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PATENTED OCT. 10, 1905.

J. J. GALWAY.

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APPLICATION FILED MAR. 7, 1904.

2 SHEETS—SHEET 1.

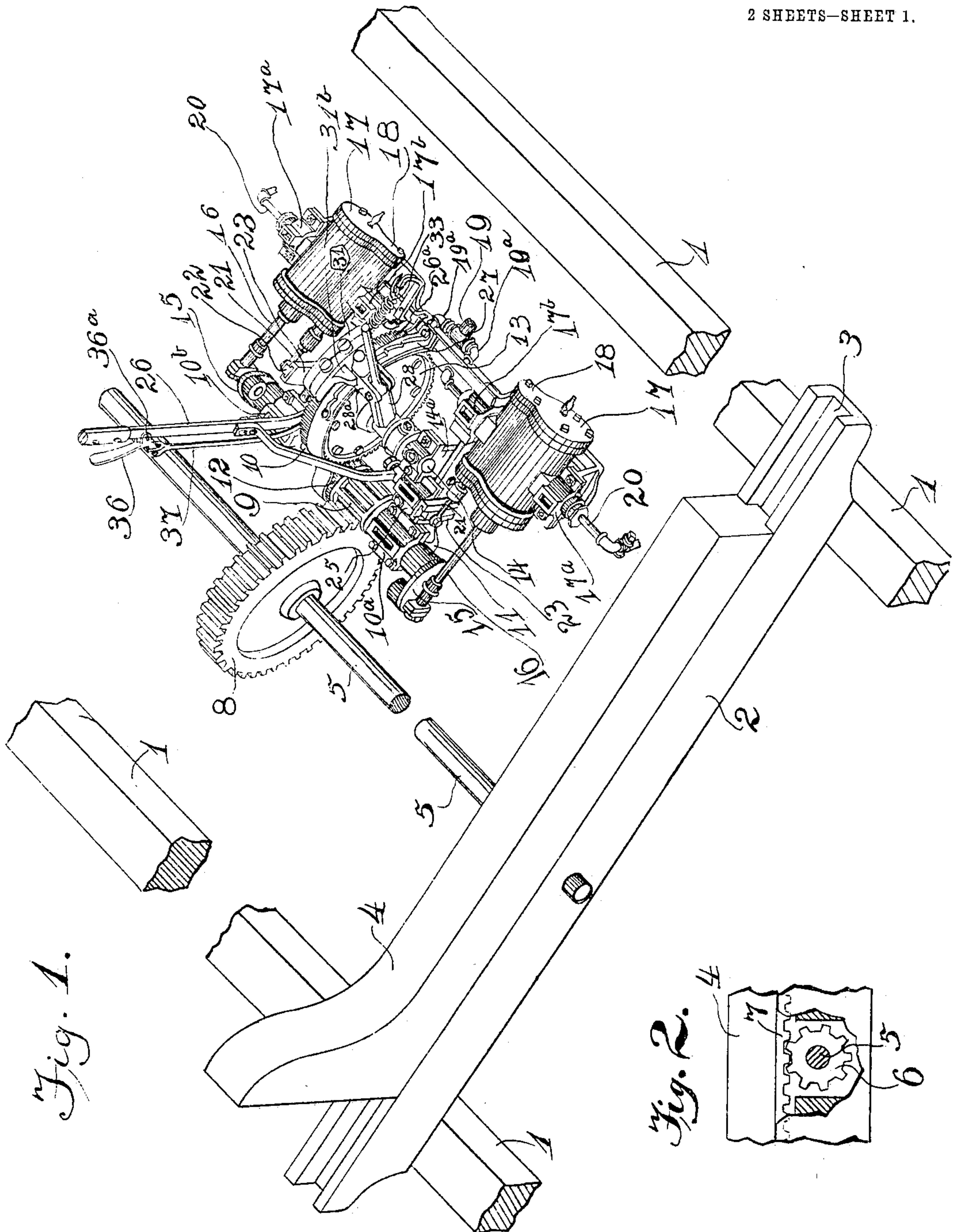


Fig. 1.

Fig. 2.

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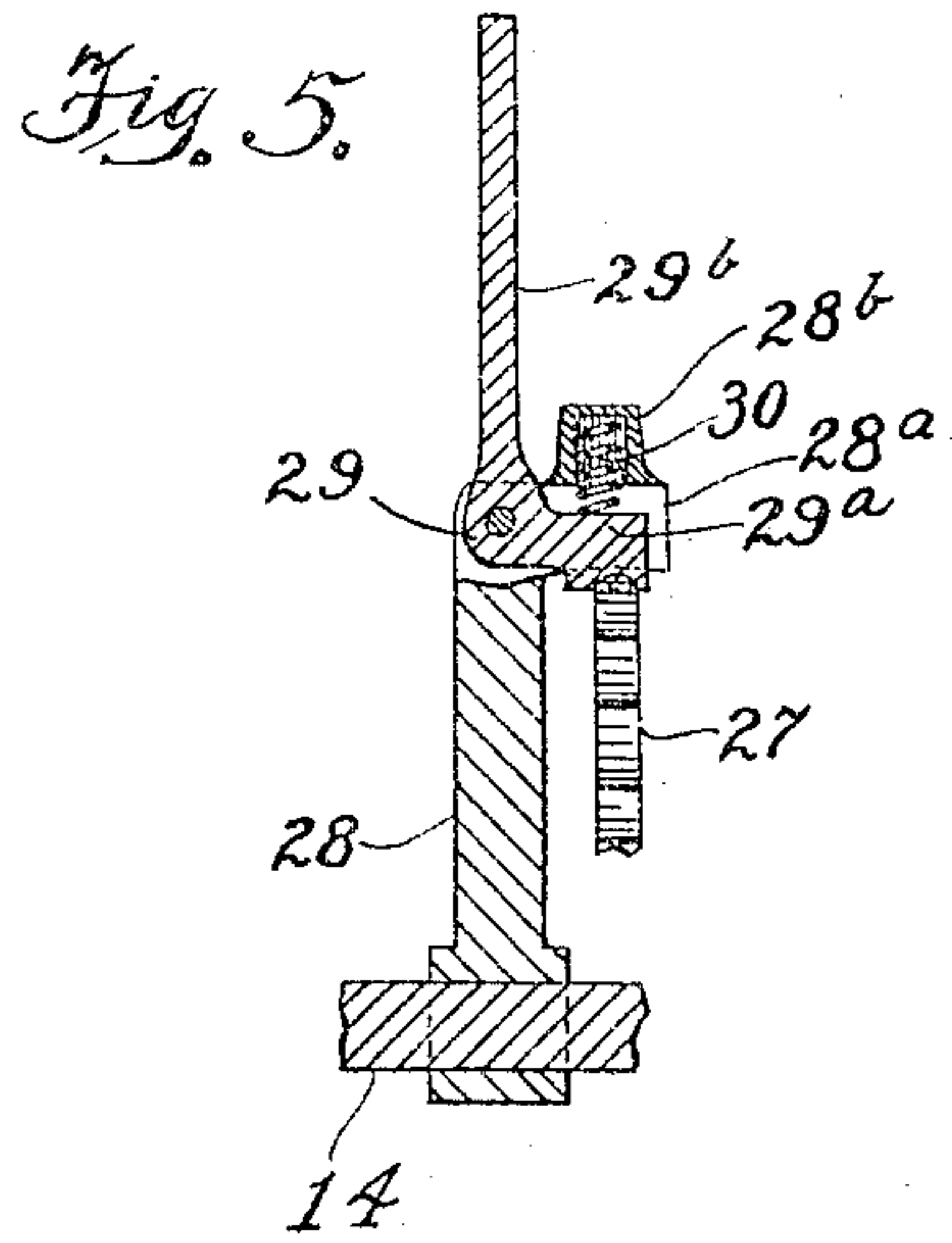
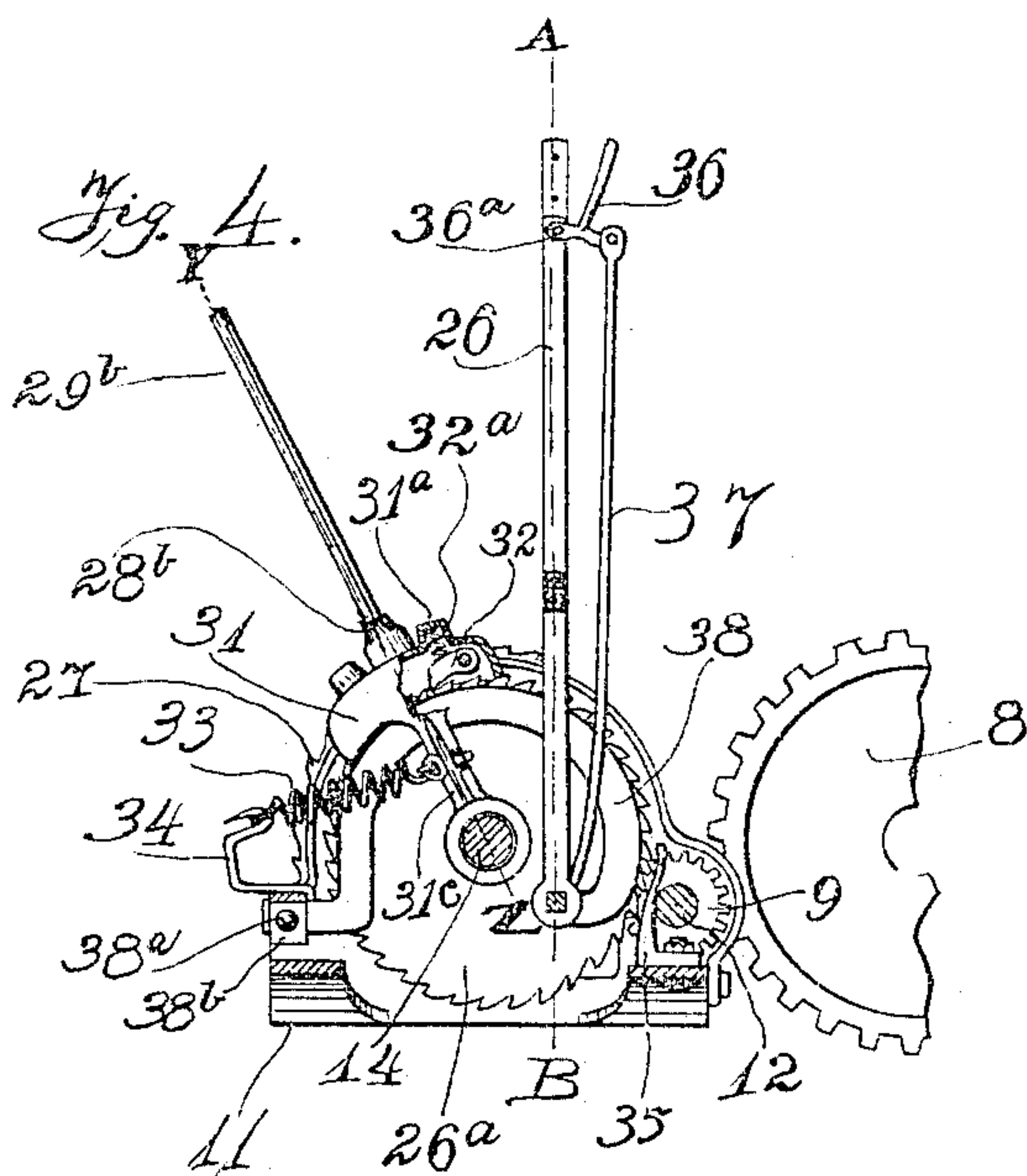
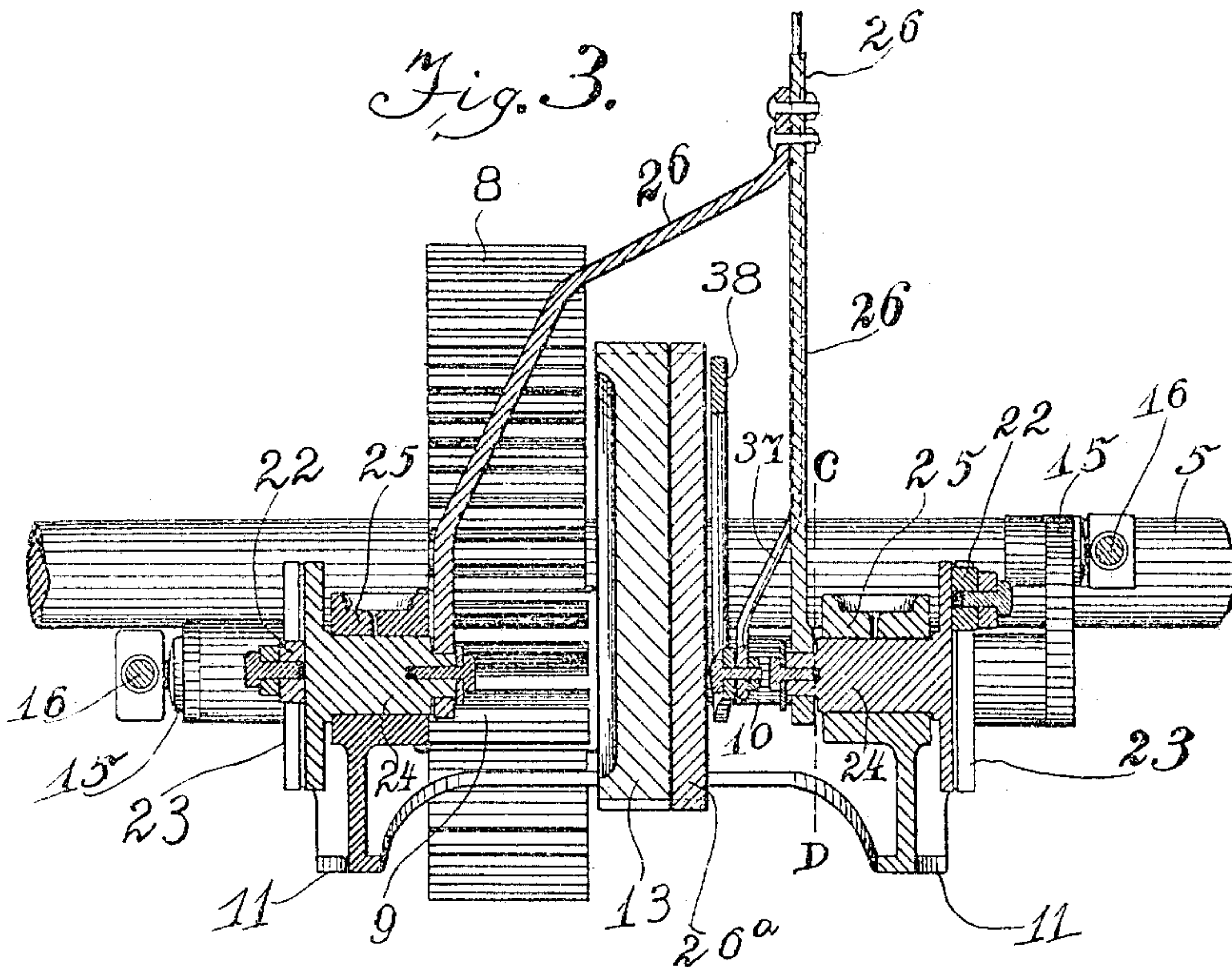
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SET AND RECEDING MECHANISM FOR SAWMILL-CARRIAGES.

No. 801,520.

Specification of Letters Patent.

Patented Oct. 10, 1905.

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To all whom it may concern:

Be it known that I, JOHN J. GALWAY, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Set and Receding Mechanism for Sawmill-Carriages; 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 set and receding mechanism for sawmill-carriages, and has for its object the provision of simple, durable, compact, and powerful means, controlled by one operator and one operating-lever, for quickly and accurately setting forward the head-blocks on sawmill-carriages and for receding the same.

It consists of the constructions, combinations, and arrangements of parts hereinafter described and claimed.

In the drawings, Figure 1 is a perspective view of a portion of a sawmill-carriage, partly broken away and equipped with my said invention. Fig. 2 is a side elevation, partly broken away, of a portion of one of the head-blocks and head-block base, showing the rack and gear for operating said head-block. Fig. 3 is an enlarged vertical longitudinal section of my said invention on the line A B of Fig. 4. Fig. 4 is a reduced vertical transverse section of said invention on the line C D of Fig. 3, and Fig. 5 is a section of a gage mechanism on the line Y Z of Fig. 4.

In the drawings, 1 1 are portions of the frame of a sawmill-carriage of any suitable construction well known to the art and not thought necessary to be herein particularly described. Upon said frame is mounted a transversely-directed head-block 2, having a guide-channel 3 formed in its upper face, upon which block and adapted to move in which channel is positioned the knee 4. Extending through said block is a shaft 5, upon which is keyed a pinion 6, positioned in a suitable recess formed in the floor of said channel 3. Said pinion is adapted to mesh with a rack 7 upon the lower face of said knee to operate said knee. Upon the shaft 5 is also keyed a gear-wheel 8, adapted to mesh with a gear 9, keyed to a shaft 10, which is journaled in suitable journal-bearings 10^a and 10^b, formed upon or secured to a base 11, mounted on said carriage. Upon said shaft 10 is also keyed a pinion 12, adapted to en-

gage a gear 13, which is keyed to a shaft 14, journaled in suitable journal-bearings, as at 14^a. Said shaft 10 is also provided at its opposite ends with crank-arms 15, to which are pivotally connected the outward ends of piston-rods 16, which rods extend at their opposite ends into oscillating power-cylinders 17 and therein are respectively provided with piston-heads of any suitable construction. Formed upon the sides of said cylinders, respectively, are steam-chests 18, provided with suitable feed and exhaust ports communicating with the chambers of said cylinders, which ports are governed by slide or piston valves of any suitable construction. I do not, however, claim invention in the construction of said cylinders or steam-chests or valves or pistons, as they may be constructed in a variety of ways well known to the art. Said cylinders and steam-chests are journaled in suitable journal-bearings as 17^a and 17^b, formed upon or secured to said base 11. Steam is admitted from any suitable source to said steam-chests through pipes 19 and 19^a, communicating in any suitable manner with axial passages formed in the trunnions of said steam-chests, and the exhaust is conveyed from said cylinders through said steam-chests and by means of tunnels or passages extending from said chests, respectively, through the walls of said cylinders and through the opposite trunnion thereof into the exhaust-pipes 20. Secured to said valves, respectively, are valve-stems 21, provided at their outward ends with blocks 22, adapted to engage segmental or other inclined guides or links 23, keyed to or formed upon shafts 24, which shafts are journaled in suitable journal-bearings, as 25. Upon the inward ends of said shafts 25 are keyed or otherwise rigidly secured the tines of a forked operating-lever 26, by means of which the pitch of said segmental guides may be governed to control said valves. Bolted to the side of said gear 13 is a ratchet-wheel 26^a. A quadrant 27 is erected on said base 11 and overhangs said gear 13, and upon said shaft 14 is journaled an arm 28, to the outer end of which is pivoted a latch 29, comprising a dog 29^a, adapted to engage one or another of the notches of said quadrant, and a handle 29^b. Said arm 28 is also provided at its outer end with an angular extension 28^a, having a housing 28^b formed thereon, adapted to receive a coiled spring 30, which is adapted to bear against said dog 29^a and normally keep the same in engagement with said quadrant. Po-

sitioned over said ratchet-wheel is a pawl-carriage 31, having one or more pawls 32 journaled therein, adapted in operative position to engage the teeth of said ratchet-wheel and to overhang the edge of said ratchet-wheel at the opposite side thereof from said gear-wheel. Said pawl-carriage has one or more housings 31^a formed thereon, respectively adapted to receive a spring or springs 32^a, which are adapted to bear upon the adjacent pawls to keep the same in engagement with the teeth of said ratchet-wheel. Said pawl-carriage has also formed thereon a lip 31^b, adapted to engage the extension 28^a when said pawl-carriage is retracted by the spring 33, which is attached at one end to said pawl-carriage and at the opposite end to an anchorage 34, secured to said base 11. Said pawl-carriage is adapted to travel with said ratchet-wheel between the limits prescribed by said extension 28^a and a forward stop 35, formed upon or secured to said base 11, and said carriage is secured in concentric position with relation to said ratchet-wheel by means of a flange 31^c, formed on said pawl-carriage and arched over the hereinafter-described bar 38 and journaled on said shaft 14. When said pawl-carriage has reached the limit of its forward travel, it coöperates with said pawls to stop said ratchet-wheel and the contiguous gears and knee, which are, however, continued in such position by the steam-pressure in said cylinders until the operator or setter relieves said pressure by moving said operating-lever to center or to reversing position. In order to retract said pawl-carriage to permit a further forward movement of said ratchet-wheel and knee, the operator cuts off the steam from said cylinders by moving said operating-lever to center, and thereupon operates a bell-crank lever 36, pivoted to said operating-lever, as at 36^a, which bell-crank lever, by means of an intermediate draw-rod 37, pivoted at one end thereto, raises a segmental bar 38, which lies parallel with the side of said ratchet-wheel and is pivoted at one end to the bottom of said draw-rod and at the other end, as at 38^a, to an anchorage 38^b on said base. The upper edge of said segmental bar is normally in the same plane as the depressions between the teeth of said ratchet-wheel and underlies the overhanging ends of said pawls. Thus when said segmental bar is raised by said bell-crank lever the upper edge of said bar raises said pawls out of engagement with said teeth, whereupon said spring 33 retracts said pawl-carriage to the stop formed by said extension 28^a. The bell-crank lever is then released and the segmental bar lowered, whereupon the pawls again engage said teeth.

It will be observed that the opposite crank-arms 15 are arranged at an angle to each other, so that if steam be actuating the piston in one cylinder said piston will through its corresponding crank-arm and connections

rock the opposite cylinder. By such arrangement accidental stoppage by the occurrence of a "dead-center" will also be avoided. It will be further observed that said guides or fulcrums 23 remain stationary and motionless except when arbitrarily operated by means of the lever 26. Said guides when on center are concentric to the arc of oscillation of said cylinders, and at such time they will at any point hold both valves at center to cut off the steam. When, however, the lever 26 is actuated to change the inclination of said guides or fulcrums, the valve-stems will be drawn outwardly or thrust inwardly, as the case may be, but one a greater distance than the other, because on account of the quartering of the crank-arms and cylinders the outer end of one valve-stem will be nearer the upper or lower end of its guide or fulcrum than the other valve-stem will be. The cylinders may then take steam on the proper side of their pistons for going ahead or reversing, as the case may be; but one piston will complete the stroke and take steam on its opposite side before the other one. Pressure will thus be exerted on one or both of said pistons at all times, except when the guides 23 are themselves, by means of said lever 26, made concentric to the arc of oscillation of said cylinders. It will be observed that the travel of the blocks 22 in an arc eccentric to the arc of oscillation of the cylinders will cause said valve-stems to reciprocate in the valve-chambers. If it be desired to reverse said mechanism to retract the knees, said operating-lever is moved to reversing position, changing the pitch of said guides 23, which then operate said valves to admit steam to the opposite end of said cylinders. When the knees have been retracted a sufficient distance, the operating-lever is again moved to center or to go-ahead position.

It will be observed that while the engine is reversed the knees may be receded any desired distance in one operation, thus gaining a decided advantage over constructions in which the knees can be receded only a short distance in one operation.

While I have described certain details of my said construction, it is obvious that the same may be modified or altered in minor particulars without departing from the spirit and scope of my said invention.

Having now described said invention, what I claim, and desire to secure by Letters Patent, is—

1. In set and receding mechanism for saw-mill-carriages, the combination with a set-shaft journaled thereon and connected by pinions and rack-bars with sliding knees, and a shaft-driving gear-wheel mounted on said set-shaft, of a counter-shaft provided with terminal crank-arms, a pinion mounted on said counter-shaft and meshing with said gear-wheel, oscillating power-cylinders, piston-

rods extending from said cylinders and pivotally connected to said crank-arms, valve-chambers formed on said cylinders and communicating by suitable ports therewith and
 5 containing suitable valves, valve-stems extending therefrom and provided at their outer ends with pivotal guide-blocks, segmental guides engaging said blocks and provided with axles extending at an angle thereto and
 10 journaled in suitable bearings, an operating-lever rigidly secured to the inner ends of said axles and adapted to oscillate the same to change the pitch of said guides, a second counter-shaft, a gear-wheel keyed thereon and
 15 meshing with a second pinion mounted on the first said counter-shaft, a ratchet-wheel mounted on the second counter-shaft, a pawl-carriage journaled on said second counter-shaft and overhanging the periphery of said ratchet-
 20 wheel and carrying pivoted spring-depressed pawls adapted to engage the teeth of said ratchet-wheel, a segmental bar pivoted at one end to a suitable stationary support and extending beneath the overhanging ends of said
 25 pawls, a draw-rod pivoted at its lower end to the opposite end of said segmental bar and at its upper end to a bell-crank lever carried by said operating-lever near the upper end thereof and adapted to raise said bar into pawl-
 30 lifting position, an adjustable stop for limiting the retraction of said pawl-carriage, a stop for limiting the forward movement of said pawl-carriage, means for conveying steam into said cylinders and means for conveying
 35 the exhaust away therefrom, substantially as described.

2. In means for the purposes described the combination with a sawmill-carriage having a set-shaft journaled thereon geared to sliding
 40 knees, and an engine mounted on said carriage and geared to said set-shaft, of means for limit-

ing the movement of the gears by which said engine is geared to said shaft comprising a ratchet-wheel rigidly secured to the side of one of said gears and axially aligned therewith, 45 a pawl-carriage journaled on the shaft of said one of said gears and overhanging the periphery of said ratchet-wheel, spring-depressed pawls carried by said pawl-carriage and adapted to normally engage the teeth of 50 said ratchet-wheel, a segmental bar pivoted at one end to a fixed support and underlying the ends of said pawls, means for raising said segmental bar to disengage said pawls from the teeth of said ratchet-wheel, means for re- 55 tracting said pawl-carriage when said pawls are raised, an adjustable back stop adapted to limit the backward movement of said pawl-carriage, and a front stop adapted to limit the forward movement of said pawl-carriage, sub- 60 stantially as described.

3. In set and receding mechanism for sawmill-carriages, the combination with a carriage having a set-shaft journaled thereon and connected by pinions and racks with sliding 65 knees, of steam-operated mechanism including a valve and adapted to advance or recede said knees through the mediation of said set-shaft, a lever for controlling said valve, means for limiting the advancing movement 70 of said knees, and a lever mounted on said valve-lever and adapted to render said limiting means inoperative, the construction being such that both of said levers may be operated simultaneously by one hand of the operator, 75 substantially as described.

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

JOHN J. GALWAY.

Witnesses:

JAMES T. WATSON,

WELLINGTON M. BLEWETT.