

F. F. DEEDS.
MECHANISM FOR MAKING BOLTS, SCREWS, &c.
APPLICATION FILED JUNE 28, 1910.

996,840.

Patented July 4, 1911.

2 SHEETS—SHEET 1.

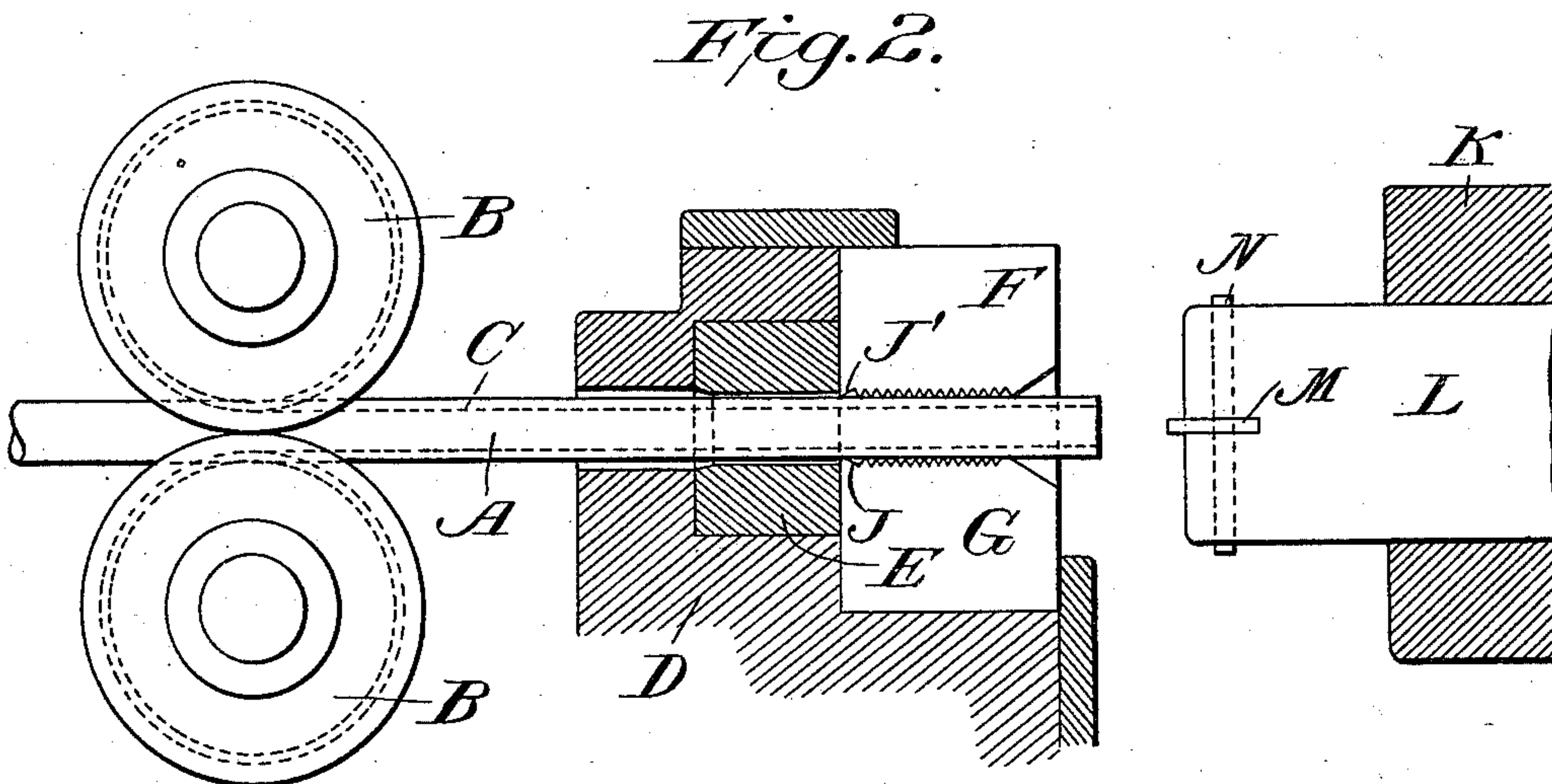
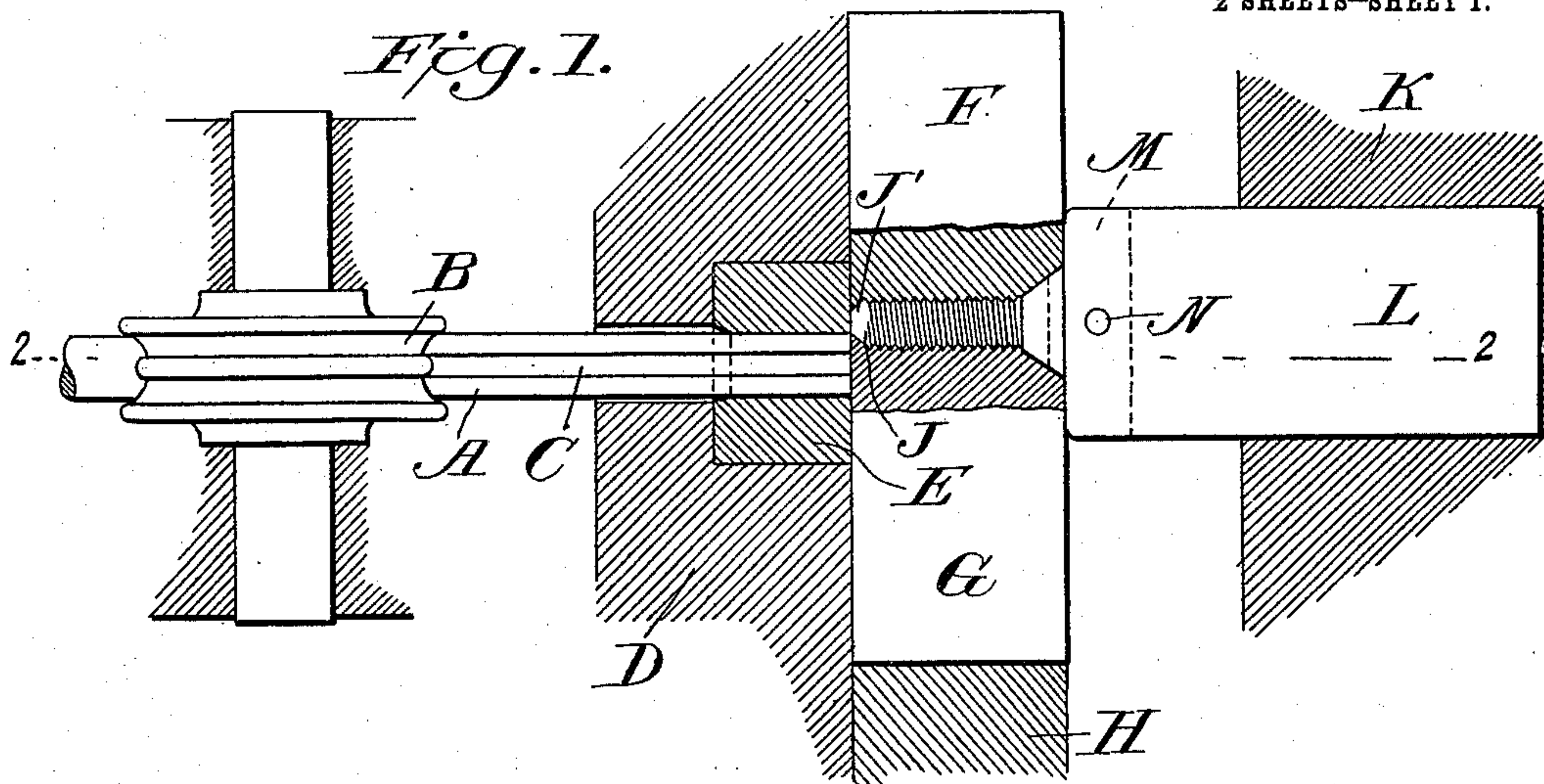
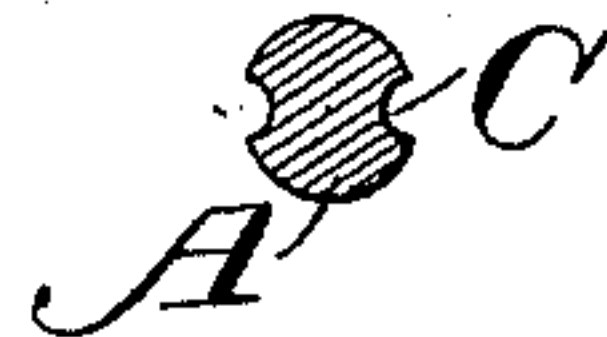


Fig. 3.



Fig. 4.



Inventor

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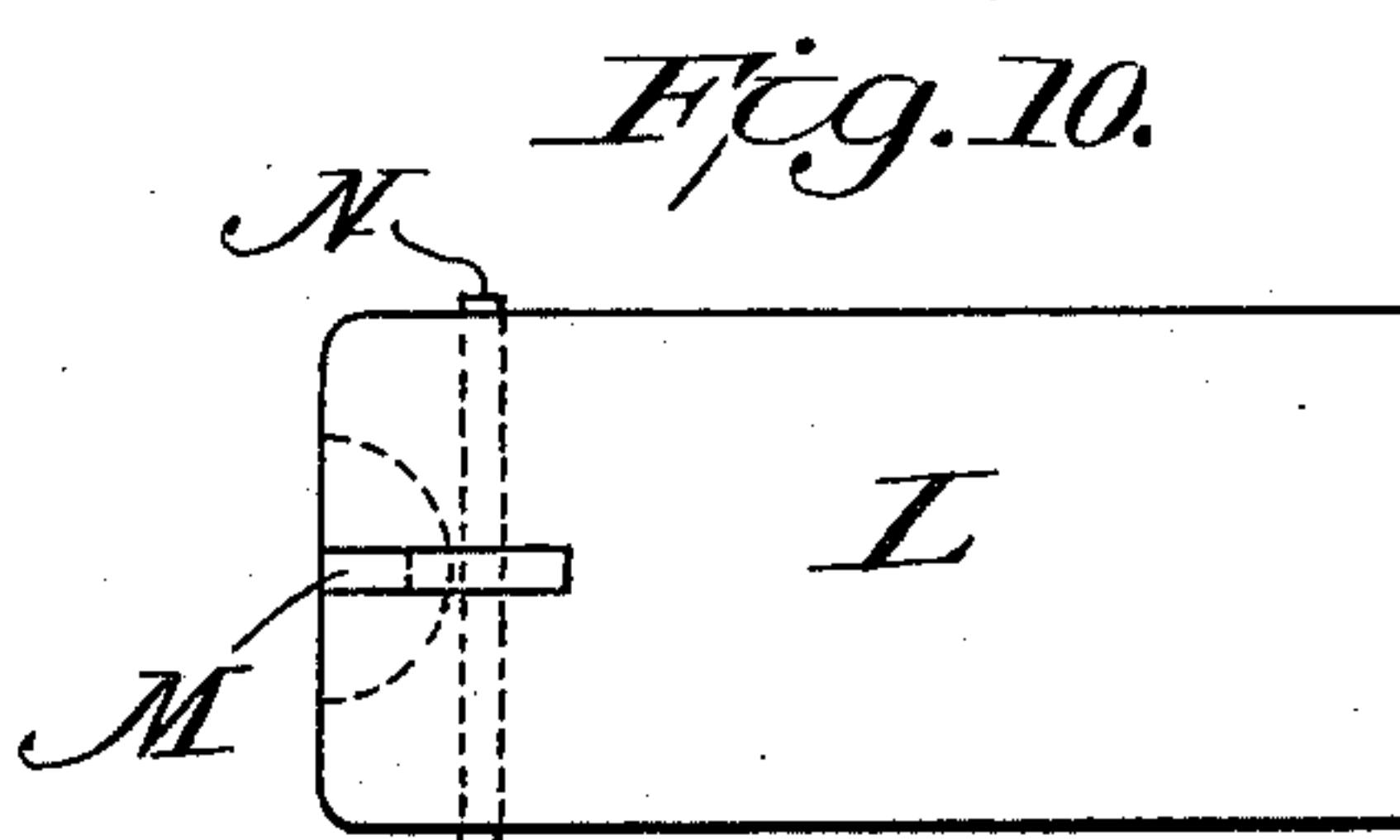
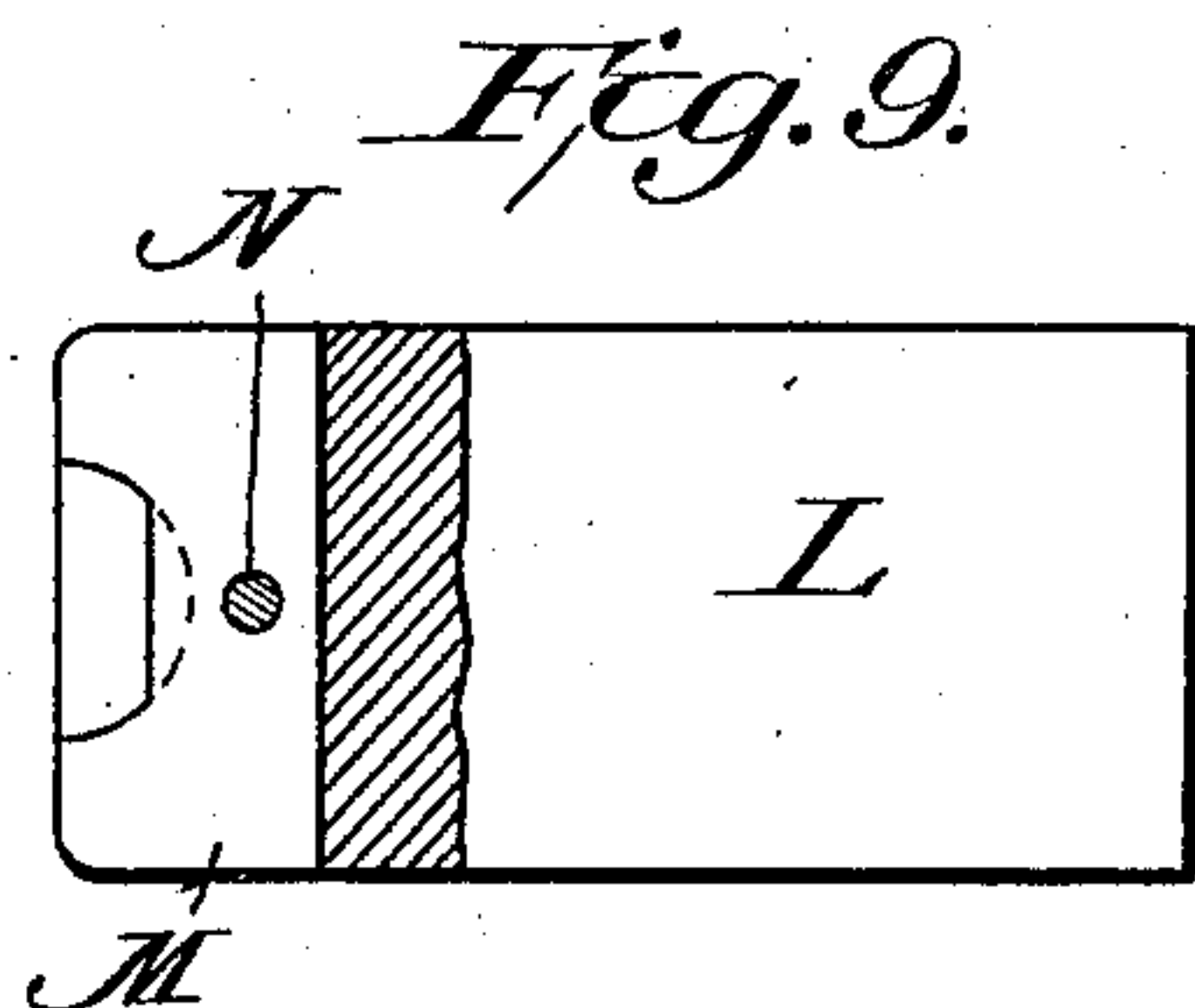
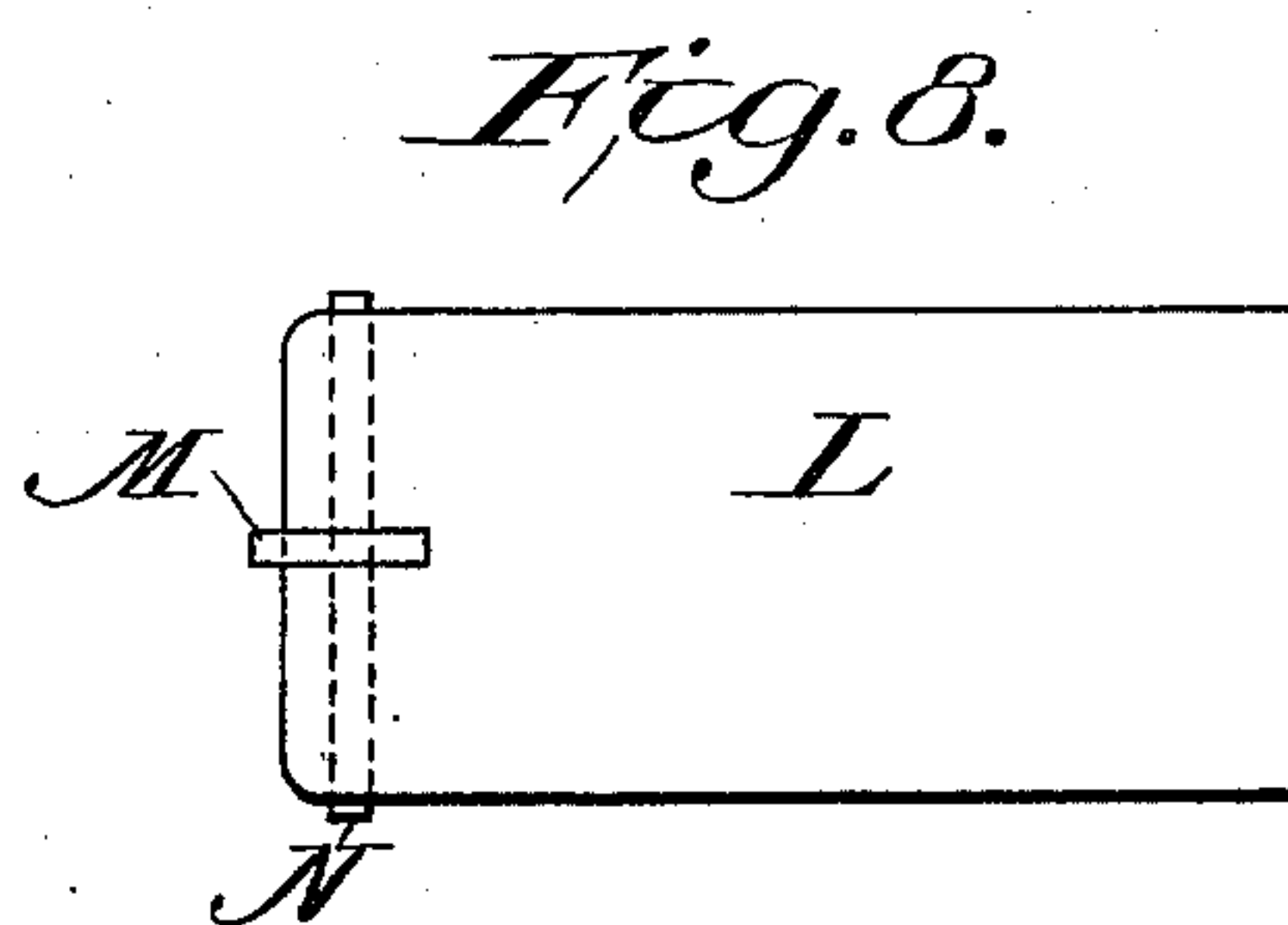
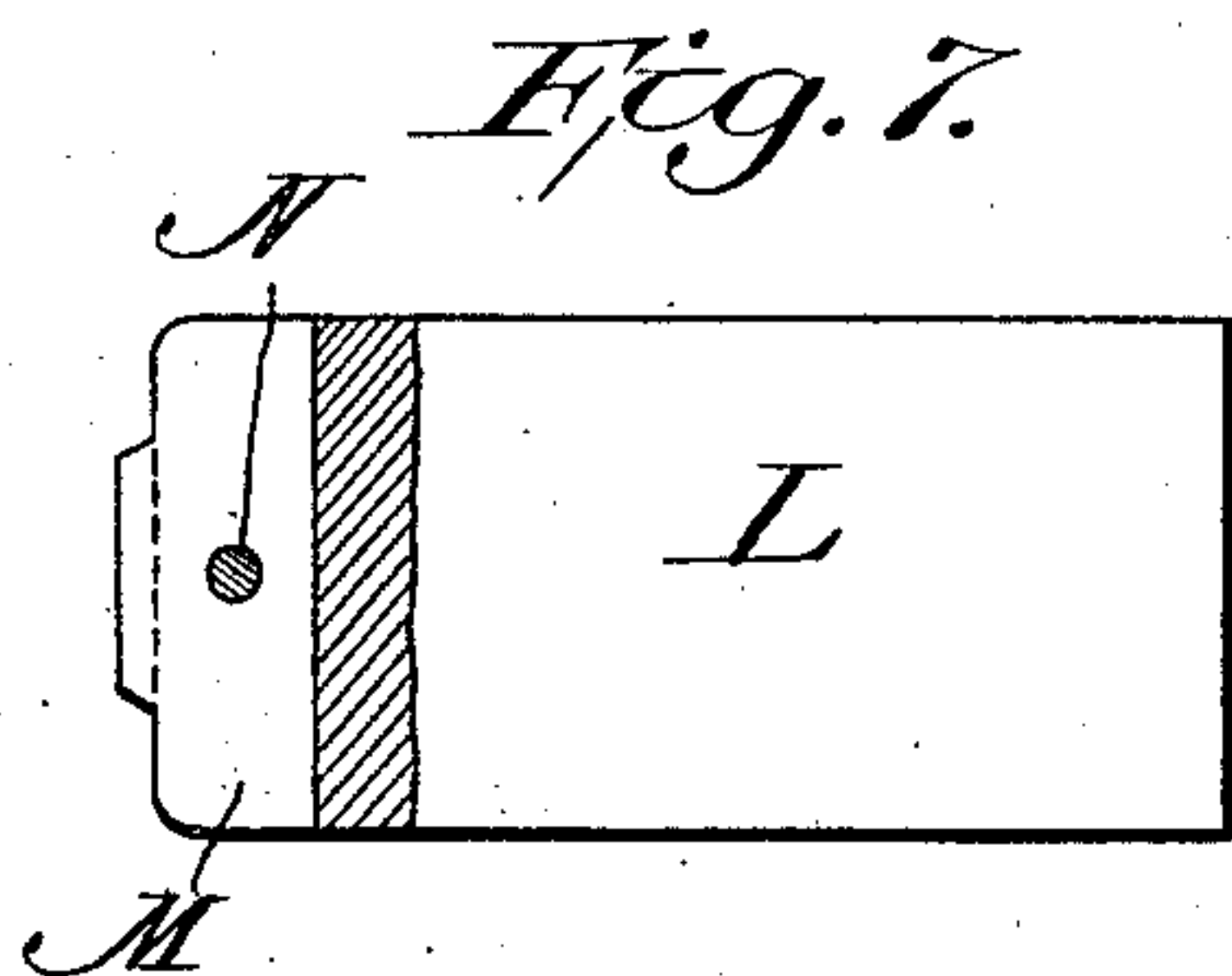
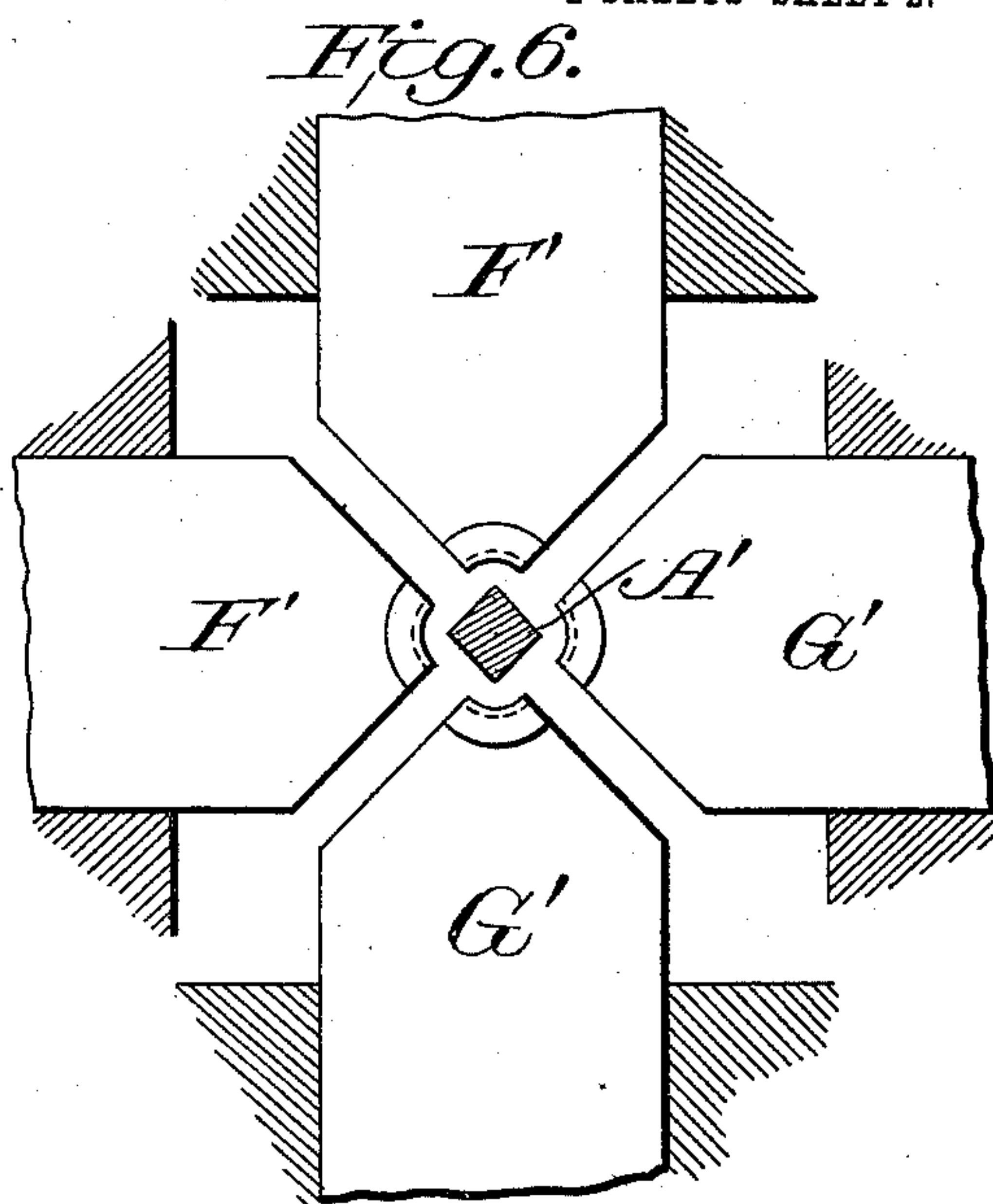
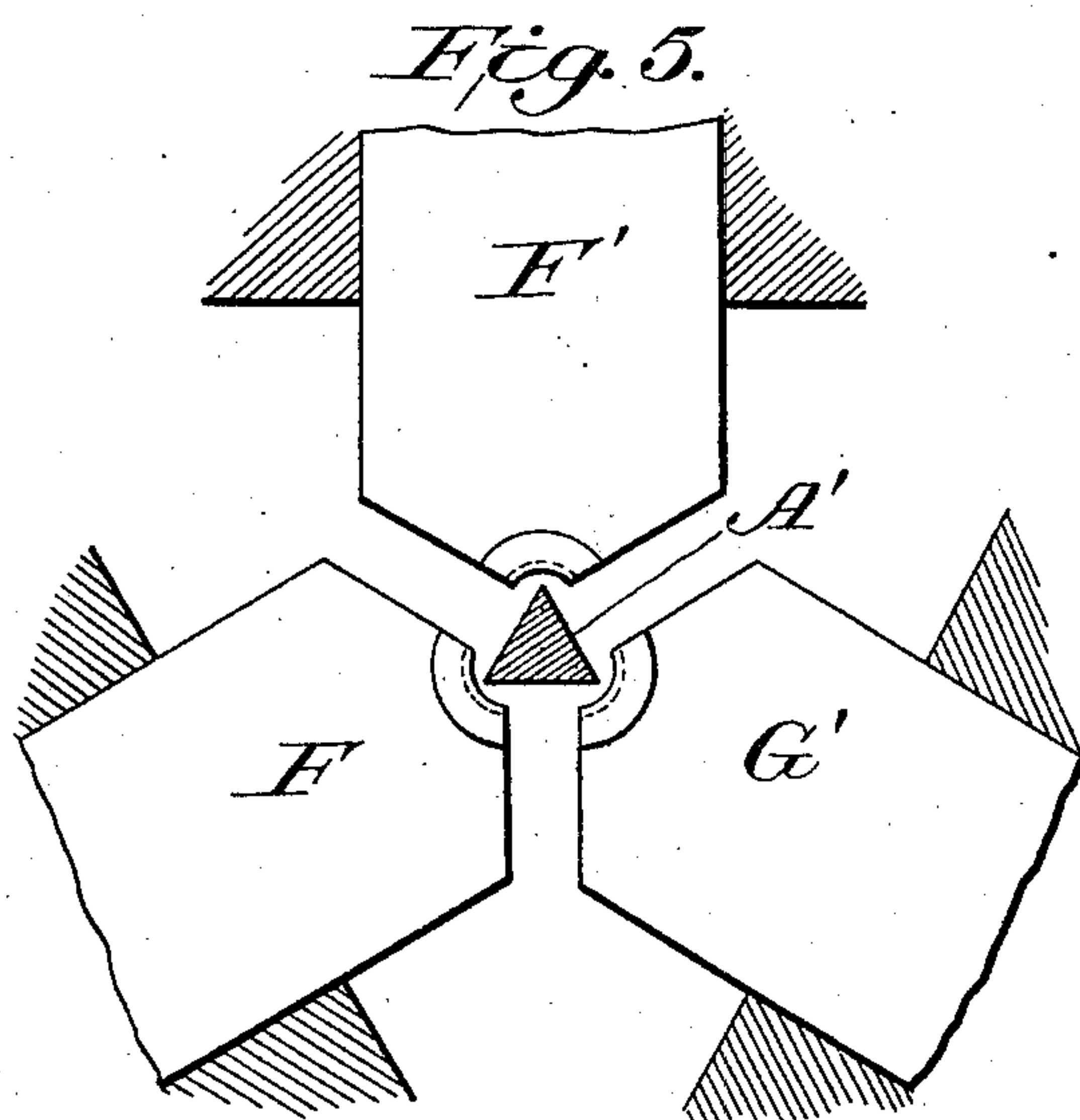
Attorneys

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

FRED F. DEEDS, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-THIRD TO FRANK McHALE
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MECHANISM FOR MAKING BOLTS, SCREWS, &c.

996,840.

Specification of Letters Patent.

Patented July 4, 1911.

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To all whom it may concern:

Be it known that I, FRED F. DEEDS, citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Mechanism for Making Bolts, Screws, &c., of which the following is a specification.

This invention relates to means for making bolts, screws, and other screw threaded articles, and has for its object to provide improved devices for this purpose, whereby the operations of heading, cutting off, forming the stock, threading the blank, pointing and slotting are performed in a continuous manner, and in substantially one operation.

It is known that when threads are swaged on screw or bolt blanks, for example, a fin is formed, between the parts of the die, or the stock is enlarged in consequence of the displacement of metal. To remedy this condition my invention includes the idea of providing the stock in such shape that in consequence of the die pressure the excess metal will be forced into a groove or recess produced in the stock, thus avoiding the appearance of fins on the completed articles and also avoiding enlargement thereof as referred to. In one form of the invention the stock is grooved lengthwise, and is then cut off and swaged in a die to form the threads, and the excess metal is compressed into the grooves and fills the same so that the article has a true circular section when completed. In other modifications of the invention the stock is made angular in shape, and is pressed in dies to a circular form, the flat sides of the stock giving space sufficient to accommodate the excess metal.

The invention also embodies improvements with respect to the construction of the dies and the manner of forming the articles therein, in a continuous operation as above referred to.

The invention is illustrated in the accompanying drawings in which—

Figure 1 is a horizontal section, partly in plan, of the means including the dies for producing the articles indicated. Fig. 2 is a horizontal section on the line 2—2 of Fig. 1. Fig. 3 is a cross section of the stock before it passes the grooving rolls. Fig. 4 is

a similar section thereof after it passes said rolls. Figs. 5 and 6 are face views of modified forms of dies, with angular stock therein. Figs. 7, 8, 9 and 10 are detail views of modified forms of heading dies.

Referring specifically to the drawings, A indicates an ordinary round wire or rod which is fed between grooved rolls B which produce longitudinal grooves C in the stock which then passes through an opening in the machine frame D and through a hole in a cutting off die or collar E which is set in a recess in the frame and which is made of tempered steel and ground on the face to form a cutting edge. The swaging or pressing dies F and G set in a suitable recess in the frame and are operated by a slide H located behind the die G and connected thereto to reciprocate the same.

The wire or stock is fed through the cutting die E far enough to make the body and head of the screw or bolt, the dies F and G being then separated. The die G is then advanced to meet the die F by means of the slide H, and the cutting edge J on said die, coöperating with the cutting die E, shears the wire or rod, and the blank thus formed is swaged between the dies F and G, the cutting edges J and J' acting to point the screw and clear the same of any burs. The dies F and G are threaded where they meet to form the threads on the blank, and in this operation the excess metal is received by and fills the grooves C, said grooves being disposed in line with the meeting faces of the dies F and G, whereby the formation of fins, or crowding of the metal between the dies, is avoided. These dies are also shaped to form the head of the article, and after the operation described the ram K, which carries the heading die L, is moved forward by any suitable means and compresses the end of the stock into the head recesses in the dies F and G, thereby forming the head. To slot the head a kerf plate M is fastened in the die L, as by a pin N, and when the die is advanced said plate cuts into the head to form the kerf.

It will be noticed that the die G, particularly, coöperates with the die E to cut off the blank from the stock; also that the dies F and G coöperate to swage the threads;

also that the die L coöperates with the dies F and G to produce the head, the latter acting as the anvil for the heading die L. By the means shown the operation may be made
 5 practically continuous, the stock being fed forward through the die E as fast as it is disposed of by the shaping dies.

In the modified form shown in Figs. 5 and 6, instead of the two dies F and G,
 10 gang dies F' and G', in groups of three or four parts, are shown, and these may be operated on special shaped wires or rods A', the shapes being non-circular, and the flat sides affording spaces to receive the ex-
 15 cess metal displaced in the swaging operation, the finished form being circular.

In Figs. 7 to 10 modified heading dies are shown, those in Figs. 7 and 8 being adapted for forming and kerfing the head
 20 of a countersunk screw or bolt, and those in Figs. 9 and 10 being used for forming and heading a slotted round headed screw or bolt, the countersunk head being produced in a suitable cavity in the dies F and
 25 G, and the round headed bolt being formed in a suitable cavity in the heading die L, and against the flat side of the die F, the cavity in which may be threaded to the side surface thereof.

30 Various other modifications are capable of being made within the scope of the invention; and, furthermore, the shape of the stock may be varied, while retaining the idea of giving space for the displaced metal.

35 Having thus described my invention, what

I claim as new, and desire to secure by Letters Patent of the United States, is:—

1. In a mechanism of the kind described, the combination of shaping devices for giving a non-circular form to stock sufficient
 40 to prevent formation of fins when the stock is swaged, cutting off, side swaging and clamping dies to which the stock is fed from said devices, and a heading die co-operating with said swaging dies to head the
 45 article while clamped therebetween.

2. In a mechanism for making bolts, screws, or the like, the combination of shaping devices for giving a non-circular form
 50 to stock sufficient to prevent formation of fins when threads are formed thereon, and cutting off and thread-forming dies located in line with said devices, and to which the stock is fed from said devices.

3. In a mechanism for making bolts, 55 screws, or the like, the combination of a set of grooving rolls adapted to groove stock sufficiently to prevent formation of fins thereon when the stock is swaged, a cutting
 60 off die having an opening in line with said rolls to receive the stock therefrom, and cutting off and thread-swaging dies coöperating with said die, substantially as described.

In testimony whereof, I do affix my signature in presence of two witnesses.

FRED F. DEEDS.

Witnesses:

FRANK McHALE,

STEDMAN J. ROCKWELL.