scraper or other tool through this section between the cuts. In order to pass the wire draft-rope through said section a ball of cord is placed in one of the sections, and, one end of said cord being secured, water is admitted into said section in order to float the ball through to the next cut. The movements of the ball of cord are very uncertain, however, as it is liable to be drawn into one of the lateral branches or to be caught by some projection along the sides of the section.

The object of the invention herein is to provide means whereby the rapid and direct passage of the cord through the section may be insured; and to this end the invention consists in the construction and combination of devices or elements, all as more fully hereinafter described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a sectional elevation of a section of pipe-line having my devices in position for being forced through said section. Fig. 2 is a view in side elevation of the arrow; and Fig. 3 is a sectional view on the line *x x*, Fig. 2.

In the practice of my invention the pipe-line 1 is cut, as at *a*, Fig. 1, and also on each side of said cut, at points approximately seven hundred feet from said original cut. The pipe is preferably severed at an angle, as shown in Fig. 1, in order that a portion of the pipe on one side of the cut may be easily raised and lowered. After the above-described cuts have been made, the water having been previously turned off from the section of line being operated on, a portion of the line adjacent to the cut *a* is raised and the arrow 2 is inserted, one end of the cord on the reel 3 having been attached to the swivel 4 on the rear end of the arrow. The reel 3, which is of any suitable form, is mounted in a frame, 5, constructed to fit within the pipe, and provided with fingers 6, adapted to engage the ends of the section at the cut *a*, to prevent the reel from being forced into the pipe. A sleeve, 7, is then slipped over the raised portion of the pipe, which is then lowered, and the sleeve being slid along over the cut *a* the joints at the ends of the sleeve are temporarily calked. Water is then turned into the section of line being operated on, and, passing along the pipe, engages the cup 8 on the front end of the arrow and forces the same before it through the section of pipe. The cup 8 is pyramidal in contour, being formed of four triangular pieces of leather or other suitable flexible material, united at their edges, the seams or joints 9 being of such a character as to keep the cup expanded, but freely yielding when subjected to external pressure. The apex of the cup is secured to the front end of the arrow, its large or open end being toward the rear end of said arrow, in order that the current of water may engage the cup and force it and the arrow through the pipe. In order to prevent the force of the current from distorting the cup, straps 10 are secured to the sides thereof between the seams or joints, the opposite end of said straps being secured to the arrow, as shown. These straps are made of such lengths as to permit of the expansion of the cup to the greatest effective extent, but to prevent any expansion beyond that point.

In lieu of the reel secured within the pipe at the cut *a*, a spindle, 11, (see Fig. 2,) is mounted on the rear end of the arrow, one end of the cord wound upon said spindle being secured at the end of the pipe-section at which the arrow is inserted.

The arrow should be made of such a length that it cannot be drawn into any of the lateral branches by the current flowing therein.

After the arrow has been carried through a section of pipe-line in the manner above described, the water is again turned off, the

sleeve 7 slipped back along the joint, and the ends of the pipe-line raised. A wire is then attached to the end of the cord and drawn through, said wire being subsequently employed for drawing a wire draft-rope through the pipe.

The wire draft-rope is employed for pulling a scraping or cleaning tool of any suitable construction through the section of pipe-line under operation.

I am aware that a piston provided on its surface with scraping and cleaning brushes and with flexible cup-valves for forming a tight joint against the interior of the pipe has been employed for removing dirt and sediment from the interior surfaces of the pipe, said piston being of necessity forced through the pipe by a fluid-pressure higher than that normally attained in the pipe-line. Such construction differs radically from the device herein described and claimed both in construction and operation. My device is intended to pass freely and easily through the pipe, it being rather floated than forced through, very little pressure being required, except where the pipe is very greatly clogged by incrustations, and such impediment is easily overcome by ordinary hydrant-pressure, the sides of the cup yielding and collapsing readily to any external pressure. My device is employed solely for the purpose of passing a cord through the pipe, and is not designed to operate in removing any of the dirt therefrom.

I claim herein as my invention—

1. The combination of a tapering-sided cup formed of flexible material, a shaft or arrow passing through said cup and secured to the apex thereof, said cup being suitably proportioned with reference to the diameter of the pipe in which it is to be used for passing freely through the pipe under ordinary hydrant-pressure, and means for attaching a cord to the opposite end of the arrow, substantially as set forth.

2. The combination of the pyramidally-shaped cup formed of flexible material, a shaft or arrow passing through said cup and secured at or near one end to the apex thereof, and means for attaching a cord to the opposite end, substantially as set forth.

3. The combination of a shaft or arrow, a pyramidally-shaped cup formed of triangular pieces of flexible material united to each other at their edges and at their apices to the shaft or arrow at or near one end thereof, and flexible stay-straps connecting the free edges of the cup to the shaft, substantially as set forth.

In testimony whereof I have hereunto set my hand.

JACOB GEYSER.

Witnesses:
E. J. SMAIL,
DARWIN S. WOLCOTT.