

(No Model.)

3 Sheets—Sheet 1.

B. D. WHITNEY.

MACHINE FOR CUTTING BARREL STAVES, &c.

No. 515,388.

Patented Feb. 27, 1894.

FIG. 1.

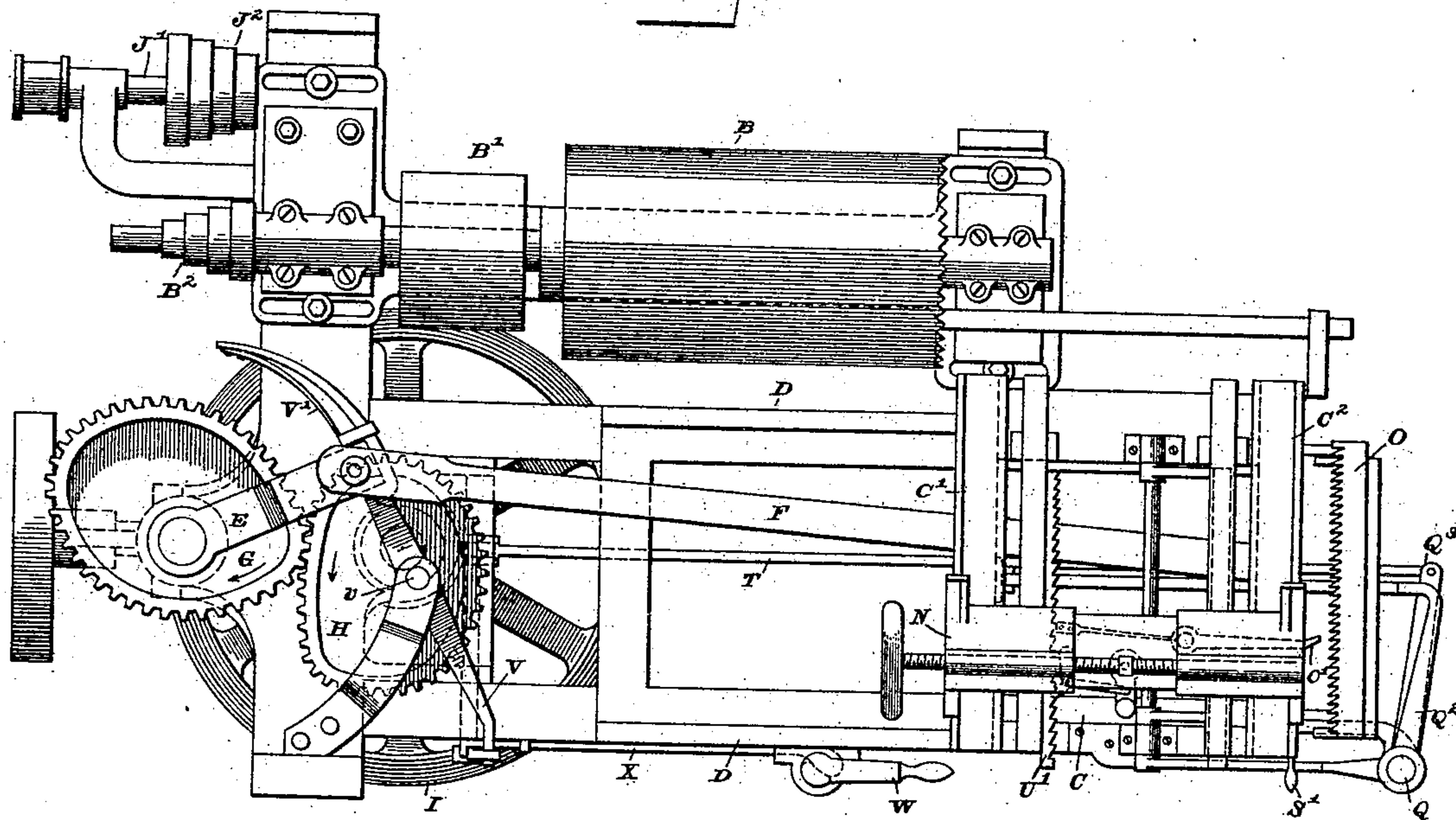
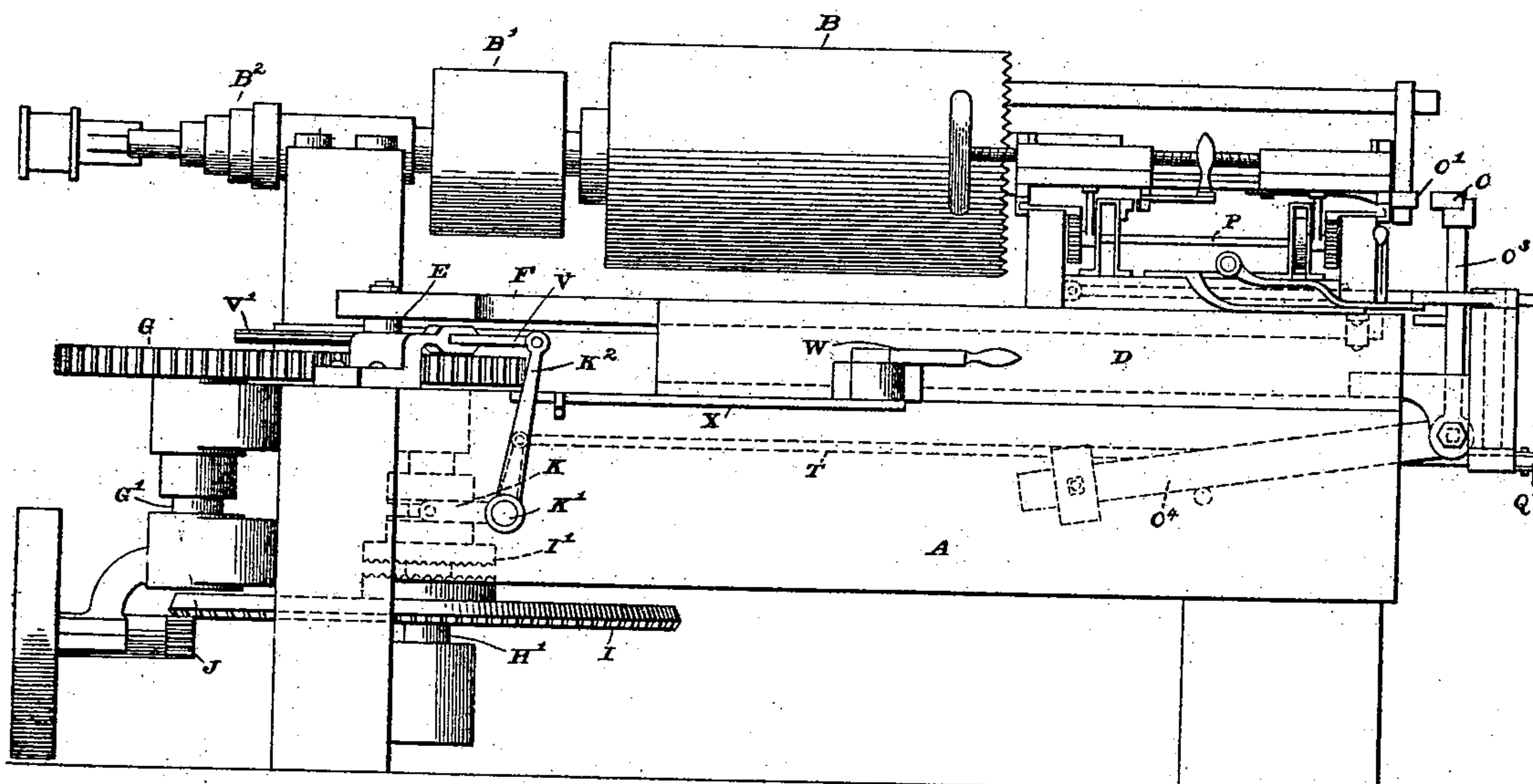


FIG. 2.



Witnesses

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FIG. 3.

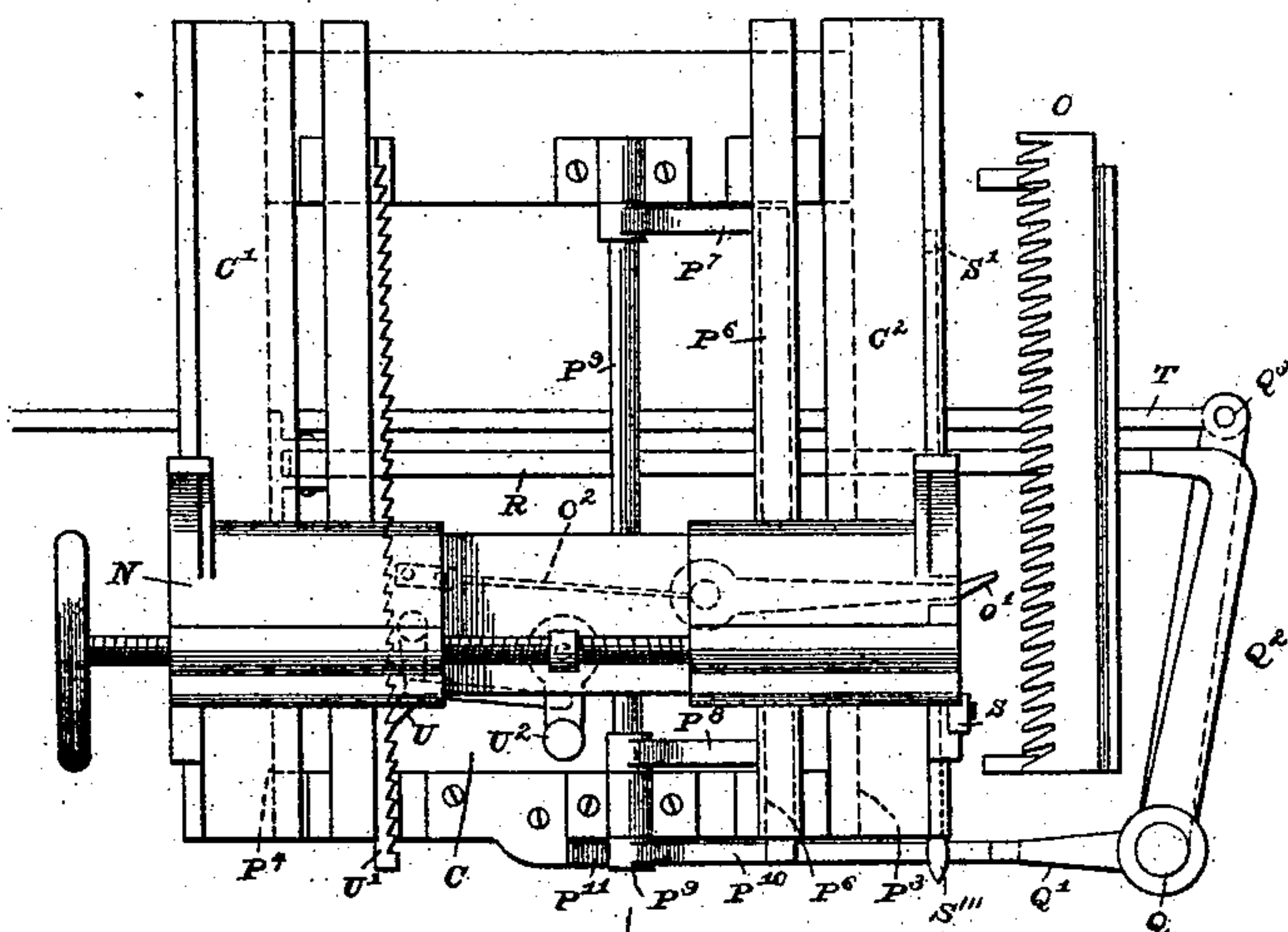


FIG. 4.

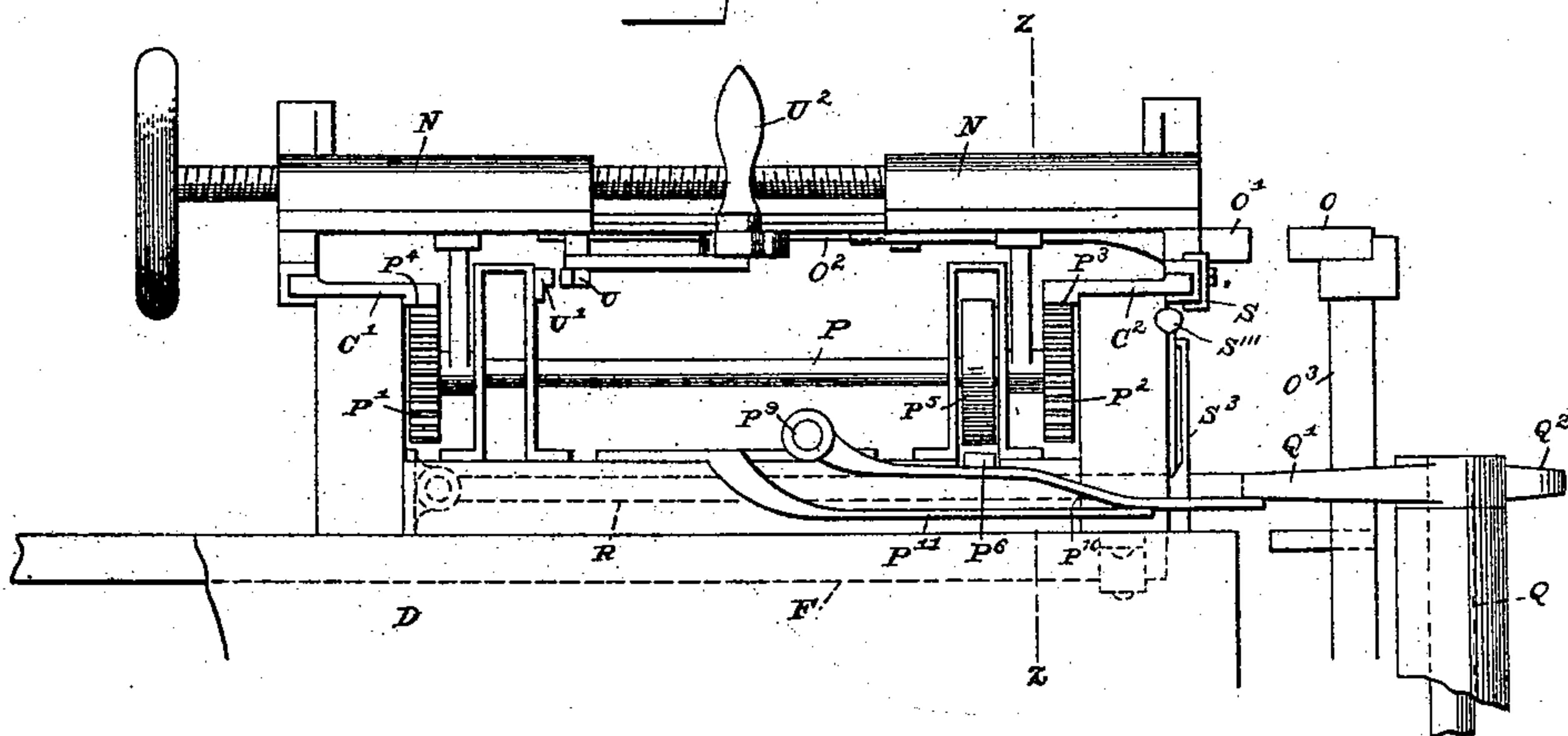
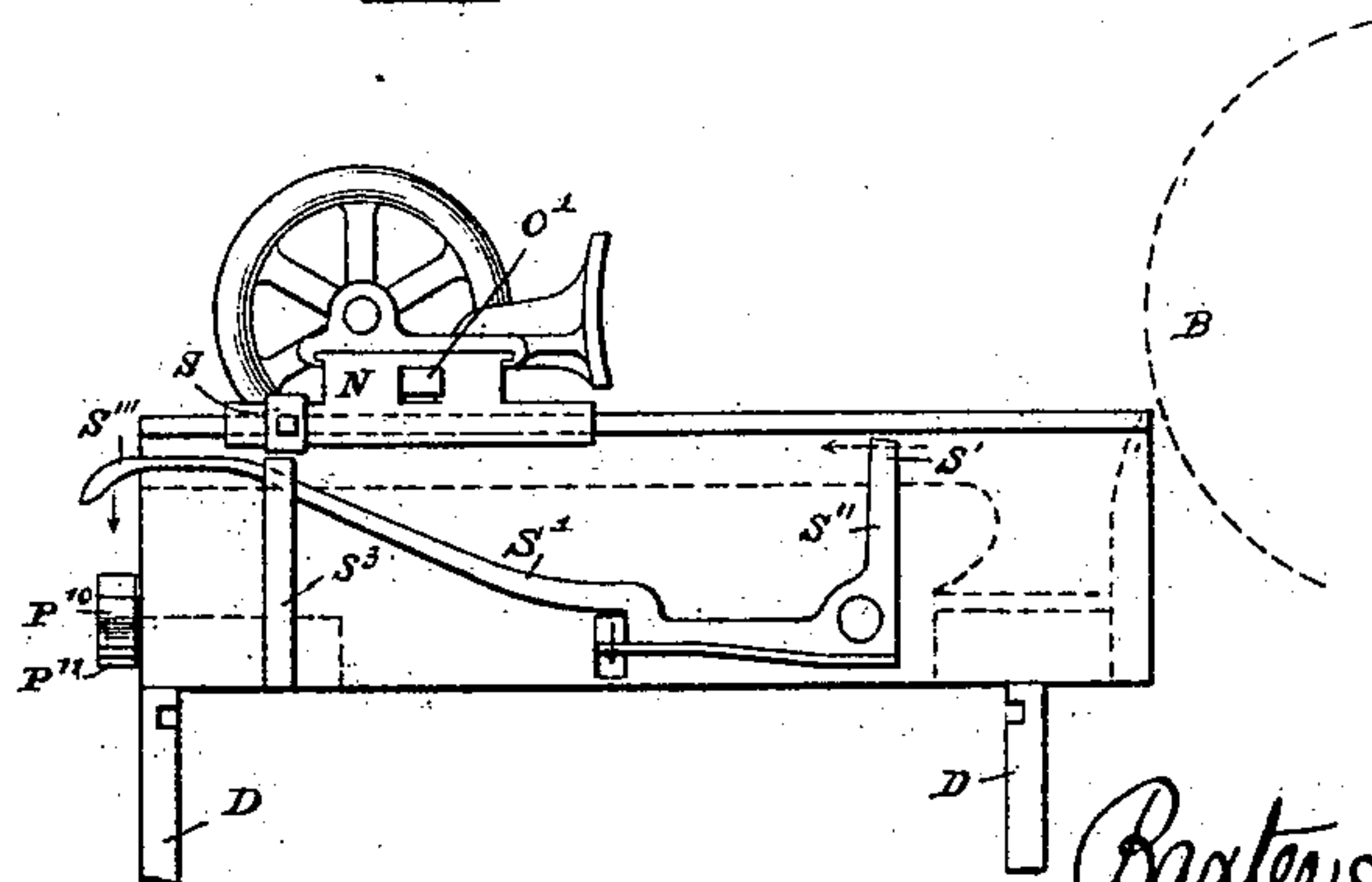


FIG. 5.



Witnesses
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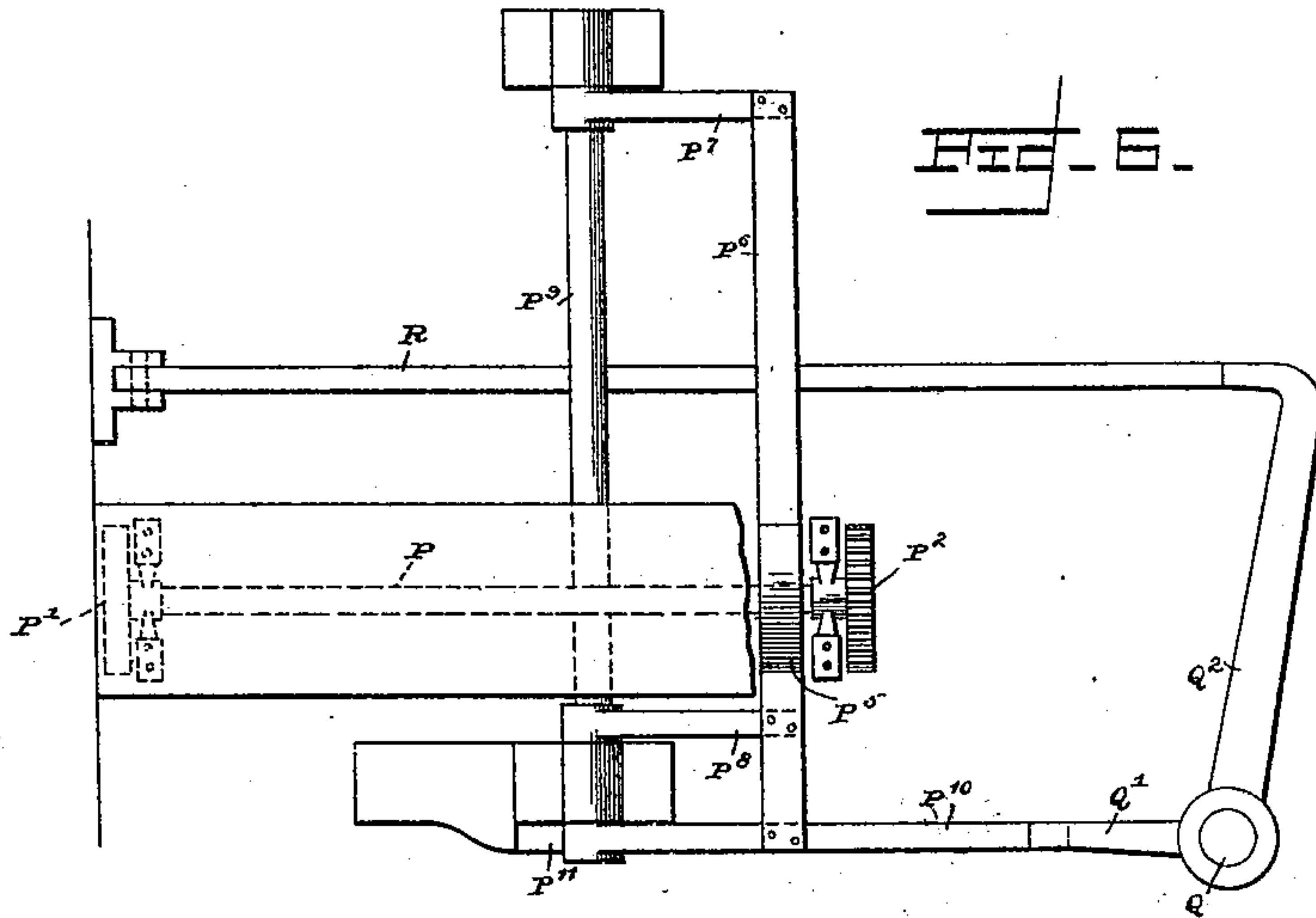
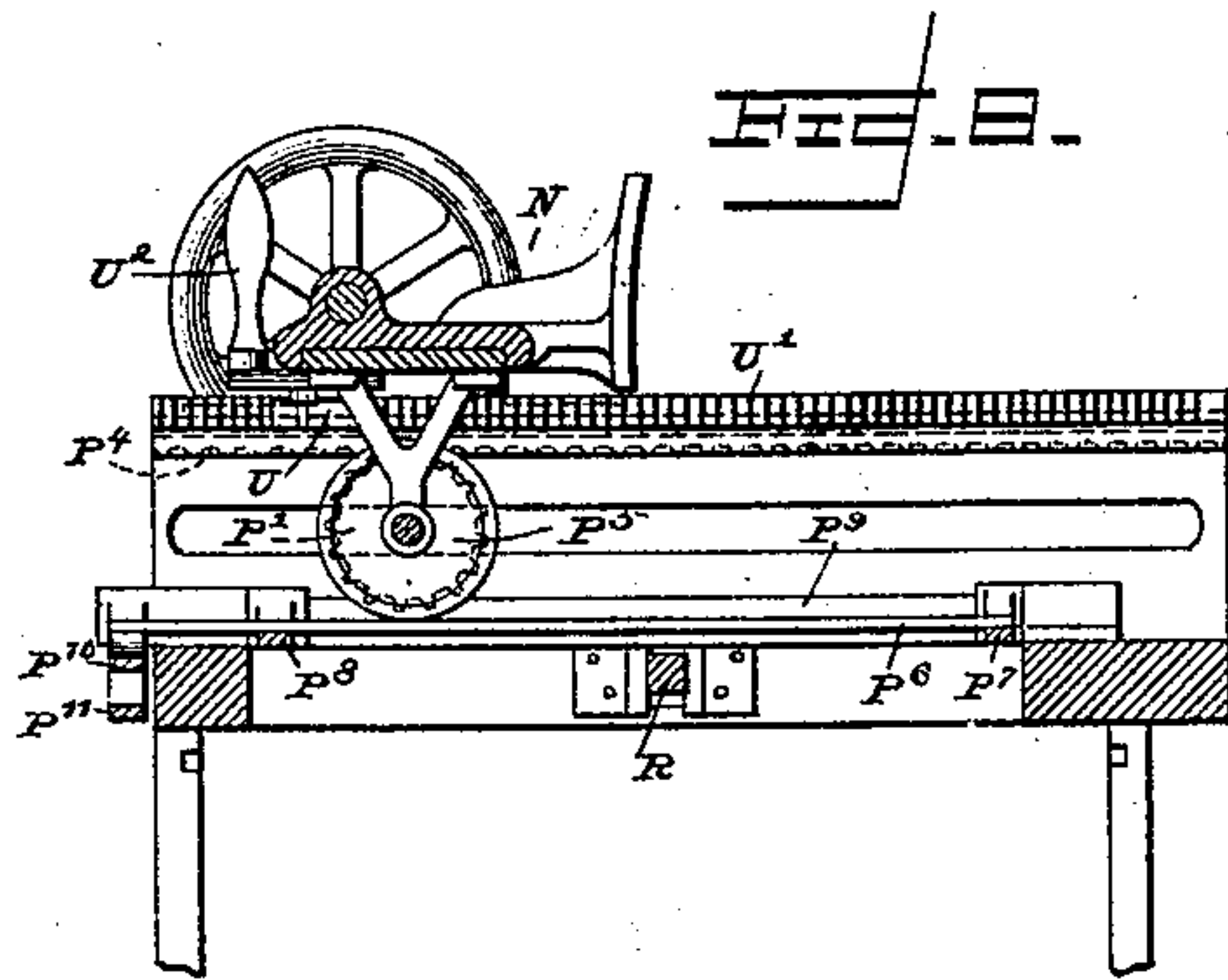
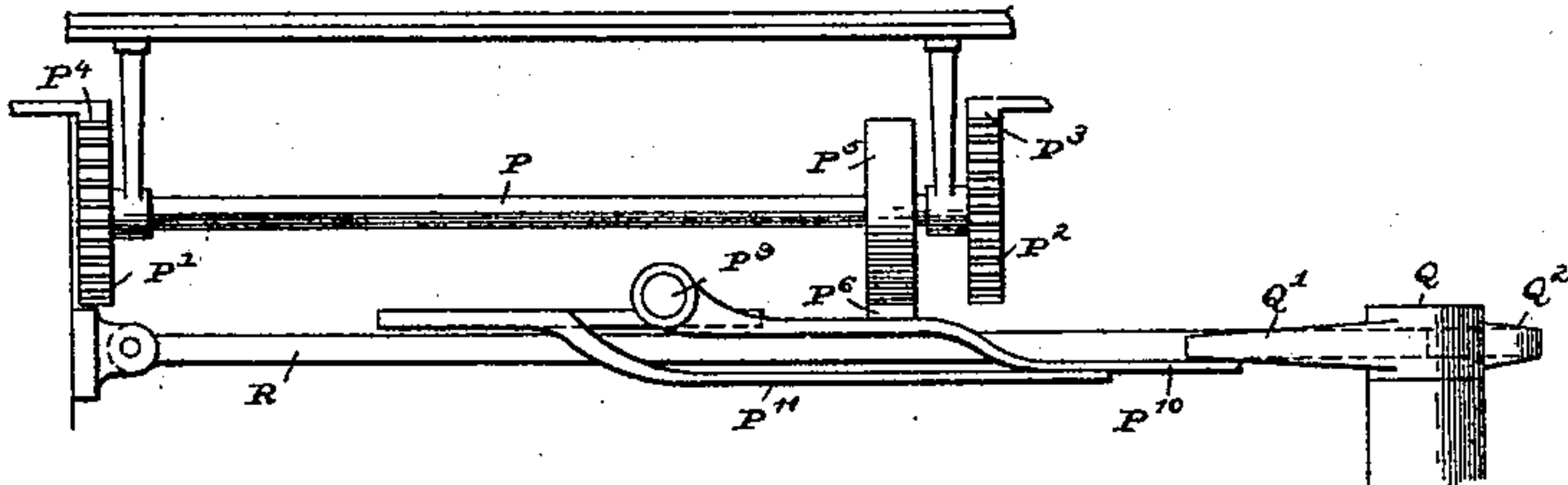


Fig. 7.



Witnesses

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UNITED STATES PATENT OFFICE.

BAXTER D. WHITNEY, OF WINCHENDON, MASSACHUSETTS.

MACHINE FOR CUTTING BARREL-STAVES, &c.

SPECIFICATION forming part of Letters Patent No. 515,388, dated February 27, 1894.

Application filed May 21, 1891. Serial No. 393,670. (No model.)

To all whom it may concern:

Be it known that I, BAXTER D. WHITNEY, a citizen of the United States, residing at Winchendon, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Machines for Cutting Barrel Staves, Headings, Box-Boards, &c.; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to mechanism for cutting staves for barrels and casks, also barrel headings, box boards, &c.

Its object is to provide a superior, automatically acting, and labor saving machine for sawing suitably-prepared cants, bolts or blocks, into staves or headings, &c., of desired form and thickness for the purpose required.

The invention consists in the combination and arrangement of a suitable saw with a traversing table or carriage and other appliances for operating same, and of a setting mechanism consisting of sundry devices adapted to the holding and movement of the cants or blocks in a proper manner by action of the machine as will more fully appear by the following description and the accompanying drawings, in which—

Figure 1 is a top or plan view of the machine. Fig. 2 is a side elevation of the same. Fig. 3 is an enlarged plan view of the carriage with parts of shipping and set mechanism adjacent thereto. Fig. 4 is a side view of the carriage, &c. Fig. 5 is an end view of the carriage. Figs. 6 and 7 are enlarged representations of the detailed construction of the shipper and brake mechanism of the set works. Fig. 8 is a cross sectional elevation on the line *z z* of Fig. 4.

Similar letters of reference denote like parts in the several figures.

A, represents the frame of the machine.

B is the saw which may be of any proper form or size suited to the work to be done, either straight, as with a common circular or band saw, or to produce staves with suitable degrees of curvature (either transversely or longitudinally) cylindrical saws may be used with either straight or bilging sides, and of such length and diameter as may be suited

to the kind of staves to be cut. The saw may be mounted upon a mandrel in any usual and convenient manner and be power-driven by a band wheel or pulley B'.

C, is a carriage or traveling table for carrying the cants or bolts to be cut. It is equipped with appliances for dogging or holding the bolts and for the proper presentation of same to the saw and it is moved upon a track or ways D by a crank E and connecting rod F, operated by eccentric or irregular gears G and H, which are suitably mounted upon shafts G' and H', the latter being revolved by a gear I, which receives motion through its mate J, from shaft J' which is driven by a belt from the mandrel or shaft of the saw working upon the pulleys B'' and J'' which are preferably stepped, or in "cones" for the purpose of adjusting the rate of feed for the saw cut.

To provide for arresting the motion of the carriage, the gear I is fitted loosely to shaft H' and is provided with an indented coupling or clutch I' which has a feathered connection with the shaft upon which it slides to connect or disconnect the gear, being moved by the shipping lever K (mounted upon rock shaft K') and worked by action of the carriage through mechanism that will hereinafter be more fully described in its appropriate connection with the automatic setting devices. The irregular or eccentric gears G and H are so formed as to control the movement of the carriage C in a manner to give a practically equable motion at proper velocity during the cut of the saw—then to increase the velocity of movement during the first part of the return of the carriage, then decreasing again during the remainder of the return stroke so as to give an easy motion for the action of the set mechanism and change of direction to the carriage to avoid jar or shock to the machine; thereby effecting a saving of time in the return passage and providing for the proper action of the saw and set mechanism, it being the purpose to save time, insure more efficient action and prevent wear and tear of the parts of the machine, which is an important factor in the economy of the work to be done and a salient feature of one of the parts of my invention relating to the movement of the carriage.

I will now describe the construction of the set mechanism and its connection with the other parts of the machine. For holding the cant or block to be cut, a sliding set beam or carrier N, is mounted upon ways C' C², extending transversely across the carriage C, which set beam is provided with suitable dogs or clamping devices with operating mechanism for seizing or gripping the block. As represented in the drawings, a screw with right and left hand threads, is used to move each dog to and from the center of the beam to suit length of block, but any other device may be used, of which various kinds are well known. To set the beam N, and the block which it carries, to cut staves of the required thickness, a serrated gage-bar O, having a series of inclined teeth projecting therefrom, is so placed that the inclined-face of a finger or blade O' will contact with the teeth at the end of each return movement of the carriage. The contact of the inclined face of this blade O' with any one of the inclined teeth of bar O moves the beam N, with the block or cant it may be carrying in a direction toward the saw sufficiently for the thickness of the staves to be cut. To enable the withdrawal of finger O' from the bar O without backward movement of the beam N it is pivotally attached thereto and provided with a spring O² which allows the finger to recede as it is withdrawn and then returns it to a normal position against its seat, (on a part of the set beam) in readiness to enter the next space. To keep the ends of the set beam square, or in equal movement, it has a shaft P, with gears P' P² working in racks P³ P⁴, and to prevent irregularities of movement by momentum or jars and other causes liable to occur, a friction wheel P⁵ is placed on the shaft P and, at proper times, made to contact with a brake P⁶ which effectively controls its action and prevents undue or improper movement of the beam. This brake is made to present a frictional surface extending the entire distance of the traverse of wheel P⁵ and adapted to engage therewith at any position of beam N. It is supported by arms P⁷ and P⁸ projecting from a pivotal shaft P⁹, which also has a controlling arm or lever P¹⁰, to which is applied a spring P¹¹ to press the brake upon the wheel. This arm P¹⁰, is also adapted to slide under a vibratory arm Q' attached to the shipping mechanism, by which action the brake is withdrawn from the wheel P⁵ so that the set beam may be thrown back for the introduction of new blocks. The vibratory arm Q' which projects from a vertical pivotal shaft Q, is brought to a position to act upon the arm P¹⁰, to release the brake at the return of the carriage after the last cut has been made from a block, by means of a stop-bar R, which is brought into line with an arm Q² also attached to shaft Q, through the agency of a stop or pin S, attached to beam N which strikes against an elbow lever S' to lift the bar R which it acts upon by a flexible or spring

connection S², so that the lever may be used while the bar R is under the arm P¹⁰ the bar being raised by the spring after its release, thus bringing it in position to act upon the arm P¹⁰, and from that through shaft Q upon arm Q', also through another arm Q³ and rod T, by which it is connected to the shipping mechanism at rock shaft K' and operates to disconnect clutch and gear I. This lever S' is likewise provided with a handle to be operated at other times when requisite, by the attendant. A friction spring S³ presses against the lever S to hold it in position as set by action of beam or attendant. A pawl or latch U which is attached to set beam takes into rack U' that is graduated to correspond with the thickness of staves to be cut as determined by the gage-bar O, which provides means for the ready adjustment of the set beam to make the first cut from the block or cant in the proper position to allow the finger O' to enter gage-bar O correctly. This latch U is connected to a handle U² which is designed to be operated by attendant in adjusting each new block but if neglected so that the finger O' does not enter a space in gage O correctly the latter is mounted upon a yielding support O² which is held in its normal position by a weighted arm O⁴ or by a spring to avoid breakage of parts. For different thicknesses of staves the gage-bar O and rack U' are exchangeable for others graduated for the required thickness. To insure a stoppage of carriage in proper position for the ready withdrawal of the set beam from the saw and adjustment of the blocks to be cut, a detent V is provided to catch the crank pin E and arrest its motion at the desired point. This is brought to position by a lever or arm K² of the shaft K', worked by the shipping mechanism. A catch spring V' is used to prevent rebound or backward movement of pin E, it also acts as friction to reduce the shock of the crank in stopping. To readily stop the action of the carriage and to prevent accident in starting, a hand lever W is attached to an eccentric which works a rod X to throw an arm of rock shaft K' to a position to disconnect clutch I' and keep the same in that position until released by a reverse movement of lever W.

Having thus described the general plan and construction of the various parts of my improved machine, I will say in relation to its operation that a suitable bolt, cant or block of wood, is first placed upon the carriage and properly dogged to the set beam, when the attendant is expected to place it correctly for the first cut by means of latch U and rack U' then the motive power of the carriage is applied by dropping the lever S' with the stop bar R, which releases the arm Q² and allows the clutch I' to drop into connection with the gear I by its own weight. The bolt will then be presented to the action of the saw and set forward the proper distance for a new cut as many times as there may be staves or pieces in the block, when by action

of the bar R and other parts of the shipping mechanism (including the detent V) the carriage will be stopped in the exact position to allow the set beam to be thrown back by the attendant for the introduction of a new bolt, when the action may be repeated as often as a block is sawed, thus making an efficient, easy and expeditious method of cutting staves or boards from the block, saving much time and labor over ordinary means of doing the work, and insuring greater accuracy than by other ways heretofore used.

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

1. In a sawing machine, the combination of a saw, having fixed journal boxes, a reciprocating carriage for feeding the material to be cut past the saw, said carriage being coupled to a drive shaft, together with gears for actuating the shaft, said gears being so shaped and arranged that the motion given to the shaft and transmitted therefrom to the carriage may cause the carriage to move with a uniform speed during the cut of the saw and then upon its return movement to travel at an increasing rate of speed during the first half of said movement and a diminishing rate during the remainder thereof, substantially as described.

2. In a sawing machine, the combination of the saw, a reciprocating carriage for feeding the material to be cut past the saw, a sliding set beam on the carriage, a serrated gage bar located in a fixed position adjacent to one end of the set beam and having inclined or angular projections and a spring-provided blade or finger pivoted to the said beam and having its inclined face adapted to contact with the gage bar for the purpose of actuating the beam, substantially as described.

3. In a sawing machine, the combination of a saw having fixed bearings, a reciprocating carriage for feeding the material to be cut past the saw, said carriage being coupled to a drive shaft, together with gears for actuating the shaft, said gears being so shaped and arranged that the motion given to the shaft and transmitted therefrom to the carriage may cause the carriage to move with a uniform speed during the cut of the saw and then upon its return movement to travel at an increasing rate of speed during the first half of said movement and a diminishing rate during the remainder thereof, a sliding set beam on the carriage, a serrated gage bar located near one end of said beam and formed with inclined or angular projections and a blade or finger on the set beam which is adapted to contact with the gage bar for the purpose of intermittently actuating the beam, substantially as described.

4. In a sawing machine, the combination of the saw, a reciprocating carriage for feeding the material to be cut, past the saw, a sliding set beam on said carriage, an angularly-serrated gage bar located in a fixed position ad-

jacent to one end of the set beam, a pivoted finger on the set beam which is adapted to engage with the gage bar, a toothed rack on the carriage which is toothed to correspond with the thickness of staves to be cut as determined by the gage bar and a pawl or latch on the set beam engaging the toothed rack, substantially as described.

5. In a sawing machine, the combination of the saw, a reciprocating carriage for feeding the material to be cut, past the saw, a sliding set beam on the carriage, a serrated gage bar located near one end of the set beam, a yielding support on which the gage bar is mounted and a weighted arm for holding said support in its normal position, substantially as described.

6. In a sawing machine, the combination of the saw, a reciprocating carriage for feeding the material to be cut, past the saw, a sliding set beam on the carriage, a stop or pin S on the set beam, a pivotal shank Q, having a vibratory arm Q' and also another arm Q², a stop bar R, the elbow lever S' and the flexible or spring connection S² together with the clutch mechanism controlled by said parts, all arranged to operate, substantially as described.

7. In a sawing machine, the combination of the saw a reciprocating carriage for feeding the material to be cut, past the saw, a sliding set beam mounted in ways upon said carriage, said set beam being provided with suitable dogs or clamping devices for gripping the block to be cut, the shaft P having gears P' P², working in racks P³ and P⁴ on the set beam and having also a friction wheel thereon, a brake P⁶ operating on the friction wheel, the clutch mechanism and the pivotal shaft Q, together with bar R and elbow lever S', substantially as described.

8. In a sawing machine, the combination of a saw, a reciprocating carriage for feeding the material past the saw, a sliding set beam on said carriage, a shaft P supported in the set beam and having gears P' and P², working in racks P³ and P⁴ on the set beam and having also a friction wheel P⁵, the brake P⁶ acting on said friction wheel, said brake being supported by arms P⁷ and P⁸, projecting from the pivotal shaft P⁹, having lever P¹⁰, to which is applied a spring P¹¹ to press the brake upon the wheel, substantially as described.

9. In a sawing machine, the combination of the saw, a reciprocating carriage for feeding the material to be cut, past the saw, a sliding set beam on said carriage, a shaft supported in the set beam and having gears that engage racks on the set beam, and having also a friction wheel, a brake engaging said friction wheel which brake is supported in arms projecting from the pivotal shaft P⁹, which also has a controlling arm P¹⁰, to which is applied a spring P¹¹, to press the brake upon the wheel, a pivotal shaft Q, having a vibratory arm Q' and another vibratory arm Q², said arm

Q² being adapted to engage with the aforesaid arm P¹⁰, the elbow lever S' which is engaged by a stop S on the set beam and the lever R which is lifted in consequence of such engagement, and the clutch mechanism substantially as described.

10. In a sawing machine, the combination of a saw, a reciprocating carriage for feeding the material to be cut, past the saw, a sliding set beam on said carriage, an angularly-serrated gage bar located adjacent to one end of the set beam, a pivoted finger on the set beam which engages said gage bar, a toothed rack on the carriage, a detent or pawl on the said beam which engages said toothed rack and a handle U³ to which the detent or pawl is connected so that the latter may be easily operated by the attendant, substantially as described.

11. In a sawing machine, the combination of the saw, a reciprocating carriage, a set beam on the carriage, the pivoted shaft Q with its arms Q' and Q², the elbow lever S' which is acted upon by a stop or pin on the set beam, the bar R which is lifted in consequence of such action, the shaft P supported in the set beam and having gears engaging racks on said beam and having also a friction wheel, a brake acting upon said friction wheel, said brake being supported in arms

P⁷ and P⁸ projecting from a pivotal shaft P⁹, having a controlling arm P¹⁰, the rock shaft K', having shipper lever K and the connections whereby the action of the carriage is controlled, substantially as described.

12. In a sawing machine, the combination of a saw, having fixed bearings, a reciprocating carriage for feeding the material to be cut, past the saw, said carriage being coupled to a drive shaft, together with gears for actuating the shaft, said gears being so shaped and arranged that the motion given to the shaft and transmitted therefrom to the carriage may cause the carriage to move with a uniform speed during the cut of the saw and then upon its return movement to travel at an increasing rate of speed during the first half of said movement and a diminishing rate during the remainder thereof, a sliding set beam on the carriage, a brake mechanism applied to the set beam, a gage mechanism which operates to adjust the set beam to determine the width of the cut, and the shipper mechanism, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

BAXTER D. WHITNEY.

Witnesses:

ELKANAH N. WATERS,
WM. L. BOYDEN.