

No. 646,545.

Patented Apr. 3, 1900.

F. NOVOTNY.

APPARATUS FOR SCOURING AND CLEANING PIPES OR CONDUITS.

(Application filed Nov. 11, 1899.)

(No Model.)

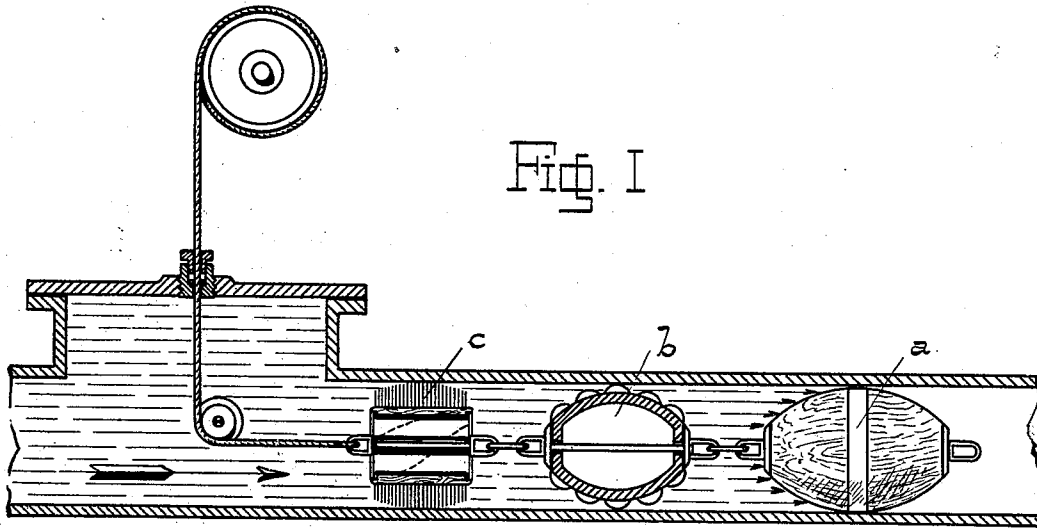


Fig. 1

Fig. 5. Fig. 4. Fig. 3.

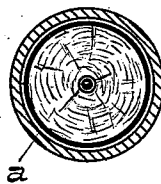
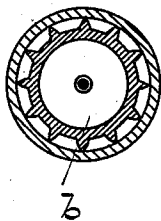
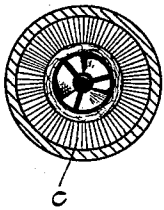
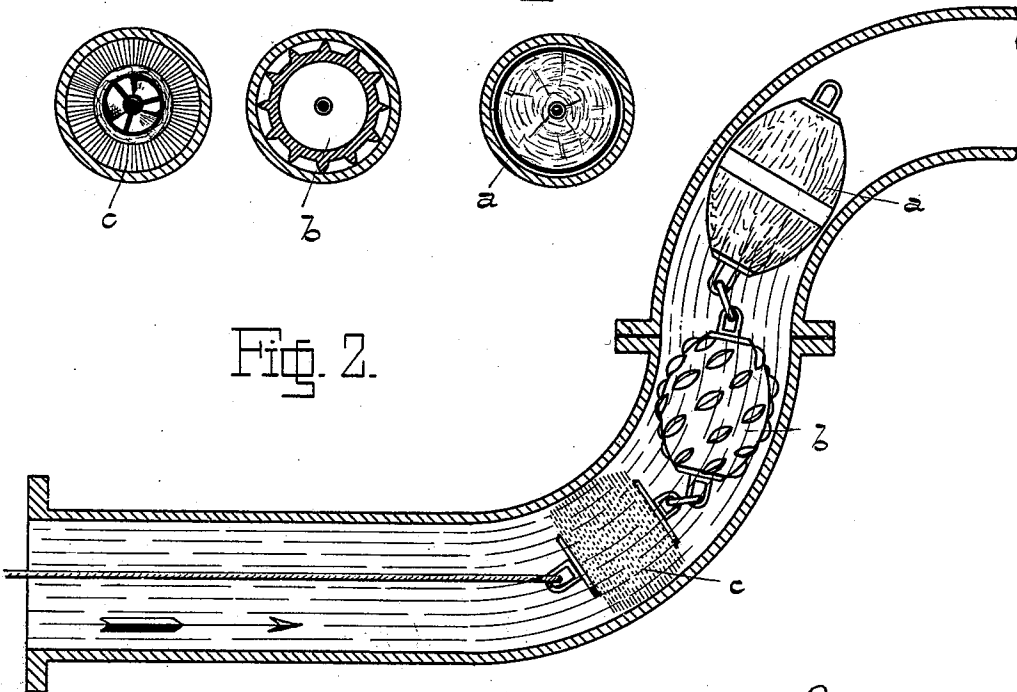


Fig. 2.



Witnesses:

Wm. H. Boulter

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UNITED STATES PATENT OFFICE.

FRANZ NOVOTNY, OF BERNBURG, GERMANY.

APPARATUS FOR SCOURING AND CLEANING PIPES OR CONDUITS.

SPECIFICATION forming part of Letters Patent No. 646,545, dated April 3, 1900.

Application filed November 11, 1899. Serial No. 736,611. (No model.)

To all whom it may concern:

Be it known that I, FRANZ NOVOTNY, a subject of the Duke of Anhalt-Bernburg, residing at Bernburg-on-the-Saale, Germany, have
5 invented certain new and useful Improvements in or Relating to Apparatus for Scouring and Cleaning Pipes and Conduits, (for which I have applied for Letters Patent in Germany, filed April 21, 1899, and in France,
10 filed June 7, 1899,) of which the following is a specification.

In tubular pipes and conduits for water or other fluids vegetable or mineral sediments become in time deposited on the sides and
15 especially on the lower parts of the conduits, which form in time a gradually-thickening and hardened layer, which it was, up to now, almost impossible to remove, especially in conduits extending for considerable lengths,
20 whereby not infrequently the very existence of an extensive plant of such pipe-conduits becomes threatened.

The object of the present invention therefore is an apparatus for scouring tubular conduits of all kinds of any diameter and length
25 and to remove from them the said deposits.

The apparatus in question is represented in the accompanying drawings.

Figure 1 shows it at work in a straight
30 pipe, Fig. 2 in a bent pipe, while Fig. 3 represents a section through the pipe and the "piston" *a*; Fig. 4, a similar section through the scraper *b*, and Fig. 5 a section through the brush *c*.

The part *a* consists of a parabolical or other
35 form of body having a circular cross-section, the largest diameter of which is a few millimeters smaller than the diameter of the pipe to be cleaned and is intended to act as a guide and piston, which owing to its slightly-smaller
40 diameter can be driven by means of compressed steam, air, water, or by any other means of pressure to which the said body offers a resisting-surface through and along the
45 pipe.

The body *b* is made of resisting material, and its surface is provided with sharpened teeth, scrapers, ribs, or slots forming, preferably, an acute angle with the longitudinal
50 axis of said body, owing to which arrange-

ment the body in passing through the tube will have imparted to it a revolving motion, like a screw. By means of the movement through the pipe of this body thus armed the
55 hardened deposit is cut up and loosened.

The cylindrical device *c* is provided on its cylindrical surface with bristles, such as steel-wire brushes, and being of a diameter equal to the bore of the tube intended to be scoured
60 will remove and carry off the sediment-layer already cut up and loosened by the part *b*.

Fig. 2 represents the apparatus in action in a bent part of the pipe-conduit. In it the parts marked *a b c* are the same as those so
65 marked in Fig. 1, respectively. In order to use the apparatus, one of the access-chambers in the pipe-conduits system is opened and the three devices connected together are inserted in the order described above, the last
70 of them being secured to a guide or safety line which passes out of the chamber through a packed orifice in the cover, the outer end being fastened to a winch on which the required
75 length of line is wound. The chamber is then tightly closed and the next one toward which the apparatus is intended to travel through the pipe about to be scoured is
80 opened, so as to allow an exit of the compressed fluid about to be used and for the hardened deposit to be removed. Pressure of the required degree is now applied in the
85 form of compressed steam, air, water, or the like in the direction indicated by arrows in the accompanying drawings, in consequence of which the apparatus will be effectually
90 driven along the tubing, drawing after it the line as it unwinds from the winch. The power of the pressure medium is sufficient to drive the fragments of the sediment loosened by the scraper *b* and caught by the brush *c* before the latter to the next chamber, together
95 with the apparatus itself, the latter thus working without stoppage. After arriving at the next chamber the apparatus may be taken out there or drawn back through the conduit by means of the guide-line and winch to the
100 chamber where it was inserted.

Practical experiments have proved the fact that a pipe-conduit of about one thousand
meters long and two hundred and fifty milli-

meters wide can be scoured in a short time under a pressure of three atmospheres without stoppage, and this in spite of several bends having to be negotiated in the tubular conduit.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an apparatus for scouring pipes and tubular conduits, the combination with a piston-body of circular cross-section, of a scraper-body flexibly connected therewith and adapted for rotary movement and provided with scraping projections on its outer surface arranged at an acute angle to the longitudinal axis of the scraper-body.

2. In an apparatus for scouring pipes and tubular conduits the combination of a piston-body of circular cross-section, a scraper provided with a series of scraping projections on

its periphery, and a circular brush substantially as described.

3. In an apparatus for scouring pipes and tubular conduits, the combination of a piston-body of circular cross-section, a scraper provided with a series of scraping projections on its periphery, said scraper being arranged to have a rotary movement as described, and a circular brush, said piston-body, scraper and brush being flexibly connected together all as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANZ NOVOTNY.

Witnesses:

HERNANDO DE SOTO,
RUDOLF SCHMIDT.