

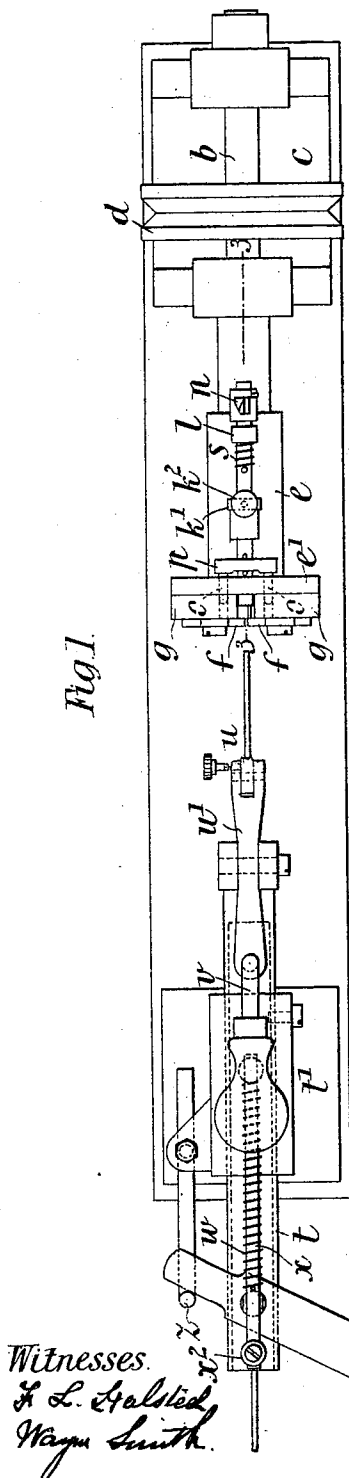
C. H. PENNING & J. J. S. HESLOP.

MACHINE FOR THREADING RODS OR THE LIKE.

No. 587,400.

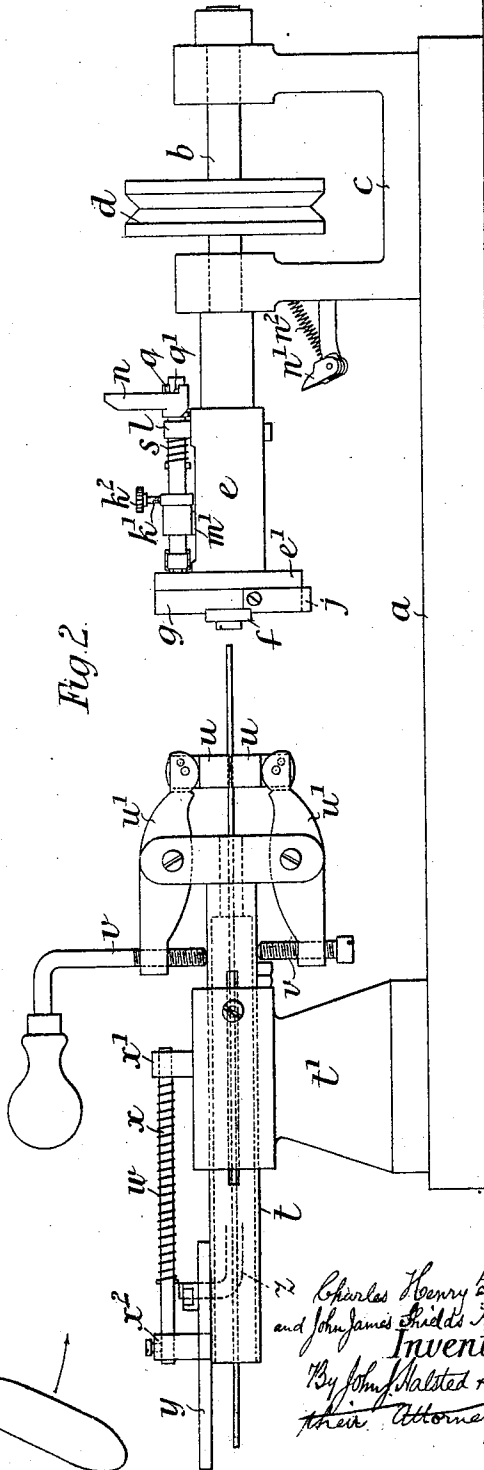
Patented Aug. 3, 1897.

Fig. 1.



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Fig. 2.

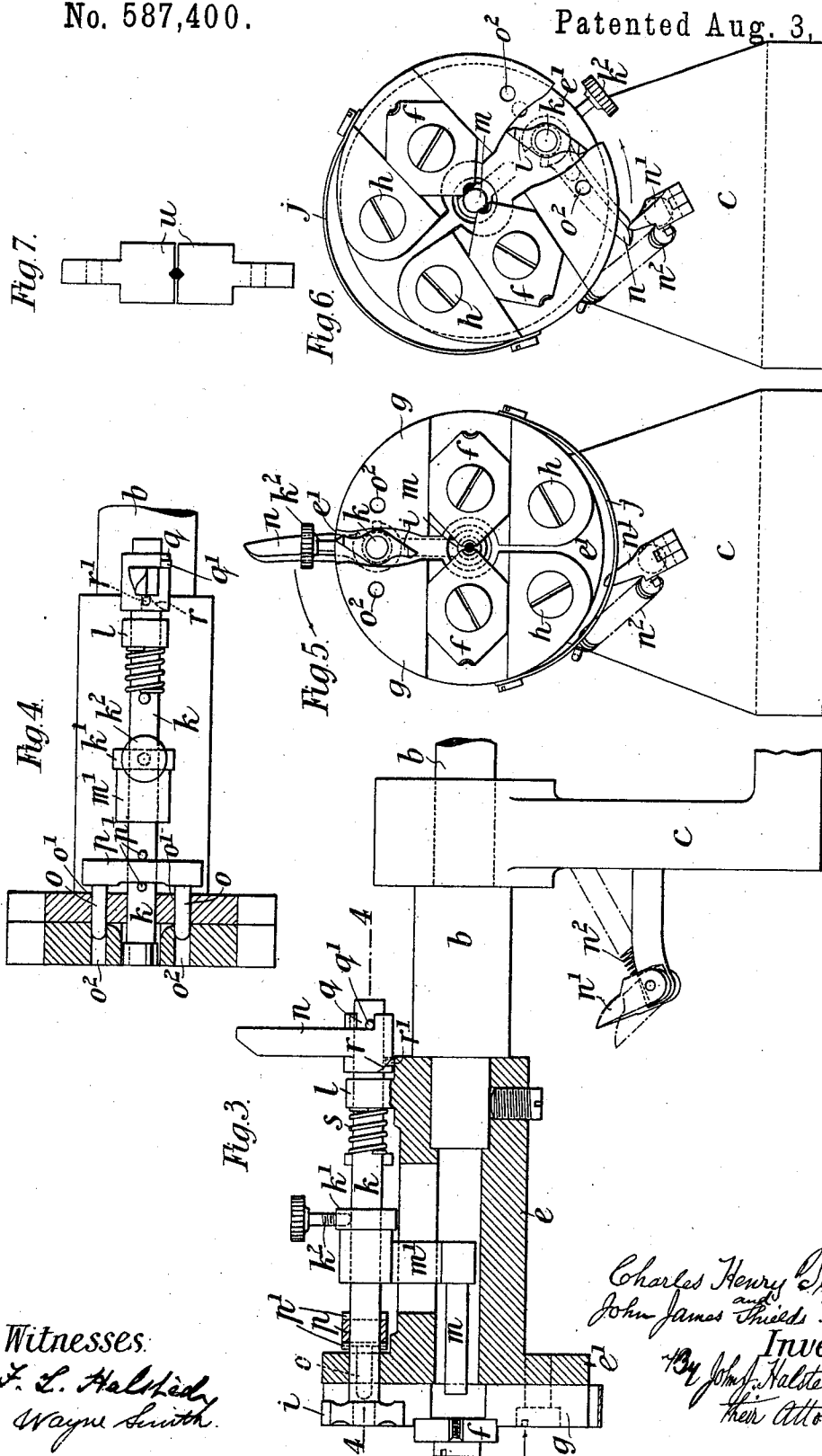


Charles Henry Penning
and John James Shields Heslop
Inventors.
By John Galsted & Son,
their Attorneys.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR THREADING RODS OR THE LIKE.

SPECIFICATION forming part of Letters Patent No. 587,400, dated August 3, 1897.

Application filed January 26, 1897. Serial No. 620,744. (No model.)

To all whom it may concern:

Be it known that we, CHARLES HENRY PENNING and JOHN JAMES SHIELDS HESLOP, subjects of the Queen of Great Britain, residing at Sunderland, Durham, England, have invented new and useful Improvements in Machines for Threading Rods or the Like, of which the following is a specification.

Our invention relates to an improved machine for screwing rods, tubes, bolts, and the like wherein a continuous rotary motion in one direction is imparted to the dies.

In a machine constructed according to our invention the dies are mounted in a carrier made in two parts adapted to close together upon the article to be screw-threaded and to separate to release it. A locking or clamping device is arranged in conjunction with this divided die-holder and adapted to be operated to allow the opening of the dies, when the required length of the screw-thread has been formed, by the impingement of the end of the rod, tube, bolt, or the like against a push-piece in connection with the locking device, so as to release the latter and allow the parts of the die-holder to separate.

We sometimes arrange, in conjunction with the traveling vise in which the article being screwed is held during the screwing operation, a spring or other device for moving back or withdrawing the said article from the dies.

To enable our invention to be fully understood, we will describe the same by reference to the accompanying drawings, in which—

Figure 1 is a plan view of a screwing-machine provided with our improvements, and Fig. 2 is a side elevation of the same. Fig. 3 is a section on the line 3 3, Fig. 1, drawn to a larger scale than the said figure; and Fig. 4 is a section on the line 4 4, Fig. 3. Fig. 5 is a face view looking in the direction of the arrow, Fig. 3; and Fig. 6 is a view similar to Fig. 5, but showing the parts in a different position. Fig. 7 is a face view of the vise or holder for the work being screwed.

a is the bed-plate of the machine, and *b* is the spindle or mandrel, which is supported in the head *c* and has fixed to it a belt-pulley *d*, through the medium of which motion is transmitted to the spindle, and also a hollow spindle or sleeve *e*, carrying a face-plate *e'* for carrying the dies *ff*. The said dies are

not directly supported upon the said plate, but are arranged in holders *g g*, pivoted to the said plate *e'* at *h h* and adapted to be separated by a cam-piece *i*, arranged between them, as shown in Fig. 6, a spring *j*, connected to the said holders *g g*, serving to move them toward each other to close the dies when the said holders are released by the said cam-piece.

The cam *i* is carried upon the shaft *k*, supported at one end in the face-plate *e'* and at the other end in a bearing *l* on the sleeve *e*, the said shaft being capable of sliding longitudinally and also of rotating to the desired extent in its bearings.

m is the push-piece against which the end of the rod or the like being screw-threaded impinges, the said push-piece being carried by an arm *m'* on the shaft *k* in such a manner that as the screwing of the rod proceeds the push-piece will be moved backward more or less to cause the longitudinal movement of the said shaft *k*. It will be noticed that the arm *m'*, carrying the push-piece, is adjustable upon the shaft *k* by means of a stop-collar *k'* and set-screw *k²* in order to permit of a rod being more or less screwed before the end of the same comes into contact with the said push-piece.

The rotary movement of the shaft *k* necessary for turning the cam-piece *i* to the position shown in Fig. 6 for separating the die-carriers is effected by the impingement of an arm *n* on the shaft *k* against a trip-piece *n'* on the head *c*. While the screwing operation is taking place, this arm *n* moves past the trip-piece *n'* without coming into contact therewith. When, however, the said shaft *k* is moved longitudinally under the pressure of the rod or the like being screwed against the push-piece *m*, the said arm is moved sufficiently to come into the path of the trip-piece *n'*, whereby the shaft *k* will be rotated in the desired manner.

In order to afford a relatively large contact-surface between the arm *n* and the trip-piece *n'*, we pivot the said trip-piece, as clearly shown in Fig. 3, in such a manner that immediately the arm *n* comes into contact with the point of the said trip-piece the latter will be moved to the position indicated by the dotted lines in Fig. 1 to afford the necessary bear-

ing-surface. A spring n^2 serves to return the trip-piece to its normal position when the arm n has moved out of contact with it.

In order to hold the two parts of the die in their proper relative positions during the screwing operation, we provide the pins $o o$, Figs. 3 and 4, which slide in holes $o' o'$ in the face-plate e' , and when the die-carriers are in their working position engage in the holes $o^2 o^2$ therein. These pins $o o$ are carried by a cross-head p , mounted on the shaft k between two pins $p' p'$ or their equivalents upon the said shaft in such a manner that while the said cross-head with the pins is capable of partaking of the longitudinal movement of the said shaft it will not partake of its rotary movement.

It will be obvious that before rotating the shaft k to separate the dies it will be first of all necessary to disengage the pins $o o$ from the holes $o^2 o^2$ in the carriers $g g$. This disengagement of the said pins might be effected by the pressure of the rod or the like being screwed against the push-piece m , sufficient space being left between the arm n and the trip-piece n' to permit of the withdrawal of the said pins before the arm comes into contact with the said trip-piece. As, however, this would put a certain amount of pressure upon the rod being screwed we prefer to effect the withdrawal of the said pins in the following manner: We make the arm n capable of rotating slightly upon the shaft k without imparting movement to the said shaft by forming a notch q in the boss of the arm n and by placing a pin q' in the shaft k , whereby it will be obvious that the arm n is free to move independently of the shaft k to an extent corresponding to the length of the notch q . At the opposite end of the boss of the arm n to that in which the notch q is formed we make a cam-surface r , Figs. 3 and 4, which is adapted to operate, in conjunction with a pin r' , on the sleeve e , the said cam-surface r being arranged in such relation to the slot q that while the arm n is rotating upon the shaft k without moving the said shaft the cam-surface r will be acting against the pin r' to move back the pins o in the desired manner. With this arrangement it will be understood that when the arm n during the rotation of the spindle b comes into contact with the trip-piece n' the said arm will first be moved to draw back the pins o out of engagement with the die-carriers, and that then the shaft k will be rotated to the desired extent in order to separate the said carriers.

A spring s on the shaft k serves for moving back the said shaft to its normal position after the arm n has passed out of contact with the trip-piece n' .

The rod or the like to be screwed may be carried in any suitable manner. In the drawings we have represented a sliding tube t as being arranged in a head t' , carried on the bed-plate a , the said tube at that end adjacent to the dies being provided with a suitable vise

or gripping device, a front view of the jaws $u u$ of which is shown in Fig. 7, the said jaws being carried by two levers $u' u'$, provided with adjusting-screws $v v$.

w is a spring which normally tends to move the tube t to its rearward position in such a manner that immediately the dies are opened the rod or the like being screwed will be drawn back. This spring w is shown as arranged around a rod x , which at one end slides through a post x' on the head t' , while the other end is fixed to a projection x^2 upon the tube t .

y is a lever pivoted on the tube t and formed at one end with a handle, while the other end is designed to press against a stop z , which forms a fulcrum for the said lever in such a manner that when the lever is moved in the direction of the arrow, Fig. 1, the tube t will be moved forward toward the dies. The object of this lever is to permit of pressing the rod or the like to be screwed against the dies until it enters between them in a manner which will be readily understood.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is—

1. In a machine for threading rods, tubes, bolts and the like, the combination with a vise for holding the article to be screw-threaded against rotation, and with a die-carrier adapted to be continuously rotated, such carrier being provided with holders pivoted to the face-plate, of a cam-piece serving automatically to separate the holders from each other when the desired length of screw-thread has been cut.

2. In a screw-threading machine, the combination of the following devices, namely: a rotary die-carrier, die-holders pivoted to the face-plate, arm m' and its push-piece m , and shaft k , this push-piece being adapted to be operated by the impingement against it of the rod or the like on which the thread is being cut, and the cam-piece i , between the holders, the combination serving to unlock the dies and to allow them to be separated to release the work, all substantially as described.

3. In a screw-cutting machine, the combination of die-holders pivoted upon the face of a face-plate, and moving in lines parallel therewith, a cam-piece i , located between them and serving to separate them to release the work, arm n , trip-piece n' , and push-piece, substantially as set forth.

4. In combination with the plate e' , and its pin-holes, and with the holders g , and their corresponding pin-holes, the cross-head p , and its pins for such holes, the shaft k , having the pins p', p' , thereon and provided with a reacting spring and trip-piece n' , the combination operating substantially as set forth.

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