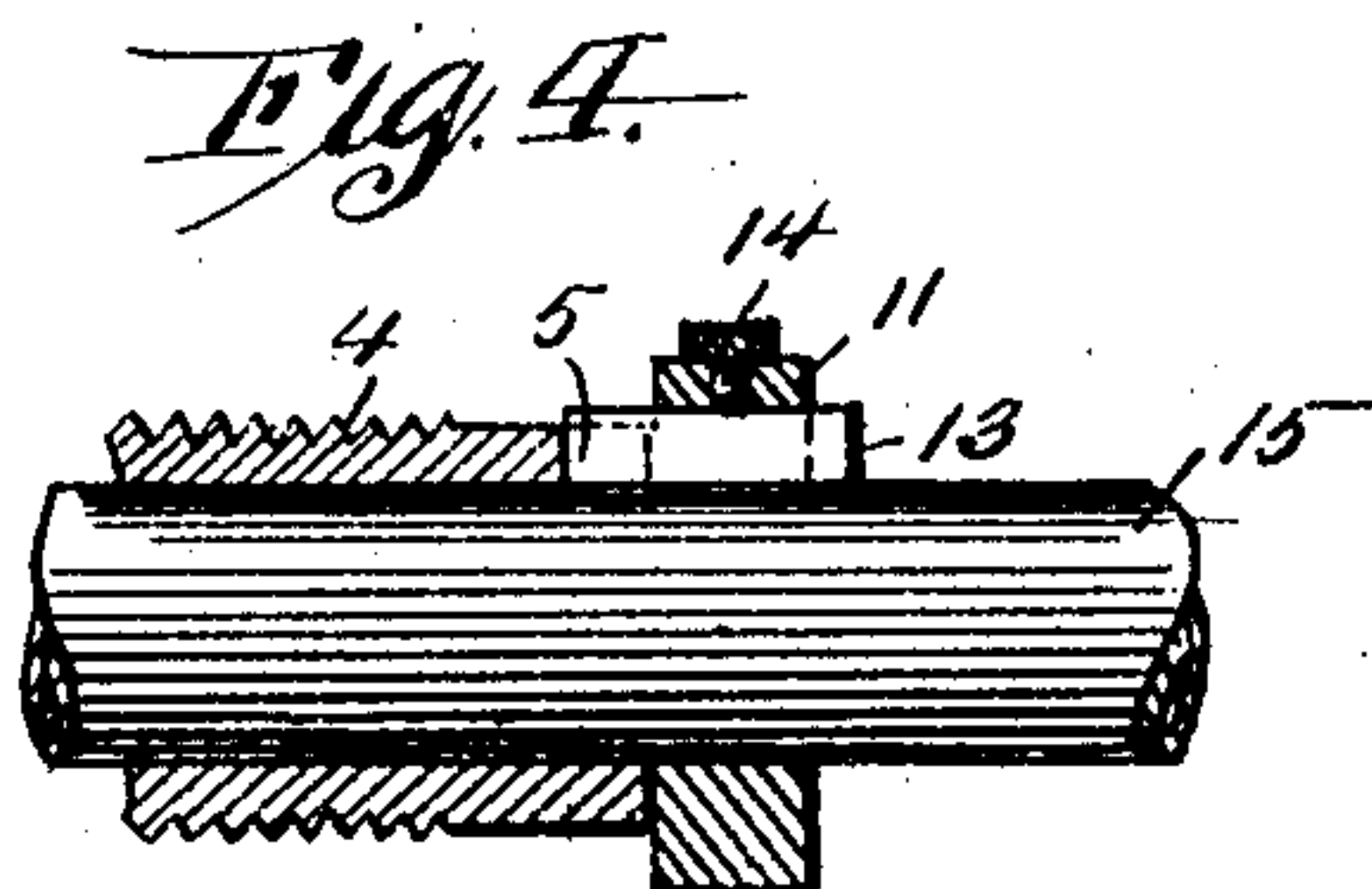
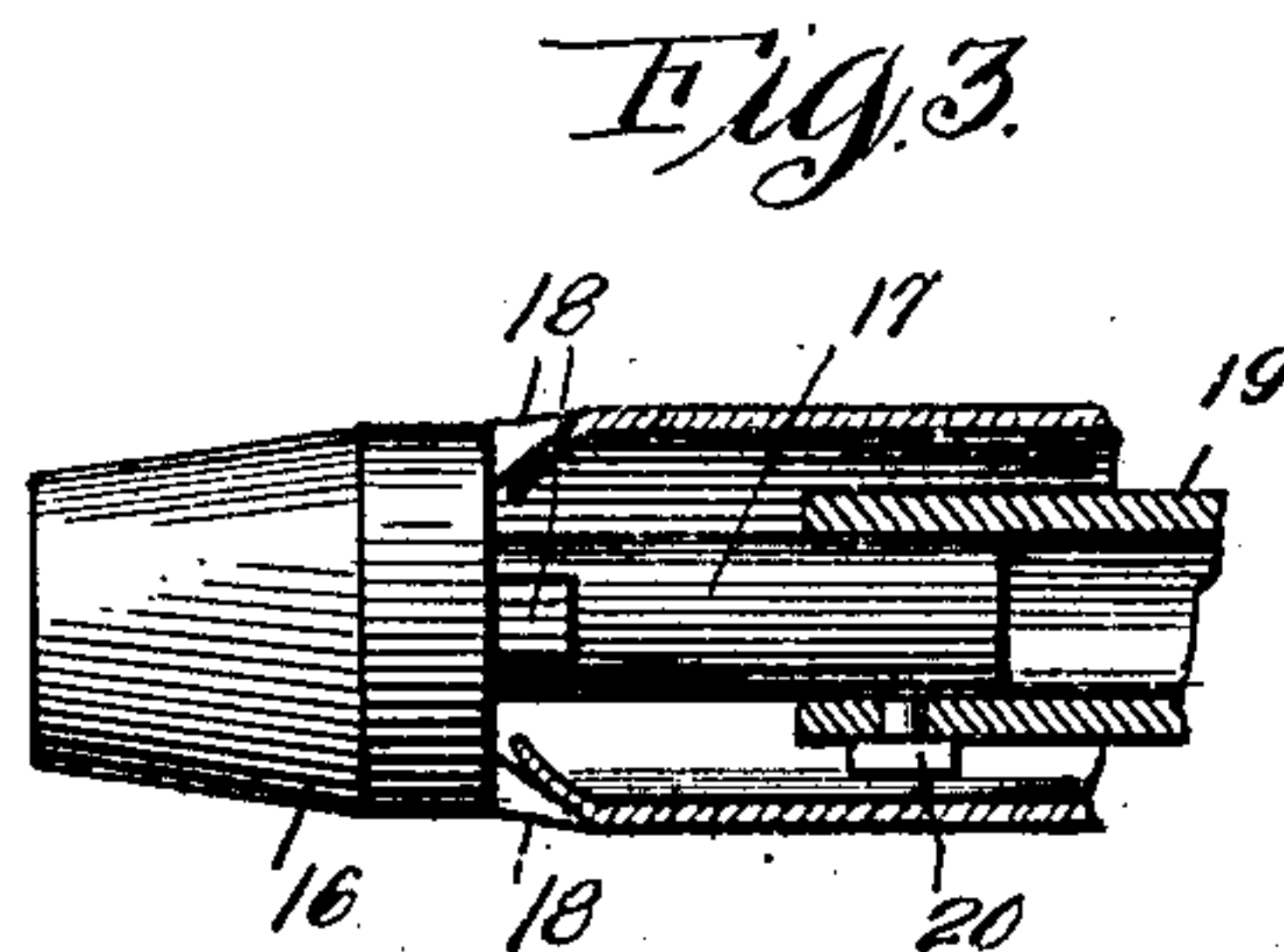
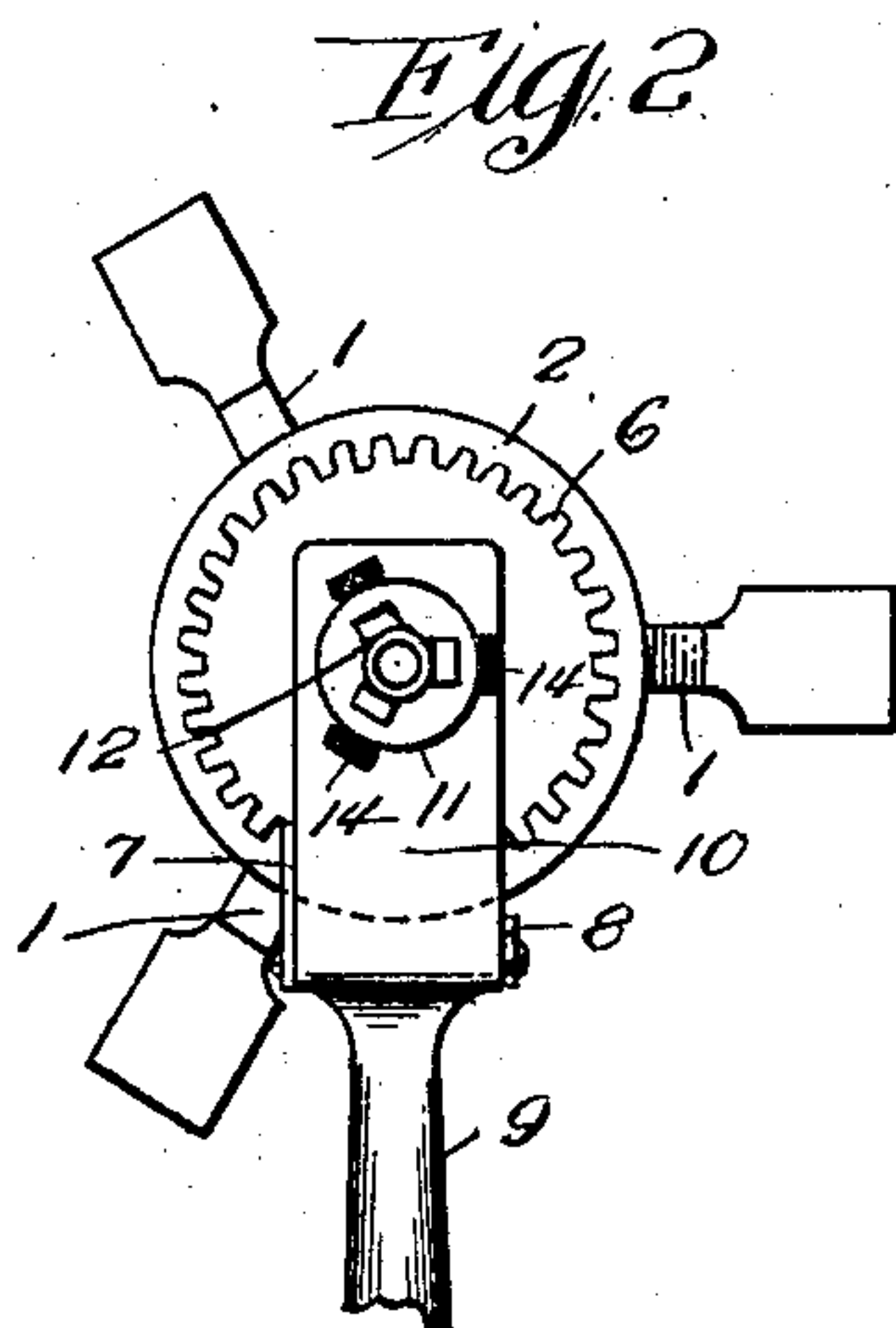
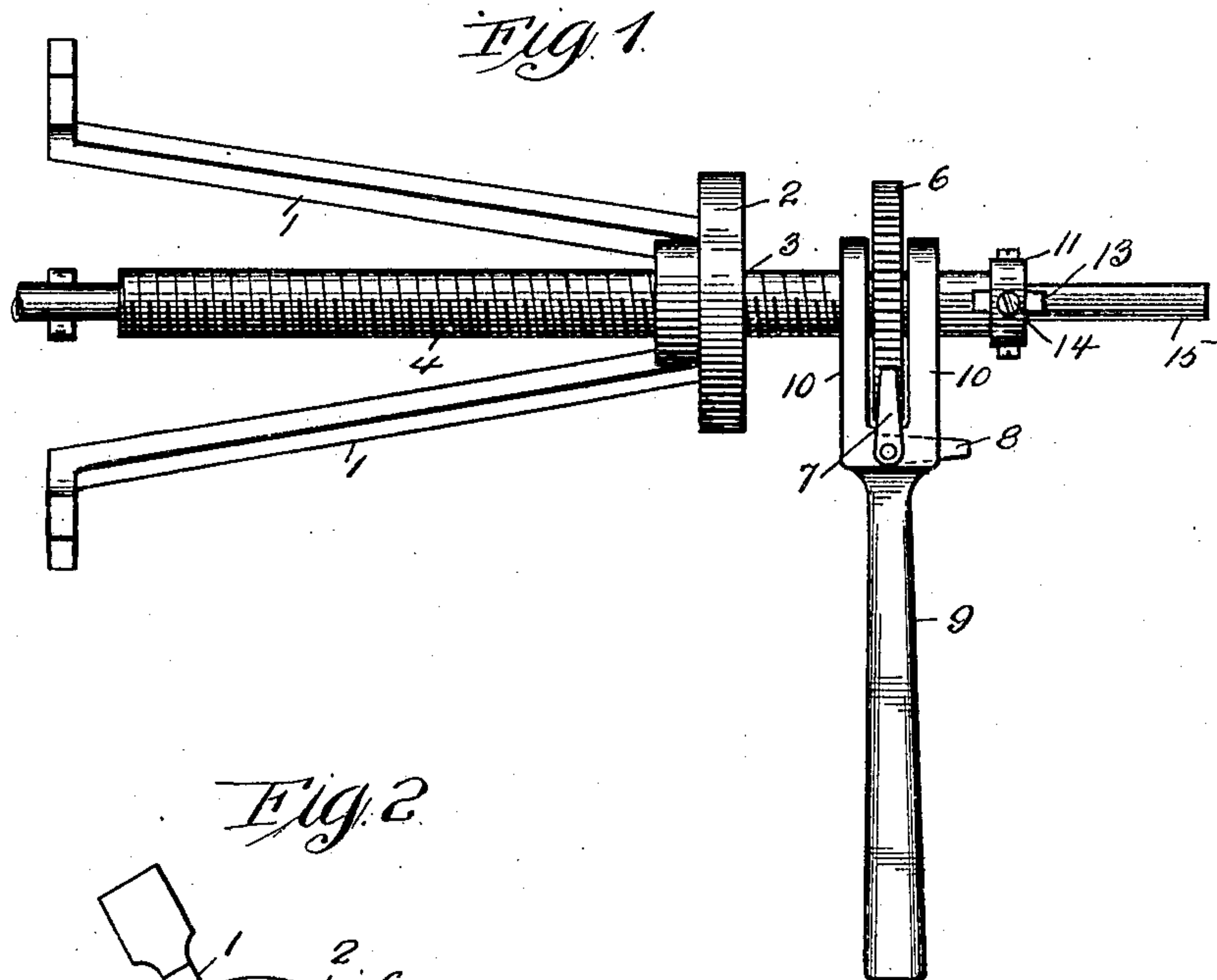


W. T. ADAMS.
BOILER TUBE EXTRACTOR.
APPLICATION FILED OCT. 10, 1907.

918,411.

Patented Apr. 13, 1909.



Witnesses:
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B. H. McClary

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UNITED STATES PATENT OFFICE.

WALTER T. ADAMS, OF HAYS BOROUGH, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO
RICHARD HIGGINS, OF PITTSBURG, PENNSYLVANIA.

BOILER-TUBE EXTRACTOR.

No. 918,411.

Specification of Letters Patent.

Patented April 13, 1909.

Application filed October 10, 1907. Serial No. 396,798.

To all whom it may concern:

Be it known that I, WALTER T. ADAMS, a citizen of the United States, residing at Hays borough, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Boiler-Tube Extractors, of which the following is a specification.

This invention relates to apparatus for withdrawing boiler tubes, and its object is, to provide an apparatus of this character, of simple and durable construction, adapted to be readily operated by hand, to draw out boiler tubes.

The invention comprises a supporting frame provided with an internally-threaded bearing, a hollow screw extending through said bearing, means for clamping a boiler tube to cause it to turn with said screw, and a jack for revolving the screw.

The invention also consists of novel means for loosening and starting the withdrawal of the tube.

The construction of the improvement will be fully described hereinafter, in connection with the accompanying drawing, which forms a part of this specification and its novel features will be set forth in the appended claims.

In the drawing: Figure 1 is a side elevation of a tube-drawing apparatus embodying the invention. Fig. 2 is a front elevation of the same. Fig. 3 is a side elevation of the devices for loosening and starting the tube, the tube being shown in section. Fig. 4 is a sectional view on an enlarged scale, of the tube clamping device.

The supporting frame of the device comprises a plurality of diverging arms 1, connected at their outer ends to a disk 2, formed with a central internally-threaded bearing 3. Within the bearing 3, is supported a hollow screw 4, formed at its outer end with one or more slots 5, for the purpose hereinafter explained; and upon said screw, adjacent to its outer end, is fixed a toothed wheel 6, adapted to be engaged on either side, by one of two dogs 7 and 8, of spring metal pivotally secured upon opposite sides of a jack-lever 9. This lever is forked or bifurcated to extend on opposite sides of the wheel 6, and its forked arms 10 are formed with openings through which the screw loosely extends.

The numeral 11 designates a clamping ring, formed on its inner periphery with

equi-distant radial slots 12, serving as key-seats to receive keys 13, which extend through the slots 12, and into the slots 5 of the screw, thus securing the ring and screw so that they will revolve together. The ring 11 is also formed with peripheral threaded openings to receive set screws 14, which clamp the keys 13 against the boiler tube 15, when the latter extends through said ring.

For the purpose of loosening the inner end of the boiler tube, and starting its withdrawal, I employ the devices shown in Fig. 3, in connection with the revoluble screw, and clamping device, said devices comprising a tapering plug 16, provided with a stem 17, and with oppositely disposed projecting cutters 18, removably secured to the head of the plug; and a rod 19 formed at one end with a socket to receive the stem of the plug, and secured thereto detachably by a suitable pin 20.

The operation of the mechanism, constructed as thus described, is as follows: The inner end of the tube to be withdrawn, is started by the insertion therein of the plug 16, with the rod 19 attached thereto, the outer end of said rod extending through the hollow screw, and clamped by the ring 11, and the keys and set screws. The turning of the jack-lever rotates the screw, and draws the rod and plug outward, and the contact of the cutters 18 with the outer surface of the tube, slits the inner end of the tube so that it will easily collapse when a turning and longitudinal pressure is applied thereto by the revolution of the screw. After the tube has been drawn out sufficiently to extend through the hollow screw, the rod 19 is disconnected from the screw, and the tube is clamped thereto, after which the continued revolution of the screw draws the tube out entirely, or to such an extent as to permit its removal by hand.

It will be noted that by my improvement, the tube is subjected to a turning or twisting strain, as distinguished from a straight longitudinal pull, and its removal is thus effected.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is:

1. An apparatus for drawing boiler tubes, comprising a frame adapted to rest against the boiler, and provided with a threaded central bearing, a hollow screw extending through said bearing, a jack comprising a

toothed wheel mounted upon the outer end of said hollow screw, and a lever loosely supported upon said screw, and provided with a dog to engage said wheel, a clamping device
5 through which the boiler tube extends, and means for securing said clamping device to the end of the hollow screw.

2. In an apparatus for drawing boiler tubes, the combination with a frame adapted
10 to rest against the front of the boiler, and provided with a threaded central bearing, of a hollow screw extending through said bearing, a toothed wheel mounted upon the outer end of said hollow screw, a jack lever loosely
15 supported on said screw, and carrying oppositely disposed pivoted dogs, and a clamping device, consisting of a ring through which the boiler tube extends, formed with internal key-seats, keys extending through said seats,
20 and one or more of said keys projecting into

a slot or slots on the end of the hollow screw, and set screws for securing said keys.

3. An apparatus for withdrawing boiler tubes comprising a frame consisting of diverging arms, and a central internally
25 threaded bearing, a hollow screw extending through said bearing, a jack for revolving said screw, a rod adapted to extend through said screw, and through a boiler tube, said rod having a plug at one end provided with
30 projecting cutters, and a clamping device adapted to secure said rod, and subsequently a boiler tube to the hollow screw.

In testimony whereof I affix my signature in presence of two witnesses.

WALTER T. ADAMS.

Witnesses:

MAX H. SROLOVITZ.

B. H. McCLEARY.