No. 701,539. Patented June 3, 1902.

A. D. CATLIN.

INSULATOR PIN MACHINE.

(Application filed May 27, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

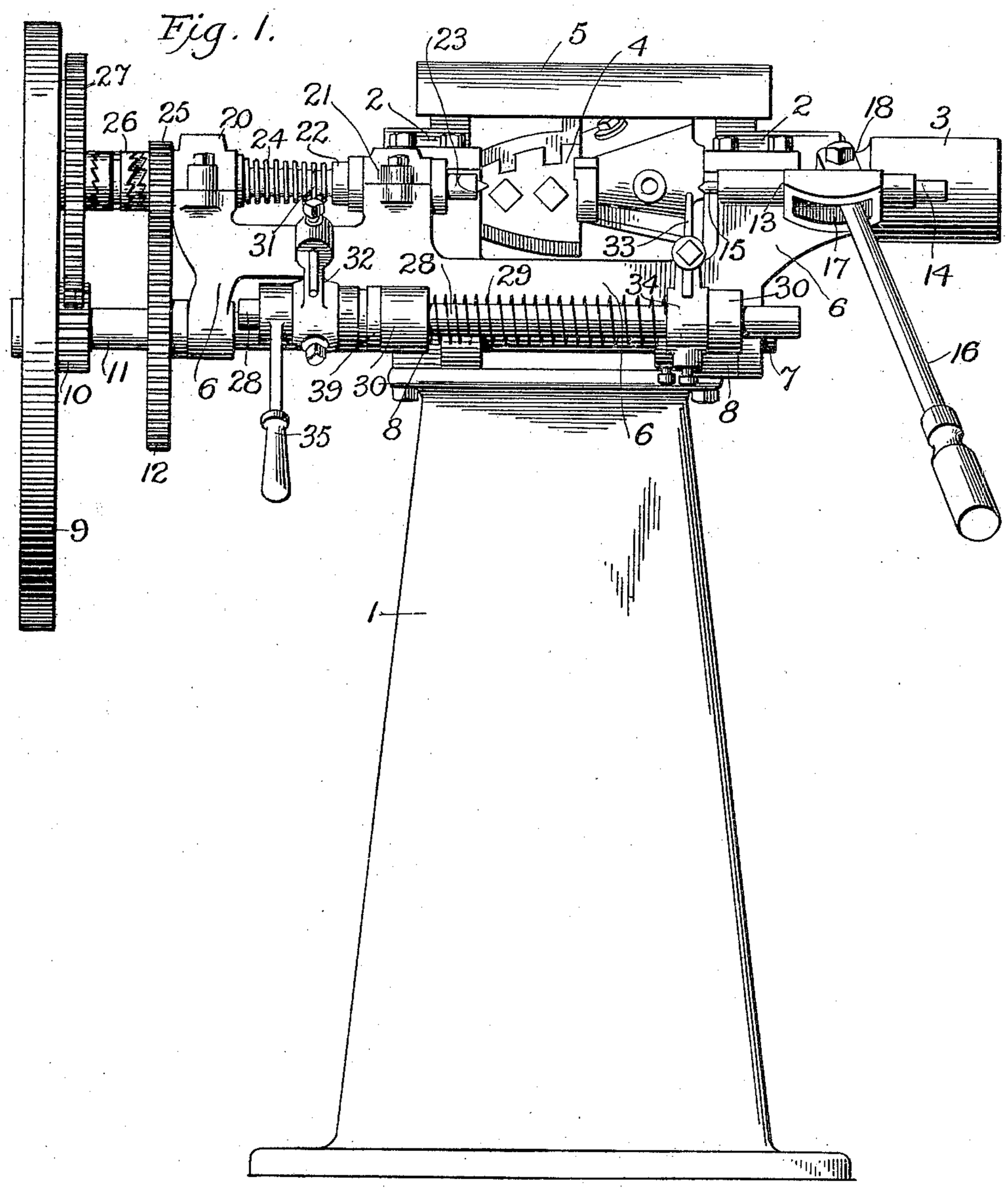

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Fig. 2.

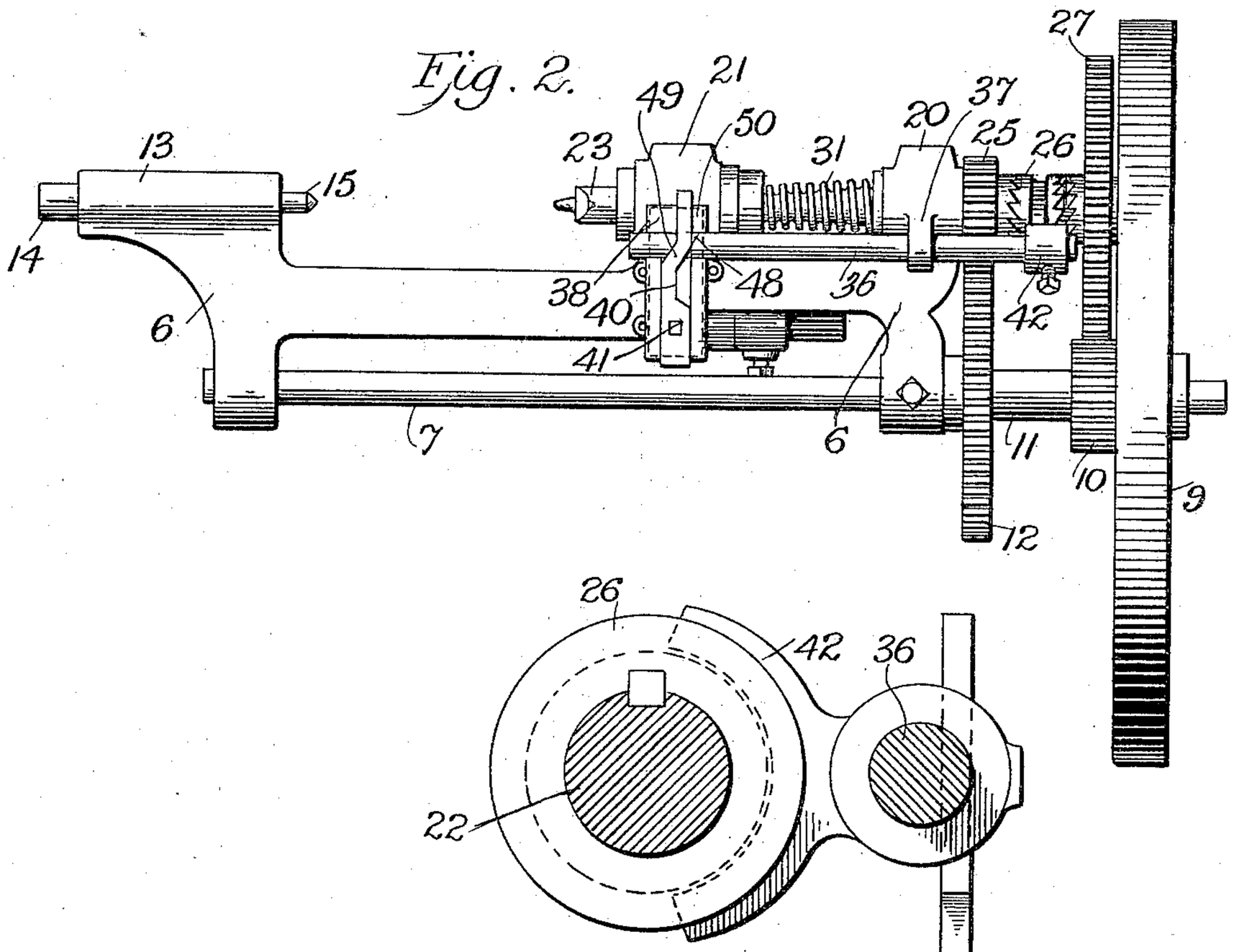
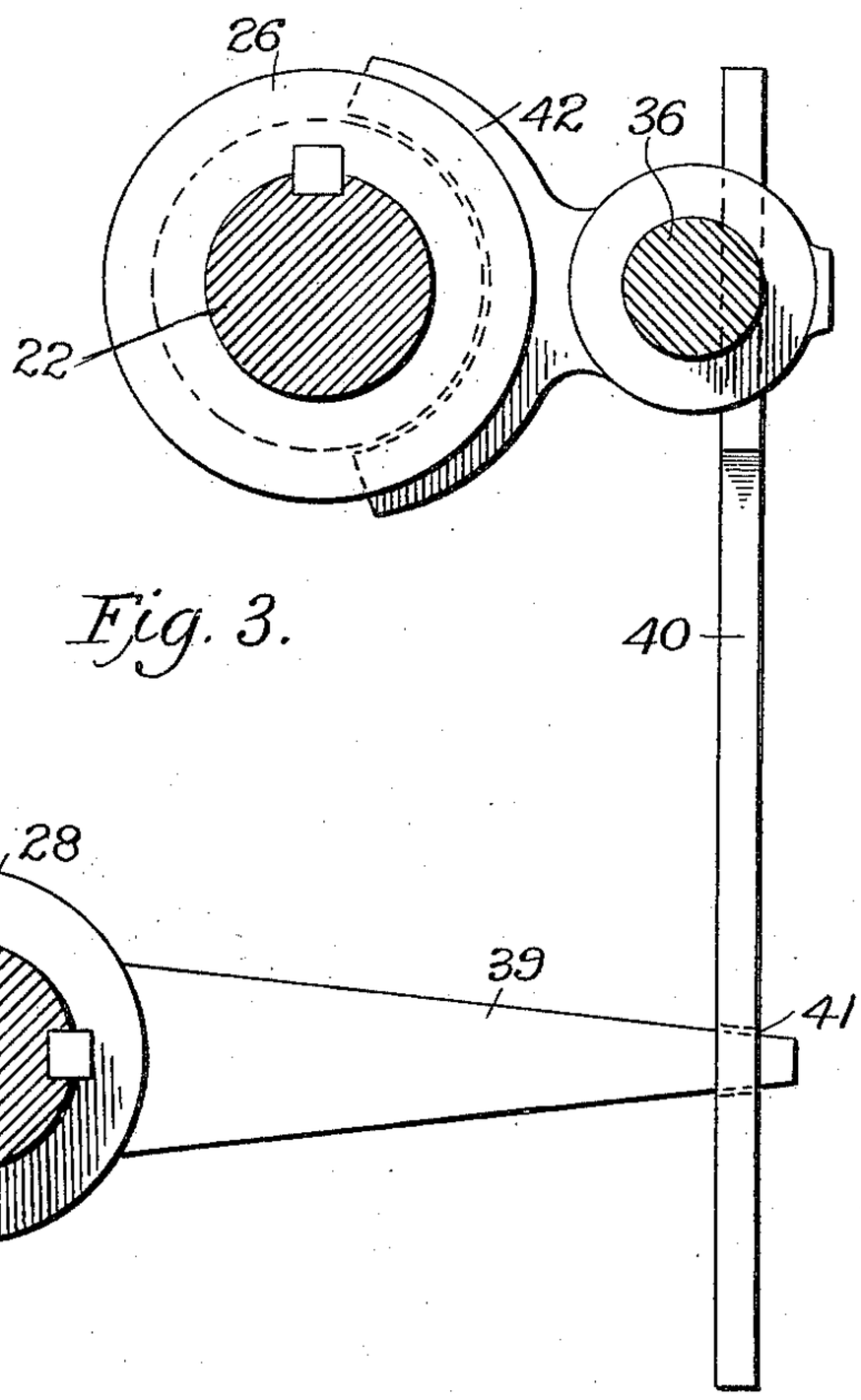


Fig. 3.



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ABEL DELANCY CATLIN, OF CHATTANOOGA, TENNESSEE.

INSULATOR-PIN MACHINE.

SPECIFICATION forming part of Letters Patent No. 701,539, dated June 3, 1902.

Application filed May 27, 1901. Serial No. 62,052. (No model.)

To all whom it may concern:

Be it known that I, ABEL DELANCY CATLIN, a citizen of the United States of America, and a resident of Chattanooga, Hamilton county, and State of Tennessee, have invented certain new and useful Improvements in Insulator-Pin Machines, of which the following is a specification.

This invention relates to improvements in machines for turning and threading insulator-pins.

The object thereof is to provide means of increasing the output of pins of this character and at the same time produce a cheaper, better, more durable, and more efficient article.

My machine operates upon the principle of running at a lower velocity during the process of turning or shaping the pins and at a more rapid speed during the operation of providing the conical portions of the pins with the customary threads.

The present improvements represent betterments in the construction of the machine shown, described, and claimed in my former Letters Patent upon an insulator-pin machine, dated April 7, 1891, No. 449,773.

The invention may be said to consist, essentially, in a speeding-up mechanism for machines of the character shown in my patent just referred to and also in the numerous details and peculiarities of the combination, construction, and arrangement of the various parts and devices entering into the union of mechanical elements constituting the machine, all as will be hereinafter more fully described and then specifically pointed out in the ensuing claims.

In the accompanying drawings, illustrating my invention, Figure 1 is a front elevation of my improved insulator-pin machine. Fig. 2 is a rear detail elevation of the swinging frame and accompanying parts, said frame being the one which carries the speed-increasing gear for the threading device. Fig. 3 is an enlarged sectional detail view of the clutch-shifting device.

Similar numerals of reference designate corresponding parts throughout all the different figures of the drawings.

The main frame of the present machine and the general arrangement of the turning devices or cutters are substantially the same as in the machine covered by my former Letters Patent hereinabove alluded to, and hence it will only be necessary to give the most cursory description of these parts, as they are presented merely for a foundation or basis with which to connect the speeding-up devices, which more properly constitute the subject-matter of the present improvements.

1 denotes the frame of the machine, consisting principally of an upright pedestal, on the top of which are mounted the operative mechanical features. On the upper portion of this frame a cutter-shaft is supported in boxes or bearings 2 2, on which shaft between the boxes is mounted the cutter-head 4, having knives suitable for fashioning both the shank and the insulator-supporting portions of the pins of the desired shape, while on the right-hand end of this shaft is a pulley 3, adapted to receive a belt for imparting a rotary motion to the cutters. A hood 5 is preferably employed to shield or fend the cutter-head 4.

A movable or swinging frame 6 is placed parallel with the cutter-shaft and is pivotally secured upon the horizontal rod 7, that is mounted in bearings 8 8 on top of the pier or pedestal 1, as shown in Fig. 1, it being evident that the frame 6 can be made to occupy different positions of obliquity or horizontality by revolving its pivot-rod 7 to a greater or less degree toward or away from the cutter-head. The frame 6 is provided on one end of its upper portion with a box 13, in which is placed a central supporting-pin 14, carrying on the inner end thereof, which projects from the box, a center pin 15. A lever 16 passes through a guide 17, which is integral with the box 13, engages the pin 14, and is pivoted to the frame 6 at the point 18 alongside of the box 13, said lever being susceptible, because of its engagement with the pin 14 and its position in the guide 17, of being moved to the left or right for the purpose of moving the center pin 15 inwardly for engaging with the stock or blanks to be worked, all as will be presently more fully explained.

A drive-pulley 9, a small pinion 10, and a sleeve 11 are fast to each other, a gear-wheel

12 being also fast to the sleeve 11, and said four parts being loose on the pivot-rod 7, so as to revolve easily and readily thereon.

The end of the frame 6 opposite to that provided with the box 13, of which I have spoken, is provided with boxes 20 and 21, and in these boxes is supported a shaft 22, the inner end 23 of which projects beyond the box 21 and is provided with a spur-center 23, similar to the spur-center 15 of the pin 14, to engage with one end of the insulator-pin blank or stock. Between the boxes or bearings 20 and 21 the shaft 22 is turned to a tapering contour, corresponding to the required contour of the insulator-supporting portion of the insulator-pin, and is also provided with a screw-thread 24, corresponding to the screw-thread required on the end of the insulator-pin, for passing into the threaded socket of an insulator of the common form. Upon the outer end of the shaft 22 is secured a pinion 25, that is in mesh with the gear-wheel 12, a gear-wheel 27, which is in mesh with the pinion 10, and a double clutch 26, having a peripheral groove and teeth on both sides, said clutch being splined upon the shaft or spindle 22, as shown in Fig. 3, and adapted to engage either with the hub of the gear-wheel 27 or the hub of the pinion 25. In its normal position the clutch 26 is in engagement with the hub of the gear-wheel 27, so as to drive the spindle 22 at the proper speed for turning, it being understood that the gear-wheel 27 and the pinion 25 are loose on the spindle 22.

On the front of the swinging or movable frame 6 are cast or attached bearings 30 30 for supporting therein a horizontal endwise-movable rod 28, there being coiled about this rod, between the bearings 30, a spiral spring 29, which is compressed when the rod is shifted endwise toward the left and which has the function of restoring the rod to its normal position. Securely fixed to this rod, near the left-hand end thereof, as is shown in Fig. 1, is a lever 35. Adjoining lever 35, also fast on shaft 28, is a collar 32, having a projection that carries a tracer-pin 31 for engaging with the screw-thread 24 of spindle 22, so that when said spindle revolves this engagement with pin 31 may cause the rod 28 to be shifted endwise. Collar 32 is adjustably secured on its shaft by a set-screw, and tracer-pin 31 is held in the collar by a set-screw or similar device. On the rod 28, near the right-hand bearing 30, is secured, by means of a set-screw or similar device, a collar 34, which carries a cutting implement 33, which performs the duty of cutting the screw-thread in the blank, said cutting taking place in perfect correspondence with the movement of the tracer-pin 31 in engagement with the screw-thread 24. Likewise secured to rod 28, being splined thereto, as shown in Fig. 3, to leave it free to move endwise, is a lever 39, which projects rearwardly and the end of which enters a slot 41, with which the vertical bar 40 is provided. (See Figs. 2 and 3.) This bar 40 slides in a way on the face 38, formed on the side of the movable frame 6, as shown in full lines in Fig. 2, said face, its guideway, and the bar 40, contained therein, being designed to be covered when the machine is in use by means of a plate 50. (Shown in dotted lines in the same figure.) The bar 40 is angular near its upper end, having an inclined portion 49, which is adapted to engage an inclined transverse groove 48, cut in the shipper-bar 36, supported endwise movably in a bearing 37, formed on the spindle-bearing 20, and also in a second bearing provided in the face 38 below spindle-bearing 21. This shipper-bar 36 has fastened thereon a yoke 42, that engages the peripheral groove in the double-clutch device 26. It will be obvious that a vertical movement of the bar 40 will in consequence of the engagement of its inclined part 49 with the shipper-bar groove 48 shift said bar and cause the clutch 26 to engage the hub of pinion 25 or the hub of gear-wheel 27, accordingly as the movement of the shipper-bar is one direction or the other. This vertical movement of the bar 40 is accomplished by the action of the lever 39, and it moves in consequence of motion imparted to the rod 28 through the manipulation of the handle 35.

Suitable power will be applied to drive the pulley 3 and cutter-head 4 and also to actuate the pulley 9, which will drive pinion 10 and gear-wheel 12. In operating the machine the insulator-pin blank will be placed between the centers 15 and 23 and said centers engaged with the ends thereof by drawing inwardly upon the lever-handle 16. After the insulator-pin blank has thus been firmly engaged the lever 16 will be raised upwardly, thereby oscillating the swing-frame 6 toward the cutter-head 4, and while in this position the turning of the insulator-pin will be performed, it being noted that while this operation is progressing the clutch 26 is in engagement with the gear-wheel 27, thus driving the spindle 22 at the proper speed for turning. After the blank has been nearly cut to the required dimension and contour the lever 35 will be raised, bringing the threading-tool 33 into position for cutting the thread and also bringing the tracer-pin 31 into engagement with the revolving screw-thread 24, so that the tracer, following the lead of the thread, will move the rod 28 lengthwise in its supporting-boxes, carrying with it the cutting-tool 33, which works to cut the thread in the blank, the thread thus cut corresponding in pitch to the pitch of the thread 24. When the lever 35 is raised, the lever 39 will be simultaneously depressed, because it is fixedly secured to the same rod 28, and this movement of lever 39 depresses the bar 40, thereby shifting the shipper-bar 36, so that the clutch 26 is disengaged from the gear-wheel 27 and engaged with the pinion 25, so that the gear-wheel 12 becomes the actuating-gear for the spindle 22 instead of said spindle being driven from the

pinion 10, so that a much speedier movement is given to the spindle 22 than when it is operated for turning. Herein lies one of the very important features of the present invention—namely, that the insulator-blank is revolved at a much more rapid velocity for threading purposes than during the turning or shaping of it. When the thread has been formed upon the pin to the proper distance from its end, the lever 35 will be depressed to free the tracer-pin 31 from thread 24, and the spring 29 will then operate to move the shaft 28 lengthwise in the opposite direction and restore it to its original position, after which the lever 16 may be moved downwardly to oscillate the frame backwardly and retreat the perfected pin from the action of the cutting devices, also moving the center 15 outwardly to free the pin from the centers, when another blank can be inserted between the centers and the operation repeated.

It will be seen that by this machine insulator-pins of a uniform contour and dimension may be rapidly made, and the devices whereby the stock can be revolved more rapidly for threading than for turning enable the machine to greatly increase its capacity and output. Although the cutters are herein shown and described as being arranged to make insulator-pins, it will be evident that other kinds of pins or articles may be made instead, and also it will be obvious that many changes in the construction, arrangement, and combination of the various parts may be made without varying from the legitimate scope of the invention as herein outlined and claimed.

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

1. An insulator-pin machine, comprising spindles and means for rotating them, contour-forming cutters, a thread-cutting device, and means for imparting a more rapid rotation when the thread-cutting device is in operation.

2. In an insulator-pin machine, the combination with the cutting devices, of a pivoted frame, means therein for supporting the pin-blank and causing it to rotate, and means whereby the speed of rotation of the blank may be increased at the beginning of the threading operation, and suitable threading devices likewise carried by the movable frame.

3. In an insulator-pin machine, the combination with the frame, the cutting devices for turning the pin-blank to the proper shape, a movable frame pivoted to the main frame, supporting-centers in said movable frame for holding the pin-blank, one of said centers being carried on the end of a threaded spindle, threading devices for imparting the thread to the pin, means for causing the threading devices to operate in correspondence with the threaded spindle, and means for causing the threaded spindle to run at a higher speed in threading than in turning.

4. In an insulator-pin machine, the combination with the main frame, of cutters for turning the pin, a movable frame pivoted to the main frame, centers for supporting the pin-blank, one of which centers is carried on the end of a threaded spindle, gearing for driving said spindle which includes a clutch device for fast and slow speeds, a tracer-pin engaging the threaded spindle, and the threading-tool, the two being carried by a common shiftable rod, and means whereby said rod may be adjusted to place the threading device in operative position and simultaneously to adjust the clutch for high speed in threading.

5. In an insulator-pin machine, the combination with the main frame and the turning-cutter supported thereon, of a movable frame pivotally supported on the main frame, adjustable pin-blank-sustaining devices, one of which is carried by a threaded shaft, a clutch on said shaft, speed-changing gears likewise on the shaft, a threading implement which is operated from the aforesaid threaded shaft and means whereby the speed of the threaded shaft will be accelerated when the threading implement is in connection.

6. In an insulator-pin machine, the combination with the main frame, and means carried thereby for shaping the blank to the proper form, of a swinging frame and centering devices therein, one of which is carried by a threaded spindle, a clutch-gear on said shaft, the gearing arrangement for driving the gears at different speeds, a threading implement, an endwise-movable spring-provided shaft carrying it, a tracing-pin on said shaft engaging the threaded spindle, a shipper-bar for operating the clutch, an angular slide engaging the shipper-bar, and a lever on the threading-tool shaft which connects with the angular bar.

7. The combination with the main frame, a cutter therein for shaping the blank to the proper form, supporting devices for the blank, means for driving them at different speeds, a threading-tool, a spring-provided rod carrying it, said rod having a handle, a lever fixed on said rod, a clutch for controlling the means for driving the device that supports the blank, a shipper-bar arranged to operate said clutch, an angular slide-bar engaging an inclined groove in the shipper-bar and being itself engaged by the aforesaid lever.

Signed at Chattanooga this 20th day of May, 1901.

ABEL DELANCY CATLIN.

Witnesses:
ELI S. REED,
L. M. STONG.