Dec. 25, 1928. 1,696,502

T. A. PETERSON

LOG SIZING MECHANISM

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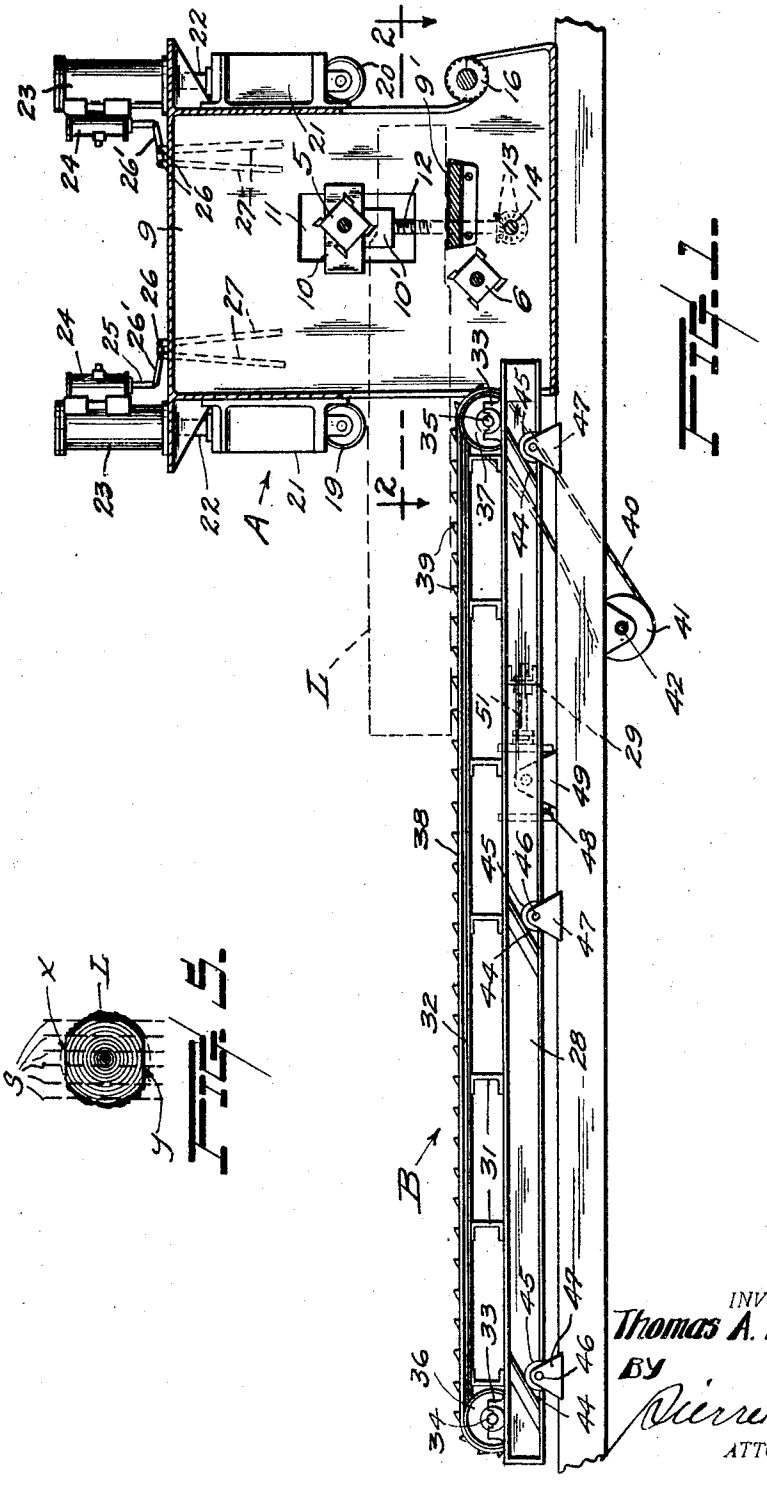


FIG. 1.

FIG. 2.

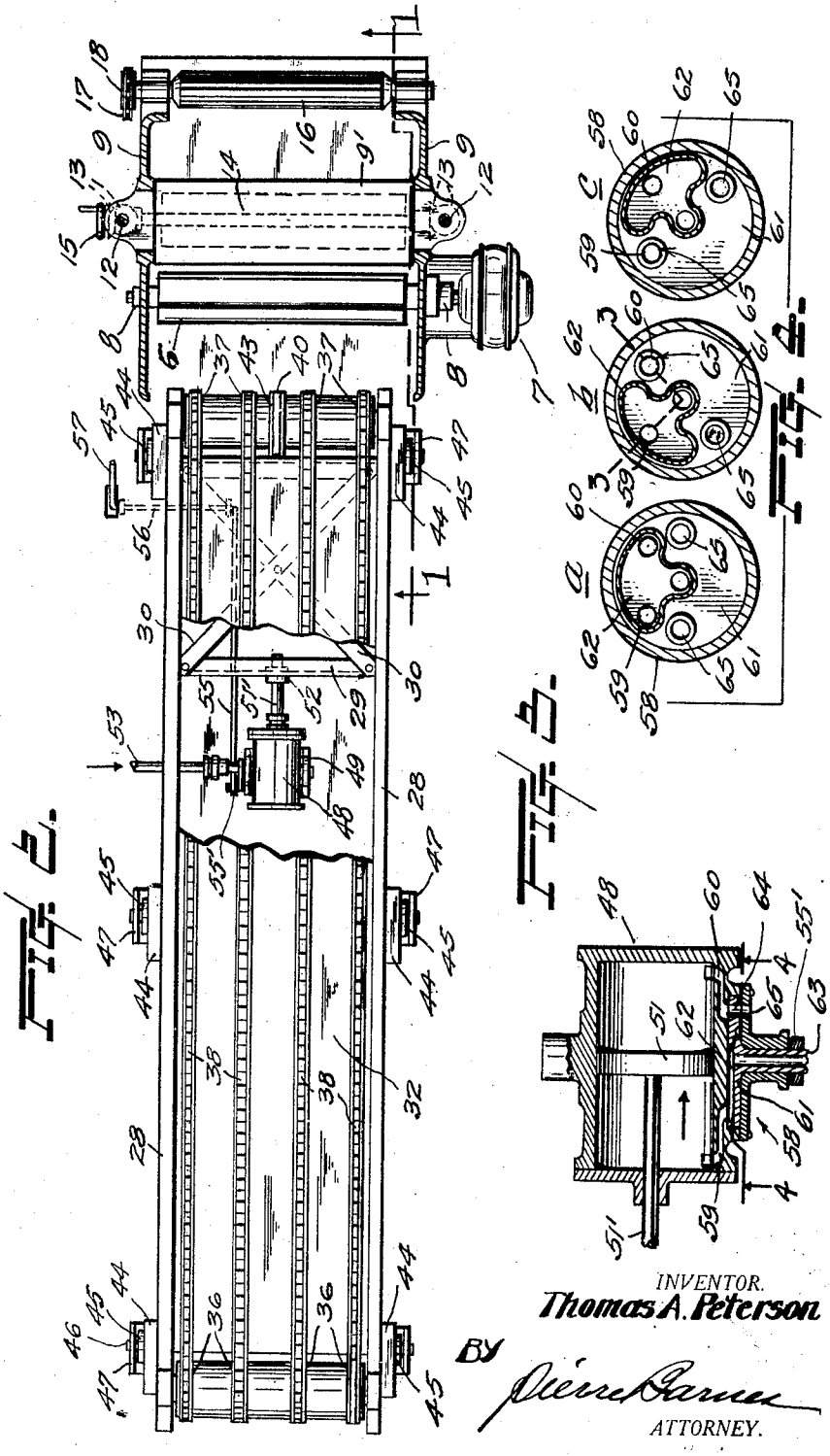
INVENTOR.
Thomas A. Peterson
BY
Pierre Games
ATTORNEY.

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INVENTOR.
Thomas A. Peterson
BY Pierre Barnes
ATTORNEY.

Patented Dec. 25, 1928. 1,696,502

UNITED STATES PATENT OFFICE.

THOMAS A. PETERSON, OF ONALASKA, WASHINGTON.

LOG-SIZING MECHANISM.

Application filed June 9, 1926. Serial No. 114,615.

This invention relates to improvements in that class of lumber-mill machines which are employed for surfacing the upper and lower sides of timber or saw logs preparatory to cutting the same into mercantile lumber.

The object of the invention, generally stated, is to provide vertically adjustable work supporting and feed devices which are adapted to be quickly and accurately regulated for sizing logs or the like to selected thicknesses.

The invention consists in the novel construction, adaptation and combination of parts as will be hereinafter described and claimed.

In the accompanying drawings,—

Figure 1 is a view partly in side elevation and partly in vertical longitudinal section of an embodiment of my invention applied to a planer, the section being taken on broken line 1—1 of Fig. 2. Fig. 2 is a plan view of the same, a part of the table and feed mechanism being broken away and the planer shown in section on line 2—2 of Fig. 1. Fig. 3 is a longitudinal section of the table-operating cylinder shown in the preceding views, the section of the valve being taken substantially on broken line 3—3 of diagram *b* of Fig. 4. Fig. 4 are sectional views taken substantially on broken lines 4—4 of Fig. 3 to illustrate the cylinder valve in different positions. Fig. 5 is an end view of a sized saw log, to illustrate the purpose of the invention.

Referring to said drawings, the planer A, to which the invention is applied, may be of any usual or suitable construction and includes upper and lower rotary cutter heads 5 and 6, respectively.

These cutter heads may be driven by power belts or by individual motors, such as 7 as shown, by way of example, with respect to the lower cutter head 6.

The lower cutter head is desirably journaled in stationary bearing boxes 8 provided in the side members 9 of the planer frame.

The bearing boxes for the upper cutter head are formed or provided in blocks, such as 10, Fig. 1, which are arranged for vertical adjustment in ways 11 provided in the respective frame members 9.

12 represents vertical screw-shafts taking in threads provided in nut elements, as 10^1, of the respective blocks; said screws being actuated, to raise and lower the cutter head 5, through the medium of bevel gears 13 from an operating shaft 14 which is manually rotated by means of a crank wheel 15.

A bridge member 9^1 is advantageously provided in the frame for supporting the work below the upper cutter head 5.

Mounted in bearings provided in the rear end of the planer frame is a live-roller 16 which is rotated as by means of a power driven chain 17 passing about a sprocket wheel 18 secured to an end of the roller arbor.

19 and 20 represent presser rollers connected for vertical adjustments to the front and rear ends of the planer frame. As shown, said presser rollers are regulated by having the carriers 21 thereof connected to the lower ends of piston rods 22, whose pistons (not shown) operate within cylinders 23 by means of compressed air, or other suitable power agent, under the control of valves provided in the chests 24. The referred to valves are of known or suitable type, the valve stems 25 being operatively connected to arms 26^1 extending from controlling rods 26 which are regulated by means of levers 27 positioned at either side of the frame.

Associated with and extending to or into the front end of the planer is a rigid frame B, hereinafter designated as the table.

As shown, said table is constructed with a longitudinal girder element 28 at each of its sides, and are rigidly held in spaced apart parallel relation with each other by suitable framing including beams, as 29, and diagonal braces, as 30. Rigidly secured upon said girders and framing are tranverse bars 31 upon which is imposed a floor 32.

Located at the opposite ends of said table are bearing boxes 33 for shafts 34 and 35 upon which are respectively mounted sprocket wheels 36 and 37 for endless feed chains, each feed chain having a lead 38 passing lengthwise within channels provided therefor in the table floor 32. Said chains are provided with links having log engaging elements 39 and are driven as by means of an endless chain 40 passing about a sprocket wheel 41 provided upon a power shaft 42 and a sprocket wheel 43 which is mounted upon the shaft 35 of the sprocket wheels 37. The feed chains and the sprocket wheels therefor constitute feed mechanism which is mounted upon the table to be movable as a unit therewith.

Said table is adapted for vertical adjustment, for which I employ, preferably, wing

attachments 44 which are rigid with the table and arranged to bear upon the peripheries of rollers 45, one for each rail; the roller axles 46 being journaled in stationary chairs 47. The wings 44 have their under surfaces disposed in planes inclined in the same direction longitudinally of the table and to a similar angle with respect to a horizontal plane, whereby a movement imparted to the table in one longitudinal direction will cause the table to be elevated and a movement of the table in the opposite direction will permit gravitation to lower the table. For producing such movement of the table in either longitudinal direction, selectively, I employ a power cylinder 48, preferably of the oscillatory type having its trunnions mounted in a stationary rigid frame 49.

Operating within the cylinder 48 is a piston 51 whose rod 51^1 is connected as at 52 to the table structure.

A suitable fluid power agent such as compressed air, for example, is delivered through one of the cylinder trunnions from a supply pipe 53 extending from a source or reservoir of the power agent. The power agent is controlled by means of a suitable valve provided in a chest 58 therefor having passages 59 and 60 leading to the respective ends of the cylinder. As shown, the valve 61 is of the rotary type having a chamber 62 which affords communication between the air inlet provided within the valve stem 63 and the ports of either or both of the passages 59 or 60 according to the setting of the valve. The valve is also provided with discharge ports 64 which, upon occasion, are adapted to be brought into register with the ports 65 of the chest cover for the exhaust of air from one side or the other of the piston into the external atmosphere.

In the diagrams *a*, *b*, and *c*, of Fig. 4, I represent the valve in three operative positions; in *a* the valve is set to admit the power agent to the ports of both the passages 59 and 60, the power agent acting against both sides of the piston to retain the same and the table which is connected thereto in stationary position; in diagram *b*, the valve is set to admit the power agent into passage 59 at one side of the piston and a discharge port 64 arranged for the exhausting of air from the other side of the piston, thereby causing the piston to move in the direction indicated by the arrow in Fig. 3, resulting in a corresponding movement of the table to effect the elevating of the same; and in diagram *c*, the valve is set for admitting and exhausting air from the sides of the piston reverse to those obtaining in the diagram *b*, resulting in the table being moved for lowering the same.

The valve operating mechanism shown in Fig. 2 comprises an arm 55^1 secured to the valve stem 63, said arm being connected by means of a reach rod 55 and a crank shaft 56 with an operating lever 57 located within convenient reach of the operator.

A log indicated by dotted lines L in Fig. 1, is raised or lowered as desired by regulating the valve 61 by means of the lever 57; the power agent being controlled to thrust the table toward the planer or away from it according to whether the table is to be raised or lowered for the purpose of having more or less of the underside of the log removed by the knives of the lower cutterhead 6. The cut of the upper cutterhead is regulated by adjusting the height of this head by means of the manually operated screws 12.

In Fig. 5 I illustrate, by way of an example, a log L surfaced, as at X and Y by means of the upper and lower cutter heads 5 and 6. A log thus treated may be fed directly to a sawing machine—either single or gang—for "edging" the work or for edging and dividing the same, as on line S, for instance, in Fig. 5, to produce mercantile lumber and slabs.

The advantages of the invention will be apparent to those familiar with the manufacturing of lumber. While I have particularly described and illustrated the preferred embodiment of the invention, I do not wish to confine myself specifically thereto except as limited by the scope of the following claims.

What I claim, is,—

1. The combination with a planer having a cutter-head, of a vertically movable work supporting table, means rendered operative by horizontal movement of the table to effect vertical movement of the table, power actuated means to impart horizontal movement to the work supporting table for effecting vertical movement of said table with respect to the cutting circle of said cutter-head, and manually controlled devices for regulating said power actuated means.

2. The combination with a planer having a cutter-head, of a work supporting table arranged for vertical movement, feed mechanism, including sprocket chains passing about wheels mounted in bearings provided upon said table, power actuated means for effecting horizontal movements of said table, means rendered operative by the movement of the table in opposite horizontal directions selectively to effect vertical movement of the same with respect to said cutter-head, and manually controlled devices for regulating the action of said power actuated means for raising and lowering said table.

3. In combination, a table arranged for vertical and horizontal movements, feed mechanism carried by said table, power means for imparting movement to the table and said feed mechanism as a unit therewith

in two horizontal directions, and table supporting means rendered operative by the movement of the table in said horizontal directions for effecting the elevation of the table and permitting gravitation to lower the table when the latter is moved in the other horizontal direction.

4. The combination with a table, feed mechanism mounted thereon, and means to actuate said feed mechanism, of inclined-plane devices rigid with said table, rollers mounted in stationary bearings, said rollers being disposed below the respective inclined-plane devices and acting therewith to support the table, and means for imparting longitudinal movement to the table and to said feed mechanism and cooperating with the inclined-plane devices and the rollers for effecting changes in the elevation of the table and said feed mechanism.

5. The combination with a table and power driven feed mechanism carried thereby, said table and feed mechanism being arranged for horizontal and vertical movements, of means associated with said table and rendered operable by the horizontal movement thereof to effect the elevation of the same, and endwise movement of said feed mechanism, and manually controlled devices for imparting horizontal movement to the first named means.

Signed at Seattle, Washington, this 4th day of May, 1926.

THOMAS A. PETERSON.