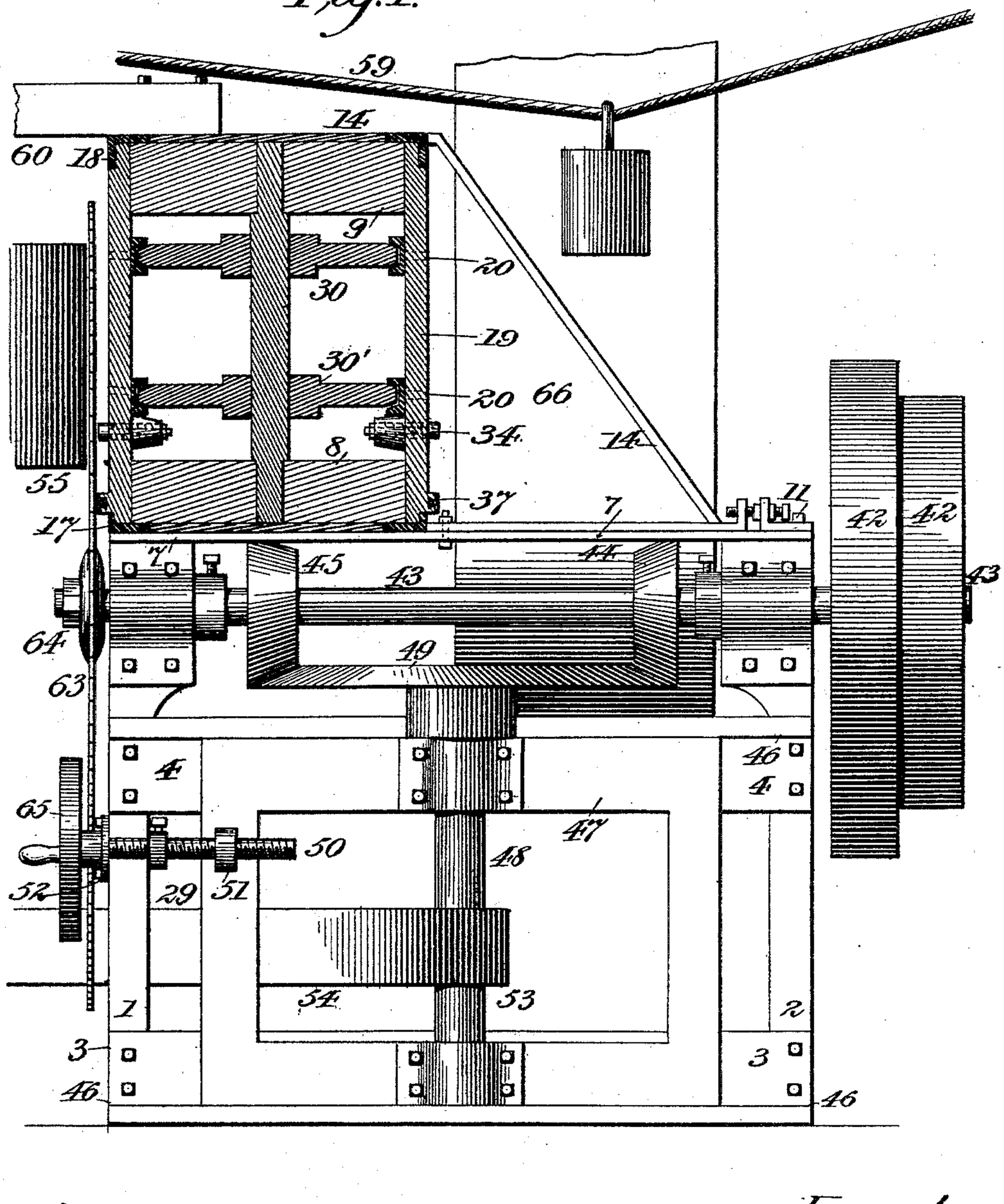
(No Model.) 4 Sheets—Sheet 1.

A. T. LINDERMAN.

SLAB SAWING MACHINE.

No. 411,922. Patented Oct. 1, 1889.

Fig. 1.



Witnesses.
Paul D. Hodges
H. A. Grant

Inventor.
Albert T. Linderman

(No Model.) 4 Sheets—Sheet 2.

A. T. LINDERMAN.

SLAB SAWING MACHINE.

No. 411,922. Patented Oct. 1, 1889.

Fig. 2.

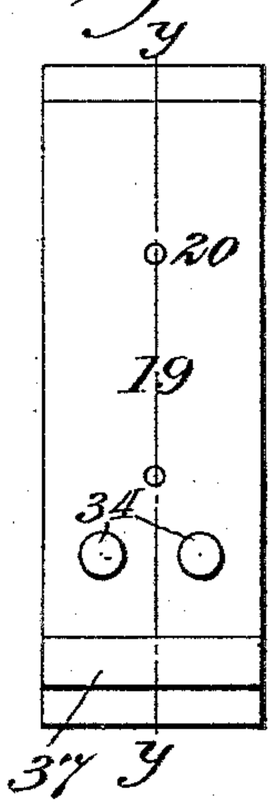


Fig. 3.

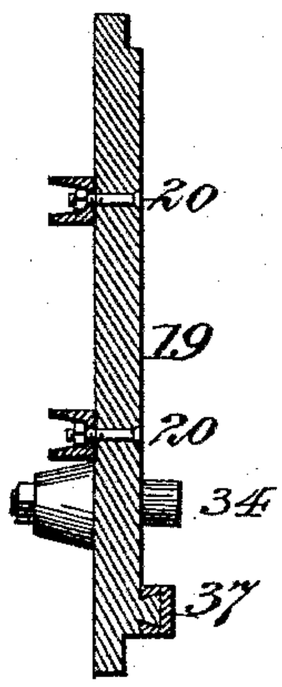
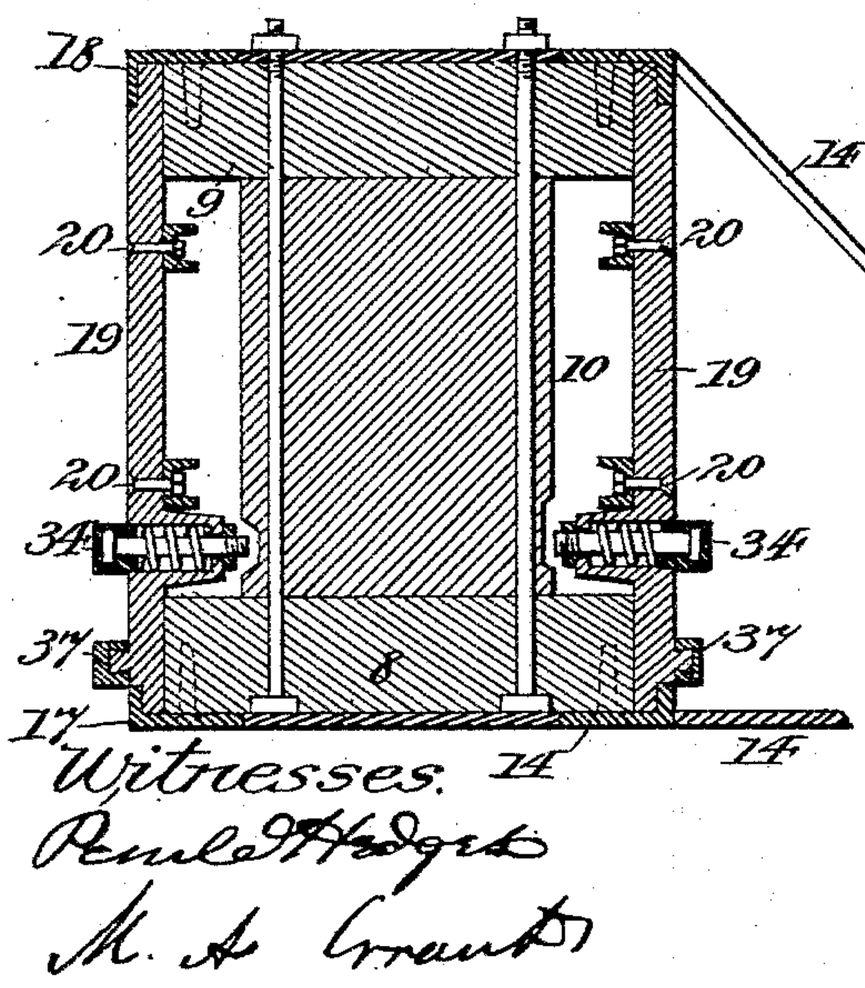


Fig. 7.

Fig. 4.



Witnesses.
Ronald Hodgkins
M. A. Grant Jr.

Inventor.
Albert T. Linderman

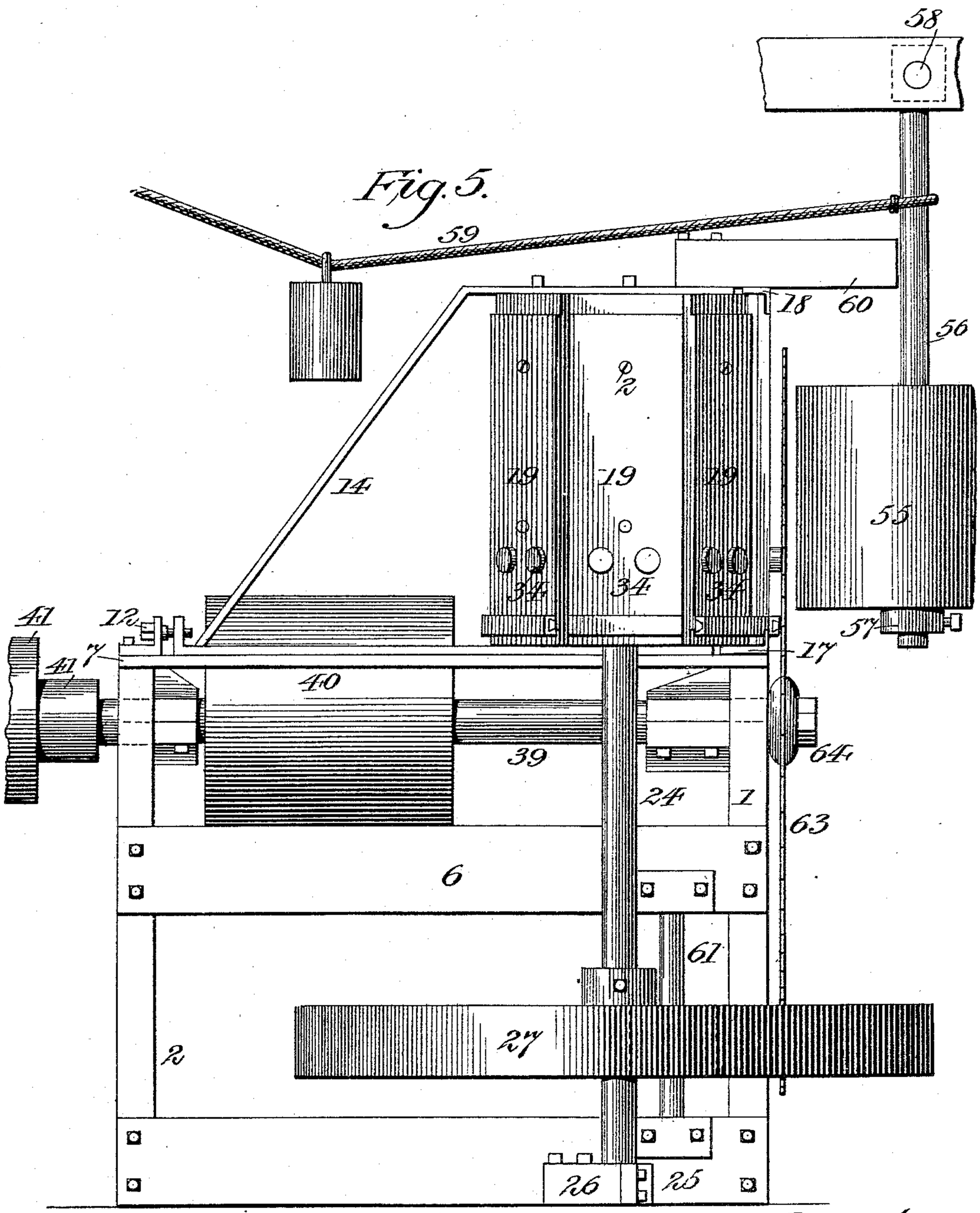
(No Model.) 4 Sheets—Sheet 3.

A. T. LINDERMAN.

SLAB SAWING MACHINE.

No. 411,922. Patented Oct. 1, 1889.

Fig. 5.



Witnesses.
Paul D. Hedgeth
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Albert T. Linderman

(No Model.)

4 Sheets—Sheet 4.

A. T. LINDERMAN.

SLAB SAWING MACHINE.

No. 411,922. Patented Oct. 1, 1889.

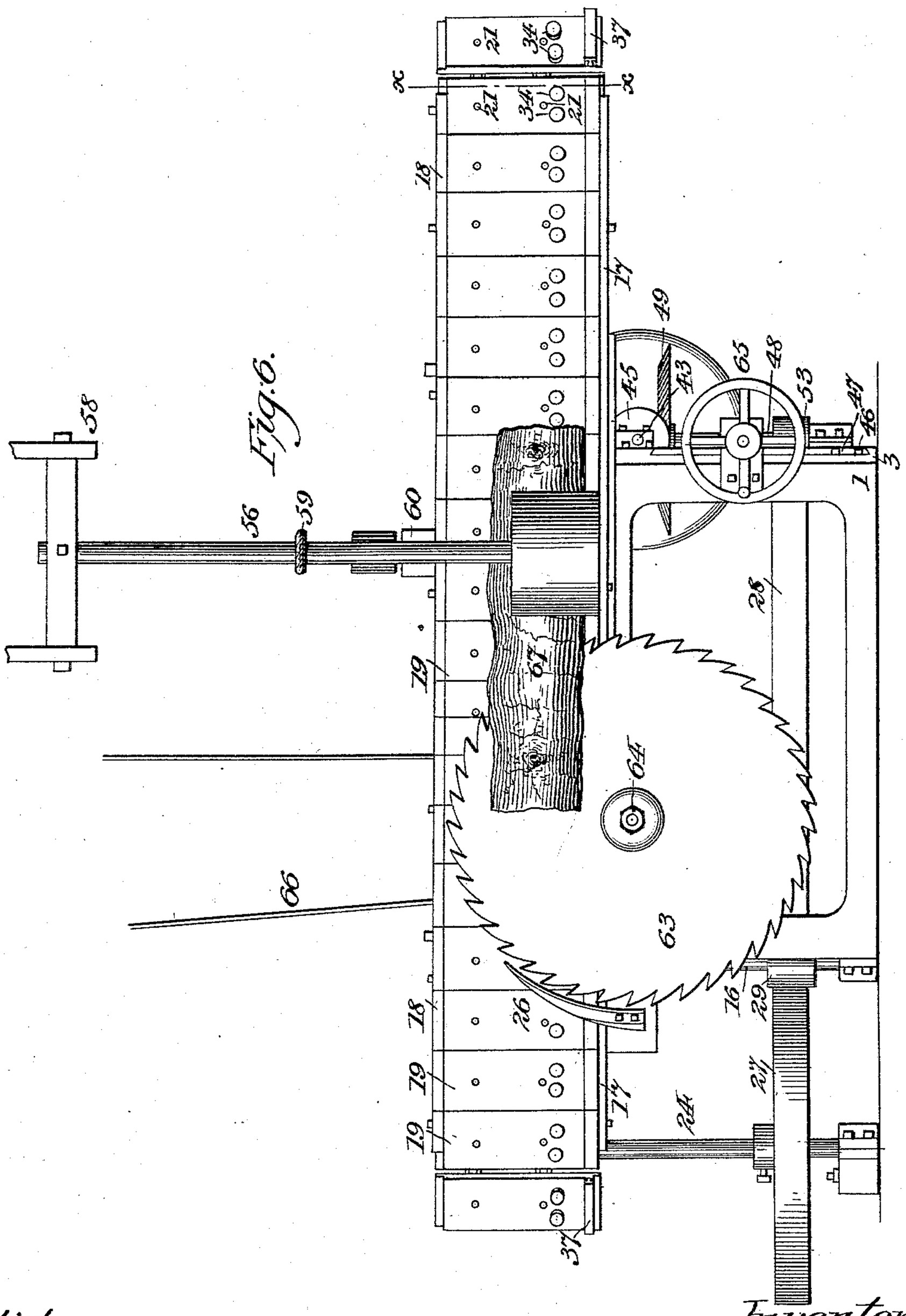

Fig. 6.

Witnesses.
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M. A. Grant.

Inventor:
Albert T. Linderman

UNITED STATES PATENT OFFICE.

ALBERT T. LINDERMAN, OF WHITEHALL, MICHIGAN.

SLAB-SAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 411,922, dated October 1, 1889.

Application filed February 12, 1887. Serial No. 227,451. (No model.)

To all whom it may concern:

Be it known that I, ALBERT T. LINDERMAN, a citizen of the United States, residing at Whitehall, in the county of Muskegon and State of Michigan, have invented a new and useful Improvement in Slab-Sawing Machines, of which the following is a specification.

My invention relates to improvements in machines for sawing slabs from lumber; and the object of my invention is to provide a machine to saw slabs that shall have a continuous feed, which feed is furnished by a succession of moving carriages past the saw, provision being made for stopping, advancing, or retreating the feed, and also for regulating the thickness of the lumber cut. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a rear end view of the body of the machine, the feed-works being sectional and drawn at the plane X X, Fig. 6. Fig. 2 is a plan view of a carriage-lag. Fig. 3 is a sectional side view of a carriage, drawn at the plane Y Y, Fig. 2, this carriage being provided with "spurs" instead of "dogs." Fig. 4 is a sectional end view of the feed-works, drawn at the plane Z Z, Fig. 7. Fig. 5 is a front end view of the machine. Fig. 6 is a front view of the same. Fig. 7 is a plan or top view of the machine.

Similar reference-numbers refer to like parts throughout the several views.

The cast-iron side frames 1 and 2, fastened together by the four cross-girders 3 4 5 6, constitute the frame of the machine, to which the table or top 7 is firmly bolted.

The frame of the feed-works consists of the sill 8 and plate 9, bolted together, the bolts passing through the separating-posts 10. This feed-works frame is fastened adjustably to the table 7 by bolts 11 and 12, these bolts being used for adjusting the feed-works to regulate the thickness of the lumber cut, additional bolts 15 and 16 being used to fasten the frame when adjusted. The angle-irons 17 and 18 are firmly screwed to the feed-works frame and furnish a guide for the top and bottom, respectively, of the carriages or lags 19, the edges of the sill 8 and plate 9 being preferably faced with a metal strap to form the guide and support to the back of the carriages. The endless feed-chain, to which these carriages are attached by means of the bolts 20, is driven by the sprocket-wheel 22, Fig. 7, and a like one below it (not shown) on the same shaft, which drives the lower endless feed-chain, and is also attached to the carriages along their lower ends by bolts 20, shaft 24, which turns these driving sprocket-wheels, being journaled to the end of the feed-works frame above and supported below by the box 25, attached to sill 26, sill 26 being adjustably fastened to the floor, so that it can be varied according as the feed-works frame is changed to cut different thicknesses of lumber. Where only slight changes are made in the feed-works frame, no change in this sill 26 need be made. Shaft 24 is turned by pulley 27, which is driven by belt 28, the idler 29 serving to clear it from contact with the leg of the machine.

The idler sprocket-wheel 30, Fig. 7, and a similar one below it (not shown) are carried by a short shaft which is journaled in bearings to the end of the bottom sill 8 and top plate 9 by boxes which are separated from the ends of the sill and plate by the wedged bushing 33 to take up the slack in the endless feed-chain and keep it taut. These boxes are fastened to the frame of the feed-works by long bolts with nuts inserted in slots 32, Fig. 7, and similar nuts, bolts, and slots in the sill below. (Not shown.)

It is desirable that the dogs 34 should have a soft-metal face to prevent injury to the saw in case it should "run," and thus strike them. I therefore prepare a mold of the proper shape, and, inserting the head of the bolt in it, cast a soft-metal head upon and about the head of the bolt that will fit loosely in the hole in the carriage made to receive it. The soft metal should reach far enough below the head of the bolt to well cover it up to about one-third of the bolt's length. Back of this soft-metal head, and between it and the bottom of the well in the carriage in which the dog 34 plays, a light spiral spring is coiled about the bolt, having a tendency to throw the bolt out of the well, this being prevented by a nut on the outer end of the bolt. By means of this nut the distance which the dog protrudes beyond the face of the carriage may be regulated. I also cast a soft-metal face upon the bracket 37 to prevent injury to the saw in case of con-

tact with it. I find it to be a convenient and substantial way to cast upon the carriage a boss with a dovetailed tongue on it to hold the soft-metal face firmly to the carriage. I use suitable attachments found in the "link belt" of commerce to fasten to the carriage with the bolt 20. These attachments are then united to like attachments upon the adjoining carriage by the common links, and thus form an endless feed-chain for moving the carriages.

The saw-arbor 39 is hung or journaled in boxes on the side frames 1 and 2, having caps on their under side, thus allowing for the removal of the arbor 39 from below without raising the feed-works. This arrangement also leaves the table-plate 7 with an unbroken top surface, which allows the feed-works frame to be set lower than if this were not the case.

The pulley 40 drives the saw-arbor from a belt 66 from above, suitably connected to the power that drives the machine. The cone-pulley 41 upon the saw-arbor overhangs the frame of the machine and drives the feed-works of the machine by a belt to cone-pulley 42, which turns shaft 43. Upon this shaft are bevel friction-wheels 44 and 45. Sliding in ways 46 is the jacket 47, upon which, in suitable bearings, turns the shaft 48, upon the top of which shaft is fastened the bevel friction-wheel 49. The screw 60, turning in the threaded nuts 51 at one end and in the bracket 52 at the other end, operates to slide the jacket 47 in the ways 46, and with it the bevel friction-wheel 49, to or from either driving bevel friction-wheel 44 or 45, or in the space between, touching neither. Hence, according as the screw 50 be turned, the shaft 48 will turn either way or remain idle. By means of a belt 28 from pulley 53 this movement is imparted to pulley 27, and by said pulley to the feed-works of the machine.

The presser-wheel 55 is hung loosely upon the shaft 56, upon which it turns, collar 57 holding it in place. The upper end of this shaft is fastened to gudgeons 58, which turn in cross-timbers above, as shown in Fig. 5. One end of a weighted rope 59 being attached to the shaft 56, and the other end to timbers above, (not shown,) causes a constant pressure toward the feed-works to be exerted upon the presser-wheel 55. To prevent its actual contact with the feed-works, the block 60 is bolted to the plate of the feed-works, the arrangement allowing the presser-wheel to conform to the uneven surface of the slab and yet exert a constant pressure against it.

Shaft 61 is journaled in bearings on girders 5 and 6. Upon this shaft is the idler 29. This idler prevents contact of the belt 54 with the frame of the machine. The spreader 62 is bolted to a bracket upon the frame of the machine and serves to spread the slab from the piece of lumber that has been cut from it, thereby preventing either from coming into contact with the heel of the saw, and performs the further office of keeping the lumber in place upon the carriages, where it is supported and carried until it has passed the saw. The slab meanwhile drops as soon as the saw has cut through it. Thus the slab is left near the feeder of the machine, handy to be put through again, if necessary, and the lumber carried well back out of the way and is separated from the slabs. The saw 63 is fastened between two collars upon the saw-arbor by the nut 64. The hand-wheel 65 serves to easily operate the screw 50.

To operate my machine, a man or smart boy, if the slabs be not too heavy, stands near the hand-wheel 65, Fig. 6, which he turns, thus starting the feed-works, sending the carriages 19 from him toward the saw. He then lays the flat side of the slab 67 to the carriages, resting its lower edge upon the brackets 37, and presses the slab well up against the carriages, which serves to press into their recesses all of the dogs 34 that are behind the slab. The flat side of the slab will now lie flat against the face of the carriages. The slab will ride along until it reaches the presser-wheel 55, the resistance of which may cause the slab to stop. It may then slide upon the staves as they pass until the first dog not pressed back by the face of the slab comes in contact with the end of the slab. This dog will drive the slab before it, the slab raising the presser-wheel, which then keeps the slab in place against the face of the carriages. The operator can now release the slab and pick up another ready to follow it. A boy stands back of the saw and takes away the lumber, or it may be allowed to drop on a table. After the board has been cut from the slab the slab drops on the floor, or, preferably, a table placed for this purpose on the outside of the saw, and if the part of the slab which thus falls off be thick enough the sawyer picks it up and again puts it through the machine until it is cut up. If for any reason it is desired to back the slab out of the machine, the sawyer turns the hand-wheel the proper way and the feed-works are reversed, the first free dog at the front end of the slab driving the slab back before it.

The adjustment of the feed-works by the bolts 11 and 12 is of course necessary to give the lumber the desired thickness.

By placing the carriages above the line where the power is applied to drive the saw the pull of the saw-teeth is down in cutting, and thereby the slab is held down firmly against the supporting-foot of the carriage. The added pressure thus given to the supporting-edge of the slab against the foot of the carriage assists by friction to hold the slab from a liability to slip on the carriage-foot any more when the slab is driven into the cut of the saw than when simply riding along out of cut. This principle will equally obtain whether a circular or band saw be used.

An advantage possessed by my machine over other similar machines is that it provides

a nearly-continuous feed, the saw being in cut nearly all of the time. Other machines for sawing slabs have been used in which the slab was placed on a carriage, which, by moving a hand-lever, fed past the saw, another movement of the lever gigging the carriage back, the constant attention of the sawyer and occupancy of the carriage being employed by the slab while it was being sawed and gigged. This retards the cut fully one-half.

I am also aware that prior to my invention slab-sawing machines have been used having a continuous roller-feed. These rollers were necessarily in front of the saw, and do not sufficiently support a short, knotty, and uneven slab while it is being cut.

Carriages upon the outside of the saw have been used, and I do not claim the carriage moving past the saw upon the outside. I do not know of a succession of carriages which furnish within themselves the gage of the thickness of the lumber cut having been heretofore used to travel on the inside or back side of the saw—that is, on the side of the saw next to its driving-pulley.

I do not wish to confine myself to any particular style or kind of dog to be used upon carriages 19. In fact, I find that spurs of sharpened steel wire set in the face of the carriages, as shown in Fig. 3, answer in the majority of cases to carry the slab along with the carriages. In case, however, the slabs are icy or very hard and these spurs do not hold, the first dog that comes along drives the slab before it, and I have found it practical to put dogs in only a portion of the carriages and spurs in the others.

I am aware of the construction shown in patent to Hull, No. 13,354, and disclaim the same.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a slab-sawing machine, the combination, with a saw for sawing the slabs, of an endless-chain system of carriages for carrying the slabs, means for regulating the space between the carriages and the saw, whereby the thickness of the lumber cut from the slab is regulated, wood or soft-metal faced supports upon the carriages for supporting the slabs, wood or soft-metal faced receding dogs in the carriages for dogging the end of the slab, whereby it is driven along with the carriages, a reciprocating presser-wheel ahead of the saw for holding the slab against the carriages, and suitable mechanism for stopping, starting, or reversing the feed of the carriages, substantially as set forth.

2. In slab-sawing machines, the combination, with a saw for sawing the slabs, of a moving endless-chain system of carriages provided with receding dogs which recess in the carriages when covered by the slab, but become operative to dog the end of the slab when not so covered, whereby the slab is driven with the carriages, substantially as shown and described.

3. In slab-sawing machines, the combination, with a saw for sawing the slabs, of an endless-chain system of moving carriages provided with wood or soft-metal faced feet for supporting and carrying the slab while it is being cut, means for changing and regulating the distance of the travel of the moving carriages from the saw, whereby the thickness of the lumber cut from the slab is regulated, and a presser-wheel for holding the slab in position on the carriages, as set forth.

4. In the moving endless-chain system of carriages for slab-sawing machines, a carriage provided with wood or soft-metal faced receding dogs for driving the slabs, whereby contact of the saw-teeth with said dogs is rendered harmless to the saw-teeth, substantially as shown and described.

5. In the moving endless-chain system of carriages for slab-sawing machines, a carriage provided with a wood or soft-metal faced foot for supporting the slab, whereby contact of the saw-teeth with said foot is rendered harmless to the teeth of the saw, substantially as shown and described.

6. The combination, in a machine for sawing slabs, of a saw for sawing the slabs, an endless-chain system of moving carriages for carrying the slab, means for regulating the distance evenly of the carriages from the saw, whereby the thickness of the lumber cut is regulated, and the presser-wheel 55, arranged to operate in holding the slab to the carriages where they are regulated, substantially as set forth.

7. The machine for sawing slabs, consisting, essentially, of a vertical circular saw, a vertical flat-surfaced endless carrier moving parallel to the plane of the saw and provided with a bottom support for the slab, and dogs for dogging it at its rear end, and a presser-wheel adapted to act upon the rough side of the slab, substantially as set forth.

ALBERT T. LINDERMAN.

Witnesses:
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