No. 707,184. Patented Aug. 19, 1902.

E. E. THOMAS.

TWIN SAW SLABBING MACHINE.

(Application filed Apr. 7, 1902.)

(No Model.) 6 Sheets—Sheet 1.

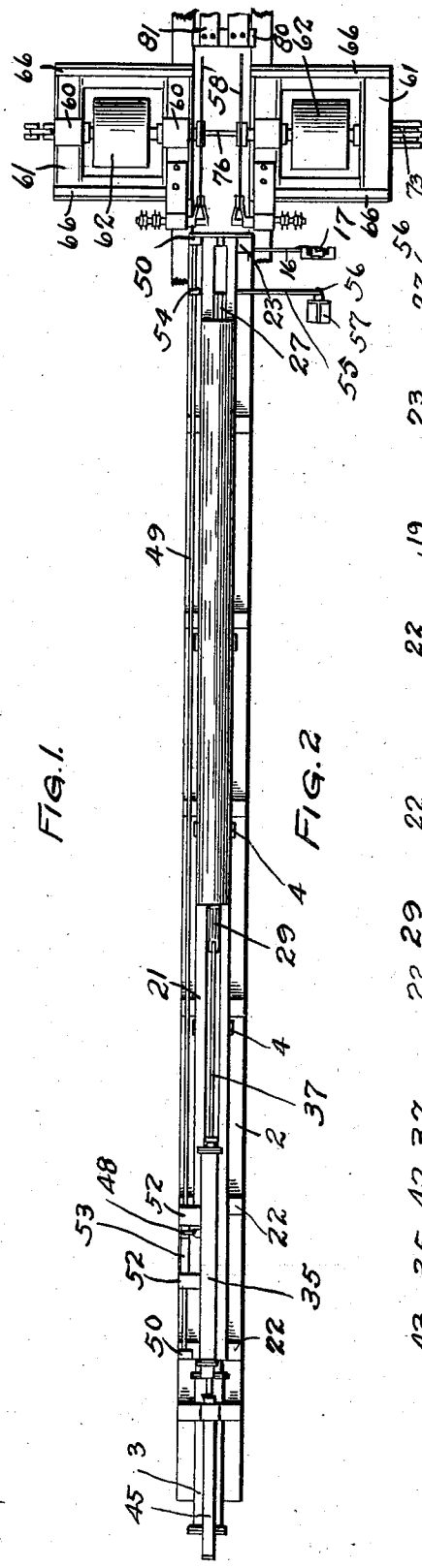


FIG. 1.

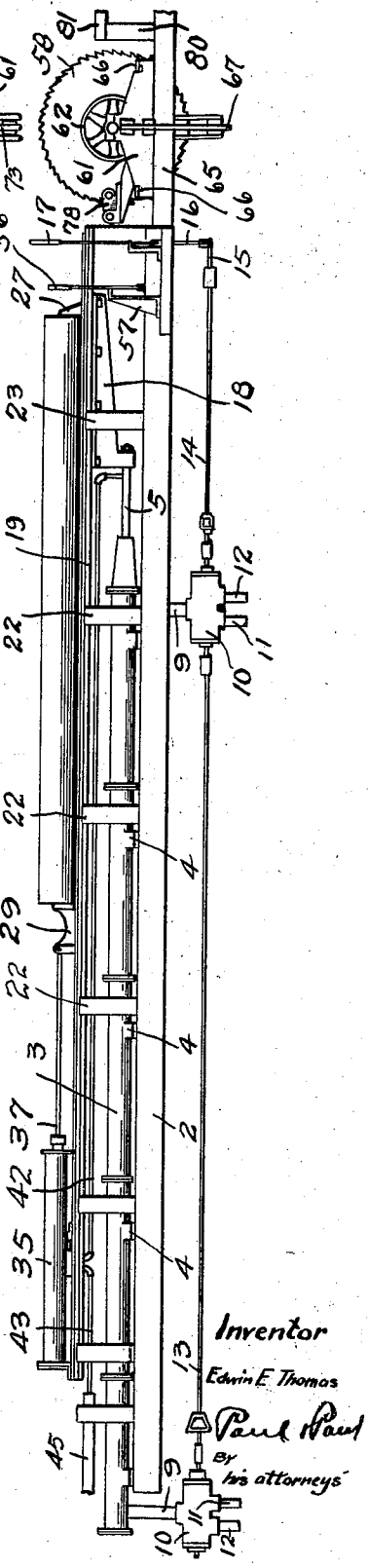


FIG. 2.

Witnesses
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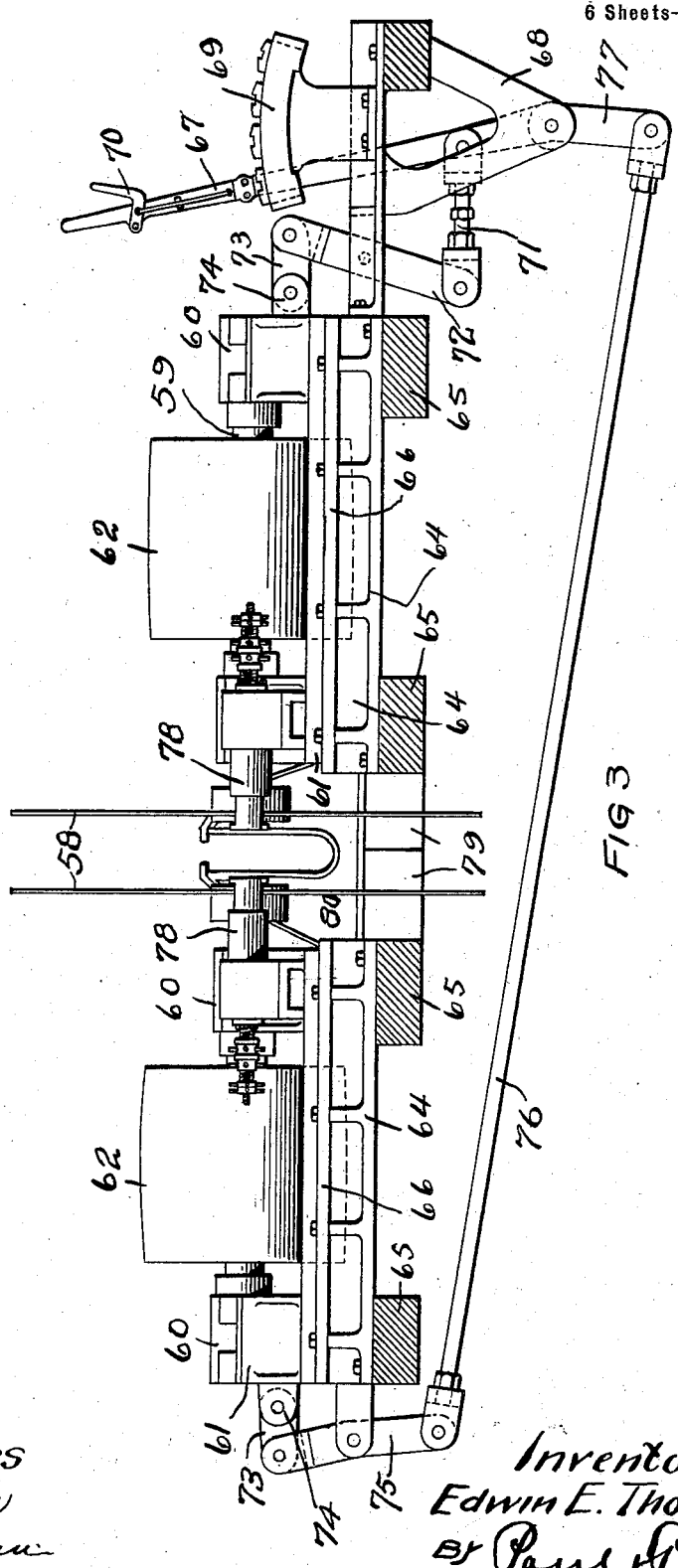


FIG 3

Witnesses
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(No Model.) 6 Sheets—Sheet 3.

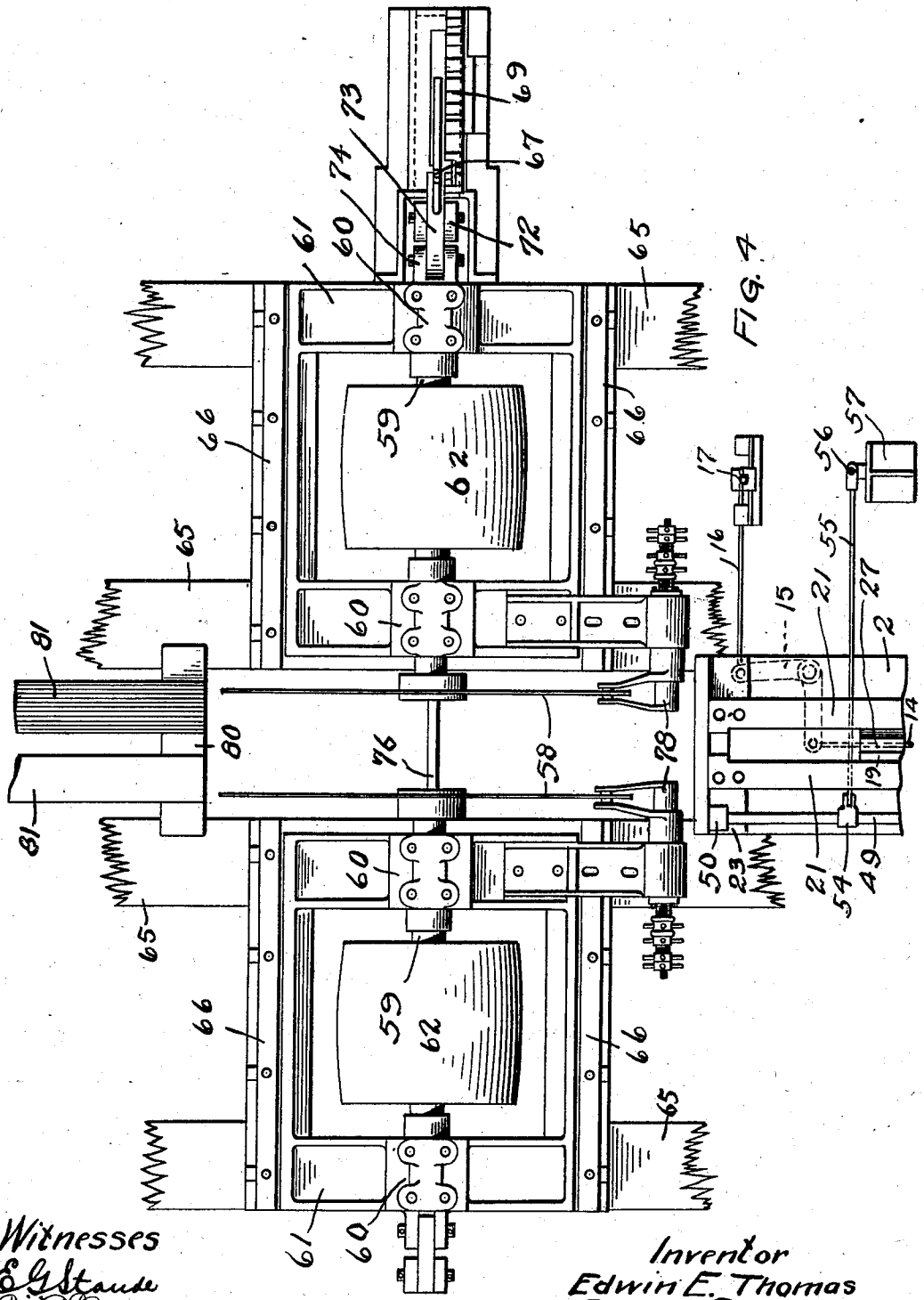


FIG. 4

Witnesses
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(Application filed Apr. 7, 1902.)

(No Model.) 6 Sheets—Sheet 4.

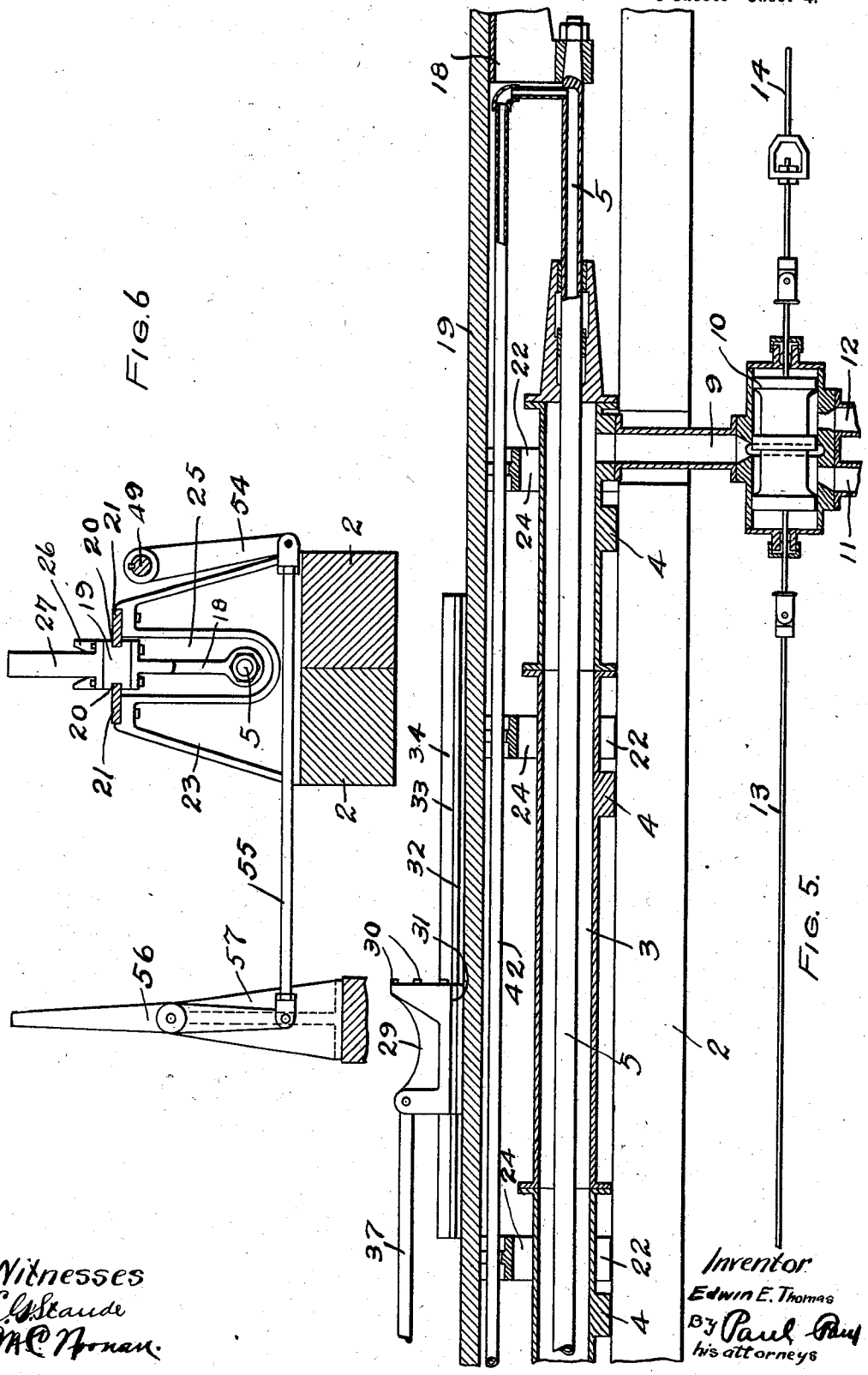


FIG. 6.

FIG. 5.

Witnesses
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(Application filed Apr. 7, 1902.)

(No Model.) 6 Sheets—Sheet 5.

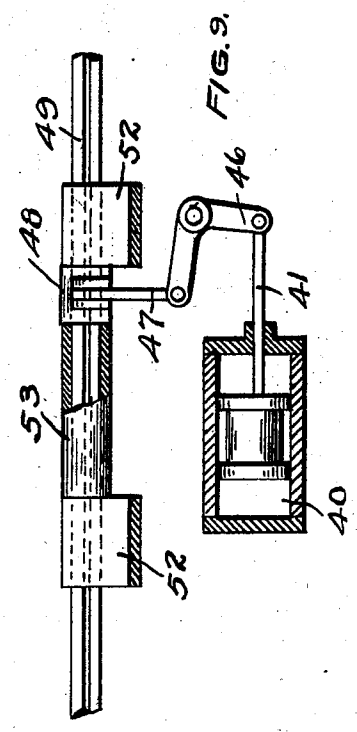


FIG. 9.

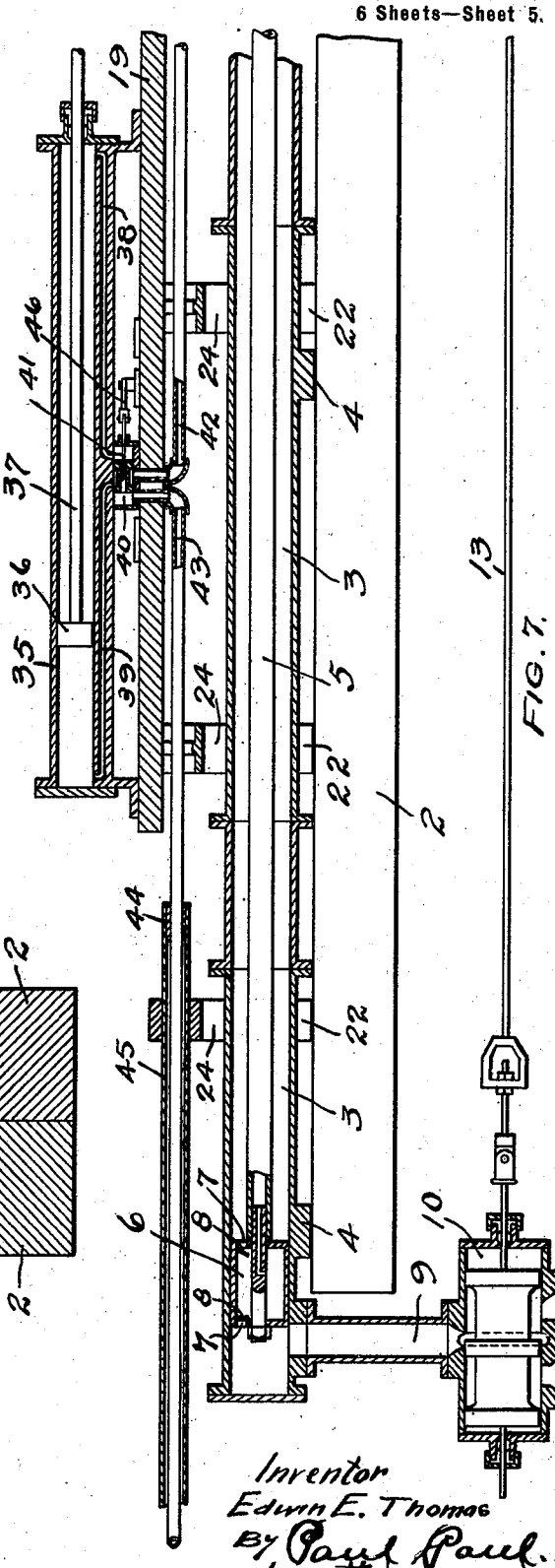


FIG. 7.

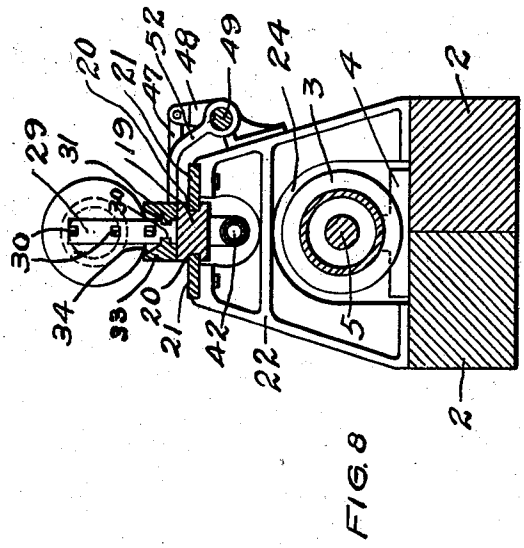


FIG. 8.

Witnesses
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TWIN SAW SLABBING MACHINE.

(Application filed Apr. 7, 1902.)

(No Model.) 6 Sheets—Sheet 6.

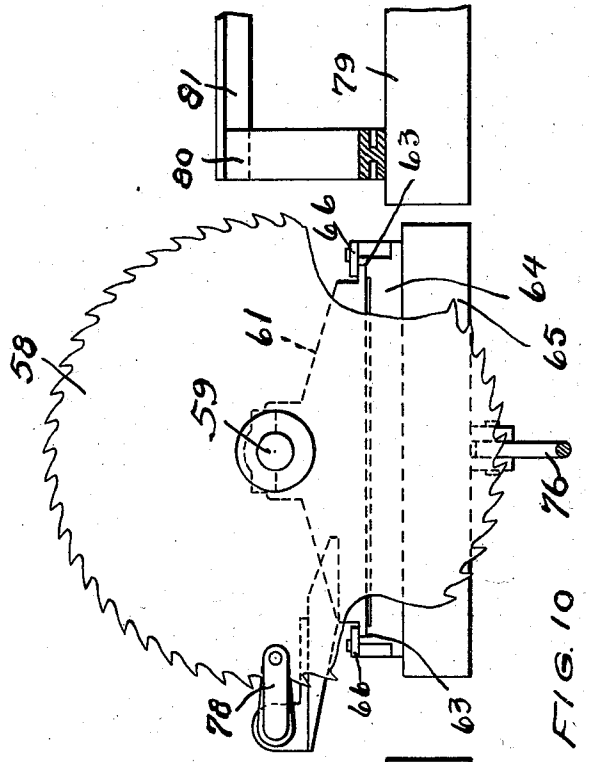


FIG. 10

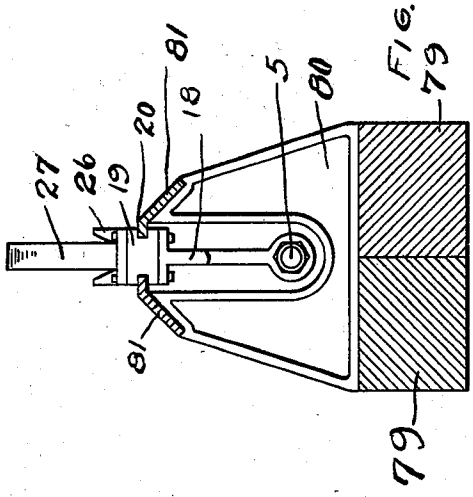
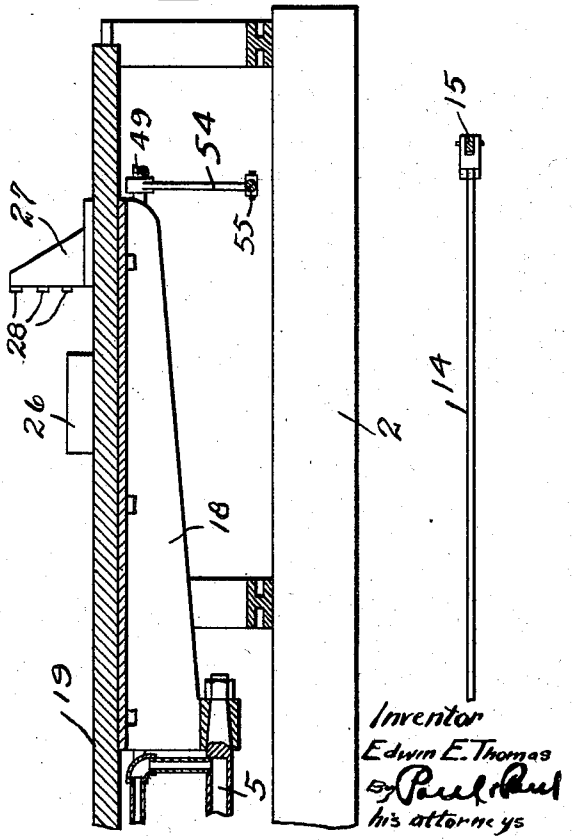


FIG. 11



Witnesses
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UNITED STATES PATENT OFFICE.

EDWIN E. THOMAS, OF ST. PAUL, MINNESOTA, ASSIGNOR OF ONE-HALF TO UNION IRON WORKS, OF MINNEAPOLIS, MINNESOTA, A CORPORATION OF MINNESOTA.

TWIN-SAW SLABBING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 707,184, dated August 19, 1902.

Application filed April 7, 1902. Serial No. 101,665. (No model.)

To all whom it may concern:

Be it known that I, EDWIN E. THOMAS, of St. Paul, Ramsey county, Minnesota, have invented certain new and useful Improvements in Twin-Saw Slabbing-Machines, of which the following is a specification.

My invention relates to saw-mill machinery; and the primary object of the invention is to provide a slabbing-machine having a much greater capacity than any of the machines of this character now in use and one that is particularly adapted for slabbing small logs.

A further object is to provide a machine of simple but strong and durable construction and one that can be readily handled by two men, one to control the movement of the carriage and the log-dogs and the other to regulate the set of the saws.

A further object is to provide a machine in which a log can be rapidly "gigged" back and again carried past the saws to remove a board or boards when the "cant" is not of the proper dimensions to be sent directly to the gang after slabbing.

The invention consists generally in various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a plan view of a log-slabbing machine embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 is an end view showing the position of the saws with respect to the carriage-guideway. Fig. 4 is a plan view of the saws and their operating mechanism. Fig. 5 is a longitudinal section of the forward end of the steam feed-cylinder and the log-carriage and the forward sawyer's valve. Fig. 6 is a transverse section of the log-carriage and the guides therefor and one of the levers controlled by the sawyer. Fig. 7 is a view corresponding to Fig. 5 of the rear end of the steam feed-cylinder, the log-carriage, the mechanism for operating the locking-dog, and the rear sawyer's valve. Fig. 8 is a transverse section showing the position of the movable log-dog and its steam operating-cylinder in the rear of the same. Fig. 9 is a detail of the mechanism for operating the valve that admits steam to the cylinder that controls the moving log-dog. Fig. 10 is a section of the forward portion of the machine. Fig. 11 is a transverse section of the forward end of the log-carriage and its support.

In the drawings, 2 represents suitable timbers whereon a steam feed-cylinder 3 of the usual type is supported upon suitable bases or feet 4. This cylinder is provided with a hollow piston-rod 5, communicating with a hollow piston 6, that is provided with holes 7, leading to the interior of said cylinder, said holes being normally closed by check-valves 8. This construction of piston and rod corresponds to that shown and described in a certain application for Letters Patent of the United States, filed by me August 31, 1901, Serial No. 73,914, and need not be described in detail herein. The opposite ends of the steam feed-cylinder are connected by pipes 9 with sawyer's valves 10 of the usual type, having the steam-inlet pipes 11 and exhaust-pipes 12. The sawyer's valves are connected by a rod 13 and a similar rod 14 connects the forward valve with one arm of the bell-crank 15, whose opposite arm is connected by a rod 16 with a sawyer's lever 17. The forward end of the piston-rod 5 is connected to a hanger-casting 18, that is bolted to the under side of a bar 19 near its forward end, said bar being provided in its opposite longitudinal edges with grooves 20, that are adapted to receive guide-bars 21, that are bolted to the upper ends of brackets 22 and 23, supported upon the timbers 2. The brackets 22 are used near the rear of the machine and are rigid or provided with recesses 24 to receive the feed-cylinder, while the brackets 23 are arranged near the forward end of the machine and have U-shaped recesses 25, wherein the piston-rod and the casting 18 reciprocates. The bearing 19 is provided at intervals with blocks 26, upon which the log rests, and near its forward end I provide a fixed dog 27, having a series of teeth 28 to enter the end of the log as it is being fastened on the carriage-bar. To secure the rear end of the log

on the carriage, I provide a movable dog 29, having a series of teeth 30 and provided with longitudinal grooves 31, that are adapted to receive ribs 32, provided on guides 33, that are mounted on the bar 19 and travel therewith. The guides 33 have beveled inner faces 34, which aid in holding the log more securely to its seat on the carriage. Near the rear end of the bar 19 I provide a cylinder 35, having a piston 36, whose rod 37 is pivotally connected with the dog 29. The cylinder 35 is provided with ports 38 and 39, communicating with the opposite ends, respectively, of the cylinder, and with a valve-casing 40, provided with a sliding piston-valve 41, that is adapted to alternately open and close said ports. A pipe 42 communicates with the interior of the casing 40 and with the hollow piston-rod 5, being connected thereto at a point preferably near its connection with the hanger-casting 18. The casing 40 is also connected with an exhaust-pipe 43, that is adapted to slide in a bearing 44, provided in the end of pipe 45, that is supported by any suitable means, such as one of the brackets 22 at the rear of the machine. The stem of the valve 41 is connected to one arm of a bell-crank 46, that is pivoted on the carriage-bar, and the opposite arm of said bell-crank is connected by a link 47 with an arm 48, that has a key-seat or is splined on a rod 49, that is supported at its opposite ends in bearings 50 on the brackets 22 and 23, and is further supported by sliding arms 52, that are bolted to the bar 19 and between which the arm 48 is arranged. I prefer to provide a short section of pipe 53 on the rod 49 between one of the arms 52 and the arm 48 to prevent the latter from slipping out of its proper position or becoming cramped on the rod. As the carriage-bar is driven forward or back the arm 48, sliding on the rod 49, will permit the operator by rocking said rod to operate the valve 41 at any stage of the stroke of the carriage.

The forward end of the rod 49 is provided with a depending arm 54, by the movement of which said rod is rocked, and the lower end of said arm is connected by a rod 55 with the lower end of a lever 56, that is pivoted on a standard 57. The operation of this lever will serve to rock the rod 49 in its bearings, move the valve 41, and admit steam to the cylinder 35 to actuate the piston 36 to drive the movable dog into the end of the log or withdraw it therefrom, according to the direction in which said lever is moved.

It is evident that by means of the mechanism heretofore described a log having been rolled onto the carriage can be almost instantly dogged or locked thereon even while the carriage and log are moving toward the saws. The lever 56 is located near the sawyer's lever 17, heretofore referred to, so that one man can control the movement of the sliding carriage-bar and also the mechanism for operating the movable dog.

The saws which I employ in this machine are of the circular type, (represented by reference-figure 58,) the arbors 59 of said saws being mounted in suitable bearings 60 on frames 61 and provided with driven pulleys 62. The frames 61 rest within recesses 63, provided on bases 64, that are supported upon timbers 65, and bars 66, secured to said bases, overlap the edges of said frames and hold them in position while permitting a longitudinal sliding movement thereof, which permits the saws to be adjusted toward or from each other, according to the size of the log or the slabs to be removed.

Any suitable mechanism may be employed for adjusting the saws; but I prefer to provide a lever 67, pivoted on a casting 68 and movable over a quadrant 69. Said lever is provided with the usual locking-latch device 70 and is connected above its pivot by an adjustable coupling 71 with the lower end of a pivoted bar 72, whose upper end is connected by a link 73 with lugs 74 on the saw-frame adjacent to the lever 67. The opposite saw-frame is provided with similar lugs and a link connected with a bar 75, which in turn is connected by a rod 76 with an extension 77, provided at the lower end of the lever 67. Movement of the lever 67 back and forth over the quadrant will move the saws toward or from each other and enable the setter to remove any desired thickness of slab from the log. Each saw is provided with the usual guide 78.

Upon the opposite side of the saws from the steam-feed cylinder I provide timbers 79, forming a continuation substantially of the timbers 2 and supporting brackets 80, corresponding to the brackets 23, except that the upper ends thereof are provided with downwardly-inclined faces, whereon the carriage-bar guides 81 are secured. These guides being on an incline with respect to the carriage-bar offer no obstruction to the slabs as they fall from the log on each side, but rather aid in guiding them to their proper position upon the conveyers arranged to receive them. The inner edges of the guides are substantially horizontal and adapted to enter the grooves in the carriage-bar as it is projected past the saws, the ends of said grooves being of sufficient width to receive the tapered ends of the guides to prevent any possibility of the sliding bar not engaging the guides after passing the saws.

The operation of the machine is briefly as follows: A log having been rolled from the deck upon the carriage the sawyer moving the lever 56 operates the movable dog and quickly clamps the ends of the log regardless of the position of the carriage with respect to the feed-cylinder, provided, of course, it is withdrawn from between the saws. The sawyer's valves are then operated and the carriage set in motion, projecting the log between the saws, which have previously been set the proper distance apart, to remove a slab from each side of the log. When in this con-

dition, the log is known as a "cant," and unless it is desired to remove slabs from the other sides and reduce the log to a timber it is discharged from the carriage after passing once through the saws and conveyed to another part of the mill, usually to the gang. During the movement of the log toward or from the saws the sawyer will not only have absolute control over the carriage and be able to arrest its movement at any point or drive it forward, but he will also control the movable dog and can release or redog the log whenever desired. The machine will be so constructed that logs varying considerably in length may be secured on the carriage, the sliding dog and piston connected therewith adapting themselves in their throw or movement to the various lengths of logs to be slabbed. This method of securing the logs on the carriage and slabbing them is so much faster than the same operation can be performed by other machines of this kind in general use that it is particularly adapted for slabbing small logs, in the handling of which by the usual machines considerable time and labor are consumed owing to the fact that a larger number are usually handled in a given time and secured on the carriage even more firmly than the larger logs.

It sometimes happens after removing the slabs from a log that the cant is too large to be sent directly to the gang-saws, and in such case it is necessary or desirable to gig the log back and remove one or more boards. This can hardly be done in the machines now in use owing to their construction and comparatively slow movement; but with the rapidly-reciprocating bar which I employ the log can be driven past the saws and slabbed and then rapidly gigged back and again driven forward to remove the boards.

I have shown twin circular saws employed in connection with my machine; but I do not wish to confine myself to this style, as those of the band or up-and-down reciprocating type may be employed if preferred.

I claim as my invention—

1. The combination, with a steam-feed cylinder and its piston, of a sliding log-carriage connected with said piston, said carriage being adapted to accommodate a single log thereon, guides for said carriage, fixed and movable dogs provided on said carriage, power means within control of the sawyer at a fixed point for operating the movable dog at any point in the stroke or travel of said carriage, a lever and valves for controlling the movement of said piston, and twin circular saws between which said carriage and the log thereon are projected, substantially as described.

2. The combination, with a steam-feed cylinder, its piston and the valves for controlling the admission of steam to the same, of a longitudinally-sliding bar connected with said piston, a fixed and a movable dog provided on said bar between which the log to be slabbed is placed, an engine located on said bar and having its piston connected with said movable dog, power means within control of the sawyer at a fixed point for regulating the admission of steam to said engine and the movement of said movable dog at any point in the travel of said bar, and twin circular saws between which said bar and the log thereon are advanced to remove the slabs.

3. The combination, with a steam-feed cylinder, its piston and the valves for controlling the admission of steam thereto, of a sliding bar connected with said piston and driven thereby said bar being adapted to receive a log to be slabbed and form a carriage therefor, fixed and movable dogs provided on said bar and between which the ends of the logs are clamped, an engine provided on said bar and having its piston connected with the movable dog, a rocking rod upon stationary supports, an arm slidable on said rod and connected with the valve of said engine for regulating the admission of steam thereto, and a lever mechanism within control of the sawyer for rocking said rod and operating said engine-valve to operate said movable dog at any point in the travel of said bar.

4. The combination, with a steam-feed cylinder, its piston and the sawyer's valves for controlling the admission of steam thereto, of a longitudinally-movable carriage, fixed and movable dogs provided thereon and between which the ends of the log are clamped, a fluid-pressure motor device provided on said carriage and connected with said movable dog, and power means within control of the sawyer at a fixed point for regulating the admission of pressure to said motor device and controlling the movement of said dog at any point in the travel of said carriage.

5. The combination, with a steam-feed cylinder and its piston having a hollow piston-rod, of a carriage connected with said rod, a clamping mechanism, an engine having suitable connections with said hollow rod to receive steam-pressure therefrom, the piston of said engine being connected to said clamping mechanism, means connected with the valve of said engine and within control of the sawyer at a fixed point for regulating the admission of steam to said engine-cylinder and controlling the movement of said clamping mechanism at any point in the travel of said carriage, and a sawyer's lever and valves for said feed-cylinder.

6. The combination, with the steam-feed cylinder, having suitable valves and a hollow piston and rod, of a sliding carriage-bar connected to said rod, a fixed and a movable dog provided on said bar and between which the log to be slabbed is clamped, an engine provided on said bar and having its piston connected with said movable dog for operating the same, a pipe connecting said hollow piston-rod with said engine, a rocking rod provided upon stationary supports near said bar, an arm splined thereon and connected with

the valve of said engine to control the admission of steam thereto from said hollow piston-rod, suitable lever mechanisms within control of the sawyer for operating the valves of said feed-cylinder and for rocking said rod to control the movement of said movable dog, and twin saws provided near the forward end of said bar and between which it is driven with the log, substantially as described.

7. The combination, with a steam-feed cylinder having suitable valves, a piston and a hollow piston-rod, of a carriage whereon the log to be slabbed is placed, saws provided near the forward end of said carriage, means for moving said saws toward or from each other to change their set, means for clamping the log upon said bar to prevent movement of the same during the slabbing operation, power means provided on said carriage for controlling the clamping operation of said clamping means, and means within control of the sawyer at a fixed point for actuating said controlling means to operate the clamp connected therewith at any point during the movement of said carriage.

8. The combination, with a steam-feed cylinder, its piston and the sawyer valves, of a carriage, a clamping mechanism thereon, a fluid-pressure device provided on said carriage and connected with said clamping mechism, and power means within control of the sawyer at a fixed point for regulating the admission of pressure to said motor device and controlling the movement of said clamping mechanism at any point in the travel of said carriage.

9. The combination, with a suitable base, of a steam-feed cylinder supported thereon and provided with valves for controlling the admission of steam thereto and a lever mechanism for operating said valves, of twin circular saws provided near one end of said cylinder, a longitudinally-slidable bar provided above said feed-cylinder, guides for said bar upon opposite sides of the saws, brackets whereon said guides are supported, a fixed and a movable dog provided on said bar and adapted to clamp the ends of the log placed between them, an engine mounted on said bar and having its piston connected with said movable dog, a rocking rod supported on said brackets near said bar, a sliding arm splined on said rod and connected with the valves of said engine, and a lever mechanism provided near the lever for operating said feed-cylinder valves and connected with said rocking rod for operating the same to actuate said movable dog at any point during the travel of said bar.

10. The combination, with a steam-feed cylinder provided with a hollow piston and rod and valves for controlling the admission of steam thereto, of a sliding bar provided above said feed-cylinder, suitable guides between which said bar is slidable, twin circular saws provided opposite the forward end of said bar, a fixed dog provided on said bar and having a sliding dog also mounted on said bar, guides between which said sliding dog is movable parallel to the direction of movement of said bar, an engine mounted on said bar and connected with said hollow piston-rod to receive steam therefrom, the piston of said engine being attached to said movable dog, a lever mechanism within control of an attendant for operating said feed-cylinder valves and for regulating the admission of steam to said engine at any point during the travel of said bar.

In witness whereof I have hereunto set my hand this 4th day of April, 1902.

EDWIN E. THOMAS.

In presence of—
RICHARD PAUL,
M. C. NOONAN.