

No. 824,697.

PATENTED JUNE 26, 1906.

T. R. LEIGHTON.
SCREW THREADING DIE.
APPLICATION FILED OCT. 16, 1905.

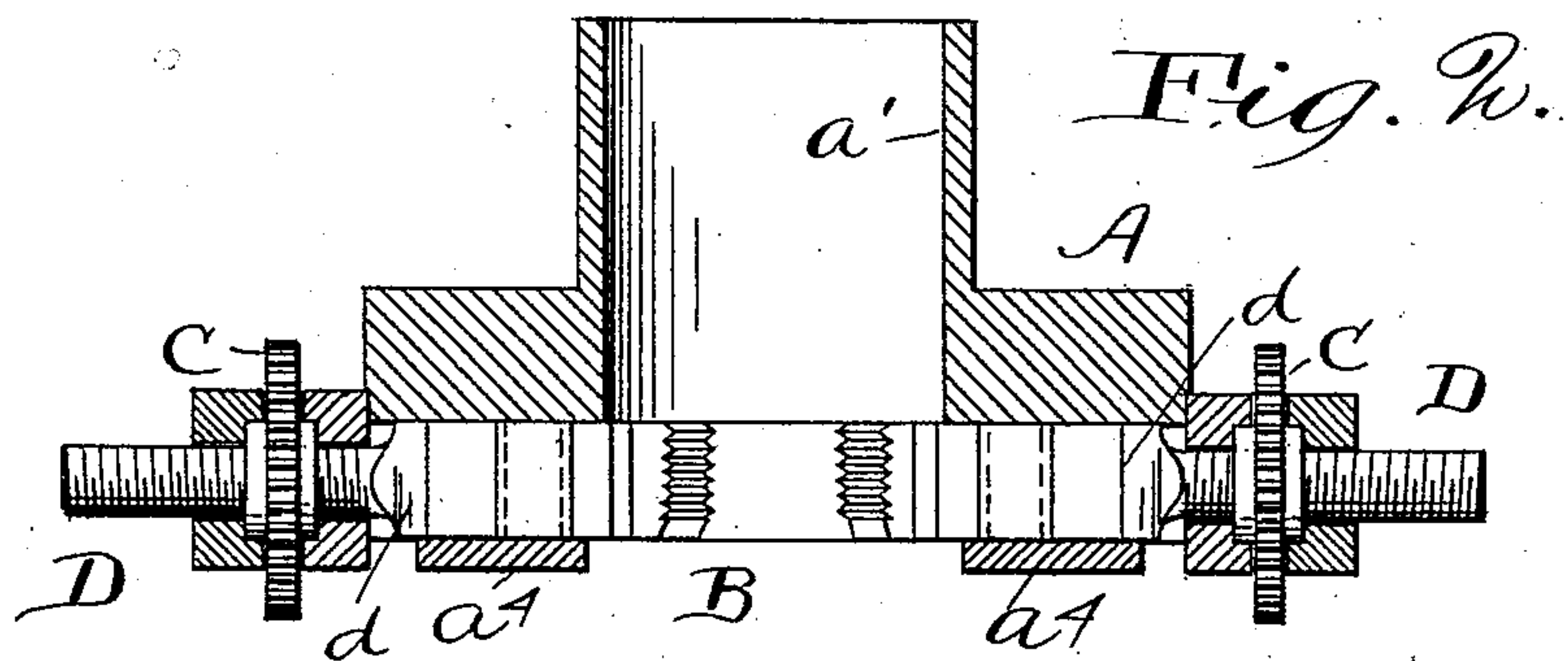
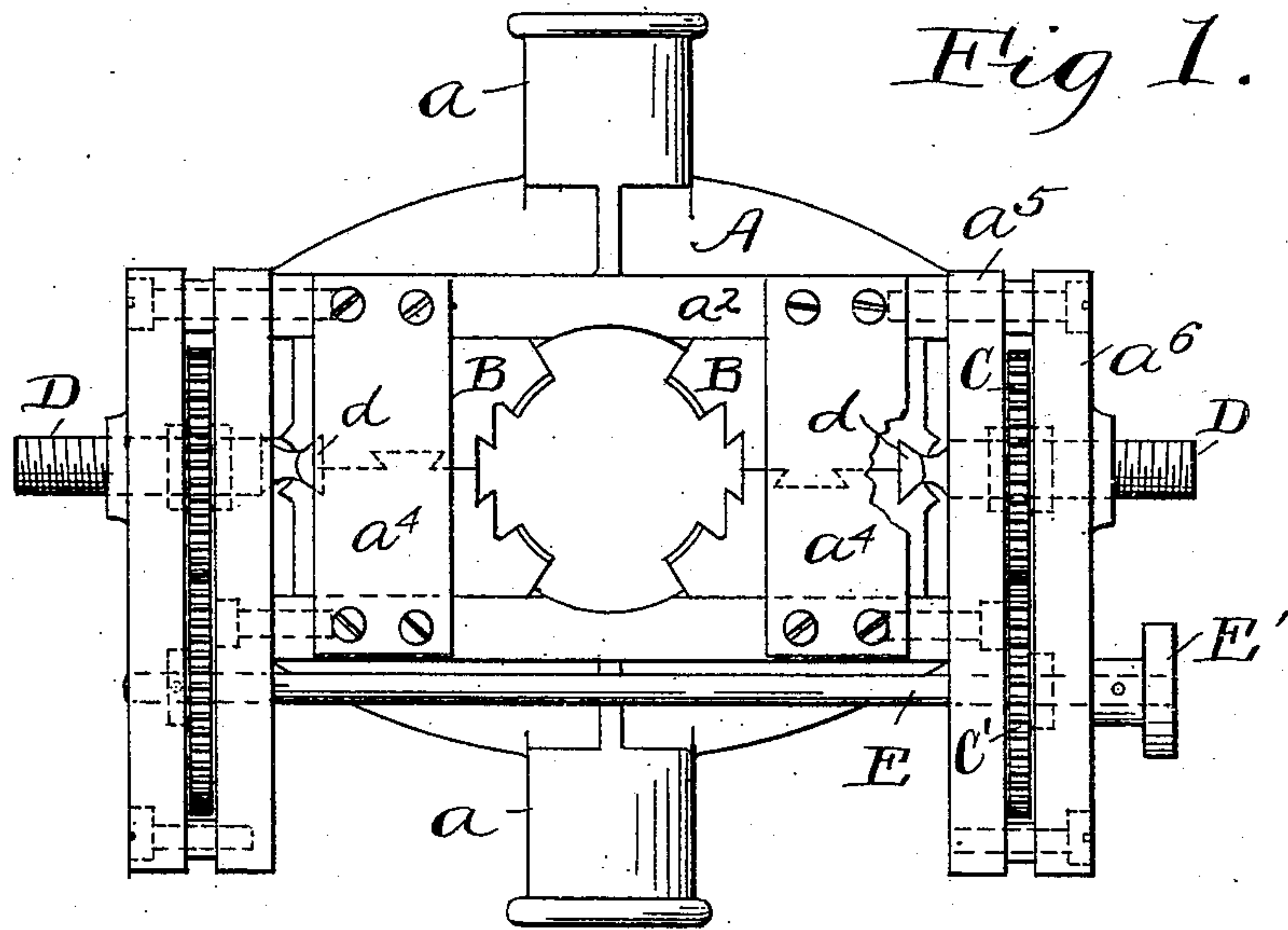


Fig. 3.

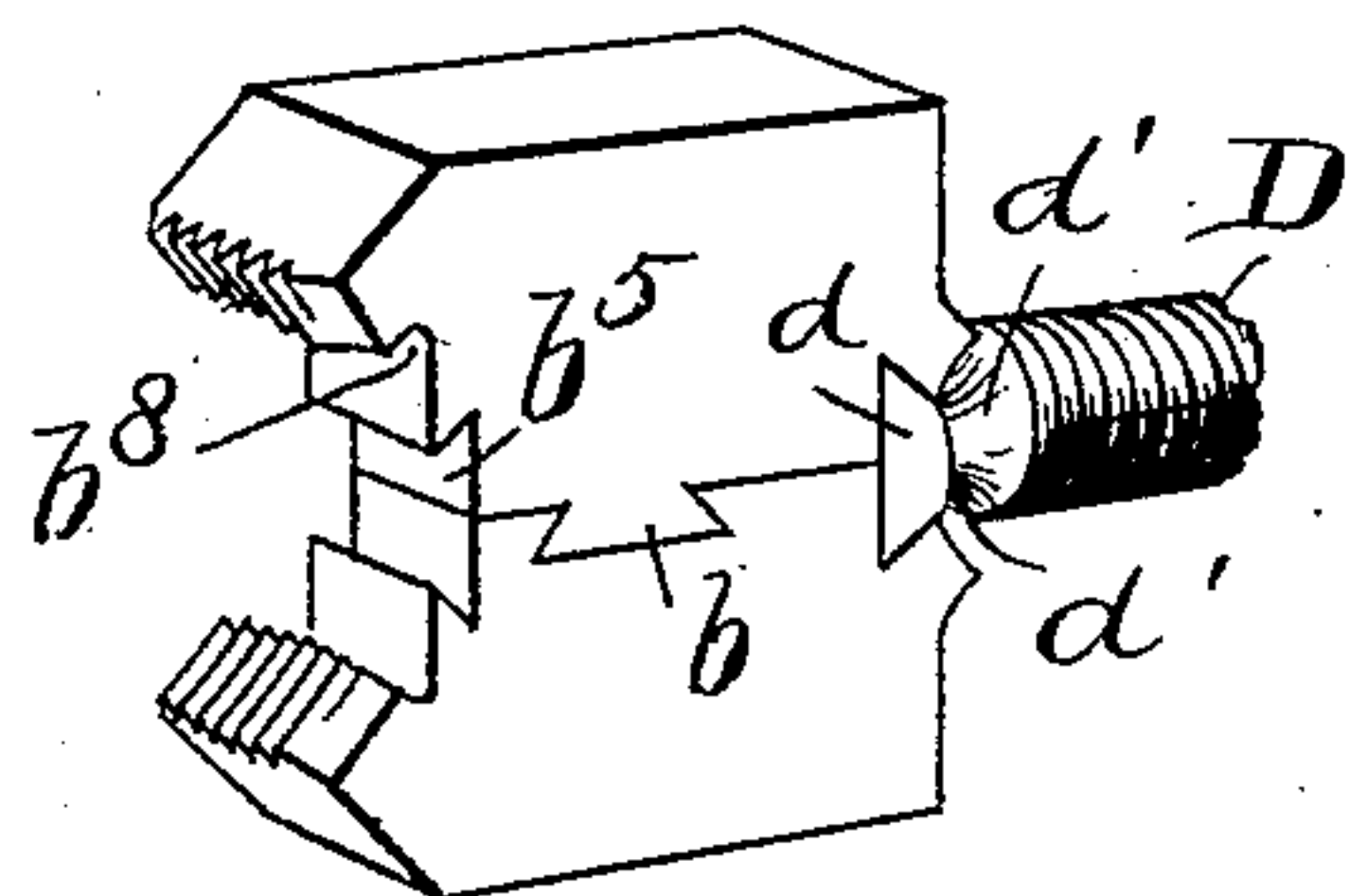
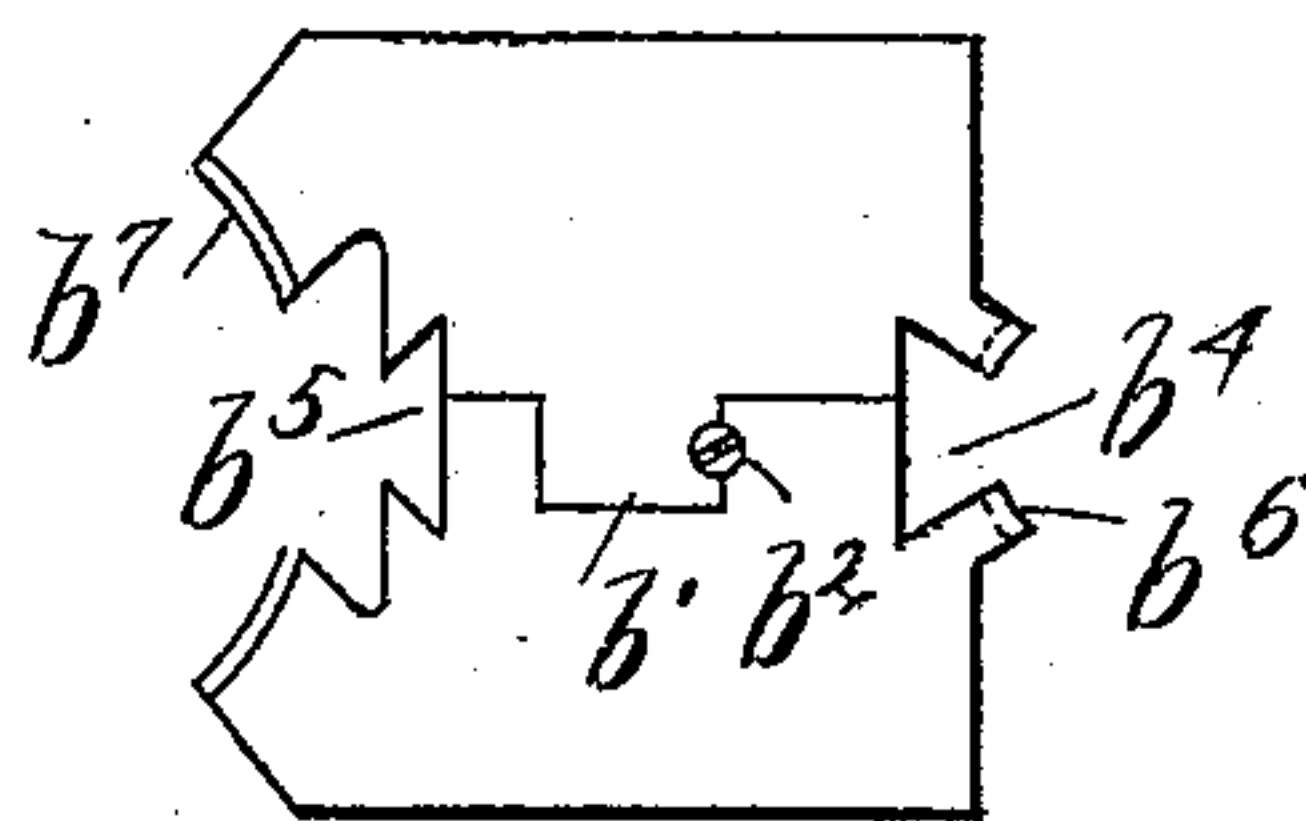


Fig. 4.



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UNITED STATES PATENT OFFICE.

THOMAS R. LEIGHTON, OF EAST CLEVELAND, OHIO.

SCREW-THREADING DIE.

No. 824,697.

Specification of Letters Patent.

Patented June 26, 1906.

Original application filed July 31, 1905, Serial No. 271,918. Divided and this application filed October 16, 1905. Serial No. 282,905.

To all whom it may concern:

Be it known that I, THOMAS R. LEIGHTON, a citizen of the United States, residing at East Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Screw-Threading Dies, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

My application, Serial No. 271,918, filed July 31, 1905, shows a die-stock carrying and operating specially-formed dies for threading pipes and rods. The present case is a division of that application and relates to the dies themselves, these dies being specially constructed so that their cutting edges may be ground to the best advantage.

In the adjustable dies hitherto known great difficulty has been found in grinding the threads, owing to the impossibility of properly reaching the surfaces with the grinding-wheel. The dies which I employ are by reason of their unique structure capable of being presented to the grinding-wheel so that their threads may be reached from all angles. My dies are also so arranged as to be reversible to cut different sizes of threads. These features will more fully hereinafter appear.

Referring to the accompanying drawings, Figure 1 is a front view of the die-stock. Fig. 2 is a longitudinal central section of the same. Fig. 3 is a perspective view of one of the dies. Fig. 4 is a side elevation of a modified form of such die.

As shown in the drawings, the die-stock comprises a frame A, which has sockets *a* for the operating-handles and may have a tubular extension *a'*, adapted to carry a guide for the pipe. On the face of the frame are a pair of parallel projecting ribs *a''*, between which the dies B are slidably guided. These dies rest on the face of the frame and are shown as held in place by plates *a'''*, secured across the ribs. Secured to each end of the frame are a pair of separated bars *a⁵* *a⁶*, between which are journaled the meshing gears C C'. The gears C are internally threaded and engage with tail-screws D, secured at their rear ends to the two dies B and threaded, respectively, in right and left hand directions. Gears C' are mounted on a rotatable shaft E, which is shown as having an operating-knob E'. It will be seen that the rotation of this knob causes the dies to approach or recede from each other. This advantage of the construc-

tion is shown, described, and claimed in my prior application referred to.

I now come to a description of the dies themselves, which constitute the present invention. The dies are each made of sections, as will be seen by reference to Figs. 3 and 4, a structure which admits of their being separated when it is desired to grind the threads and which, as will be obvious to any one skilled in the art, affords an unrestricted play of the grinding-wheel upon the threads, an advantage which is of the greatest importance. In the form shown in Fig. 3 I have shown the two sections as held together by a dovetailed tongue *b* and groove. The function of this tongue, broadly, is to hold the parts against relative endwise movement while the undercut or dovetail structure also serves to retain the two sections against sidewise separation, which is of course an advantage in keeping the parts from becoming mismatched while outside the die-stock. It may be said, however, that while the parts are in the frame no sidewise separation would be possible even though the two sections were held together by no other means than the frame itself.

In the form shown in Fig. 4 I have provided a right-angle tongue *b'* and groove, with a binding-screw *b²* locking the tongue in the groove. For certain purposes this construction may be deemed preferable; but the essential feature of each of these structures is that there shall be an interlocking tongue and groove which will maintain the two parts against relative endwise slip.

It is to be noted that the devices shown for locking the parts together and securing the accurate registration of the screw-threads are of such a nature that the sections of the die may be separated and removed from each other by the operator, who has access to their face only, without removing the entire die from the stock before effecting such separation. Thus supposing the retaining-plate *a⁴* to be temporarily removed in order to permit the removal of the die and a die of the form shown in Fig. 4 in place, it is evident that the operator may employ a screw-driver to remove the joining-screw *b²* and then lift one of the sections away from the other whereas in the ordinary form the entire die must be carried to a clamp, vise, or other, holder and held therein while the joining-screws are removed. This presents a dis-

inct advantage in shop practice, as will be appreciated by those skilled in the art.

The tail-screws D are separate from the dies and have flaring inner ends d , which are adapted to engage corresponding undercut notches b^4 or b^5 , thus admitting of the reversal of each die, enabling the die to carry effectively cutting edges at each end. These notches b^4 b^5 are, as shown, extended across the joint between the two sections of the die, and therefore may be said to overlap each section. This construction is for the purpose of causing the pressure of the feed-screws to be transmitted directly to each section of the die, thus obtaining what is obviously an advantage over those forms hitherto known, in that there are no intervening fitted sections or inserts, which through imperfect construction or looseness of fit would under strain throw the two cutting-sections out of register. The edges for cutting the smaller threads may be immediately adjacent to the dovetailed notch b^4 , as shown at b^6 in the drawings. To accommodate these edges, the tail-screws are recessed at d' adjacent to the flaring end d . At the other end of the die the cutting edges b^7 are far enough apart to

allow the body of the tail-screws D to extend freely between them, a supplementary notch b^8 being formed between the notch b^5 and these cutting edges.

I claim—

1. A die composed of a pair of mated longitudinal sections, said sections being provided with mated undercut recesses at the end adapted to receive the head of a feeding-stem in such position as to receive the thrust of said head upon each section of the die.

2. Means for cutting external screw-threads comprising a die composed of two longitudinal sections, and means for joining the sections so as to hold them against relative endwise movement, said joining means being positioned so as to be accessible upon removal of the face-plate of a die-stock whereby the sections may be separated and withdrawn from the die-stock, one at a time.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

THOS. R. LEIGHTON.

Witnesses:

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