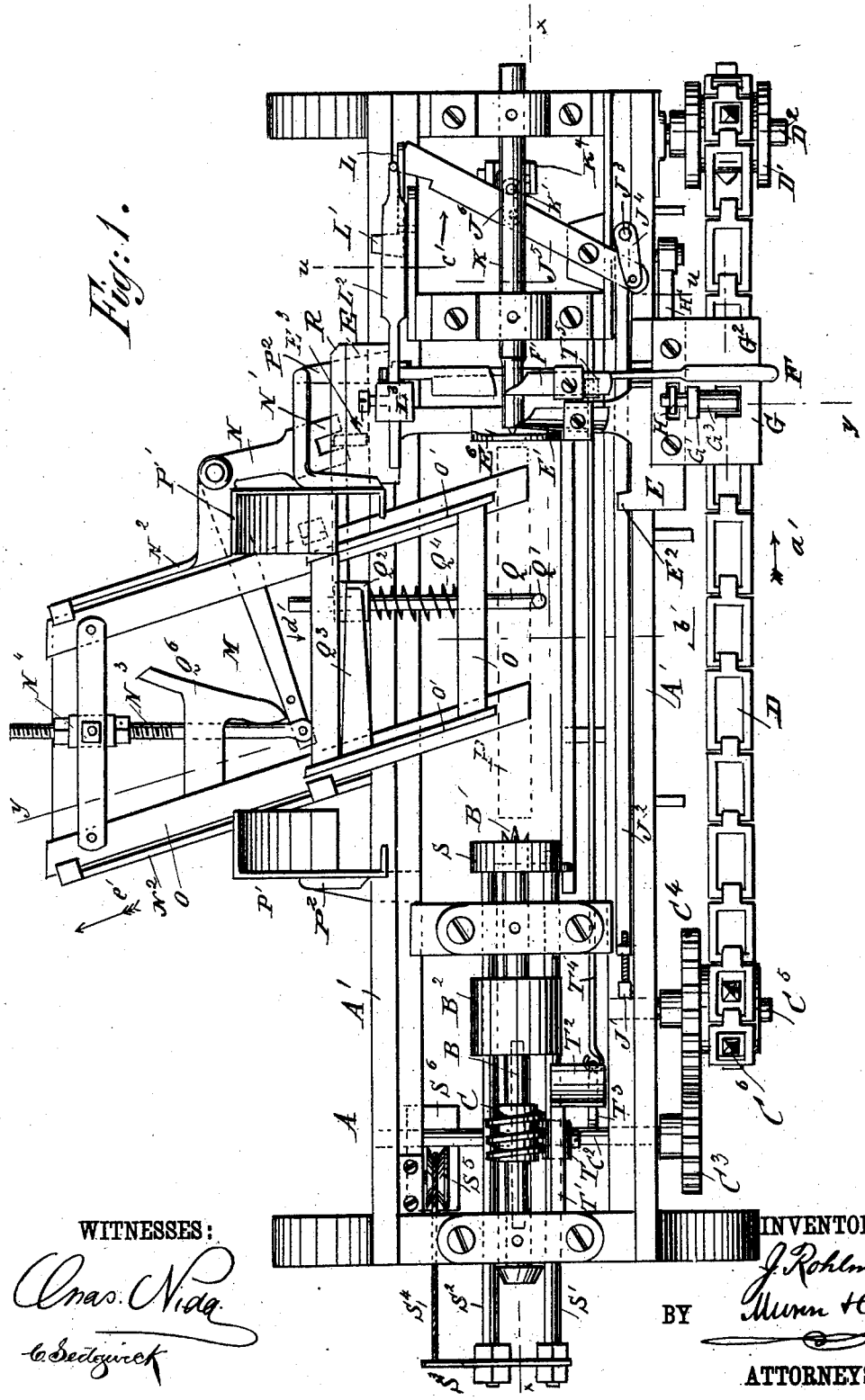
(No Model.) 6 Sheets—Sheet 1.

J. ROHLMANN.

WOOD TURNING LATHE.

No. 364,441. Patented June 7, 1887.

Fig. 1.



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J. ROHLMANN.

WOOD TURNING LATHE.

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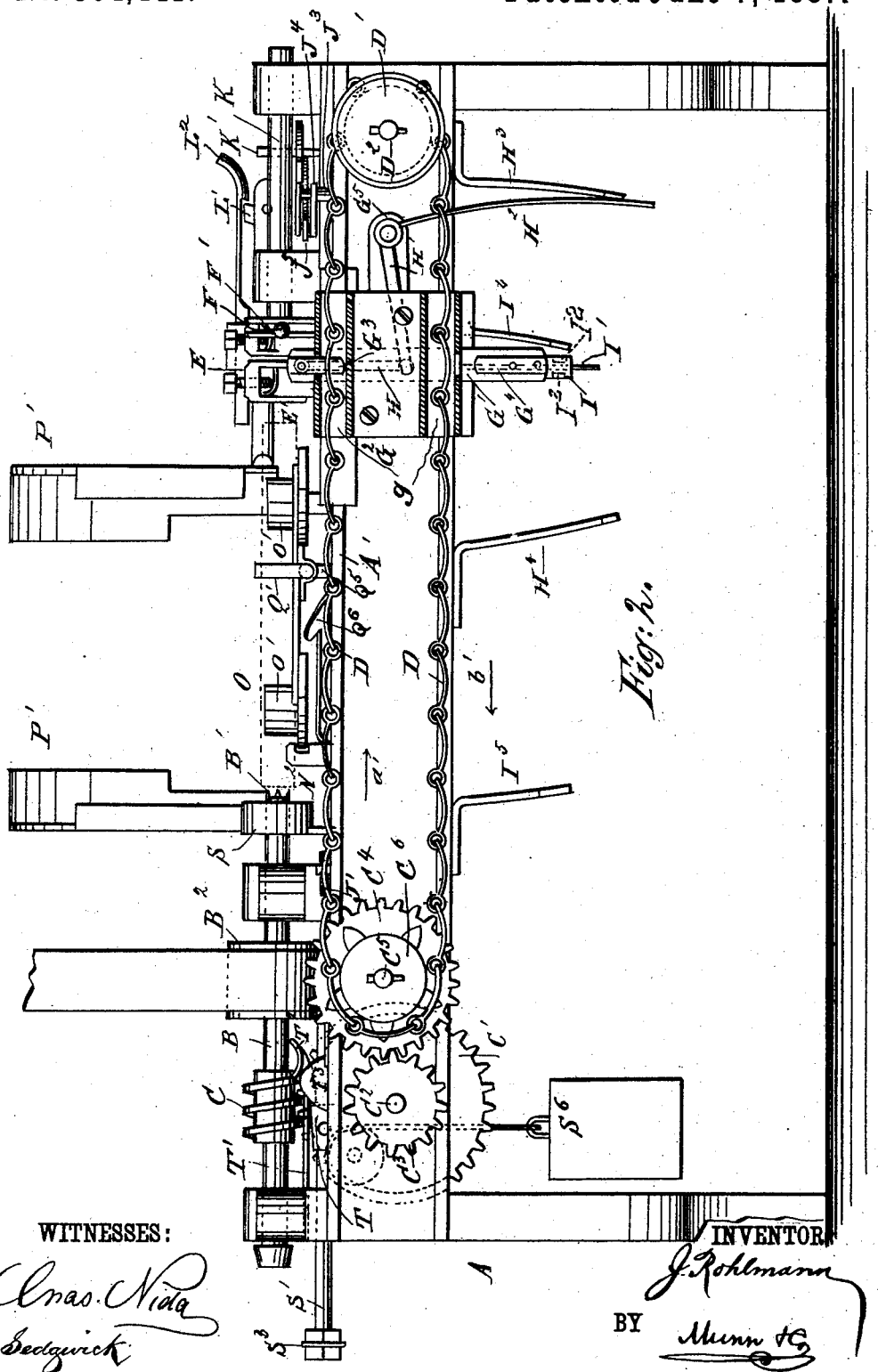

Fig. 2.

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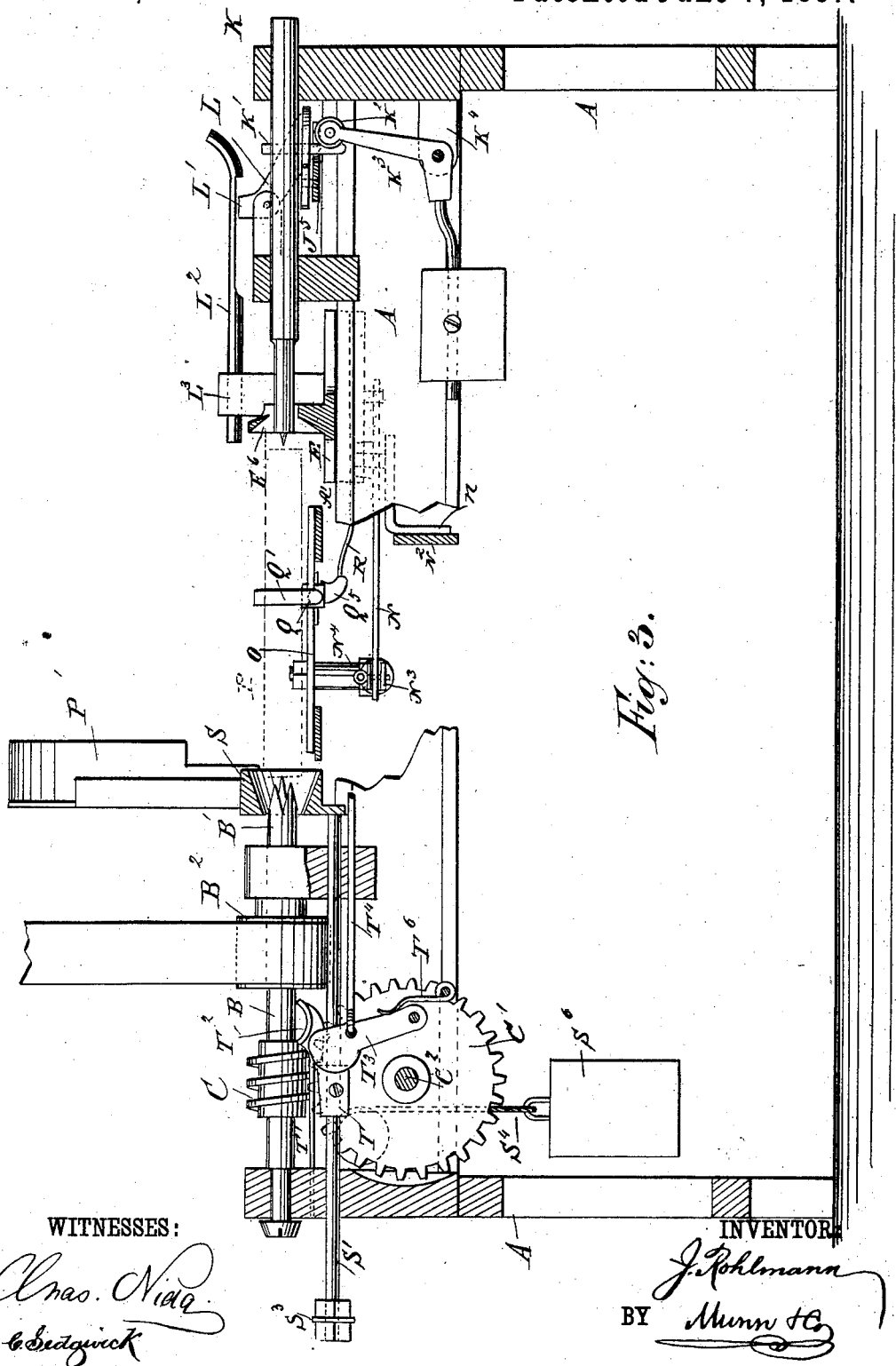

Fig. 3.

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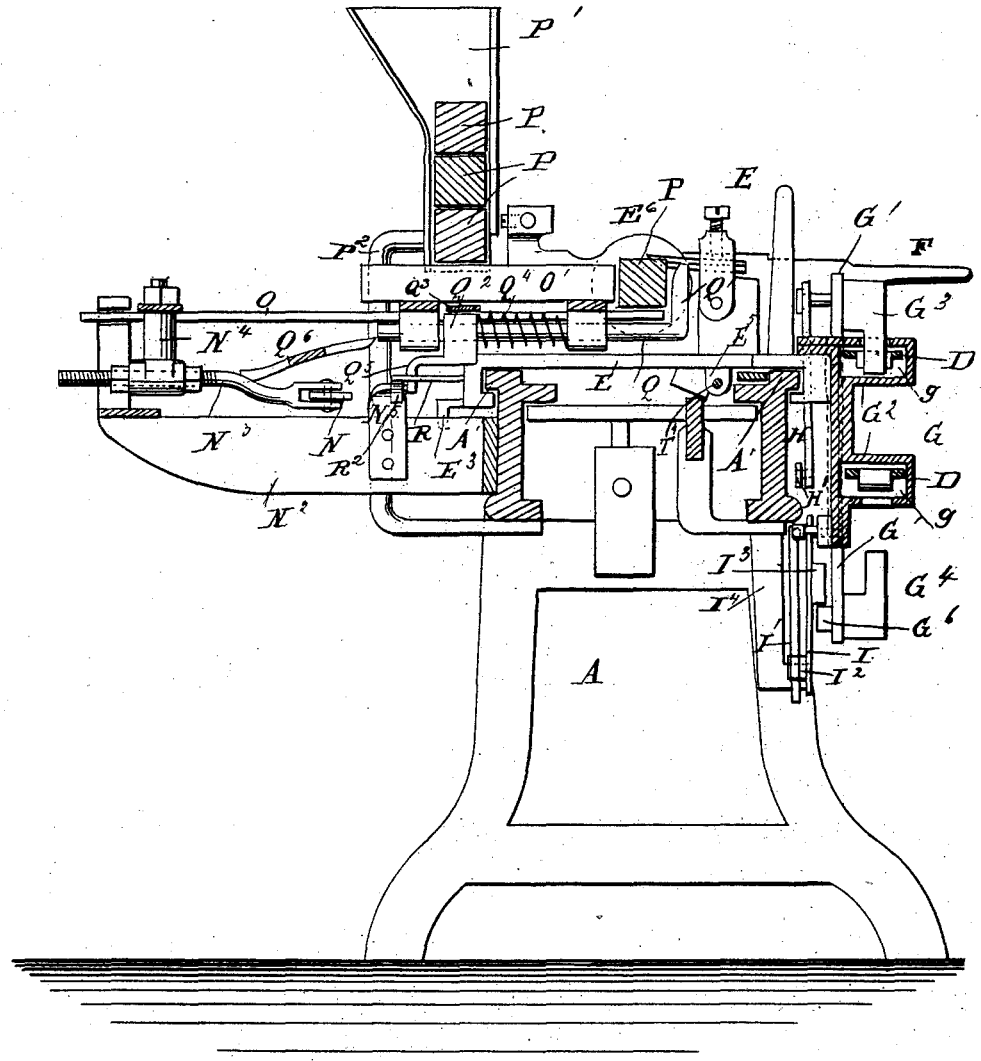
WOOD TURNING LATHE.

No. 364,441. Patented June 7, 1887.

Fig: 4.



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WOOD TURNING LATHE.

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Fig: 5

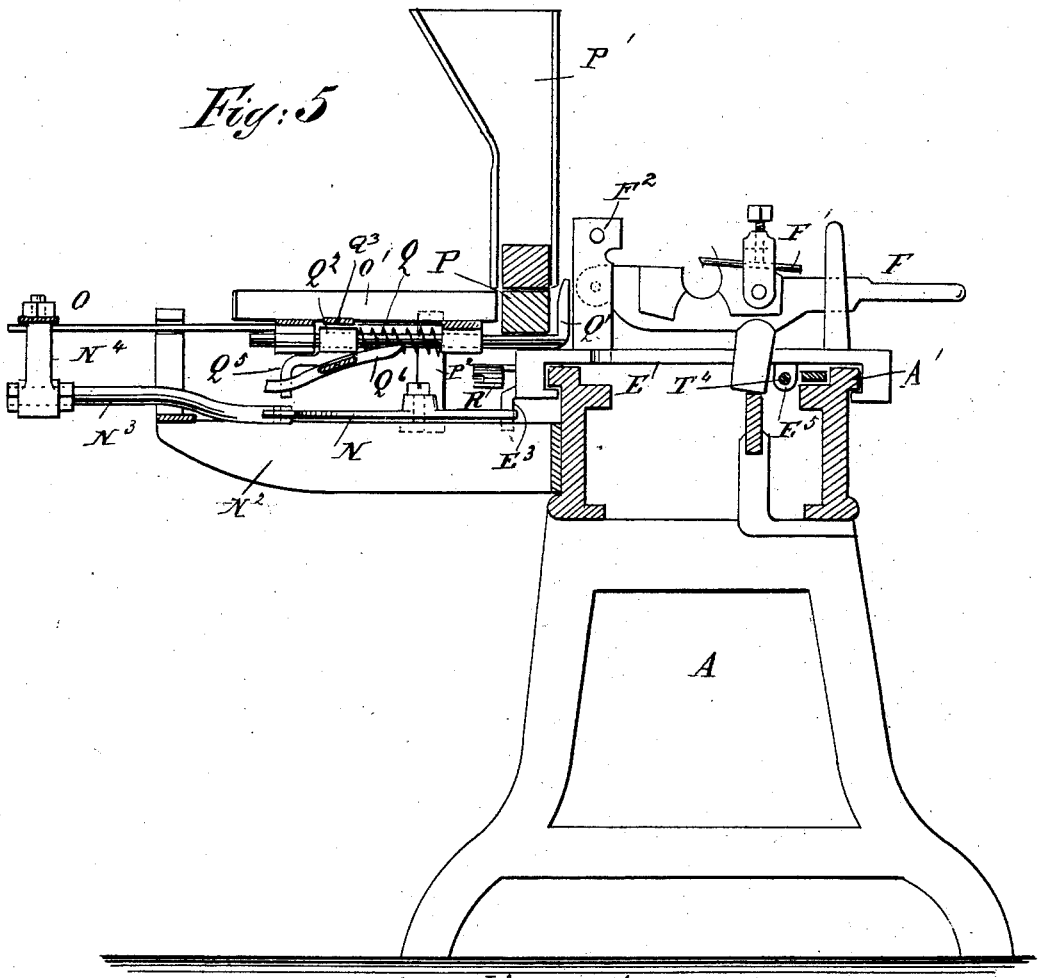
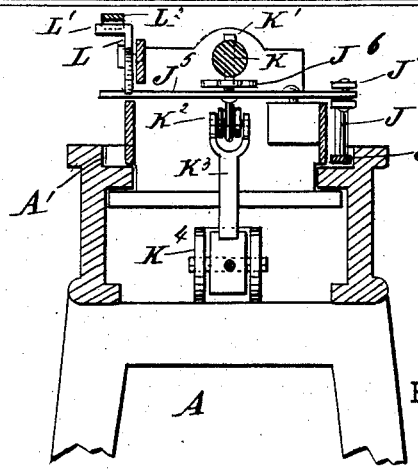


Fig: 6.



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J. ROHLMANN.

WOOD TURNING LATHE.

No. 364,441. Patented June 7, 1887.

Fig. 1.

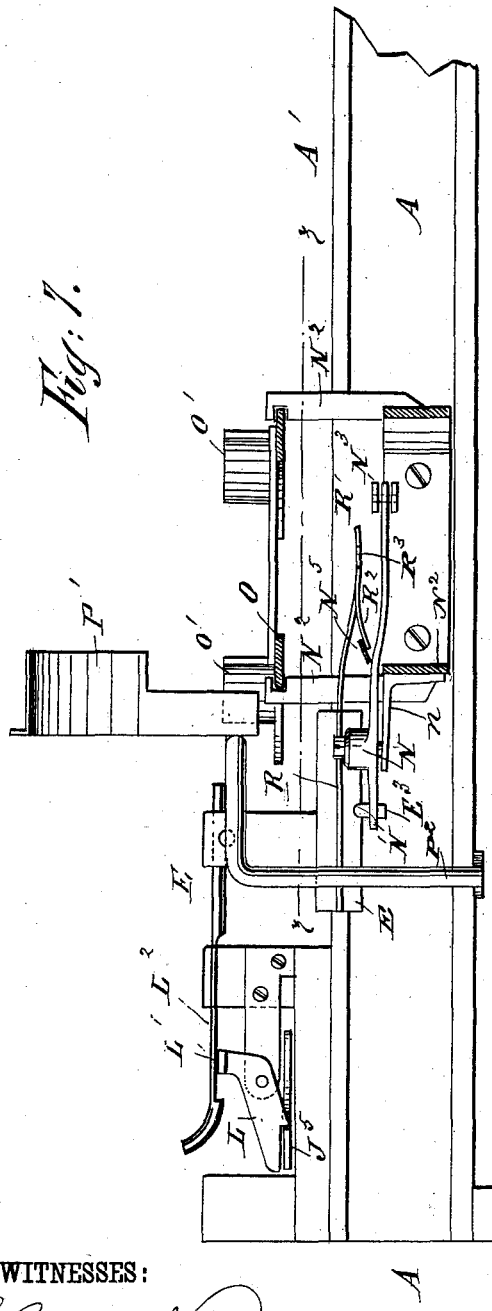
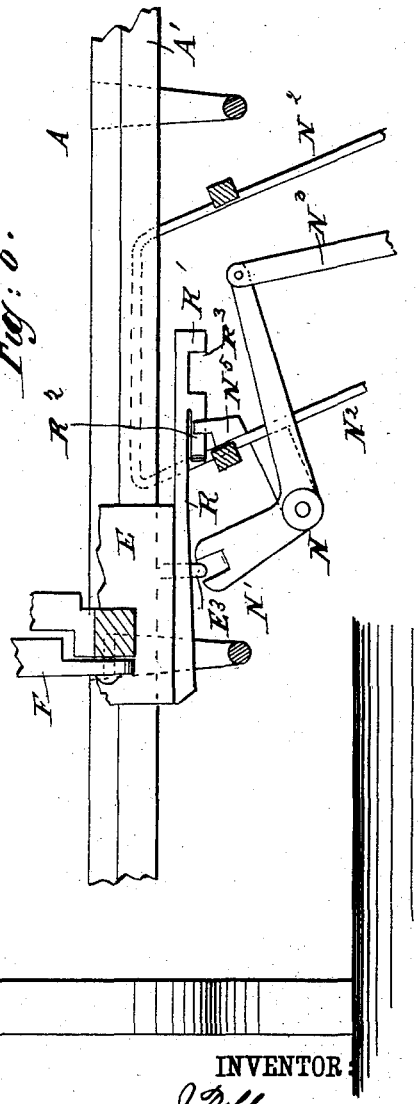


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOSEPH ROHLMANN, OF ST. JOSEPH, MISSOURI.

WOOD-TURNING LATHE.

SPECIFICATION forming part of Letters Patent No. 364,441, dated June 7, 1887.

Application filed August 24, 1886. Serial No. 211,743. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH ROHLMANN, of St. Joseph, in the county of Buchanan and the State of Missouri, have invented a new and Improved Wood-Turning Lathe, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved wood-turning lathe which is automatic in operation.

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

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of my improvement. Fig. 2 is a front elevation of the same, showing the tool-carriage in section. Fig. 3 is a longitudinal sectional elevation of the same on the line *x x* of Fig. 1, with parts of the frame broken out near the center. Fig. 4 is a vertical cross-section of the same on the line *y y* of Fig. 1, showing the device for placing the wood in the lathe in its innermost position. Fig. 5 is a similar view of the same, omitting the chain and its reversing mechanism, on the line *y y* of Fig. 1, showing the said device in its outermost position. Fig. 6 is a vertical cross-section on the line *u u* of Fig. 1 at the rear end of the lathe. Fig. 7 is a rear sectional elevation of part of my improvement, and Fig. 8 is a sectional plan view of the same on the line *z z* of Fig. 7.

In suitable bearings on the main frame A is mounted the lathe-spindle B, carrying the mandrel B′, the driving-pulley B^2, and the worm C, which meshes into the worm-wheel C′, mounted on a transverse shaft, C^2, carrying the gear-wheel C^3, which meshes into the gear-wheel C^4, mounted to rotate on a stud, C^5, projecting from the front of the frame A. To the gear-wheel C^4 is secured a sprocket-chain wheel, C^6, over which passes the endless sprocket-chain D, which also passes over the pulley D′, mounted on a stud, D^2, projecting from the rear end of the frame A.

The tool-carriage E is adapted to slide on the guideways A′ of the main frame A, and carries the adjustable tool E′, and a tool-holder, F, is pivoted by one end to a support, F^2, on the said carriage E, and carries the adjustable tool F′. To the front end of the carriage E is secured the carriage-reversing mechanism G, which consists of the bar G′, mounted to slide vertically in the casing G^2, secured to the carriage E, and having two pockets, *g g*, through which pass the upper and lower parts of the chain, and which bar G′ is provided on its upper end with the downwardly-projecting arm G^3, which engages with the upper part of the chain D, and is also provided at its lower end with a similar upwardly-projecting arm, G^4, which engages with the lower part of the chain D when the upper arm, G^3, is disengaged, and vice versa.

To the upper end of the bar G′ is pivoted an arm, H, connected by its lower end with the tripping-lever H′, fulcrumed on the bracket G^5 on the casing G^2, and having the arm H^2, which comes alternately in contact with the tripping-arms H^3 and H^4, attached to the main frame A. To the inner side of the casing G^2 is pivoted a downwardly-extending arm, I, held in its normal vertical position by a spring, I′, secured by one end to the casing G^2, and having its free end passed between two lugs, I^2, formed on the lower inner end of the arm I. (See Fig. 4.)

On the outer end of the arm I is attached a projection, I^3, the upper and lower ends of which engage alternately (according to the position of the bar G′) with the stud G^6, secured to the bar G′. When the arm G^3 of the bar G′ engages the upper part of the chain D, then the stud G^6 rests against the lower end of the projection I^3, and when the arm G^4 of the bar G′ engages the lower part of the chain D, then the stud G^6 rests on the upper edge of the said projection I^3. The arm I is actuated in order to remove or carry its projection I^3 out of alignment with and thus disengage it from the stud G^6 of the bar G′ by its lugs I^2 coming in contact with the tripping-arms I^4 and I^5, secured to the front of the main frame A.

The lug E^2 on the front part of the tool-carriage E operates a locking device connected with the end centering-spindle, K, mounted to slide in suitable bearings on the rear part of the main frame A. The locking device consists of a screw, J′, actuated so as to move the centering-spindle toward the rear end of the

frame A, for the purpose disclosed farther on, by the said lug E^2 of the carriage E, and screwing on the bar J^2, having its bearings at the side of the guideways A′, and provided on its rear end with an upwardly-projecting arm, J^3, which connects by the link J^4 with the lever J^5, sliding on the top of the main frame A and engaging by its rear end with the pivoted drop-latch L, having the arm L′, actuated so as to disengage said latch from the said lever by the adjustable spring-catch L^2, projecting longitudinally from the rear part of the carriage E and held adjustably by the screw 4 in the post L^3, secured upon said carriage.

The lever J^5 connects by the link J^6 with the pin K′, attached to the spindle K. Against the lower end of the pin K′ rests the grooved pulley K^2, mounted in the weighted bell-crank lever K^3, pivoted to the bracket K^4, attached to the frame A. (See Figs. 3 and 6.) The rear part of the carriage E actuates the feeder M for placing the wood to be turned automatically into the lathe between the mandrel B′ and spindle K, which feeder is supported upon a frame or ways, N^2, secured to and angularly disposed with relation to the main frame A. The purpose of thus disposing the feeder frame or ways is to enable the wood to be delivered so as to be readily turned with one end near to the spindle K, while furnishing all the possible space or room next to the mandrel B′ for the cutting-tools after the wood is turned, to permit of the ready removal of the turned piece or block of wood.

To the rear part of the carriage E is attached a lug, E^3, operating on the fork N′ of the bell-crank lever N, pivoted to a bracket, *n*, on the frame N^2, which carries the feeder M. The bell-crank lever N is adjustably connected by the link or rod N^3 with the swivel N^4, attached to the carriage O, sliding in suitable bearings on the frame N^2, and provided with the raised bars O′ O′, which form a recess for the blocks P, placed in a rack or hopper, P′, supported by suitable arms, P^2, above the sliding carriage O.

On the under side of the carriage O is mounted a rod, Q, having an angular arm, Q′, which holds the lower wooden block, P, firmly on the front of the carriage O. The rod Q is adapted to turn in its bearings, and is provided with a flattened adjustable collar, Q^2, against which presses one end of a flat spring, Q^3, secured by its other end to the carriage O. A spring, Q^4, is coiled on the rod Q, and holds the latter in position by pressing against the collar Q^2, which has also a downwardly-extending projection, Q^5, which engages with the stationary cam Q^6, secured to the frame N^2. The adjustability of the collar Q^2 permits of its movement toward the spring Q^4, whereby the relaxed tension of the spring may be compensated, maintaining the normal tension of the latter.

The lug Q^5 is also engaged on the forward movement of the carriage E by the free end R′ of the spring-bar R, secured to the rear part of the carriage E, and provided with the incline R^2, which, upon the return of the carriage, engages the projecting arm N^5, rigidly secured to the frame N^2. (See Figs. 7 and 8.) The projection N^5 is disengaged from the incline R^2 at the end of the backward movement of the carriage by passing through the opening of slot R^3 in the spring-bar R at the upper end of the incline R^2.

The centering-chuck S slides on the mandrel B′, and is connected by its lower end with the bars S′ and S^2, which have their bearings in the main frame A, and are united at their outer ends by the cross-plate S^3, to one end of which is attached the rope S^4, passing over the pulley S^5, and carrying on its outer end the weight S^6. To the rod S′ is attached the adjustable collar T, engaging the notched spring-catch T′, fastened to the frame A, and provided with the tripping-plate T^2, which is actuated by the cam-arm T^3, pivoted to the frame A, and connected with the rod T^4, sliding in suitable bearings on the frame A, and having an adjustable collar, T^5, on which operates the lug E^5, secured to the tool-carriage E. The latter is also provided with a stationary centering-chuck, E^6, which operates in connection with the chuck S on the mandrel B′.

The operation is as follows: A continuous rotary motion is imparted to the spindle B through pulley B^2, which causes the upper part of the chain D to travel in the direction of the arrow *a′*, and the lower part of the chain D to travel in the direction of the arrow *b′*. When the arm G^3 of the bar G′ is in contact with the upper part of the chain D, the tool-carriage E also travels in the direction of the arrow *a′* and is on its return movement, as shown in the drawings. It will be seen that the spring-arm H^2 of the lever H is already in contact with the stationary arm H^3, (see Fig. 2,) and when the arm I strikes (on the further motion to the right of the carriage E) against the stationary arm I^4 the arm I is swung to the left, and the lug I^3 releases the stud G^6, so that the lever H′, acting on the arm H, throws the latter and the bar G upward, so as to disengage the arm G^3 from the upper part of the chain D, and at the same time moves the arm G^4 in contact with the lower part of the chain, and the carriage now commences to move toward the head of the lathe in the direction of the arrow *b′*, the bar G^4 being held in engagement with the lower part of the chain by the lifting of the arm or projection G^6 of the bar G′ above, and permitting it, as before described, to rest upon the lug I^3 of the arm I. During this motion of the carriage E to the left the turning of the wood block takes place by the cutting-tools E′ and F′.

As shown in Fig. 4, the carriage O is in its inward position, carrying one of the wooden blocks P on the front of the carriage, and held in place against the edge of the bars O′ by the vertical arm Q′ of the rod Q, the bars O′ being

removed at their forward ends from the forward ends of the carriage O sufficiently to permit a block to entirely leave the hoppers and rest directly upon said carriage when at rest and just at the beginning of its forward movement, the bars O′ thereafter preventing the next block or any further blocks leaving the hoppers. Now, when the carriage E moves forward in the direction of the arrow *b′* the arm R′ of the spring-bar R presses against the lug Q^5 of the collar Q^2, and thereby turns the rod Q, so that its vertical arm Q′ is turned downward, and the wood block P is released, in order to permit it to be grasped and held between the spindle and chuck, as next described. The spring-catch L^2 now pulls on the pivoted latch L and disengages the latter from the lever J^5, so that the weighted bell-crank lever K^3, acting on the pin K′ of the spindle K, throws the spindle forward, which takes hold of one end of the wooden block P, while the other end is forced into the chuck S, and by means of the latter is forced centrally on the mandrel B′. The block P is thus centered on the mandrels B′ and K by the centering-chucks S and E^6, and the block is rotated by the spindle B.

The forward motion of the carriage E causes its lug E^3 to act on the fork N′ of the lever N, which, in connection with the link N^3, forces the carriage O to slide backward in the direction of the arrow *e′*, (see Fig. 1,) to the position shown in Fig. 5. By this backward motion of the carriage O the lug Q^5 of the collar Q^2 is brought in contact with the stationary cam Q^6, which causes the rod Q^4 to turn, so that the arm Q′ is again turned into its vertical position in readiness to perform its before-described function. The front of the carriage O is now directly under the rack or hopper P′, and another block of wood P slides down upon the same between the ends of the bars O′ and the vertical arm Q′, and the carriage is thus loaded again with one block of wood P. The tools E′ and F′ on the carriage E, in moving to the left eventually finish the turning of the block of wood P; and the chuck E^6 then comes in contact with the chuck S and pushes the latter to the left to carry the collar T into engagement with the catch T′, thereby disengaging one end of the turned wooden block P, and raising the weight S^6, and at the same time the lug E^2 of the carriage E presses against the screw J′, causing the bar J^2 to slide in the direction of the arrow *b′*, thereby acting on the lever J^5, which thus swings in the direction of the arrow *c′* and forces the spindle K to slide backward, and thereby disengages the other end of the turned wooden block P, which then drops out of contact with the mandrels B′ and K. The swinging of the lever J^5 also causes its outer end to be thrown in contact with the latch L, which locks the spindle K in position until released by the catch L^2, as above described.

When the tools E′ and F′ have finished the turning of the wooden block, then the spring-arm H^2 comes in contact with the stationary arm H^4, and the arm I is moved from its vertical position toward the right by coming in contact with the arm I^5, whereby the lug I^3 is disengaged from the stud G^6, and the bar G′ is pushed downward by the lever H′, so that the arm G^4 is disengaged from the lower part of the chain D, while the arm G^3 is placed in contact with the upper part of the chain D, thus moving the carriage E backward in the direction of the arrow *a′*. The spring I′ causes the arm I to assume its normal vertical position, with the lug I^3 over the lug G^6.

When the carriage E moves backward, then the chuck S remains in a locked position, held therein by the collar T of bar S′, engaging the spring-arm T′ until the lug E^5 of the carriage E presses against the collar T^5 on the rod T^4, whereby the latter slides in the direction of the arrow *a′* and causes the cam arm T^3 to lift the arm T′ by pulling against the under side of the tripping-plate T^2 on the end of arm T′, so that the arm T′ disengages the collar T and the chuck S slides in the direction of the arrow *a′*, caused to do so by the action of the weight S^6 and its cord S^4 on the bars S′ and S^2, connected with the said chuck S. The latter is thus brought into its inward position for guiding the next wooden block to the mandrel B′, and at the same time centering the same.

On the backward motion of the carriage E the lug E^3 enters the fork N′ and turns the lever N in the direction of the arrow *d′*, which causes the carriage O to slide forward until it assumes the position shown in Fig. 1. The incline R^2 of the arm R passes under the stationary arm N^5 on the frame N^2, and thus presses the front arm, R′, downward, so as to permit the lug Q^5 on the collar Q^2 to pass the arm R′ without coming in contact with the same, and when the carriage E is in its outermost position, then the incline R^2 has left the arm N^5, and the spring-arm R swings upward to its normal position and is ready to engage the lug Q^5 on the collar Q^2 on the return movement of the carriage E, as above described.

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

1. In a lathe, the combination, with the chain D, of the tool-carriage E, the vertically-sliding bar G′, having arms G^3 and G^4, the arm H, pivoted to the said bar G′, the bell-crank lever H′ H^2, pivoted on the carriage E, and the stationary arms H^3 and H^4, substantially as shown and described.

2. In a lathe, the combination of the chain D and the tool-carriage E, the vertically-sliding bar G′, having the arms G^3 and G^4, the arm H, pivoted on the said bar G′, the bell-crank lever H′ H^2, the stationary arms H^3 and H^4, and means for locking the said bar G′ in position, substantially as shown and described.

3. In a lathe, the combination, with the chain D, of the tool-carriage E, the vertically-

sliding bar G′, having the arms G^3 and G^4 and provided with the stud G^6, and the arm I, pivoted on the carriage E and provided with the projection I^3, which engages with the said stud G^6, substantially as shown and described.

4. In a lathe, the vertically-sliding bar G′, having arms G^3 G^4 and the lug or stud G^6, in combination with the pivoted arm I, provided with the lug I^3, engaging with the said stud G^6, the tool-carriage, and its operating-chain, substantially as shown and described.

5. In a lathe, the vertically-sliding bar G′, having arms G^3 G^4 and the lug or stud G^6, in combination with the pivoted arm I, provided with the projection I^3, engaging with the said stud G^6, and the spring I′, for holding the said arm I in position, the tool-carriage, and its operating-chain, substantially as shown and described.

6. In a lathe, the vertically-sliding bar G′, having arms G^3 G^4 and the lug or stud G^6, in combination with the pivoted arm I, provided with the projection I^3, engaging with the said stud G^6, the spring I′, for holding the arm I in position, and the stationary arms I^4 and I^5, secured to the lathe-frame and operating on the said arm I, and the chain for operating the carriage, substantially as shown and described.

7. In a lathe, the tool-carriage E, provided with the lug E^2, the screw J′, against which operates the said lug E^2, the bar J^2, carrying the said screw J′, the pin J^3, projecting from the said bar J^2, and the link J^4 on the upper end of the said pin J^3, in combination with the lever J^5, the link J^6, pivoted on the lever J^5, the pin K′, connected with the link J^6, and the back spindle, K, carrying the said pin K′, substantially as shown and described.

8. In a lathe, the tool-carriage E, provided with the lug E^2, the screw J′, against which operates the said lug E^2, the bar J^2, carrying the said screw J′, the pin J^3, projecting from the said bar J^2, and the link J^4 on the upper end of the said pin J^3, in combination with the lever J^5, the link J^6, pivoted on the lever J^5, the pin K′, connected with the link J^6, the back spindle, K, carrying the said pin K′, and the weighted bell-crank lever K^3, operating on the said pin K′, substantially as shown and described.

9. In a lathe, the carriage E and the adjustable catch L^2, in combination with the lever J^5, the pivoted latch L, the bar J^2, provided with screw J′, the arm J^3, link J^4, the back spindle, K, having the pin K′, connected to the link J^6 connected to the lever J^5, and the lug E^2 on the tool-carriage E, substantially as and for the purpose set forth.

10. In a lathe, the carriage E, the catch L^2, attached to the said carriage E, and the pivoted latch L, in combination with the back spindle, K, having the pin K′, the lever J^5, connected by the link J^6 with the pin K′, the weighted bell-crank lever K^3, operating against the said pin K′ to advance the spindle, and means through which the carriage actuates the lever J^5 to retract the spindle and engage the latch.

11. In a lathe, the tool-carriage E, provided with the lug E^3, in combination with the bell-crank lever N, forked to receive said lug, the link N^3, and the sliding carriage O, connected to the said link N^3 by a swivel, N^4, substantially as shown and described.

12. In a lathe, the combination, with the tool-carriage E, having the lug E^3, and the spring-bar R, of the bell-crank lever N, the sliding carriage O, connected with the said bell-crank lever, the rod Q, having the vertical arm Q′, the collar Q^2, having the downward projection Q^5, and the spring Q^3, acting on the said collar Q^2, substantially as shown and described.

13. In a lathe, the sliding carriage O, the rod Q, mounted on the said carriage, the collar Q^2, attached to the rod Q, and having the projection Q^5, and the spring Q^3, in combination with the stationary cam Q^6, attached to the rigid frame N^2, substantially as shown and described.

14. In a lathe, the sliding carriage O, the rod Q. mounted on the same and having the upright Q′, the collar Q^2, having the projection Q^5, and the spring Q^3, acting on the said collar, in combination with the sliding carriage E, the spring-rod R, attached to the said carriage E, and having the front arm, R′, substantially as shown and described.

15. In a lathe, the combination, with the arm N^5, attached to the frame N^2, of the sliding carriage E, having the lug E^3, the bell-crank lever N, having the fork N′, the carriage O, connected by a link and swivel with the bell-crank lever N, the rod Q, having the arm Q′ and carried by the carriage O, the spring-rod R, attached to the said carriage E, and the incline R^2 on the said spring-rod R and engaging with the said arm N^5, substantially as shown and described.

16. In a lathe, the sliding carriage O, provided with the raised bars O′ and with the rod Q, having the angular pin Q′, arranged in front of the carriage, in combination with wood racks or hoppers P′, the rod Q being arranged to turn in bearings to turn the pin upward to hold the wood on the front of the carriage between the pin and the ends of the raised bars, or downward to release it, substantially as and for the purpose set forth.

17. In a lathe, the combination, with the carriage E, having the lug E^5, of the rod T^4, carrying the collar T^5, disposed in the path of the lug E^5, the pivoted arm T^3, connected with the said rod T^4, the collar T, arranged to be engaged by the spring-catch T′, the spring-catch T′, arranged to be lifted by the arm T^3 to release the collar T, the rod S′, carrying the said collar T, and the centering-chuck S, connected with the said rod S′, substantially as set forth.

18. In a lathe, the centering-chuck S, the rods S′ and S^2, carrying the said chuck S, the

collar T, secured to the rod S′, and the spring-catch T′, arranged to engage the collar to retain the chuck in its rearward position, in combination with the weight S^6, the rope S^4, carrying the said weight S^6 and passing over the pulley S^5 and connected with the said rods S′ and S^2 for advancing the chuck, the carriage E, and catch-tripping mechanism arranged to be actuated by the carriage, substantially as and for the purpose set forth.

JOSEPH ROHLMANN.

Witnesses:
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