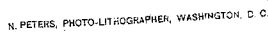


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UNITED STATES PATENT OFFICE.

CHARLES W. ROBERTS, OF COHOES, NEW YORK, ASSIGNOR TO NORMAN W. FROST, OF SAME PLACE.

IMPROVEMENT IN SCREW-CUTTING MACHINES.

Specification forming part of Letters Patent No. **176,064**, dated April 11, 1876; application filed October 29, 1875.

To all whom it may concern:

Be it known that I, CHARLES W. ROBERTS, of Cohoes, in the county of Albany and State of New York, have invented a new and useful Improvement in Combined Pipe Cutting and Threading Machine, of which the following is a specification:

Figure 1 is a front view of my improved machine. Fig. 2 is a side view of the same. Fig. 3 is a horizontal section of the same, taken through the line *xx*, Fig. 1. Fig. 4 is a top view of the same. Fig. 5 is a side view of the adjustable guide for holding the end of the pipe for cutting. Fig. 6 is an edge view of the same. Fig. 7 is an edge view of the same turned one-quarter around. Fig. 8 is a side view of the thread-cutting die. Fig. 9 is a cross-section of the same, taken through the line *yy*, Fig. 8. Fig. 10 is a detail view of a fragment of the hub of the large gear-wheel and its bearings, showing the mode of securing the parts together.

Similar letters of reference indicate corresponding parts.

The object of this invention is to improve the construction of the machine known as "The C. W. Roberts Pipe Cutting and Threading Machine and Vise," so as to make it more convenient in use and more effective in operation.

The invention consists in the pivoted bar, the hand-screw, the swiveled spider, the set-screw, and the two hooks, in combination with each other, and with the gear-wheel and its hollow or die-holding hub; in the combination of the sliding plate, the knife, the stationary nut, the swiveled screw, the worm-gearing, the box or block, the spider, and the adjustable stop-bar, with the gear-wheel and the vise; in the combination of the hand-screw, the grooved projections, the tongues, and the set-screws, with the stationary frame, and with the frame that carries the operating mechanism; in the means whereby the hollow hub of the large gear-wheel is held or secured in its bearing and yet adapted to be readily detached when required; and in the adjustable pipe-holder and the set-screws, in combination with the square cavity of the hub of

the gear-wheel and with the vise, as herein-after fully described.

A is the bed-plate of the machine, which is designed to be bolted to a bench or other support, and upon which is cast an upright frame B. In the top bar of the frame B is formed a screw-hole through which passes a screw, C. To a holder swiveled to the lower end of the screw C is attached the upper jaw D of the vise, which slides up and down upon guides or ways formed upon the inner sides of the posts of the frame B.

E are the two lower jaws of the vise, which are secured to each other and to the guides or ways between which the jaw D slides up and down, by a bolt, *e'*, passing through the said jaws E. The jaw D can thus enter the space between the jaws E, to adapt the vise for holding pipes, rods, or other things of any desired size. The adjacent edges of the jaws D E are notched and toothed, as shown in Figs. 1 and 3, so that they may hold the article securely while being operated upon.

Upon the rear part of the bed-plate A is formed a projection, F, the upper end of which is notched to receive the pipe or other article for centering it and keeping it in line when put into the vise.

G is the frame that carries the gearing, the ends of the top bar or yoke of which project to the rearward to rest upon the top of the frame B. One of the said rearwardly-projecting ends is thickened and has a hole formed through it in which is swiveled a screw, H, which has a hand-wheel attached to its upper end and passes down through a long screw-hole in the projection or column I, formed upon the side of the frame B.

Upon the other side of the frame B is formed a projection, J, in which is formed a groove, K, to receive a tongue, L, formed upon the frame G. Upon the lower part of the sides of the frame B are formed forward projections M, in the inner sides of which are formed grooves N to receive tongues O, formed upon the sides of the frame G. The frame G is secured in place when adjusted by the set-screws *m'*, which pass in through the projections M and bear against the tongues O.

By this construction, by turning the screw H to raise the tongues of the frame G out of the grooves of the frame B, the frame G and its attachments may be swung to one side upon the screw H, as a pivot. By turning the screw H out of its screw-hole, the machine will be separated into two parts for convenience in moving it from place to place.

In the middle lower part of the frame G is formed a round hole, P, to serve as a bearing for the hollow hub Q of the large gear-wheel R, which is secured in place by a ring-plate, x' , which fits in an annular cavity or groove formed by rabbeting the adjacent sides of the hub Q and bearing P, and inserting screws z' in holes bored in the joint between said ring and hub, as shown in Figs. 3 and 10.

The outer part of the cavity of the hub Q is made square to serve as a holder for the die S, for cutting the screw-thread. The die S is pushed upon the end of the pipe by the four-armed bar, plate, or spider T, to which is swiveled the forward end of the screw U.

The screw U passes in through a screw-hole in the bar V, and to its outer end is attached a hand-wheel. The ends of the bar V are bent inward and outward to rest against the gear-wheel R, to which one of said ends is pivoted by a screw-bolt. The other end of the bar V enters a hook or open keeper, W, attached to the gear-wheel R, where it is secured in place by a set-screw, X. Two of the hooks or keepers W, are attached to the gear-wheel R, one to hold the bar V in position for work and the other to hold it when turned to one side out of the way.

Y is the knife or cutter, which is secured to the sliding plate Z by a screw that passes through its outer end and screws into the said plate and by a stud formed upon the said plate Z, and which enters a hole in the forward part of the said cutter Y.

The plate Z slides in a wide slot formed radially in the gear-wheel R, where it is kept in place by gibs A' attached to said gear-wheel. To the outer side of the forward part of the sliding plate Z is attached a stationary nut, B', through which passes a screw, C'. The outer end of the screw C' is swiveled to a block or plate, D', attached to the gear-wheel R.

To the outer part of the screw C' is attached, or upon it is formed, a worm-wheel E', into which meshes a worm, F'. The outer end of the worm F' is swiveled to the box D', and to said end is rigidly attached a four-armed spider, G', so that the knife Y may be moved in and out by turning the spider G'. One arm g' of the spider G' is extended and bent outward to serve as a crank for running the knife Y in and out by hand.

H' is a stop-bar which is slotted to receive the slot-screw I', by which it is secured to the arm or bracket J', formed upon the top bar or yoke of the frame G, so that by loosening the said set-screw I' the stop-bar H' may be

raised out of the way of the spider G'. When the bar H' is lowered, an arm of the spider G' at each revolution of the gear-wheel R will strike against the said arm and the spider will be revolved through a quarter of a revolution, thus feeding the knife Y forward a little every time it makes a circuit of the pipe being cut. The forward end of the pipe being cut is held by the holder K', which is made square, and of such a size as to fit loosely into the square cavity of the hub Q of the gear-wheel R.

The holder K' has a square hole formed through its center, and is made in two parts, the smaller of which is movable and slides in grooves in the other part, as shown in Figs. 5, 6, and 7, so that it may be adjusted to hold pipes of different sizes.

The parts of the holder K' are pressed together to clamp and center the end of the pipe to be held by the set-screws L' that pass in through the hub Q of the gear-wheel R, as shown in Fig. 1.

The teeth of the gear-wheel R mesh into the teeth of a small gear-wheel, M', attached to the shaft N', which revolves in bearings in the upper part of the frame G and in the end of the bracket or arm J', and its outer end is squared off to receive a crank, O', for giving motion to the machine.

To the gear-wheel M' or to the shaft N' is attached a bevel gear-wheel P', into the teeth of which mesh the teeth of a larger bevel gear-wheel, Q', attached to a shaft, R', which works in a bracket, S', attached to or formed upon the frame G. The end of the shaft R' is squared off to receive the crank O' for giving motion to the machine.

To the shaft R' is attached a large gear-wheel, T', into the teeth of which mesh the teeth of the small gear-wheel U' attached to the shaft or stud V'. The shaft V' revolves in bearings in the frame G, and its outer end is squared off to receive the crank O' for giving motion to the machine. The crank O' may be applied to the shaft N', R', or V', according as speed or power may be required.

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

1. The combination of ring x' and screws z' with the rabbeted hub Q and its bearing P, as shown and described for the purpose specified.

2. The pivoted bar V, the hand-screw U, the swiveled spider T, the set-screw X, and the two hooks W, in combination with each other, and with the gear-wheel R and the hollow or die-holding hub Q, substantially as herein shown and described.

3. The combination of the sliding plate Z, the knife Y, the stationary nut B', the swiveled screw C', the worm-gearing E' F', the box or block D', the spider G', and the adjustable stop-bar H', with the gear-wheel R and the vise D E E, substantially as herein shown and described.

4. The combination of the hand-screw H, the grooved projections J M M, the tongues L O O, and the set-screws *m' m'*, with the stationary frame B and with the frame G that carries the operating mechanism, substantially as herein shown and described.

5. The adjustable pipe-holder K' and the set-screws L' L', in combination with the

square cavity of the hub Q of the gear-wheel R, and with the vise D E E, substantially as herein shown and described.

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Witnesses:

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JAMES CRAMER.