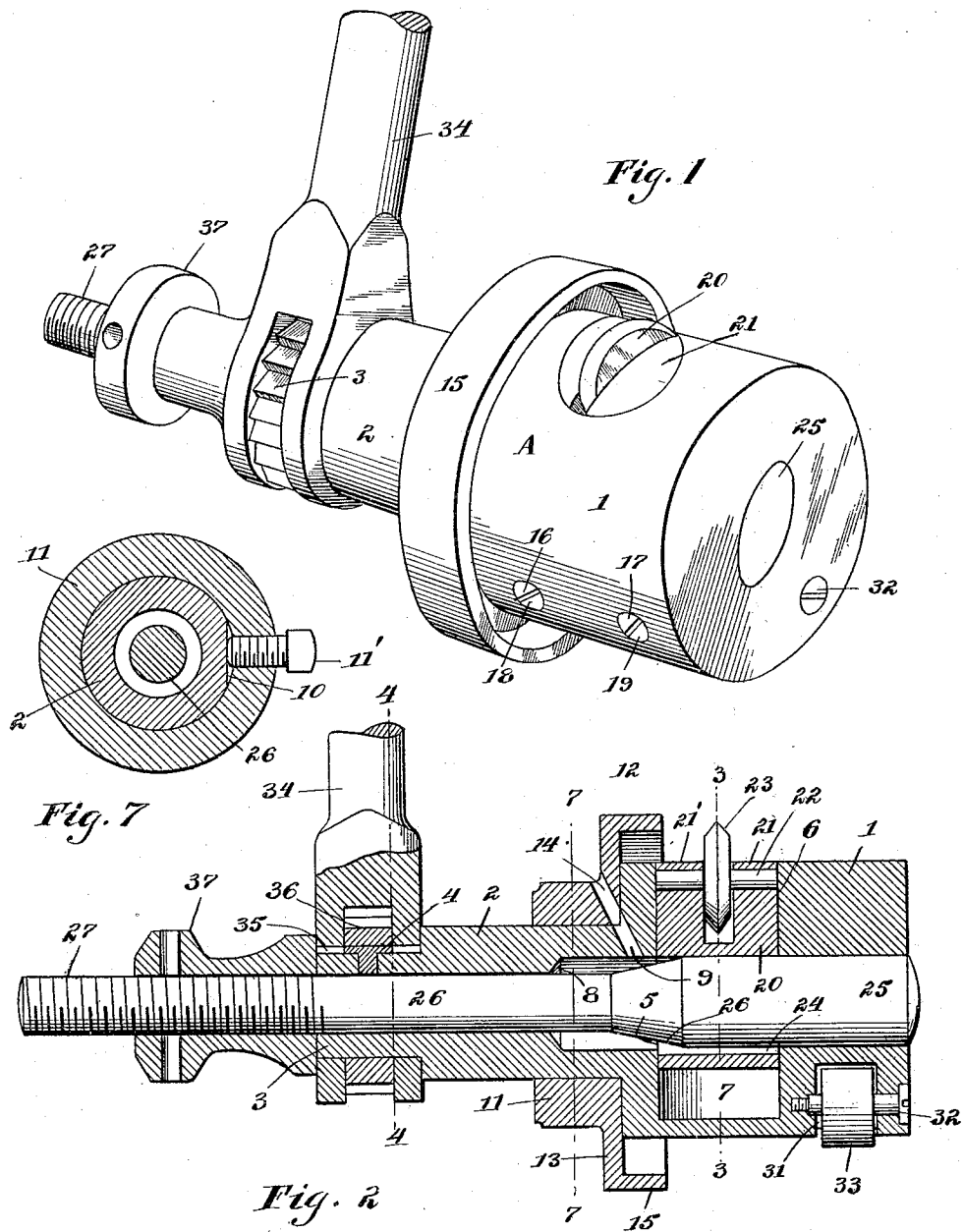


B. E. WEEKS.
 TUBE CUTTER.
 APPLICATION FILED JULY 3, 1915.

Patented Jan. 9, 1917.
 2 SHEETS—SHEET 1.

1,211,988.



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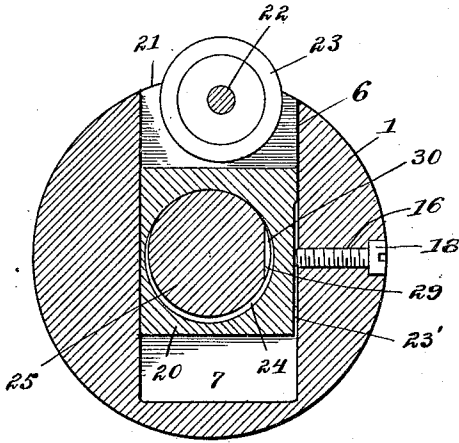


Fig. 3

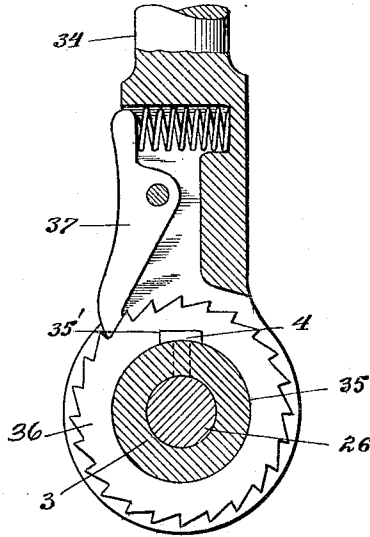


Fig. 4

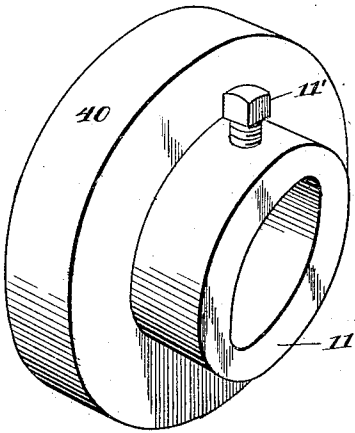


Fig. 5

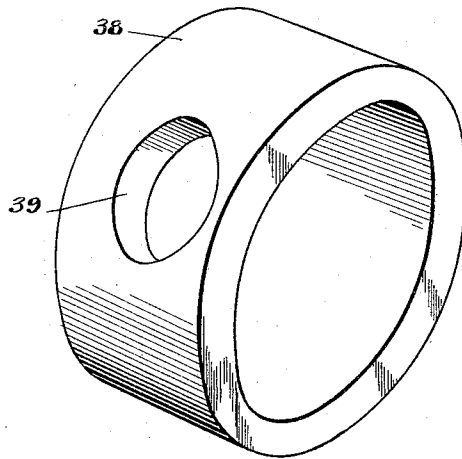


Fig. 6

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UNITED STATES PATENT OFFICE.

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TUBE-CUTTER.

1,211,988.

Specification of Letters Patent.

Patented Jan. 9, 1917.

Application filed July 3, 1915. Serial No. 37,888.

To all whom it may concern:

Be it known that I, BENJAMIN E. WEEKS, a citizen of the United States, residing at Elmhurst, in the county of Queens and State of New York, have invented new and useful Improvements in Tube-Cutters, of which the following is a specification.

The present invention relates to improvements in cutters for boiler tubes and the like, and the object of the invention is to provide a device of this character which shall be of a simple construction, comparatively cheap to manufacture and which will perform its function in an expeditious and satisfactory manner.

With the above and other objects in view, the improvement resides in the construction, combination and arrangement of parts set forth in the following specification and falling within the scope of the appended claims.

In the drawings: Figure 1 is a perspective view of a boiler tube cutter constructed in accordance with the present invention, Fig. 2 is a central longitudinal sectional view through the same, Fig. 3 is a transverse sectional view approximately on the line 3—3 of Fig. 2, Fig. 4 is a similar view approximately on the line 4—4 of Fig. 2, Fig. 5 is a perspective view of the flanged cap which may be employed for enlarging the cutter head, Fig. 6 is a similar view of the sleeve which may be employed in connection with the flanged cap illustrated in Fig. 4, and Fig. 7, is a cross sectional view on the line 7—7 of Fig. 2.

In the drawings the tool is designated by the character A and includes a cylindrical head 1 that is formed upon one end with a reduced sleeve or barrel 2. The member 2 has its end formed with a reduced annular extension 3, the said extension being provided with a spline or feather 4. The bore of the head 1 is round, and at its communication with the bore of the sleeve or barrel it is reduced or is gradually converged to conform to the reduced bore of the said sleeve as well as its extension 2, and forms the juncture between the two bores of a rounded or conical shape, as indicated by the numeral 5. The head 1, near the shoulder provided between the same and the sleeve 2 is formed with a circular opening 6 which intersects the bore of the said head and which is continued through the bore to provide a round depression or pocket 7. The shoulder 8 provided between the head and sleeve or barrel

2 has an opening 9 which communicates with its circular opening 6, whereby a lubricant may be admitted to the said opening. The sleeve, preferably at a right angle to the opening or oil port 9 is provided with a flat surface 10, the same adapted to provide a bearing or contact surface for a screw 11 in the holding sleeve 11 that is provided upon the central annular flange 12 of a collar 13, and the face of the collar is provided with an oil port 14 which communicates with the oil port 9. Preferably the inner face of the collar is depressed, forming the periphery of the same with an annular flange or bead 15, and as the said collar 13 is connected with the sleeve or barrel 2, through the medium of the screw 11, the same may be readily removed or adjusted longitudinally of the said sleeve. The removal of the collar is desirable, for the reason that collars of various sizes may be employed upon the head to agree with the size of the tube operated upon. Arranged approximately at a right angle to the axial plane of the circular opening 6 of the head 1 are threaded openings 16 and 17 respectively, one disposed adjacent the shoulder 8 and the other disposed near the outer end of the head, the said openings being arranged in a line with each other and each adapted to receive non-headed screws 18 and 19 respectively.

The numeral 20 designates the cutter holder, the same comprising an elongated member which is round in cross section and which has what I will term its outer edge slotted longitudinally providing the same with spaced arms 21—21, the said arms having registering openings whereby a pivot or axle 22 may be received, the said pivotal axle passing through the hub of the cutter wheel 23. The cutter holder is of a length sufficient to permit of its end, opposite that provided with the cutter wheel 23, entering the pocket 7, when the said cutter holder is arranged within the circular opening 6, so that the cutting edge of the wheel will not project through the opening 6, and whereby the head may be inserted within the tube to be cut before being contacted by the said cutter wheel. One of the sides of the cross sectionally rounded cutter holder is provided with a flat surface 23' which is adapted to be contacted by the screw 18 that passes through the threaded opening 16 to prevent the rotation of the cutter holder, and whereby the cutter wheel will be at all

times sustained at a right angle to the longitudinally extending head 1.

The cutter holder is provided with a transversely disposed circular opening 24, which may be, if desired, of a conical formation, the said opening being disposed near the inner end of the cutter holder and arranged in a line parallel to that of the pivot or axle 22.

The cutter advancing member is indicated by the numeral 25, the same having its lower portion for a considerable length, substantially circular in cross section and being provided with a reduced centrally arranged shank or extension 26, the outer end of said shank being threaded, as indicated by the numeral 27. The body of the advancing member, at the juncture of its enlarged round portion with its reduced and also cross sectionally circular shank is converged toward the said shank, providing the same with what may be termed a cone-shaped portion and which is indicated by the numeral 28. One of the faces of the body of the advancing member is provided with a longitudinally arranged flat surface 29 providing the said body, at its cone-shaped portion with a shoulder 30, and the screw 19 is adapted to contact with said flat surface 9 after the said advancing member has been arranged within the bore of the sleeve 2 and its extension 3. The screw member 19 does not contact with the cutter member with sufficient friction to interfere with the free working of the same, in a manner presently to be described, but the said member is adapted to prevent the same from rotating when so arranged within the tool. The set screw is adapted to limit the outward movement of the cutter advancing member by contacting with its shoulder 30. The cone-shaped portion 28 of the advancing member 25 is received in the opening 24 of the cutter holder, and when the said holder is moved longitudinally, in an outward direction, the cone-shaped surface bearing upon one of the walls provided by the said opening will move the holder 22 laterally of the head 1 and force the cutter wheel 23 into engagement with its work.

In order to assist in the operation of the tool, I provide the holder, near its outer end, and diametrically opposite the opening within which the cutter holder 20 is disposed with a recess or pocket 31, a pivot member, in the nature of a removable element or screw 32 being passed centrally through the said pocket 31 and the same providing an axle for a removable wheel 33 which projects only slightly through the pocket 31, the said projection being, however, sufficient to permit of the wheel contacting with the boiler tube which is operated upon by the

cutter wheel. In this connection it should be stated that the screws 18 and 19 have their slotted ends disposed within their openings 16 and 17 beyond the periphery of the head 1, so that the said screw will not interfere with the free revolution of the cutter head.

The numeral 34 designates a handle member, the same having its head provided with a round opening 35, and the said head being slotted and bifurcated longitudinally to permit of the arrangement therein of a ratchet wheel 36, and the numeral 37 designates a spring pressed pawl which has its body portion disposed in a suitable opening or recess in the head of the handle and which co-engages with the ratchet wheel 36. The tail of the pawl projects beyond one of the sides of the head at its juncture with the handle 34, so that the head may be operated by the pressure of the thumb of the operator thereon and spring its engaging end out of action with the ratchet wheel 36.

The ratchet wheel 36 is fast on the extension 33 while the handle is mounted to freely rotate about the same. By referring to Fig. 4 it will be observed that the rotation of the handle from left to right will permit the pawl to idly ride over the teeth of the ratchet 36. When the handle is moved from left to right the pawl will engage the teeth of said wheel so that the handle, the ratchet and the part 2, will be locked together, thereby the turning of the handle from right to left will cause a corresponding movement to be imparted to the tool.

The threaded end 27 of the cutter advancing member 25 extends a suitable distance beyond the extension 3 of the sleeve 2 of the tool, and the head of the handle is preferably disposed flush with the end of the head extension 3. The numeral 37 designates a cap nut which engages with the threaded extension of the shank 26 and by adjusting the said nut the cutter advancing member 25 will be moved longitudinally to project the cutter holder to bring the cutter wheel into proper engagement with the tube to be cut.

When a tube of a greater diameter than that operated upon by the device just described, needs cutting, an annular bushing 38 is arranged to surround the head 1, the same being provided with a lateral opening 39 which registers with the opening 6 in the head 1, in which instance, a cutter holder of a greater length than that of the cutter holder 20 is employed. In other respects, the said holder is similar to that described. Also a collar of a larger size than that of the collar 13 is employed, the said collar, indicated by the numeral 40, being substantially similar in other respects to that of the collar already described.

From the above description, taken in con-

nection with the accompanying drawings, the simplicity of the device, as well as the advantages thereof will, it is thought, be perfectly apparent to those skilled in the art to which such invention appertains without further detailed description.

Having thus described the invention, what I claim is:

1. In a device of the class described, the combination with a head having a reduced extension thereon and provided with a radial opening, of a cutter-wheel carrier adapted to reciprocate in said opening and having a transverse opening slightly greater in diameter than the diameter of an alining opening in the head, said carrier being bifurcated to form cutter-wheel bearings, a cutter wheel in said bearings, stops projecting through the head and engaging flattened portions on the cutter-wheel carrier and a longitudinally movable cutter-wheel-carrier actuator, said actuator projecting through the opening in the head and through the opening in the carrier.

2. In a device of the class described com-

prising a head having a reduced portion and a removable flanged member on said reduced portion, said flanged member being adapted to engage the work to be operated upon, said head having a radial bore intersected by a longitudinal bore, a reciprocatory cutter-wheel carrier in the radial bore and having a bore intersected by the longitudinal bore in the head, a cutter-wheel on the head-actuator movable in the head and having a threaded portion extending beyond the reduced portion of the head, and a pawl-and-ratchet mechanism on the reduced portion of the head and an adjusting nut for actuating the actuator, said adjusting nut having one end resting against the pawl-carrying member of the pawl and ratchet mechanism and adapted to hold it in place.

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

BENJAMIN E. WEEKS.

Witnesses:

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A. MARMION.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."