(No Model.)

C. E. HUNTLEY.

TUBE CUTTER.

No. 343,957. Patented June 15, 1886.

Fig. 1.

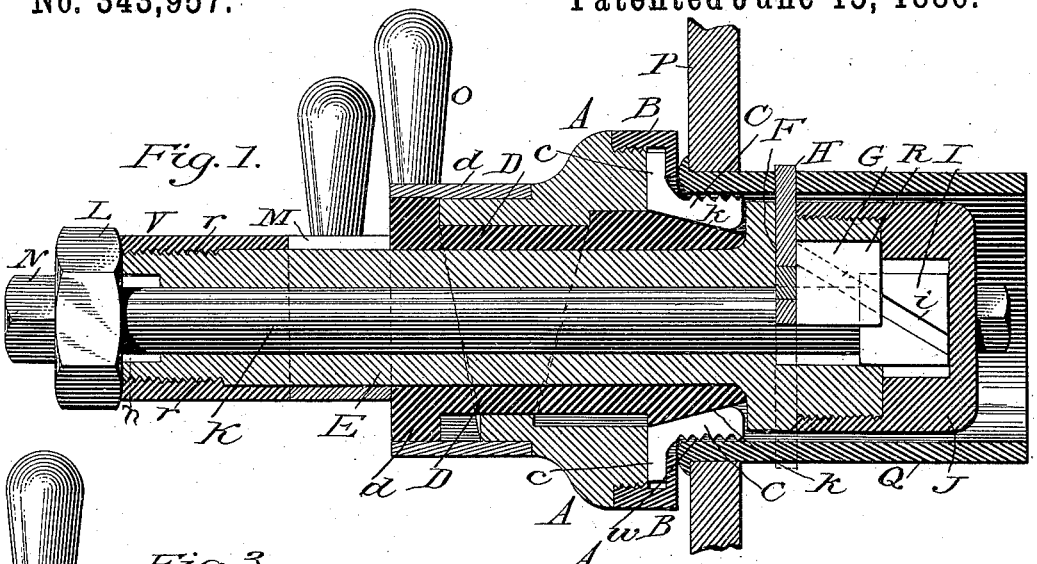


Fig. 3.

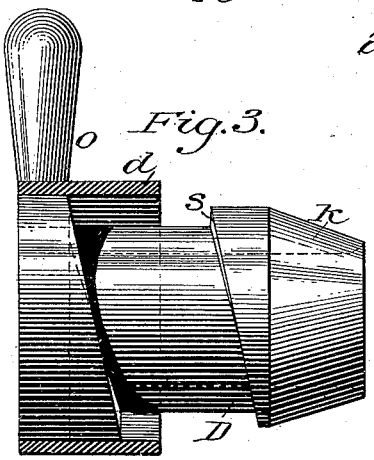


Fig. 2.

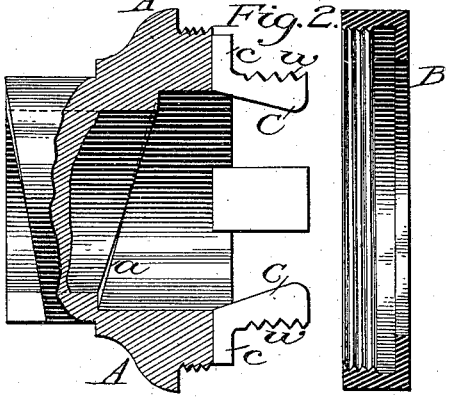


Fig. 4.

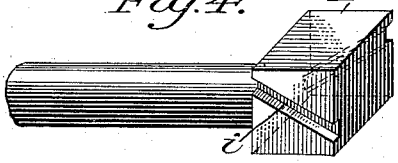


Fig. 6.

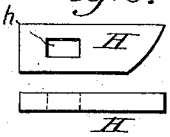
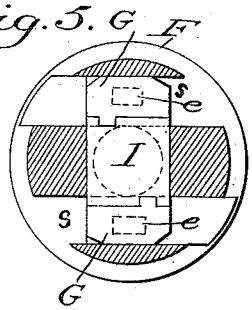
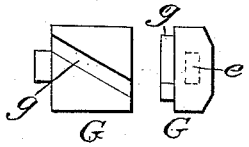


Fig. 5.





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UNITED STATES PATENT OFFICE.

CHARLES E. HUNTLEY, OF MUSKEGON, MICHIGAN, ASSIGNOR OF ONE-HALF TO WILLIAM H. PATTEN, OF SAME PLACE.

TUBE-CUTTER.

SPECIFICATION forming part of Letters Patent No. 343,957, dated June 15, 1886.

Application filed June 18, 1885. Serial No. 169,063. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. HUNTLEY, a citizen of the United States, residing at the city of Muskegon, in the county of Muskegon and State of Michigan, have invented a new and useful Device for Cutting Tubes from Steam-Boilers for the Purpose of Removing the Same for Repairs, &c., of which the following is a specification.

My invention relates to improvements in that class of tube-cutters that are inserted into the end of the tube, and are provided with adjustable knives or cutters for the purpose of cutting off the tube inside of the shell or head of the boiler; and the objects of my invention are, first, to provide a means of securing the tube-cutter to the head of the boiler for the purpose of holding it in position while in the act of cutting off the tube; second, to provide a means of adjusting the cut or feed of the cutters; and, third, to facilitate the cutting off and removing of tubes from steam-boilers. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section of my device, cut away for the purpose of showing the relative positions of its several parts. Fig. 2 is an annular shell, A, with parts broken away to show internal construction and an annular cap or flange, B. Fig. 3 is an external view of an annular sleeve, D, showing cam, &c. Fig. 4 is the device for adjusting the cutters. Fig. 5 is a face view of the head, showing the arrangement of the cutters; and Fig. 6 is the cutters or knives.

Similar letters refer to similar parts throughout the several views.

The shell A, the cap B, the jaws C, and the sleeve D constitute the appliance for fastening and holding my device in position. The sleeve E, the head F, the cutters H, and the ratchet M constitute the appliance for cutting the tube, and the nut L, the collar N, the shaft K, center blocks, I, and the cutter-block G constitute the appliance for adjusting and regulating the feed of the cutters.

The shell A is an annular sleeve fitted over the outside of the annular sleeve D, and is provided at one end with a screw for the reception of the annular collar or flange B, and on its inner surface with a cam, *a*, made to fit into a corresponding cam upon the sleeve D, and the annular collar B is provided at one end with a screw for the purpose of attaching it to the sleeve A, and at the other end or side with a flange turned in around its entire circumference and standing a sufficient distance from the face of the sleeve A to form a groove for the reception and free action of the jaws C.

The jaws C are provided upon one surface with an incline, *k*, which fits upon a corresponding incline upon the end of the sleeve D, and the opposite side is provided with teeth *w*, which act upon the inner surface of the tube Q, for the purpose of holding my device in position. Upon one end of these jaws is formed an arm, *c*, which is arranged to work freely in the groove formed by the end of the sleeve A and the flange upon the collar B.

D is a second annular sleeve, fitted to work inside of the annular sleeve A and outside of the hollow shaft E. This sleeve is provided at one end with an incline, *k*, Figs. 1, 3, which acts upon a corresponding incline upon the surface of the jaws C, and at the other end with a handle, O, and a flanged collar, *d*, which laps over and bears against a shoulder on the sleeve A. On the outside circumference of this sleeve is formed cam *s*, which is arranged to mesh into a corresponding cam, *a*, arranged upon the inner circumference of the sleeve A. The hollow shaft E passes through the sleeve D, and is made hollow through its entire length for the reception of the stem or shaft K. It is provided at one end with a cutter-head, F, and terminates with a chambered recess, R, which is provided on its outer circumference with a screw for the reception of the cap J. The opposite end of this shaft K is provided with a screw, *r*, for the reception of the nut L, and with a ratchet, M. The head F is slotted to receive the cutters, as in Fig. 5, and forms a part of the shaft K.

The cap J is chambered for the reception of the center block, I, and is provided at one end with a screw situated upon its inside circumference, arranged to mesh into the screw on the outside circumference of the chambered recess R, and acts not only as a guard for the center

block, I, and the cutter-blocks G, but as a portion of the cutter-head, and is made to fit closely into the tube that the device is intended to work upon.

M is an ordinary ratchet attachment, intended to act upon the periphery of the shaft E, for the purpose of turning the cutter-head F when in operation.

The cutter-blocks G (of which there are two) are provided upon one surface with a diagonal tongue, *g*, which is arranged to work freely in a corresponding groove, *i*, in the center block, I, and on one surface with a lug, *e*, which is arranged to fit into a corresponding mortise in the cutters, and are situated inside of the chambered recess R. The knives H are made to work freely, but closely, in the grooves S in the cutter-head, and are provided with a mortise, *h*, which is arranged to receive the lug *e* on the cutter-blocks.

The center block, I, is provided with two diagonal grooves, *i*, that are arranged to receive corresponding tongues on the cutter-blocks. It is attached to the stem *k'*, and is held in position by the recessed cap J. The shaft or rod K is attached at one end to the center block, I, and passes through the entire length of the hollow shaft E, terminating at the other end with the collar *n* and the nut N, which forms a collar for the reception and free action of the nut L. The nut L is provided with a sleeve, V, which encompasses the end of the shaft E, and is provided with a thread arranged to mesh into a corresponding thread on the shaft. The head of this nut is arranged to turn freely between the nut N and the collar *n* on the rod K.

To use my device, insert the head F J into the tube Q until the collar B comes in contact with the end of the boiler P. Then turn the handle O slightly to one side, which, by means of the cams *a s*, will force the sleeve D forward, causing the incline *k* to act upon the corresponding incline on the face of the jaws, thus forcing the jaws out against the face of the tube, by which means the device is held firmly in position. Turn the cutter-head F by means of the ratchet M, acting upon the shaft E. To increase or diminish the cut of the knives or cutters, turn the nut L, which will draw or shove the rod K, giving an endwise motion to the center block, I, which, by means of the diagonal grooves and tongues before referred to, will give a corresponding lateral motion to the cutter-blocks and vary the cut of the machine accordingly.

I am aware that prior to my invention tube-cutters have been made that act upon the inside of the tube. I therefore do not claim such an invention, broadly; but,

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

1. The combination, in a tube-cutting machine, of the annular sleeve A, provided with a cam upon its inner circumference, the annular collar B, the jaws C, the annular collar D, having incline *k*, handle O, and cam *s*, substantially as and for the purpose set forth.

2. In a tube-cutting machine, the sleeve A, the collar B, the jaws C, and the sleeve D, in combination with the hollow shaft E, the cutter-head F, the cutter-block G, the cutters H, and the ratchet M, substantially as and for the purpose set forth.

3. In a tube-cutting machine, the sleeve A, the collar B, the jaws C, the sleeve D, the hollow shaft E, the ratchet M, the cutter-head F, the cutters H, and the cap J, in combination with the cutter-blocks G, the center block, I, the rod K, and the nut L, substantially as and for the purpose set forth.

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Witnesses:
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