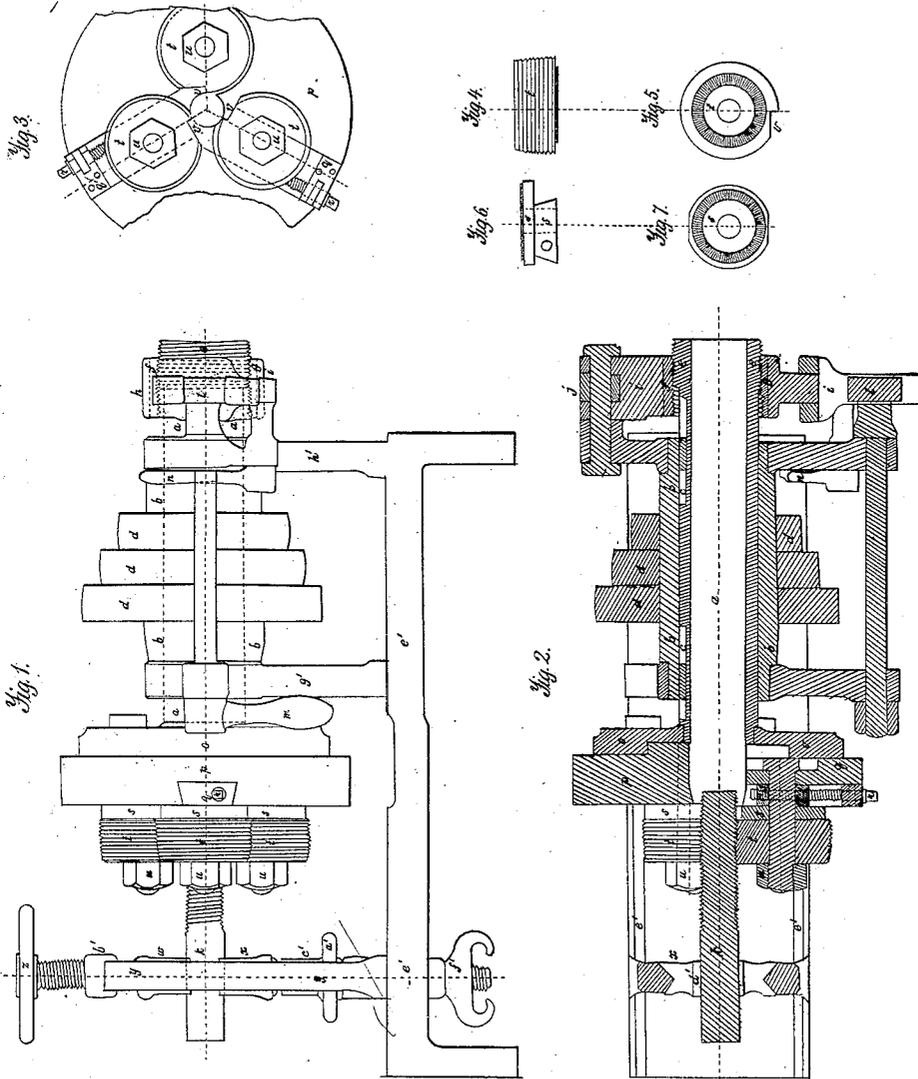


J. GRIFFITHS,
SCREW CUTTING MACHINE.

No. 9,547.

Patented Jan. 18, 1853.



UNITED STATES PATENT OFFICE.

JOHN GRIFFITHS, OF PHILADELPHIA, PENNSYLVANIA.

SCREW-CUTTING DIE.

Specification of Letters Patent No. 9,547, dated January 18, 1853.

To all whom it may concern:

Be it known that I, JOHN GRIFFITHS, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Screw-Cutting Machine for Cutting Screws on Pipes and Bolts; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a longitudinal elevation, Fig. 2 a longitudinal section taken longitudinally through the machine, Fig. 3 a plan of the dies, die seats, and their set-screws, and the die stock, Fig. 4, a longitudinal elevation of the die, Fig. 5 a plan of the inner face of the die, Fig. 6 a longitudinal elevation of the die-seat and Fig. 7, a plan of the outer face of the die seat.

Similar letters refer to similar parts.

My machine consists of a turned shaft (*a*) which is contained in and neatly fitted to a hollow mandrel (*b*). This shaft is grooved longitudinally, (*c*) to correspond with a key immovably fixed to the mandrel, which while allowing the shaft to be drawn in a longitudinal direction, compels it to revolve with the mandrel when power is applied to the driving pulleys (*d*). This shaft is entirely independent and distinct from the hollow mandrel, in which it slides with great ease, the friction being exceedingly small.

To the outer extremity of the shaft, a screw collar (*e*) is keyed, which revolves in two semi-circular screw plates (*f—g*), the shaft being driven forward or drawn backward according to the direction in which it is turned. The upper of these screw-plates (*f*) is keyed to a cap (*h*), and the lower to a bed (*i*), both of which move upon a common joint (*j*). The pitch of these screws, (*viz.*—that of the shaft, and those of the plates) determines the pitch of the screw to be cut on the pipe or bolt (*k*).

The threads of the screw-plates are cut to correspond with the screw collar of the shaft in the following manner: An ordinary cylindrical die having the same pitch as the screw collar of the shaft is keyed to the extremity of the shaft, (after unkeying the screw collar therefrom); the cap and bed are then made to approximate by means of an elliptical piece (*l*), which is moved by a lever (*m*) with the hand, so as to encircle

and press against the cylindrical die which being made to revolve with the shaft, cuts the threads in the screw plates. If a different pitch of screw be required, the screw plates and the screw collar of the shaft are removed by raising the cap by a lever (*n*) with the hand, and lowering the bed by moving the lever (*m*) with the hand until the elliptical piece (*l*) is horizontal, which will make a sufficient opening to allow the shaft to be drawn out without injury to the threads of the screws. The screw-plates and the screw collar of the shaft are then unkeyed and replaced by those of the desired pitch.

As the screw collar of the shaft rests in the lower screw plate, (which will insure the necessary feed motion to the shaft when it revolves) the upper screw plate may be dispensed with in cutting the screws on pipes or bolts, and is only used in cutting the threads of the screw-plates when by being pressed down upon the cylindrical die keyed to the shaft, it prevents the shaft being forced up out of line when pressed against by the lower screw plate, thus making it certain that the threads of the screw plates will be cut perfectly true, upon which depends the perfection of the screw cut on the pipe or bolt.

To the inner extremity of the shaft a face plate (*o*) is attached, to which a die-stock (*p*) is screwed or bolted. This die-stock has three or more dove-tail grooves, in which are screwed dove-tail pieces (*q*), through which pass set-screws (*r*). These set-screws work in the seats (*s*) of the dies (*t*), and serve to move the dies and seats to or from the center of the die stock, according to the diameter of the pipe or bolt on which the screw is to be cut. Different sizes of pipes and bolts may thus be cut by the same die, instead of each having its own die, which is the case when all other dies are used. The outer faces of the seats are channeled or grooved to correspond with channels or grooves in the faces of the dies in contact with the seats, and which when forced together by screw nuts (*u*) working on bolts, effectually prevent the dies turning on their axis when cutting, to which they would otherwise be liable.

The die is composed of a circular piece of steel in whose periphery parallel threads are cut, or threads having no pitch which are turned off near the outer face of the die giv-

ing it a draft by which the screw of the pipe or bolt is made with one cut. An offset (*v*) is cut in the periphery of the die extending its whole width, the junction of the vertical face of which with the periphery forming the cutting edge of the die or the part which is brought in contact with the pipe or bolt on which the screw is to be cut. The die is sharpened by simply grinding the vertical face of the offset, which will thus bring a new portion of the periphery in contact with the pipe or bolt. This can be immediately done upon removing the die from the die stock without softening it. These dies should be so set, that if the vertical faces of their offsets were continued, they would meet at the center of the die stock as shown in Fig. 3.

Female screws may be cut by using a single die. One of the peculiar advantages of this die is that one of three inches diameter once fitted up, will last about one hundred and twenty-five fittings up of other dies. The pipe or bolt to be cut is supported by cross heads (*w—x*), which are drawn up and down guides in a vertical frame (*y*) by hand wheels (*z—a'*). To the hand wheels, screws are attached, which pass through and work in cross-pieces (*b'—c'*), and whose extremities are secured to the cross heads, in which they loosely turn. A piece (*d'*) is placed in a groove in each of the cross heads,

which is brought in contact with the pipe or bolt by means of the hand wheels which prevents the pipe or bolt from turning while being cut by the dies. These pieces can be easily slid out of the grooves of the cross heads and changed according to the diameter of the pipe or bolt. The vertical frame is firmly fixed to the lower or horizontal frame (*e'*) by a hand screw nut (*f'*). The vertical can be detached from the horizontal frame and moved by the hand to or from the dies, by unscrewing the nut (*f'*) which permits short pipes and bolts to be cut. The pipe or bolt is brought in a line with the dies by the hand wheels, which will insure the screw being cut true. The supports (*g'—h'*) in which the mandrel revolves are firmly fixed to the horizontal frame.

What I claim as my invention and desire to secure by Letters Patent is:

The circular die with an offset which makes a cutting edge which is held in position by a bolt and screw nut, the threads which are cut in its periphery being parallel instead of having a running pitch, substantially in the manner and for the purposes as hereinbefore described.

JOHN GRIFFITHS.

Witnesses:

HENRY SIMPSON,
JOHN T. CLEMENS.