No. 749,839. PATENTED JAN. 19, 1904.

A. J. BURTON.

BAND SAW CLAPBOARD MACHINE.

APPLICATION FILED APR. 4, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

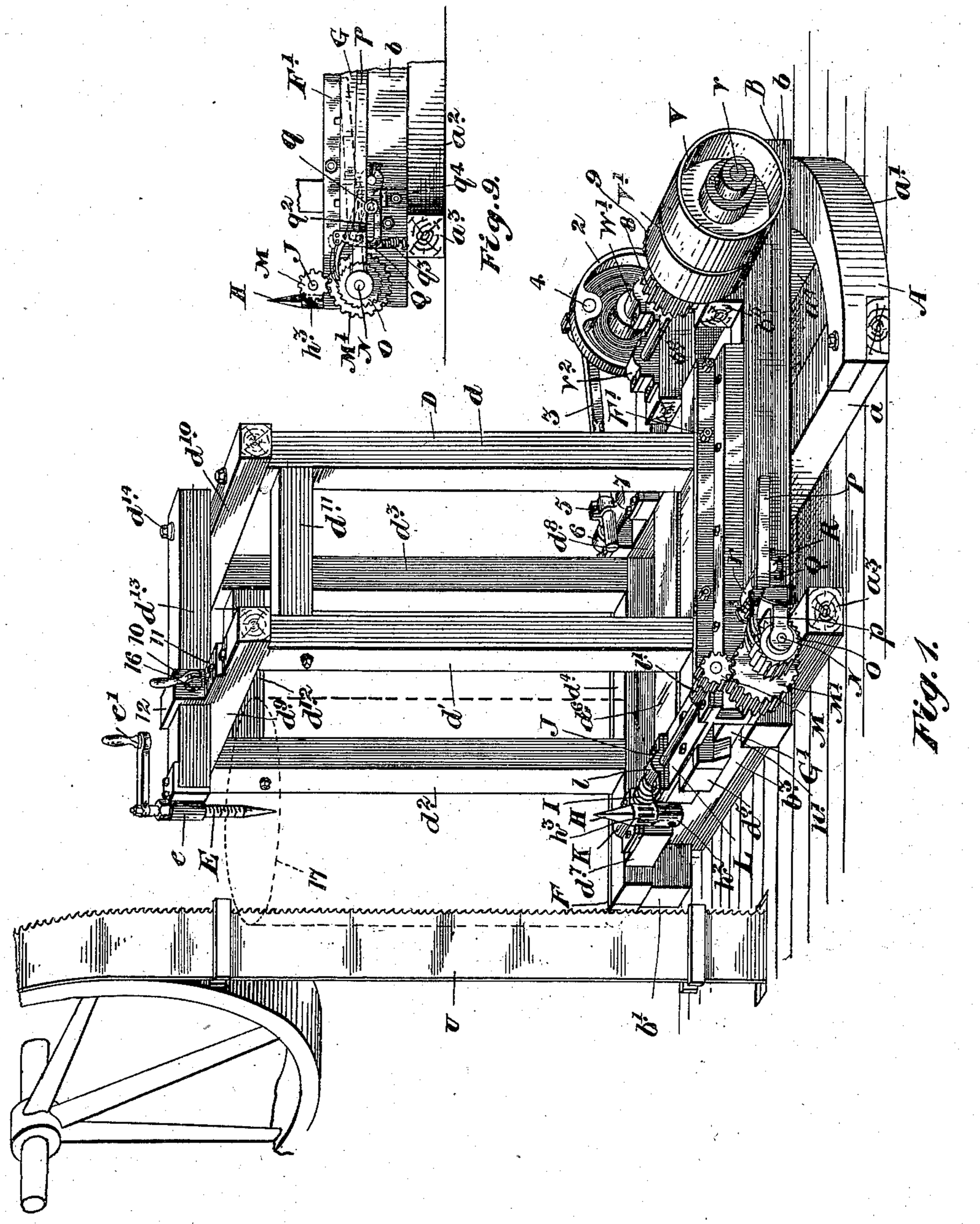

Fig. 1.

Fig. 2.

Witnesses

J. A. Symes

F. C. Askwith

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A. J. Burton

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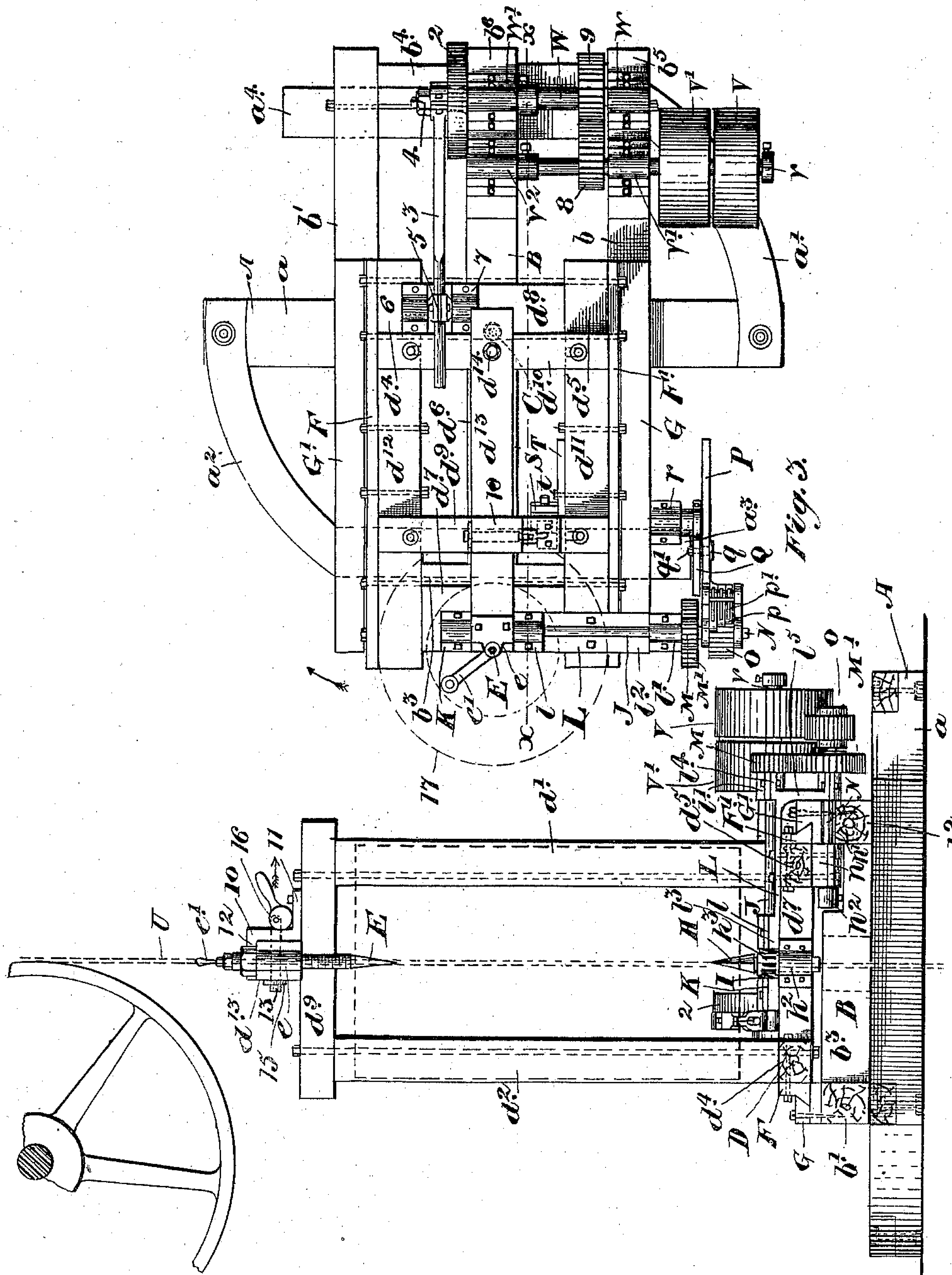

Fig. 3.

Fig. 2.

Witnesses.

J. A. Symes

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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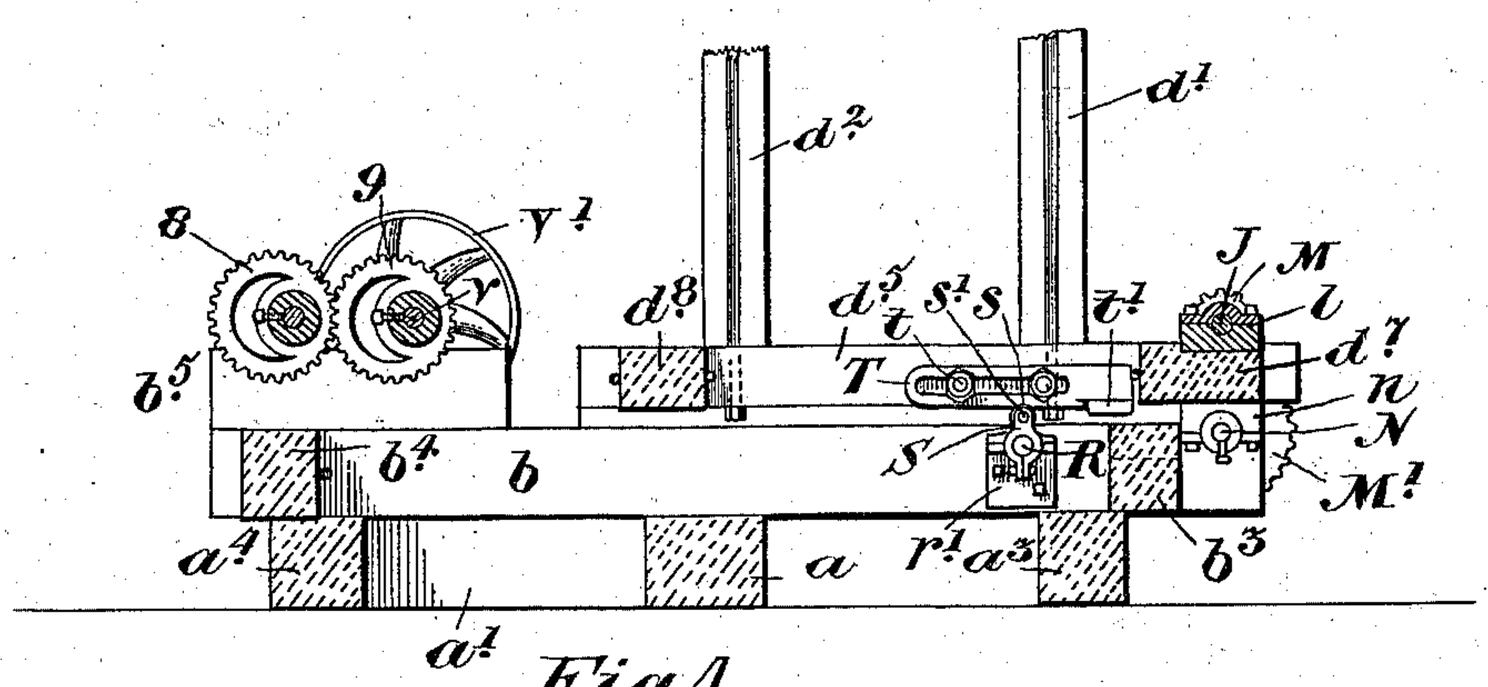

Fig. 4.

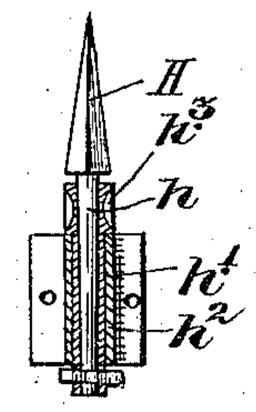

Fig. 8.

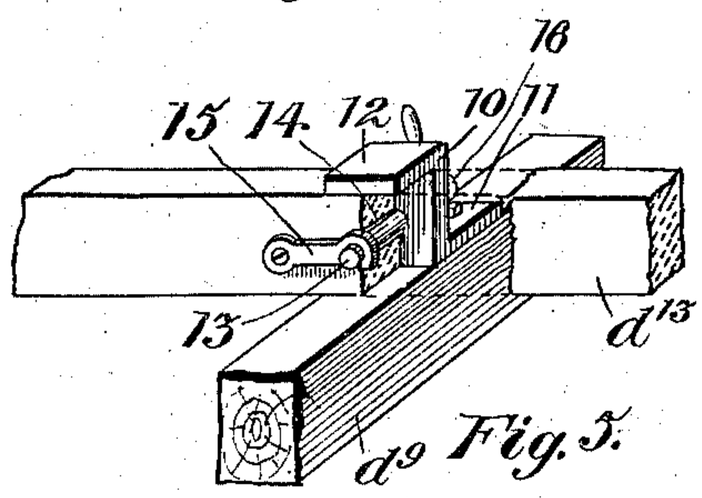

Fig. 5.

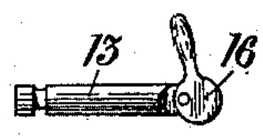

Fig. 10.

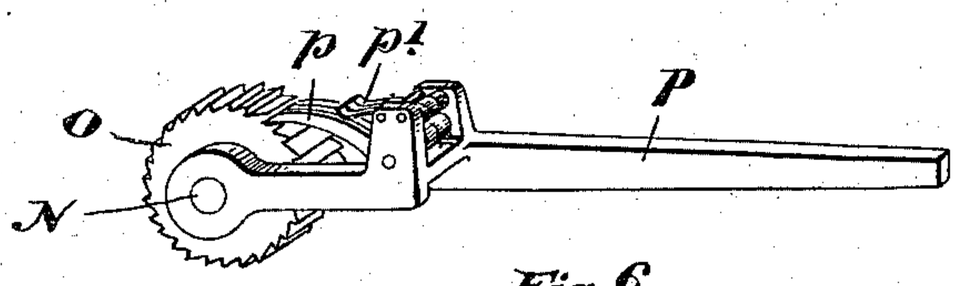

Fig. 6.

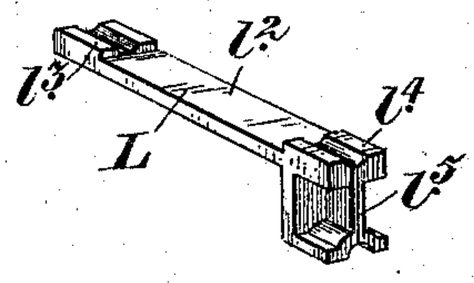

Fig. 7.

Fig. 11.

Witnesses.
J. a Symes
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by Fred B. Fetherstonhaugh
Atty.

No. 749,839. Patented January 19, 1904.

UNITED STATES PATENT OFFICE.

AMOS JOSIAH BURTON, OF PARRY SOUND, CANADA.

BAND-SAW CLAPBOARD-MACHINE.

SPECIFICATION forming part of Letters Patent No. 749,839, dated January 19, 1904.

Application filed April 4, 1903. Serial No. 151,135. (No model.)

To all whom it may concern:

Be it known that I, AMOS JOSIAH BURTON, saw-filer, of the town and district of Parry Sound, Province of Ontario, Dominion of Canada, have invented certain new and useful Improvements in Band-Saw Clapboard-Machines, of which the following is a specification.

My invention relates to improvements in band-saw clapboard-machines; and the objects of my invention are to devise a machine of simple and cheap construction, whereby a bolt or log of cylindrical form may be brought or fed up to a band-saw in such a manner as to cut clapboards from the bolt, the direction of the cut taken by the band-saw being radial, further objects being to rotate the bolt after each cut through an arc which will make the clapboard of a suitable thickness; and it consists, essentially, of a suitable base or turn-table upon which the machine is mounted, a frame supporting upper and lower center points to support the bolt, means for advancing and retracting the movable portion of the frame to feed the bolt up to the saw and withdraw it therefrom, and means for automatically rotating the bolt through a suitable angle when it has been withdrawn from engagement with the saw, the various parts of the device being constructed and arranged in detail as hereinafter more particularly described.

Figure 1 is a perspective view of the complete machine. Fig. 2 is an end view of the same. Fig. 3 is a plan. Fig. 4 is a section through the machine on the line X X, Fig. 3, the upper portion of the machine being cut away. Fig. 5 is a detail perspective view of a gripping device located at the upper part of the frame. Fig. 6 is a detail perspective view of part of the mechanism for automatically rotating the bolt the desired amount after each cut. Fig. 7 is a detail perspective view of a casting employed in the forward portion of the machine. Fig. 8 is a detail sectional view of the lower center point for supporting the bolt and the means for supporting the same. Fig. 9 is a side view of a portion of the forward left-hand corner of the machine, showing parts of the automatic mechanism for rotating the bolt. Fig. 10 is a detail of the bar and eccentric clamp for securing the swinging beam centrally in position. Fig. 11 is a section through the rocking bar Q, the roller q, and pin q'.

In the drawings like characters of reference indicate corresponding parts in each figure.

A is the base or turn-table, upon which the machine is pivotally mounted. This base consists of a cross-timber a, extending completely across the machine at the center thereof, arc-shaped timbers a' and a^2, the front and rear cross-timbers a^3 a^4, the arc-shaped timbers being bolted at their ends, respectively, to the ends of the central timber and one end of each arc-shaped timber to the end of one of the cross-timbers a^3 and a^4.

Upon the base A a pivoted base B rests. The base B comprises side timbers b b', a central longitudinal timber b^2, and front and rear timbers b^3 b^4. By means of a suitable pivotal bolt C this base and all parts of the machine supported thereby are pivotally mounted upon the stationary base A in such a manner as to be capable of turning in the direction indicated by the arrow in Fig. 3, so that the core may be removed when the clapboards have all been sawed from a bolt and a new bolt may be put in place.

The frame D of the portion of the machine which is adapted to be advanced and retracted consists of upright posts d d' d^2 d^3, longitudinal pieces d^4 d^5 d^6, located, respectively, at the sides and at the center of the lower portion of the slidable frame. End cross-timbers d^7 and d^8 connect these longitudinal pieces at the front and rear, respectively. Cross-timbers d^9 d^{10} extend across the tops of the two front and the two rear upright posts, being suitably bolted thereto, and longitudinal pieces d^{11} and d^{12} extend between the two posts on either side of the machine near their upper ends. d^{13} is a central longitudinal timber, which is pivotally secured to the rear cross-timbers d^{10} by a bolt d^{14}. To the forward end of this timber, which overhangs the upright portion of the frame, the upper center point E is rotatably secured in a suitable threaded bearing e and is provided with a crank and handle e', by which it may be forced into or withdrawn from the bolt 17.

Any suitable means may be provided for slidably securing the upper portions of the frame to the secondary or pivotal base B; but the means which I have devised and which I consider the preferable means are as follows: Plates F F′ are secured to the outside of the timbers d^4 d^5, respectively. These plates have beveled or sloping tongues formed integral therewith and extending outwardly therefrom. These tongues are designed to slidably engage guides or grooves formed in suitable side pieces G G′, which are bolted or otherwise secured to the side pieces b b' of the secondary base. One of these guides may be made in two pieces—the guide G, for instance, as shown in Fig. 2—to facilitate setting up the machine and adjusting the distance between the grooves to suit the position of the side plates F F′ and also to take up the wear. The lower support or center point H for the bolt is square in order that it may turn the bolt when desirable. The lower portion h of this point or center piece is tapered and rounded. (See Fig. 8.) This tapered portion extends into a socket h', the upper portion of which is provided with teeth forming an exterior worm gear-wheel h^3 on the socket, adapted to be engaged by a worm, to be hereinafter described. This socket extends beyond the end of the tapered portion h and has an aperture just below the end of the tapered portion adapted to permit of the insertion of a wedge to remove the pin from the socket when desirable. This socket is rotatably supported in a vertical bearing h^2, which is suitably bolted or otherwise secured to the cross-timber d^7, at the center thereof. I is a worm which is secured to a suitable shaft J and is adapted to engage the worm gear-wheel h^3.

The shaft J is journaled in suitable bearings, the arrangement of the bearings being preferably as shown in the drawings, in which a single bearing K is provided at one end of the shaft, and a double bearing or two bearings l l', secured to the same base or casting L, are provided at the other end thereof. The base for the bearings l l' is shown most clearly in Fig. 7, and it consists of the horizontal portion l^2, having raised portions l^3 l^4 at the ends thereof, provided with grooves to form the lower portion of the bearings l l'. A depending portion or bracket is formed at the outer end of the casting, the lower end thereof being formed in the shape of the upper portion of a bearing of a shaft, to be hereinafter described.

At the end of the shaft J a gear-wheel M is provided and is adapted to mesh with a gear-wheel M′, which is secured to the shaft N. The shaft N is journaled in the bearing formed at the lower extremity of the bracket l^5, and also in a bearing n, secured to the under side of the timber d^5, a slot n' being formed between the timber b and the guide G′, through which the shaft passes. A collar n^2 is provided at the inner end of the shaft N to prevent longitudinal motion thereof.

O is a ratchet-wheel, which is also secured to the shaft N.

P is a rocking-lever, which is fulcrumed on the shaft N at both sides of the ratchet-wheel O. Pawls p are pivotally secured between projections extending upwardly from each side of an enlarged portion of this rocking lever, and these pawls are adapted to engage the ratchet-wheel O at slight intervals apart, so arranged that there will always be one pawl at least in engagement with a tooth and ready to rotate the wheel. Springs p' are provided and are adapted to force the pawls downwardly to keep them in engagement with the teeth of the ratchet-wheel.

The lower edge of the lever P rests upon a roller q, mounted on a pin q', which is adjustably secured in a slot q^3, formed in a rocking bar Q. This rocking bar is suitably secured at one end to a shaft R, which is supported in bearings r r', the bearing r being secured to the outside of the timber b and the bearing r' to the inside, the shaft R extending completely through the same. The inner extremity of the shaft R is provided with a cam S, which is securely clamped thereon and is provided at its upper extremity with a roller s, which is mounted on a spindle s', supported in projections formed at the two ends of the cam.

T is a plate which is adjustably secured by bolts t to the side of the timber d^5. This plate is provided with a projection t', which is adapted to engage the roller s, thereby tripping the cam and rotating the shaft R and the rocking arm Q the required amount at determined times and for reasons to be hereinafter described. A spring q^3 draws the bar q normally downward, so as to bring it back to position after it had been raised, and a stop q^4 is provided to limit the downward swing thereof. (See Fig. 9.)

The mechanism which I have just described is that which acts directly on the lower center point H to revolve the same and the bolt through a required angle and at required times.

I will now describe the mechanism by means of which the slidable portions of the machine are advanced and retracted to bring the bolt into engagement with and withdraw it from the band-saw U.

V V′ are loose and tight pulleys, respectively, which are mounted on a shaft v, bearings v' v^2 being provided for the shaft, these bearings being secured to blocks b^5 b^6, which in turn are secured to the longitudinal timbers b and b^2 of the secondary base B of the machine.

W is a shaft, which is mounted in bearings w w', also secured to the blocks b^5 b^6. A crank-wheel 2 is provided at the inner end of the bearing w' and is secured to the shaft W. A

connecting-rod or pitman 3 is secured to this crank-wheel by a suitable bolt or crank-pin 4. The opposite end of the pitman is adjustably secured between the jaws of a rocking clamp 5. This clamp is provided with laterally-extending rounded projections, which are journaled in bearings 6 and 7, secured to the cross-timber d^8.

8 and 9 are meshing gear-wheels, which are eccentrically mounted upon the shafts v and W, respectively.

It will thus be seen that when the shaft v is driven by the belt on the tight pulley the gear-wheels 8 and 9 will cause the shaft W to rotate, and thus the pitman 3 will advance and retract the slidable portion of the machine. The eccentrically-mounted gears 8 and 9 are so set as to make the forward motion of the machine slow and the backward motion considerably faster.

In Fig. 5 I have shown a detail perspective view of the device for securing the beam d^{13}, which carries the upper center point in its correct position. This consists of a bracket 10, having horizontal portions 11 and 12, the portion 11 adapted to be secured to the cross-beam d^9 and the portion 12 adapted to overlap the top of the beam d^{13}. A bar 13 extends through the vertical portion of the bracket 10, and when the beam d^{13} is in the proper position this bar will pass through a hole 14, formed in the beam, its end projecting a suitable distance. A groove is formed in the bar, and this groove is engaged by a latch or hook 15, which is pivotally secured to the side of the beam d^{13}. An eccentric 16 (see Fig. 2) is rotatably secured to the opposite end of the rod or bar and is provided with a handle by which it may be rotated, and thus the bar is drawn in the direction indicated by the arrow, which securely holds the beam in its central position.

Having now particularly described the details of construction of the principal parts of my invention, I will proceed to explain the manner of working the machine.

When a bolt is to be placed between the centers H and E, the machine is swung round in the direction indicated by the arrow in Fig. 3 till it is substantially at an angle of forty-five degrees to the position in which it is shown in the drawings, so that the operator will not be liable to injury from the saw. The timber d^{13}, which supports the upper center, is then swung round so as not to interfere with the bolt when being placed in position. The bolt is then placed by suitable means on the lower center point H. It is then held in the vertical position and the timber or supporting-beam d^{13} is swung back into the central position, and by means of the handle e' the center E is forced into the center of the upper end of the bolt. The machine is then swung round on the turn-table or base A till it is in the position shown in the drawings. The machine will now be started by slipping the belt onto the tight pulley v'. The slidable portions of the machine will be caused to advance by means of the pitman 3, the crank-wheel 2, and the gears 8 and 9. It may here be mentioned that the bolt is about two inches clear of the band-saw when it is at the extremity of its backward motion. It will thus be seen that as the bolt is advanced against the saw a radial cut will be taken whose length will depend on the diameter of the crank-wheel 2. As the crank-wheel continues to revolve the bolt and the slidable portions of the machine will be quickly drawn back, and as soon as the bolt is clear of the saw the projection t' will engage the roller of the cam S. This will cause the shaft R and the rocking bar Q to turn through a suitable angle. The roller q on the pin q', secured to the rocking bar Q and engaging the under side of the lever P, will therefore cause the said lever to be raised into a position approximately as shown in Fig. 9 in dotted lines. The result of this motion will be that the pawls p will rotate the ratchet-wheel O, thus causing the gear-wheel M′ and the gear-wheel M to rotate. The rotation will thus be transferred through the shaft J to the worm I. The worm which engages the worm gear-wheel h^3 will rotate the gear-wheel, which in its turn causes the point H to rotate, thus turning the bolt a suitable amount. The dimensions and positions of the worm, the gear-wheels, the ratchet-wheel, the rocking lever, the rocking bar, and the cam are so adjusted that the rotation of the bolt will be just sufficient to make the next cut of the saw sufficiently far from the last cut to cut a clapboard of proper thickness. When the bolt has been radially cut all around, there will be a thin portion of the fiber of the wood holding the clapboards to the center core. This is severed by means of a specially-made tool of substantially T shape, having blades extending to both sides.

The roller q and the pin q', upon which it is rotatably mounted, may be adjusted longitudinally in the slot q^2 in the rocking bar Q. The object of this adjustment is to enable the operator to set the machine in such a way that it will cut clapboards of the proper thickness, whatever the diameter of the bolt or log may be. When a log of large diameter is being cut, the angle through which the log must be rotated to obtain a clapboard of a certain width will of course be smaller than the angle through which a small log would have to be rotated. Consequently when a large log is used the throw given to the rocking lever P will be less, and in this case the roller and pin will be moved to a position in proximity to the shaft R. If, however, a small log is being cut, the roller and pin will be moved away from the shaft R in the slot q^2, so as to give the rocking lever P a greater throw. The lever P while the machine is advancing

and retracting will remain absolutely horizontal and will not swing except when the cam is tripped by the engaging projection, the reason for this being that the under side of the lever, which rests on the roller *q*, is perfectly straight and horizontal.

The advantages of this machine over machines previously used will be immediately apparent. The clapboard-machines which were used in the past were designed to cut the bolt horizontally, and for this purpose a rotary saw was used which cut from one end of the bolt to the other. This necessitated feeding the bolt through a distance of six feet—that is, its entire length—and a little extra at each end to allow the saw to pass clear before the bolt was turned. As the cut is taken in a radial direction in the present device, the movement will of course be only the width instead of the length of the clapboard, and the result is a very considerable saving of time. Another advantage of the device is that the machine may be used to saw blocks or bolts of any diameter within certain limits, whereas in most machines previously used it was impossible to make adjustments to suit logs whose diameter differed to any extent.

The core which is left after a bolt has been sawed is of no greater diameter than the diameter of the center points, which of course prevent the band-saw penetrating in farther toward the center of the bolt. It will thus be seen that the waste material is reduced to a minimum.

It will now be seen that I have devised a machine for the purpose set forth herein which will be extremely cheap and simple in construction, simple in manipulation, and readily adjusted to suit logs of various sizes either in diameter or length.

I am aware that it is not new to provide a machine to cut clapboards from a log vertically held, as herein described, but the details of construction which I have invented whereby such machines are greatly cheapened and simplified are the features for which I desire to procure protection.

What I claim as my invention is—

1. In a machine of the class described the combination with the slidable frame, of a beam located at the upper portion thereof, upper and lower center points, the lower center point secured to the movable frame and the upper center point secured to the forward end of said beam, a vertical pivot for securing the rearward end of the beam to the upper portion of the frame, a **Z**-shape plate secured to the center portion of the front of the upper part of the frame, and means for securing the forward end of the beam in said **Z**-plate.

2. In a device of the class described the combination with the slidable frame and the base upon which the same is slidably mounted, of upper and lower center points, a shaft for driving the lower center point intermittently, a ratchet-wheel on the shaft a rocking lever fulcrumed on the shaft, a plurality of pawls pivotally secured to the rocking lever and designed to rotate the ratchet-wheel during the upward swing of the rocking lever, a rocking bar, a projecting pin adjustably secured to the rocking bar, a roller mounted thereon over which the rocking lever is adapted to slide normally in a horizontal position, a shaft to which said rocking bar is secured, bearings for said shaft secured to the base of the machine, a cam on the end of the shaft and a trip or projection secured to the slidable frame and adapted to engage the cam during the motion of the slidable frame whereby the rocking bar, and consequently the rocking lever is raised and the center point is rotated as and for the purpose specified.

3. In a device of the class described the combination with the base and the slidable frame carrying the upper and lower center points, of a crank-wheel, a shaft upon which the same is mounted, bearings secured to the stationary portion of the base of the machine in which said shaft is journaled, a crank-pin secured to the crank-wheel, a pitman rotatably secured to the crank-pin, a rocking clamp adjustably secured to the pitman and rotatably secured to the slidable frame whereby the extreme forward and rear positions of the slidable frame may be varied according to the diameter of the bolt or log to be cut.

4. In a device of the class described the combination with the slidable frame and the pivoted beam resting on the top thereof and carrying the upper center point, of a bracket secured to a cross-beam of the frame and having an upwardly-extending portion and a horizontal portion adapted to overlap the top of the beam, a rod or bar extending through the vertical portion of the bracket and through the beam, an eccentric pivotally connected to one end of the bar and adapted to bear against the vertical portion of the bracket and draw the bar rearwardly, and a latch or hook pivotally secured to the opposite vertical side of the beam adapted to engage the end of the bar as and for the purpose specified.

5. In a device of the class described the combination with the stationary base and the slidable frame mounted thereon, the upper and lower center points carried by said slidable frame, of a driving-shaft for rotating said lower center point intermittently, a ratchet-wheel secured to said shaft, a rocking lever fulcrumed on the shaft, a plurality of pawls pivotally secured to the rocking lever and adapted to engage the ratchet-wheel when the lever is raised, a rocking bar having a longitudinal slot formed therein, a pin adjustably secured in said longitudinal slot and extending outwardly therefrom, a roller mounted upon said pin and adapted to support said rocking

lever normally in a horizontal position, a shaft to which the rocking bar is rigidly secured, said shaft extending through the lower portion of the base, a cam adjustably secured to the end of the shaft and a trip or projection secured to the slidable frame and adapted to engage the cam when the bolt is clear of the saw thereby through the interposed mechanism causing the bolt to rotate through the necessary angle as and for the purpose specified.

Signed at the town of Parry Sound, in the Province of Ontario, this 30th day of March, 1903.

AMOS JOSIAH BURTON.

Witnesses:

JOSEPH WILLIAM FITZGERALD,

E. PIRIE.