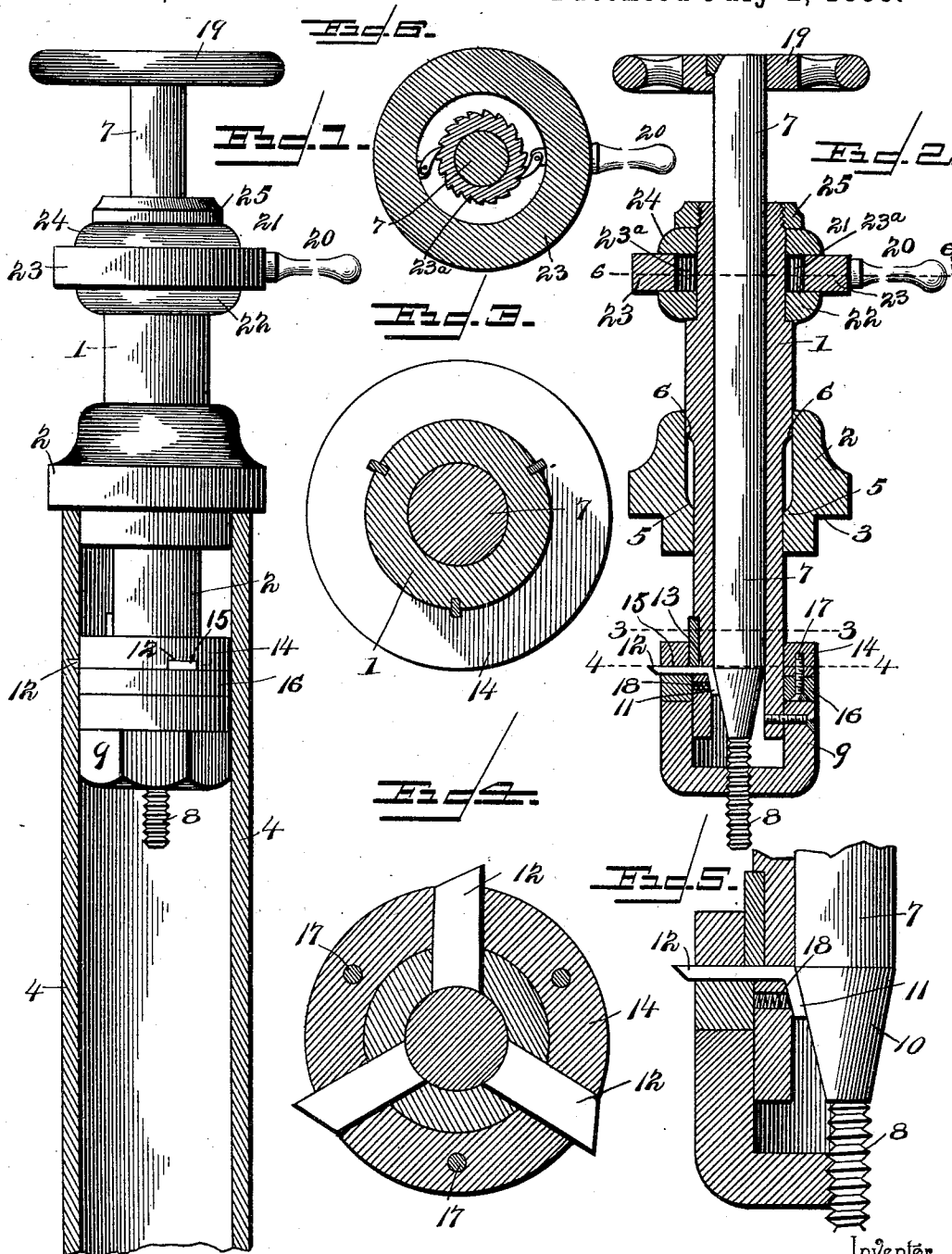


(No Model.)

J. J. K. FITZPATRICK.
TUBE CUTTER.

No. 542,219.

Patented July 2, 1895.



Inventor
John J. K. Fitzpatrick,

Witnesses
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C. H. K. K. K.

By his Attorneys,

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UNITED STATES PATENT OFFICE.

JOHN JAMES KELSOE FITZPATRICK, OF KEMP, TEXAS, ASSIGNOR TO HERMAN STRAUSS, OF SAME PLACE.

TUBE-CUTTER.

SPECIFICATION forming part of Letters Patent No. 542,219, dated July 2, 1895.

Application filed June 19, 1894. Serial No. 515,078. (No model.)

To all whom it may concern:

Be it known that I, JOHN JAMES KELSOE FITZPATRICK, a citizen of the United States, residing at Kemp, in the county of Kaufman and State of Texas, have invented a new and useful Tube-Cutter, of which the following is a specification.

My invention relates to tube-cutters; and it has for its object to provide a simple, inexpensive, and efficient apparatus for use in cutting boiler flues or tubes to facilitate the operation of removing and replacing such tubing.

It is my object, furthermore, to provide means for cutting the tubes, whereby the spreading of the latter is avoided, to enable the tubes to be withdrawn through the holes in the boiler-sheet after the removal of the detached end from such hole.

A further object of my invention is to provide a tool of compact construction, which may be operated in a limited space, and which will be capable of adjustment to fit various sizes of tubes.

Further objects and advantages of my invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a side view of a tube-cutter embodying my invention applied in the operative position to a tube. Fig. 2 is a central sectional view of the cutter. Fig. 3 is a transverse section on line 3 3 of Fig. 2. Fig. 4 is a similar view on line 4 4 of Fig. 2. Fig. 5 is an enlarged vertical section to show retracting-spring. Fig. 6 is a transverse section on the line 6 6 of Fig. 2, showing the clutch mechanism.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates a hollow or tubular stock, comprising the body portion of my improved tube-cutter, and to this stock is removably and slidably fitted a bushing 2, shouldered, as at 3, to fit in the end of the boiler-tube. A portion of a tube is shown at 4 in Fig. 1. This bushing is interiorly shouldered, as at 5, to engage a corresponding shoulder 6 upon the

exterior surface of the stock to limit the independent movement of these parts in operation.

7 represents a central spindle fitted rotatably and slidably in the bore of the hollow stock, and provided at its inner end with a reduced threaded portion or stem 8, which is arranged to engage the hollow or recessed feed-nut 9, secured to the extremity of the stock. The portion of the spindle adjacent to the threaded portion 8 is tapered or conical, as shown at 10, to engage the inner ends or feet 11 of the cutters or knives 12, which are arranged radially in suitable guides 13 in the stock and are adapted to project at their outer or sharpened ends beyond the outer surface of the stock to engage the inner surface of a boiler-tube.

The stock being of less diameter than the tube, it is necessary to provide means for preventing vibration of the inner end thereof during operation and at the same time strengthen the outer portions of the cutters or knives which are beyond the support of the guides 13, and hence to the outer surface of the stock, above the lower plane of the cutters, is keyed a seating-ring 14, provided in its lower side with radial rest 15, registering with the guides 13, and below the plane of the cutters is arranged a collar 16, secured to the seating-ring by means of screws 17, bearing against the under surface of the cutters and of equal diameter with the reduced portion of the bushing 2, to fit snugly in the bore of the boiler-tube. The feet 11 of the cutters are inclined inwardly or toward the axis of the stock to avoid unnecessary friction with the tapered portion of the spindle, and retraction-springs 18 bear at their inner ends against said feet and at their outer ends against the inner surface of the collar 16 to automatically retract the cutters when the tapered portion of the spindle is disengaged therefrom.

Secured to the outer extremity of the spindle is a handle 19, and connected to the adjacent portion of the stock is an operating-lever 20, by means of a clutch mechanism 21. This clutch may be of any ordinary or well-known construction, comprising, for instance, a collar 22, a ring 23, carrying pawls to engage

a ratchet 23^a, a washer 24, and a nut 25, the lever 20 being secured to said ring 23. This feature forms no part of my invention.

The operation of the improved cutting appliance will be readily understood from the foregoing description, and it is obvious that by substituting bushings 2 and collars 16 of different sizes tubes of various sizes may be cut with the same tool.

10 If preferred, washers or bushing-rings of the ordinary and well-known construction may be used to adjust the sizes of the bushing and collar to fit different tubes.

15 Spreading or expanding of the tube is avoided by the use of flat plate-cutters or knives, sharpened to an edge and inclined or tapered in plan, as shown in Fig. 4, whereby the points of the cutters first engage the surface of the tube.

20 Various changes in the form, proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of my invention.

25 Having thus described my invention, I claim—

1. The combination with a hollow stock provided with guides, and adapted to be rotated, of cutters or knives fitted in said guides and
30 provided at their inner ends with inclined feet, a seating ring fitted exteriorly upon the stock and provided with radial seats, a collar secured to the seating ring to close the lower sides of the rests, coiled springs arranged in
35 transverse perforations of the stock and bearing at their outer ends against the inner surface of said collar and their inner ends against

the feet of the cutters, a spindle fitted in the bore of the stock and having a tapered portion to engage the feet of the cutters, and
40 means for feeding the spindle axially in the stock, substantially as specified.

2. The combination with a hollow stock adapted to be rotated, of a shouldered bushing adjustably mounted upon the stock and
45 having a reduced portion to fit within the end of a boiler tube, radially slidable cutters mounted in guides near one end of the stock and provided at their inner ends, within the
50 bore of the stock, with inclined feet 11, a seating ring fitted exteriorly upon the stock and keyed thereto, the same being provided with radial rests registering with the guides in the stock, a collar secured to the seating ring and
55 closing said rests therein, a feed-nut secured to the inner end of the stock, a spindle fitted in the bore of the stock, having a tapered portion to engage the feet of the cutters and terminating in a threaded portion to engage said
60 feed nut, and retraction-springs arranged in perforations in the stock and bearing against the feet of the cutters to return the same when the tapered portion of the spindle is
65 disengaged therefrom, the outer ends of the perforations in which the springs are seated being covered and closed by said bushing, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN JAMES KELSEY FITZPATRICK.

Witnesses:

FRANK KAVANAUGH,

H. C. STOUT.