

(No Model.)

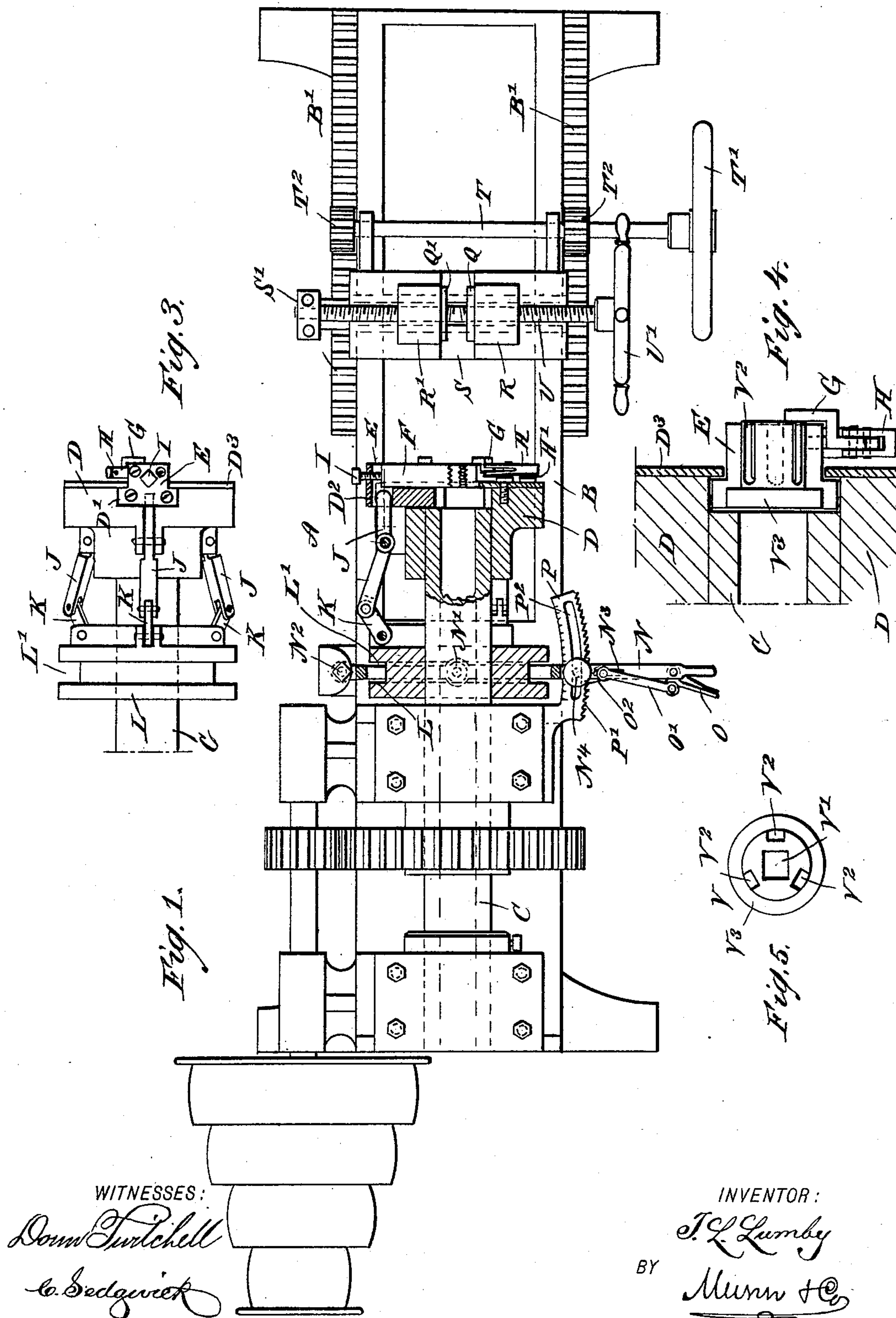
2 Sheets—Sheet 1.

T. L. LUMBY.

MACHINE FOR CUTTING THREADS ON BOLTS AND NUTS.

No. 448,971.

Patented Mar. 24, 1891.



WITNESSES:
Down Twitchell
C. Sedgwick

INVENTOR:
T. L. Lumby
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ATTORNEYS

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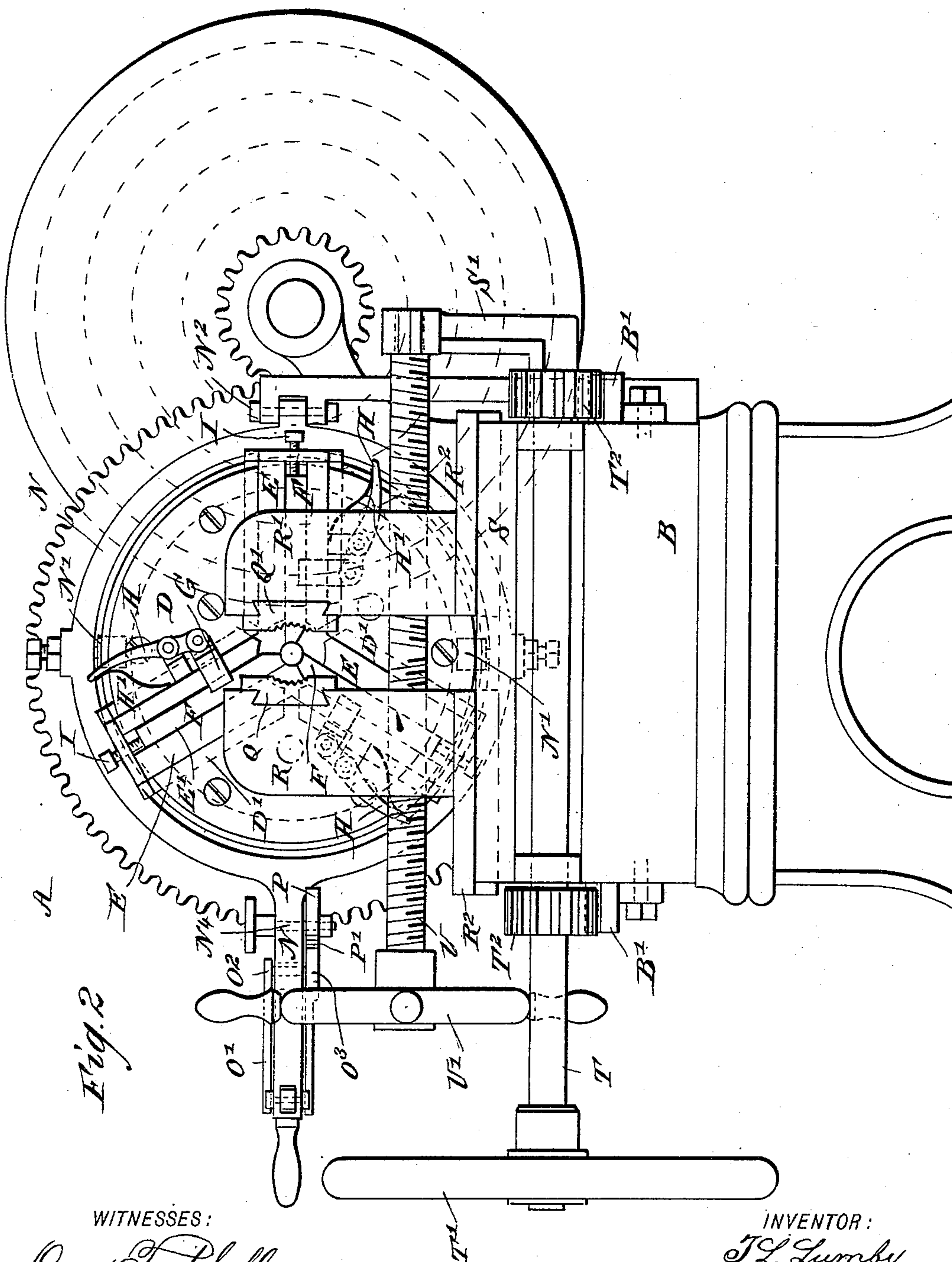


Fig. 2

WITNESSES:

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UNITED STATES PATENT OFFICE.

THOMAS L. LUMBY, OF DELPHOS, OHIO, ASSIGNOR TO HIMSELF, AND CHARLES A. BALL, OF MARION, INDIANA.

MACHINE FOR CUTTING THREADS ON BOLTS AND NUTS.

SPECIFICATION forming part of Letters Patent No. 448,971, dated March 24, 1891.

Application filed May 6, 1890. Serial No. 350,738. (No model.)

To all whom it may concern:

Be it known that I, THOMAS L. LUMBY, of Delphos, in the county of Allen and State of Ohio, have invented a new and Improved Machine for Cutting Threads on Bolts and Nuts, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved bolt, screw, and nut cutting machine which is simple and durable in construction, very effective in operation, permits of cutting bolts of different diameter by the same dies, allows of quickly moving the dies to engage or release the bolts after each bolt is cut, and enables the operator to conveniently change the dies for different-sized threads.

The invention consists of holders fitted to slide radially in the face-plate and a graduated mechanism for automatically moving the holders on the face-plate to set the dies.

The invention also consists of certain parts and details and combinations of the same, as will be hereinafter fully described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improvement with parts in section. Fig. 2 is an enlarged end elevation of the same. Fig. 3 is a plan view of the face-plate and adjacent parts. Fig. 4 is an enlarged sectional side elevation of the face-plate as arranged for tapping nuts, and Fig. 5 is a face view of the collar for holding the tap.

The improved bolt, screw, and nut cutting machine A is mounted on a suitably-constructed bed-plate B, on one end of which is mounted to turn in suitable bearings the spindle C, connected in the usual manner with suitable machinery to impart a rotary motion to the spindle.

On the end of the spindle C is secured a face-plate D, provided with a series of radially-arranged slots D', in which are fitted to slide holders E, each having in its front face a radial recess E', adapted to receive the die F. The inner end of the latter is provided with

the usual thread for cutting the thread on a bolt or screw.

Each die F is held in place in the recess E' by an arm G, passing over the front face of the die and being pivotally connected with a lever H, fulcrumed on one side of the holder E and held in position by a spring H'. When the operator presses the free end of the lever H, the arm G is withdrawn from the front face of the die F, so that the latter can be conveniently removed from the recess E' in the holder E. The outer movement of each die F is limited by a set-screw I, screwing in the upper end of the holder E.

Each of the holders is provided near its outer end with a longitudinally-extending opening D², engaged by one end of a lever J, fulcrumed on the face-plate D, and pivotally connected at its other end by a link K with a collar L, mounted to slide on and to turn with the spindle C in the rear of the face-plate D. The collar L is provided with an annular groove L', engaged by friction-rollers N', held on a shifting lever N, fulcrumed at N² to a suitable bracket secured to the bed-plate B.

On the handle end of the shifting-lever N is fulcrumed a spring-pressed angle-lever O, pivotally connected with a link O', carrying a pin O³, passing through a transversely-extending slot N³ in the shifting-lever N. The pin O³ is connected with a pawl O³, fitted to slide on the under side of the shifting-lever N and adapted to engage teeth P', formed on the outer edge of a segment P, secured to the head-stock or the bed-plate B. The segment is also provided with a segmental slot P², engaged by a pin N⁴, held on the shifting-lever N, so as to guide the said shifting-lever on the segment. The spring-pressed angle-lever O, by acting on the link O' and its pin O³, holds the pawl O³ in contact with one of the teeth P' of the segment P, so that the shifting-lever N is locked in place in a desired position.

When the operator grasps the handle end of the shifting-lever N and actuates the spring-pressed lever O, then the pawl O³ is withdrawn from the respective tooth on the segment P and the shifting-lever is unlocked to

be moved right or left, so as to shift the collar L forward or backward on the spindle C. The teeth P' are preferably graduated to indicate the diameters of bolts or screws to be cut. The bolt or screw to be cut is held between jaws Q and Q', arranged opposite each other and dovetailed in posts R and R', respectively, each having a dovetail transversely-extending base R² fitted to slide transversely in suitable guideways formed in the top of a carriage S, fitted to slide longitudinally on the top of the bed-plate B'.

In the carriage S is mounted to turn in suitable bearings the transversely-extending shaft T, carrying at one outer end a hand-wheel T' for conveniently turning the said shaft. On the latter are also secured pinions T² in mesh with longitudinally-extending racks B', secured to the sides of the bed-plate B, as is plainly shown in Figs. 1 and 2.

When the operator turns the hand-wheel T', the gear-wheels T² travel on the racks B', so that the carriage S, with the posts R R' and the jaws Q Q', move longitudinally. The jaws Q Q' stand with their inner faces equal distances apart from the central line of the spindle C and the jaws are shifted laterally toward or from each other equal distances by means of a screw U, screwing in the posts R and R', being provided with right and left hand thread, as shown in Figs. 1 and 2.

On one outer end of the screw-rod U is secured a hand-wheel U' for conveniently turning it, so as to shift the posts R and R' and their jaws Q and Q' equal distances from the center of the spindle C toward or from each other. The rear end of the screw-rod U is mounted to turn in a bracket S', secured to the carriage S.

The operation is as follows: The bolt or screw to be cut is held in the jaws Q and Q' so that the bolt or screw extends longitudinally, having its axis coincide with the axis of a center line of the spindle C. The dies F are moved radially inward or outward, according to the diameter of the bolt to be cut, by shifting the lever N, as previously described, so that the collar L, by acting with its links K on the levers J, slides the holders E simultaneously inward or outward until the dies F are in the proper position for the bolt under treatment. This position of the cutting-jaws of the dies F is indicated by the graduated teeth P' on the segment P, so that the operator only shifts the shifting-lever N until the pawl O³ drops in the corresponding graduated tooth P' on the segment P. When the dies are in the proper position, the operator turns the hand-wheel T' so as to shift the carriage S toward the face-plate D, and thereby the cutting ends of the dies F cut the thread on the bolt or screw in the usual manner. As soon as the thread is cut the operator presses on the spring-pressed angle-lever O, so as to release the pawl O³ from the respective tooth on the segment P, and then shifts the lever O to the left to move the die-

holders outward, so that the dies are disconnected from the thread of the bolt cut. The operator then turns the hand-wheel T' in an opposite direction, so as to move the carriage S from the face-plate D until the bolt is clear of the dies and face-plate. The operator then turns the hand-wheel U', so as to move the dies Q and Q' apart to release the cut bolt. A new blank is now inserted between the dies, the hand-wheel turned to screw up the dies, the shifting-lever N is moved back to its proper position, after which the hand-wheel T' is turned to move the carriage S toward the face-plate, and the above-described operation is repeated. When it is desired to tap nuts, the dies F are removed from the holders E and blank dies are inserted in their stead, and in the center of the face-plate is placed a tap-holder V, provided in its center with a square or hexagon recess V', in which is inserted the square or hexagon shank of the tap. In the periphery of the holder V are arranged notches V², adapted to be engaged by the inner ends of the blank dies inserted in the holders E, so that the holder V turns with the face-plate D when the spindle C is rotated. The nuts to be tapped are placed between the jaws Q and Q' so that their opening is in line with the tap held in the holder V. When the operator then turns the hand-wheel T', so as to shift the carriage toward the face-plate, then the tap revolving with the face-plate engages the aperture in the nut and taps the same. Thus by a simple changing of dies the bolt and screw cutter is transformed into a nut-tapping machine. The shaft-lever N is actuated in case it is desired to change the holder V for using a smaller or a larger tap-holder, holders with different-sized openings V' being provided for this purpose. The holder V' is prevented from falling out by being provided with a collar V³, adapted to be engaged by the blank dies. The die-holders E are held in place on the face-plate D by plates D³, screwed to the front of the face-plate, as is plainly shown in Figs. 4 and 5.

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

1. In a machine for cutting threads on bolts and nuts, the combination of a face-plate, die-holders fitted to slide on the face-plate, dies adjustably secured to the die-holders, a sliding collar, a link connection between the die-holders and collar, and a graduated operating mechanism connected with the sliding collar, substantially as herein shown and described.

2. In a machine for cutting threads on bolts and nuts, the combination of a face-plate, die-holders fitted to slide on the face-plate, dies adjustably secured to the die-holders, a sliding collar, a link connection between the die-holders and collar, an operating-lever connected to the collar, a graduated segment, and a spring-actuated pawl carried by the oper-

ating-lever and engaging the segment, substantially as herein shown and described.

3. In a bolt and nut cutting machine, the combination, with a die-holder provided with
5 recesses to receive the dies, of an arm adapted to pass over the front of the holder to engage the die and a spring-pressed lever pivoted on the said holder and carrying the said arm, substantially as shown and described.

10 4. In a bolt and nut cutting machine, the combination, with a die-holder provided with recesses to receive the dies, of an arm adapted to pass over the front of the holder to engage the die, a spring-pressed lever pivoted on the
15 said holder and carrying the said arm, and set-screws held in the said holder and passing into the said recesses to engage the outer ends of the dies, substantially as shown and described.

20 5. In a bolt and nut cutting machine, the combination, with a face-plate provided with radial slots, of die-holders fitted to slide in the said slots and supporting the dies, levers fulcrumed on the said face-plate and engag-
25 ing the said die-holders, a collar fitted to slide and pivotally connected with the said levers, and a graduated lever under the control of

the operator for shifting the said collar, substantially as shown and described.

6. In a bolt and nut cutting machine, the
30 combination, with a face-plate provided with radial slots, of die-holders fitted to slide in the said slots and supporting the dies, levers fulcrumed on the said face-plate and engag-
35 ing the said die-holders, a collar fitted to slide and pivotally connected with the said levers, a shifting-lever connected with the said collar to move the latter longitudinally toward
40 or from the face-plate, a pawl held to slide on the said shifting-lever, and a toothed segment adapted to be engaged by the said pawl, sub-
stantially as shown and described.

7. In a machine for cutting threads on bolts and nuts, the combination, with a face, of die-
45 holders held to slide radially on the face-plate, means for operating the die-holders, and tap-holders adapted to be placed centrally on the face-plate and provided with notches adapted to be engaged by blank dies held in the said holders.

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Witnesses:

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A. E. SWINEHART.