

Reciprocating Saw Mill,

N^o 76,471.



Witnesses.
M. G. Ashpettez
Thos Trache

Inventor:
Jno. L. Knowlton
per Munnell
attorneys

United States Patent Office.

JOHN L. KNOWLTON, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 76,471, dated April 7, 1868.

IMPROVEMENT IN SAW-MILLS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOHN L. KNOWLTON, of Philadelphia, in the county of Philadelphia, and State of Pennsylvania, have invented a new and improved Sawing-Machine; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a new and improved machine for sawing timber in straight, curved, or bevelled form, and is an improvement on a machine for the same purpose, patented by me, October 20, 1863, and reissued September 12, 1865.

The object of the present invention is to render the machine better adapted for the sawing of crooked or curved timber, such as is used for ship-building, and while effecting this result, to obtain simplicity in construction, a greater facility of manipulation, and a less cumbersome machine than usual. In the accompanying sheet of drawings—

Figure 1 is a front sectional view of my invention, taken in the line $x x$, fig. 2.

Figure 2, a horizontal section of the same, taken in the line $y y$, fig. 1.

Figure 3, a detached vertical section of a part pertaining to the same, taken in the line $z z$, fig. 4.

Figure 4, a horizontal section of fig. 3, taken in the line $z' z'$.

Similar letters of reference indicate corresponding parts.

A represents a frame, which supports a horizontal bed, B, said frame having two uprights, $a a$, to which horizontal bars $b b$ are attached, one at some distance above the other, as shown clearly in fig. 1.

To these bars $b b$ there is permanently bolted, or otherwise secured, a segment, C, of wood or metal; cast iron will probably be used. This segment is provided or cast with a flange, c , which extends out from it at right angles, and concentric with it; and in the exterior surface of this flange there is made a groove, d , to receive friction-rollers, which are secured to a segment, D, to admit of D moving freely on C, and securing the former to the latter.

The exterior of the segment D is toothed, to receive a screw, E, through the medium of which the segment C is turned.

The segment D has saw-guides F F attached to it, in line with each other, and in a position radial with the segment, said guides having slides G G fitted within them, to which the ends of the saw H are attached.

The slides G G are secured to the inner ends of levers I I, by means of connecting-links $i' i'$ which serve, as the saw is operated, to keep the sides of the slides parallel with the sides of the guides F, in order to prevent the former from being twisted or cramped in the guides. The fulcrum f of the levers are on the segment D, and the outer ends of the levers are connected by a rod, J, the ends of which are provided with screw-threads, to work in swivel-nuts g , in the outer ends of the levers.

It will be seen from the above description that, by turning the rod J, the saw H may be strained or kept at a proper degree of tension at all times. This will be fully understood by referring to fig. 1.

The advantage of this arrangement consists in the dispensing with the comparatively heavy and cumbersome saw-sash used in my original machine, and admitting of the saw being more readily strained than hitherto. This is an important feature of the invention, as it economizes in the construction of the machine, and reduces jars and concussions, and consequent wear and tear.

The saw H works through a slit or hole in the bed B, and the segments C and D admit of timbers being turned to any given angle relatively with the saw, and also of very crooked timber being sawed, as the ends of the segments are so placed that the open space $a \times$ between their ends is over the bed B. This is also an important feature of the invention, as the original machine has its saw-gate attached to a plate which forms a complete circle, and this plate worked on a guide, which also forms a complete circle.

In the original machine, therefore, a stick of timber cannot be turned on the bed B, back of the plane in which the segment C is placed, nor can a stick of timber be conveniently sawed which is quite crooked, as timber for the knees of vessels, for instance. By my improvement a stick of timber, in being sawed, may be turned around nearly in an entire circle in a horizontal plane, and to facilitate this adjustment of the timbers, I use annular ways $I \times$ for the carriages or trucks to work or move on. A portion of these ways is shown in fig. 2.

By means of these annular ways, therefore, and the open space a^x , the sawing of crooked timber, more especially ship-timber, is greatly facilitated.

J^x represents the feed-wheels by which the timber is fed to the saw, and K is the pressure-roller above it. The feed-wheels are rotated from a horizontal shaft, L , by means of bevel-gears h and an upright shaft, i , two feed-wheels $J^x J^x$ being used, and placed on a shaft, j , (see fig. 4.) This shaft j has its bearings in a yoke, M , attached to a sleeve, N , which is fitted loosely on the upright shaft i , so that it may turn freely thereon. The lower part of this sleeve has a toothed wheel, k , upon it, into which a rack, l , gears, said rack being fitted in suitable guides, so that it may slide freely therein. By adjusting or moving this rack l , the feed-wheels $J^x J^x$ may be turned so as to coincide with the direction designed to be given the timber in its movement towards the saw. This, it will be seen, is essential, as the wheels $J^x J^x$ feed the timber to the saw, and it is owing to the position of said wheels (the planes in which they rotate relatively with the saw) that the feed-movement of the timber has the proper direction given it.

By the arrangement of the feed-wheels as above described, they may be adjusted with the greatest facility by the operator.

The above-described improvements render my original patented machine far more desirable and valuable than hitherto, as they not only facilitate the manipulation of the machine while in operation, but render the same capable of performing work which cannot be conveniently done with the original one.

I claim as new, and desire to secure by Letters Patent—

1. The guides F , slides G , connecting-links $i' i''$, pivoted levers $I I$, and connecting-rod J , in combination with the saw H , all arranged and operating as described, for the purpose specified.
2. The construction and arrangement of the segments $C D$, the former having the opening a^x for the purpose, substantially as described.
3. The rack l , and pinion K , in combination with the sleeve N , yoke M , and feed-rollers J^x , as herein described, for the purpose specified.

JOHN L. KNOWLTON.

Witnesses:

CHARLES B. MITCHELL,
WM. F. HELMS.