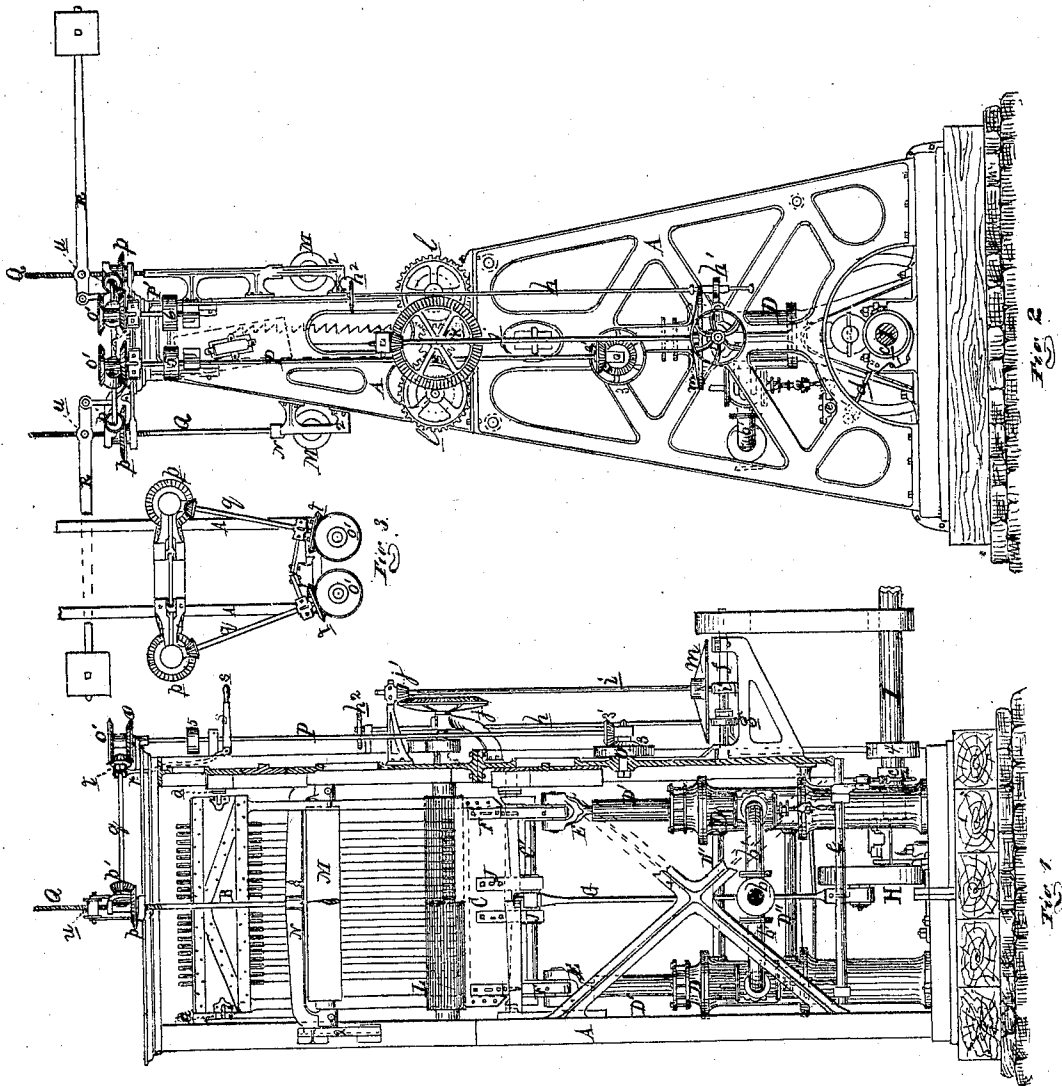


H. D., E. N., & C. T. WICKES.

Improvement in Saw-Mills.

No. 132,552.

Patented Oct. 29, 1872.



ATTEST:

H. F. Eberts
Wm. H. Church

INVENTORS:

Henry D. Wickes
Edward N. Wickes
Charles T. Wickes
per Attorney
Wm. L. Sprague

UNITED STATES PATENT OFFICE.

HENRY D. WICKES, EDWARD N. WICKES, AND CHARLES T. WICKES, OF
EAST SAGINAW, MICHIGAN.

IMPROVEMENT IN SAW-MILLS.

Specification forming part of Letters Patent No. 132,552, dated October 29, 1872.

To all whom it may concern:

Be it known that we, HENRY D. WICKES, EDWARD N. WICKES, and CHARLES T. WICKES, of East Saginaw, in the county of Saginaw and State of Michigan, have invented a new and useful Improvement in Saw-Mills; and we do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon and being a part of this specification, in which—

Figure 1 is a rear elevation of our gang, partially in section; Fig. 2 is a side elevation; and Fig. 3 is a partial plan of the top.

Like letters refer to like parts in each figure.

The nature of our invention relates to an improvement in the construction of and method of operating that class of gang-saw mills, in which the sash carrying the saws has imparted to it an oscillatory or vibratory movement; and it consists in the employment of a pair of trunk-engines secured in the lower part of the gang-frame, which engines are connected directly to the lower girt of the sash by connecting-rods coupled to said lower girt and to the bottoms of the engine-trunks, whereby the oscillation of the gang-sash is permitted, while the rectilinear movement of the trunks and pistons is not interfered with; also in the method of operating the cylinders by steam-pipes for equalizing the pressure on their pistons, so that in case one cylinder, from the wrong adjustment of its valve, or any other cause, should take steam first, the pressure would be equalized.

In the drawing, A represents a pyramidal iron frame erected upon and secured to a foundation entirely independent of the mill-house. The frame may have its side columns cast in two parts and bolted together, as shown. B is the upper and C the lower girt of the sash or gate, of which C' is the noddle-shaft, the crank-arms of which move in the lower slides of the frame, giving the lower end of the sash an oscillatory movement in rising and descending, the device in question being that for which Letters Patent were issued to A. P. Barlow, December 17, 1867, reissued March 15, 1870; but any equivalent means may be used to oscillate the lower end of the sash. The upper end of the sash may have an oscillatory movement, if desired, and, as shown, by the use of curved or inclined guides, to receive the sash cross-head *a*. D D are steam-cylinders securely

bolted to standards rising from the bed-plate just within the cheeks of the frame, and whose steam-chests are supplied with steam through branches *b'* from a steam-pipe, *b*, common to both. In lieu of piston-rods the pistons have attached to them the trunks D' playing through the upper heads. E is a connecting-rod strapped to a wrist in the bottom of each trunk. The wrist in the fork at the top of each rod is connected to the bottom girt of the gate or sash by a strap, F, within whose jaws are two pairs of brasses, one pair embracing the wrist and the other the noddle-shaft, so that, in connection with the inclined upper slides, the gate has a rolling vibration in the plane of the cut of the saws, which necessitates a vibration in the connecting-rods E, as will any other method of oscillating the gang.

We do not wish to confine ourselves to any particular method or plan of oscillating the gang, as our improvement is applicable to any oscillating gang; but give our preference to that described, as the swing to the lower end of the gate is produced by a pitman, G, in the following manner: The upper end of said pitman is rigidly secured to the center of the noddle-shaft C', and its lower end strapped to the wrist of a crank-wheel, H, at the inner end of a shaft, I, transversely journaled in the lower part of the frame, and, in the reciprocation of the gate, gives it a rotary movement. The lower girt of the gate is connected by straps J to the noddle-shaft C', which oscillates in boxes in said straps, as said noddle-shaft is cranked at the ends where it engages with the lower slides. The lower end of the gate oscillates in a radius described by the straps J, if they be taken as a prolongation of the pitman for a distance equal to the distance from the center of the noddle-shaft to the center of its crank-arms.

Heretofore the pitmen reciprocated the gates of gang-mills, but in this case the gate reciprocates the pitman, which in turn rotates the shaft I, which, through the eccentric *c*, reciprocates the steam-valves through the eccentric rod *d*, connected to an arm on the rock-shaft *e*. *f* is a shaft, journaled in a bracket, projecting from one side of the frame, and derives motion from the shaft I by a belt passing around their respective pulleys, as shown in Fig. 1. The shaft *f* carries a friction-wheel, *g*, feathered on it and deriving its lateral movement through the pinion *h*, engaging with a

rack on the edge of the clutch-finger, which slides said friction-wheel. The shaft h extends up through the mill-floor, and is provided with a hand-wheel, h^2 , at the upper end for rotating it. i is an upright shaft stepped in a bearing, i' , which straddles the shaft f , and is journaled at the upper end in a bracket projecting from the side of the frame. Its upper end carries a pinion, j , meshing with a bevel-gear, j' , on the end of a shaft journaled through another bracket on the side of the frame, and which shaft carries an intermediate pinion, k , which rotates the gears l , at the projecting ends of the feed-rolls L . At the lower end of the shaft i is a disk or brush-wheel, m , resting on the periphery of the wheel g , which rotates it. By sliding this wheel g toward the periphery of the brush-wheel its speed and that of the feed-rolls is decreased, and, per contra, increased by moving said wheel toward the center. M are the pressure-rolls, which are hung in yokes N , sliding in guides 2 at the front and back sides of the frame. As these rolls have to be adjusted to bear on cants of varying heights, requiring them to be raised and lowered on the introduction of each cant, we effect it through the following mechanism: A pulley, O , rotates on a stud projecting from the side of the frame, to which pulley motion is given by the shaft I through a belt and pulley, 4 , on said shaft. There is also a short vertical shaft, P' , parallel with the shaft P , stepped in a bracket at the side of the frame, and like the other projects above its top. On the shaft P is a pulley, 5 , and on P' another, 6 . A belt passing around both transmits motion from P to P' . At the tops of the shafts P P' are secured the double disks o o' , whose internal faces are beveled, as shown. On each yoke N is an upright screw, Q , feathered to receive the spline of a beveled gear, p , sleeved thereon in a bracket projecting from the front and rear cornices of the main frame. In the bracket are also journaled the shafts q , carrying pinions p' , meshing with the gears p . The shafts q radiate from the upright shafts P P' at the ends next to them being journaled in boxes at the upper ends of a pair of rods, r , pivoted to a lever, s , below. t is a friction-pinion, placed at the end of each shaft q between the friction-wheels o o' , so that by raising or lowering the lever s the pinions t will be pressed into contact with one or the other of the disks o o' , rotating the shafts q , and through them the screws Q , which carry the pressure-rolls M . The screws Q work in nuts u , secured in the jaws of the weighted levers R , whose short arms are pivoted through links to the top of the frame, whereby the necessary pressure to keep down the cant in the upward movement of the saws is exerted on the rolls M . All that the attendant has to do to raise or lower said rolls is to disengage the lever s from a notch or other holding device at the side of the frame A and press it up or down until the pressure-rolls are at the desired

plane, and then replace said lever s in its notch, which holds the pinions out of contact with either of the disks o o' .

In order to equalize the pressure in the steam-cylinders, insure unison in the movements of their pistons, and to correct the result of any derangement of either valve, or the setting of one valve to let one cylinder take steam before the other, we connect the upper and lower ends of said cylinders by the horizontal pipes D'' , as shown in Fig. 1, but their employment is not essential, only advisable, especially if the machinery receive only the rough care usually bestowed upon saw-mill engines.

If an ordinary direct-acting engine were employed to reciprocate the gate the frame would have to be increased in height, which would render it top-heavy and unstable.

We are well aware that the gates of gangs have been connected directly to the piston-rods of the engines employed to reciprocate them; but such an arrangement does not permit of the oscillation of the gate. It is true that we might use engines of the oscillating type for this purpose, but their increased cost, liability to derangement, and the expense of repairs would militate against them.

By employing a pair of engines whose cylinders are not bolted to the sides of the frame but to standards on the same bed-plate with the frame, and acting in unison upon the ends of the lower girt, we secure greater stability and steadiness of motion in the gate, reducing the wear and tear of the moving parts, while, what is of greater importance, we can increase the speed of the gang and its production.

We cannot lay any claim to the invention of the trunk-engines, but only to their application in the manner described, and to the method of operating their valves; we also disclaim the invention of the feed mechanism of the gang, and the method of vibrating or oscillating the gate.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The arrangement of the cylinders D , trunks D' , connecting-rods E , and straps F , with relation to the noddle-shaft C' and lower girt C of an oscillating saw-gang, reciprocating in suitable slides in the frame A , substantially as and for the purpose set forth.

2. The employment of the pipes D'' , as and for the purpose set forth.

3. The method of raising and lowering the pressure-rolls M and their yokes N through the screws Q , nuts u in the levers R , gears p , pinions p' , shafts q , friction-wheels t , and disks o o' , rods r , lever s , shafts P P' , and pulleys 5 and 6 , substantially as described.

HENRY D. WICKES.

EDWARD N. WICKES.

CHARLES T. WICKES.

Witnesses:

CHAS. H. CAMP,

GEO. A. FLANDERS.