

(No Model.)

3 Sheets—Sheet 1.

D. S. ABBOTT.
SLAB SAWING MACHINE.

No. 410,777.

Patented Sept. 10, 1889.

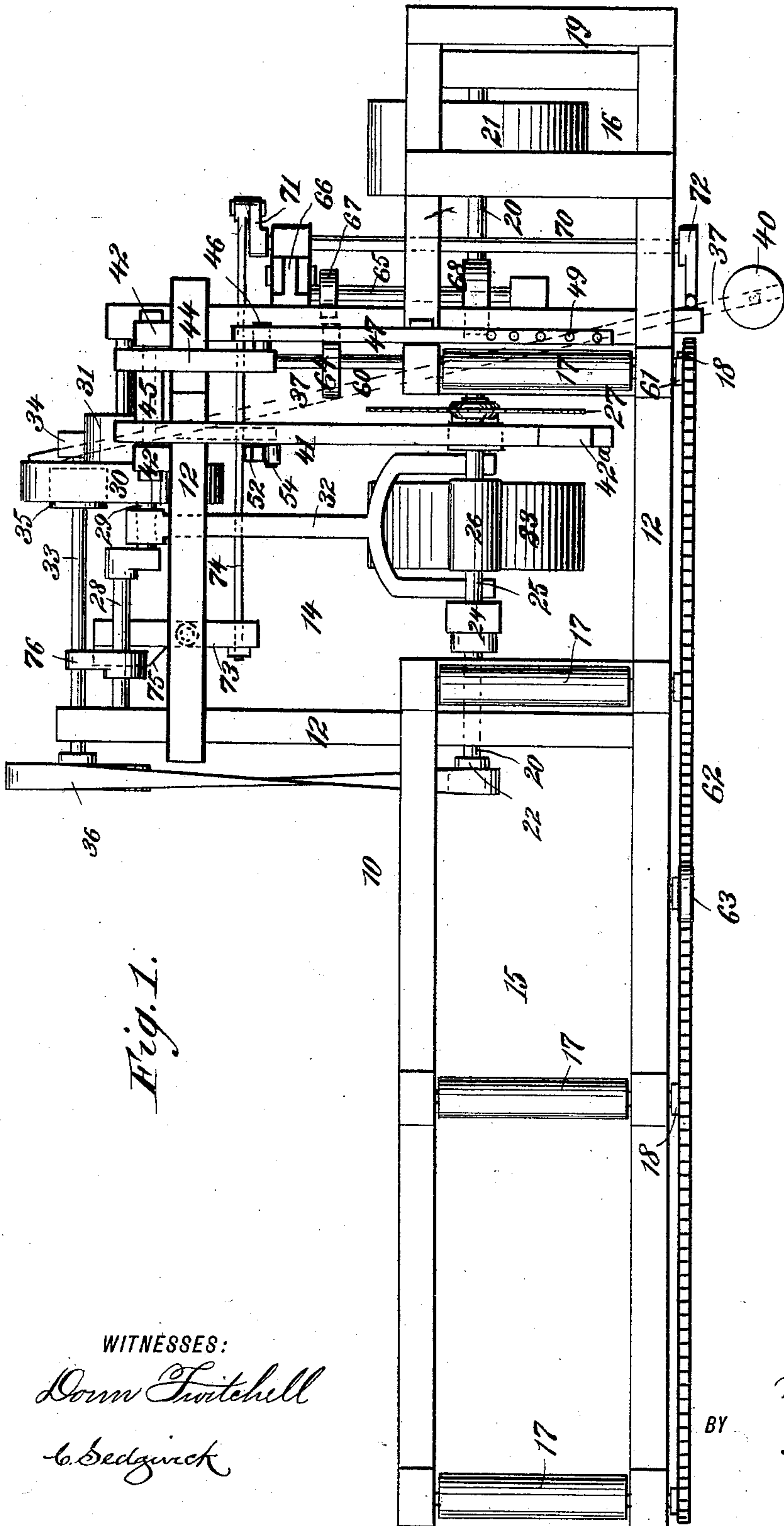


Fig. 1.

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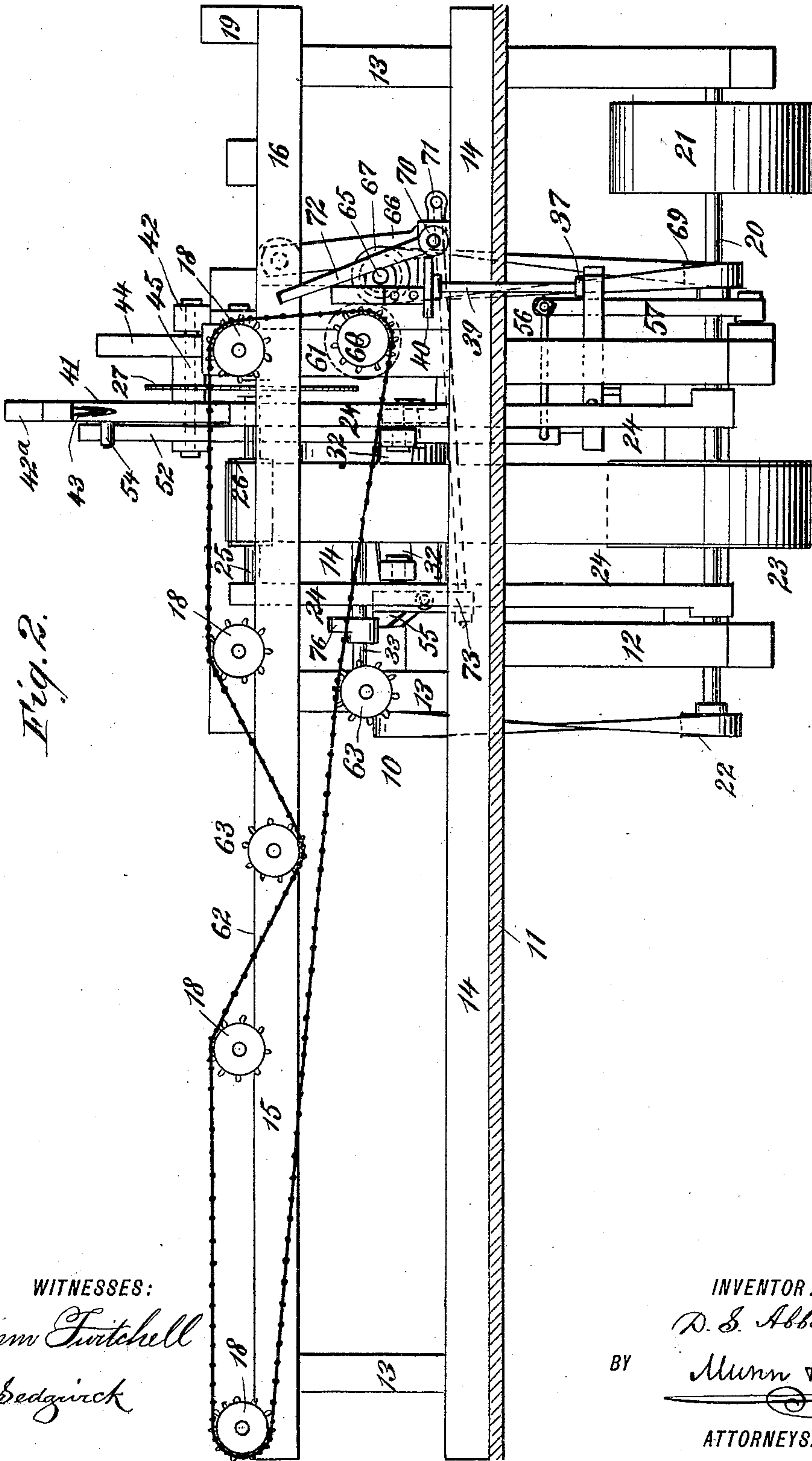
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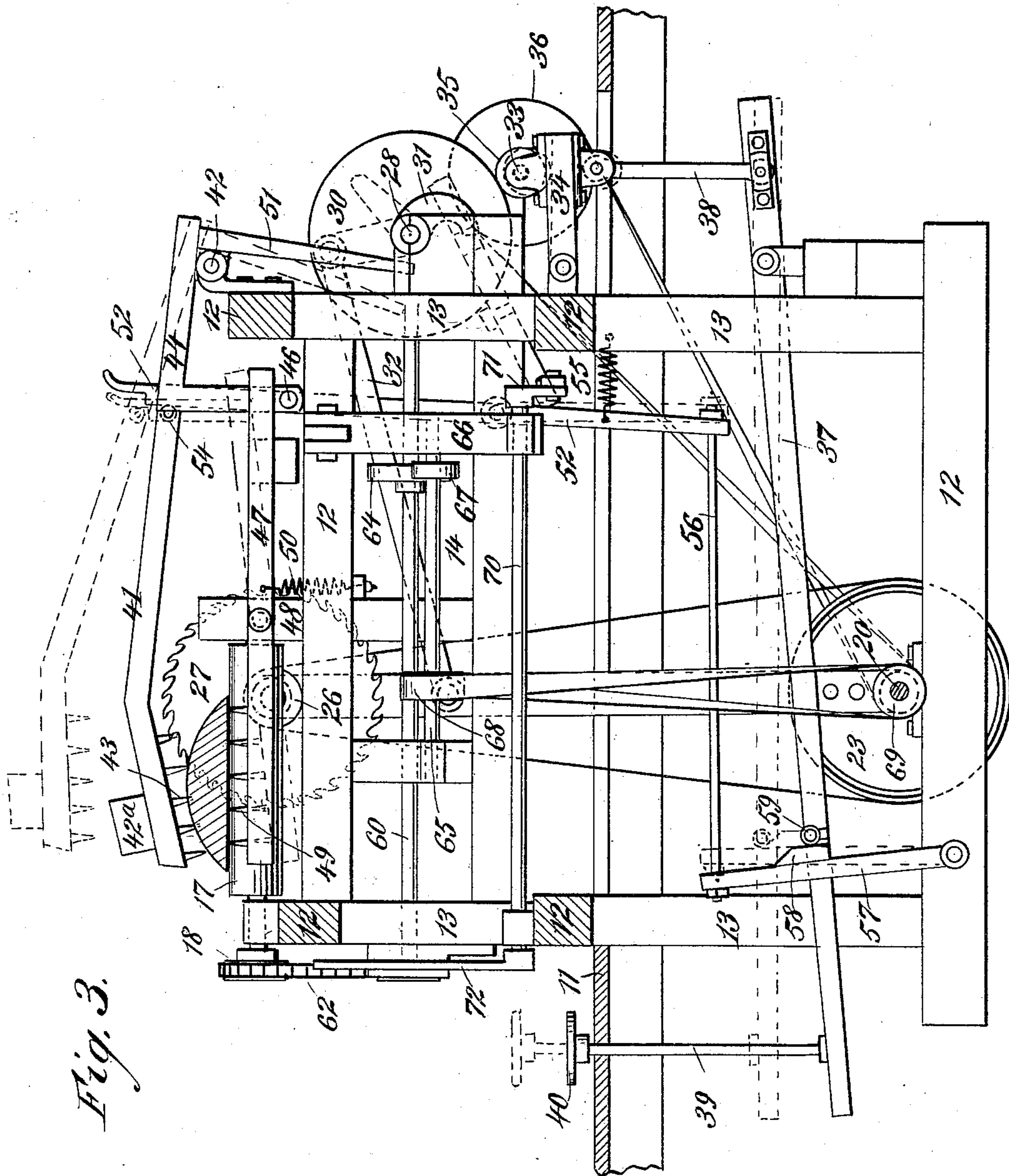


Fig. 3.

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UNITED STATES PATENT OFFICE.

DAVID S. ABBOTT, OF OLEAN, NEW YORK.

SLAB-SAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 410,777, dated September 10, 1889.

Application filed October 18, 1888. Serial No. 288,438. (No model.)

To all whom it may concern:

Be it known that I, DAVID S. ABBOTT, of Olean, in the county of Cattaraugus and State of New York, have invented a new and Improved Slab-Sawing Machine, of which the following is a full, clear, and exact description.

My invention relates to an improvement in slab-sawing machines, commonly known as "slab-slashers," and has for its object to provide a machine in which the material will be automatically fed to the saw for each successive cut; and a further object of the invention is to provide a means whereby the slab will be automatically prevented from feeding lengthwise while the saw is in the cut; and the object of the invention is also to provide a means for holding the slab stationary while being cut and means for releasing the slab to be fed forward for another cut.

The invention consists in the construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the machine. Fig. 2 is a side elevation, and Fig. 3 is a partly sectional end elevation of the machine.

In carrying out the invention the frame 10 is adapted to extend partially below the floor-line 11, and consists of a series of cross-beams 12 and vertical standards 13, bolted or otherwise secured together to form a rectangular open body 14, from the sides of which body at the front horizontal wings 15 and 16 are respectively projected, supported in any approved manner. The wing 15, adapted to receive the material to be cut, is longer than the wing 16, and is provided at intervals in its length with transverse carrying-rollers 17, having secured to their forward extremity a sprocket-wheel 18. The shorter wing 16 is also provided with a carrying roller or rollers having a sprocket-wheel attached thereto, and at the extremity of the said wing 16 a transverse bumper-beam 19 is secured, as best shown in Fig. 1.

In the base-beams of the body-frame, parallel

with the axis of the wings, a drive-shaft 20 is journaled, provided at one projecting end with a drive-pulley 21, and at the other extremity with a small pulley 22. A large pulley 23 is also keyed or otherwise attached to the drive-shaft, aligning the center of the main frame. A saw-frame is pivoted upon the drive-shaft, consisting of two perpendicular standards 24, through the lower end of which the main shaft passes, having journaled in their upper ends a short shaft 25, having secured thereto between the standards a pulley 26, belted to the pulley 23, and a circular saw 27, fixed upon the outer end contiguous to the short wing 16, as best shown in Fig. 1. The saw is adapted to be carried by the swinging frame on or near a radial line from the main shaft. Thus the belt connecting the frame and main shaft is kept at nearly the same tension while the saw is being fed to the material.

At the rear of the body-frame, near the top, a shaft 28 is journaled, provided with a central crank-arm 29, a large friction-pulley 30, secured thereto at one side of the crank-arm, and an essentially hook-shaped cam 31, keyed thereto near said friction-pulley, as best shown in Fig. 3. Both ends of the crank-shaft 28 are journaled in fixed bearings.

The swinging saw-frame is reciprocated from the crank-shaft by means of a forked pitman 32, the rear or straight one of which is loosely mounted upon the crank-arm of the shaft 28, the members of the bifurcated end being pivoted, respectively, to the several standards 24 of the swinging frame, as best shown in Figs. 1 and 2.

Below and to the rear of the crank-shaft 28 a parallel straight shaft 33 is journaled, one end of the said shaft being held to revolve in fixed bearings projected from the body-frame and the other end in a movable bearing 34, consisting of a horizontal beam pivoted to the body-frame, as best illustrated in Fig. 3.

Upon the adjustable shaft 33 a small friction-pulley 35 is fixed, adapted for frictional contact with the larger friction-pulley 30 upon the crank-shaft. The adjustable shaft 33 is also provided at one end with a pulley 36, belted to the drive or main shaft pulley 22. It will thus be observed that the saw-frame

is actuated only when the friction-pulleys 30 and 35 are brought in contact.

The two friction-pulleys are normally out of contact and are brought together by the manipulation of a lever 37, fulcrumed beneath the floor-line upon the body-frame, as best shown in Fig. 3. The lever 37 extends beyond the body-frame at front and rear, being connected at the rear end with the adjustable shaft-bearing 34 by a link 38, and provided at the forward end with an attached rod 39, projecting upward through the floor, terminating in a foot-plate 40.

A clamping arm or dog 41 is pivoted in lugs 42, integral with the upper portion of the body-frame at one side of the rear, consisting of an arm extending forwardly over the body-frame to the left of the saw, provided with a weight 42^a at the top of the forward end and a series of teeth 43 upon the under side, purposed to engage with the slab, as shown in Fig. 3. The forward end of the dog 41 may be bent, if desired, to readily grasp a circular contour.

To the rear of the dog 41, at the pivotal point, an angle-bar 44 is attached through the medium of a cross-bar 45, or the said cross-bar and angled bar may be integral with the dog. The horizontal member of the bar is parallel with the dog, and the vertical member of the bar extending downward within the body-frame is provided at the extremity upon one side with a horizontal pin 46. The pin 46 is adapted for contact with the rear end of a lower dog 47, fulcrumed at or near the center upon a vertical standard 48, constituting a portion of the body-frame, as best shown in Fig. 3. The lower dog, which is to the right of the saw, is straight and provided at the forward end with attached teeth 49, purposed to engage with the under side of the slab.

To the rear of the pivotal point a spring 50 is attached to the lower dog and also to the frame, the spring serving the same purpose as the weight upon the upper dog—namely, to keep the dogs in contact with the slab until purposely disengaged.

The two dogs are actuated from the crank-shaft 28. This is effected by the hook-cam 31 lifting and remaining a predetermined time in contact with a vertical finger 51, projected downward from the rear end of the upper dog, as best shown in Fig. 3. The position of the cam 31 upon the crank-shaft 28 is so calculated as that it will hold the dogs disengaged from the slab through the medium of the finger 51 while the crank-arm 29 is in its backward throw and the saw traveling from and toward the slab. When, however, the slab has traveled forward for another cut and just previous to the saw entering the same, the cam releases the finger and the dogs again resume their normal position.

To prevent the crank-shaft 28 by any possibility from carrying the cam 31 far enough to relieve the dogs before the slab is carried

forward for the next cut, a safety-latch 52 is provided, consisting of a vertical bar recessed at the upper end to receive a pin 54 upon the upper dog, as shown in positive lines, Fig. 2, and dotted lines, Fig. 3.

The rod is normally held in engagement with the pin 54 by a spring 55, and the lower end of the latch 52 is connected by a bar 56 with one end of a lever 57, pivoted to the base of the body-frame, as best shown in Fig. 3, the said lever being provided with a lug 58 upon one side, having an inclined upper end, which lug is adapted for engagement with a pin 59, secured to the foot-lever 37.

As aforesaid, the latch-rod 52 engages with the pin 54 at all times, and when the upper dog is elevated the recess in the latch-bar receives the pin and holds the dogs in an open position. The dogs are not released until the foot-lever 37 is depressed to throw the friction-rollers 30 and 35 in contact when the pin 59 is brought in engagement with the lug 58, which, carrying the lever 57 forward, presses the latch-bar backward, causing it to assume the position illustrated in positive lines, Fig. 3, whereby the dogs are permitted to approach one another.

A shaft 60 is journaled in the body-frame at the right-hand side, extending from front to rear, from which the carrying-rolls 17 are driven, which shaft is provided upon the forward extremity with a sprocket-wheel 61, the sprocket-wheel 61 and likewise the sprocket-wheels of the carrying-rollers being purposed to engage with an endless chain belt 62, the said chain belts engaging also with one or more idlers 63, as best shown in Fig. 2. At or near the rear end the shaft 62 is provided with a friction-pulley 64.

A second shaft 65, parallel with the shaft 62, is journaled in fixed bearings at the forward end, the rear end being journaled in a pendent beam 66, pivoted to the body-frame. This second shaft 65, which is adjustable, is provided with a friction-pulley 67, purposed to engage with the similar pulley 64, and an ordinary pulley 68, belted to a pulley 69, secured to the drive-shaft 20, as shown in Fig. 3.

In the lower end of the adjustable bearing-beam 66 and likewise in the frame of the wing 16 an adjusting-shaft 70 is held to revolve, provided with a crank-arm 71 at the rear end and a lever 72 at the forward end. The crank-arm 71 is united with the forward end of an essentially-vertical lever 73, pivoted at the rear of the body-frame by a connecting-rod 74, as shown in Fig. 1, to which lever a lug 75 is secured, adapted for time contact with a finger 76, rigidly secured to the shaft 28. The movement of the finger 76 is so timed that it will engage with the lever 73 just as the saw recedes from the cut and set the carrying-rollers in motion to carry the slab onward for another cut. This is accomplished by the lever 72 being turned to the left, as shown in Fig. 1, by the horizontal le-

ver 73 engaging with the finger 76, whereupon, through the medium of the crank-arm 71 and the pivoted bearing-beam 66, the rotating shaft 65 is made to approach the shaft 62 until the friction-pulleys 64 and 67 are in contact.

If it is not advisable to have the slabs automatically delivered to the saw, the lever 72 is turned to the right or opposite to the position shown, whereupon the shaft 65 will be so far removed from the shaft 60 that the action of the finger 76 upon the lever 73 will not bring the two friction-pulleys 64 and 67 in engagement.

It will thus be observed by the aforesaid construction that, the slab being cut, it is automatically fed forward for another cut simultaneously with the withdrawal of the saw, and that as the saw is fed automatically forward for another cut dogs engage the slab and retain it in a fixed position. The slab being again cut, the saw recedes, the dogs disengage, and the slab is moved forward again.

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

1. The combination, with a body-frame, wings attached to the said frame, and carrying-rollers journaled in said wings, of a pivoted frame, a shaft journaled in the same, carrying a saw, a crank-shaft parallel with the saw-shaft, a pitman connecting the saw-frame and crank-shaft, an upper and lower toothed dog fulcrumed upon the body-frame, and means, substantially as shown and described, for rotating the crank-shaft and actuating the dogs from said crank-shaft, as and for the purpose specified.

2. The combination, with a body-frame, wings attached to said frame, carrying-rollers journaled in said wings, a pivoted frame, and a shaft journaled in the pivoted frame, carrying a saw, of a crank-shaft parallel with the saw-shaft, a pitman connecting the saw-frame and crank-shaft, an upper toothed dog fulcrumed upon the body-frame, provided with a finger at the extremity, a lower toothed dog, actuated by the upper dog, and an essentially hook-shaped cam secured to the crank-shaft capable of contact with the said finger, substantially as shown and described.

3. The combination, with the body-frame and the drive-shaft, a rocking frame, a shaft journaled in the rocking frame, carrying a saw, a crank-shaft parallel with the saw-shaft, provided with a friction-roller, and a pitman connecting the crank-shaft and rocking frame, of a shaft parallel with and beneath the crank-shaft, said shaft journaled at one end in a fixed bearing and in a swinging bearing at its other end, provided with a friction-roller aligning the friction-roller of the crank-shaft, said shaft belted to the drive-shaft, a lever fulcrumed in the body-frame, and a link connecting the swinging bearing and the lever, all arranged substantially as and for the purpose described.

4. The combination, with a body-frame and

the drive-shaft thereof, a rocking frame, a shaft journaled in the rocking frame, carrying a saw, a crank-shaft parallel with the saw-shaft provided with a friction-roller and a cam, and an adjustable shaft beneath the crank-shaft belted to the drive-shaft provided with a friction-roller aligning the friction-roller of the crank-shaft, of a lever linked to the adjustable shaft, an upper dog fulcrumed upon the body-frame provided with a downwardly-projecting finger, and a lower dog actuated from the upper dog, substantially as shown and described.

5. The combination, with a body-frame and the drive-shaft thereof, a saw frame rocking on the drive-shaft, a crank shaft connected with the rocking frame, an adjustable shaft parallel with the crank-shaft, having frictional contact therewith, and a lever controlling the adjustable shaft, of a cam secured to the crank-shaft, an upper and lower dog actuated by said cam, and a latch-bar controlling the dogs and connected with the said lever, substantially as shown and described.

6. The combination, with a body-frame and the drive-shaft thereof, wings projected from the body-frame, carrying-rollers journaled in said wings, a saw-frame rocking upon the drive-shaft, a crank-shaft connected with the saw-frame, an adjustable shaft having frictional contact with the crank-shaft, and a foot-lever controlling the adjustable shaft, of a cam secured to the crank-shaft, upper and lower dogs actuated by said cam, a latch-bar controlling the dogs and connected with the said lever, and means for actuating the carrying-rollers, substantially as shown and described, whereby the material is fed to the saw, the saw automatically fed to the material, and the material held from binding while being cut, as set forth.

7. The combination, with a body-frame and the drive-shaft thereof, wings projected from the body-frame, carrying-rollers journaled in said wings, a saw-frame rocking upon the drive-shaft, a crank-shaft connected with the saw-frame and provided with a fixed finger, and a connection between the crank-shaft and drive-shaft, substantially as described, of a shaft 60 at a right angle to the crank-shaft, an adjustable shaft 65 parallel with the shaft 60, having frictional contact therewith, a chain belt connecting shaft 60 and the carrying-rollers of the wings, an adjusting-shaft 70, provided with a crank-arm 71, a lever 73, engaging the finger of the crank-shaft, and a rod 74, connecting the lever and adjusting-shaft, all combined for operation substantially as shown and described.

8. In a slab-sawing machine, the combination, with the crank-shaft 28, journaled on the frame, the cam 31, mounted thereon, the pivotal frame having a saw journaled therein, and a pitman-connection between crank-shaft and saw-frame, of the dog 41, pivotally secured to the frame, its forward end projected over the slab to be cut and having at said end teeth

43, for engaging the slab, pin 54, projected laterally from the dog, and a finger 51, depending therefrom, adapted to engage the cam 31, the pivoted dog 47, having teeth 49, adapted to engage the lower surface of the slab, the angle-arm 44, having the pin 46, for engaging the dog 47, the latch-lever 52, for engaging the pin 54, a lever 57, having a lug 58, a rod 56, connecting said lever and the latch-lever 52, and the lever 37, having a pin 59, for engaging the lug 58, all arranged substantially as and for the purpose described.

9. In a slab-sawing machine, the combination, with the main shaft, the rocking frame 24, pivoted upon said shaft, a saw journaled in said frame, the crank-shaft 28, having a friction-pulley 30, and a pitman 32, connecting the saw-frame and crank-shaft, of the shaft 33, having a fixed bearing at one end and a swinging bearing 34 at its opposite end, the lever 37, fulcrumed in the main frame, and a link-connection 38 between said bearing and lever,

all arranged substantially as shown and described.

10. In a slab-sawing machine, the combination, with the main frame, the carrying-rollers mounted thereon, the shaft 60, journaled in the main frame and geared with the carrying-rollers, and the friction-pulley 64, mounted on the said shaft, of the shaft 65, the friction-pulley 67, mounted thereon, the beam 66, pivoted to the main frame and carrying one end of the shaft 65, the shaft 70, journaled in the main frame, having a crank-arm 71 and a handle 72, the shaft 28, provided with a cam 76, the lever 73, adapted to engage the cam 76, and a rod connecting the lever 73 and crank-arm 71, all arranged substantially as and for the purpose described.

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Witnesses:

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