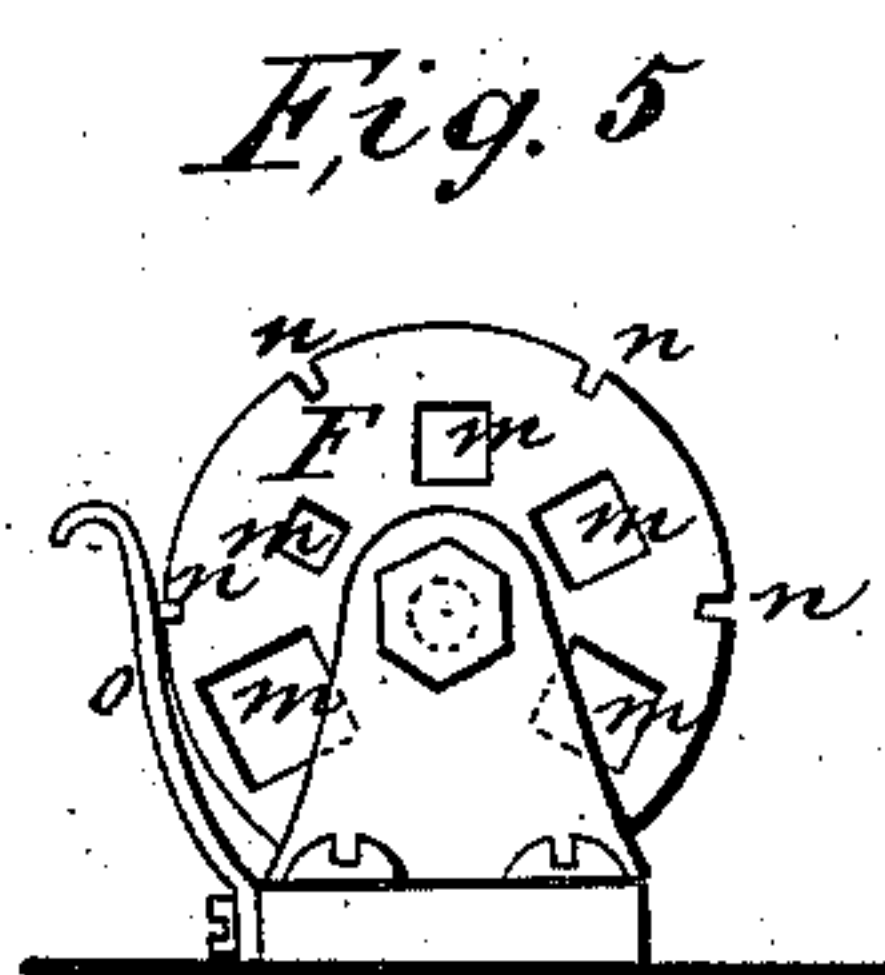
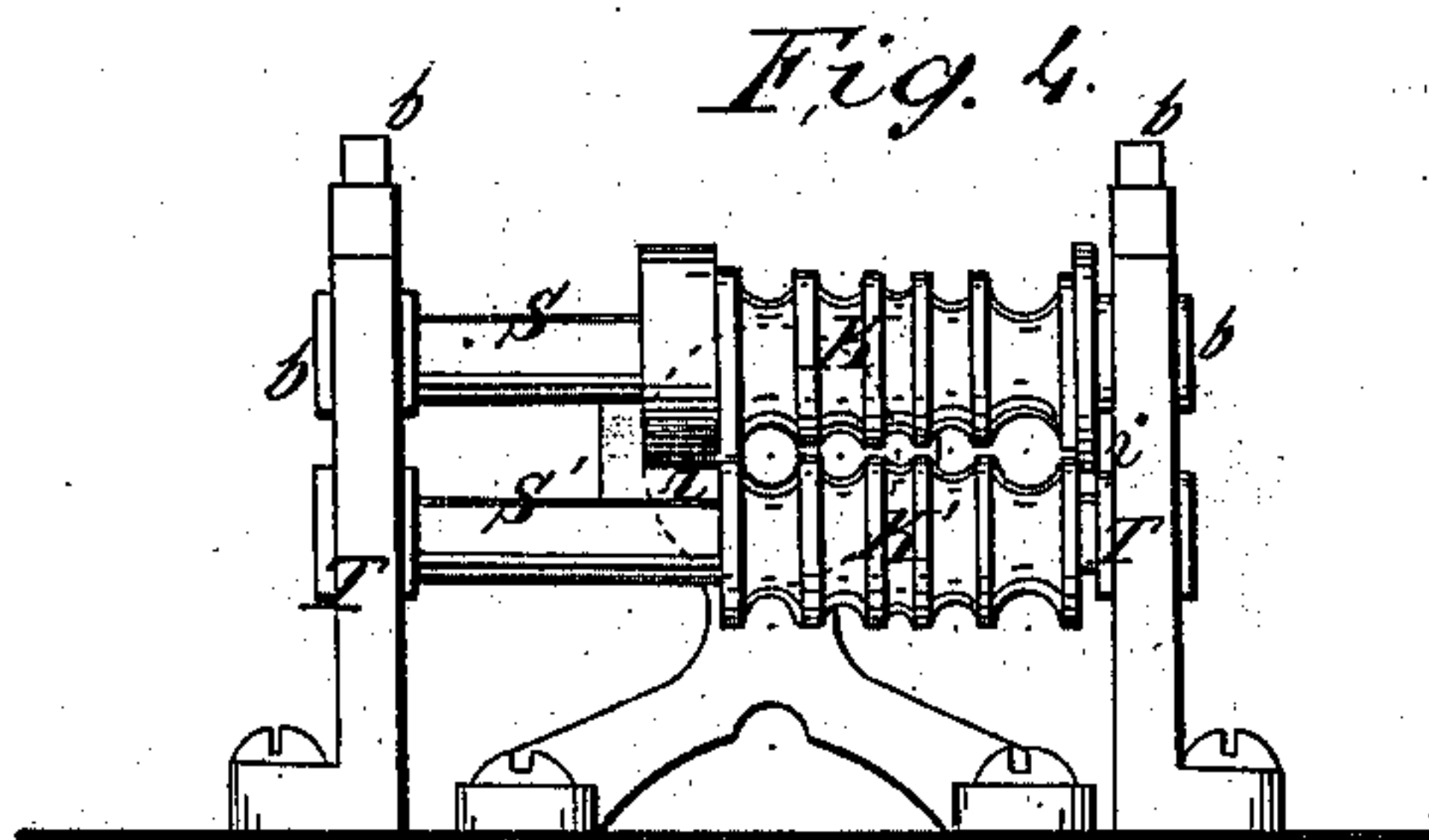
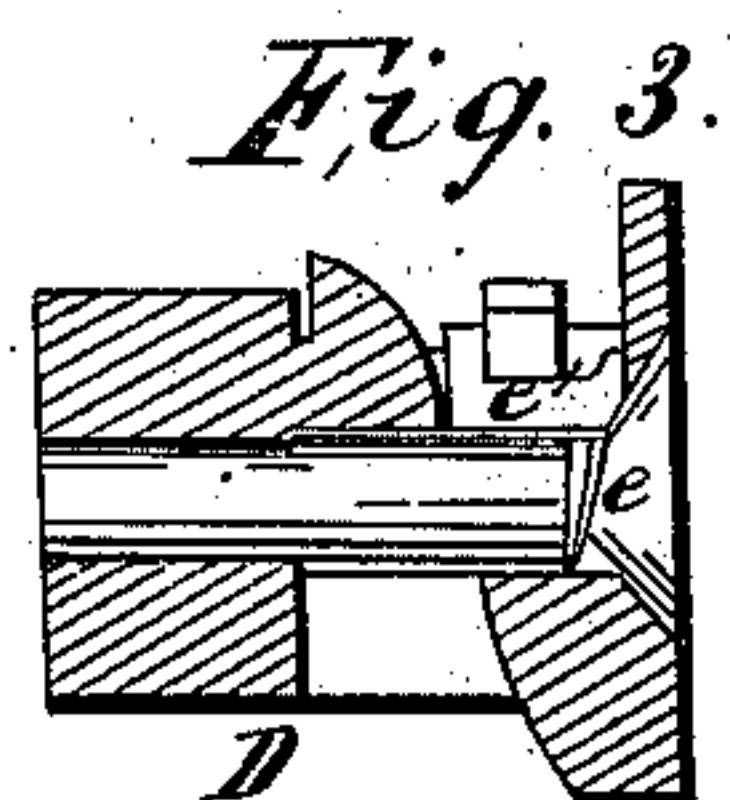
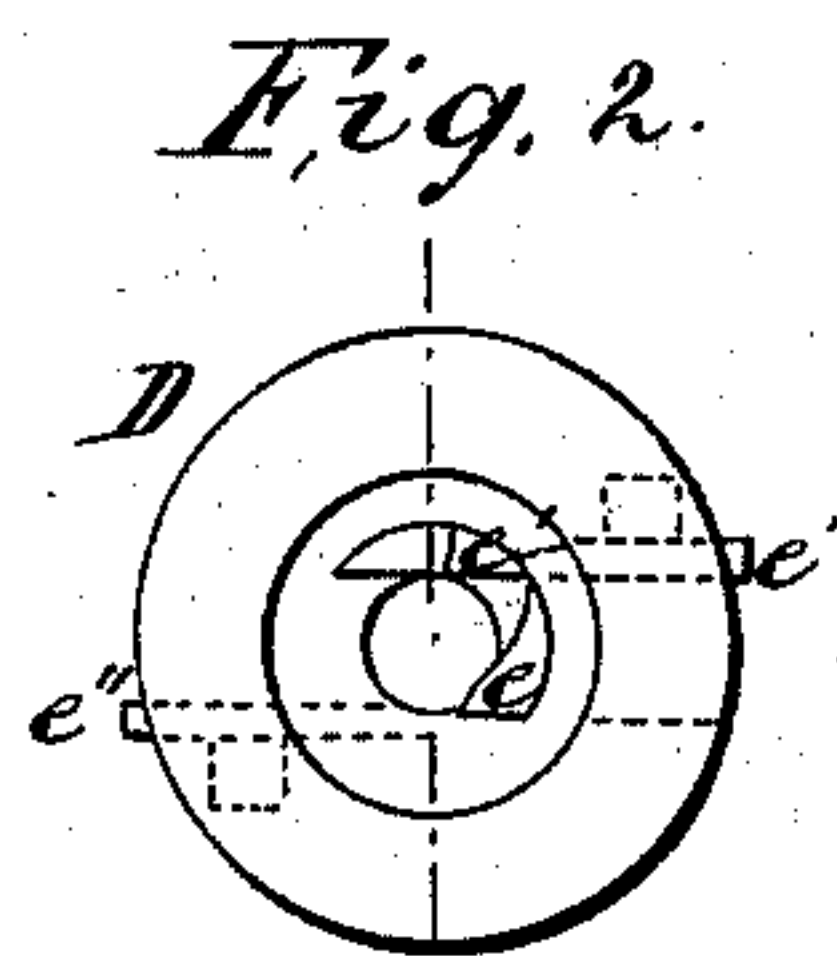
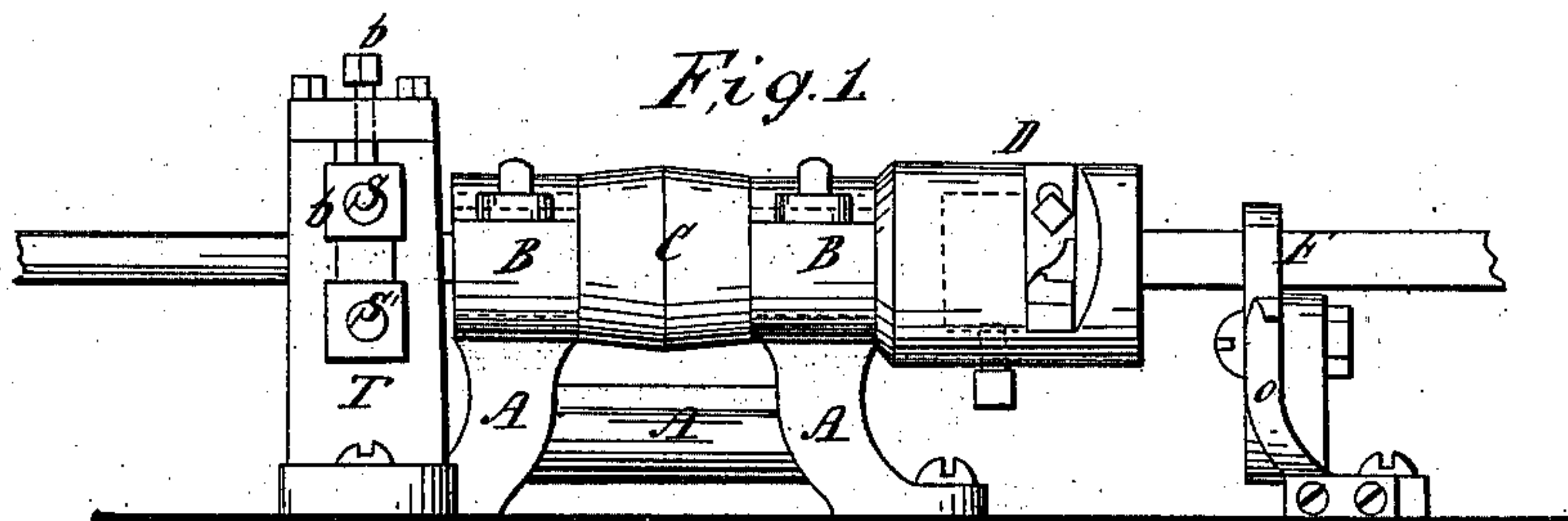


F. Douglas,
Gage Lathe.

N^o 81,761.

Patented, Sept. 1, 1868.



Witnesses.

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United States Patent Office.

FRANK DOUGLAS, OF NORWICH, CONNECTICUT.

Letters Patent No. 81,761, dated September 1, 1868.

IMPROVEMENT IN MACHINE FOR TURNING RODS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, FRANK DOUGLAS, of Norwich, in the county of New London, and State of Connecticut, have invented a new and improved Self-Feeding Rod-Machine; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation.

Figure 2, an end view of the cutter-head.

Figure 3, a longitudinal vertical section of the cutter-head.

Figure 4, an elevation of the end opposite to the cutter-head, showing a side elevation of the auxiliary guide-rolls.

Figure 5, a detached view of the guide-plate.

In this invention, the knives which reduce the stick to a round rod are so arranged that one of them scores directly into the stick, and at the same time draws it along and feeds it to the cutter, while the others shave off the corners of the rod and round it to the proper size. A new guide-plate is also employed, together with a new device for holding the rods when they shall have passed through the guide-plate.

In the drawings, A indicates the supporting-frame, and B B the bearings of the cutter-spindle, C representing the belt-pulley, and D the cutter-head.

The cutter-head and spindle are provided with an axial opening or bore, extending entirely through them, through which the stick travels while being reduced to the proper shape.

The cutter-head is provided with three knives, one, *e*, arranged so as to present its edge nearly crosswise of the stick, but inclined slightly, so that as the cutter-head revolves, this knife will score directly into the body of the wood, and at the same time draw the stick along, cutting a spiral around it. This blade cuts into the wood nearly to the depth of the shaving which is afterwards to be taken off, or, in other words, nearly to the lines which will form the circumference of the round rod when it is made.

Immediately behind this knife is another, *e'*, the edge of which extends longitudinally with the cutter-head and the stick, and which cuts or "roughs" off the chips that have been scored by the blade *e*, reducing the stick nearly to the required form.

Immediately behind this knife is another, *e''*, the edge of which extends in the same direction as that of blade *e'*. This knife finishes off the stick, reducing it to the required dimensions and form, and giving it a smooth, even surface.

In order that the stick may at all points fit nicely, and thus be held firmly in the tubular cutter-head, the bore of the latter corresponds to the size of the stick at the different points, being largest at the outer extremity, decreasing a little at the rear edge of the knife *e'*, and decreasing still further at the rear edge of knife *e''*, from which point it continues of uniform calibre to the other end of the spindle.

For convenience in making the cutter-head, and to save the necessity of elongating it to too great an extent, I arrange the knives *e'* *e''* on opposite sides of it, whereby any point in the surface of the stick will pass under the operation of the latter knife the moment it has escaped from the former.

The edges of the knives may be bevelled, and inclined to any degree, to make them cut more easily and cleanly without tearing or breaking away the wood.

The back of knife *e'* presses against the side of knife *e*, and holds the latter in place, rendering only one screw necessary to hold both blades. The edge of knife *e'* is slightly curved, that part of it which first comes in contact with the stick being bent up, so as to cut the chip cleanly from the stick.

In connection with a cutter and knives thus constructed and operating, I employ a circular guide-plate, F, hung on a spindle at its centre, and provided with a series of square holes, *m m m*, of different sizes, to receive a variety of sticks, and arranged so that as the plate is rotated on its spindle, the centres of the holes will be successively presented in a line with the axis of the cutter-head and spindle. The plate is also provided with a series of notches, *n n n*, and a spring-lock, *o*, operating in the notches, by which it is held in the proper posi-

tion for feeding the sticks accurately through the different holes. This plate not only guides the sticks properly to the cutter-head, and holds them steadily, but it prevents their turning while the knives are in operation.

When the stick shall have passed entirely through the plate F, it is still necessary to have some provision made to prevent it from turning. By this time, however, the opposite end of the stick will project through the other end of the cutter-spindle, and I take advantage of this fact to construct an apparatus at that point for the purpose.

Such apparatus consists of two grooved rollers, R R', working upon shafts, S S', one of which is supported upon adjustable spring-bearings, b b, in upright standards, T T. The rollers are held in position with regard to each other by means of flanges, r r', on one, which overlap the ends of the other, and prevent it from sliding or moving endwise independently of its companion. The grooves on the rollers are so constructed and arranged that they form, in connection with each other, circular openings between the rollers, through which the rods pass. The spring-bearings press the rollers together against the rod sufficiently to hold the latter in place, guide it properly from the spindle, and prevent its turning.

Cutter-heads and spindles of different sizes, and provided with central apertures of different sizes, may be used in connection with the series of different-sized holes in the plate F, and between the rollers R R', so that a perfect rod of any dimensions may be made.

It is evident that knives for moulding and turning the rod might be used with my improved feed-device, as well as knives for simply rounding and polishing it, as above described, and that any number, one, three, or more knives, might be employed on the cutter-head for polishing, turning, or moulding the rod.

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

1. The arrangement of the inclined cross-cutting knife *e* with the knives *e'* *e''*, in a tubular cutter-head, when constructed and operating substantially as and for the purpose above described.
2. The guide F, when constructed with the openings *m m*, and the notches *n n*, and operating in connection with the lock *o* and the tubular cutter-head, substantially as and for the purpose set forth.
3. The arrangement of the grooved rollers R R', at the rear end of the cutter-spindle, substantially as described.

FRANK DOUGLAS.

Witnesses:

ALBERT S. BOLLES,
ED. H. THAMES.