(No Model.)

J. FITZPATRICK.

FLUE CUTTER.

No. 565,850. Patented Aug. 11, 1896.

Fig. 1.

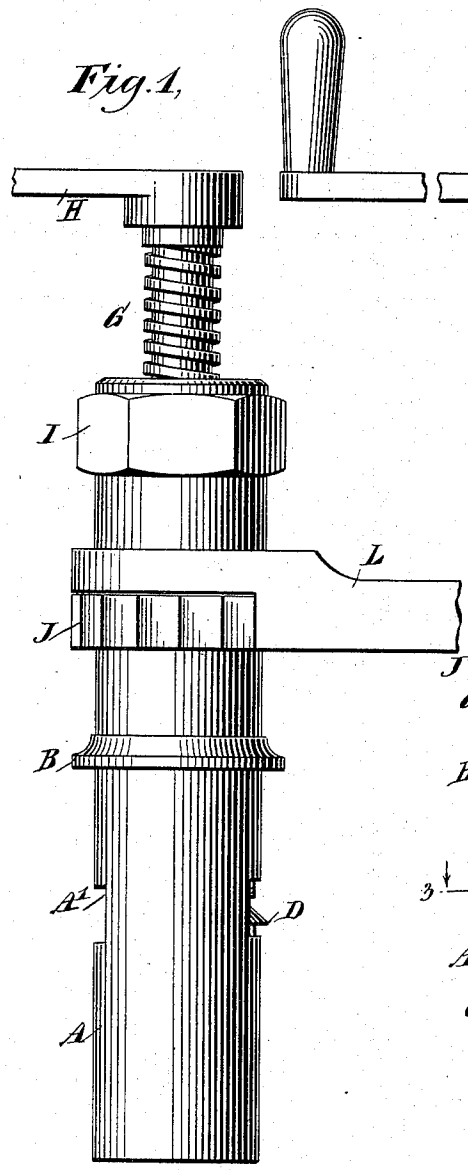


Fig. 2.

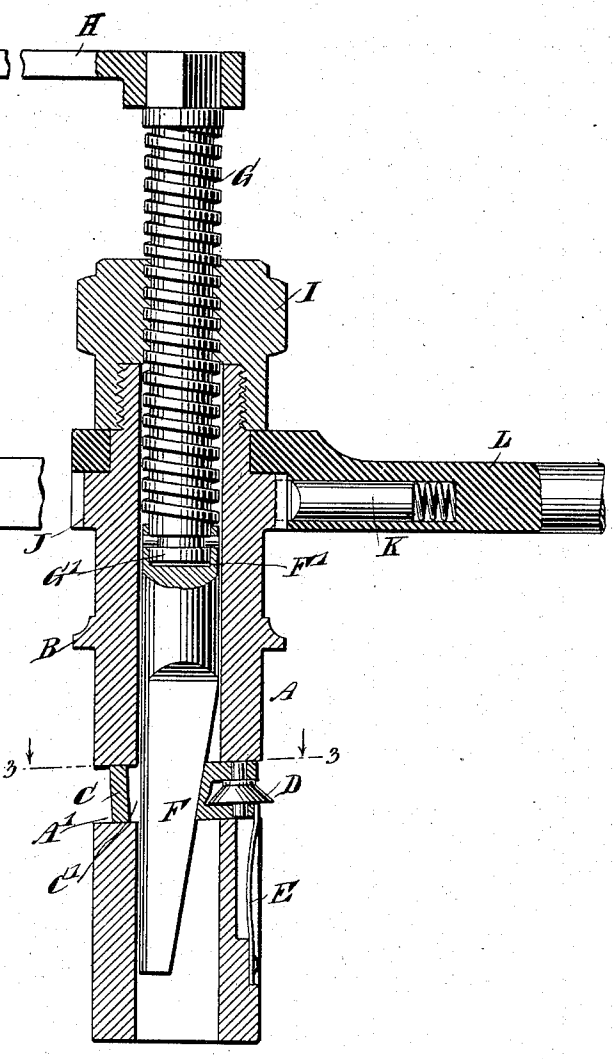
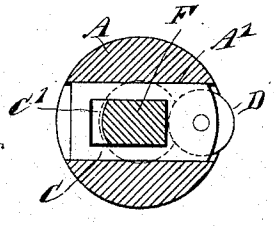


Fig. 3.



WITNESSES:

Edward Thorpe.

Rec'd. Forster Jr.

INVENTOR

J. Fitzpatrick

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JEREMIAH FITZPATRICK, OF RATON, TERRITORY OF NEW MEXICO.

FLUE-CUTTER.

SPECIFICATION forming part of Letters Patent No. 565,850, dated August 11, 1896.

Application filed October 9, 1895. Serial No. 565,138. (No model.)

To all whom it may concern:

Be it known that I, JEREMIAH FITZPATRICK, of Raton, in the county of Colfax and Territory of New Mexico, have invented a new and Improved Flue-Cutter, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved flue-cutter, which is simple and durable in construction, very effective in operation, and arranged to properly cut the flue inside of the flue-sheet of the boiler for conveniently withdrawing the cut parts of the flue.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claim.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement. Fig. 2 is a central longitudinal sectional view of the same, and Fig. 3 is a transverse section of the same on the line 3 3 of Fig. 2.

The improved flue-cutter is provided with a cylinder A, the outside diameter of which is somewhat less than the interior diameter of the flue to be cut, and on said cylinder A is formed or secured a collar B, adapted to abut against the outer end of the flue. In the forward end of the cylinder A is arranged a transverse opening, diagonally disposed with relation of the axis of the cylinder, and forming a guideway A′, in which is fitted to slide a carrier C, in which is journaled a circular cutter D, adapted to cut the flue from the inside as the carrier C is moved outward. The cutter C has a straight side from edge to edge, parallel with the walls of guideway A′, and its opposite side is beveled to an edge. A spring C, secured in the forward end of the cylinder A, presses on the carrier C, so as to hold the latter normally in an innermost position, and to return said carrier to an innermost position after the flue is cut.

The carrier C is provided with an opening C′, through which passes a wedge F, mounted to slide longitudinally in the bore of the cylinder A, so as to move the carrier C outward against the tension of the spring E. The wedge F is provided at its base end with a socket F′, in which is mounted to turn the grooved end G′ of a feed-screw G, carrying at its outer end a handle H for conveniently turning said feed-screw, the latter screwing in a nut I, secured to the outer end of the cylinder A. On the cylinder A is formed or secured a ratchet-wheel J, engaged by a spring-pressed pawl K, held in a handle L, fulcrumed on the said cylinder between the ratchet J and the inner end of the nut I.

Now it will be seen that when the carrier C is in an innermost position the cutting-edge of the cutter D is within the exterior surface of the cylinder A, and the latter can be readily inserted in the flue to be cut, the outer end of the flue being engaged by the collar B. When the two are in this position, the operator revolves the cylinder A by manipulating the arm L in the usual manner, so that the pawl K, by engaging a tooth of the ratchet-wheel J, turns the cylinder A, while the handle L is swung in one direction, and during the return or backward movement of the handle the pawl K glides over the teeth of the ratchet-wheel. In turning the cylinder A the cutting-edge of the cutter D is moved on the inner surface of the flue and in a circle, and at the same time the carrier C is fed outwardly by the operator turning the handle H of the feed-screw G to move the wedge F inwardly within the cylinder A. Thus a turning movement is given to the carrier C, carrying the cutter D, and at the same time an outward sliding motion is imparted to the said carrier by the action of the wedge F. The flue is thus cut by the cutting-edge of the cutter D, and when the flue is entirely cut through the handle H is turned in the opposite direction, so as to move the wedge F outwardly and to cause an inward sliding of the carrier C by the action of the spring E. The cylinder A can then be conveniently removed from the cut flue, and the cut parts of the flue can be readily taken out of the flue-sheets.

By arranging the guideway A′ so that the cutter will move outward diagonally with relation to the axis of the cylinder it is found that a pipe may be cut entirely through without the formation of a bur on the outer side, as happens when the ordinary cutters are used, so that the pipe may be easily removed

through the opening in the tube-sheet, and thus rendering it unnecessary to split the pipe longitudinally before it can be removed.

It will be seen that this tool is very simple and durable in construction, can be conveniently manipulated, and requires comparatively little power.

It is understood that the cutter can be used on either side of the cylinder.

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

A flue-cutter consisting of a cylindrical body portion having a passage extending longitudinally through it and having a counter-passage extending transversely through the body portion and diagonally with relation to the longitudinal center thereof, the body portion having an annular ratchet-rim formed thereon and a reduced screw-threaded end adjacent to said ratchet-rim, a cutter-carrier movable longitudinally through the transverse passage, a cutter carried by the cutter-carrier and having an axis out of parallel with the longitudinal line of the body portion, the body portion having a recess in its side at a point adjacent to the transverse passage, a spring located in said recess and engaging the cutter-carrier, a wedge-shaped mandrel passed through an opening in the cutter-carrier and longitudinally movable in the body portion, a nut held on the reduced screw-threaded end of the body portion, a screw-feed coöperating with the internal threads on the nut, an arm having a collar lying against the ratchet-rim and pressed by the nut, and a spring-pressed pawl carried by the arm, the pawl coöperating with the teeth on the ratchet-rim, substantially as described.

JEREMIAH FITZPATRICK.

Witnesses:
JAMES G. YOUNG,
TIMOTHY SEXTON.