No. 733,642. PATENTED JULY 14, 1903.

J. C. GROBLE.

FLUE CUTTER.

APPLICATION FILED MAR. 19, 1903.

NO MODEL.

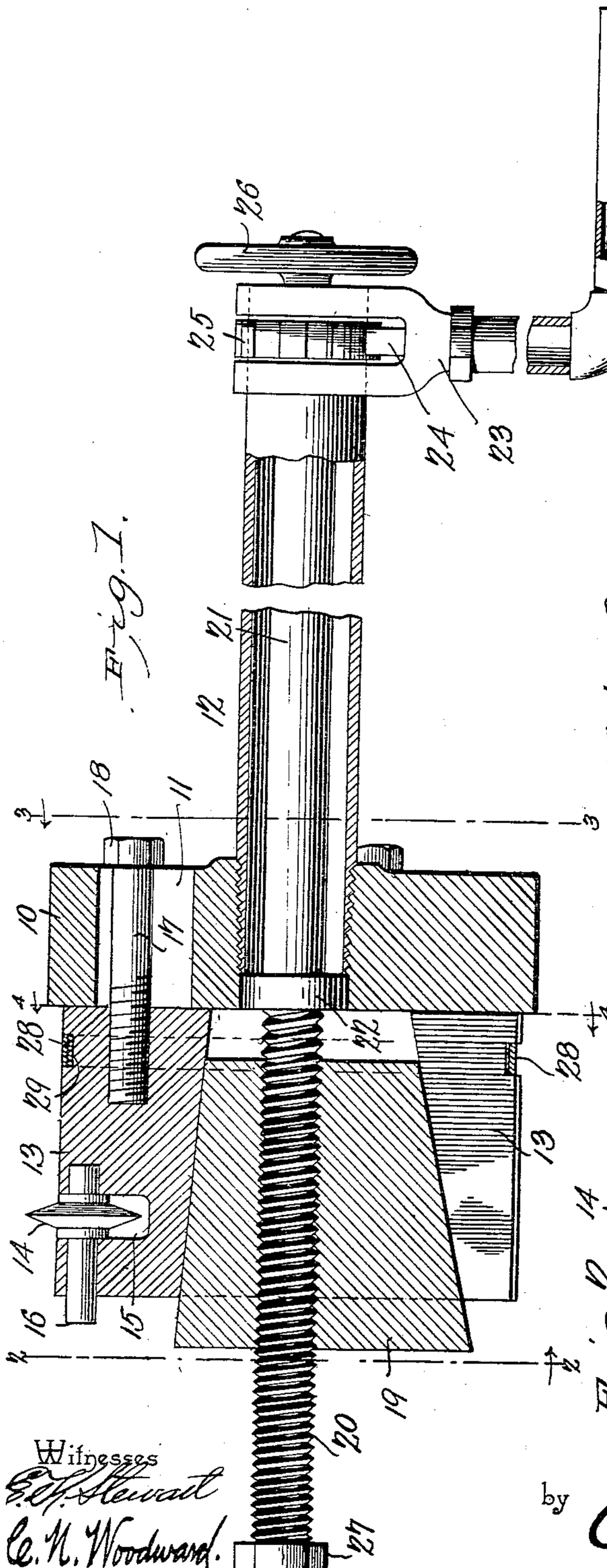

Fig. 1.

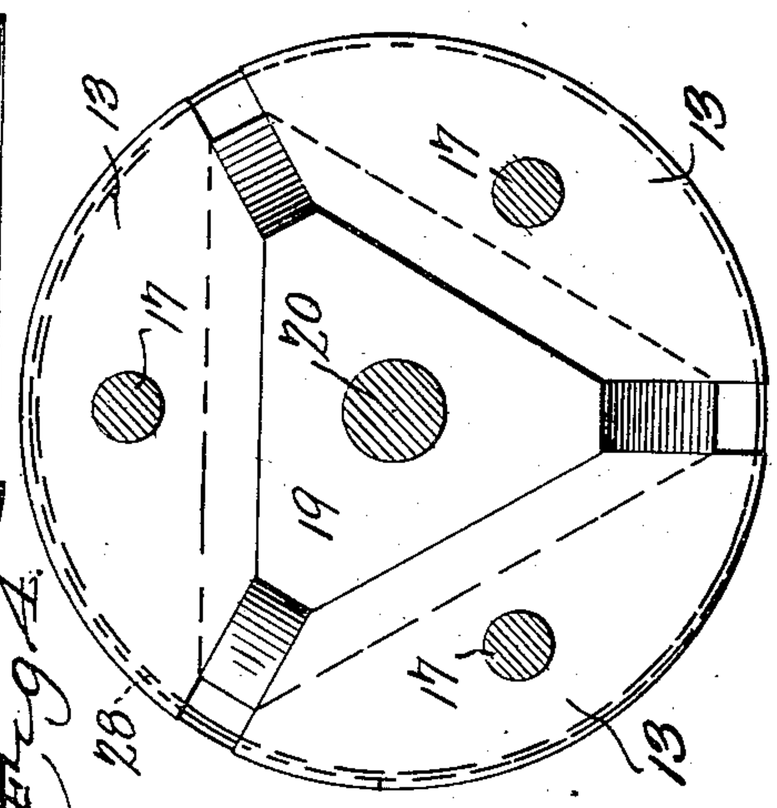

Fig. 4.

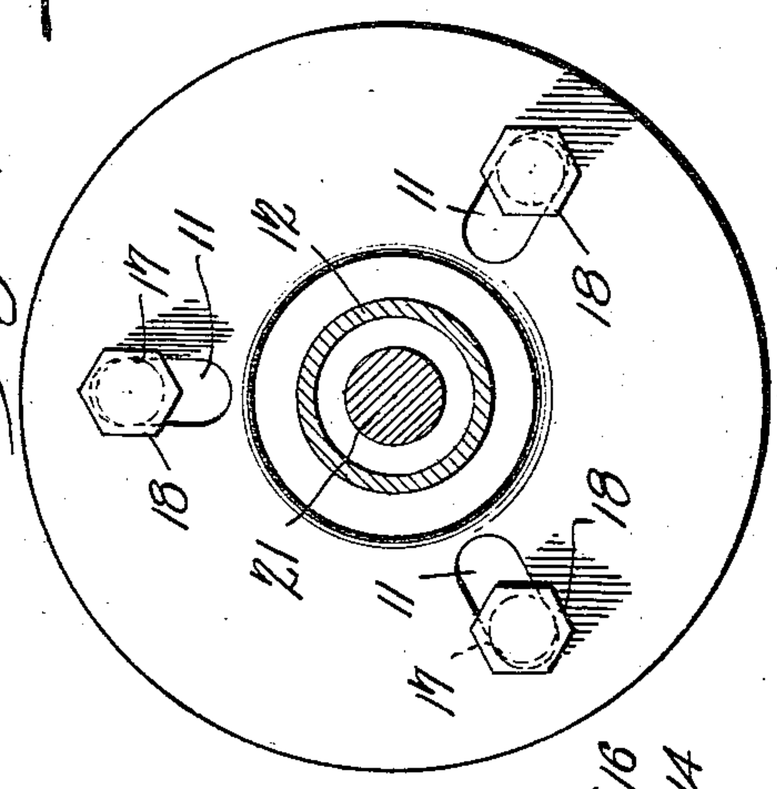

Fig. 3.

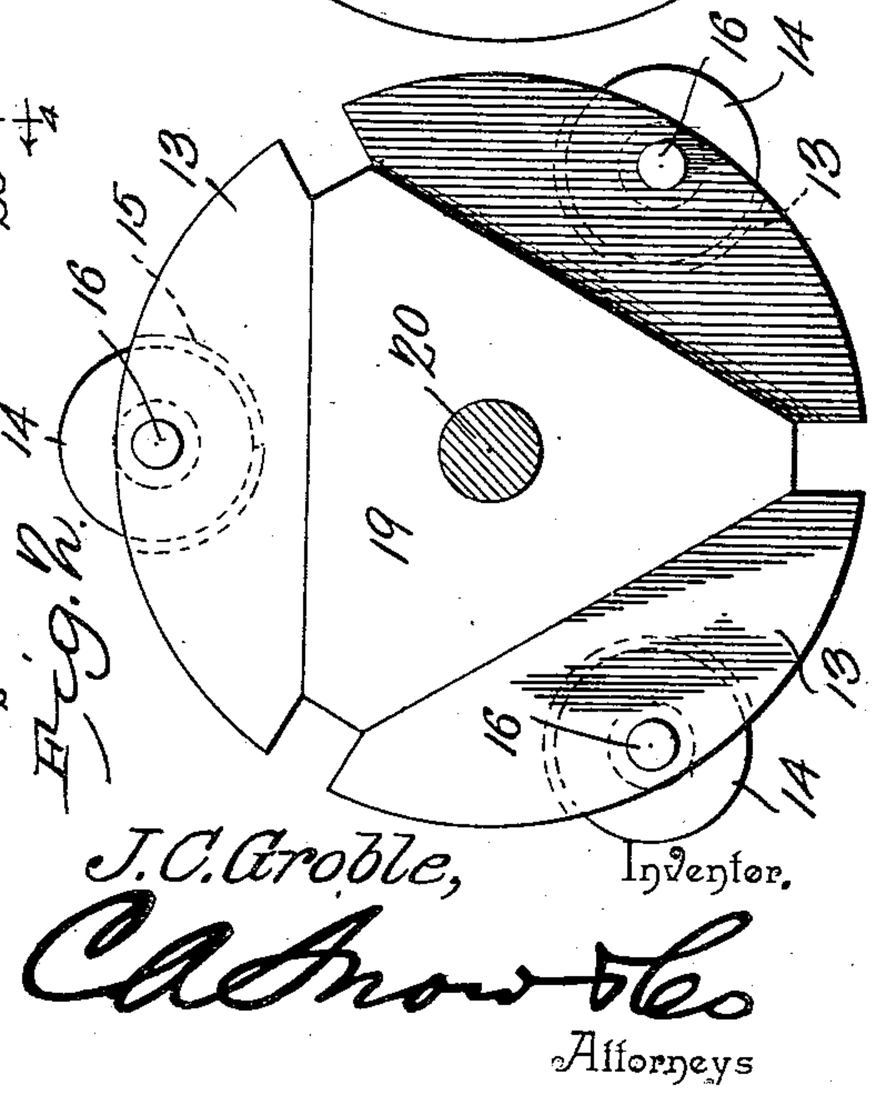

Fig. 2.

Witnesses
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No. 733,642. Patented July 14, 1903.

UNITED STATES PATENT OFFICE.

JACOB C. GROBLE, OF ELWOOD, INDIANA.

FLUE-CUTTER.

SPECIFICATION forming part of Letters Patent No. 733,642, dated July 14, 1903.

Application filed March 19, 1903. Serial No. 148,603. (No model.)

To all whom it may concern:

Be it known that I, JACOB C. GROBLE, a citizen of the United States, residing at Elwood, in the county of Madison and State of Indiana, have invented a new and useful Flue-Cutter, of which the following is a specification.

This invention relates to devices employed for severing pipes and tubes of various kinds, such as boiler-flues and the like, and has for its object to simplify and improve the construction of devices of this class to enable the pipe or flue to be severed without mutilation thereof and to provide a device which may be expanded to adapt it to flues or pipes of various sizes and which may be extended longitudinally to enable it to operatively engage any point in the tube or flue.

The invention consists in certain novel features of the construction, as hereinafter shown and described, and specified in the claims.

In the drawings illustrative of the invention, in which corresponding parts are denoted by like designating characters, Figure 1 is a longitudinal sectional elevation. Fig. 2 is an end view showing the inner or cutting end of the implement. Fig. 3 is a transverse section on the line 3 3 of Fig. 1. Fig. 4 is a transverse section on the line 4 4 of Fig. 1.

This improved implement consists of a stock or supporting member 10, preferably circular in form and provided with spaced radiating slots 11 and with a tubular extension 12, projecting centrally therefrom and preferably united detachably thereto, as by a screw-thread, as shown in Fig. 1. The tubular extension 12 may be of any required length, and by detachably connecting it to the stock various lengths of this member may be employed, as hereinafter explained.

Movably connected to the stock 10 is an expanding head formed in sections 13, radially disposed and each section carrying one or more cutting-wheels 14, rotatively mounted in cavities 15 and detachably supported upon pins 16, which are removable through the outer ends of the sections to enable the wheels to be renewed or repaired. The inner surfaces of the head-sections are inclined, as shown in Fig. 1, and each section is provided with a guide-pin 17, extending through one of the guide-slots 11 in the stock 10 and provided exteriorly of the stock with an enlarged head 18 to prevent the passage of the pin through the slot. This construction permits the head-sections 13 to be radially adjusted relative to the center of the stock and tubular extension and held against longitudinal movement. Within the cavity formed by inclined faces of the assembled sections 13 a block 19 is supported, with its outer surface inclined to conform to the inclined inner surfaces of the head-sections, as shown clearly in Fig. 1. The block 19 is provided with a longitudinal threaded aperture in which the threaded portion 20 of a mandrel 21 operates and is extended beyond the larger or rear end of the block, and the stock 21 thereof extending through the tubular member 12, as shown. The mandrel will be provided with a collar 22 at the junction of its threaded and unthreaded portions, which engages a shoulder in the stock 10 and limits the forward movement of the mandrel. The outer end of the tubular member 12 is provided with means for forcibly rotating it, consisting, preferably, of a ratchet-lever 23, provided with a pawl 24, operatively engaging a ratchet-wheel 25, fast on the member 12, the lever being free to rotate upon said member. The outer end of the mandrel extends through the ratchet-wheel and is provided with a hand-wheel 26, by which it may be rotated. The free end of the threaded portion of the mandrel is provided with a "head" 27 to prevent the accidental disengagement of the block 19 therefrom.

Surrounding the divided head formed by the sections 13 is a yieldable resilient band 28, preferably formed of a plurality of coils or wrappings of a spring-like structure, which exerts its force to hold the sections in their inward positions and prevent displacement when the pressure is withdrawn, but which will yield to the action of the block 19. The sections 13 are provided with circumferential registering grooves 29 to receive the resilient band 28, as shown. By this simple arrangement the rotation of the device in one direction by the lever-and-ratchet mechanism will carry the wheels 14 around in engagement with the interior of the tube to be severed, and by rotating the mandrel by means of the hand-wheel 26 the block 19 will be drawn in-

ward against the sections 13 and expand them, and thus increase the diameter of the path of the wheels and gradually sever the tube with a smooth uniform cut without mutilating or disfiguring the tube.

The parts will preferably be of steel properly tempered.

A number of the tubular members 12 and mandrels of different lengths may be furnished with one head or stock, so that the device may be adapted to sever tubes at any point, and these changes may be very quickly made, thus materially increasing the efficiency of the device.

As many of the cutting-wheels 14 and the sections 13 may be employed as desired, but three of each will generally be employed, as illustrated.

Having thus described my invention, what I claim is—

1. A flue-cutter consisting of a supporting-stock having radiating guide-slots, a divided head having inclined inner surfaces and carrying cutting-wheels, guide-pins extending from said head members through said guide-slots, an expanding block having inclined sides corresponding to and engaging the inclined surfaces of said divided-head members, and means for forcibly moving said expanding block, substantially as described.

2. A flue-cutter consisting of a supporting-stock having a tubular extension detachably connected to said stock, a divided head having inclined inner surfaces and carrying cutting-wheels, means for connecting said head members to said stock and permitting the radial movement thereof, an expanding block having inclined sides corresponding to and operatively engaging the inclined surfaces of said divided-head members and provided with a longitudinal threaded aperture, a threaded mandrel engaging said threaded aperture, and extending through said tubular extension and means operating in advance of said extension for rotating said mandrel, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JACOB C. GROBLE.

Witnesses:
LEO F. GRIFFITH,
FRED. C. HANKER.