No. 690,253. Patented Dec. 31, 1901.

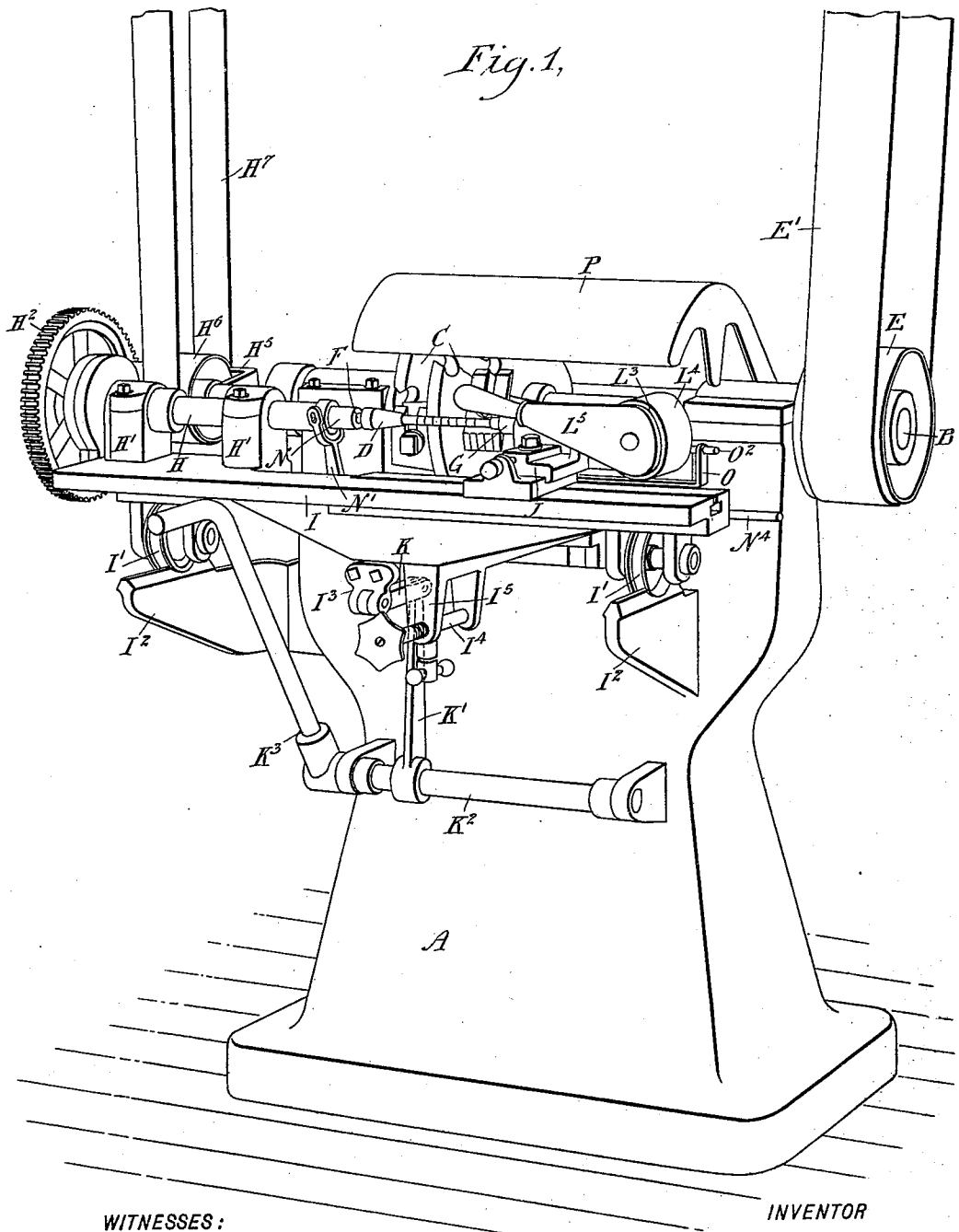
G. A. ENSIGN.

WOOD TURNING LATHE.

(Application filed May 9, 1901.)

(No. Model.) 2 Sheets—Sheet 1.

Fig. 1.



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Fig. 2.

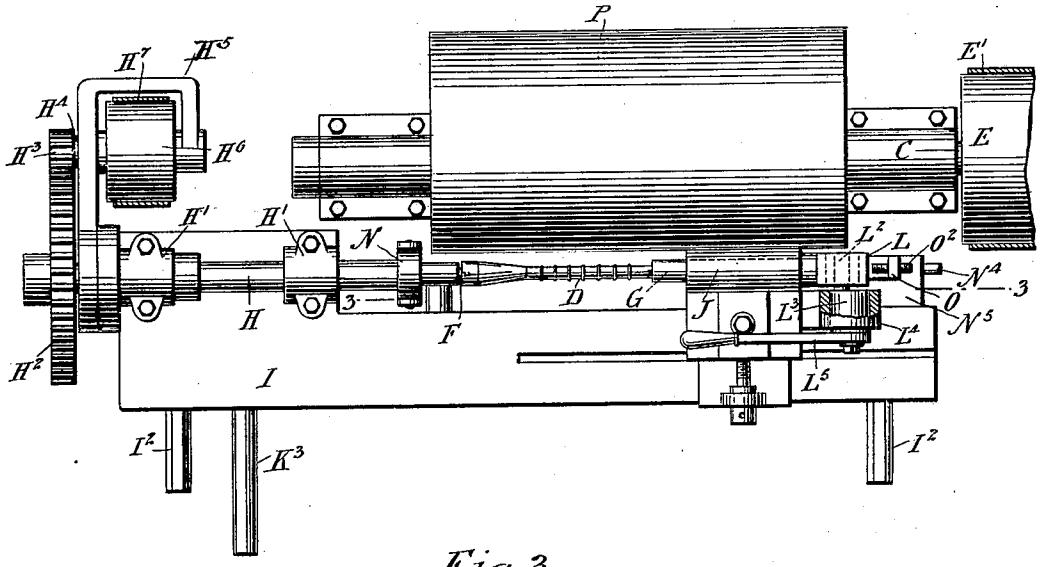
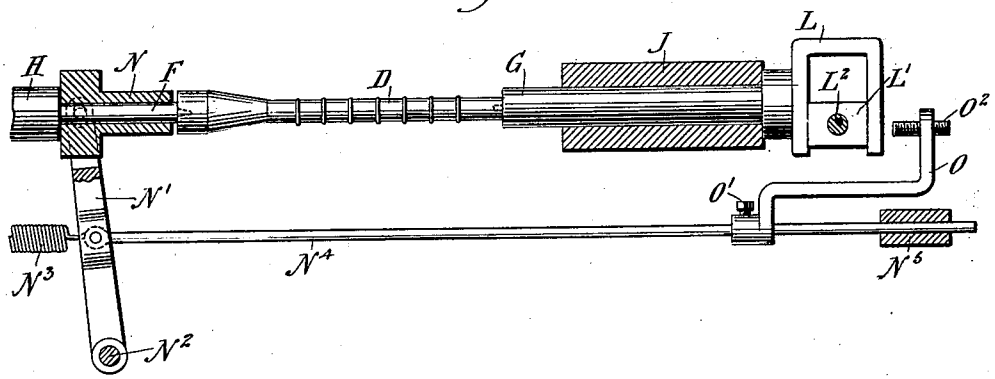


Fig. 3.



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WOOD-TURNING LATHE.

SPECIFICATION forming part of Letters Patent No. 690,253, dated December 31, 1901.

Application filed May 9, 1901. Serial No. 59,402. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. ENSIGN, a citizen of the United States, and a resident of Defiance, in the county of Defiance and State of Ohio, have invented a new and Improved Wood-Turning Lathe, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved wood-turning lathe more especially designed for producing in large quantities duplicate articles—such as bobbins, handles, spoons, mallets, stakes, pins, and the like, either plain or with beads—the lathe being arranged to reduce the rough material to the finished product complete in every respect and the exact shape and size, perfectly smooth and exceedingly accurate.

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

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a perspective view of the improvement. Fig. 2 is a plan view of the same with parts in section, and Fig. 3 is an enlarged sectional side elevation of the device for discharging the work from the centers of the head-stock and the tail-stock.

The wood-turning lathe is mounted on a suitably-constructed frame A, in which is journaled a cutter-head spindle B, carrying a sufficient number of individual cutter-heads C for covering the entire length of the work D, turned its full length at one operation, as hereinafter more fully described. On one end of the spindle B is secured a pulley E, connected by a belt E′ with other machinery for imparting a rotary motion to the spindle B and the cutter-heads C.

The work D is held on the usual head-stock center F and a tail-stock center G, of which the center F is secured on a driven spindle H, journaled in the usual head-stock bearings H′, carried by a table I, and the center G is mounted to slide longitudinally in a tail-stock J, held adjustably in a transverse as well as a longitudinal direction on the table I. The latter is mounted to travel transversely to bring the work D into proper position for the cutter-heads C to turn a rough stick to the desired shape. The table I is for this purpose provided on its under side with grooved wheels I′, mounted to travel on transversely-extending rails I^2, secured to or forming part of the frame A. On the under side of the table I is secured a bracket I^3, pivotally connected by a link K with the upper end of an arm K′, secured on a shaft K^2, journaled in suitable bearings on the frame A, and on said shaft K^2 is secured a handle K^3, adapted to be taken hold of by the operator to impart a rocking motion to the shaft K^2 and cause the arms K′ to move the link K, and consequently the table I, transversely to bring the work to the cutter-heads C or to move it away from the same, according to the direction in which the handle K^3 is moved. The inward sliding movement of the table I is limited by a screw-rod I^4 under the control of the operator and screwing in a nut I^5, carried by the table, the inner end of said screw-rod being adapted to abut against the front of the frame A at the time the table I moves to its innermost position. By adjusting the screw-rod I^4 the axis of the head-stock is brought nearer to or farther from the axis of the cutter-head spindle B at the time the table I is in an innermost or working position.

On the outer end of the head-stock spindle H is secured a gear-wheel H^2, in mesh with a pinion H^3, secured on a shaft H^4, journaled in an arm H^5, mounted to swing loosely from the spindle H as a fulcrum, and on said shaft H^4 is secured a pulley H^6, connected by a belt H^7 with other machinery for imparting a rotary motion to the shaft H^4, the pinion H^3, and gear-wheel H^2 to rotate the head-stock spindle H comparatively slow relatively to the rotary motion given to the cutter-head spindle B. By having the arm H^5 and the parts carried thereby mounted to swing it is evident that the arm adjusts itself on moving the table I transversely, so that the belt H^7 always has the proper tension.

In order to readily discharge the finished article from the centers F and G, the following device is provided: On the outer end of

the tail-stock center G is formed or secured a bearing L, engaged by a block L′, held on the eccentric-pin L^2 of an eccentric L^3, mounted to turn in a suitable bearing L^4, attached to the tail-stock J, as indicated in Fig. 2. On the eccentric L^3 is secured a handle L^5, adapted to be taken hold of by the operator to turn the eccentric L^3 in its bearing L^4, so that the pin L^2 imparts longitudinal movement to the block L′, and consequently to the bearing L and the tail-stock center G, to move the latter in or out of engagement with the work D. Thus when the handle L^5 is in the position shown in Figs. 1 and 2 the tail-stock center G is in engagement with the end of the work D, and when the operator throws the handle L^5 over from the left to the right then the tail-stock center G is moved in a like direction and out of engagement with the end of the work D. It is understood that the block L′ is free to slide vertically in the bearing L; but by turning the eccentric L^3 a longitudinal shifting movement is given to the tail-stock center for the purpose mentioned.

The work D is pushed off the head-stock center F after the tail-stock center G is moved out of engagement with its end of the work D, and for this purpose a pusher N in the form of a sleeve is mounted to slide on the head-stock center F to engage the end of the work D and push the latter off said center F on shifting the pusher N from the left to the right. The movement of the pusher in the direction mentioned is controlled from the tail-stock center G, and for this purpose the said pusher N is engaged by a shifting-lever N′, fulcrumed at N^2 on the table I, the lever being pressed on by a spring N^3 to hold the pusher N normally out of engagement with the work D in the position shown in the drawings. The shifting-lever N′ is pivotally connected with one end of a rod N^4, having its other end mounted to slide in bearings N^5, attached to the table I. On the rod N^4 is held longitudinally, adjustably, an arm O by means of a set-screw O′, and in said arm O screws a set-screw O^2, adapted to be engaged by the outer end of a bearing L, so that when the latter is shifted from the left to the right, as previously explained, and the tail-stock center G has moved out of engagement with its end of the work D, then the bearing L, on a further movement to the right, engages the set-screw O^2 and moves the arm O and rod N^4 from the left to the right to swing the shifting-lever N′ in a like direction against the tension of the spring N^3, so that the pusher N is moved on the head-stock center F to push the work D off said center F. When this takes place, the finished work drops and is discharged from the machine. The operator now places a large stick in position on the center F and then throws the handle L^5 over, back to the forward position, (shown in Figs. 1 and 2,) so that the tail-stock center G engages the other end of the work. The work is now supported and is rotated with the head-stock spindle H and the center F, and the operator now swings the handle K^3 inward, so that the table I, with the work, is moved transversely, and the work is brought in contact with the cutter-heads C, so that the latter turn the work throughout its length, the work being finished as soon as the screw-rod I^4 abuts against the frame A. When this takes place, the operator throws the handle K^3 back, to move the table I to the front, and then the operator swings the handle L^5 from the left to the right to discharge the work from the centers F and G, as above explained. The usual hood P extends over the cutter-heads C, as shown in the drawings.

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

1. A wood-turning lathe, comprising a revoluble spindle carrying a plurality of cutters, a table mounted to travel transversely toward and from the cutters, a head-stock mounted on the table, a driving-pulley mounted in a swinging support carried by the table and geared with the head-stock, a tail-stock on the table, and means for operating the table, as set forth.

2. In a lathe, the combination with the head-stock, the tail-stock provided with a bearing at one end, and means for engaging the bearing to impart a longitudinal movement to the tail-stock, of a sliding and spring-pressed pusher loosely mounted on the head-stock spindle, a sliding rod having one end connected with the pusher, and an arm secured to the said rod and having its free end extending in front of the bearing on the end of the tail-stock, as set forth.

3. In a lathe, the combination with a sliding table and a head-stock, having a gear-wheel on its spindle, of an arm mounted to swing on said spindle, and a shaft mounted in said arm and provided with a pulley and with a pinion meshing with the gear-wheel on head-stock spindle, as set forth.

4. A wood-turning lathe having a discharging device for the finished work, comprising a guideway on the tail-stock center, a block vertically slidable therein, and an eccentric mounted to turn and engaging said block, to impart a sliding motion to the tail-stock center, as set forth.

5. A wood-turning lathe having a discharging device for the finished work, comprising a guideway on the tail-stock center, a block vertically slidable therein, a handled eccentric adapted to be turned by the operator and engaging said block, to move the tail-stock center longitudinally, a pusher movable longitudinally on the head-stock center, to engage the work and push it off said head-stock center, and a shifter for said pusher and adapted to be engaged by said guideway, as set forth.

6. A wood-turning machine having a discharging device for the finished work, comprising a guideway on the tail-stock center, a block vertically slidable therein, a handled

eccentric adapted to be turned by the operator and engaging said block, to move the tail-stock center longitudinally, a pusher movable longitudinally on the head-stock center, to engage the work and push it off said head-stock center, and a shifter for said pusher and adapted to be engaged by said guideway, said shifter comprising a spring-pressed shifting-lever, a rod connected with said lever, and an arm adjustable on the rod and adapted to be engaged by said guideway, as set forth.

7. A wood-turning lathe having a discharging device for the finished work, comprising a guideway on the tail-stock center, a block vertically slidable therein, a handled eccentric adapted to be turned by the operator and engaging said block, to move the tail-stock center longitudinally, a pusher movable longitudinally on the head-stock center, and a shifter for said pusher and adapted to be engaged by said guideway, said shifter comprising a spring-pressed shifting-lever connected with said pusher, a rod pivotally connected with said lever and mounted to slide at its free end, an arm adjustable on said rod, and a set-screw on the arm and adapted to be engaged by said guideway, as set forth.

8. In a wood-turning lathe, the combination with the head-stock, the tail-stock, and means for moving the tail-stock longitudinally, of a pusher loosely mounted on the head-stock spindle, a pivoted and spring-pressed shifting-lever engaging the pusher and normally holding it out of engagement with the work, and a sliding rod connected with the shifting-lever and provided with an arm having its free end extending into the line of movement of the tail-stock to be engaged thereby when it is moved, as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE A. ENSIGN.

Witnesses:
GEO. W. DEATRICK,
JOSEPH BAUER.