(No Model.) 2 Sheets—Sheet 1.

C. J. PETERSEN.

LATHE FOR TURNING SPIRAL PATTERNS ON STICKS.

No. 561,724. Patented June 9, 1896.

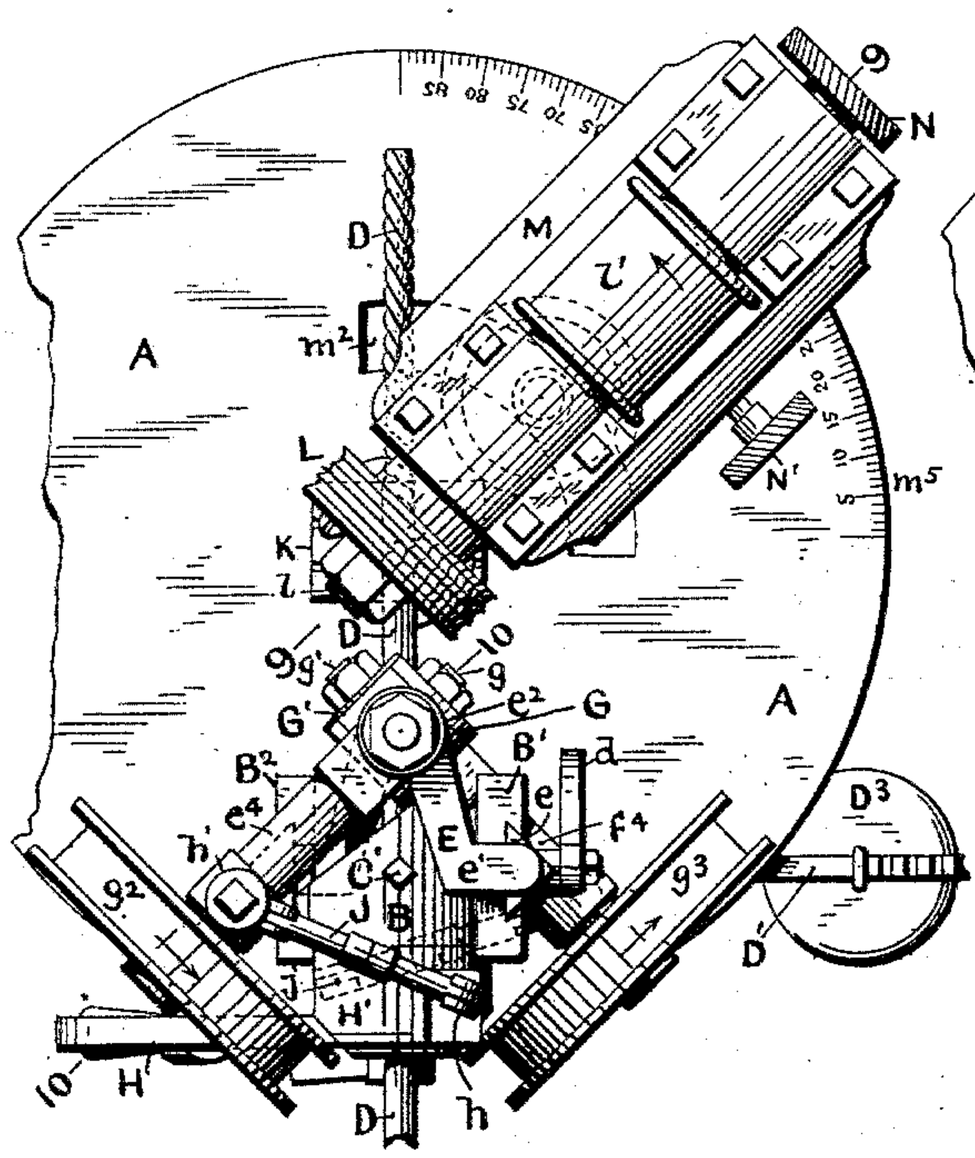


FIG. 1.

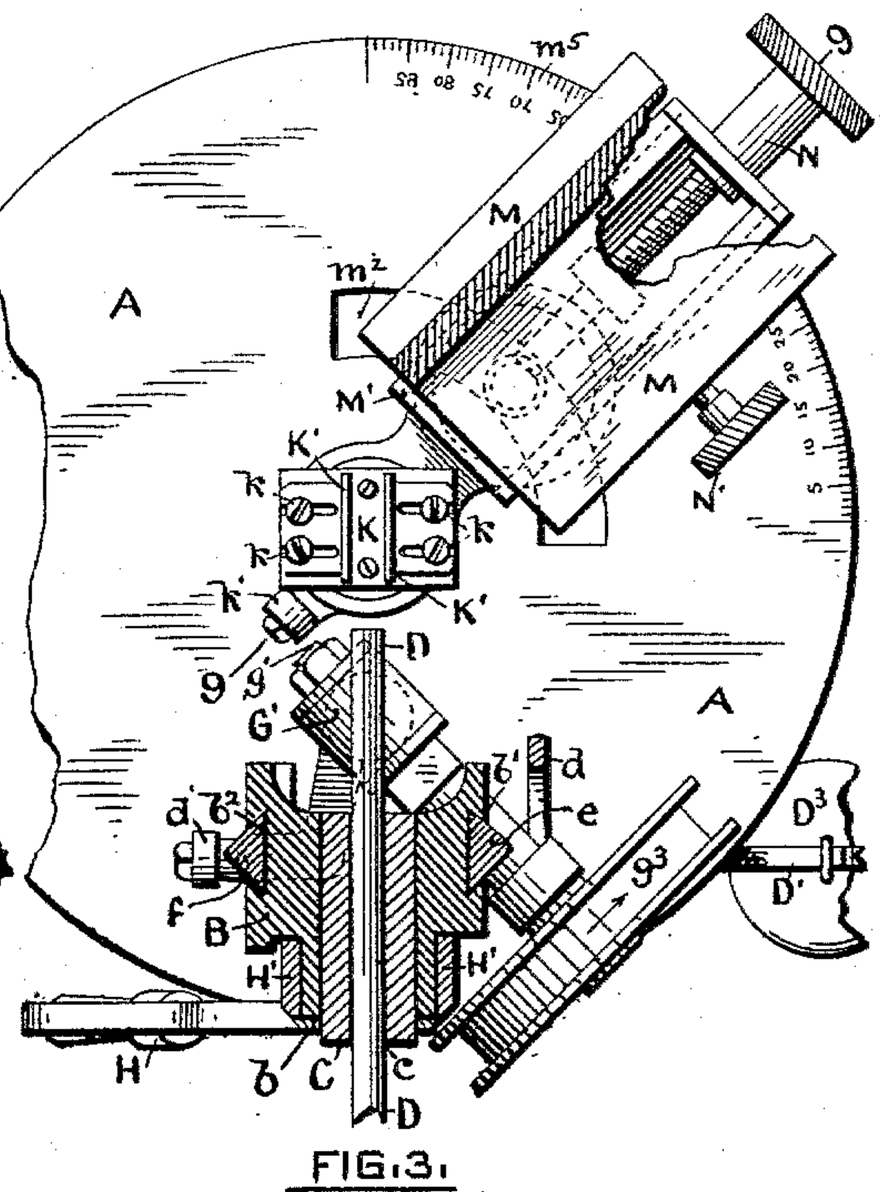
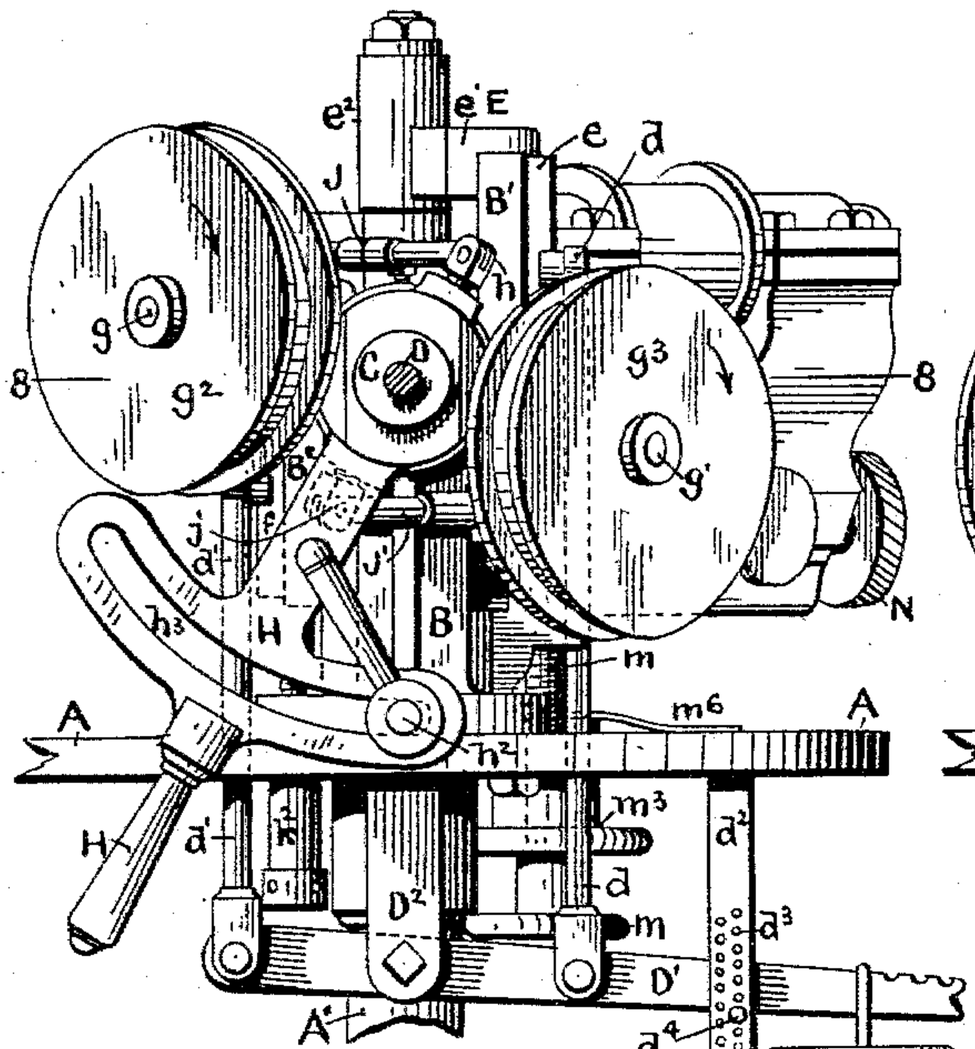


FIG. 3.



WITNESSES. FIG. 2.

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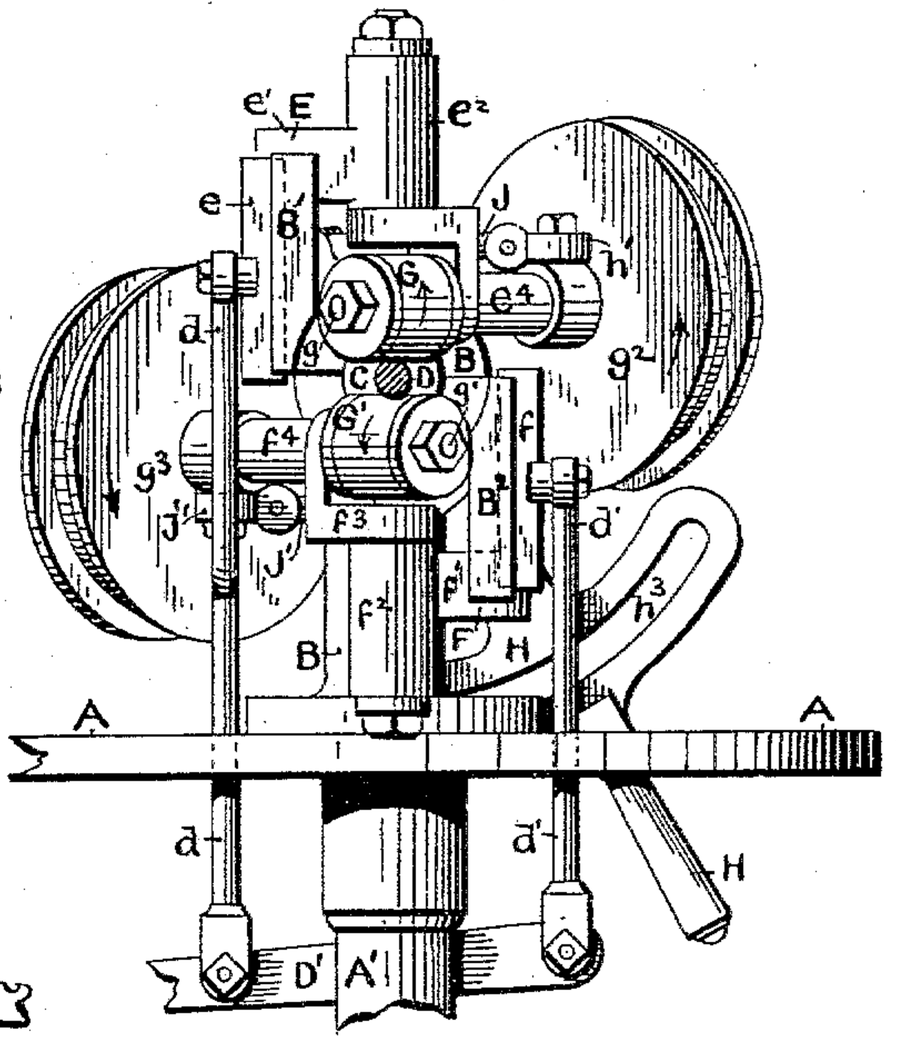

FIG. 4.

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(No Model.) 2 Sheets—Sheet 2.

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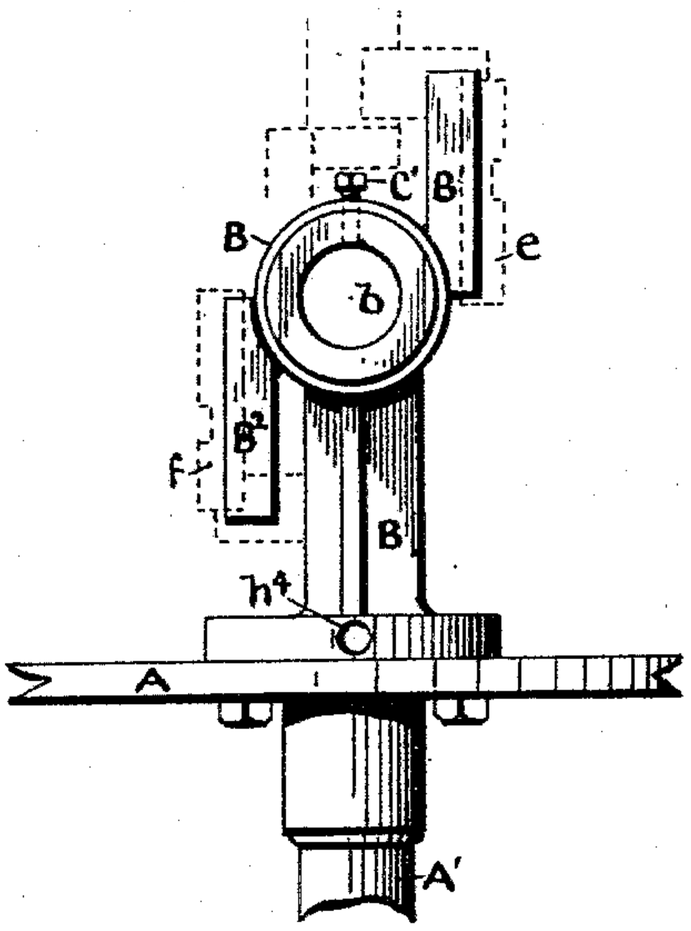

FIG. 5.

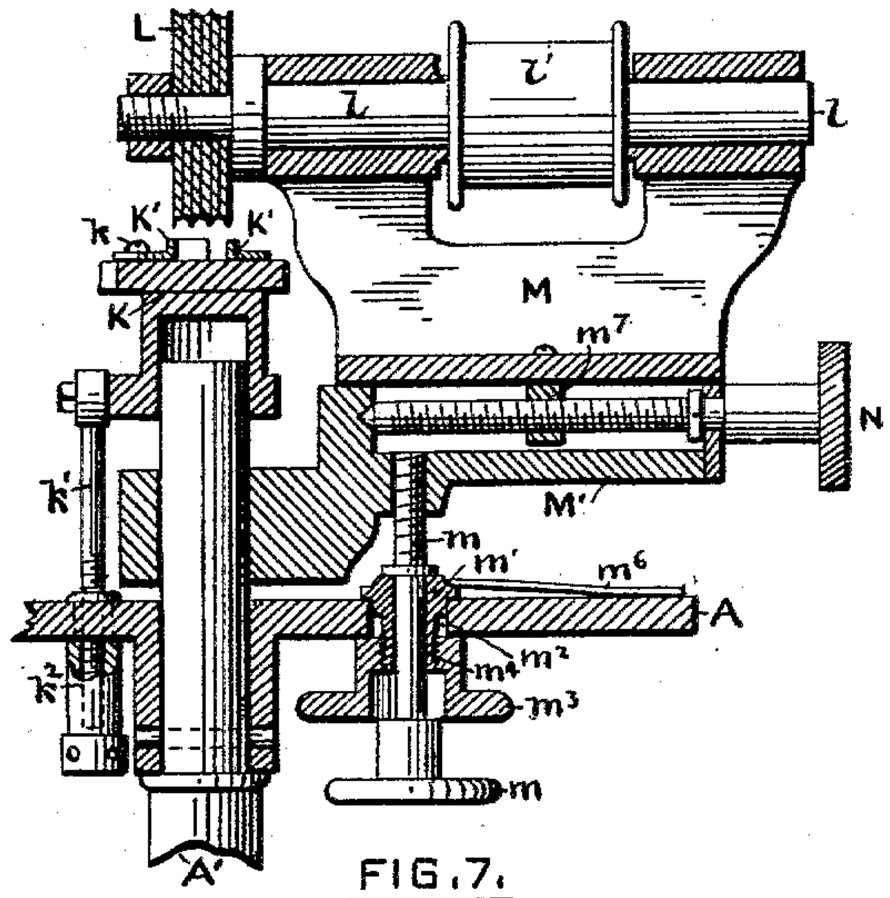

FIG. 7.

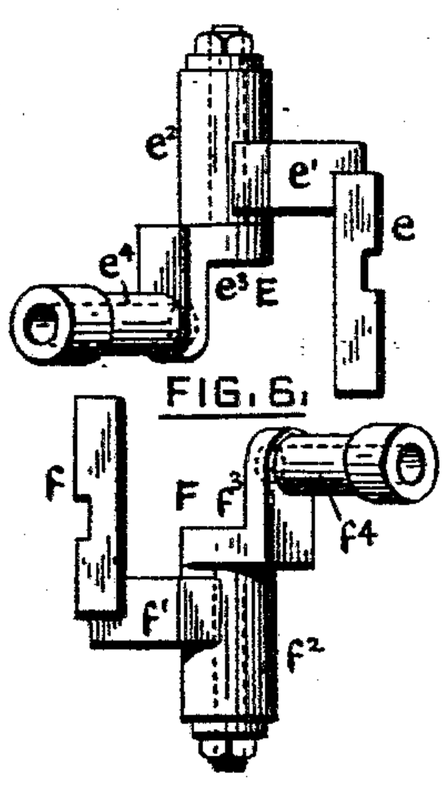

FIG. 6.

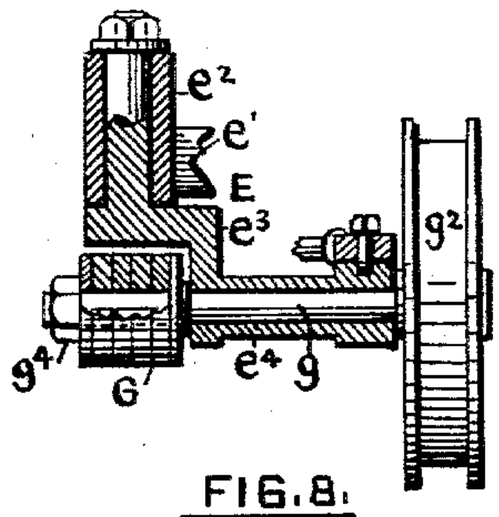

FIG. 8.

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UNITED STATES PATENT OFFICE.

CHARLES J. PETERSEN, OF PORT CHESTER, NEW YORK, ASSIGNOR TO GEORGE MERTZ'S SONS, OF SAME PLACE.

LATHE FOR TURNING SPIRAL PATTERNS ON STICKS.

SPECIFICATION forming part of Letters Patent No. 561,724, dated June 9, 1896.

Application filed January 23, 1892. Serial No. 419,000. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. PETERSEN, a citizen of the United States, residing at Port Chester, county of Westchester, and State of New York, have invented a new and useful Improvement in Lathes for Turning Spiral Patterns on Sticks; and I do hereby declare the following specification, taken in connection with the accompanying drawings, forming a part of the same, to be a description thereof.

This invention relates to a lathe for automatically turning spiral patterns on the exterior of wooden sticks; and it consists generally in a machine having a pair of feeding-rolls which are arranged so that their longitudinal axes cross each other at an angle, (which angle preferably can be varied,) whereby both a forward and a rotary movement is given to the sticks passing between the rolls, and a rotary cutter which is arranged to act upon the advancing and rotating sticks to mold or cut a pattern thereon. It also consists in certain features of arrangement and construction, all as hereinafter described and claimed.

Referring to the drawings, Figure 1 represents a top view of a lathe embodying the invention. Fig. 2 shows a front elevation of the same. Fig. 3 represents a horizontal section on line 8 8 of Fig. 2. Fig. 4 shows a rear elevation of the machine with the cutter-head removed. Fig. 5 represents a front elevation of the bed-plate and the stationary head mounted thereon, portions of the arms which slide in said head being shown by dotted lines. Fig. 6 represents the right and left hand arms which carry the feed-rolls. Fig. 7 shows a vertical section of the cutter-head, &c., on line 9 9 of Figs. 1 and 3. Fig. 8 represents a vertical section through one of the feed-rolls and its mounting on line 10 10 of Fig. 1.

The frame of the lathe is composed of a bed-plate A, and an upright head B secured thereto, Figs. 1, 2, 3, 4, and 5, which frame may be supported upon the floor or a bench by suitable legs or by a central standard A′, to which standard the plate A may be secured in any preferred manner. The head B is provided with a horizontal hole *b*, Fig. 5, adapted to receive a bushing C, Figs. 2, 3, and 4, which may be secured to the head by a set-screw C′, Figs. 1 and 5, the said bushing having a central hole *c* of a size to receive, support, and guide the sticks D, upon which the pattern is to be turned.

The head B is furnished on opposite sides with two plates B′ B², having in their outer faces, respectively, vertical dovetail grooves *b′ b²*, Fig. 3. Upon these respective plates compound arms E F are mounted to slide in vertical planes, the arm E being composed of a block *e*, adapted to slide in the groove *b′*, a bent arm *e′* projecting horizontally from said block, a vertical portion e^2, a bent portion e^3 projecting from the part e^2, and a tubular or sleeve portion e^4 projecting horizontally from the part e^3, as shown in Fig. 6.

The arm F is composed of a block *f*, adapted to slide in the groove b^2, a bent arm *f′* projecting horizontally from said block, a vertical portion f^2, a bent portion f^3 projecting from the part f^2, and a tubular or sleeve portion f^4 projecting horizontally from the part f^3.

In the sleeves e^4 f^4 are respectively mounted shafts *g g′*, which bear upon their rear ends, respectively, feed-rolls G G′ and upon their forward ends pulleys g^2 g^3 for revolving the rolls. These pulleys may be driven by separate belts from separate pulleys on a countershaft, but they are preferably driven by a single belt passing over a driving-pulley, thence around under the pulley g^3 from right to left, Fig. 2, up over the driving-pulley, and down around the pulley g^2 from right to left, then up to the driving-pulley.

The feed-rolls G G′ may be composed of any suitable material, but are preferably made of washers of vulcanized fiber, which are clamped upon the feed-roll shafts by a nut, as g^4, Fig. 8, so said rolls can be easily and inexpensively renewed when worn.

As particularly shown in Figs. 1 and 4, the feed-rolls G G′ are arranged so that their longitudinal axes cross each other at an angle in order that the sticks shall be given a rotary as well as a forward movement, and as such angle may need to be varied to produce different patterns arrangement is made for such purpose. In order that such variation may be easily and accurately accomplished, the arms E F, in which the roll-shafts are

mounted, have their parts e^3 f^3 pivoted in the parts e^2 f^2, as shown in Fig. 8, and said arms are connected in such a way that when one is moved the other will be moved at the same time an equal amount, but in the opposite direction. This may be accomplished by means of a lever H, Figs. 1, 2, 3, and 4, having a sleeve H′, Fig. 3, upon its upper end, which is mounted to turn on the head B. To the upper end of the lever H is swiveled a stud h, Figs. 1 and 2, and to the sleeve e^4 is swiveled a piece h', Figs. 1 and 4, and the said pieces are connected by a rod J, whose ends are pivoted to the pieces. To the lever H there is also swiveled a stud j, (shown by dotted lines in Fig. 2,) and to the sleeve f^4 is swiveled a piece j', Fig. 4, and the said pieces are pivoted to a connecting-rod J′. When the lever H is swung toward the right hand, Figs. 1 and 2, the roll-shafts g g' will be swung in opposite directions and the angle formed by the longitudinal axes of the rolls will be increased, and when the lever is swung toward the left hand the angle will be diminished, the arm parts e^3 e^4 and f^3 f^4 turning in the parts e^2 f^2, respectively. For securing the lever H, and therefore the feed-rolls, in a fixed position a clamp-screw h^2, Fig. 2, may be employed, which passes through a segmental slot h^3 in the lever H into a threaded hole h^4, Fig. 5, in the upright B.

From the fact that the arms E F, which carry the feed-rolls, are mounted to slide vertically on the head B it will be understood that the rolls may approach and recede from each other to act upon sticks of different diameters. In order that any vertical movements of the rolls shall be in unision and the same in amount for each roll relatively to the longitudinal axis of the stick, the blocks e f are respectively connected by rods d d', Fig. 4, to a bar D′, and this bar is pivoted at a point midway between where the rods d d' are connected with it to a bracket D^2, Fig. 2, projecting downwardly from the bed-plate A.

The bar D′ is provided with a weight D^3, which causes the feed-rolls to approach each other and grip the stick, though for such purpose the feed-rolls may be weighted in any suitable manner. From the plate A a bar d^2 projects downwardly, which is furnished with a series of holes d^3, and a stop or pin d^4 can be passed through such holes under the bar D′ to prevent the feed-rolls from approaching each other more than is desirable—that is, too much to prevent the sticks from easily entering between them when fed into the lathe.

When a stick is advanced by the feed-rolls, it is received by a central support K, Figs. 3 and 7, which is preferably furnished with one or more lateral stick-guides K′, adjustably secured to the support, as by screws k. The support K is made vertically adjustable to receive sticks of different diameters, and for this purpose it may be mounted to slide on the upper end of the standard A′, as shown in Fig. 7, and have a screw k' attached to it, and the screw be engaged by a nut k^2, having a bearing on the bed-plate for raising and lowering the support.

The rotary cutter L, which is to mold or turn the pattern on the sticks, is mounted upon a shaft l, Figs. 1 and 7, which is furnished with a pulley l' for revolving it, and the cutter is set at an angle with the longitudinal axis of the stick it is to mold. The shaft l is mounted in a head M, and said head is preferably circumferentially adjustable around the center of the support K. For this purpose the head may be attached to a bed-piece M′, mounted to swing on and about the standard A′. The head M, and consequently the cutter L, is also preferably arranged to be vertically adjustable by means of a screw m, which has a bearing upon a plate m', located in a segmental slot m^2, and is threaded into the bed-piece M′. For securing the cutter-head in its circumferentially-adjusted position a nut m^3 may be used, which is threaded on a downwardly-projecting stud m^4 on the plate m', Fig. 7, and bears upon the under side of the bed-plate A when turned up to its clamping position. If desired, the plate A may be provided with a degree-scale m^5, Figs. 1 and 3, and a pointer m^6 be secured to the bed-piece M′ or to the plate m', as shown in Fig. 7.

For adjusting the cutter L in a horizontal plane and radially to and from the support K the cutter-head M may have a lug m^7 thereon, which is engaged by an adjusting-screw N, having a bearing in the bed-piece M′, as shown in Fig. 7, and a set-screw N′ may be employed to secure the cutter-head in its adjusted position.

The operation of the machine is as follows: The head B, having been supplied with a bushing C, provided with a hole of the proper diameter to support the stick to be molded, the weighted end of the bar D′ is raised by hand, which separates the feed-rolls G G′, and the stick is passed into the bushing and between the rolls, when the bar D′ is released, the weight D^3 causing the rolls to grip the stick. The pin d^4 is then passed into that hole d^3 which is just below said bar, so that when no stick is between the rolls they cannot approach each other sufficiently to prevent them from receiving a stick. The support K is adjusted vertically and its guides K′ laterally to support the stick properly against the thrust of the cutter. Either before or after the lathe is started the cutter L is adjusted circumferentially, radially, and vertically, so as properly to perform its office in molding the stick. The feed-rolls, which have been adjusted by the lever H so as to give the proper rotation and advancement to the stick, act to feed the stick forward and turn it on its own axis, during which time the cutter molds a spiral pattern on the stick, as indicated in Fig. 1. Thus it will be seen

that after the parts of the lathe have been properly adjusted the machine will automatically produce a spiral pattern on sticks with no more attention than is necessary to keep the machine supplied with sticks, which can be done by a boy.

When the sticks are very long, troughs may be employed, one at the front or receiving end of the lathe and the other at the delivery end, to support the sticks as they enter and leave the lathe, as will be readily understood.

It will be evident that if the lathe be intended to produce only certain patterns upon sticks of the same diameters the lathe can be made with its feeding-rolls permanently fixed at the proper angle with and distance from each other. The support K and guide K′ can be fixed in position properly to support the stick against the thrust of the cutter, and the cutter-head need not be adjustable. As hereinbefore described, however, the lathe is designed and intended to mold a large variety of patterns the spirals of which may have different pitches or inclinations and on sticks of different diameters, which construction greatly increases the usefulness of the lathe.

What I claim, and desire to secure by Letters Patent, is—

1. The combination of a pair of feeding-rolls the longitudinal axes of which cross each other and the bearings of which are connected to move equally and simultaneously in opposite vertical directions; a guide for the stick to be molded; and a rotary cutter for molding the stick, substantially as set forth.

2. The combination of a pair of feeding-rolls movable to and from each other, weighted to cause them to grip a stick, and the longitudinal axes of which cross each other; means, substantially as described, for securing an equal and simultaneous vertical movement of the rolls to and from each other; a guide for the stick; and a rotary cutter for molding the stick, substantially as set forth.

3. The combination of a pair of feeding-rolls, the longitudinal axes of which cross each other; means, substantially as described, which secure an equal and simultaneous swinging movement of the rolls in opposite directions when the angle formed by their axes is changed; a guide for the stick; and a rotary cutter for molding the stick, substantially as set forth.

4. The combination of a pair of vertically and horizontally adjustable feeding-rolls, the longitudinal axes of which cross each other; means, substantially as described, which secure equal and simultaneous vertical movements of the rolls; means, substantially as described, which secure equal and simultaneous horizontally-swinging movements of the rolls; a guide for the stick; and a rotary cutter for molding the stick, substantially as set forth.

5. The combination of a pair of feeding-rolls the longitudinal axes of which cross each other; a rotary cutter for molding the stick; a guide for the stick located upon the receiving side of said rolls; and a vertically-adjustable support for the stick against the thrust of the cutter, located on the delivery side of said rolls, substantially as set forth.

6. The combination of a pair of feeding-rolls the longitudinal axes of which cross each other; a rotary cutter for molding the stick; a guide for the stick located upon the receiving side of said rolls; and vertically and laterally adjustable supports for the stick against the thrust of the cutter, located on the delivery side of said rolls, substantially as set forth.

7. The combination of a pair of feeding-rolls the longitudinal axes of which cross each other; a guide for the stick to be molded; a support for the stick against the thrust of the cutter; and a rotary cutter, for molding the stick, adjustable vertically, radially and circumferentially with relation to said support, substantially as and for the purposes specified.

8. The combination of the lathe-bed; the head B secured thereto and furnished with a bushing-hole *b* and with the side plates B′ B²; arms E F which slide vertically in said plates; feeding-rolls G G′ mounted to revolve in said arms; the rods *d d′* connected to said arms respectively; and a bar D′ connected to both of said arms and pivoted at a point midway between the arms, substantially as and for the purposes specified.

9. The combination of the lathe-bed; the head B secured thereto and furnished with the side plates B′ B²; arms E F which slide in said plates and have their parts e^4 f^4 respectively pivoted to turn in their parts e^2 f^2; feeding-rolls G G′ mounted to revolve in said arms; a lever H mounted to turn on the head B and swivel-connected with both of said arms, whereby when the lever is moved the rolls will be swung the same in amount and in opposite directions, substantially as and for the purposes specified.

10. The combination with the stick-support K of the rotary cutter L; the head M upon which the cutter is mounted to revolve, the said head being adjustable vertically, radially and circumferentially with relation to said support, substantially as and for the purposes specified.

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Witnesses:
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JAMES H. MCCULLOUGH.