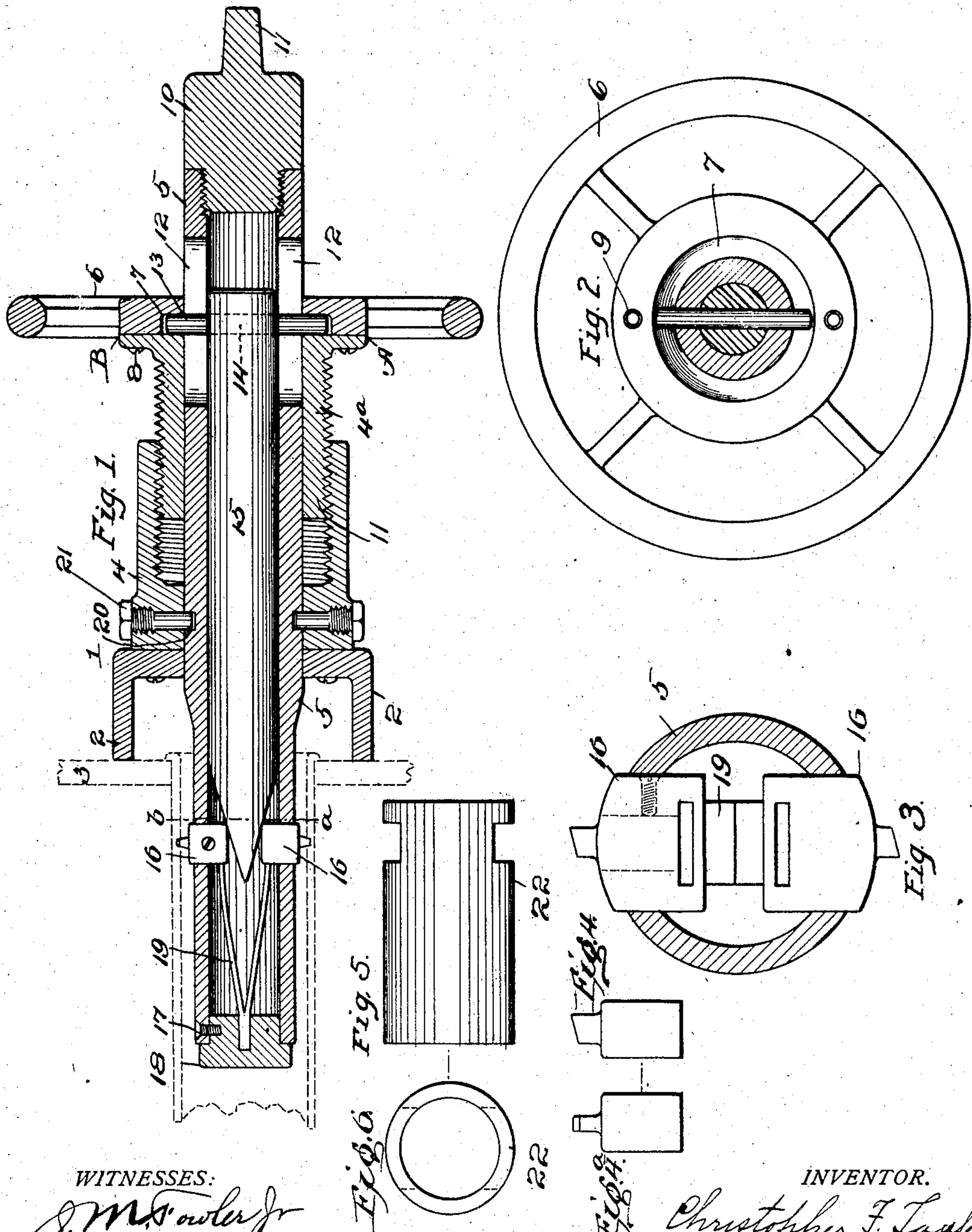


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C. F. LAUFER.
BOILER TUBE CUTTER.
APPLICATION FILED AUG. 15, 1904.



WITNESSES:

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BOILER-TUBE CUTTER.

SPECIFICATION forming part of Letters Patent No. 790,212, dated May 16, 1905.

Application filed August 15, 1904. Serial No. 220,841.

To all whom it may concern:

Be it known that I, CHRISTOPHER F. LAUFER, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Boiler-Tube Cutters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in a boiler-flue-cutting mechanism.

The object of the invention is to improve the construction of a mechanism which is adapted to be positioned upon a boiler and which is provided with a cutting means capable of being positioned within a flue of a boiler when it is desired to remove the same by cutting through the flue at each end.

Another object of the invention is to improve the construction of a support, rotary cutting means carried by said support, and means for adjusting said rotary cutting means.

A still further object of the invention is to produce a boiler-tube-cutting device which is cheap in construction, efficient in operation, and is composed of a minimum number of parts.

The invention also consists in certain other details of construction, as will be hereinafter described and specifically claimed.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of a mechanism constructed in accordance with the present invention, showing the same positioned upon a boiler. Fig. 2 is a transverse view taken on line A B, Fig. 1, looking toward the forward end of the mechanism. Fig. 3 is a transverse sectional view taken on line *a b*, Fig. 1, the wedge being removed from in an assembled position with the other elements of the invention. Fig. 4 is a view in side elevation of one of the knives. Fig. 4^a is an end view in elevation of the knives. Fig. 5 is a view in side elevation of the jacket to be used in cutting large flues. Fig. 6 is an end view of the jacket illustrated in Fig. 5.

Referring to the drawings by numerals, 1 designates a member which is provided with

projections 2, said projections 2 being adapted to engage the boiler 3. Rigidly secured to member 1 is an internally-screw-threaded sleeve 4, within which is positioned a comparatively long sleeve 5. An auxiliary sleeve 4^a, which is provided with a screw-threaded surface upon its periphery, is adjustably mounted within the sleeve 4. A wheel 6, which is provided with an annular recess portion 7, is secured in a fixed position by means of screws 8 or the like upon an integral flanged extension of sleeve 4^a. The screws 8 are adapted to engage threaded apertured portions 9, which are formed in wheel 6.

The sleeve or tubular member 5 is provided with a removable member 10, upon which is formed a head 11 for the purpose of providing means whereby connection may be made with a compressed-air motor or the like for causing rotation of the tubular member 5.

As sleeve 4^a is adjustably mounted upon sleeve 4, there will be a longitudinal movement of said member 4^a, thereby necessitating parallel longitudinal openings 12 to be formed in tube 5 for the purpose of permitting of the passage of pin 13, which is positioned in an aperture 14 of wedge 15. Owing to this construction sleeve 4^a may be longitudinally adjusted in member 4 without changing the position of tubular member 5, although the adjustment of sleeve 4^a will cause longitudinal movement of wedge 15, thereby controlling movement of knives 16 16. The knives 16 16 comprise in their construction a block or body portion within which is positioned the blades, said blades being positively secured within the blocks by means of screws or like member.

Secured upon the inner end of tubular member 5 by means of screw 17 is a spring-carrying plug 18. A bifurcated spring 19 is rigidly secured to plug 18 at one of its ends, and the opposite end of said spring 19 is secured to the knives 16 16 for the purpose of drawing the same inwardly when the wedge 15 is removed from in engagement with said knives. Of course it will be obvious that as the wedge is moved from between the knives the spring will gradually bring the two knives together.

For the purpose of securing tubular member 5 in a fixed longitudinal position within sleeve 4 a peripheral groove 20 is formed upon said member 5, and adjustable bolts 21 are
 5 positioned within suitable apertures of casing 4 and normally project into the peripheral groove portion 20 of 5.

Upon considering the drawings, Fig. 1, it will be obvious that the tubular member 5 is
 10 reduced in thickness toward its inner end for the purpose of providing an annular extension upon which the knives are mounted and which is adapted to be positioned within a tube of the boiler when it is desired to cut the
 15 same for permitting of the removal thereof.

After the mechanism has been positioned upon a boiler and the knife-carrying portion thereof is within the boiler-tube it will be necessary to cause rotary movement of wheel
 20 6, consequently forcing wedge 15, by medium of pin 13, between knives 16 16, causing the same to impinge against the inner surface of the tube within which the same is positioned. By causing rotary movement of tube 5 similar movement of knives 16 16 is produced,
 25 thereby causing said knives to cut into the boiler-tube as the same are spread apart by means of wedge member 15 being advanced, as heretofore specified.

30 The tubular jacket 22 is to be used in cutting larger flues, said jacket being adapted to be positioned upon the reduced inner end portion of tubular member 5, so that the same will form a guiding means for the knives 16 16.

35 From practical experience I have found that this cutting mechanism will cut the tube with great rapidity, owing to the peculiar construction of the different parts. In operation the knives cut a shaving similar to a lathe instead of wearing the flue out by friction.
 40

While I have described in the foregoing description the preferred construction of my invention and have illustrated the same in the accompanying drawings, it will be evi-
 45 dent to one versed in the art to which this invention relates that certain modifications, alterations, and changes may be made, and I therefore reserve the right to make such modifications, alterations, and changes as shall
 50 fairly fall within the scope and spirit of the invention.

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

55 1. In a device of the character described, the combination of a sleeve provided with extensions, an auxiliary sleeve provided with a wheel adjustably mounted within said sleeve having extensions, a tubular member pro-
 60 vided with a reduced end portion and having longitudinal openings mounted within said sleeves, a plurality of knives mounted within said tubular member, a bifurcated spring connecting said knives, a wedge provided with
 65 a transverse pin mounted within said tubular

member and normally in engagement with said knives, said pin of the wedge member projecting through the longitudinal openings of said tubular member and normally in en-
 70 gagement with the wheel, and means for causing rotary movement of said tubular member and knives.

2. In a mechanism of the class described, the combination with a support, of a revoluble, tubular member positioned upon said support,
 75 movable knives carried by said tubular member, a slidable wedge positioned within said tubular member and adapted to engage said knives for causing movement thereof, and adjustable means mounted upon said support
 80 and secured in an operative position to said wedge, providing means for causing movement of the same.

3. In a device of the character described, the combination with a support, of a rotatable
 85 member carried by said support, a movable knife positioned upon said member, a slidable member carried by said rotatable member for adjusting said movable knife, adjusting means for said slidable member positioned upon and
 90 in direct engagement with said support, and means for imparting movement to said rotatable member.

4. A mechanism of the class described, comprising a primary sleeve, a tubular member
 95 provided with adjustable knives positioned within said primary sleeve, a slidable member positioned within said tubular member, and revoluble means positioned upon and in direct engagement with said primary sleeve
 100 and connected to said slidable member capable of adjusting said knives, when movement is imparted to said revoluble means.

5. In a mechanism of the class described, the combination of a primary sleeve provided with
 105 extensions, a revoluble, tubular member having apertures formed therein near one end, mounted within said sleeve, movable knives positioned within the apertured portion of said member, a slidable wedge positioned within
 110 said tubular member and adapted to engage said knives, a revoluble sleeve in engagement with said primary sleeve and connected to said slidable member capable of causing longitudinal movement of said member for ad-
 115 justing the knives, when movement is imparted to said revoluble sleeve.

6. In a mechanism of the class described, the combination with a support, of a revoluble
 120 member positioned upon said support, expansible knives carried by said member, longitudinal, adjustable means carried by said revoluble member and normally in engagement with said knives, and rotatable means engaging said support and connected to said
 125 adjustable means, capable of causing movement of said knives.

7. A device of the character described, comprising a primary sleeve, a revoluble member
 130 carried by said sleeve, a movable knife mount-

ed upon said revoluble member, adjusting means positioned upon and in engagement with said primary sleeve, capable of causing movement of said knife.

5 8. In a device of the character described, the combination of a primary sleeve provided with extensions, a revoluble, tubular member removably positioned within said primary sleeve, knives carried by said revoluble member, a longitudinal movable member carried by said revoluble member and adapted to engage said knives for causing adjustment thereof, and an auxiliary, rotatable sleeve carried by and in engagement with said primary sleeve and connected to said movable member.

15 9. A mechanism of the class described, comprising a support, a rotatable knife carried by said support, and adjustable means in engagement with said support and connected with said knife for adjusting the same, when movement is imparted to said adjustable means.

25 10. A device of the character described, comprising a primary sleeve provided with extensions and an integral screw-threaded portion, a tubular member having a circumferential groove positioned within said primary sleeve, a removable member carried by said primary sleeve and engaging the groove portion of said tubular member, said member having elongated apertures formed therein near one end, adjustable knives positioned within said tubular member and adapted to be extended beyond the outer surface thereof, 35 a bifurcated spring connecting said knives, a slidable wedge member positioned within said

tubular member and adapted to cause movement of said knives, said wedge member provided with a pin extending through the elongated apertured portion of said tubular member, an externally-screw-threaded auxiliary sleeve removably positioned within said primary sleeve normally in engagement with said pin, and a wheel secured to said auxiliary sleeve and in engagement with said pin providing means whereby movement may be imparted to said sleeve and said wedge member. 40 45

11. In a device of the character described, the combination with a supporting member provided with extensions, a revoluble member positioned within said supporting member, movable knives carried by said revoluble member, a longitudinal adjustable member positioned within said revoluble member and capable of causing adjustment of said knives, 55 and longitudinal, adjustable means in engagement with said supporting means and connected to said longitudinal movable member.

12. A mechanism of the class described, comprising a support, a movable member carried by said support, a movable knife mounted upon said member, and adjustable means positioned upon and in engagement with said support, capable of causing movement of said knife. 60 65

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

CHRISTOPHER F. LAUFER.

Witnesses:

ANDREW DANIEL, Jr.,
CARLE WHITEHEAD.