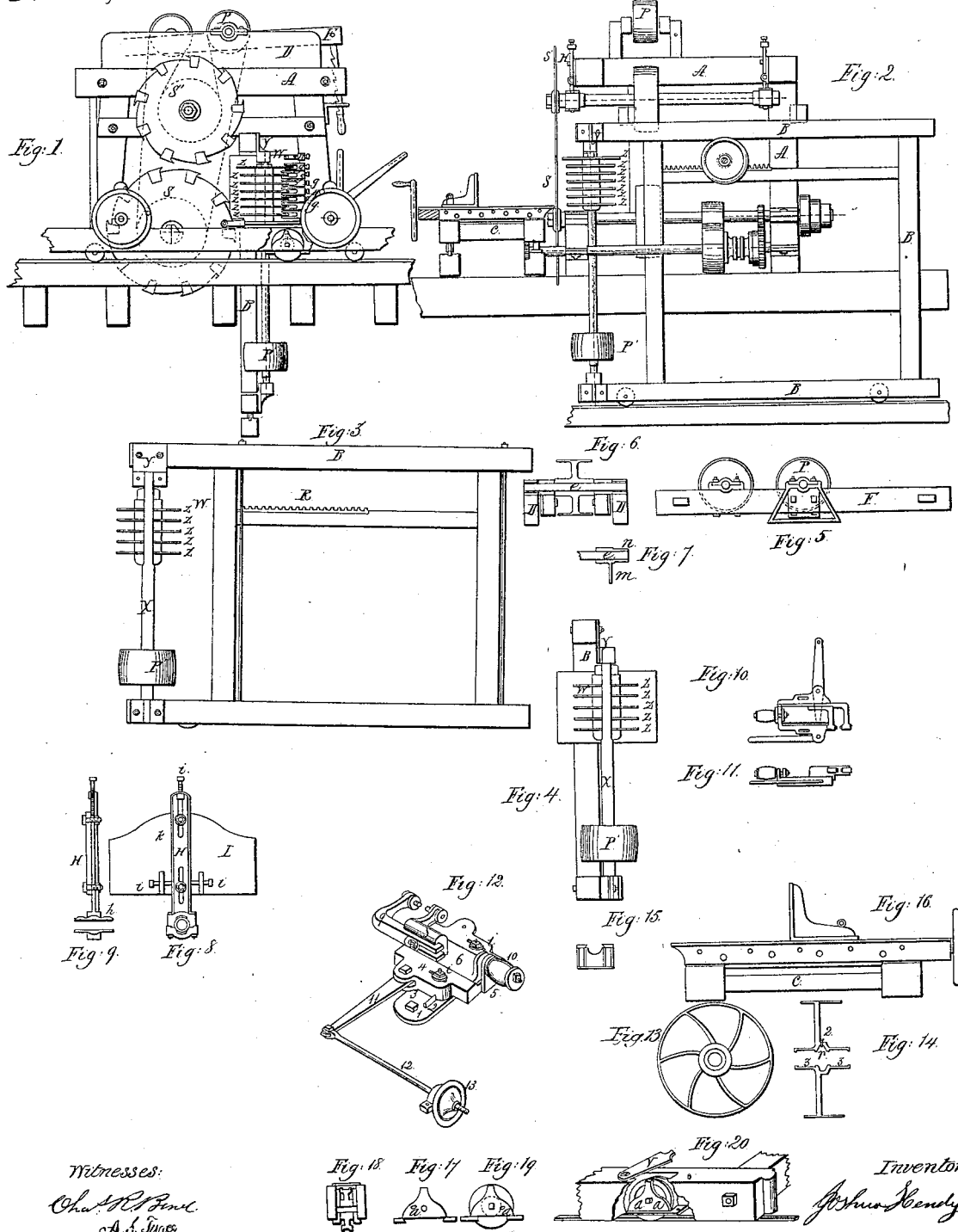


*J. Hendy,
Circular Sarr Mill.*

N^o 53,977.

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UNITED STATES PATENT OFFICE.

JOSHUA HENDY, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN SAW-MILLS.

Specification forming part of Letters Patent No. 53,977, dated April 17, 1866.

To all whom it may concern:

Be it known that I, JOSHUA HENDY, of San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Saw-Mills; and I hereby declare the following to be full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents a front elevation of a saw-mill constructed in accordance with my invention; Fig. 1, a side elevation of the same, part of the wood-work or mill-frame being removed in order to exhibit more clearly the arrangement of the parts. Figs. 3 and 4 represent detached parts of said mill, Fig. 3 being an elevation of the movable saw-frame to which the gang of circular saws is attached; and Fig. 4 a transverse vertical section of the same. Figs. 5, 6, and 7 show, in details, certain portions of the belt-tightening apparatus used with the mill, Fig. 6 being a section on the line *xx*, Fig. 5. Figs. 8 and 9 show the details of the construction of the ball-and-socket hanging box, which holds the arbor of the upper saw *S'*, Fig. 1. Figs. 10, 11, and 12 represent, in detail, the saw-guide *G*, Fig. 1, used to direct the lower saw, *S*. Figs. 13 and 14 show the construction of the loose pulley *P*² on the feed-shaft *X'*. Figs. 15 and 16 are, respectively, a transverse section and side elevation of the head block. Figs. 17, 18, 19, and 20 represent the truck used with the feed-carriage, as seen at *a*, Fig. 1.

The object of my invention is to construct a saw-mill so organized and arranged that lumber of any required dimensions may be sawed accurately and without difficulty. In sawing dimensioned timber—as, for instance, scantling from plank—it cannot be sawed true owing to the springing of the plank; but with the mill constructed in accordance with my invention this difficulty is obviated, as the scantling is cut from a log instead of from a plank.

The improvement contemplated by my invention will be more clearly seen by reference to the drawings.

A *A* is the stationary frame of a double circular-saw mill, a portion of which frame is left out in Fig. 2 in order to more fully show the machinery.

D is a frame on top of the stationary frame *A*, which supports the belt-tightening apparatus *F*.

B, Figs. 1, 2, 3, and 4, is a movable frame carrying the gang of circular saws *z z*, which work at right angles to the circular saws *SS'*. The circular saws *z z* are held at required distances from each other by means of the collars *c c*, and revolve on the shaft *X*, which has its bearings in the frame *B*, and to which motion is communicated by means of the pulley *P'*.

The frame *B* is moved by means of a rack and pinion, as shown in Fig. 2, and wheels or trucks are mortised in the bottom of the frame to facilitate its movement toward or away from the feed-carriage *c*.

W is a shield to prevent sawdust from clogging the machinery. It is secured to the frame *B*, in rear of the gang of circular saws, by any suitable means.

The saw-guides *g g* of the saws *z z* are attached to a rod by set-screws, as seen in Fig. 1, and this rod has journals turned upon its ends working in journal-boxes *n* attached to the shield *W*. The set-screw *u*, in the upper journal-box, holds the rod firmly in any desired position. Each of the saw-guides *g g* consists of a strip of metal of suitable dimensions, one end of which is fitted on the rod, as just explained. The other end is slotted or formed with jaws, on whose inner surfaces are placed pins, which serve to keep the saw more accurately in the required direction, the guides having first been properly adjusted by means of the set-screws which hold them to the rod.

When the gang-saws *z z* are to be changed upon the shaft *X* the set-screw *u* is unscrewed, allowing the guides *g g* to be turned out of the way. To change the gang-saws the hanging box *y* must first be removed, thus giving room between the end of the shaft *X* and frame *B* for removing or replacing the saws.

In connection with the lower vertical saw, *S*, I use a saw-guide, *G*, of peculiar construction, the details of which are shown in Figs. 10, 11, 12. It is secured, by means of bolts on the bed-plate *I*, to the stationary frame *A*. The bed-plate *I* is provided with a rib, 2, and slot 3. On this bed-plate is placed the metallic block 4, which has a groove on its under side corresponding with rib 2, and is attached to bed-plate 1 by bolts *i i* working in slot 3.

6 is a slide working in a dovetail groove in block 4, and to which is secured one of the jaws, 9, of the guide. This jaw has a dovetail slot in the end, which is secured to the slide in which the short jaw 8 is fitted, as shown in the drawings. The screw or bolt *m*, which works in the same slot, is the means by which the jaw 8 is adjusted and held in place.

The slide 6 is secured to a spring, 10, made of india-rubber or other elastic substance, by means of which, in combination with the lever 11, the guide is held firmly in any desired position. The lever 11 is pivoted to the block 4, as seen in Figs. 10 and 12, by its inner end, which works against a pin on the under side of slide 6, as shown in Fig. 10. 12 is a rod, connected with lever 11, having a screw and hand-wheel, 13, at its outer end. This saw-guide, by loosening the bolts *i i*, may be adjusted to any saw, and it is operated by means of turning the hand-wheel 13 to the right, acting upon the lever 11 to force both jaws out, as just explained, or to the left, when the guide is drawn back by the rubber spring 10. The guide thus constructed and arranged is much superior to those heretofore in use, as it is more easily adjusted and operated without danger to the operator.

The arbor of the upper saw, *S'*, works in a ball-and-socket adjustable hanging box, *H*, more particularly shown in Figs. 8 and 9, in which *H* is the hanger, in the lower part of which is the socket for the journal-box *h*, Fig. 9, working as a universal joint.

L is a plate, attached to the mill-frame *A*, to which is affixed the hanger *H* by bolts *K K'*. The plate *L* has a groove or slot, either straight or curved, to allow a lateral movement of the hanging box.

i i i are set-screws by which the hanger *H* is adjusted.

F is the frame for belt-tightener, the new and improved feature of which is the use of the journal-box of the pulley *P* for its bearing, said journal-box having a peculiar construction, as shown in Figs. 5, 6, and 7. In these figures, *e* represents the shaft of pulley *P*, working in journal-boxes *m*, attached to frame *F*, which boxes have journals turned upon their outer ends working in turn in boxes upon the stationary frame *D*. This tightening-frame is easily operated, as, having its bearings in the boxes of the stationary pulley *P*, the only power required is for the purpose of taking up the slack; whereas the tightening-frame as now used, being hinged at its end, requires power sufficient to raise both the tight and slack parts of the belt. I use with this saw-mill the friction feeding apparatus, consisting of the double friction-coupling, backing, and brake, for which Letters Patent were granted me on the 11th of October, 1859.

The present improvements made by me in this apparatus consist in the peculiar construction of the loose pulley on the feed-shaft, in the construction of the feed-blocks, and in making the truck of the feed-carriage self-lubricating.

*P*² is the loose pulley on the feed-shaft *X'*. (Shown more particularly in Figs. 13, 14.) The peculiarity of its construction consists in having a chamber, *r*, cast on the inner side of the hub for the purpose of holding the tallow or oil. *t* is a plug for feeding the same, and the hub is also fitted with grooves for Babbitt's metal. The pulley is thus made self-lubricating, which is a great desideratum, especially when it is considered how difficult it is to get at all times, whether the mill is in motion or not.

Figs. 15 and 16 show the formation of the head-blocks for the feed-carriage, which are made of a combination of wood with plates of metal. (Shown more particularly in Fig. 15.) The head-block thus made is stronger than when made of wood alone, and is even stronger than if of cast-iron, being much less liable to break.

Figs. 17, 18, 19, 20, show the carriage-truck, which is so constructed as to be made self-lubricating, the cheeks *a* being provided with a vertical groove on the inside, allowing the passage of oil to the bearings. The oil which escapes from the bearings is carried round by the hub of the truck until it again reaches the groove and falls again upon the bearings, and the truck thus becomes self-lubricating.

V is a metal slide on top of the carriage at the point where the oil is fed to the truck, for keeping the lubricating-channel free and preventing the sawdust and dirt from clogging. The truck being mortised into the feed-carriage can be made to run close to the track, and, having a flange on its lower part for a bearing, does not weaken the timber in consequence of the mortise.

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

1. In saw-mills constructed substantially as described, the sliding or movable frame for supporting a gang of circular-saws working at angles with vertical, circular, or other saws, which said frame is arranged and operated as hereinbefore shown and set forth.

2. In mills for sawing lumber or other material, the saw-guide, in combination with the means for adjusting the same, both radially and transversely in relation to the saw, as herein shown and described.

3. In the saw-guide constructed as above described, the jaws for adjusting the saw-blade in combination with a slide adjustable by spring and lever in a supporting-block, which in its turn is adjustable upon the mill-frame, as shown and set forth.

4. In saw-mills constructed substantially as herein described, the saw-guides for a gang of circular saws, as set forth, said guides being secured to a plate or shield, and adjustable thereto in the manner and by the means herein set forth.

5. In machines, as herein described, the arrangement of the tightening-frame, of the mechanism to transmit movement from the prime mover, the frame having its bearings on the

journal-boxes of the stationary pulley by means of which boxes it is pivoted to the stationary frame of the saw-mill, substantially as and for the purposes set forth.

6. The construction and arrangement herein described of the trucks of the feed-carriage for a saw-mill, whereby the truck is made self-

lubricating and kept from being clogged up by dust or dirt, substantially as shown and set forth.

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Witnesses:

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