

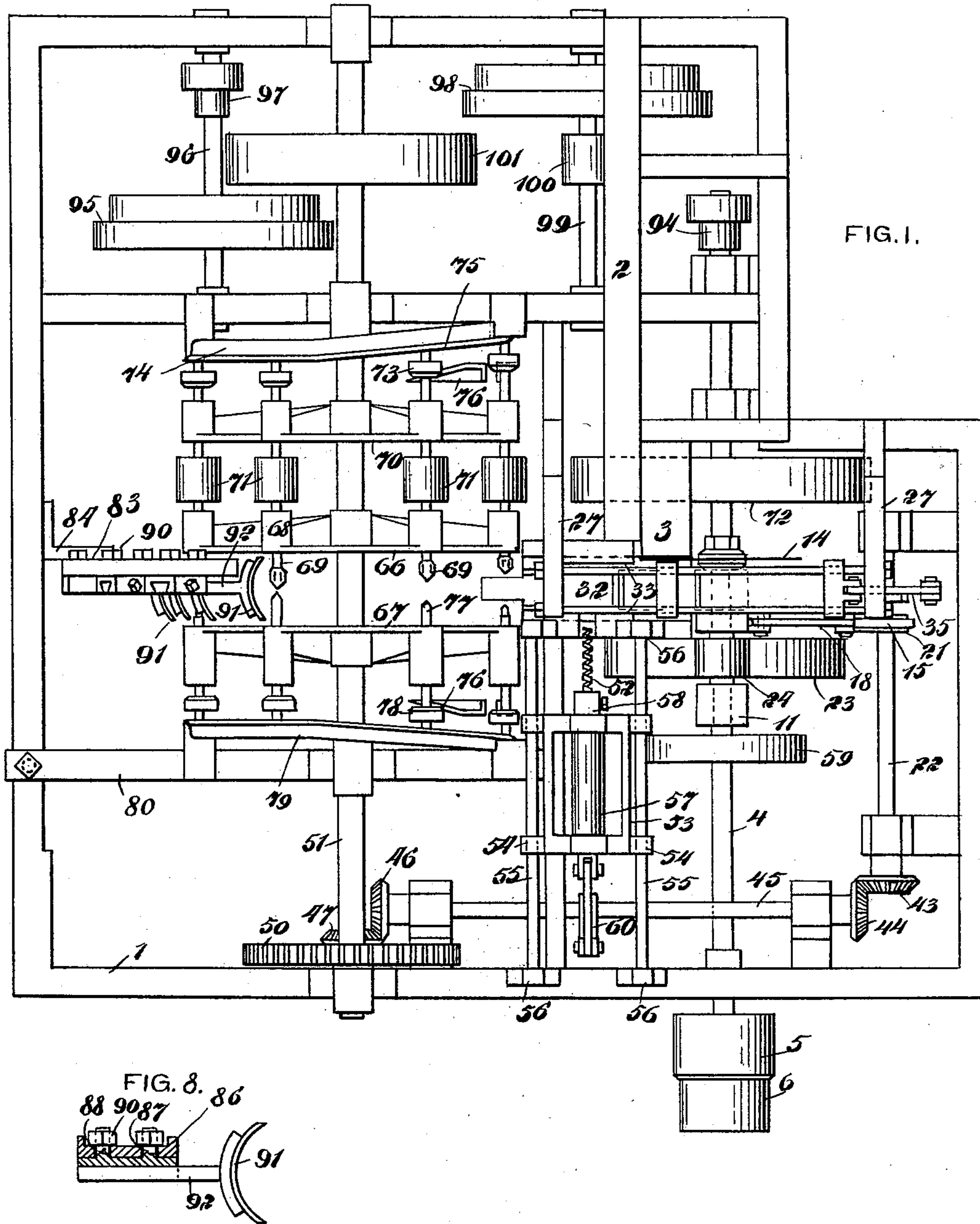
(No Model.)

3 Sheets—Sheet 1.

W. T. JONES.
WOOD TURNING MACHINE.

No. 592,737.

Patented Oct. 26, 1897.



WITNESSES:
Donn Twitchell
R Ferguson

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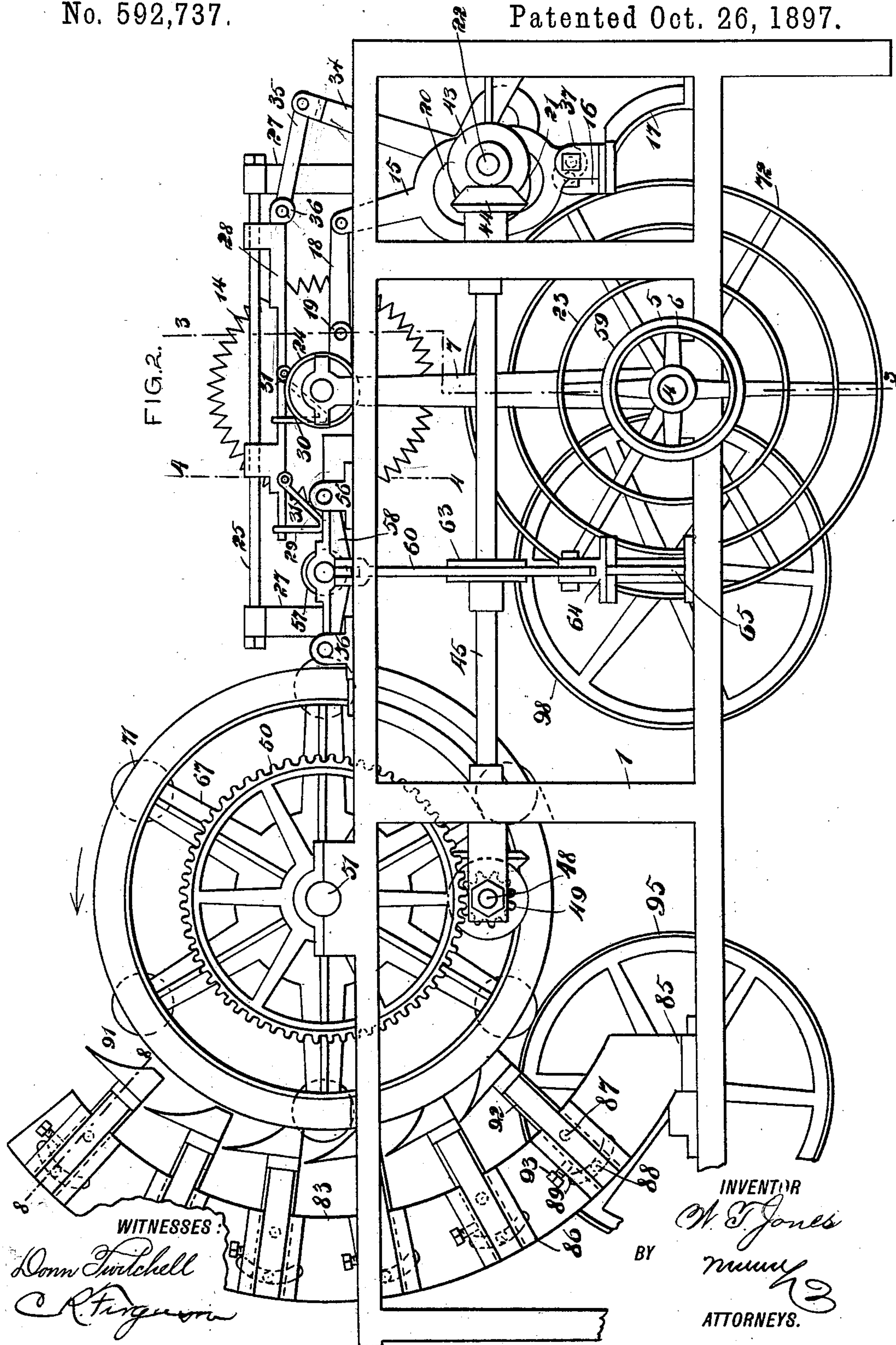
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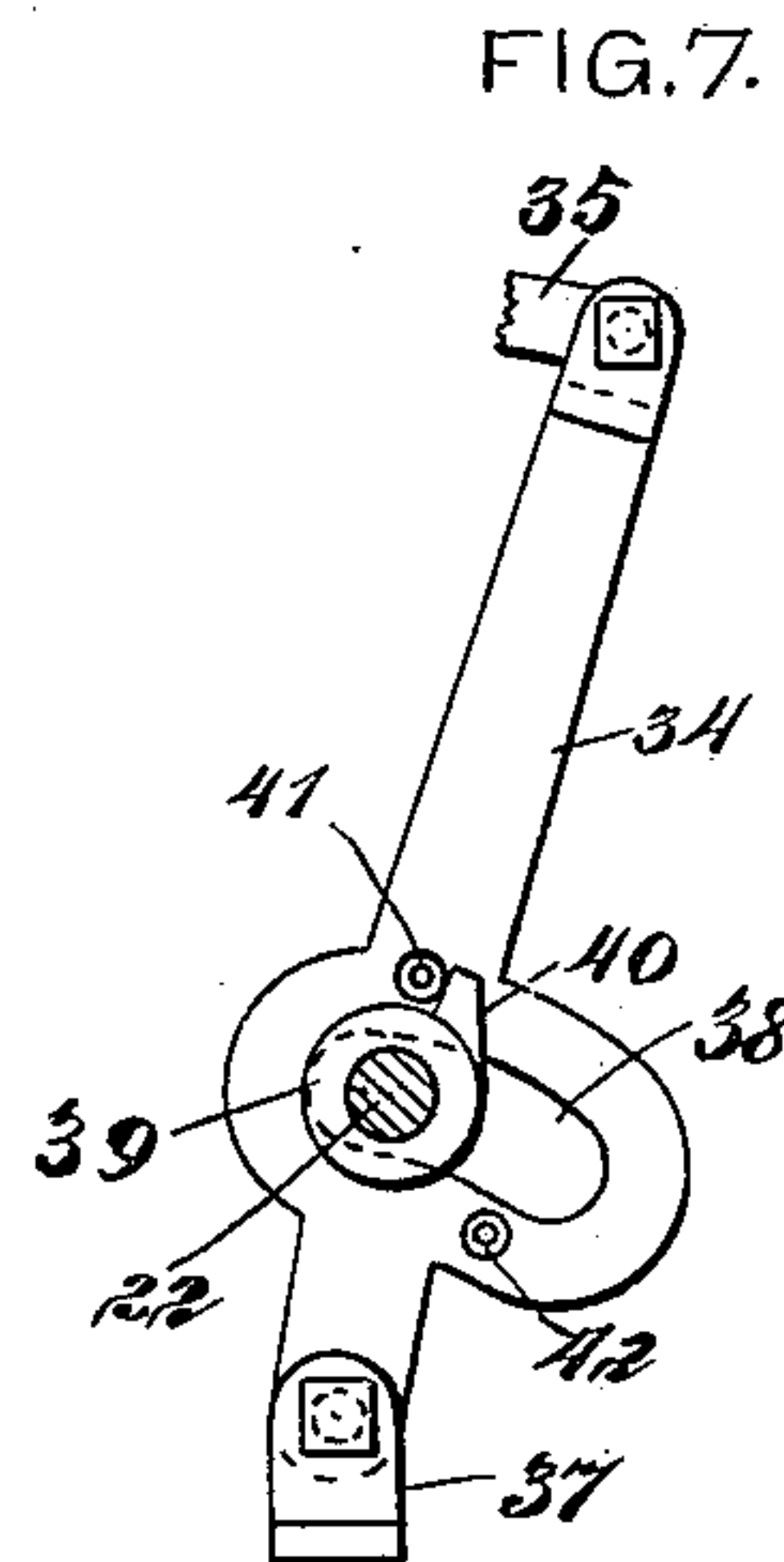
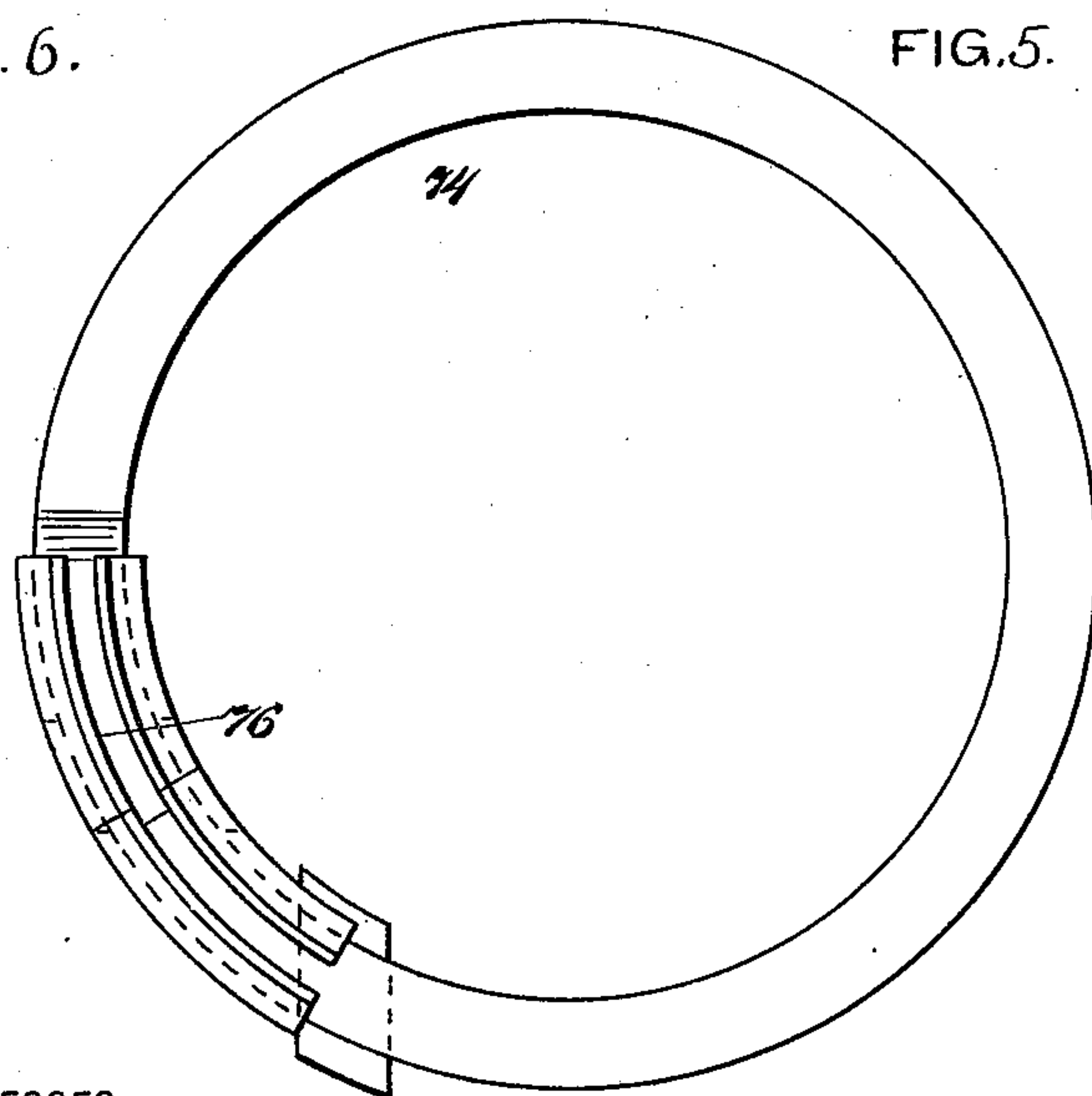
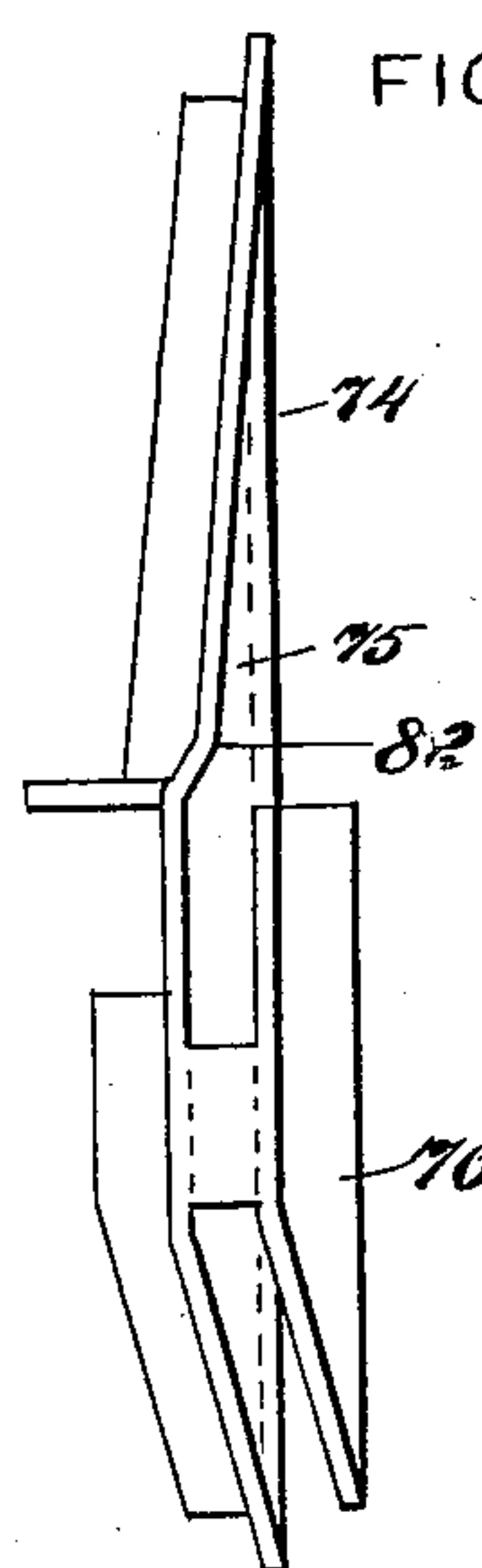
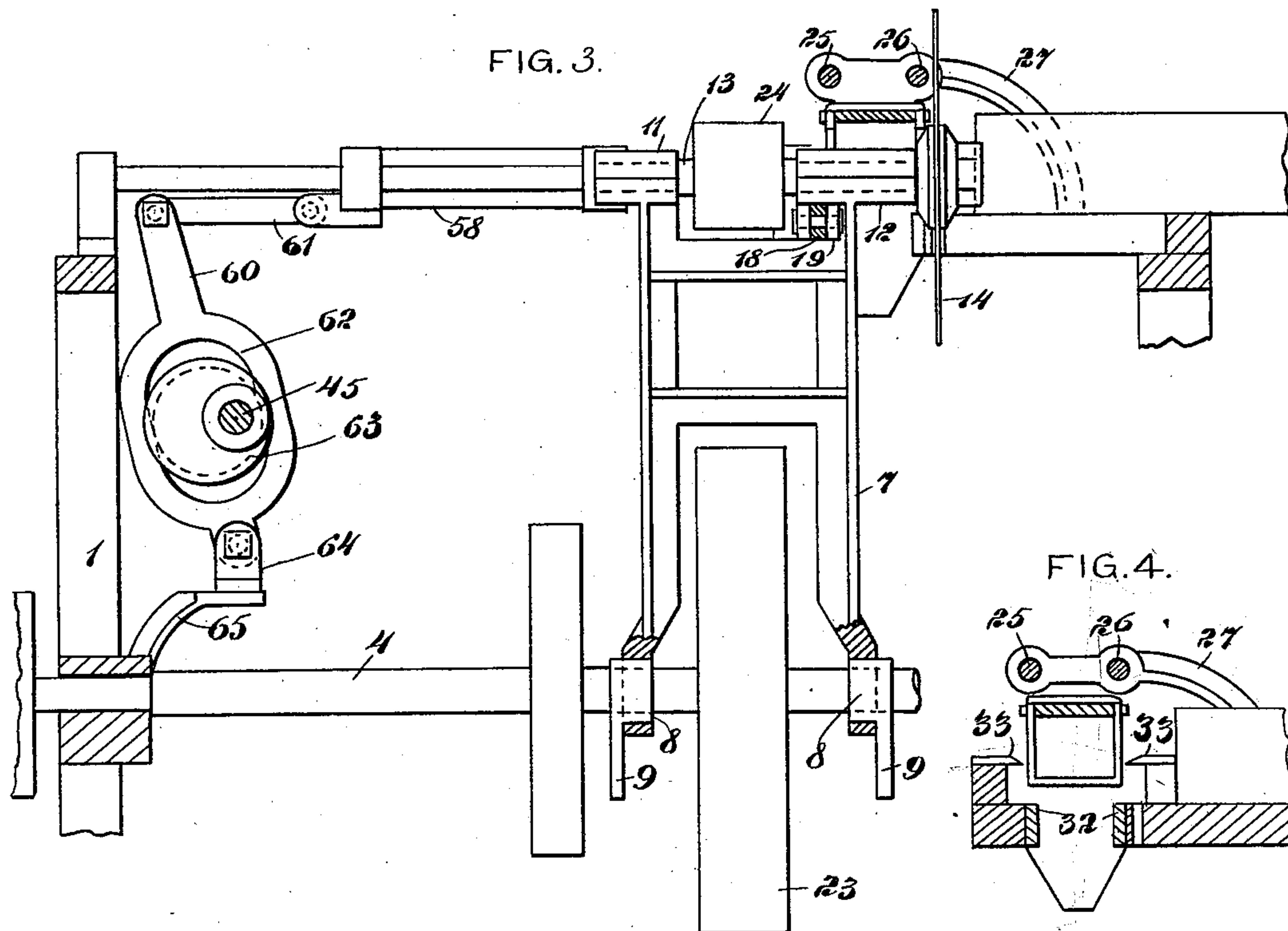
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UNITED STATES PATENT OFFICE.

WILLIAM T. JONES, OF NEW WESTMINSTER, CANADA.

WOOD-TURNING MACHINE.

SPECIFICATION forming part of Letters Patent No. 592,737, dated October 26, 1897.

Application filed December 8, 1896. Serial No. 614,910. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. JONES, of New Westminster, in the Province of British Columbia and Dominion of Canada, have invented a new and Improved Wood-Turning Machine, of which the following is a full, clear, and exact description.

This invention relates to machines particularly adapted for turning fish-net floats; but it will be obvious that it may be employed for turning other articles.

The object of the invention is to provide a machine by means of which the proper length of wood will be sawed from the strip and then automatically forced into position for turning.

I will describe a wood-turning machine embodying my invention, and then point out the novel features in the appended claims.

Reference is to be had to 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 top plan view of a machine embodying my invention. Fig. 2 is a side elevation thereof. Fig. 3 is a section substantially through the line 3 3 of Fig. 2. Fig. 4 is a section substantially through the line 4 4 of Fig. 2. Fig. 5 is a side elevation of a shifting cam employed. Fig. 6 is an edge view thereof. Fig. 7 is a detail showing means for operating a block-pushing carriage, and Fig. 8 is a section substantially on the line 8 8 of Fig. 2.

Referring to the drawings, 1 designates a frame of any suitable material and having on its upper side a guide-strip 2 for directing a strip of wood to the saw. At the end of this guide-strip 2 adjacent to the saw is a platform 3, upon which the lower surface of the wood strip may rest.

Extended transversely of and having bearings in the frame 1 is a main driving-shaft 4, having fast and loose pulleys 5 6 at its outer end. Mounted to swing relatively to this main driving-shaft 4 is a saw-carrying frame 7. This frame 7 comprises arms provided at their lower ends with openings into which projections 8 on brackets 9 extend. These brackets 9 may be secured to the main frame in any desired manner, and, as they surround the main shaft 4, they will serve as supporting-bearings therefor, or, rather, to prevent a

direct downward pressure of the frame 7 on said shaft.

The frame 7 at its upper end has bearing-blocks 11 12, in which the arbor 13 of a circular saw 14 rotates. A backward-and-forward swinging motion is imparted to the frame 7, and consequently to the saw 14, by means of a lever 15, having pivotal connection at its lower end with a stud 16, mounted on a bracket 17, secured to the frame of the machine. From the upper end of this lever 15 a link 18 extends to a pivotal connection with a lug or lugs 19, extended from the bearing-block 12. This lever 15 is provided with an elongated opening 20, against the walls of which an eccentric 21 on an eccentric-shaft 22 engages. Obviously, upon the rotation of the shaft 22 the eccentric 21 will cause a backward-and-forth swinging motion of the lever 15, thus moving the saw-frame back and forth. Rotary motion is imparted to the saw by means of a band engaging around a band-wheel 23 on the main shaft 4 and a band-pulley 24 on the arbor of the saw.

Guide-rods 25 and 26 are mounted in brackets 27, extended upward from the frame of the machine and curved over to one side of the saw 14. Upon these guide-rods 25 and 26 is mounted to slide a carriage 28. Pivotaly mounted on the forward portion of the carriage 28 are pushing-fingers 29-30. Each of these pushing-fingers comprises a bar or yoke adapted to engage over the upper side of the carriage and to extend down at the sides thereof. The lower ends of the downwardly-extended portions have upwardly and outwardly inclined arms 31, which have pivotal connection with the sides of the carriage. Obviously, on the forward movement of the carriage the vertical portions of the fingers engaging against a block of wood will move the same forward. The movement of this carriage 28 will be such that the first block will be moved a certain distance by the pushing-fingers 29, and during this movement the strip of wood will be moved inward the desired length of a block, so that the saw may sever the second block, and then the fingers 30 will move this second block forward, of course, while the first fingers are moved, and on the backward movement of the carriage the inclined arms 31 by riding upon a wooden

block will raise the fingers, so that the carriage may move to its extreme outer position for subsequent action.

The blocks are moved along on a suitable platform 32, and at the opposite sides of this platform 32 are upwardly-extended flanges, from which knife-edged blades 33 extend inward. These knife-edged flanges are designed to engage in the block as the same is pushed along, and thus prevent it from vertical movement, which might be caused by a jar of the machine or otherwise.

A longitudinally-reciprocating motion is imparted to the carriage 28 by means of a lever 34, having a link connection 35 at its upper end, with a lug or lugs 36 on the end of the carriage 28. The lower end of this lever 34 is pivotally connected to a lug 37 on the bracket 17. The lever 34 is provided with an arc slot 38, through which the eccentric-shaft 22 passes. It will be seen that the pivotal connection of the lever 34 with the lug 36 is somewhat forward of a vertical line drawn through the axis of the shaft 22. Secured to the shaft 22 is a cam 39, having at one side a finger 40, adapted to engage with a pin 41, extended from the lever 34 above the slot 38, and also with a pin 42 on said lever below the slot 38. The pins 40 and 41 will preferably be provided with antifriction-rollers.

In operation the finger 40, engaging with the pin 41, will rock the lever 34 in a direction to move the carriage 28 forward. As the pivotal point of the lever is forward of the shaft 22, as before stated, it is obvious that as the lever moves forward the pin 41 in describing a circle somewhat eccentric to the shaft 22 will escape the finger 40, and the continued rotation of the finger 40 will engage with the pin 42 and move the lever 34 in the opposite direction.

On the shaft 22 is a bevel-gear 43, meshing with a bevel-gear 44 on the shaft 45, extended at right-angles to the shaft 22. At its opposite end this shaft 45 has a bevel-gear 46, meshing with a bevel-gear 47 on a shaft 48, having a bearing in the frame 1, and on this shaft 48 is a pinion 49, engaging with a gear-wheel 50 on the shaft 51, which supports and carries block-holding devices to be hereinafter described.

After a block shall have been moved between the knife-edged flanges 33 it is designed to bore a hole longitudinally through said block. For this purpose I employ a bit 52, adapted to be moved longitudinally by means of a carriage 53. It will be seen that one of the knife-edged flanges 33 is cut away sufficiently to allow the inward movement of the bit 52. The carriage 53 consists of a frame having perforated lugs 54 at its corners, through which guide-rods 55 pass. These guide-rods 55 are secured to uprights 56 on the frame of the machine.

Mounted to rotate in the frame 53 is a band-roller 57. This band-roller has a length equal to that of the carriage-frame, and on its

forward end it is provided with a chuck 58, in which the shank of the bit 52 is secured. Rotary motion is imparted to the band-roller 57 by means of a band passing around the same and around a band-wheel 59 on the shaft 4. It will be seen that by making the roller 57 substantially the length of the carriage provision is made for the movement of said carriage, the roller, of course, slipping through the belt. Reciprocating motion is imparted to the carriage 53 by means of a lever 60, having a link connection 61 with the carriage and provided with an elongated opening 62, with the walls of which an eccentric 63 on the shaft 45 engages. The lower end of said lever, it will be seen, is pivotally connected to a lug 64 on a bracket 65 secured to the frame of the machine. The eccentrics 63 and 21 will preferably be provided with annular flanges to engage against the outer surfaces of their respective levers, so as to prevent a lateral movement of the levers relative to the eccentrics.

During the boring of a block it is obvious that the knife-edged flanges 33 will hold the block rigidly in place. After boring a block it is to be transferred to a rotary carrier, which subjects it to the action of turning-knives. This carrier comprises spiders 66 and 67, mounted on the shaft 51. The spider 66 is provided with a series of bearing-blocks 68, in which are mounted to rotate the spindles of chucks 69. The spindles of the chucks 69 are extended through bearings in an auxiliary spider 70, also mounted on the shaft 51, and between the spiders 66 and 70 the spindles are provided with band-pulleys 71, over which a band is designed to engage, the said band being extended from a band-wheel 72 on the main shaft 4. The outer ends of the spindles of the chucks 69 are provided with rollers 73.

Secured to the frame 1 is a ring-plate 74, designed to move the chucks 69 into and out of engagement with a block. As here shown, this ring-plate 74 has a beveled or cam surface 75, and attached to the ring-plate 74 is a plate 76, with the inner surface of which the rollers 73 are designed to engage for the purpose of drawing the chucks 69 out of engagement with the blocks.

Mounted to rotate in bearings in the spider 67 is a series of spindles 77, each provided on its outer end with a roller 78. A ring-plate 79, similar in construction to the ring-plate 74, is attached to the frame of the machine and is designed to move the spindles 77 longitudinally to engage them with and also to disengage them from the blocks. The ring-plate is preferably adjustable toward and from its spiders, so that provision is made for different lengths of blocks. As here shown, the ring-plate is secured to a bar 80, movable on the upper side of the frame, and it may be held as adjusted by suitable set-screws.

In operation the carrier will be rotated in the direction indicated by the arrow in

Fig. 2. Immediately after a bored block shall have been forced between a chuck 69 and its opposite spindle 77 the shanks of these devices, engaging against their respective ring-plates 74 79, will be forced inward to rigidly engage the block by means of the offset portion 82 on each ring-plate, and as they are carried upward the incline of the ring-plates will force the holding devices closer into engagement with the block. After the block shall have been carried beyond the cutter-blade to be described and the forming or turning completed the parts 73 and 78 will engage against the inner side of the incline-plates 76, which it will be seen are located below the top plane of the frame. These plates 76 will serve to draw the parts 69 and 77 out of engagement with the block, so that the same may drop downward to the floor.

Arranged concentrically with the spiders 66 and 67 is a segmental plate 83. This segmental plate extends around the rear portion of the carrier or spiders 66 and 67 and is secured to the frame of the machine by means of a bracket 84 and also by means of an outwardly-extended portion 85 at its lower end. Mounted on the segmental plate 83 is a series of swinging guide-plates 86. Each guide-plate 86 has a pivotal connection 87 near its inner end with the segmental plate 83, and near its outer end it is provided with a lug 88, which passes through an arc slot 89 in the plate 83. The lug 88 is screw-threaded at its outer end and is engaged by a set-nut 90. By this construction it will be seen that the guides 86 may be swung or adjusted to regulate the pitch of the knives 91, carried on the inner ends of the shanks 92, movable through the guide-plates 86. These shanks 92 have their opposite edges beveled to engage correspondingly-beveled portions in the guide-plates 86. The shanks 92 may be held as adjusted in the guide-plates by means of set-screws 93. The cutter-blades 91 are made of a suitable shape to turn the block as desired, and it will be seen that the several cutters are gradually placed closer to the carrier or spiders 66 and 67 from the upper to the lower one.

Motion is imparted to the carrier comprising the parts 66 and 67 by means of a band extending from a two-step pulley 94 on the main shaft 4 to a two-step band-wheel 95 on the counter-shaft 96, having journal-bearings in the frame of the machine. On this counter-shaft 96 is a two-step pulley 97, from which a band extends to a two-step band-wheel 98 on a counter-shaft 99, having bearings in the frame of the machine, and on this counter-shaft 99 is a pulley 100, from which a band extends to a band-wheel 101 on the shaft 51.

By employing the two-step pulleys and band-wheels it is obvious that the speed of the carrier may be changed to slow or fast, as occasion may require, and relative sizes of these pulleys and wheels are so proportioned as to give a range of speeds varying from two

to ten revolutions of the carrier-shaft to five hundred of the driving-shaft.

When it is desired to operate the machine, the timber to be operated upon is placed upon the frame and against the guide-strip 2 by the operator, who when the saw recedes pushes the timber up to the stop-block channel. The saw then comes forward and cuts off enough material to make one float. The finger 40 on the eccentric-shaft 22 then engages the pin 41 on the lever 34 and gives a forward motion to the block-shifting carriage 28. The pushing-fingers 29 will force the cut-off block along to the center of the block that comes opposite the bit 52. The operator in the meanwhile pushes up the timber in order that another block may be cut off. The bit 52 now passes through the block and withdraws. At this time the saw always comes forward and cuts off the second block. The fingers on the carriage 28 now push the block which has been bored forward until the center of the block is brought into the path of the devices 69 and 77. The blocks thus engaged are carried around by the carrier against the edges of the cutter-blades 91.

It will be seen that as the carrier rotates the blocks in passing the cutter-blades are rapidly revolved relatively to the carrier by means of the band engaging with the pulleys 71.

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

1. A wood-turning machine, comprising a series of fixed cutters, a rotary block-carrier for moving blocks against said cutters, means for rotating the blocks relatively to the carrier, a saw for severing a block from the strip, means for imparting a back-and-forth motion to said saw, means for moving a block forward, a reciprocating frame for holding and operating a boring-tool, and knife-edged flanges for holding a block for the boring-tool, substantially as specified.

2. A wood-turning machine, comprising a main shaft, a saw-carrying frame mounted to swing relatively to said main shaft, a circular saw carried by said frame, means for rotating the saw from the main shaft, a carriage for moving a sawed block forward, a bit-carrying carriage movable at right angles to the block-moving carriage, means for operating both of said carriages, knife-flanges for holding the block for the boring-tool, a rotary carrier, chucks and spindles mounted in said carrier and adapted to rotate relatively thereto, and cutter-blades arranged near the carriage, for engaging with and cutting or turning the blocks, the said cutter-blades being gradually placed with relation to the rotary carrier, substantially as specified.

3. A wood-turning machine, comprising a main shaft, a saw-carrying frame mounted on and adapted to rock with the frame, a pulley on the arbor of said saw, adapted for engage-

ment with a band extended from a band-wheel on the main shaft, guide-rods arranged at one side of the saw, a carriage on said guide-rods, pushing-fingers on said carriage and adapted to swing relatively thereto, a fulcrumed lever having a link connection with the carriage, an eccentric for rocking said lever, a boring device forward of the saw, a block-carrier forward of the boring device, and cutter-blades, substantially as specified.

4. In a wood-turning machine, the combination with cutter-blades and a carrier for moving a block of wood against the same, of chucks and spindles mounted on said carrier and adapted to rotate relatively thereto, means for rotating the chucks relatively to the carrier, a bit-carrying frame movable transversely of the block-carrier, a fulcrumed lever having a link connection with said bit-carrying frame, an eccentric for rocking said lever, an elongated roller mounted in the bit-carrying frame and adapted to be engaged by a band extended from a band-wheel on the main shaft of the machine, knife-edged flanges for holding a block while boring, a rotary saw, and means for forcing a block forward to the saw, substantially as specified.

5. In a wood-turning machine, the combination with a saw, of guides extending along one side of said saw, knife-edged flanges on the opposite sides of said guides, means for pushing a block between said knife-edged flanges, a reciprocating bit-carrying frame, means for imparting motion thereto, a rotary block-carrier, and turning-knives arranged near said block-carrier, substantially as specified.

6. In a wood-turning machine, the combination with a carrier for blocks, of a segmental plate concentric with said carrier, guide-plates mounted to swing on said segmental plate, cutter-blade shanks adjustable longi-

tudinally in said guide-plates, and means for securing them as adjusted, substantially as specified.

7. In a wood-turning machine, the combination with a saw, a block-carrier and cutting or turning blades, of a block-shifter comprising a carriage or frame, guide-rods on which said carriage or frame is movable, pushing-fingers mounted to swing vertically on said carriage, a pivoted lever having a link connection with the carriage, a shaft, an eccentric on said shaft engaging against the walls of an elongated opening in said lever, and another eccentric on said shaft for moving the saw to the work, substantially as specified.

8. In a wood-turning machine, the combination with a block-carrier, of a segmental plate concentric to the block-carrier, guide-plates having pivotal connection near their inner ends with said segmental plates, screw-threaded lugs on said guide-plates passing through arc slots in the segmental plate, set-nuts on said lugs, and knife-carrying shanks adjustable in said guide-plates, substantially as specified.

9. In a wood-turning machine, the combination with a saw, a boring device and a block-carrier, of a block-shifter comprising a reciprocating carriage, a fulcrumed lever having a link connection with said carriage, a shaft, a finger extended radially from said shaft, and pins arranged at opposite sides of a slot-opening in said lever and adapted to be engaged successively by the finger on the shaft, the pivotal point of said lever being forward of a vertical line through the axis of the shaft, substantially as specified.

WILLIAM T. JONES.

Witnesses:

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ANDREW W. ROSS.