No. 775,679. PATENTED NOV. 22, 1904.

F. NOWOTNY.

APPARATUS FOR CLEANING TUBES, PIPES, OR THE LIKE.

APPLICATION FILED DEC. 10, 1903.

NO MODEL.

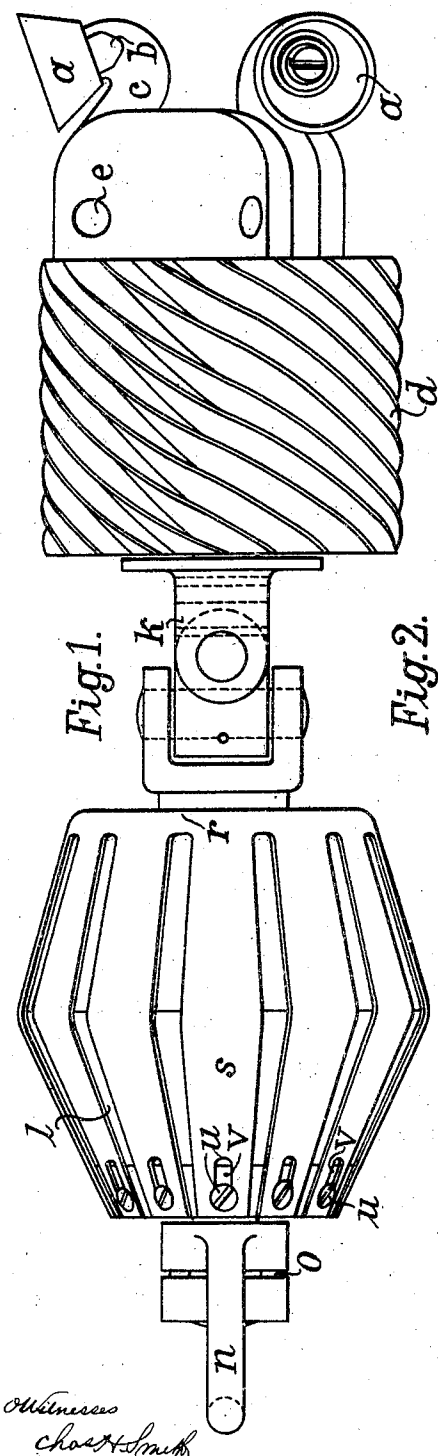

Fig. 1.

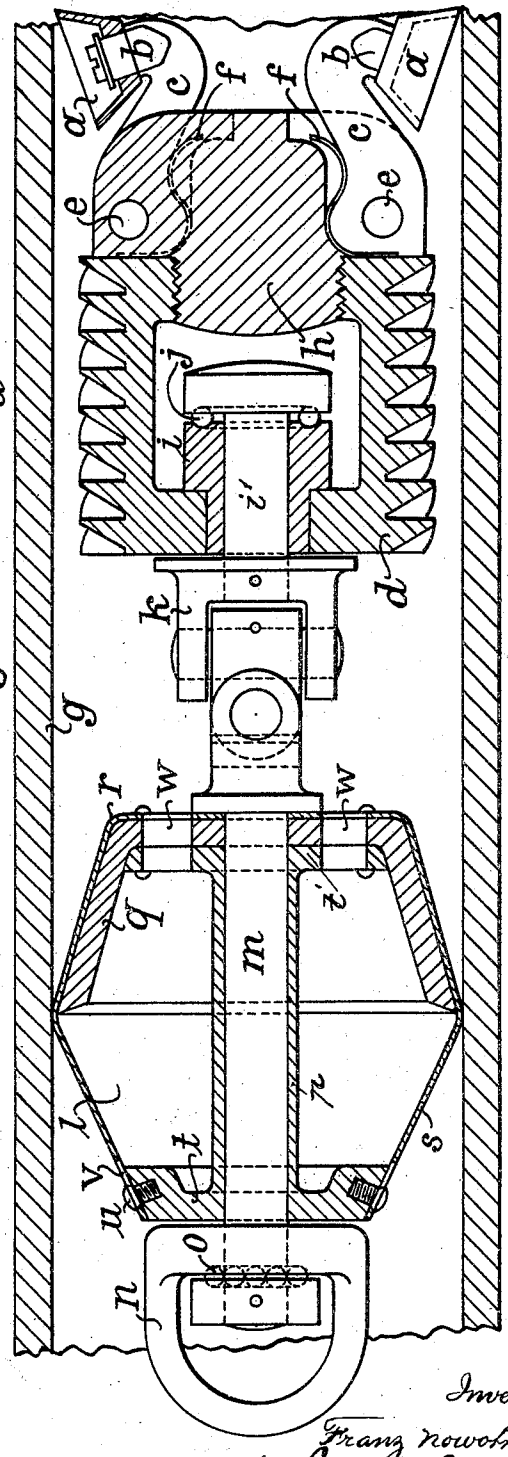

Fig. 2.

Witnesses
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No. 775,679. Patented November 22, 1904.

UNITED STATES PATENT OFFICE.

FRANZ NOWOTNY, OF BERNBURG, GERMANY.

APPARATUS FOR CLEANING TUBES, PIPES, OR THE LIKE.

SPECIFICATION forming part of Letters Patent No. 775,679, dated November 22, 1904.

Application filed December 10, 1903. Serial No. 184,521. (No model.)

To all whom it may concern:

Be it known that I, FRANZ NOWOTNY, a subject of the Duke of Anhalt, residing at Bernburg, Anhalt, in the Empire of Germany, have invented an Apparatus for Cleaning Tubes, Pipes, or the Like, of which the following is a specification.

My invention relates to an apparatus for cleaning tubes, pipes, conduits, and mains, the object being to provide a means whereby rotating cutters may be used in conjunction with a traveling and revolving screw-propeller for enabling the fluid within the tube or pipe to more effectively act upon the traveling and revolving propeller to which the cutters are attached than is possible with the ordinary fixed unyielding form of cutters at present employed for such purposes, and thus to secure an apparatus which will be more effective in operation and work with greater efficiency than it is possible to obtain with any apparatus for this purpose now in common use.

In the drawings, Figure 1 is a plan of my improved apparatus; and Fig. 2 is a sectional elevation of the same, shown within the pipe to be cleaned.

In carrying out my invention I arrange cutters in the form of hollow roller-like cups *a*, the outer surfaces of which I provide with serrated or merely sharpened edges, while the lower portion is provided with a hole to receive a stud *b*, upon which the cup revolves. This stud is attached to the free end of an arm or carrier *c*, and the arm or carrier is pivotally connected to a spindle or pin *e*, secured in a plug *h*, adapted to be received in the end of the screw-propeller *d*. Beneath each arm or carrier *c* a suitably-shaped spring *f* is employed for giving the arm an outward movement in order that the cutters may be forced to operate against the full diameter of the wall of the pipe or tube *g*, through which the apparatus is passing.

As hereinbefore stated, I prefer to provide the end of the screw-propeller with a plug *h*, to which the arms *c* are pivotally connected, as this construction is more desirable than connecting the arms directly to the screw-propeller. The screw-propeller *d* is mounted upon a bushing *i*, surrounding the spindle *i'*, and is preferably provided with a ball or anti-friction bearings *j*. *m* also represents a spindle which at one end is connected to the spindle *i'* by a universal coupling *k* and at the other end is provided with a shackle *n*, which also operates on the ball-bearing *o*. The spindle *m* is provided with a sleeve *p*, having a flange *t* at one end and a flange *t'* at the opposite end thereof.

A cup-shaped member *q*, preferably made of leather, rubber, or other suitable material capable of being expanded, is secured over the face of the flange *t'*, and a protective metallic cover provided with fingers *s* is secured exteriorly of the cup-shaped member *q*, passes over the same, and the free ends of the fingers *s* are connected to the periphery of the flange *t* by means of the screws *u*, which pass through suitable slots *v* in the ends of the fingers *s*, and the slots *v* are of sufficient length to permit of an appreciable movement of the fingers *s* in order to provide for the necessary expansion for the cover to completely fill any tube in which the apparatus is to be used. I also provide openings *w* in the flange *t'*, the cup-shaped member *q*, and the face of the cover in order to positively direct the fluid used in operating the apparatus (which fluid passes through these openings *w*) upon the blades of the screw-propeller. The parts just hereinbefore described comprise an expansible piston, which I have indicated in the drawings by the letter *l*.

I claim as my invention—

1. In an apparatus for cleaning tubes, pipes, and the like, the combination with an expansible piston and a spindle therefor, of a screw-propeller, a spindle upon which the same is revolubly mounted, a universal coupling connecting said spindles, a plug secured in one end of said screw-propeller, arms pivotally connected to said plug, rotary cutters secured on said arms and means for forcing said arms and their cutters outward.

2. In an apparatus for cleaning tubes, pipes and the like, the combination with an expansible piston and a spindle therefor, of a screw-propeller, a spindle upon which the same is revolubly mounted, a universal coupling con-

necting said spindles, a plug secured in one end of said screw-propeller, arms pivotally connected to said plug, rotary cutters secured on said arms and springs between the arms and the plug for forcing said arms and their cutters outward.

3. In an apparatus for cleaning tubes, pipes and the like, the combination with a screw-propeller and rotary cutters connected thereto, of a spindle, a universal coupling between said screw-propeller and said spindle, a sleeve on said spindle, flanges integral with the ends of said sleeve, a cup of flexible material secured to one of said flanges, a protective metallic cover passing over said flexible material, and fingers integral with said cover and slidably connected to the flange on the opposite end of the sleeve.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

FRANZ NOWOTNY.

Witnesses:
HERMANN HEIDE,
SIEGFRIED HENSCHEL.