(No Model.) 5 Sheets—Sheet 1.

J. B. IVEY.

SAWING MACHINE.

No. 396,935. Patented Jan. 29, 1889.

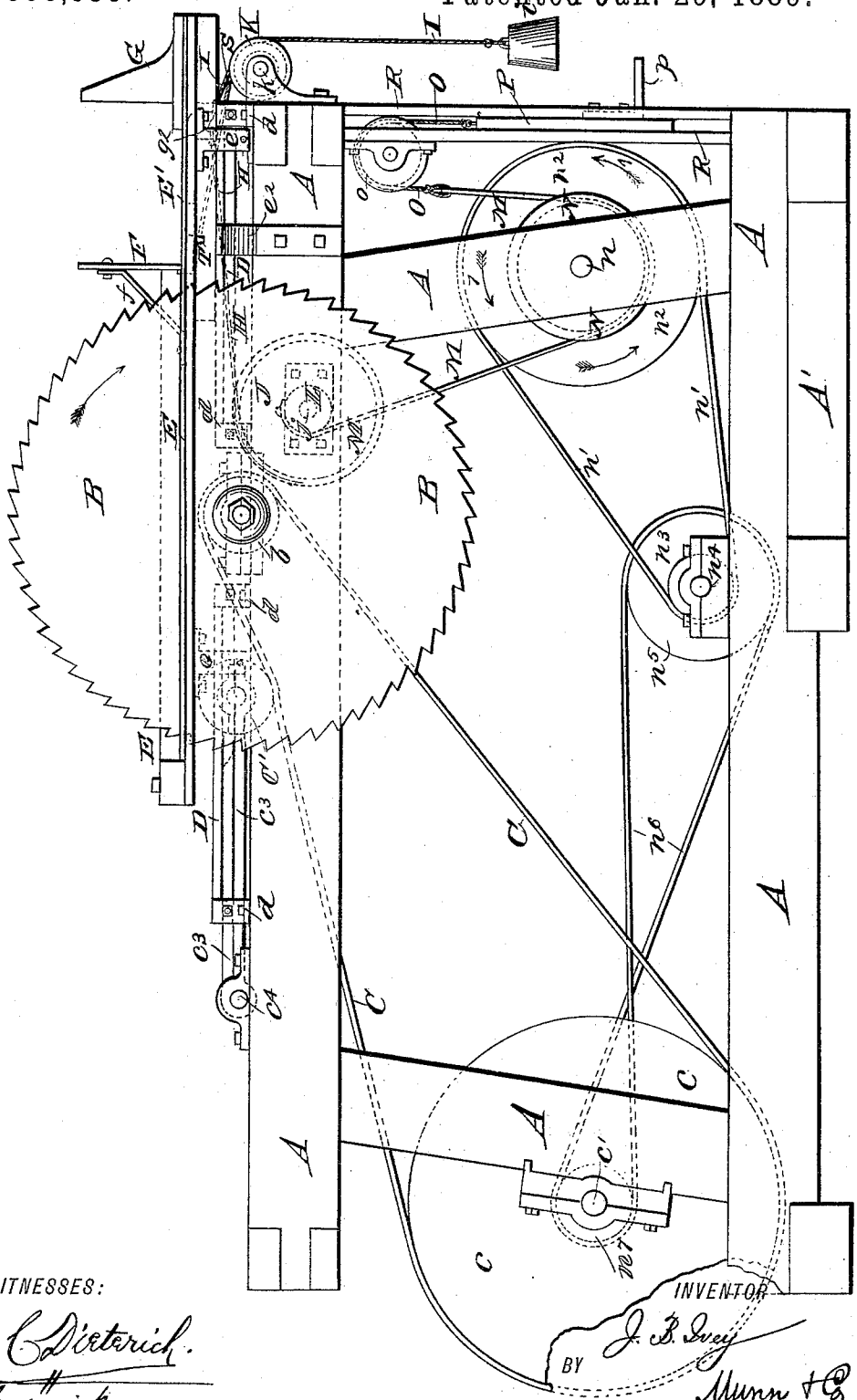


Fig. 1.

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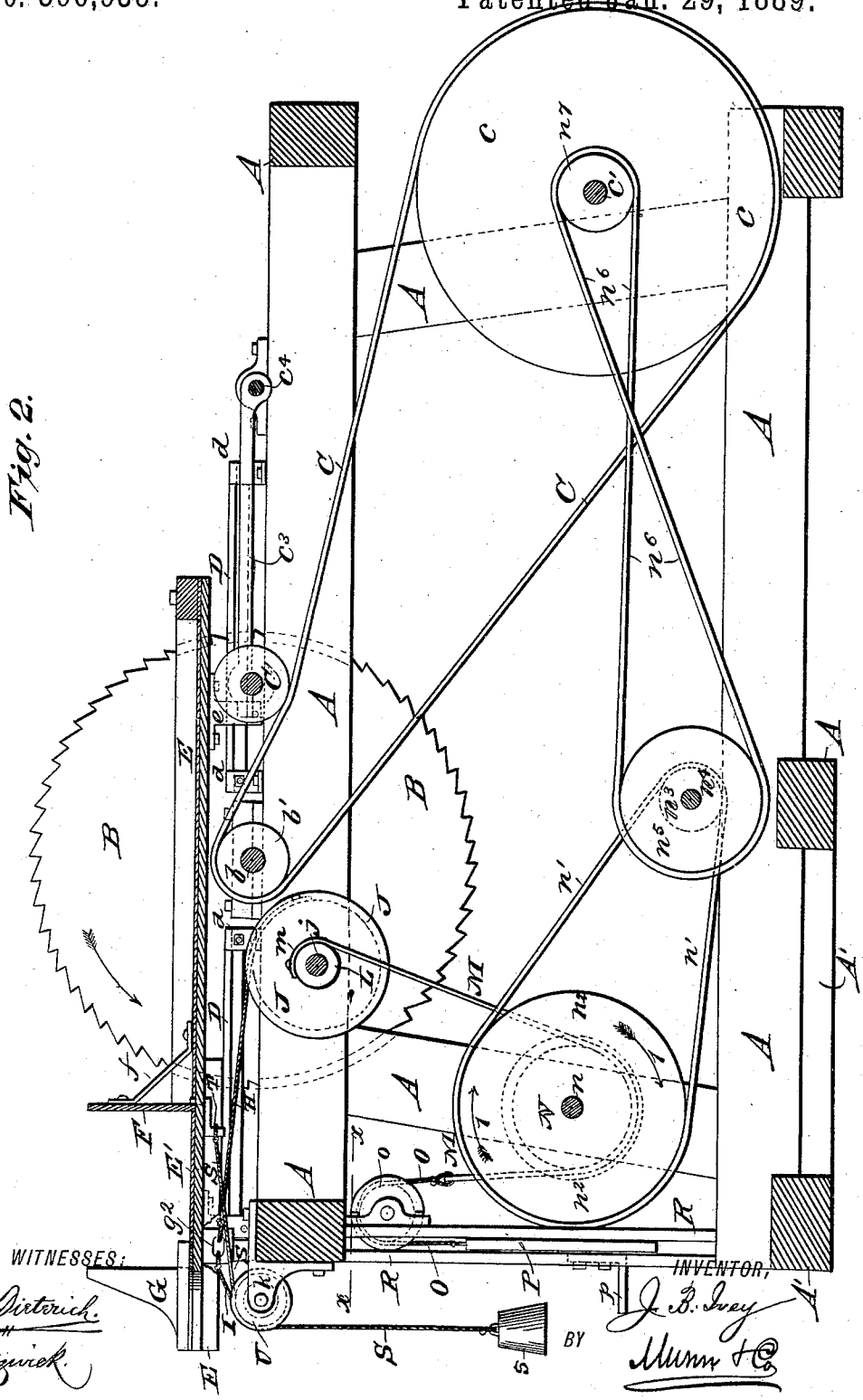
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Fig. 2.



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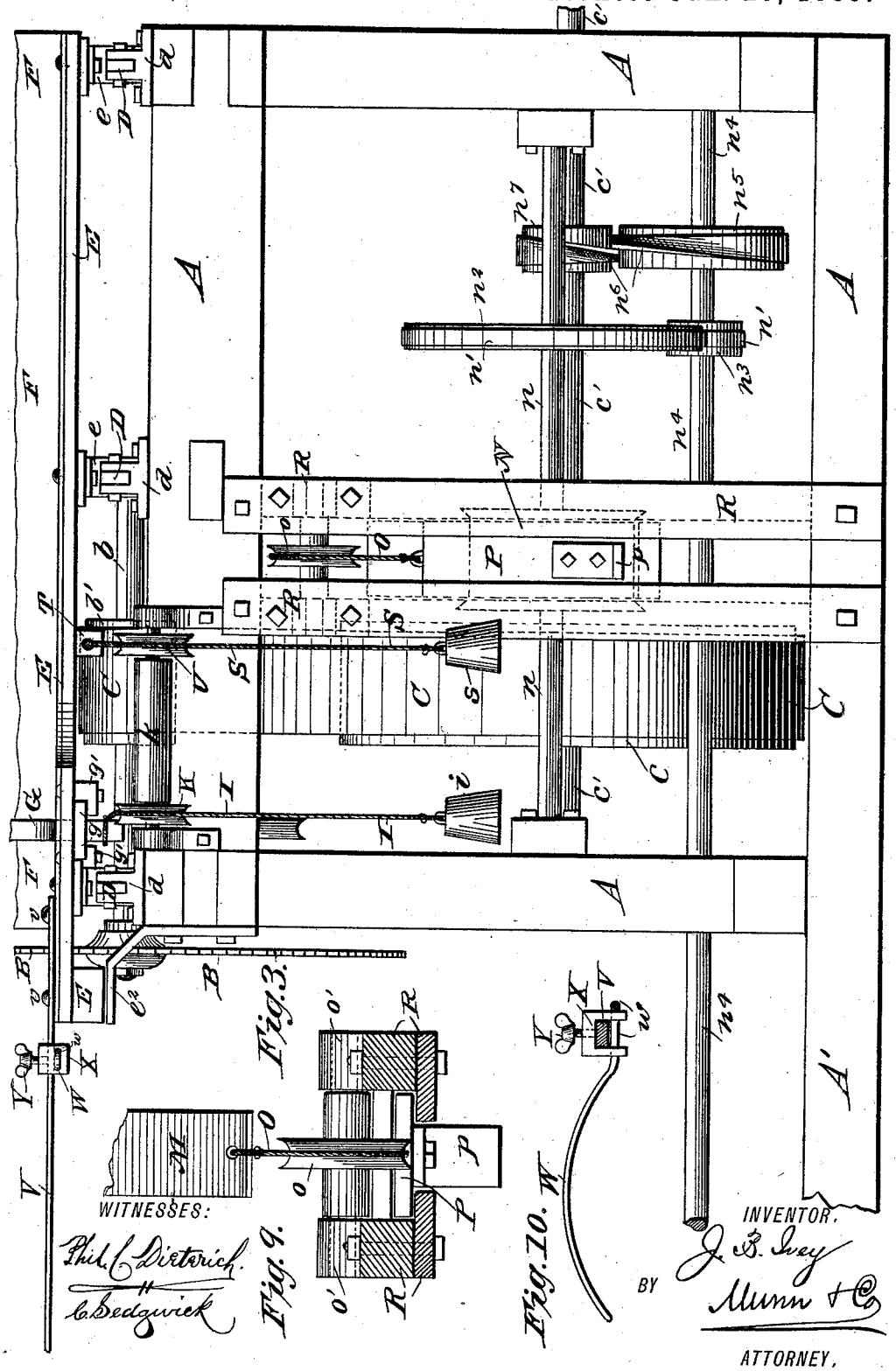


Fig. 3.

Fig. 9.

Fig. 10.

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SAWING MACHINE.

No. 396,935. Patented Jan. 29, 1889.

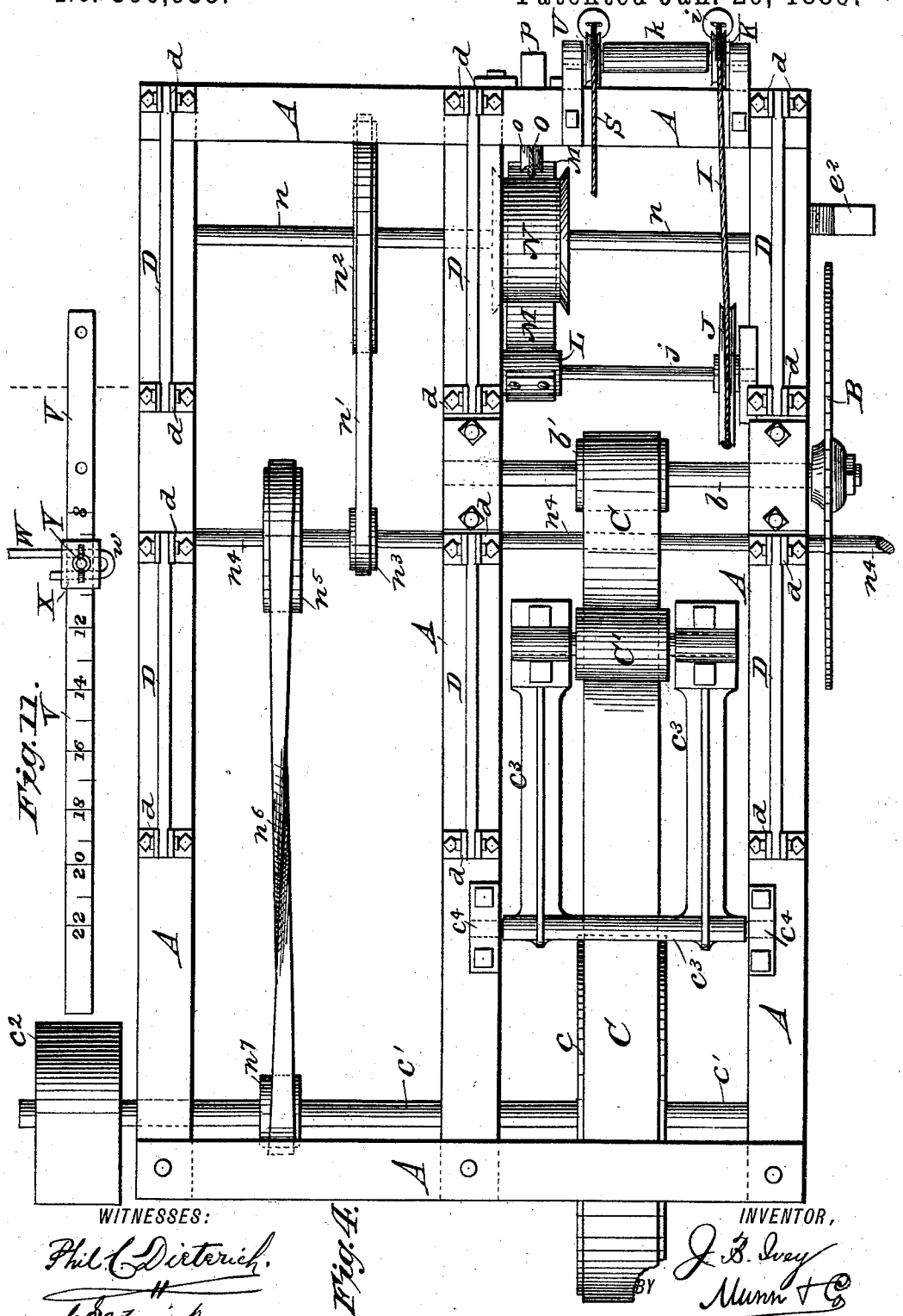


Fig. 4.

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SAWING MACHINE.

No. 396,935. Patented Jan. 29, 1889.

Fig. 5.

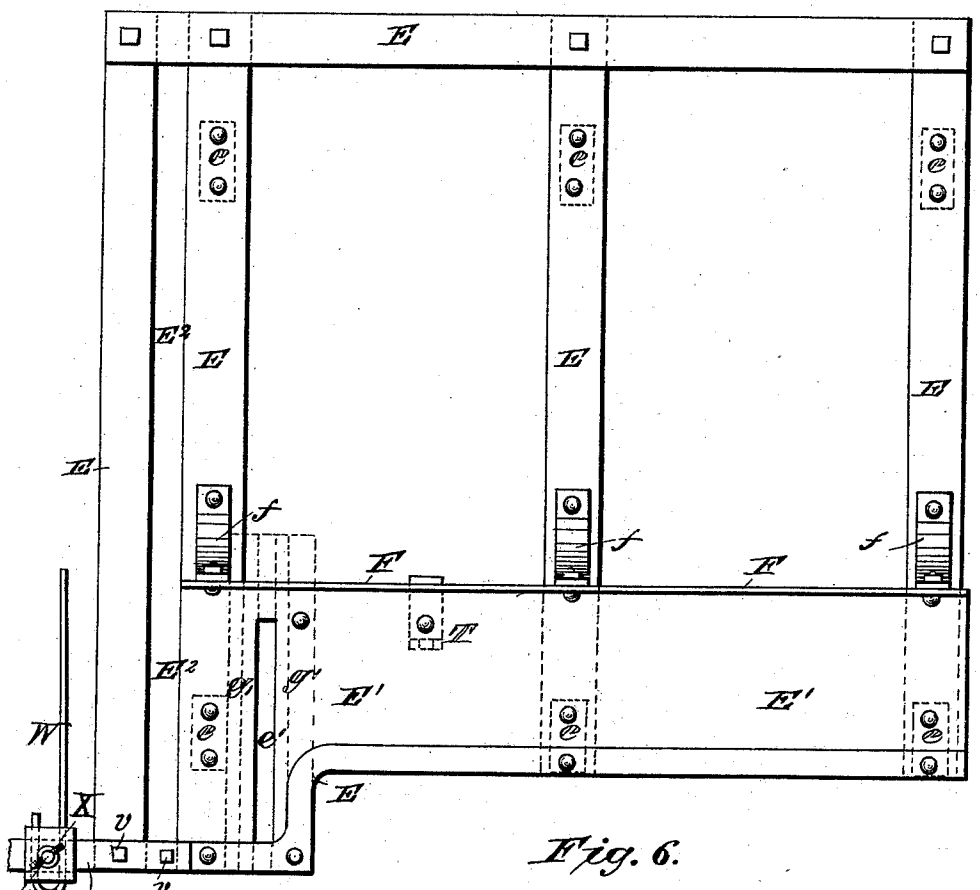


Fig. 6.

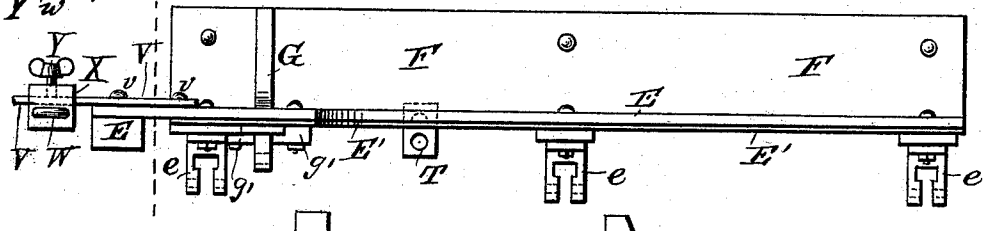


Fig. 7.

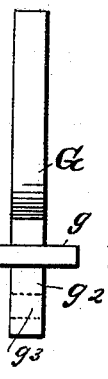
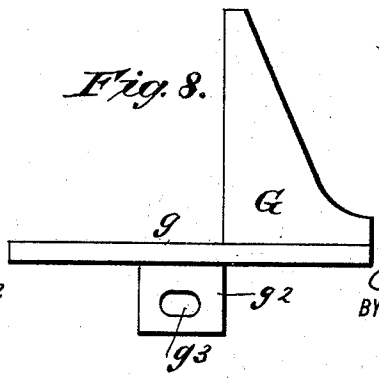


Fig. 8.



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UNITED STATES PATENT OFFICE.

JAMES BURNETT IVEY, OF MACON, GEORGIA.

SAWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 396,935, dated January 29, 1889.

Application filed May 1, 1888. Serial No. 272,465. (No model.)

To all whom it may concern:

Be it known that I, JAMES BURNETT IVEY, of Macon, in the county of Bibb and State of Georgia, have invented a new and Improved Sawing-Machine, of which the following is a full, clear, and exact description.

My invention relates to a sawing-machine designed for use chiefly in cross-cutting wood billets into pieces suitable for chopping to make kindling-wood; but the improvements are applicable to sawing-machines used for other purposes.

The object of the invention is to provide a simple and effective machine of this character by the use of which a large amount of work may be done without excessive fatigue to the operator; and the invention consists in certain novel features of construction and combinations of parts of the sawing-machine, all as hereinafter described and claimed.

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 side elevation of my improved sawing-machine. Fig. 2 is a sectional elevation of the machine as viewed from the other side. Fig. 3 is a front end view of the machine. Fig. 4 is a plan view thereof with the wood-carriage removed. Fig. 5 is a plan view of the wood-carriage, the gage being partly broken away. Fig. 6 is a front end view thereof. Figs. 7 and 8 are front edge and side views, respectively, of the movable wood-clamping jaw of the carriage. Fig. 9 is a detail plan view of part of the wood-clamp and carriage-operating devices in horizontal section on the line $x\ x$ in Fig. 2. Fig. 10 is an end view of the saw-gage with its main bar in cross-section, and Fig. 11 is a plan view of the gage with its arm partly broken away.

The main frame A of the sawing-machine is shown as made of wooden timbers suitably framed and bolted together to support the operating parts of the machine, presently described; but the frame may be made of metal, or of wood and metal combined in any preferred manner. The saw B is fast to an arbor or mandrel, b, journaled on the frame and carrying a pulley, b', from which a belt, C, leads to a driving-pulley, c, fast on a shaft, c', journaled on the frame, and this shaft carries a pulley, c^2, from which a main driving-belt will pass to a pulley on any convenient motor for operating the machine. A heavy pulley, C', journaled at the outer end of a frame, c^3, fulcrumed at c^4 on the main frame A, rests on the saw-driving belt to take up undue slackness thereof.

Onto the top of the frame A there are fixed a series of bars, D, preferably six in all, arranged in three aligned pairs separated for a distance above the saw-mandrel. These bars D are held to the frame A, preferably, by means of end or head pieces or bearings, d, which are bolted to opposite ends of the bars and also to the frame. The upper edges or parts of these bars D are made broader than their lower parts, and so that lugs or bearings e, bolted to the under side of the wood-carriage E, may fit by their T-shaped slots onto the bars D, which thus constitute tracks on which the carriage may be moved freely forward and backward for a distance limited by contact of the front and rear lug bearings e of the carriage with the front and rear pairs of bearings d for the track bars or ways D, to which the lugs e are fitted, as above described. The wood-carriage has at its front end a metal top or floor plate, E', onto which and against a vertical laterally-ranging fence or plate, F, forming also the fixed jaw of the carriage wood-clamp, the wood to be sawed is laid.

Braces f stay the jaw and fence F to the carriage-body. The carriage also has a longitudinal slot, E^2, through which the saw B passes, and another slot, e', in the carriage is provided to receive the movable jaw G, which clamps the wood to the opposite jaw and fence, F, of the carriage in a manner presently explained. A bracket, e^2, fixed to the side of the frame A, supports that portion of the carriage E which extends outside and in front of the saw. The detailed construction of the wood-carriage is shown best in Figs. 5 and 6 of the drawings.

The body portion of the movable wood-clamp jaw G fits loosely in the carriage-slot e', and side flanges, $g\ g$, formed on the jaw, fit below the carriage-top and between it and rabbeted guides or ways $g'\ g'$ on the carriage, thus giving the jaw substantial support on

the carriage while it is being moved in the slot e' toward and from the fixed jaw or fence F to grip and release the wood to be cut. The movable clamp-jaw G has a lower lug, g^2, which is slotted at g^3 for the more convenient connection of two cords, H I, the one H running rearward from the lug to the periphery of a wheel, J, to which the cord is fixed, said wheel being fast on a transverse shaft, j, which is journaled on the frame A. The other cord, I, passes forward from the clamp-jaw lug and over a guide-pulley, K, which is journaled on a shaft, k, fixed to lugs or bearings on the main frame. The cord I carries a weight, i, sufficiently heavy to retract the jaw G or move it from the opposite jaw, F, after the cutting of the stick of wood which had been clamped and fed to the saw by the pull of the cord H, and in a manner presently described.

On the shaft j, which carries the wheel J, there is also fixed a pulley or drum, L, to the periphery of which is fixed one end, m, of a friction-band, M, which band passes below a friction-drum, N, which is fixed to a shaft, n, journaled to the frame A, and from this drum the band M extends upward and is connected with a cord, O, which passes over a pulley, o, journaled in bearings o' in parallel uprights R R, fastened at the front of the main frame A. The other end of the cord O is fastened to a slide, P, which is fitted for vertical movement in or between the uprights R R, and is provided with a treadle-arm, p, in convenient reach of the operator's foot, to be depressed thereby for tightening the band M onto the drum N. The drum is rotated continuously in direction of the arrows 1 by a belt, n', which passes from a pulley, n^2, fixed on the drum-shaft n to a pulley, n^3, on a shaft, n^4, which is journaled at the base of the frame A and carries another pulley, n^5, from which a crossed belt, n^6, runs to a pulley, n^7, on the main driving-shaft c' of the machine. Fig. 4 of the drawings represents this shaft n^4 extended from the left-hand side of the sawing-machine for operating the driving mechanism of an elevator and carrier which is supported axially on a side extension, A', of the base of the frame when I combine the sawing-machine and elevator and carrier, as described in another application for Letters Patent filed of even date herewith; but should this combined apparatus not be desired the laterally-extended portion of the shaft n^4 and the extension A' of the frame A will be dispensed with.

To retract the wood-carriage after each cutting operation of the saw, a cord, S, fixed at one end to a lug, T, fastened to the under side of the carriage, is passed outward to and over a pulley, U, which, like the pulley K, is fitted loosely on the shaft k, and the cord carries at its lower end a weight, s, of sufficient gravity to draw the carriage back to normal position when the pressure of the operator's foot is removed from the treadle p.

To regulate the length of the pieces sawed from the wood billets, I provide a gage which consists of a bar or rod, V, bolted or otherwise fastened at v to the front end of the wood-carriage and projecting laterally toward the left hand, and provided with an arm, W, which extends rearward in the plane of the saw and the path of the wood billet when the latter is pushed outward prior to making successive cuts through it by the saw. The arm W is held adjustably to the gage-bar V, preferably by means of a shackle or slide-block, X, which overlaps the top and both edges of the bar, and through which below the bar the doubled or bent end portion, w, of the arm is passed prior to bending the arm vertically into the preferred concavo-convex form shown in Fig. 10 of the drawings. A thumb or set screw, Y, in the shackle X may be set down tightly onto the gage-bar to bind the arm W securely thereto after it has been set at any required adjustment, and the gage-bar is preferably marked in a scale of inches, as shown in Fig. 11, to facilitate the setting of the arm.

The complete operation of the sawing-machine is as follows: The saw B and drum N being rotated by the pulley and belt-gearing above described, a billet or stick of wood will be laid onto the floor-plate E' of the carriage E and against the fixed jaw or fence F, and after the wood is moved outward endwise to the set gage-arm W the operator who had so placed the billet will then depress the treadle-plate p by one foot. This draws on the cord O and tightens the friction-band M to the drum N, which by its rotation at once draws on the band to rotate the drum L, the shaft j, and pulley J, and consequently draws on the cord H and pulls the movable jaw G backward to tightly clamp the billet between the jaws F G of the wood-carriage, and as the pressure on the foot-plate p is continued the draft of the cord H will also continue, and will draw the entire carriage backward on the frame to carry the clamped billet to and past the saw to make one cut through the wood, and meanwhile the backward movement of the carriage had drawn on the cords I S and lifted their respective weights i s, which will fall of themselves and automatically retract the carriage and its movable jaw G to normal positions as soon as the operator releases the foot-plate p to let the friction-band M slack off from the drum N, so that the drum no longer has a tendency to draw either the jaw G or the entire carriage, and the billet may then be freely pushed outward endwise to the gage prior to depression of the foot-plate p by the operator to again clamp the billet and cause the carriage to move rearward to cause the saw to make its next cut through the wood.

It will be noticed that both hands of the operator are entirely free to handle the wood billets easily and quickly, and that by operation of the treadle-plate p by one of his feet the entire wood clamping, feeding, and sawing operations are easily and nicely con-

trolled—that is to say, the first motion of the treadle *p* causes clamping of the wood by the jaw G, and should the wood be clamped improperly it may be at once released by removing the foot from the treadle or discontinuing the pressure on the treadle to allow the jaw G to be drawn outward by its weighted cord, and at any time while the saw is making its cut the carriage with the wood billet may be allowed to draw back from the saw by releasing or relaxing pressure on the treadle to allow the weighted cord of the carriage to act, thus affording every facility for accomplishing the work with economy of time and labor.

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, with a frame and a table or support thereon provided with a fixed jaw or fence, of a movable jaw fitted to the table, a pulley journaled on the frame, a cord connecting said pulley with the movable jaw, a friction-band connected for turning the cord-pulley, a treadle or operating device connected to the other end of the band, and a friction-drum onto which the band may be tightened to receive motion therefrom for actuating the movable jaw, substantially as described, for the purposes set forth.

2. In a sawing-machine, the combination, with a frame and a table or support thereon provided with a fixed jaw or fence, of a movable jaw fitted to the table, a pulley journaled on the frame, a cord connecting said pulley with the movable jaw, a friction-band connected for turning the cord-pulley, a treadle or operating device connected to the other end of the band, a friction-drum onto which the band may be tightened to receive motion therefrom for actuating the movable jaw, and a weighted cord connected to said jaw for retracting it, substantially as described, for the purposes set forth.

3. In a sawing-machine, the combination, with a frame and a carriage fitted for reciprocation thereon and provided with a fixed jaw or fence, of a movable jaw fitted to the carriage, a pulley journaled on the frame, a cord connecting said pulley with the movable jaw, a friction-band connected for turning the cord-pulley, a treadle or operating device connected to the other end of the band, a rotating friction-drum onto which the band may be tightened for actuating the movable jaw, and a weighted cord connected to the carriage to retract it, substantially as described, for the purposes set forth.

4. In a sawing-machine, the combination, with a supporting-frame and a carriage fitted for reciprocation thereon and provided with a fixed jaw or fence, of a movable jaw fitted to the carriage, a pulley journaled on the frame, a cord connecting said pulley with the movable jaw, a friction-band connected for turning the cord-pulley, a treadle or operating device connected to the other end of the band, a friction-drum onto which the band may be tightened for actuating the movable jaw, and weighted cords connected to both the movable clamping-jaw and reciprocating carriage for retracting either independently or both simultaneously, substantially as described, for the purposes set forth.

5. In a sawing-machine, the combination, with a frame and a table or support thereon provided with a fixed jaw or fence, F, of a movable jaw, G, fitted in the carriage, a shaft, *j*, journaled on the frame, a pulley, J, and drum L on said shaft, a cord, H, connecting the pulley J with the jaw G, a weighted retracting-cord, I, connected to the jaw G, a shaft, *n*, journaled in the frame, gearing operating said shaft, a friction-drum, N, on said shaft, a treadle device, P *p*, fitted to the frame, and a friction-band, M, connected to the drum L and to the treadle and receiving the drum N in its bight, substantially as described, for the purposes set forth.

6. In a sawing-machine, the combination, with a frame and a reciprocating carriage thereon provided with a fixed jaw or fence, of a movable jaw, G, fitted in the carriage, a shaft, *j*, journaled in the frame, a pulley, J, and drum L on said shaft, a cord, H, connecting the wheel *j* with the jaw G, a weighted retracting-cord, I, connected to the movable jaw G, a weighted retracting-cord, S, connected to the carriage, a shaft, *n*, journaled on the frame, gearing for operating said shaft, a friction-drum, N, on said shaft, a treadle device, P *p*, fitted in the frame, and a friction-band, M, connected to the drum L and to the treadle and receiving the drum N in its bight, all constructed and arranged for operation substantially as described, for the purposes set forth.

JAMES BURNETT IVEY.

Witnesses:
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J. J. COBB.