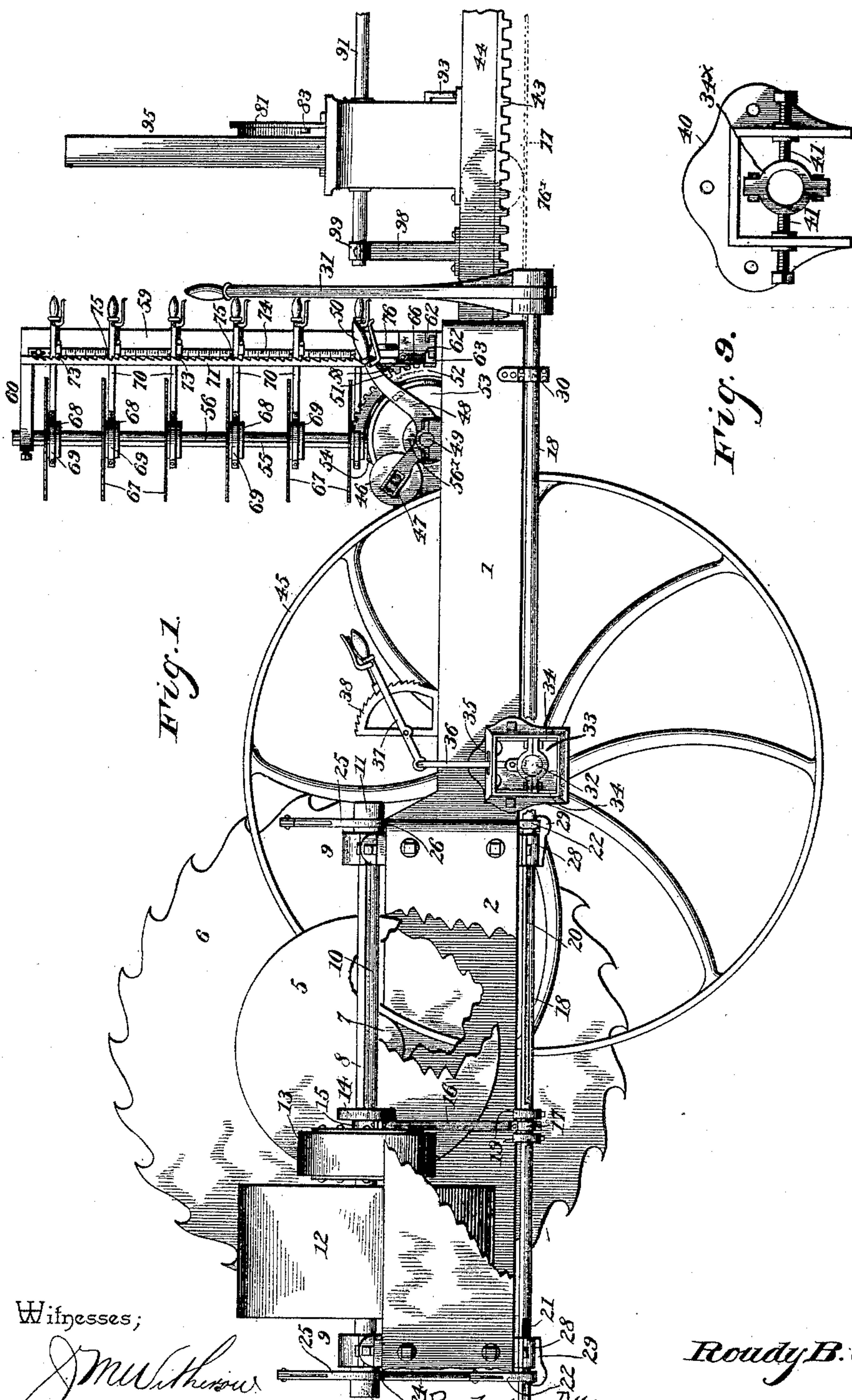


4 Sheets—Sheet 1.

No. 497,768.

Patented May 23, 1893.



Witnesses;

J. M. Witherspoon

Chas. S. Hyer.

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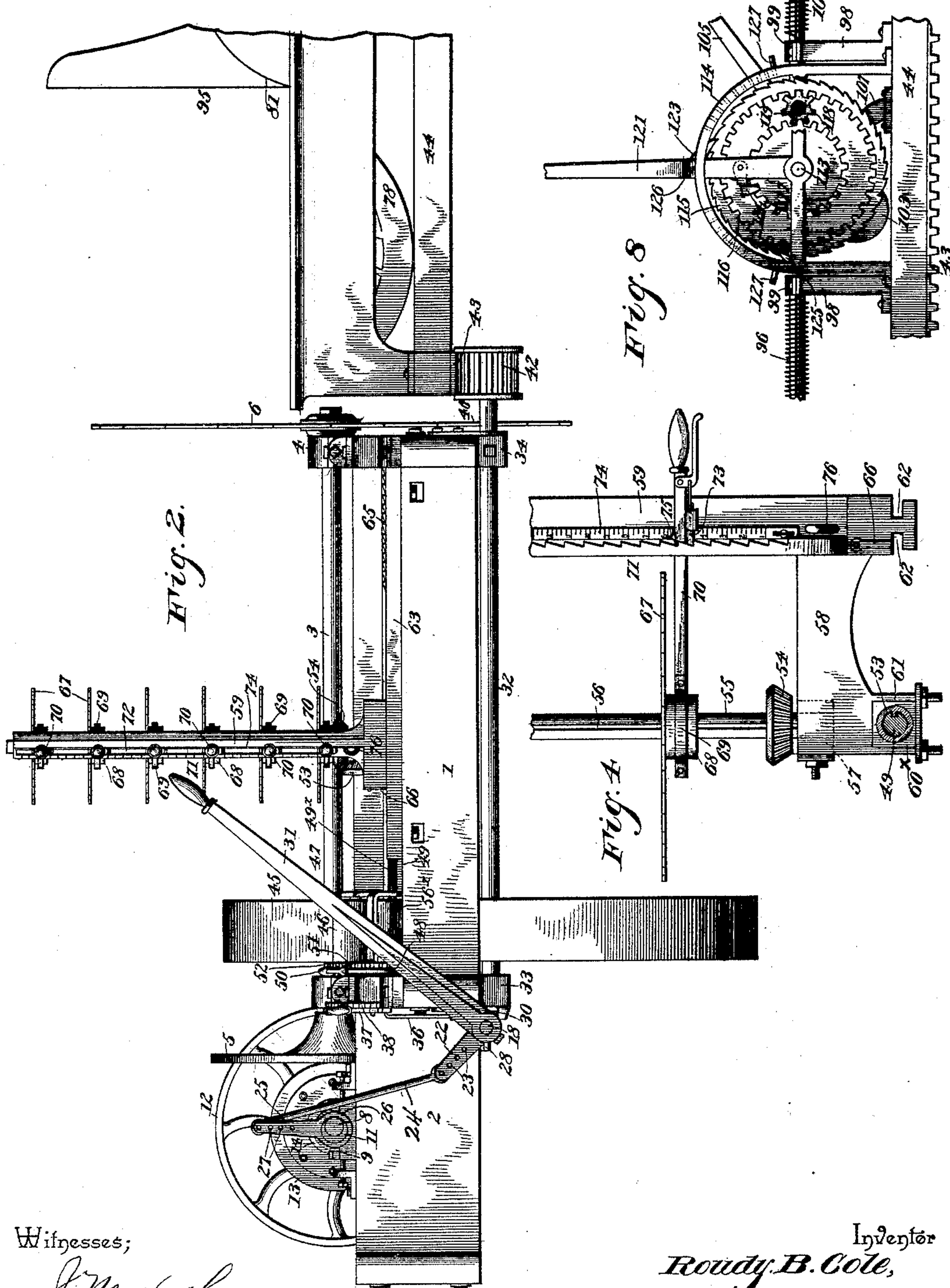
(No Model.)

4 Sheets—Sheet 2.

R. B. COLE.  
SAWMILL.

No. 497,768.

Patented May 23, 1893.



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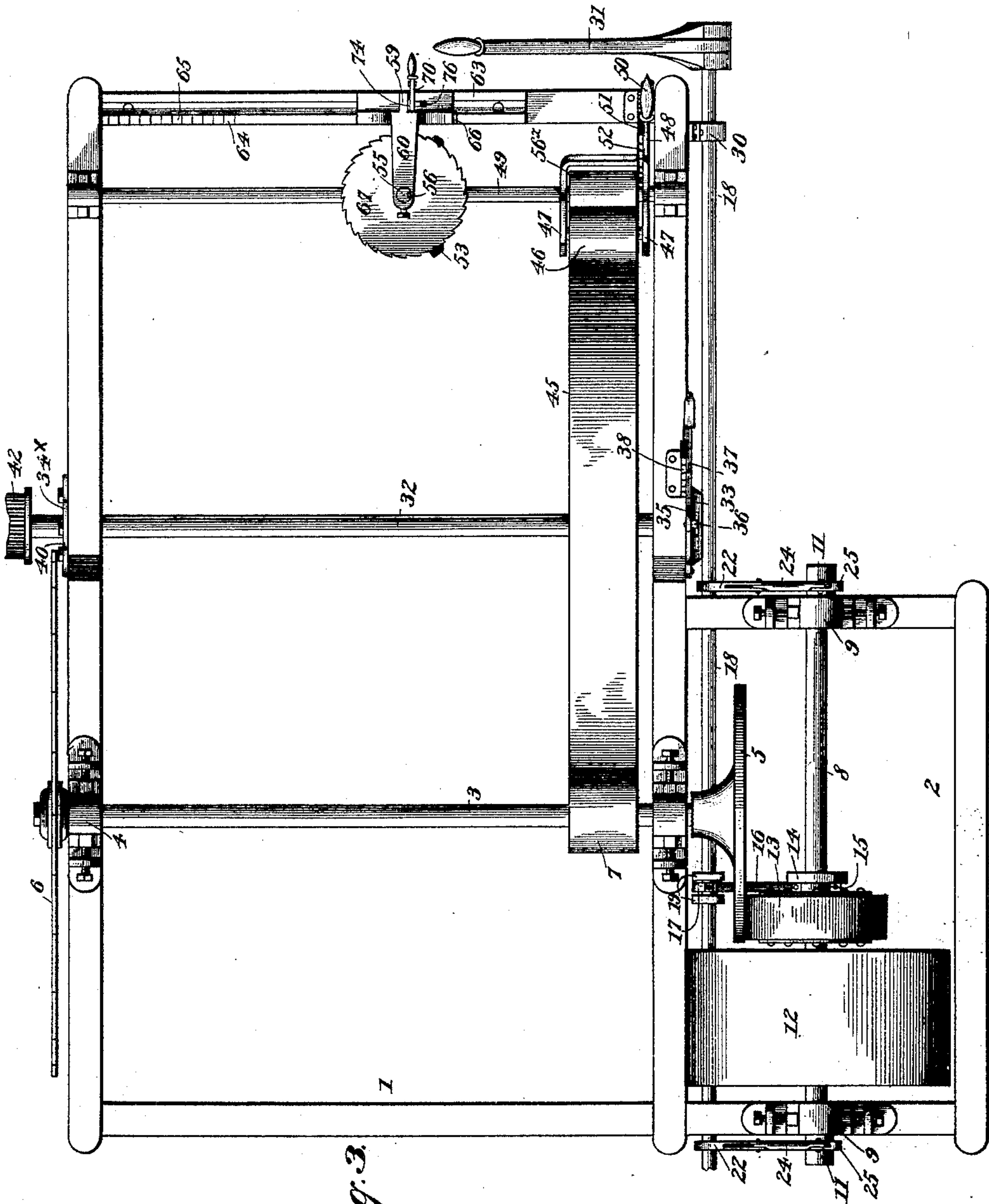
(No Model.)

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No. 497,768.

Patented May 23, 1893.



*Fig. 3.*

Witnesses;

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4 Sheets—Sheet 4.

R. B. COLE.  
SAWMILL.

No. 497,768.

Patented May 23, 1893.

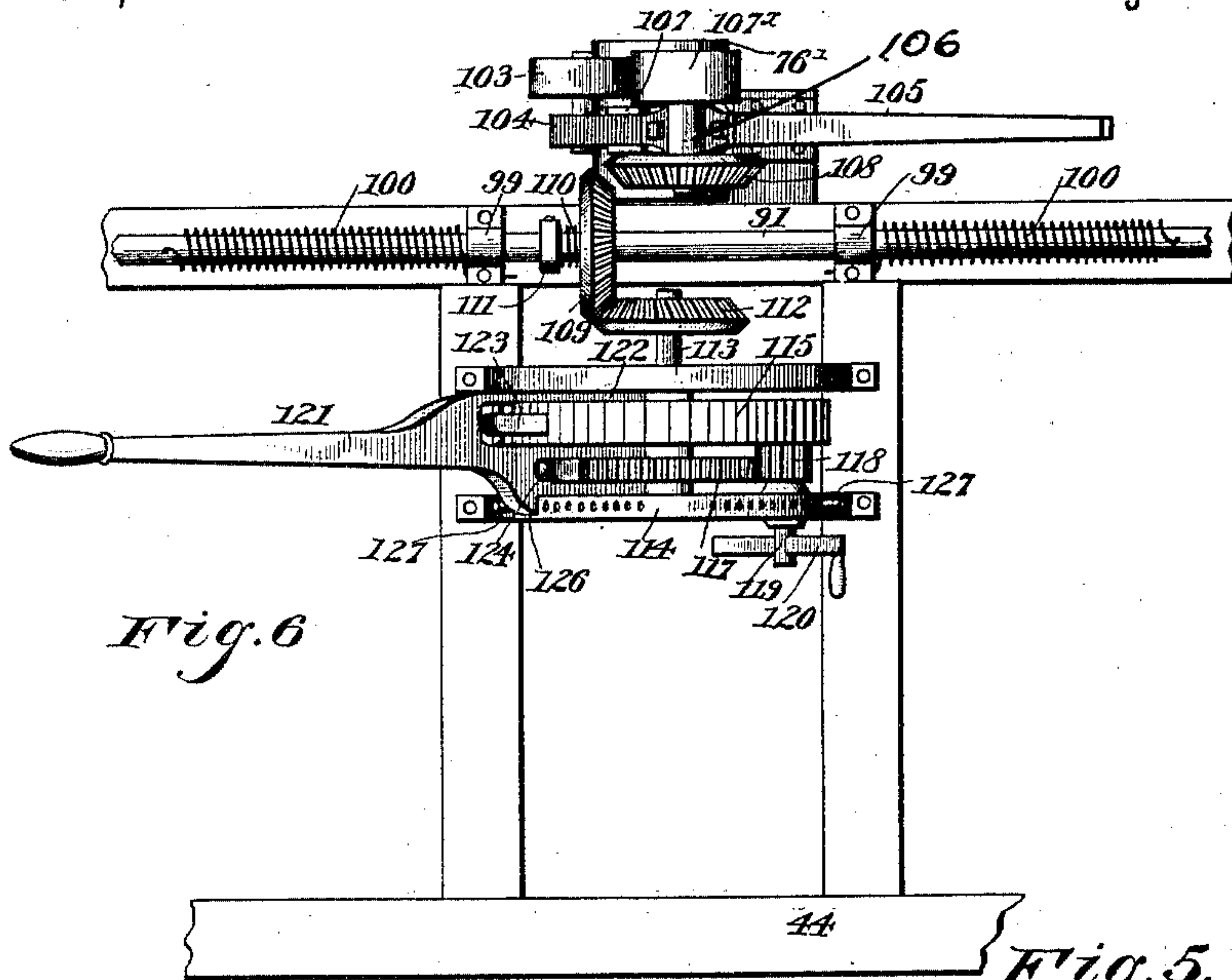


Fig. 6

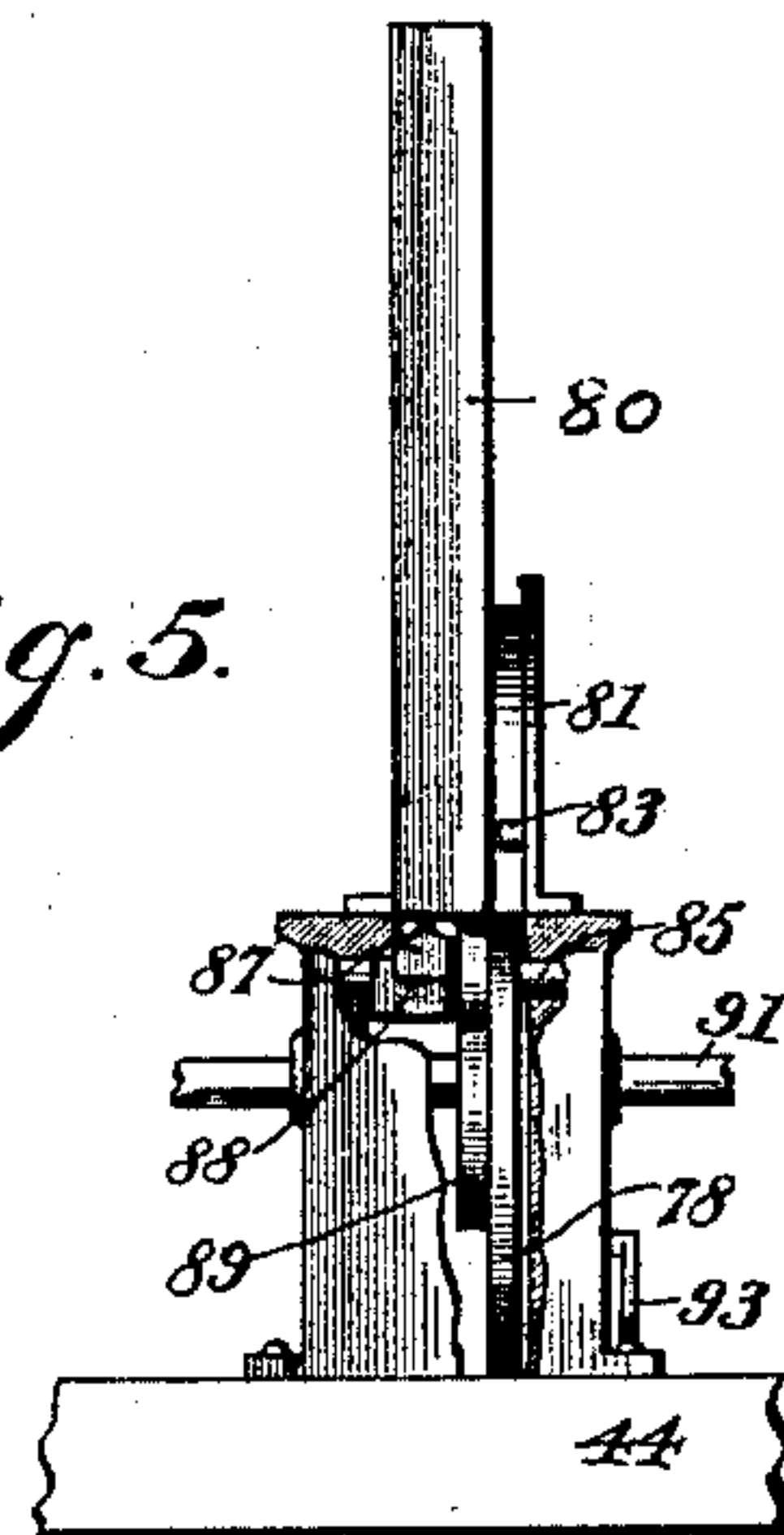


Fig. 5.

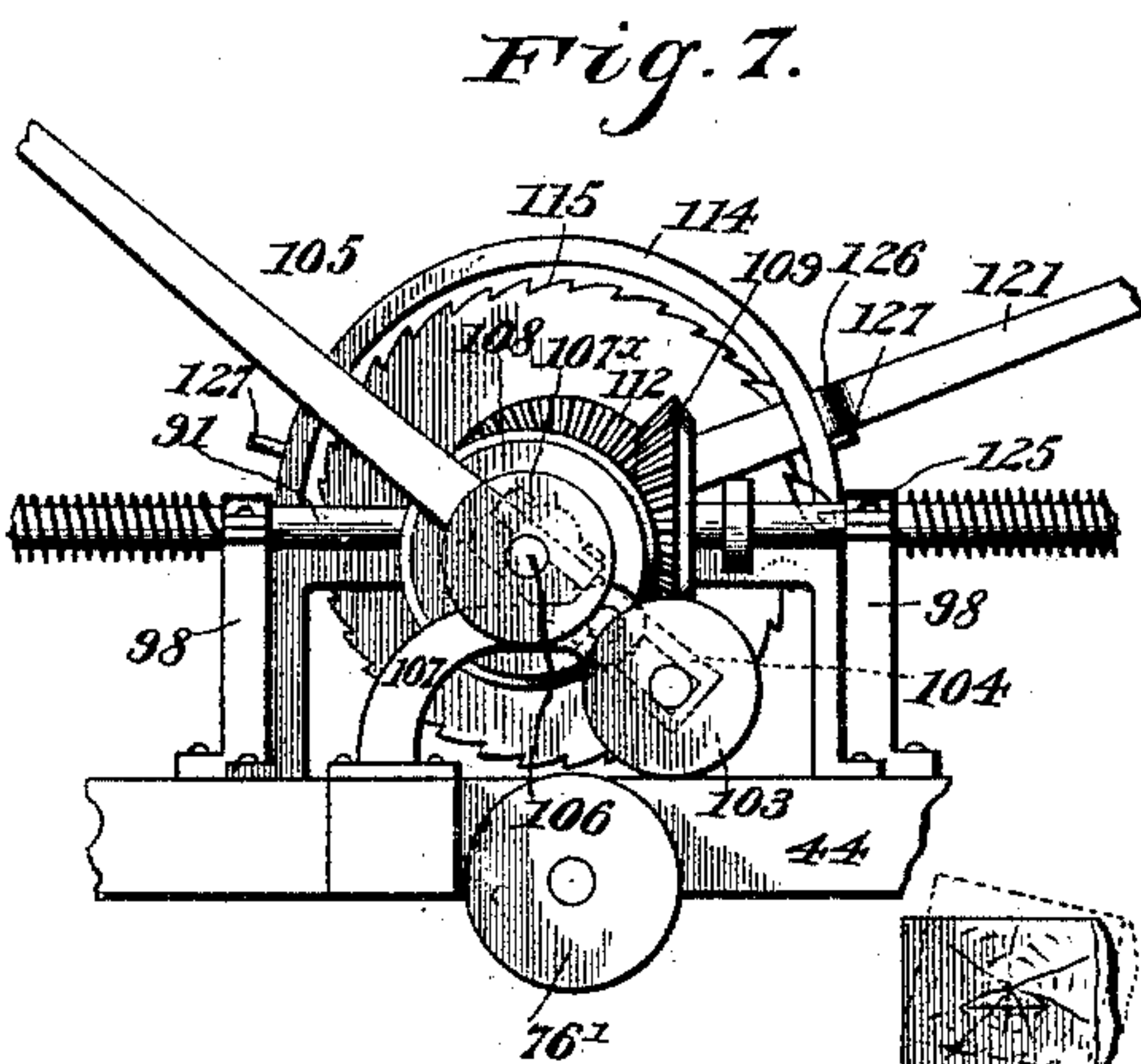


Fig. 7.

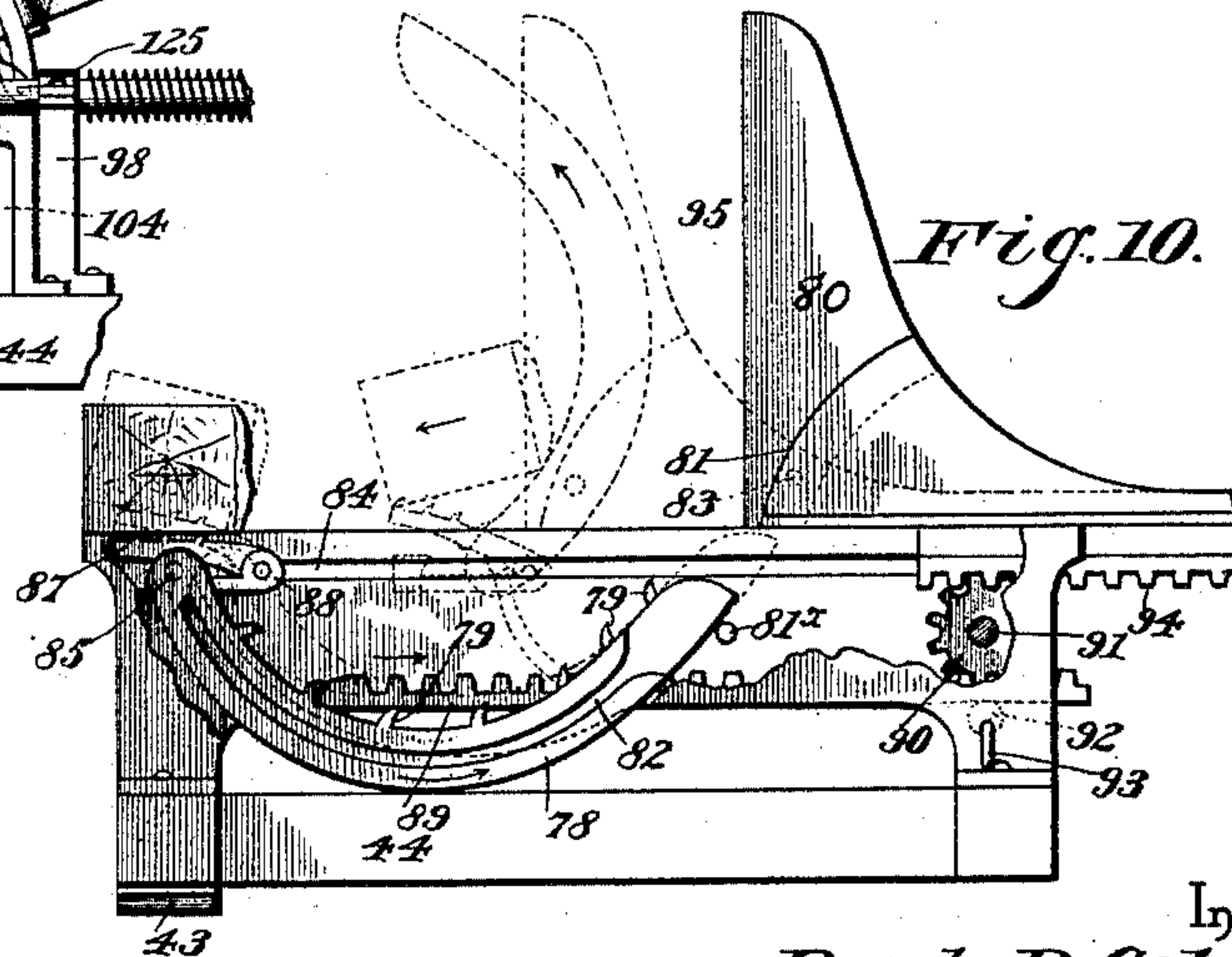


Fig. 10.

Witnesses;

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# UNITED STATES PATENT OFFICE.

ROUDY BUSH COLE, OF LAKEWOOD, ILLINOIS.

## SAWMILL.

SPECIFICATION forming part of Letters Patent No. 497,768, dated May 23, 1893.

Application filed July 5, 1892. Serial No. 438,940. (No model.)

*To all whom it may concern:*

Be it known that I, ROUDY BUSH COLE, a citizen of the United States, residing at Lakewood, in the county of Shelby and State of Illinois, have invented a new and useful Sawmill, of which the following is a specification.

This invention relates to certain new and useful improvements in saw mills, and consists in the construction and arrangement of the parts thereof, as will be more fully hereinafter described and claimed.

The object of this invention is to so improve a device of the character set forth, that it will be more effectual in its operation and more convenient by virtue of the addition of several attachments for independent and combined service, the whole device being comparatively inexpensive in manufacture.

In the drawings:—Figure 1 is a side elevation of the improved mill, shown broken away in parts. Fig. 2 is an end elevation of the same also shown broken away. Fig. 3 is a top plan view of the saw frame and with the parts in connection therewith. Fig. 4 is an elevation of a portion of the edges on an enlarged scale. Fig. 5 is an end view of the head block and log turning attachment. Fig. 6 is a top plan view of log turning friction mechanism and the double acting ratchet wheel in connection therewith. Fig. 7 is an end elevation of the device shown by Fig. 6. Fig. 8 is an elevation on an enlarged scale of the double ratchet mechanism shown mounted on a portion of the carriage. Fig. 9 is a detail view of one of the boxes. Fig. 10 is an end elevation of the carriage showing the improved log turning and carrying mechanism in operation by dotted lines.

Similar numerals of reference are employed to indicate corresponding parts in the several figures.

Referring to the drawings; the numeral 1 designates the saw frame of suitable form of construction and comprising side, end, and cross bars, or beams, as will be more fully hereinafter referred to from time to time in describing the support of the several parts of the mechanism thereon, and said frame is also provided with an extension 2, projecting outward from a portion of one side thereof. On the said frame is mounted the saw mandrel 3, which extends across the frame 1 and

has the ends thereof journaled in adjustable boxes 4, whereby the same may be kept in true line together with the parts supported thereby. On said mandrel 3 is keyed a friction disk 5, and on the end of the mandrel adjacent to the outer portion of one of the side bars thereof is mounted a circular saw 6, of any preferred form of construction, and which may be supplied with the incidental mechanism now commonly employed in connection with circular saws. A small friction wheel 7 is also mounted on the mandrel 3, between the disk 5 and the saw 6, and at a suitable point intermediate of latter parts. In the extension 2 of the frame 1, and on the upper surface thereof is mounted a transverse shaft 8, which has bearing in adjustable boxes 9, and is formed with a key seat 10, the ends of the said shaft 8 being formed with eccentrics 11. On the shaft 8 is mounted a belt pulley 12, and adjacent to the belt pulley is a friction wheel 13, adapted to engage with the disk 5, which is provided with a suitable key adapted to engage the key seat 10 and have adjustable movement on the shaft 8 longitudinally thereof by means of a flanged collar 14, engaged by a yoke 15 carried by the upper end of a lever 16, whose lower end 17 embraces a rod 18. On the rod 18 at opposite sides of the lower embracing end 17 of the lever 16 are situated collars 19, to hold said end in position and through which end the said rod 18 has free movement. The said rod 18 is formed with grooves or key seats 20 and 21, to be engaged by the keys of the several parts on the said rod. At the opposite ends of the extension 2, arms 22 are mounted on the rod 18, and have a series of openings 23 therein, to which is adapted to be adjustably secured the lower ends of connecting rods 24, whose upper ends are attached to arms 25 of eccentric rings 26, which embrace the eccentrics 11 on the shaft 8, the said arms 25 being in like manner provided with a series of openings 27 for the adjustment of the upper ends of the connecting rods 24.

By the mechanism set forth, including the adjustable boxes 9, the friction wheel 13 is brought into bearing contact with the face of the disk 5, or said wheel 13 is disconnected from the disk 5, as may be found necessary and desirable. The rod 18 has bearing in



boxes 28 secured to the under side of the extension 2, and connected to said boxes are recessed guards 29, which are adapted to engage the lower portions of the arms 22, to hold the same in proper position when the rod 18 is adjusted, and said lower embracing ends of the arms 22 are provided with suitable keys engaging the grooves or key seats 20 and 21, by means of which the rotary motion imparted to the rod 18 is transmitted through the arms 22, and the parts connected thereto to the eccentrics 11, as heretofore stated. The rod 18 extends outward parallel with the adjacent side of the frame 1, and passes through a box 30 secured adjacent to the end of said frame, and the free end of the rod has an operating lever 31 connected thereto and by means of which the said rod 18 may be either revolved or rotated, or shifted longitudinally, and when the said rod 18 is shifted sufficiently the friction wheel 13 may be adjusted on the shaft 18, so as to bring the same to bear against the side of the disk 5 opposite to that shown in Fig. 1, in order to reverse the motion of the saw 6 if desired.

Under the frame 1 is mounted an axle or shaft 32 having bearing in an adjustable box 33 having guide flanges 34 thereon and a slot 35 in the upper flange through which projects a bar or rod 36 connected at its lower end to said box 33 and at its upper end to a lever 37 having a dog engaging a toothed sector 38. The opposite end of the said shaft 32 is held in a pivoted box 34<sup>x</sup>, as fully shown in Fig. 9, which consists of a flanged plate 40 having set screws 41 projecting through opposite flanges thereof and bearing against the said box to permit raising and lowering of the end of the shaft in connection with the box 33. On the free end of said shaft 32 is mounted a pinion 42 which meshes with the rack 43 of the carriage 44, and a large friction wheel 45 is also mounted on said shaft and is adapted to have its rim thrown out of and into gear with the friction wheel 7 on the saw mandrel 3 at one side, and to transmit motion from said wheel to a friction wheel 46 having bearing in boxes 47 in the free end of an elbow lever 48 mounted on a shaft or axle 49 located adjacent to one end of the frame 1, said lever being formed with an operating handle 50 supplied with a dog 51 adapted to engage a toothed segment 52 secured on said frame adjacent to the shaft or axle 49. The shaft or axle 49 is formed with a key seat or groove 49<sup>x</sup> on which is adjustably mounted a vertically situated bevel gear 53 which is adapted to mesh with a smaller horizontally mounted bevel gear 54, keyed to the lower end of a vertically disposed mandrel 55, having a key groove or seat 56, extending throughout the length thereof. Another friction wheel 56<sup>x</sup> is permanently keyed to the axle or shaft 49 and is adapted to be engaged by the wheel 46 to impart motion to said shaft or axle. The lower end of said mandrel 55 is stepped in a box 57 mounted in a base extension 58 of

an upright 59 also having a horizontal top arm 60 in which the upper end of the said mandrel is journaled. The shaft or axle 49 bears in a box 60<sup>x</sup> in an extension 61 of the base extension 58, as fully shown in Fig. 4, and in this figure the hub of the gear 53 is shown on the shaft or axle 49, the remaining portion of the said gear not being illustrated. The opposite portion of the base extension 58 of the upright, is formed with grooves 62 which are engaged by a flanged guide track 63 secured on frame 1, and adjacent to said track is mounted a bar 64 having notches 65 adjacent to one end thereof adapted to be engaged by a catch 66 secured to one side of the base extension of the upright, in order to hold the latter and the parts carried thereby immovably in engagement with the log.

On the mandrel 55 are adjustably mounted a multiplicity of horizontally disposed edging saws 67 having grooved collars 68 in connection therewith and loosely embraced by yokes 69 carried on the ends of levers 70 and by means of which the saws may be vertically adjusted or raised and lowered for purpose of setting same at points of elevation desired. To one side of the upright 59 is secured a ratchet bar 71 in such manner as to leave a slot 72 through which the levers 70 pass, and the latter are provided with dogs 73 adapted to engage the said ratchet bar 71 to hold the saws 67 in their adjusted positions. Adjacent to said ratchet bar 71 and adjustably secured to the side of the upright is a scale plate or strip 74 and in connection with each lever 70 is an index 75 adapted to be relatively positioned adjacent to or against said scale plate or strip in order to readily accomplish and ascertain the necessary or required amount of adjustment of the saws 67. The lower portion of one side of the base extension 58 of the upright 59 is also provided with a grip or hand hold 76 to conveniently adjust the said upright and the parts carried thereby. The carriage 44 has wheels 76' running on tracks 77 and is adapted to be moved back and forth adjacent to the saw 6, and therein is mounted a log turning device, shown more clearly in Fig. 5, and comprises a curved arm 78, provided with spurs or spikes 79 on the upper edge thereof and is free to move upward or downward through an opening and against a guide 81 and is limited in its downward movement by resting on a pin 81<sup>x</sup> on a standard 95. A groove 82 is formed in one side of said arm and is adapted to be engaged by a pin 83 in connection with the guide 81, to steady the movement of the arm as will be readily seen.

In a groove 84 in the frame supporting the log-carrying mechanism, or carriage a pin 85 moves horizontally and operates a log carrier consisting of a spiked arm 87 pivoted at its inner end to a support 88, also movably mounted in the said groove 84. The pin 85 is also connected to the upper curved extension of a rack bar 89 and to the adjacent end of the arm 78 and forms a pivot for the latter;



and the said rack bar 89 is adapted to be thrown into engagement with a gear 90 mounted on a shaft 91 by an eccentric 92 bearing against the under side of the same and having an operating handle or grip 93. As the rack bar 89 is operated to move in the direction of the arrow, shown in Fig. 10, it draws backward on the pin 85, which separates the arm 87 from the support 88 and raises the same causing the spikes thereof to take firmly into the under side of the log and raise the latter and gradually turn it over, when the said arm 87 shall have reached the rear limit of its movement, and bring the log against the arm 78, which, during said operation of the other parts, will have been gradually rising as shown in dotted lines, and assist the carrier in overturning the log to bring the uncut side thereof in proper position to the saw 6. When the log shall have been properly turned, the movement of the rack bar 89 is reversed and the same is caused to return to its normal position as shown in full lines and dragging the log over with it to be again sawed.

It will be understood that there will be more than one of the log turning devices set forth mounted on the carriage in order to equalize the movement of the log throughout its length. The guide 81 has a rack 94 on the under side thereof which meshes continuously with the gear 90 and is simultaneously moved with the other parts of the log turning devices, and connected to and moving with said guide is standard 95, so it will be seen that the logs may be moved or shoved toward the edge of the carriage adjacent to the saw 6 when turning of the same is not desired, and this independent movement is accomplished through the medium of the pivotal mounting of one end of the rack bar 89, which, when not raised by the eccentric 92 is disengaged from the gear 90.

The shaft 91 extends along the carriage and is formed with key-seats or grooves 96 in the same to permit parts which will be presently referred to to be slid or moved longitudinally thereon. Friction mechanism and a compound or double acting ratchet are mounted on the carriage for moving the standards and for operating the log turning mechanism heretofore set forth. This mechanism is intermediately situated between two standards in order to simultaneously operate the same, or if more standards and log turning mechanisms be employed a single arrangement of such mechanism could be employed to operate the whole as will be readily understood and would constitute no departure from the invention and mechanism shown as it would require merely an elongation of the shaft 91 and the employment of an additional number of grooves 96. The said mechanism comprises a frame or support 98 on the carriage having two boxes 99 in which the shaft 91 is longitudinally and rotatingly movable. On the the outer side of each of the boxes 99 is lo-

cated a coiled spring 100 which has one end secured to said boxes and the other end to the shaft 91 and surrounds the said shaft. It will be understood that the said shaft 91 is longitudinally adjustable in order to connect the several gears carried thereby and by the adjacent mechanism. When the said shaft is rotated to move the standards 95, the springs 100 wind thereon and when the operating mechanism is released from said shaft, the said springs automatically rotate the shaft in the opposite direction and return the standards to their normal positions. As heretofore stated, to the carriage 44 are secured a series of traveling wheels 76' moving on tracks 77, and one of said wheels is constructed and arranged as a friction wheel which is adapted to be intermittently engaged by a friction wheel 103 adjustably journaled in a box 104 carried by the free lower end of a lever 105 journaled on a transverse shaft 106 mounted in a bracket 107 rising from the frame or support 44, and said lever extends upward a proper distance for convenient engagement and operation. On the outer end of said shaft 106 is fixed a friction wheel 107<sup>x</sup> which is adapted to bear against the friction wheel 103 whenever the latter is moved to engage the wheel 76' aforesaid, and the degree of rigidity or firmness of contact of said friction wheels 103 and 107<sup>x</sup> is made regulable by the power applied to the lever 105 and also by the movable or adjustable mounting of said wheel 103 in connection with the lever. On the inner end of the shaft 106 is mounted a bevel gear 108 which is adapted to be thrown into mesh with a similar gear 109 mounted on the shaft 91 and is longitudinally movable, being held in engagement with the gear 108 by a spring 110 bearing thereagainst and secured to a collar 111 on the said shaft 91. This movement of the gear 109 is necessary in view of the automatic movement of the said shaft 91. The gear 109 meshes with a similar gear 112 mounted on another transverse shaft 113 having bearing in suitable boxes in the central portion of cross bars of a double arched frame 114. On the said shaft 113 is fixedly mounted a large ratchet wheel 115 which has combined therewith an annular gear 116, and on said shaft is also loosely mounted a combined ratchet and gear 117 and with the latter and the annular gear 116 meshes a pinion 118 carried by a short shaft 119 having bearing in the frame 114 and having a crank 120 thereon in order to operate the log turning mechanism by hand if so desired. Over the ratchet wheels 115 and 117 is mounted a lever 121 having a forked end 122 loosely journaled on the shaft 113 and carrying reversely operating pawls 123 and 124, pivoted thereto and engaging said ratchet wheels. It will be seen that the operation of said lever 121 in either direction will cause a continuous rotation of the shaft 113 in one direction which is owing to the connection between the pinion 118 engaging the combined ratchet and gear 117 and



the annular gear 116 of ratchet wheel 115. A stop pawl 125 is also employed in connection with the ratchet wheel 115 to prevent back movement therewith and suitably secured to the arched frame 114, and on the lever 121 is a stop 126 adapted to bear on the top of the said frame and to contact with pins 127 adjustably mounted in openings in said frame to limit the throw of the said lever. It will be understood that the pawls on the lever 121 will each alternately and reversely slip in one direction and operate in the reverse direction.

It will be seen that the speed of the saw and the carriage are regulated to each other by the mechanism set forth and that some of the parts are automatic in their action; further that the log turning and feed mechanisms may be operated either by the double ratchet, the friction mechanism in connection with shaft 91, or by hand as fully set forth. The several parts are combined for unitary operation, and a great saving of labor, time and expense is consequent by the use of the device as a whole, heretofore fully set forth.

Having thus described the invention, what is claimed as new, is—

1. In a saw mill, the combination of a saw mandrel carrying a saw at one end and a friction-disk on the other end thereof, a friction-wheel on said mandrel adjacent to said disk, another friction-wheel for engaging the said disk to operate the same, an adjustable shaft below the said mandrel carrying a large friction-wheel adapted to contact with the friction-wheel on the said mandrel, an adjustable box 33, having guide-flanges 34 thereon and a slot 35 in the upper flange through which projects a bar or rod 36, connected at its lower end to said box 33, the said adjustable shaft being mounted in said box, a lever 37 connected to the upper end of the bar or rod 36 extending upwardly from the box 33 and having a dog, a toothed sector 38 engaged by the dog on the said lever 37, a pivoted box 34<sup>x</sup> located at the opposite end of said adjustable shaft, an adjustable standard supporting a vertical mandrel having adjustable friction mechanism in connection therewith, and a shaft carrying a gear adapted to engage with the gear on the lower end of said vertical mandrel, said mandrel receiving a series of edging saws, substantially as described.

2. In a saw mill, the combination of a saw mandrel having a saw on one end and a friction disk on the other end, a transverse shaft adjacent to said mandrel having eccentrics on the ends thereof, a belt pulley on said shaft, a friction wheel adjustably mounted on said shaft, connecting rods and arms secured to said eccentrics, a sliding rod in engagement with said arms and the friction wheel on the shaft, and guards adapted to engage the said arms, substantially as described.

3. In a saw mill, the combination of a saw mandrel having a saw on one end thereof and a friction disk on the other end, a shaft trans-

versely arranged to said mandrel and having a belt pulley thereon and eccentrics on the ends thereof, a friction wheel adjustably mounted on said shaft and having a flanged collar in connection therewith, a lever engaging said collar, connecting rods and arms attached to said eccentrics, a sliding rod engaging said arms and having collars thereon located on opposite sides of said lever, a lever for operating said rod, and guards engaging the lower parts of said arms, substantially as described.

4. In a saw mill, the combination of a saw mandrel carrying a saw and a friction disk, a shaft transversely arranged adjacent to said mandrel in adjustable boxes and having a belt thereon and eccentrics on the ends thereof, a friction wheel adjustably mounted on said shaft, adjustable connecting rods and arms attached to said eccentrics, and a sliding rod engaging said arms and in connection with said disk on the shaft, substantially as described.

5. In a saw mill the combination of a saw mandrel having a saw thereon, a friction disk mounted on said mandrel, driving mechanism for said friction disk, a friction wheel on said mandrel, a large adjustable friction wheel engaging with the latter friction wheel on the mandrel, a friction mechanism engaging said larger friction wheel on the opposite side thereof and adjustable to and from the same, gears in connection with said last named friction mechanism and an edging device adapted to be operated by the said gears, substantially as described.

6. In a saw mill the combination of a saw mandrel having a saw thereon and means for operating the same as set forth, a friction wheel on said mandrel, a shaft adjustable at one end and pivotally mounted at the other end, a large friction wheel mounted on said shaft and engaging the said friction wheel on the mandrel, adjustable friction mechanism on the opposite side of and adapted to engage the said friction wheel on the shaft, a beveled gear in connection with the said adjustable friction mechanism, and a vertical mandrel having a beveled gear on the lower end thereof adapted to engage the aforesaid beveled gears and carrying a series of vertically adjustable edging saws thereon, substantially as described.

7. In a saw mill the combination of a saw frame, a mandrel mounted thereon carrying a saw, an adjustable shaft at the lower portion of said frame carrying a large friction wheel adapted to be operated by the said mandrel, a shaft extending across one end of the frame and having an adjustable friction mechanism and gear in connection therewith adapted to engage the said large friction wheel, an adjustable standard supporting a vertical mandrel with a gear on the lower end thereof adapted to engage the aforesaid gear, a series of saws mounted on said mandrel, a series of levers connected to said saws and



carrying dogs in connection therewith, and a vertically disposed rack bar adapted to be engaged by said dogs, substantially as described.

8. In a saw mill the combination of a saw mandrel adapted to be rotated and having a friction wheel thereon, a shaft pivoted at one end and mounted in an adjustable box at the opposite end, a large friction wheel mounted on said shaft and adapted to engage the aforesaid friction wheel, adjustable friction mechanism located on the opposite side of said large friction wheel, edging mechanism as set forth operated by the said adjustable friction mechanism, a pinion on the end of the said shaft, and a carriage adapted to be operated by said pinion, substantially as described.

9. In a saw mill the combination of a large friction wheel adapted to be operated by the saw mandrel, a transversely extending shaft adjacent to one side of the said large friction wheel, a friction wheel on said shaft, a lever having bearing on said shaft and carrying an-

other friction wheel on its free end, a gear adjustably mounted on said shaft, an adjustable upright, a ratchet bar adjacent to said upright, a catch in connection with the upright, a vertically disposed mandrel supported by said upright and having a gear at the lower end thereof to engage the aforesaid gear, a series of edging saws adjustably mounted on said vertical mandrel, a series of levers connected to said saws and having dogs and indicators or pointers thereon, a vertically disposed ratchet bar adapted to be engaged by the dogs of said levers, and a vertically disposed adjustable scale plate adjacent to said lever, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ROUDY BUSH COLE.

Witnesses:

A. L. JACKSON,  
J. S. ROBERTS.