

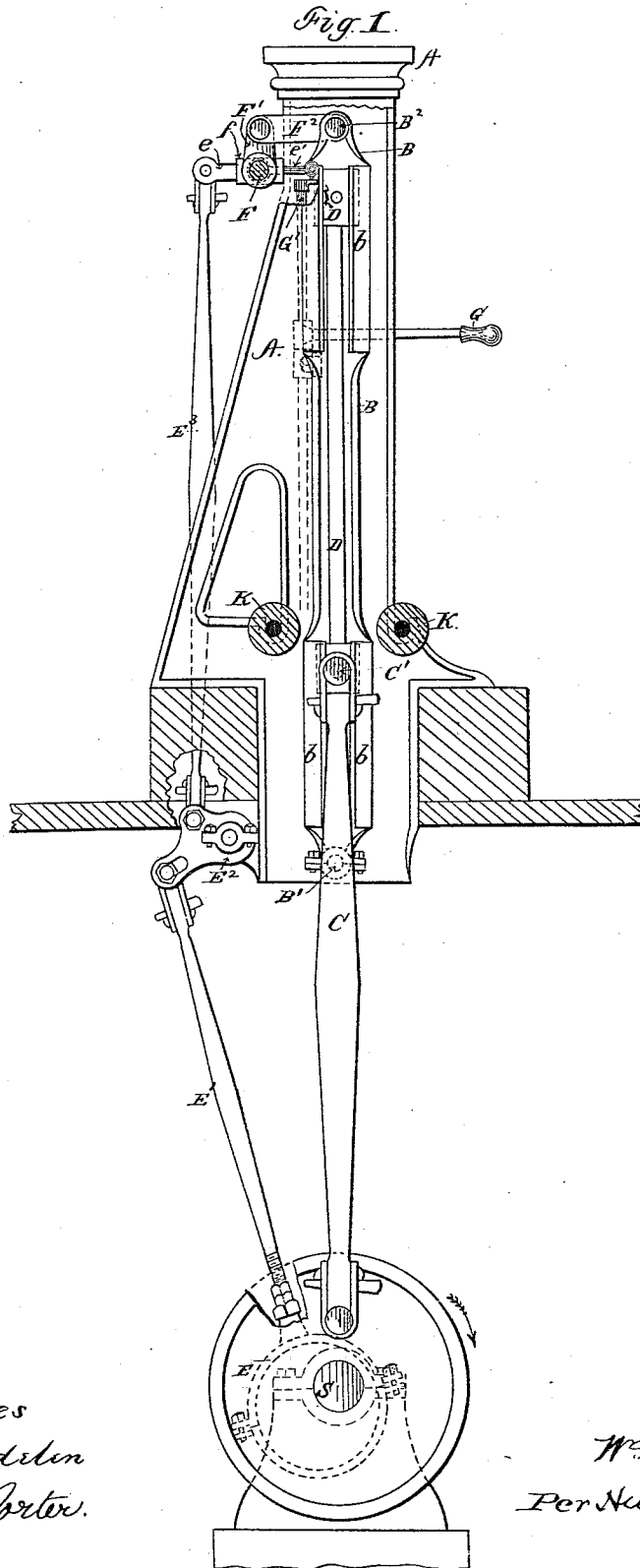
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3 Sheets—Sheet 1.

W. M. WILKIN.
RECIPROCATING SAW MILL.

No. 286,355.

Patented Oct. 9, 1883.



Witnesses
W. R. Edlin
Robt H. Porter.

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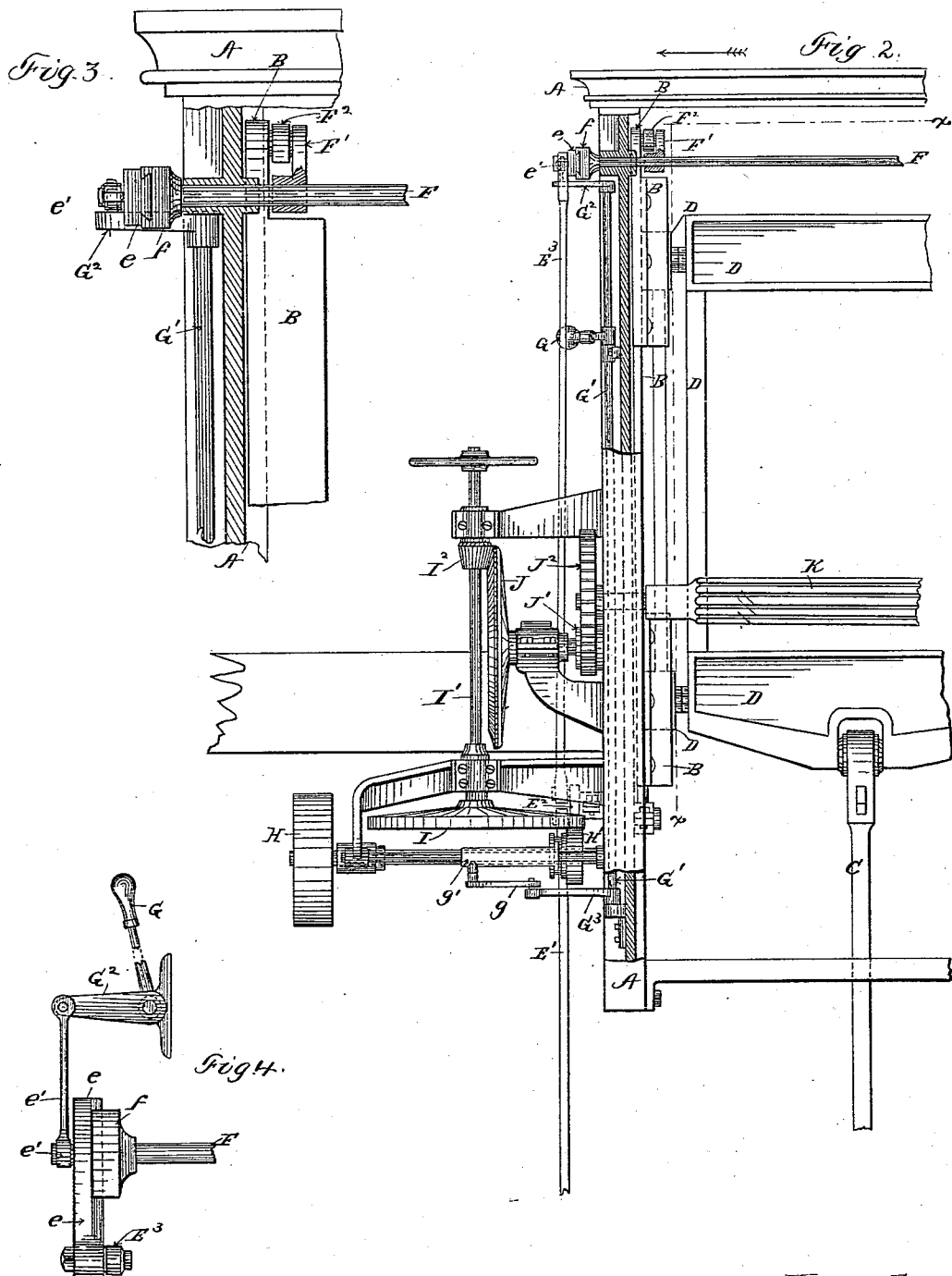
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3 Sheets—Sheet 3.

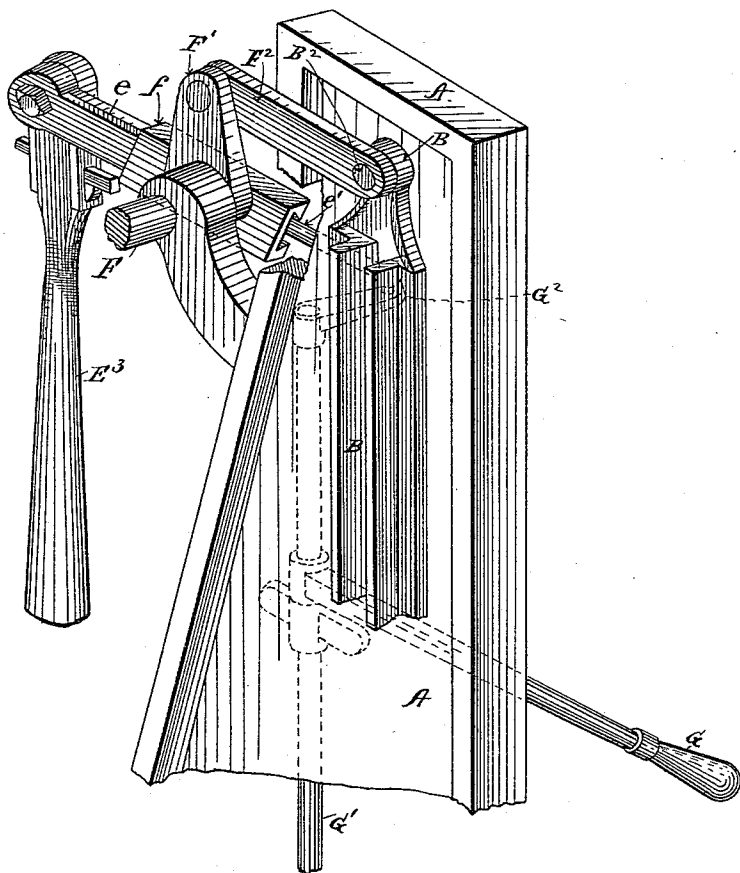
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Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM M. WILKIN, OF EAST SAGINAW, MICHIGAN.

RECIPROCATING SAW MILL.

SPECIFICATION forming part of Letters Patent No. 286,355, dated October 9, 1883.

Application filed April 18, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. WILKIN, a citizen of the United States, residing at East Saginaw, in the county of Saginaw and State of Michigan, have invented certain new and useful Improvements in Reciprocating Saw Mills; and I do hereby 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.

This invention relates to devices for regulating the movements of reciprocating saws, and particularly to what are known as "gang-saws."

The particular devices to which my invention relates are those by which the saws are oscillated or thrown forward and back as they move up and down, which movements are known as the "rake and clearance of the saws." Heretofore these movements have been obtained by adjusting the sash containing the saws in guides, which are on pendulum-pieces pivoted on the sides of the frame at the top and oscillating the pendulum by an eccentric on the crank-shaft. Such a movement has also been varied by setting the guides at the top of the sash at an angle to those at the bottom.

The first part of my invention relates to the manner of pivoting the pendulum—viz., pivoting it to the frame at or near the bottom of the pendulum pieces—or, in other words, inverting the pendulum and applying the mechanism for moving it at the top.

The second feature of my invention consists in making the oscillatory movement variable by applying, in the gearing connecting the eccentric with the pendulum, devices in the nature of a link-movement or similar movements used in steam-engine valve-gears.

The third feature of my invention consists in connecting the devices by which the degree of oscillation is varied with those which regulate the feed in such a manner that as the feed is increased the rake of the saws will be increased automatically and proportionately.

My device is illustrated in the accompanying drawings, as follows:

Figure 1 is a side view of the inside of the

frame. Fig. 2 is a front view with a part of the frame, sash, &c., shown, and with parts of the frame in vertical section. Fig. 3 is a part of Fig. 2, enlarged. Fig. 4 is a top view of the parts G^2 , e , e' , f , and E^3 . Fig. 5 is a perspective view of the variable-link movement.

The various parts are indicated by letters of reference, as follows:

A is the frame. B is the pendulum, which is pivoted to the frame at B' , and is connected at B^2 with the gearing, by which it is oscillated. C is the sash or saw pitman. D D D, &c., represent the saw-sash and its guide-blocks. E is the eccentric, which operates the gearing which oscillates the pendulum. E' is the eccentric-rod. E^2 is a rock-arm. E^3 is a connecting-rod. F is a rock-shaft, which extends across the top of the frame. f is a grooved head or link-block on one end of the shaft F. e is a link or bar, movable in the groove in said link-block and connected with the connecting-rod E^3 . F' is a crank or arm on said shaft F, of which there is one on each side of the frame. F' are links or bars, which connect the cranks or arms F' with the pendulum-pieces B. G is a hand-lever on the upright shaft G' , which is adjusted on the outside of the frame. G^2 is a crank or arm on the top of this shaft, and G^3 is a similar crank on the bottom. e' is a connecting-rod between the arm G^2 and the link-bar e . H is the driving-pulley of the feed-gearing. H' is a traveling friction-gear on the shaft of the pulley H. g' is traveling yoke or sleeve on the same shaft, and collars onto the friction-gear H'. g is a connecting-rod from the crank-arm G^3 to the traveling sleeve g' . I is a disk-friction. I' is its shaft. I' is a beveled gear on the shaft I'. J J' J' are gears for transmitting motion from the shaft I' to the feed-rollers K.

Heretofore, as stated above, the pendulum has been pivoted at its upper end, and as such an adjustment could not properly throw the saws forward at the top to give the proper rake, diagonal guides for the saw-sash were employed in connection with the pendulum. I pivot the pendulum at or near the bottom, and move it by gearing at the top, and thus give the saws their oscillation at the top without the aid of diagonal guides. I may use

diagonal guides, if so desired, to give still more rake to the saws.

Heretofore the rock-shaft F has been placed across the frame at the bottom, and connection from it was there made with the pendulum. I place it at the top of the frame, and there make connection with the pendulum. Each revolution of the shaft S moves the saw-frame up and down, and through the eccentric E and gearing E' E² E³, e f, F F' F² and pendulum B the saw-frame is oscillated or vibrated forward and back while it is moving down and up. The forward movement is known as the "rake," and occurs as the saws go down, and the backward movement is known as the "clearance," and occurs as the saws go up. When the pendulum is pivoted at the top this forward movement all takes place at the bottom of the saws, and so does not produce the desired result; but when the pendulum is pivoted at or near the lower end the forward movement properly throws the saws over onto the log, and gives a proper rake from the top of the cut.

The second part of my invention consists in making the amount of this vibration of the pendulum variable. This is done by incorporating at some point in the eccentric-gearing a shifting device or variable crank or link movement. This may be done by making the eccentric E a shifting-eccentric, such as is common in steam-engine valve-gears; or a link-movement or shifting crank-arm may be substituted for the rock-arm E²; or it may be done, as shown, by a shifting-link or crank-arm, e, on the rock-shaft F. This device is very simple, consisting, wholly, in varying the length of the arm e, which is done by sliding it in the head f by means of the rod e', crank G², shaft G', and the lever G. Of course as the arm e is extended the shaft F is rocked through a shorter arc by a given movement of the rod E³. It is not essential that there be a rock-arm, E², for the rod E' may extend from the eccentric to the arm e.

The third feature of my invention consists in making the variation of the vibration of the pendulum automatically conformable with the speed of the feed-rollers, which is always made variable. If the character of the log is such that it can be fed to the saws faster than another, by reason of its size or the hardness of the wood, the saws should also be trimmed so as to cut deeper at each stroke—that is, given more rake. So it will be observed that there should be community of action between the variable feed and the variable rake. They should vary in unison. The faster the feed the more rake, and vice versa. The speed of the feed is determined by the position of the friction-gear H' from the center of the disk-friction I. The nearer the friction-gear H' is to the center of the disk I the more rapid the feed, and vice versa. I move the friction-gear H' by the arm G³ on the shaft G', which is the same shaft as that on which the arm G² is fixed,

which moves the arm e. So, therefore, any movement of the hand-lever G, which is in position for use by the sawyer, will vary the feeding of the log to the saw and the rake of the saw in unison.

There may be many various kinds of speed-regulators used in place of the frictions H' and I; and I do not desire to be limited to any particular kind, for it will be obvious to any mechanic how to make connection between any ordinary speed-regulator and any variable rocking-gear.

It should be observed that the first part of my invention—viz., the pendulum pivoted at or near the bottom—may be used without a variable rocking gear, and it may be used with a variable rocking gear without being in connection with the variable feeding-gear; and the variable rocking gear may be used with a pendulum, which is pivoted at the top, either with or without connection with the variable feeding-gear.

What I claim as new is—

1. In a reciprocating saw mill, a sash-pendulum which holds all the guides of the saw-sash, and thereby carries the said sash bodily, pivoted at or near its lower end, and moved by rocking mechanism connected with it at or near its upper end, substantially as shown.

2. In a reciprocating saw mill, a saw-sash pendulum which holds all the guides of said sash, and thereby carries it bodily, pivoted at or near its lower end, and moved by a variable rocking gear, connecting with it at or near its upper end, substantially as shown.

3. In a reciprocating saw mill, the combination, substantially as shown, of a saw-sash pendulum which holds all the guides of the said saw-sash, and thereby carries it bodily, pivoted at one end, a variable rocking gear for moving said pendulum, a speed-regulator for varying the speed of the feeding mechanism, and, finally, a hand-lever which is geared to operate both the shifting parts of the rocking gear and the speed-regulator simultaneously.

4. In a reciprocating saw mill, the combination, substantially as shown, of a saw-sash pendulum which holds all the guides of said saw-sash, and therefore carries it bodily, pivoted at or near its lower end, a variable rocking gear for moving said pendulum connecting therewith at or near its upper end, a speed-regulator for varying the speed of the feeding-rollers, and, finally, a hand-lever geared to operate both the shifting parts of the rocking gear and the speed-regulator simultaneously.

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

WILLIAM M. WILKIN.

Witnesses:

JNO. K. HALLOCK,
C. SMALLEY.