(No Model.)

A. W. GOODELL.

SLAB SAWING MACHINE.

No. 559,524. Patented May 5, 1896.

Fig. 6

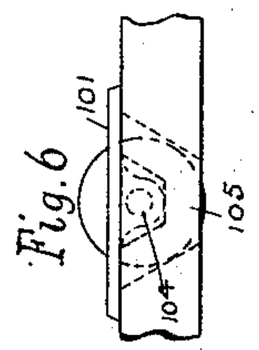


Fig. 4

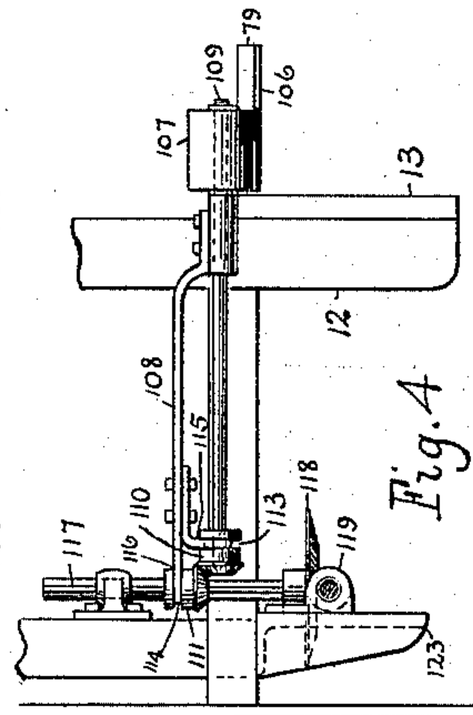


Fig. 3

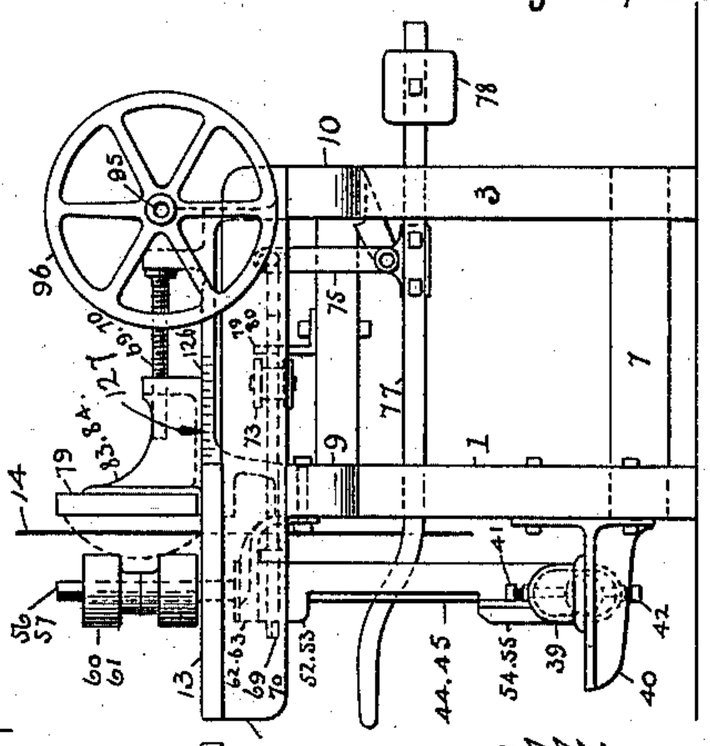


Fig. 5

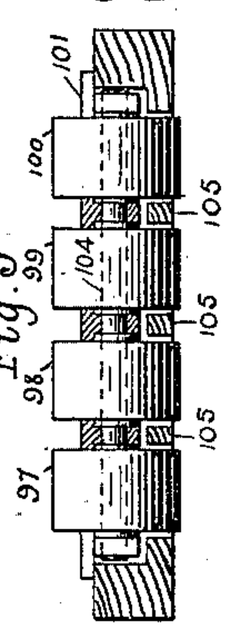


Fig. 7

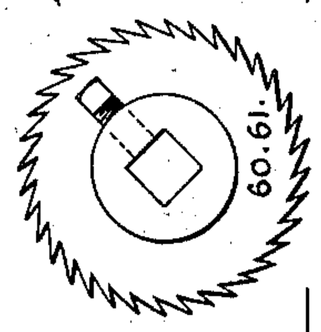


Fig. 2

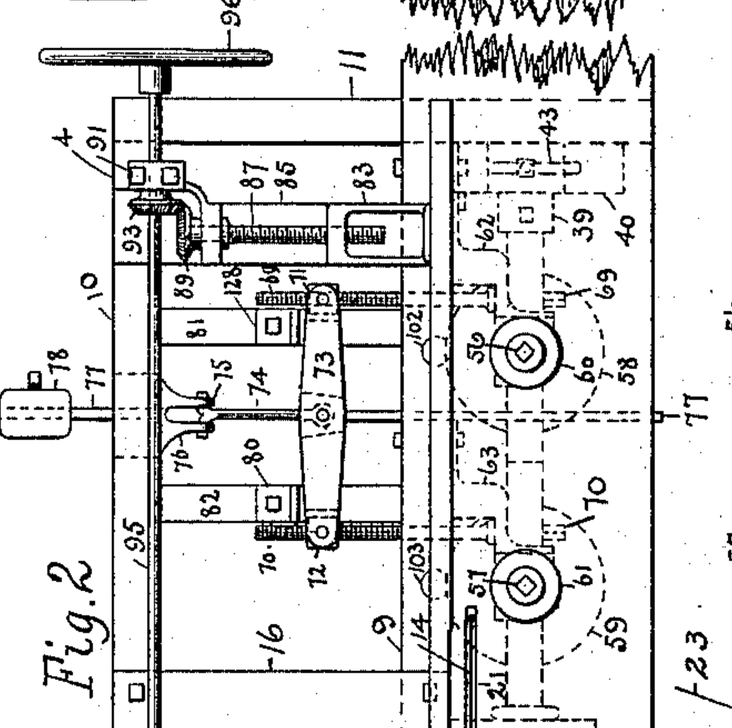
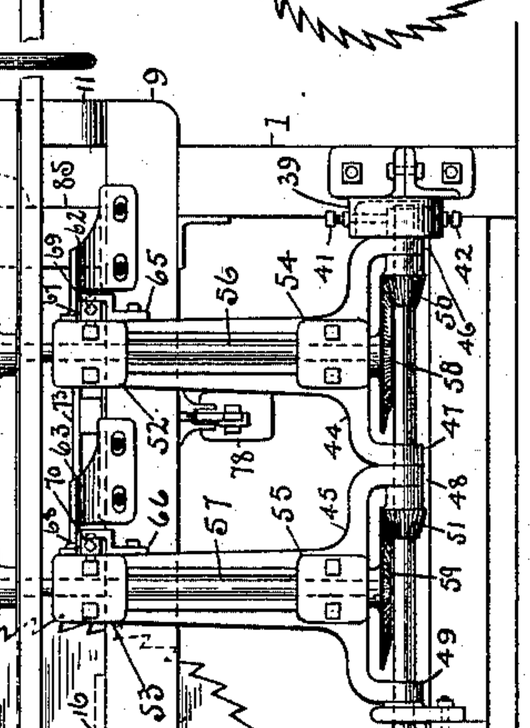


Fig. 1



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AUSTIN W. GOODELL, OF PHILADELPHIA, PENNSYLVANIA.

SLAB-SAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 559,524, dated May 5, 1896.

Application filed January 11, 1896. Serial No. 575,111. (No model.)

To all whom it may concern:

Be it known that I, AUSTIN W. GOODELL, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Slab-Sawing Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in slab-sawing machines, and I construct a machine which will work into merchantable shape the slabs heretofore cut from logs and cast aside as useless because no machine had been constructed which would saw a slab, owing to the irregular form of its outer side and its varying thickness and shape. I am now able to utilize this waste material, and thereby greatly economize lumber-stock. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the machine. Fig. 2 is a top view of the machine. Fig. 3 is an elevation of the feed end of the machine. Fig. 4 is a partial elevation of the machine on line A B, Fig. 2, looking in the direction of the arrow. Fig. 5 is an elevation of the fence-rollers. Fig. 6 is a top view of the fence-rollers. Fig. 7 is an end view of the feed-rolls seen in Figs. 1, 2, and 3.

Similar figures of reference are used for similar parts throughout the views.

My machine-frame is rectangular in general shape, and composed of uprights 1 2 3 4, to which are secured the lower horizontal members 5 6 7 8 and upper horizontal members 9 10 11 12. A table 13 rests upon the horizontal pieces 11 12 and extends somewhat beyond each end of the framing, the greater extension being at the feeding end. Its inner edge preferably coincides with the inner edge of 9 and its outer edge extends slightly beyond 11 12. A circular splitting-saw 14, secured to an arbor 15, is carried by a bed-plate 16, having journal-bearings 17 18, all being secured on framing 9 10 toward the left end of the machine. The saw 14 is secured to the arbor 15 by washers 19 and a nut 20 in the usual way. The saw 14 projects above the table 13 and through a slit 21, cut for the purpose. A pulley 22 is fixed upon the arbor 15 between the bearings 17 18, and it receives the driving-belt 23. At the outer end of the arbor 15, opposite the saw 14, is a three-step cone-pulley 24, carrying a belt 25, which drives the three-step cone-pulley 26 on the cross feed-shaft 27, carried in bearings 28 29. The shaft 27 has a bevel-gear 30 beyond the bearing 29, the shaft 27 extending beyond the gear 30 and having a feather 31 set into the shaft, over which the gear 30 slides, and by which it is made to revolve with the shaft 27. A collar 32, abutting the bearing 28, secures the shaft 27 from end movement when the gear 30 moves away from the bearing 29.

Along the lower front of my machine I place a longitudinal feed-shaft 33, having upon its left end a bevel-gear 34, engaging the gear 30, and secured in contact therewith by a forked yoke 35, which embraces the hub of 30 in a groove 36, and at its other extremity it is attached to the movable support 37, secured in a circular pocket in the bearing 29, 37 also having a shaft-bearing 38 pivotally supported within its outer end.

The shaft 33 passes along the lower side of the front of the machine, and at its right-hand end (the feed end of the machine) it is supported in a carrier 39, secured to a bracket 40, which is fastened to the frame-upright 1. In 39 provision is made to adjust the height of the shaft at this end, thereby inclining it by means of the screws 41 42, while a slot 43 in the bracket 40 permits side adjustment. The support 37, carrying the left end of the shaft 33, is also arranged for the side adjustment of the shaft 33, thus enabling the shaft 33 to be carried toward or from the machine-frame and its right end to be elevated, as desired. The feed-shaft 33 has attached to it, near its right end, two yokes 44 45, each of which embrace and are carried on the shaft at two points 46 47 and 48 49. Within the yokes are bevel-gears 50 51, secured on the shaft 33.

The yokes 44 45 have upper bearings 52 53 and lower bearings 54 55, in which are se-

cured the upright revolving feed-shafts 56 57, having bevel-gears 58 59 secured to their lower ends and engaging gears 50 51. The shafts 56 57 at their upper ends are rectangular, this part being above the table 13 and carrying the feed-rolls 60 61, which are made in sections, and the periphery of which is toothed, as seen in Fig. 7. Adjustable brackets 62 63 are secured to frame 9 and project outward and against the right side of the upper end of the yokes 44 45. These brackets resist the thrust caused in feeding and are adjustable to enable them to be kept in contact when the shaft 33 is elevated at its outer end, and the yokes 44 45 and feed-rolls 60 61 are thereby tilted to the left, this being necessary to give the rolls a draw-down to the table 13 on the material they are feeding to the saw.

The feed-rolls 60 61 are divided longitudinally to enable their being reversed in order that the rolls may be continuous or not, the better to cause them to take hold of the irregular-shaped slab being fed in. One or more of the longitudinal parts may be used or omitted. (See change, as in Fig. 3, where the slab being fed in is shown in dotted lines.) At the upper end of yokes 44 45 are attached brackets 65 66. Swivelingly secured in brackets 65 66 and also in the yokes 44 45 are blocks 67 68, which carry the outer end of the equalizer-screws 69 70, the screws preferably being square at their outer ends to receive a wrench or hand-wheel used in turning the screws. The screws 69 70 at their inner ends, about midway across the machine, are screwed into swivel-nuts 71 72, pivoted in the ends of the double equalizing-bar 73, which is held at its center by a rod 74, bifurcated at its outer end and entering the upper ends of a double arm 75, fulcrumed on a bracket 76, attached to the framing 10. The lower end of the double arm 75 is broadened and has secured thereto a counterweighted hand-lever 77, the handle of the lever being on the feed-shaft side of the machine, and a counterweight 78 being carried on the lever beyond the opposite side of the machine.

Brackets 128 80 are attached to the framing 81 82 and stop one end of the double equalizing-bar 73 when the screw at the opposite end is turned to move its feed-roll outward. The equalizing mechanism and the counterweight forces the feed-rolls 60 61 up to the slab being fed, and also permits the feed-rolls to be forced out of perpendicular, or one to remain upright and the other at an inclination, or various modifications from such positions to suit the varying contour of the slab being fed, and the adjustment, while automatic, and the pressure on the rolls equalized can also be modified by the operator by applying a hand-wheel or wrench to the outer end of the screws 69 70. At right angles to the table 13 is the fence 79. Standing upright, and parallel with the saw 14, the fence is supported by brackets 83 84, set to have a sliding movement on supports 85 86. Secured to the supports are screws 87 88, having gears 89 90, attached to their outer ends, their inner ends being screwed into the brackets 83 84.

At right angles to the screws 87 88 is a shaft 95, running parallel with the outer side of the machine and the fence above the framing and secured in bearings 91 92, formed on the supports 85 86. At the bearings are gears 93 94. Secured to the shaft and at its right-hand end a hand-wheel 96 is secured. By turning the hand-wheel the gears and screws revolve and the fence is moved toward or from the saw. The fence gages the thickness the stuff will be sawed. To prevent the stuff being fed to the saw from causing too much friction as it moves along the fence, I have provided rollers 97 98 99 100, secured in a frame 101, which is fastened to the back of the fence, each feed-roller 60 61 having a nest of rollers 97 98 99 100 opposite it, as seen at 102 103, Fig 2. Each set of rollers runs upon a central shaft 104. My object in making the rollers separate rather than in one is to avoid cutting away the fence to permit their insertion, as it will be seen by my invention the fence is intact between each two rollers at 105, and it therefore preserves most of its original strength, especially so as it is reinforced by the frame 101 at its back.

Opposite the saw, at 106, the face of the fence is depressed, and a delivery-roll 107, which may have its periphery either smooth or fluted, is attached to its left outer end, its function being to catch the stuff after it has passed the feed-rolls and pull it by and away from the saw. The face of the delivery-roll 107 stands out flush with the undepressed line of the fence 79. The delivery-roll 107 is attached to the fence 79 by a bracket 108, causing the roll and fence to move in conjunction toward or from the saw.

The delivery-roll 107 is mounted upon a perpendicular shaft 109, carrying a gear 110 at its lower end working into a gear 111 on a horizontal shaft 112. As the fence 79 and its roller 107 are movable, and as the shaft 33 from which the roller 107 is driven is also movable, it is necessary to secure the gears 110 111 in mesh or working contact, and to do so I make grooves 113 in 110 and 114 in 111, into which I insert forks 115 116. The fork 116 rests on the hub of 111 and is secured to bracket 108 at its upper end. Fork 115 enters groove 113 of 110 and carries it in perpendicular position. The gear 111 is free to move lengthwise of the shaft 112, but is controlled in revolving by a feather 117, let into the shaft 112 and gear 111. At the outer end of the shaft 112 is a gear 118, running into a gear 119, secured to the shaft 33, and this construction enables the delivery-roll 107 to be run at the correct speed. As the shaft 33 may be moved, the gears 118 119 must be secured to work together whenever

the shaft 33 or fence 79 is moved, sometimes in opposite ways, and to permit this movement I have provided a yoke 120, which embraces the shaft 33 outside of the gear 118, and then passing around 118 and being forked over 118 at 121 continues beyond the gear and embraces the shaft at 122, where it is secured to a bracket 123, extending out from the frame 2. The inner end of the shaft 112 is carried in a bracket 124, secured to frame 6.

Opposite the roll 107 is a spreader 125. This separates the sawed piece from the slab after it has passed the saw, and also prevents pinching the saw and affords a seat for the delivery-roll to press the sawed material against, thus enabling the delivery-roll to move the sawed piece along and away from the saw.

The operation of my machine is as follows: The fence being set for any required thickness of stuff, a slab sawed from a log and having one flat side (the side cut from the log) is placed with its flat side against the fence. If the slab is too thick to pass under the feed-rolls as then set, the lower shaft 33 may be set outward, or by pressing down on the hand-lever 77 the feed-rolls will be swung outward, or the screws 69 70 may be turned to throw the feed-rolls outward, when the slab will be fed in by the feed-rolls 60 61 to the saw 14, the screws 69 70, the equalizing-bar 73, and counterweight 78 causing the feed-rolls 60 61 to conform in position to the contour of the slab and continue to feed it, and the delivery-roll 107 will take away the sawed piece. The feed-rolls 60 61 being in longitudinal sections may be changed, as already described, to more readily take hold of the slab to be sawed.

Various thicknesses may be sawed by manipulating the hand-wheel 96, which moves the fence 79, and its delivery-roll 107, and its driving mechanism. The shaft 33 may be elevated at the feed end of the machine and thereby cant the feed-rolls 60 61 to get more bite. Wedging and irregularly-rounded slabs and those having knots and projections upon their outer surface may with equal facility be fed to the saw, thereby saving and utilizing a vast amount of useful and valuable lumber heretofore destroyed. To enable the operator to quickly and accurately set the fence to saw any desired thickness, I have constructed a scale 126 on supports 85 86, and have placed an index or pointer 127 on brackets 83 84. This scale and index are in full view of the operator when manipulating the hand-wheel 96 and enable him to quickly and correctly set the machine to secure any desired thickness of stuff.

A mechanic skilled in the art after reading my specification might modify my construction to accomplish the same results; but such modified construction would be within the scope of my invention. Therefore I do not claim the precise construction shown and described; but

I do claim—

1. In a slab-sawing machine, a saw attached thereto, a movable fence thereon, means to move the fence simultaneously at each end from a single operative point, upright feed-rolls therefor seated upon a rectangular shaft, the rolls being in longitudinal and removable sections, and carried in a yoke upon a shaft normally upright but having means for side adjustment, substantially as described.

2. In a slab-sawing machine, a saw attached thereto, a movable fence thereon adjusted from a fixed point, a driven delivery-roll attached to the fence and movable therewith, a depression in the fence opposite the saw, and feed-rolls to press and feed the material against the fence, said feed-rolls being held in position and contact with the material being fed by a counterweight acting automatically so each roll may have equal pressure and assume a position farther from or nearer to the fence, to roll over uneven material, and means to move the feed-rolls by hand mechanism when desired, substantially as described.

3. In a slab-sawing machine, a saw therefor, a fence therefor having attached thereto a delivering mechanism suited to shifting positions of the fence, feed-rolls therefor mounted upon shafts normally perpendicular, but pivotally supported from a feed-shaft arranged for outward and inward moving, means for raising or lowering the end of the feed-shaft nearest the feed end of the machine, and means for connecting the feed-shaft to the cross feed-shaft for such adjustment and the maintenance of their driving-contact under such adjustment, substantially as specified.

4. In a slab-sawing machine, a saw therefor, a movable fence therefor, feed-rolls therefor swingingly and tiltingly supported, and means to support the feed-rolls against the pressure produced in feeding against the saw, by brackets adjustably attached to the frame for that purpose, substantially as described.

5. In a slab-sawing machine, a saw therefor, a movable fence therefor, a delivery-roll attached thereto, driven from the feed-shaft, and a spreader opposite the roll and in line with the edge of the saw, substantially as described.

6. In a slab-sawing machine, a saw thereto attached, feeding mechanism against a fence automatically and mechanically adjustable thereto, a driven delivery-roll for the fence driven from the feed-roll mechanism, means to adjust the fence for different thicknesses of material to be sawed, and a scale and index to guide the operator in setting and adjusting the fence to the saw, substantially as described.

7. In a slab-sawing machine, a saw therefor secured on an arbor mounted in bearings seated upon a bed-plate secured to the machine-frame, a driving-pulley on the arbor between the bearings, a table, a slit in the

table through which the saw is inserted, a fence at one side of the table movably attached, a fluted delivery-roll at the back edge of the saw, a spreader back of the saw, in line therewith, and opposite the delivery-roll, substantially as specified.

8. In a slab-sawing machine, a saw, a frame, a table, a fence, cross and longitudinal feed-shafts therefor, forked yokes doubly embracing and resting upon one of the feed-shafts, for swinging motion, gears to drive the feed-roll shafts, within the yokes, from the feed-shaft, a carrier for one end of the feed-shaft having means for elevating and securing in elevation the feed-shaft, and at the other end of the shaft a bearing centrally suspended for oscillation to permit the elevation of the opposite end of the shaft, feed-rolls upon the shafts seated on the yokes, the feed-rolls being seated upon rectangular seats formed therefor, brackets secured at the upper end of the yokes at one side, swiveling blocks secured in the brackets and yokes, equalizing-screws secured in the swiveling blocks having means for hand adjustment outside of the swiveling block, and at their inner end connection with an equalizing-beam and counterweight, substantially as specified.

9. In a slab-sawing machine, a saw, a table, a frame, a movable fence and a driven delivery-roll thereto attached, feed-shafts, feed-roll shafts swingingly attached thereto, means to press the feed-rolls automatically and by hand against the material being operated upon, and stops secured to the framing to limit the movement of the equalizing-lever, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

AUSTIN W. GOODELL.

Witnesses:
GEO. W. REED,
R. C. WRIGHT.