3 Sheets--Sheet 1.

L. W. STOCKWELL.

Machines for Threading and Cutting Off Tubes.

No. 151,517. Patented June 2, 1874.

Fig. 1.

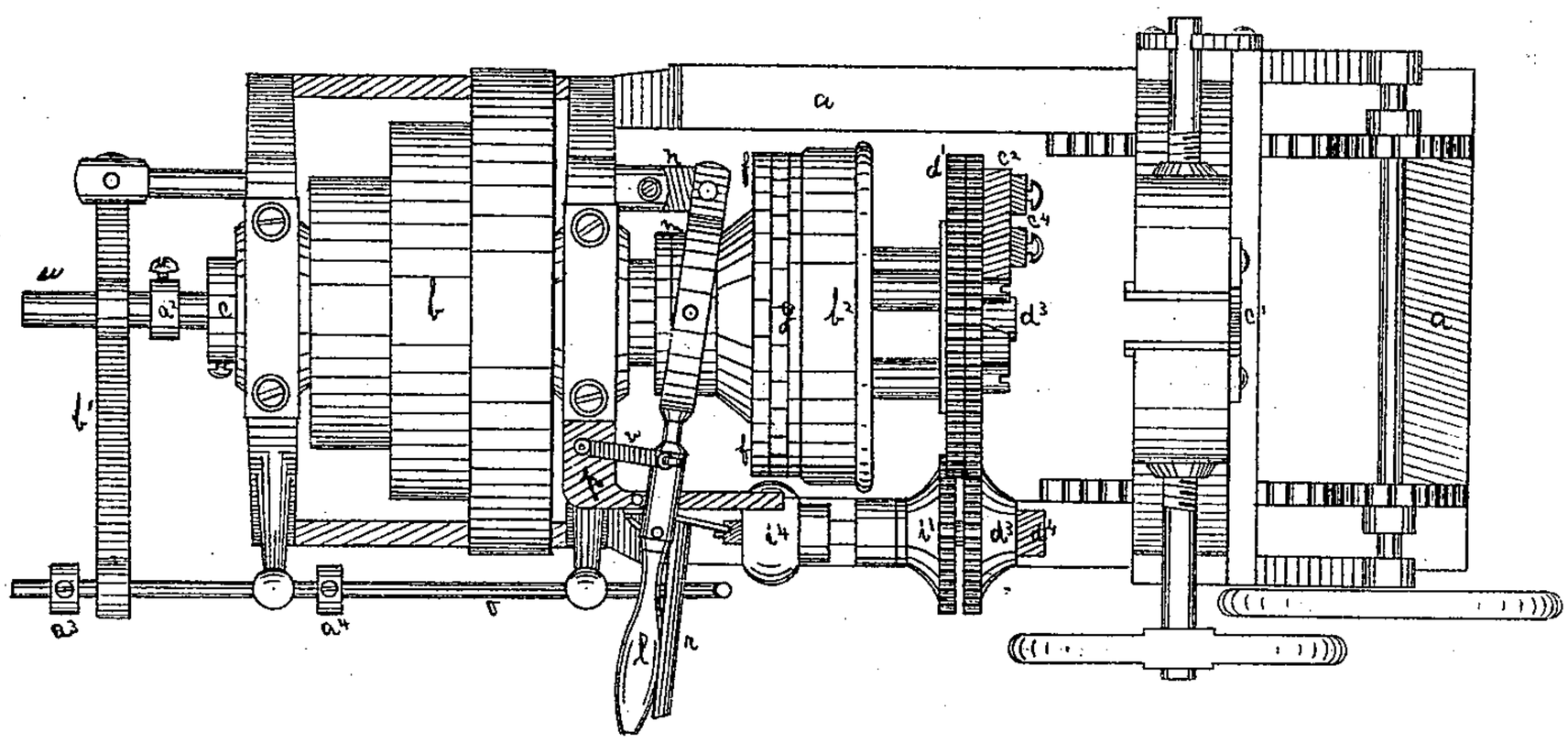


Fig. 6

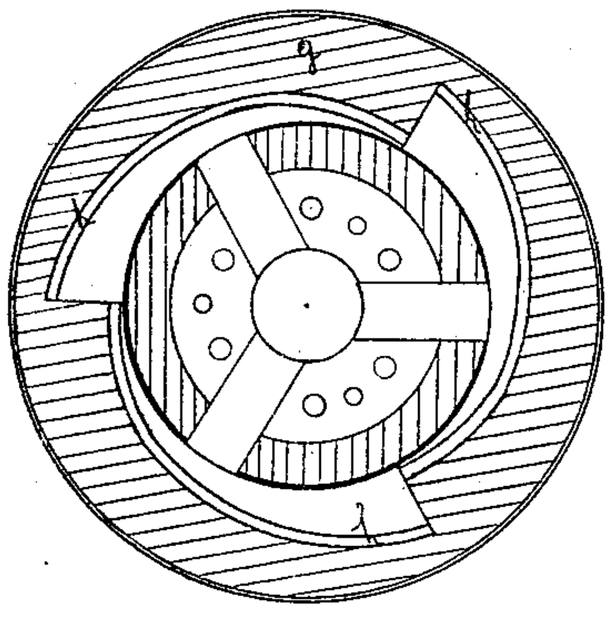


Fig. 9.

Fig. 10

Fig. 11.

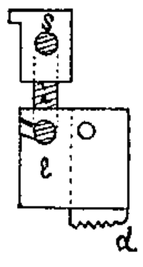
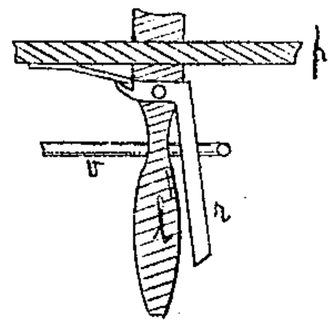


Fig. 6.



Witnesses.
A. B. Griffin
E. P. Stedman

Levi W. Stockwell
Inventor
by Bradford Howland
his Attorney.

3 Sheets--Sheet 2.

L. W. STOCKWELL.

Machines for Threading and Cutting Off Tubes.

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Fig. 2.

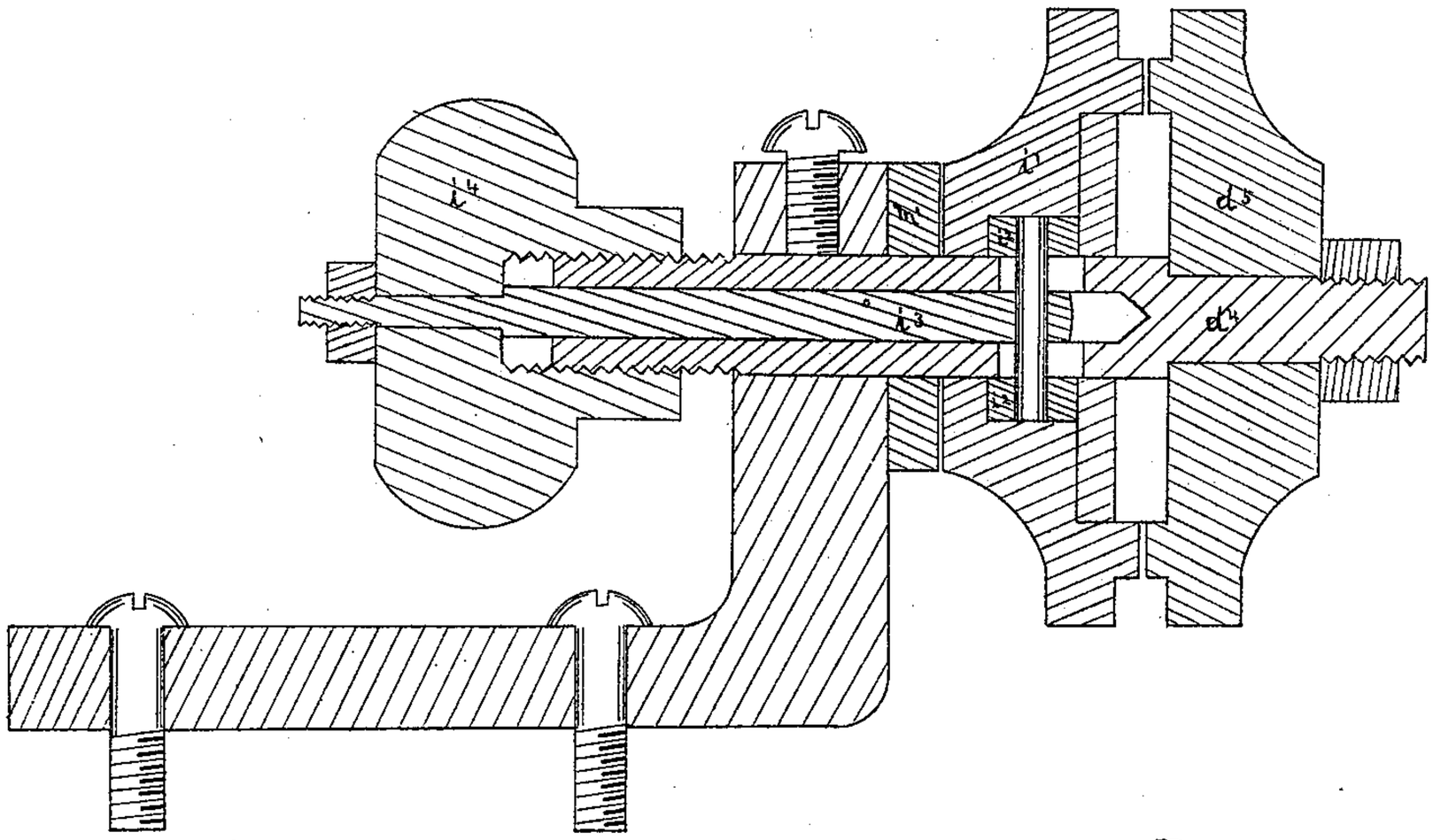


Fig. 3.

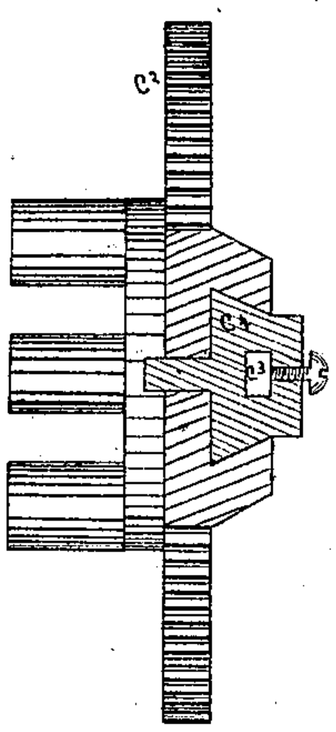


Fig. 5.

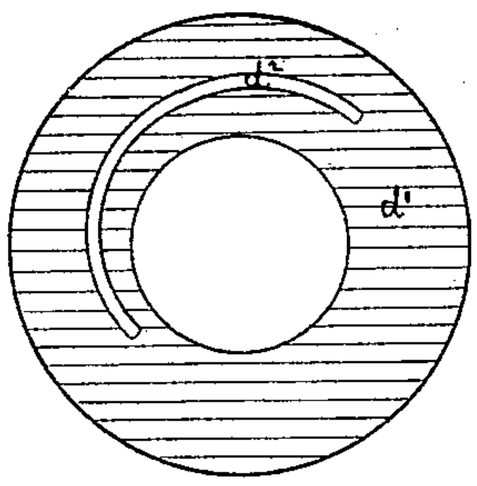
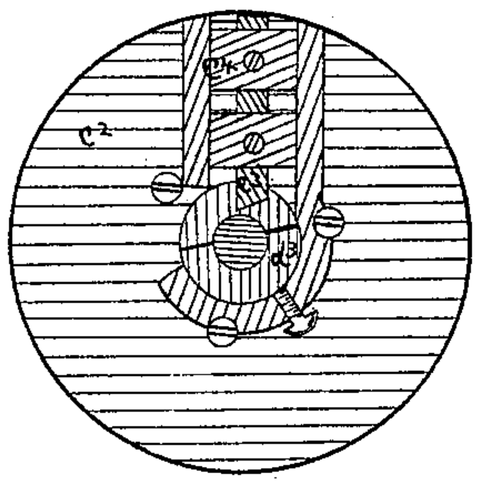


Fig. 4.



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3 Sheets--Sheet 3.

L. W. STOCKWELL.

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Fig. 12.

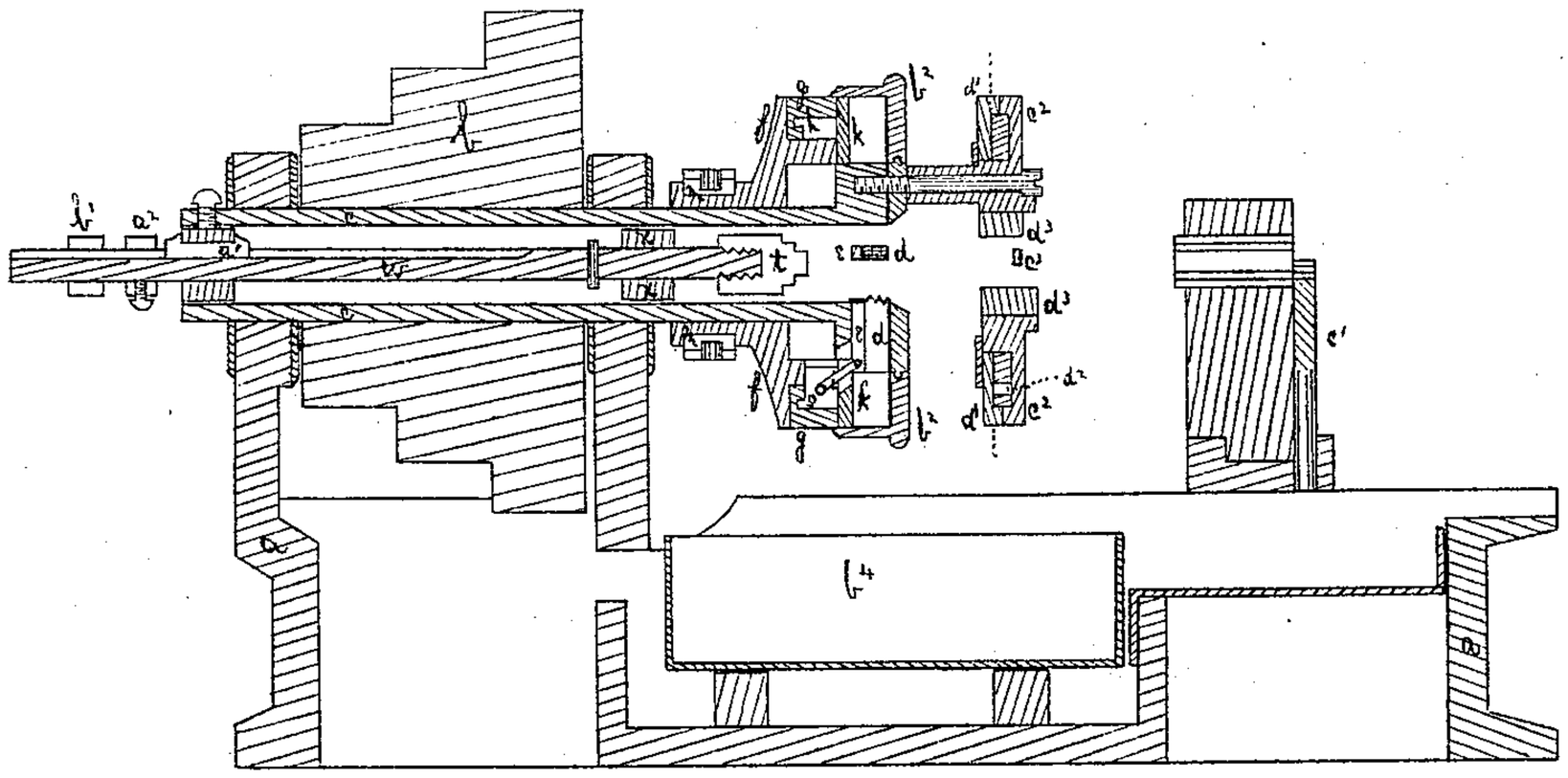
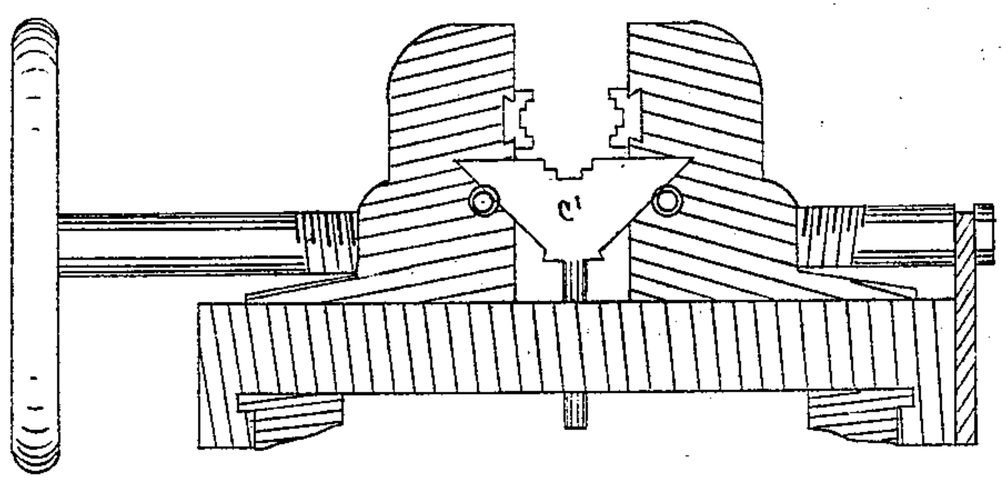


Fig. 7.

Fig. 13.



Witnesses -

A. B. Griffin

E. P. Stedman

Levi W. Stockwell

Inventor

by Bradford Howland

his Attorney.

UNITED STATES PATENT OFFICE.

LEVI W. STOCKWELL, OF RAVENNA, OHIO.

IMPROVEMENT IN MACHINES FOR THREADING AND CUTTING OFF TUBES.

Specification forming part of Letters Patent No. **151,517**, dated June 2, 1874; application filed September 15, 1873.

To all whom it may concern:

Be it known that I, LEVI W. STOCKWELL, of Ravenna, in the county of Portage and State of Ohio, have invented an Improved Gas-Pipe-Fitting Machine, of which the following is a specification:

The principal feature of novelty is the manner of cutting off, reaming, and threading gas-pipes without stopping the machine.

Figure 1 is a top view of the machine. Figs. 2, 3, 4, and 5 are plans of parts used in cutting off gas-pipe. Figs. 6 and 7 are plans. Figs. 9, 10, and 11 illustrate the combination of the dies, die-cases, strut-levers, and seats. Fig. 12 is a sectional elevation of the machine. Fig. 13 is an end view of the gas-pipe holder.

a is the frame of the machine. *b* is the driving-pulley on the hollow shaft *c*. On the front end of the hollow shaft is the cutter-head, containing the dies *d d d*, which are held by pins in their cases *e e e*. Around the cutter-head is the sliding collar *f*, which revolves with the cutter-head, and is made to slide on it to open and close the dies. The sliding collar is surrounded by the ring *g*, which moves with the collar to open and close the dies, and has as many cams as there are dies. The die-cases *e e e* are connected with the ring *g* by the strut-levers *i i i* and the lever-seats *s s s*. Flanges on the lever-seats enter the grooves *h h h*, Fig. 8, in the ring, so that when the ring is turned on the collar, the lever-seats, strut-levers, die-cases, and dies are moved toward or from the axis of the cutter-head by the cams in the ring, and thus the dies are adjusted to different-sized gas-pipes. The outer ends of the strut-levers turn in the seats, and the inner ends turn in the die-cases. The forms of the levers, seats, die-cases, and dies, and the manner in which they are combined, are shown in Figs. 9, 10, and 11. There is a vernier scale on the circumference of the ring *g*, and a corresponding scale adjoining it on the sliding collar, which are marked with letters or figures to indicate the adjustment of the dies. The scales are shown, but not marked with letters or figures, in Fig. 1. Grooves for the die-cases and seats are made in the cutter-head and sliding collar. The face-plate *k* is screwed fast to the front end of the sliding collar *f* to hold the ring *g* and seats, so that they may be moved by the collar *f* in opening and closing the dies. The collar *f* is made to slide on the cutter-head by means of the lever *l*, which is pivoted on opposite sides of the collar, at the top and bottom, to the ring *m*, which rests in a groove around the collar, and in which the collar revolves. The lever *l* has its fulcrum in the link *n*, attached to the frame of the machine. The sliding rod *o* passes under the handle of lever *l*, through projections of the frame. The arm *p* is attached to the frame and passes through a slot in lever *l*, and supports the handle of the lever. A spring fastened to the arm *p* passes through the slot in lever *l*, and presses against the end of the small lever *r*, which is pivoted in the slot. The lever *r* has a notch near its end in the slot, for the end of the spring to catch against, and hold lever *l* when the lever *l* is moved forward to close the dies. The combination of levers *l* and *r*, and the arm *p*, and the spring are shown in Fig. 6. When the handle of lever *r* is pressed toward the handle of lever *l*, the end of lever *r* presses the spring out of the notch, and then the spiral spring *v* draws back lever *l*, and opens the dies. One end of the spiral spring *v* is attached to the arm *p*, and the other end to the lever *l*. A pin through the arm *p*, behind the lever *l*, prevents the lever from being carried back by the spiral spring farther than necessary to open the dies; but when the dies are to be removed and changed for others, this pin is removed, so as to permit the spiral spring to carry back the lever *l* and sliding collar, until the dies are drawn out, so that the pins through the die-cases are outside of the cutter-head. These die-case pins are then taken out and the dies removed. When the machine is in operation, the pins through the die-cases are kept in place by the sides of the grooves through the cutter-head; but the dies are very easily removed by simply pushing the pins out, when the die-cases are opened sufficiently to bring the pins outside of the cutter-head. When the dies are closed, the strut-levers are perpendicular to the axis of the cutter-head. *t* is a gas-pipe reamer, screwed fast to the front end of the rod *w*, Fig. 12, to ream the ends of

gas-pipe. x is a loose collar, in which the rod w slides, and is used to hold the reamer in the center of the cutter-head. To keep the collar x in place there is a pin just back of it through the rod w. The reamer is made to revolve with the cutter-head by the key or feather a^1, which is in a groove in the rod w, and a groove in a collar held by a set-screw in the end of the hollow shaft c. A section of the end of the hollow shaft, collar, and key a^1 is shown in Fig. 7. The rods w and o slide in the lever b^1. The collar a^2 and rod w, Fig. 12, and the collars a^3 and a^4 on rod o, Fig. 1, are adjusted by their set-screws, so that when the thread on a gas-pipe is cut as far as required, the end of the gas-pipe, pressing back the reamer, causes the collar a^2 to press back the lever b^1, which presses against collar a^3, and draws back the rod o until its front end, which is turned up, presses back the handle of lever r, and the lever l is thrown back by the spiral spring and the dies are opened.

Before it is threaded, the gas-pipe is reamed as follows: The dies are opened and the pipe-holder moved by hand, causing the pipe to press back the reamer until the collar a^4 presses against the projection through which the rod o passes, thereby arresting the backward movement of the reamer, so that the gas-pipe may be pressed against it and the end of the pipe reamed. The cap b^2 surrounds the cutter-head, and projects over a portion of the sliding collar, to cover the dies and strut-levers. It is held in its position (but so as to be easily removed and replaced) by slight pins or projections on the circumference of the cutter-head, which enter a groove in the cap. The vessel b^4 catches and holds the cuttings, and has holes in it to let the oil escape into the reservoir beneath. The pipe-adjuster c^1, Fig. 13, supports pipes of different sizes in such a position that the center of the pipe is always exactly between the centers of the vise-jaws while the jaws are being closed to hold it. Its sides or edges rest on two pins, one in each side of the vise, and are at an angle of forty-five degrees to the top, which is horizontal, thus causing it, when the vise-jaws are being closed, to rise as fast as each jaw moves toward the other. It is guided by its lower end passing through a hole in the frame in which each side of the vise moves. The sides of the vise are moved by right-and-left-hand screws, which are turned by a hand-wheel. The vise, with its frame, is moved to and from the cutter-head in the ordinary manner, by means of toothed wheels turning on ways in the frame of the machine, turned by a hand-wheel.

The parts of the machine used in cutting off gas-pipe, and their arrangement and mode of operation, are as follows: The toothed wheel c^2 has three hollow projections on one side, through which it is firmly attached to the cutter-head by screws. This wheel, Figs. 3 and 4, holds the cutter c^3, which is fastened by set-screws to the cutter-carrier c^4. The toothed cam-wheel d^1 turns on a shoulder of, and against the side of, wheel c^2. It has a cam-groove, d^2, extending only part of the way around, in the side which is against wheel c^2, so made that from one end of the cam-groove to the other end it gradually approaches the center of wheel d^1. A projection on the cutter-carrier c^4 extends into this cam-groove, so that by the turning of wheel d^1 on the wheel c^2 the cam moves the cutter-carrier and cutter to or from the gas-pipe to be cut off, which passes through the bush d^3 in the hole through the centers of the wheels. The bush d^3 is held in this hole by a set-screw. The bush is cut away on one side, so as to permit the cutter to approach and cut the pipe. Different-sized bushes are used to fit and support different-sized pipes while being cut off. Fig. 2 shows the mechanism for operating the cam-wheel d^1. The standard which supports arbor d^4 is screwed to the frame of the machine. The arbor is fastened in the standard by a set-screw. The wheel d^5 is turned on one end of the arbor by the wheel c^2. The wheel i^1 clutches with the wheel d^5, and is turned by it on the arbor. The wheel i^1 turns the cam-wheel d^1. The wheels d^5 and i^1 each have the same number of teeth; but the cam-wheel d^1 has one tooth less than wheel c^2, and, consequently, the cam-wheel revolves faster than the wheel c^2, and thereby carries in the cutter.

Fig. 5 is a section, showing the cam-groove, and is indicated by the dotted line in Fig. 12. The ring i^2 around the arbor is in a recess formed in wheel i^1. A pin passes through the rod i^3, and also through a slot in the arbor into opposite sides of the ring i^2, for the purpose of sliding the wheel i^1 on the arbor by moving the rod i^3. The rod i^3 extends from the pin through a hollow in the arbor to the end of the arbor, and then passes through the knob or handle i^4, which turns on the rod, but is kept from sliding on it by a shoulder and a nut. The knob screws on the arbor. When the knob is turned on the arbor-screw the wheel i^1 is thrown in or out of clutch with wheel d^5 by means of the rod i^3 and the pin and ring i^2. When the knob is turned to draw the wheel i^1 out of clutch it is turned enough to draw the wheel i^1 against the washer m^1, which, by its friction against the wheel, stops it from revolving on the arbor, and causes it to arrest the motion of the cam-wheel d^1 until the projection on the cutter-carrier has moved back to the outer end of the cam-groove, where it remains and turns the cam-wheel by pressing against the outer end of the groove, until the knob is turned in the opposite direction, and the wheel i^1 again thrown in clutch with wheel d^5.

Some of the principal parts in this machine are claimed in my application for a bolt-threading machine, and in my application for a nut-tapping machine.

I claim as my invention—

1. The combination of the reamer t, rod w, collar x, feather a^1, hollow shaft c, lever b^1, rod o, and collars a^2, a^3, and a^4, substantially as and for the purpose herein set forth.

2. The combination of the reamer t, rod w, hollow shaft c, lever b^1, rod o, levers l and r, and the sliding collar f, substantially as and for the purpose herein set forth.

3. The cutter c^3, in combination with the cutter-carrier c^4, having a projection, which enters the cam-groove d^2, and the wheels c^2, d^1, d^5, and i^1, substantially as and for the purpose herein set forth.

4. The combination of the cutter c^3, cutter-carrier c^4, having the projection which enters the cam-groove d^2, the wheels c^2 d^1 d^5 i^1, and the bush d^3, substantially as and for the purpose herein set forth.

5. The wheel d^5, in combination with wheel i^1, arbor d^4, ring i^2, and rod i^3, with their connecting-pin, and the knob i^4, substantially as and for the purpose herein set forth.

LEVI W. STOCKWELL.

Witnesses:
G. F. ROBINSON,
BRADFORD HOWLAND.