

No. 864,693.

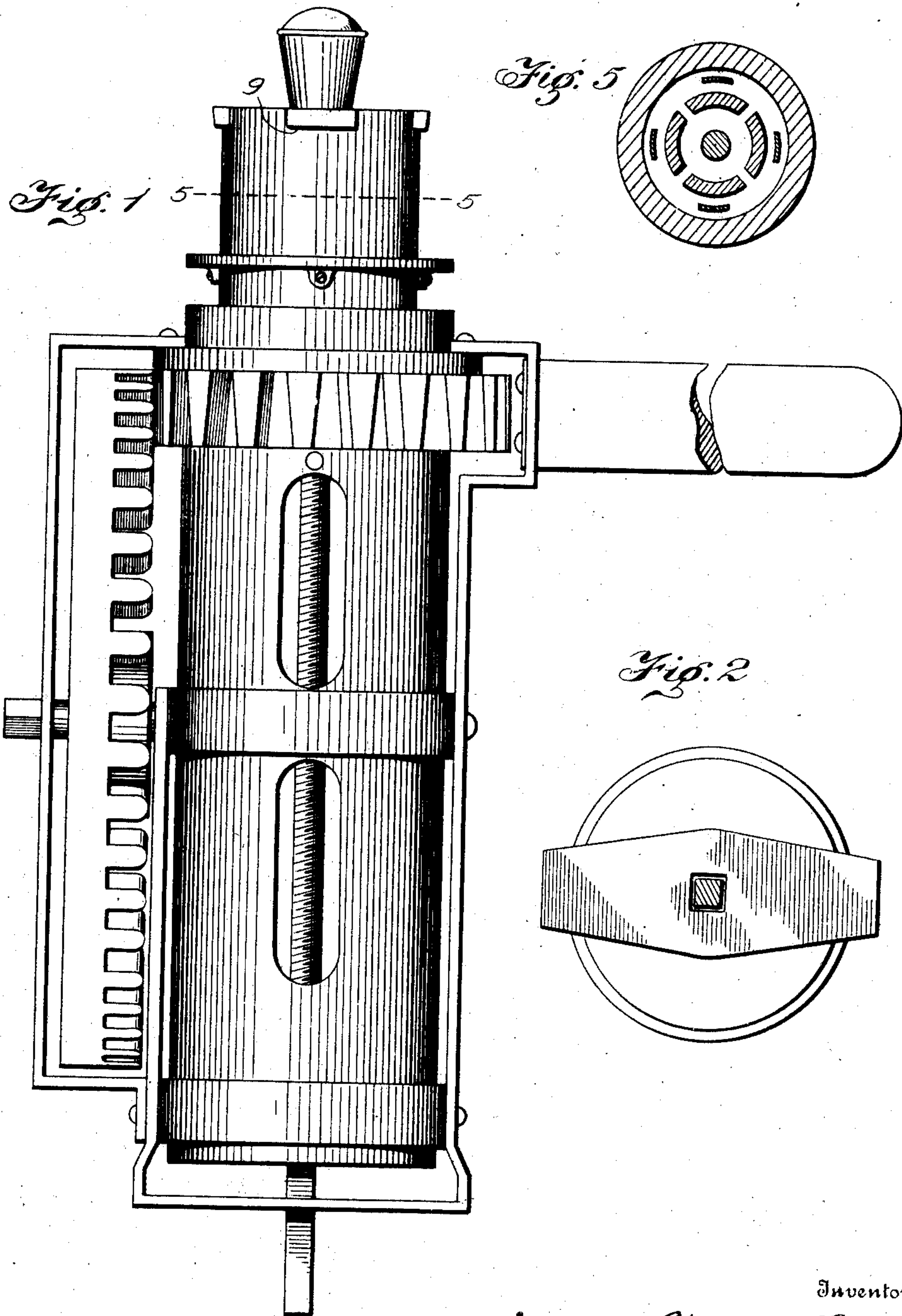
PATENTED AUG. 27, 1907.

C. ROOS.

BOILER TUBE CUTTER.

APPLICATION FILED NOV. 21, 1906.

2 SHEETS—SHEET 1.



Witnesses

R. E. Clafflin
Anna Brown.

Inventor

Charles Roos

By

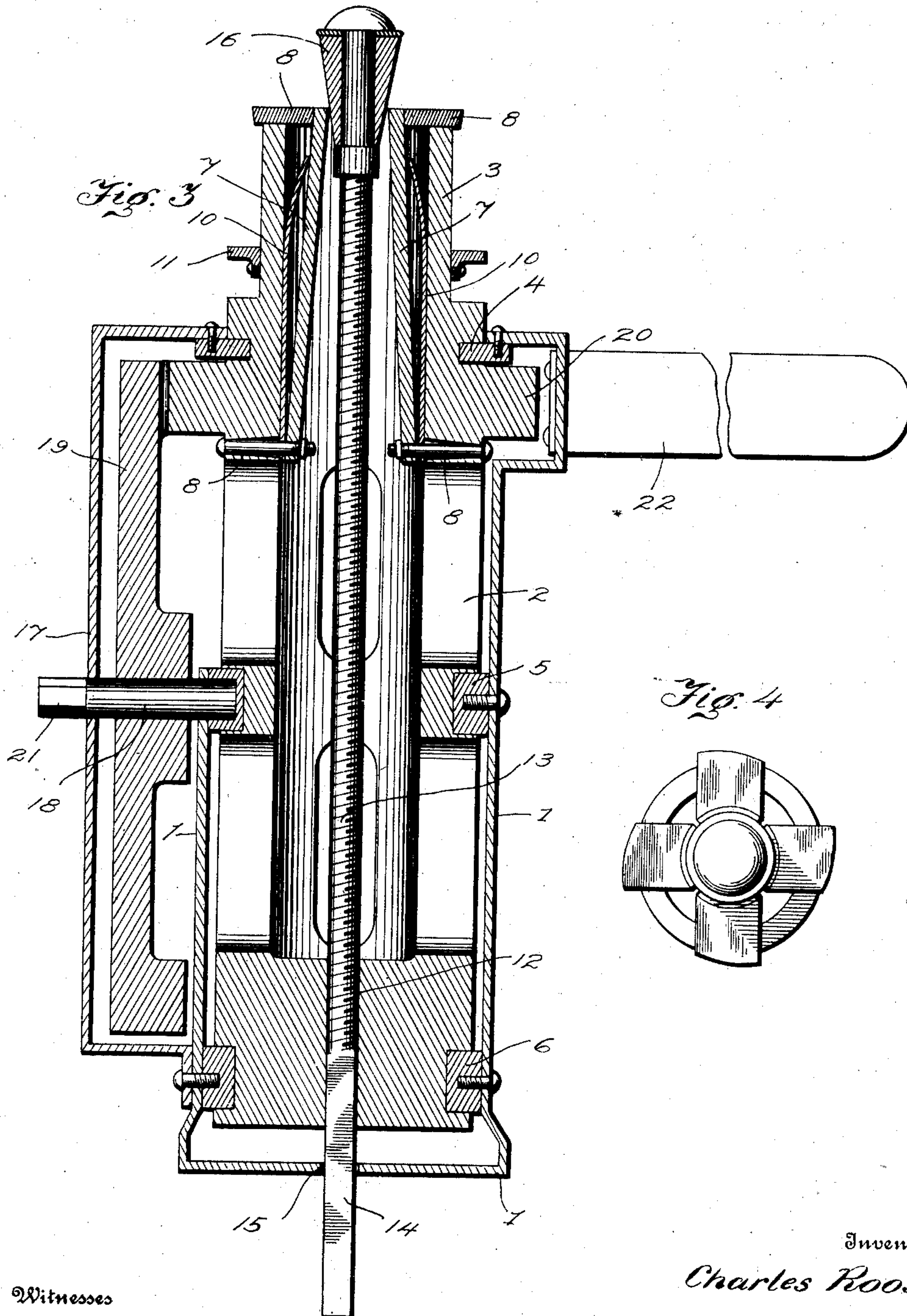
Victor J. Evans
Attorney

No. 864,693.

PATENTED AUG. 27, 1907.

C. ROOS.
BOILER TUBE CUTTER.
APPLICATION FILED NOV. 21, 1906.

2 SHEETS—SHEET 2.



Witnesses

R. Clafflin
Amos Brown

Inventor

Charles Roos

By

Victor J. Evans
Attorney

UNITED STATES PATENT OFFICE.

CHARLES ROOS, OF LEADVILLE, COLORADO.

BOILER-TUBE CUTTER.

No. 864,693.

Specification of Letters Patent.

Patented Aug. 27, 1907.

Application filed November 21, 1906. Serial No. 344,477.

To all whom it may concern:

Be it known that I, CHARLES ROOS, a citizen of the United States of America, residing at Leadville, in the county of Lake and State of Colorado, have invented
5 new and useful Improvements in Boiler-Tube Cutters, of which the following is a specification.

This invention relates to improvements in boiler tube cutters, the object of the invention being to provide a simple construction of cutter adapted to be
10 easily and conveniently handled and inserted within and withdrawn from the tubes, and whereby the operation of cutting the tubes may be efficiently and expeditiously performed.

In the accompanying drawings,—Figure 1 is a side
15 elevation of a boiler tube cutter embodying my invention. Fig. 2 is a rear end elevation thereof. Fig. 3 is a vertical longitudinal section. Fig. 4 is a front elevation. Fig. 5 is a cross section on line 5—5 of Fig. 1.

Referring to the drawings, the numeral 1 designates
20 a suitable frame, in which is revolubly mounted a cutter head comprising a tube 2 having a reduced forward end 3 adapted to enter the tube to be cut. The frame 1 carries annular bearing rings 4, 5 and 6, which enter annular grooves in the surface of the cutter tube 2, and
25 on which the latter turns.

Arranged within the reduced forward end 3 is a group of resilient cutter bars or shanks 7, each comprising a metallic strip secured at its inner end to the wall of the cutter tube in any suitable manner, as by a
30 bolt 8, the forward ends of said cutter bars or shanks terminating slightly beyond the outer end of the reduced portion 3 and being free for movement toward and from the wall of such portion. The outer or forward ends of the said cutter bars or shanks carry outwardly extending right-angularly arranged cutters 8,
35 which fit and slide within recesses 9 formed in the edge of the portion 3 and are made integral with or suitably fixed to the shanks. Leaf springs 10 are fixed at their inner ends to the tubes by the bolts 8 and are arranged
40 between the shanks and wall of the portion 3, their free forward ends being inwardly bent to exert pressure on the shanks to normally force the cutters inwardly to their primal or inoperative position. The cutters are arranged equidistantly around the portion
45 3 and are designed to act successively on the surface of the boiler tube as the cutter tube 2 rotates. A ring 11 surrounds and is suitably secured to the reduced portion 3 and serves as a gage to indicate the extent to which the same should be inserted into the boiler tube.

50 The rear end of the cutter tube 2 is provided with a threaded passage 12 and is solid to form a nut to traverse a screw 13 extending at its rear end through said passage. This screw is threaded for the greater portion of its length, but is provided with an angular rear extremity 14 projecting through a correspondingly shaped

opening 15 in the rear end of the frame 1, whereby the screw is held from rotating with the cutter tube or cylinder. The forward end of the screw carries a tapered head or spreader 16 which is revolubly mounted thereon to turn with the outer ends of the shanks 7 which
60 impinge against the same, thus reducing friction in the use of the tool. When revoluble motion in one direction is imparted to the cutter tube 2, the latter travels forwardly on the screw and the cutters therefor ride in contact with the tapered head or spreader 16, by which
65 they are progressively forced outward to their work to a gradually increasing extent to cut into the surface of the boiler tube. When the cutter tube 2 is revolved in the reverse direction it travels back on the screw 13 and the shanks accordingly move back on the reducing
70 surface of the head 16, and the cutters are retracted by the springs 10, thus permitting the cutting end of the implement to be conveniently removed from the boiler tube at the completion of the cutting operation.

A bracket 17 is suitably secured upon one side of the
75 frame 1 and forms therewith a bearing for a shaft 18 to which is keyed or otherwise fixed a drive gear 19 which meshes with an integral gear 20 formed upon the cutter tube 2. The outer end of the shaft 18 projects beyond the bracket 17 and is squared for the application of a
80 crank handle, brace or other suitable power appliance whereby the tool may be driven. A handle 22 is provided upon the frame 1 at any convenient point to enable the device to be conveniently handled and manipulated.

85 From the foregoing description, taken in connection with the accompanying drawings, the construction and mode of operation of the device will be readily understood, and it will be seen that the invention provides a cutter which may be rapidly and efficiently operated
90 and conveniently controlled.

If desired, the reduced portion of the cutter tube may be independent of the tube and detachably secured thereto, either by fastening it upon the interior or fitting it into the forward end of the tube, so that
95 interchangeable portions of different sizes may be employed without removing the cutting blades or shanks, and by simply varying the size of the spreading head to seat the diameter of the reduced fitting employed. By this means, the frame and body of the tool may be
100 used in connection with separate attachments for cutting boiler tubes of different sizes.

Having thus described the invention, what is claimed as new, is:—

1. A boiler tube cutter comprising a frame, a screw fixed
105 against rotation relative to the frame, a cutter tube revolubly mounted on the frame and inclosing the screw, said tube being arranged to travel on the screw, the free end of the latter being normally arranged to project beyond the forward end of the tube, radially movable cutters
110 upon the forward end of the tube having shanks extending

therein, springs acting upon said shanks to normally retract the cutters, and a spreader mounted upon the free end of the screw for projecting the cutters in the advance movement of the tube thereon.

- 5 2. A boiler tube cutter comprising a frame, a cutter tube
revolubly mounted on the frame and having an open forward
end and a closed rear end, the latter being provided
with a screw-threaded aperture, a screw fixed against rotation
relative to the frame and extending through the
10 tube with its forward end normally projecting in advance
thereof, the said screw being engaged with the threaded
opening in the tube, whereby the latter is adapted to
travel on the screw, shanks movably mounted in the forward
end of the tube, springs acting on said shanks to
15 normally hold them inwardly, radially movable cutters
carried by the shanks beyond the forward end of the tube,
and a spreader revolubly mounted upon the free end of the
screw to act upon the shanks and spread the cutters upon
the forward movement of the tube.

3. A boiler tube cutter comprising a frame, a rotary cutter 20
tube journaled therein, cutters at the forward end of
the tube having radially movable shanks inclosed therein,
springs acting upon said shanks to retract the cutters, a
screw shaft extending through the cutter tube, said shaft
being fixed against rotation relative to the frame and in 25
threaded engagement with the tube, whereby the latter is
adapted to travel thereon, a tapered spreader revolubly
mounted upon the shaft to project the cutters upon the
forward movement of the tube, and means for revolving
the cutter tube. 30

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

CHARLES ROOS.

Witnesses:

HELMER OSTRUM,
CHAS. E. NORDBERG.