

No. 695,597.

Patented Mar. 18, 1902.

G. A. BELAND.  
BOILER TUBE CUTTER.

(Application filed Aug. 3, 1901.)

(No Model.)

Fig. 1.

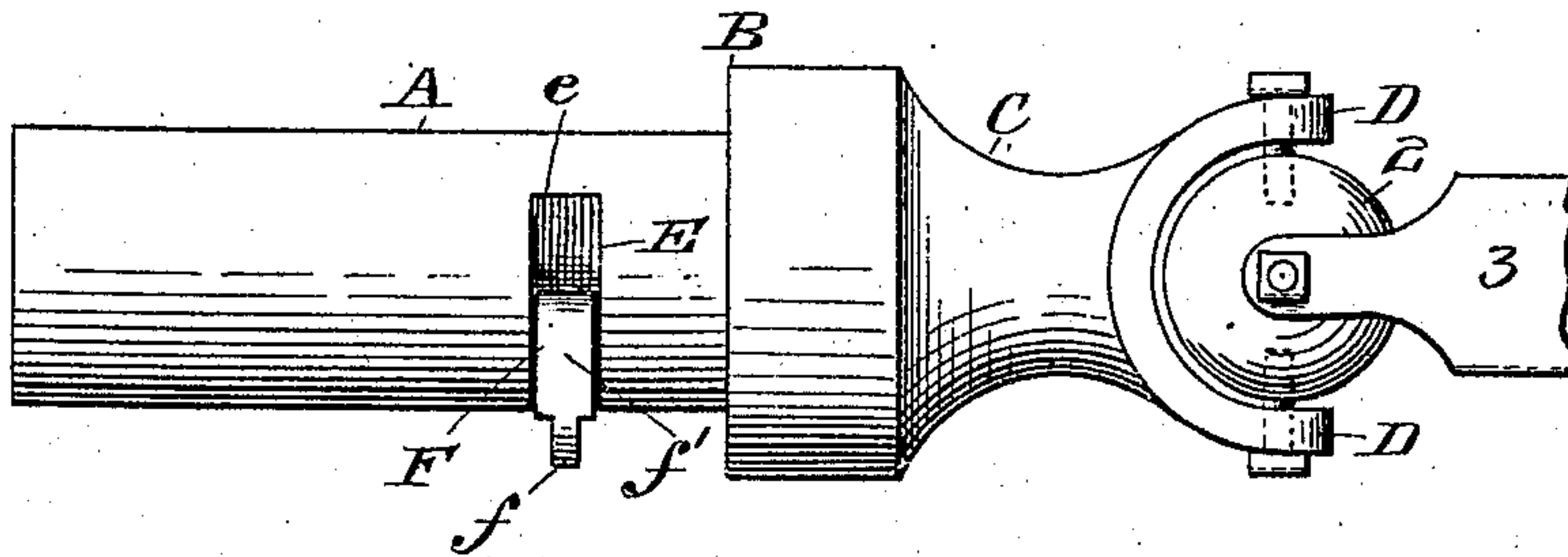


Fig. 2.

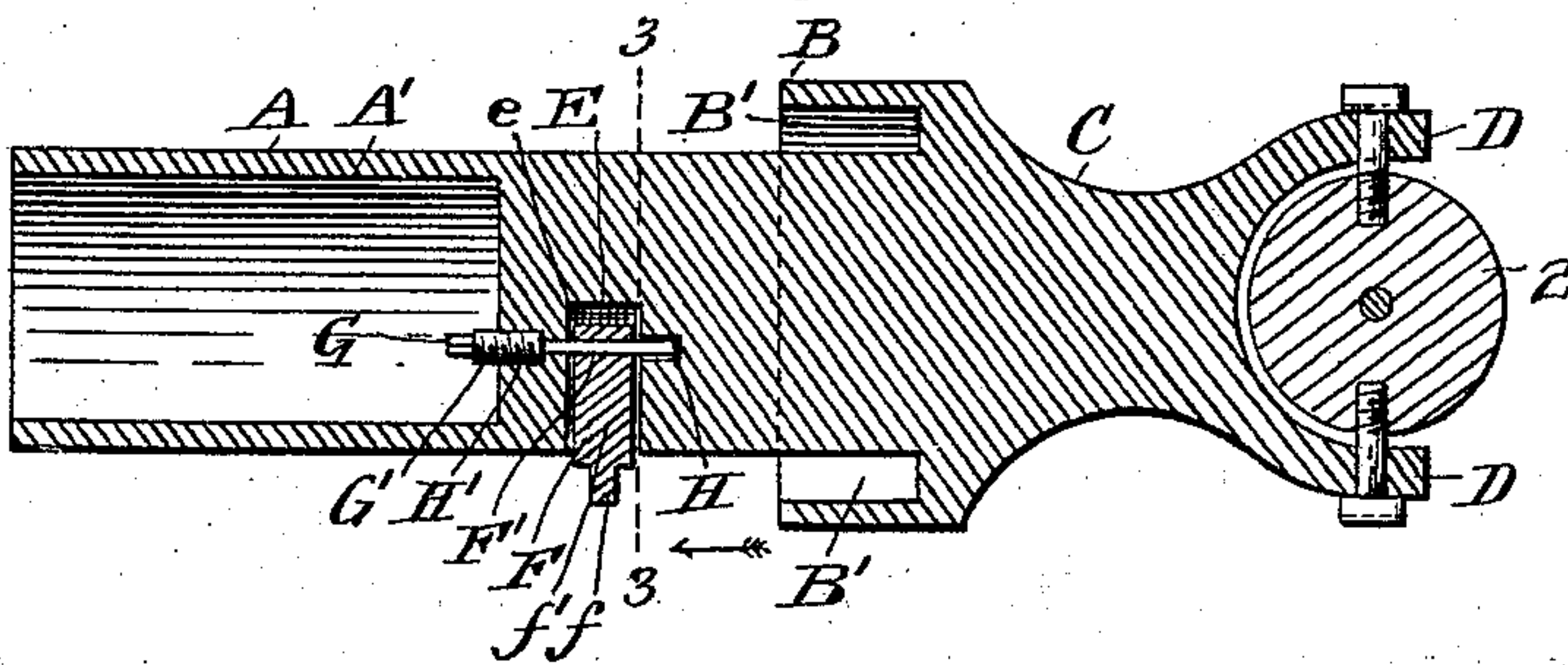


Fig. 3.

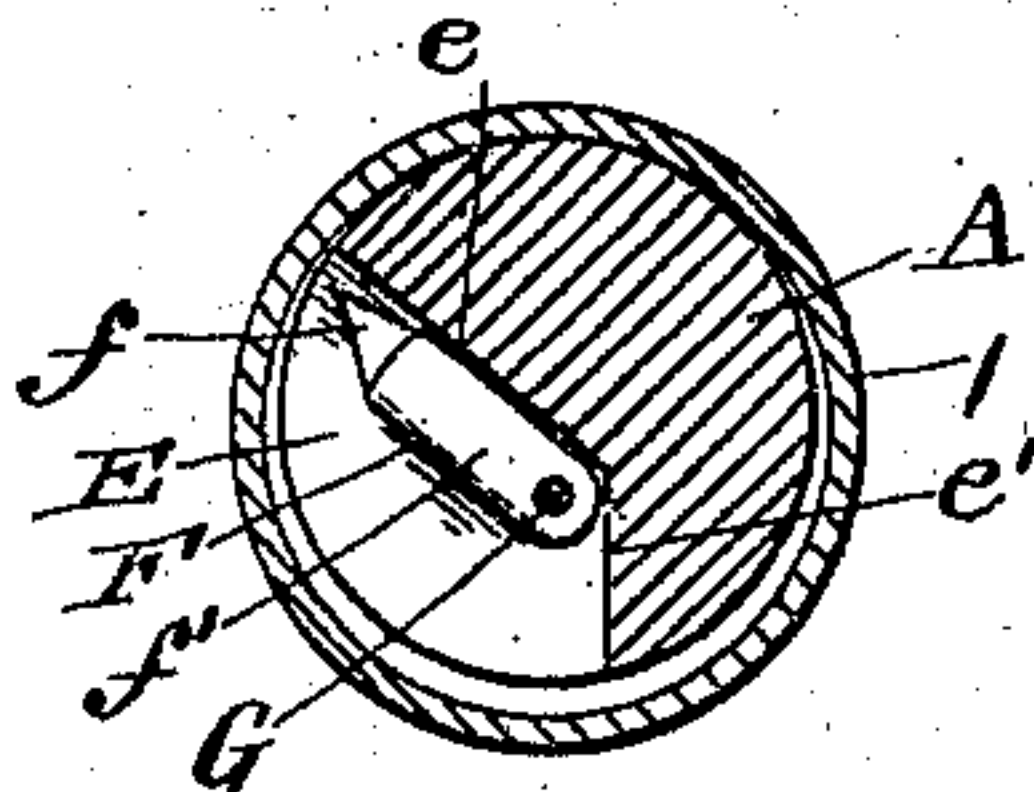


Fig. 4.

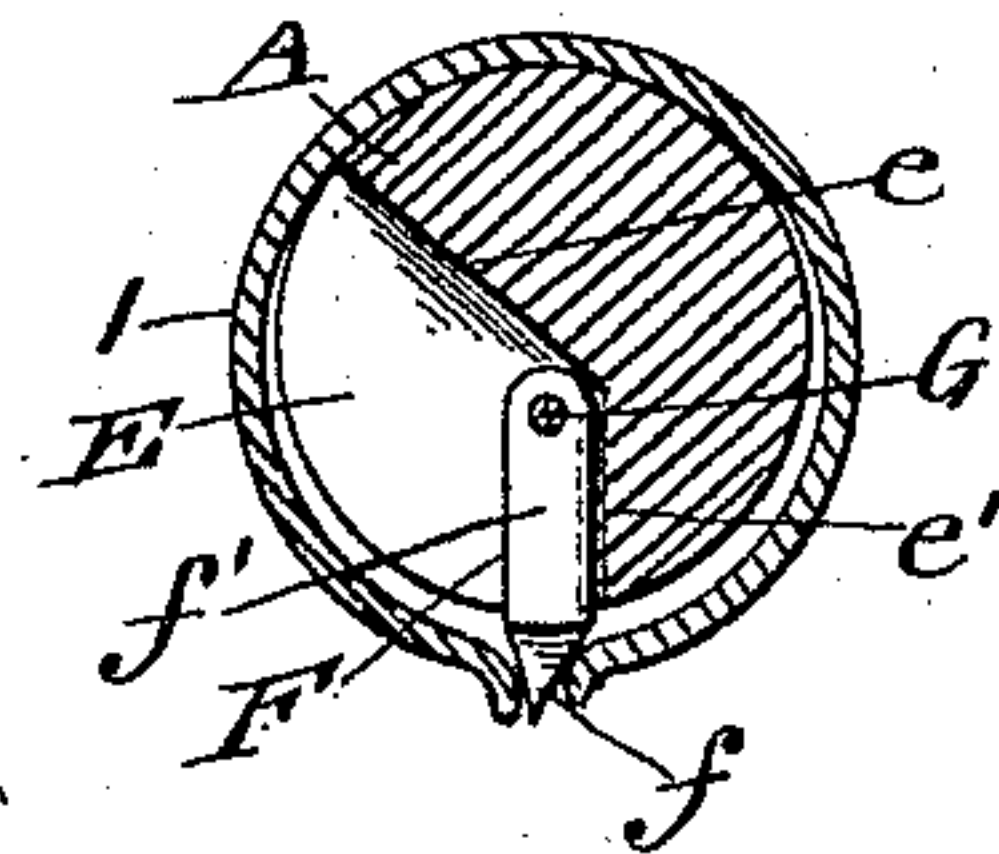
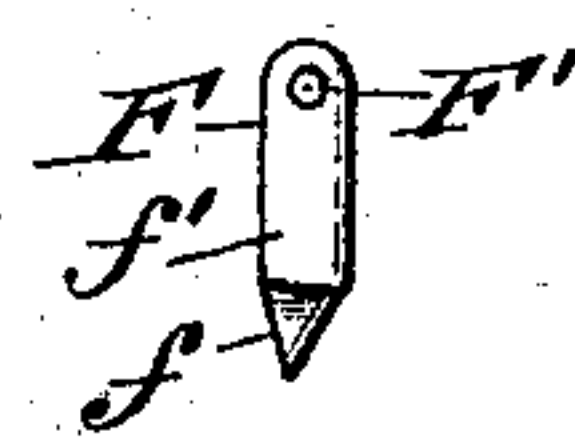


Fig. 5.



Fig. 6.



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# UNITED STATES PATENT OFFICE.

GEORGE A. BELAND, OF CENTRALIA, ILLINOIS.

## BOILER-TUBE CUTTER.

SPECIFICATION forming part of Letters Patent No. 695,597, dated March 18, 1902.

Application filed August 3, 1901. Serial No. 70,801. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE A. BELAND, a citizen of the United States, residing at Centralia, in the county of Marion and State of Illinois, have invented certain new and useful Improvements in Boiler-Tube Cutters, of which the following is a specification.

My invention relates to devices for cutting the tubes of tubular boilers, and particularly to that class of cutters that cut the tube from the inside, and has for its object to provide a device that will dispense with the complicated machinery usually employed in this class of device, and consequently is simple in operation, easy to repair, and reasonable in cost of manufacture.

Other advantages of my invention will be more fully disclosed in the subjoined specification and by reference to the drawings, in which—

Figure 1 is a longitudinal view of my invention. Fig. 2 is a longitudinal sectional view through the center of Fig. 1; Fig. 3, a cross-section of the cutter on the line 3 3 of Fig. 2 and a section of a tube, showing the cutter in the position when the device is inserted in the tube; Fig. 4, a like view showing the cutter in operative position, and Figs. 5 and 6 detail views of the cutting-blade.

In the drawings, in which similar characters of reference indicate like parts throughout the several views, A represents the cylindrical portion of my invention, which is adapted to be inserted in the boiler-tube, (indicated by the numeral 1 in Figs. 3 and 4.) In order to reduce the weight of the cylinder A, it is hollowed out, as shown at A' in Fig. 2.

B represents a shoulder portion larger in diameter than the cylinder A, and which has an annular groove B' cut therein, the inner wall of which is of the same diameter as the cylinder A and a continuation thereof. The purpose of the annular groove B' is to receive the end of the boiler-tube 1, and hence is made of any desired width and depth in order to insure a uniform length of the tubes when cut off, it often occurring that the tubes before being cut are of irregular length from the flue-sheet, and to prevent having to make two cuts off the end of the longer tubes, as might be necessary if the groove B' was not

provided, the end of the tube is received in the groove, and but one cut is necessary.

Above the shoulder B a head C projects, having the U-shaped end D, in which is journaled any suitable universal joint 2, connected to the end of a shaft 3. The shaft and joint I do not claim as my invention, as any suitable construction may be substituted therefor.

In the solid part of the cylinder A a groove E is cut on the non-radial planes  $e$  and  $e'$ , which are at an obtuse angle to each other, and pivoted therein is the cutting-blade F, which is held in place by the pin G, inserted in the bore H of the cylinder A and the bore F' of the cutter F. The cutting-blade F is made with cutting edge  $f$  narrower than the body  $f'$ , which construction is designed to add solidity to the blade, as well as provide a narrow cutting edge. The plane  $e$  is made of such a length that when the cutting-blade F is in an inoperative position, as shown in Fig. 3, the point of the cutting-blade is within the plane of the outer surface of the cylinder A, while the plane  $e'$  is of sufficient length to allow the cutting edge  $f$  and a small part of the body  $f'$  of the cutting-blade F to be outside the plane of the outer surface of said cylinder A when the device is in the operative position shown in Fig. 4. By this construction it may be readily seen that by turning the device in one direction the cutting edge  $f$  cuts the tube 1, while by turning the device in the opposite direction the cutting edge may be removed from the tube 1 and hidden in the groove E.

The pin G is preferably made with a screw-threaded portion G', adapted to be screwed into the threaded portion H' of the bore H to retain the pin G in said bore, while the head of the pin G is made square to receive a key for seating and unseating the pin.

The operation is as follows: The cutting-blade F being in the position shown in Fig. 3, the cylinder A is inserted in the tube 1 the desired depth. Power is then applied through the universal joint 2 and shaft 3 and the cylinder revolved in the right direction until the tube is cut.

Having thus described my invention, what I claim is—

In a boiler-tube cutter, the combination of

a cylinder rotated by means of a shaft and universal joint, an enlarged shoulder on said cylinder grooved annularly, a segmental groove cut into said cylinder by non-radial  
5 planes at an obtuse angle to each other, said cylinder having an annular recess cut into its end and a hole screw-threaded for a portion of its distance cut into said cylinder parallel with the sides of the cylinder and intersecting said segmental groove near the angle  
10 formed by said non-radial planes, a cutting-blade having a heavy body portion and a narrowed cutting edge integral therewith in-

serted in said segmental groove and having a hole in its body portion to register with the  
15 hole in the cylinder, and a pin screw-threaded near its end to seat in the hole in said cylinder and cutting-blade, substantially as shown and described.

In testimony whereof I hereto affix my signature in the presence of two witnesses. 20

GEORGE A. BELAND.

Witnesses:

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WALTER A. MATHIS.