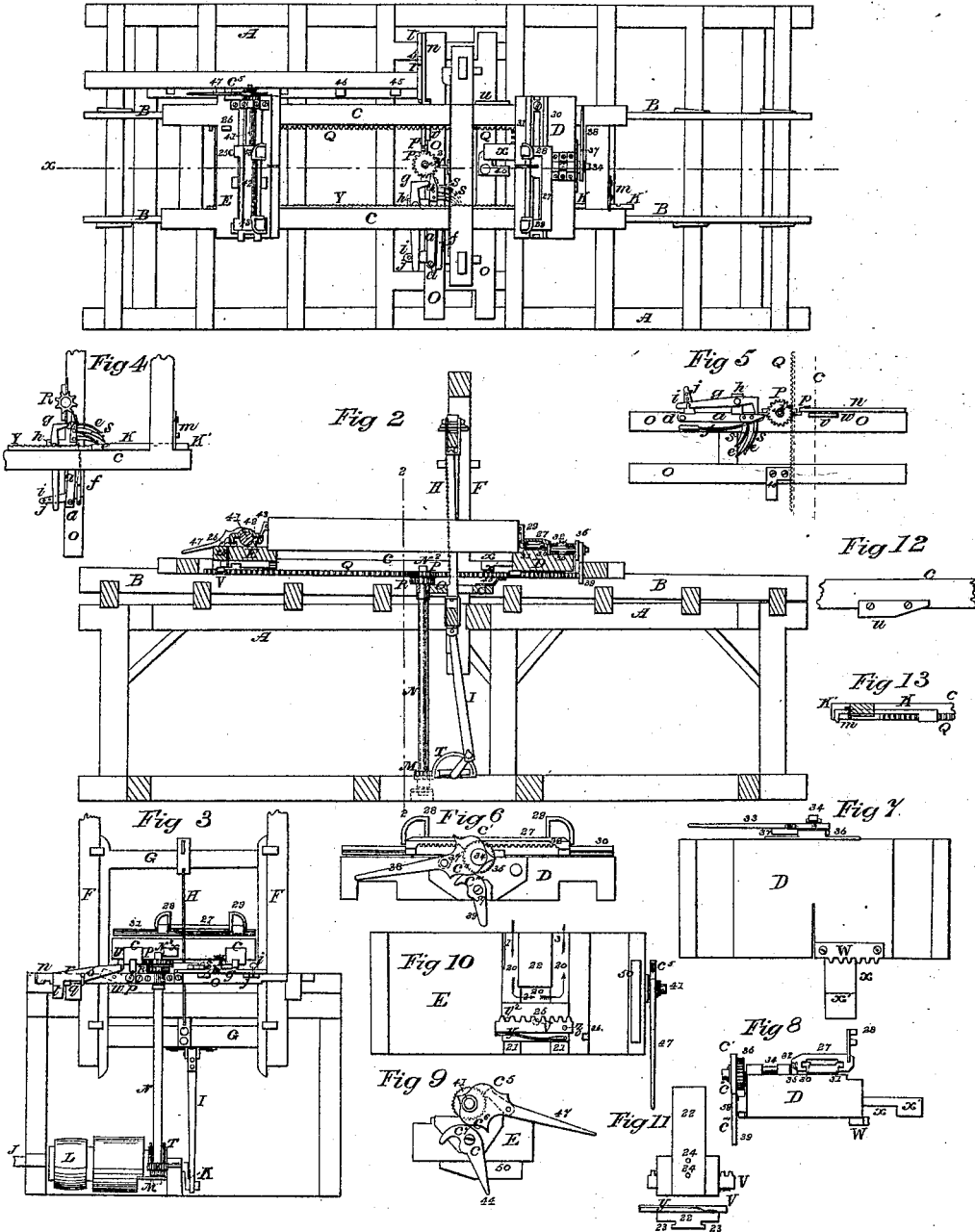


Patented Oct. 31, 1848.

Fig 1



UNITED STATES PATENT OFFICE.

WILLIAM FINK, OF WILLIAMSPORT, PENNSYLVANIA.

SAWMILL.

Specification of Letters Patent No. 5,898, dated October 31, 1848.

To all whom it may concern:

Be it known that I, WM. FINK, of the town of Williamsport, in the county of Lycoming and State of Pennsylvania, have invented a new and useful Improvement in Sawmills, called the "Improved Self-Acting Sawmill," which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1, is a top view of the machine. Fig. 2, is a vertical longitudinal section of the machine on the line *xx* of Fig. 1. Fig. 3, is a vertical transverse section on the line 2, 2, of Fig. 2 looking toward the cutting edge of the saw. Fig. 4, is a top view of a portion of the carriage and rack attached to it and the feed gear and part of the slide. Fig. 5, is a top view of the transverse sliding frame to which a part of the feed gear is attached, detached from the carriage. Fig. 6 is a front view of the head block looking toward the saw. Fig. 7 is a view of ditto inverted or turned bottom upward to show the short rack on the under side thereof. Fig. 8, is an end view of the head block. Fig. 9, is an end view of the tail block—the top view of which is seen in Fig. 1. Fig. 10, is a view of the tail block inverted, or turned bottom upward, to show the continuous groove and rack beneath the same. Fig. 11, is a bottom and end view of the slide to which the rack and spring are attached shown in Fig. 10, detached from the tail block. Fig. 12, is a section of the carriage, showing the inclined block for lifting the lock plate. Fig. 13, is a section showing the sliding shield for preventing the feed hands acting against the ratchet bar while setting the log.

Wherever the same parts occur in the several figures of the drawings they are indicated by the same letters.

A is the frame. B, B, ways. C, carriage. D, head block. E, tail block. F, F, fender posts. G, gate. H, saw. I, pitman rod attached to saw gate. J, main or driving shaft. K, crank on shaft J, to which the pitman rod is attached for operating the saw. L, drum on the main shaft. These parts are made and arranged in the usual manner, and therefore need no particular description of their construction.

The mode of operation will appear under the head of "operation," hereafter, where

the combination of the parts will be made to appear more clearly.

M is a pinion placed on the lower end of a shaft N stepped in a box in the frame and whose upper portion turns in a box affixed to a transverse sliding frame *o*, and on whose upper end there is a pinion P that is brought into gear with a rack Q affixed to the side of the carriage *c* for running the carriage back after the board has been sawn, and a toothed tappet wheel R just below the pinion P on the same end of the shaft N for operating the vibrating arm *a* attached to the slide *o* by the pin *d* to which the feed hands *s, s*, are attached. The pinion M is turned by an endless screw T on the main shaft.

V is a row of cogs attached to the under side of tail block for the purpose of conducting the pinion P, with the rack Q, of the carriage in order to run or gig back the carriage.

W, is a row of cogs on the underside of head block for conducting the pinion P out of gear with the rack Q, of the carriage and for bringing the hands *s, s*, into gear with a ratchet bar Y on the opposite side of the carriage by moving the sliding frame O to which the box of the shaft N is secured alternately to the right and left for changing the direction of the movement of the carriage. By means of the pinion P, and tappet wheel R, arm *a* and hands *s, s*, racks Q, V, W, Y, the carriage, when once started, is kept in a continuous motion with that of the saw (except certain pauses) as will be shown more clearly hereafter. *ee* are two springs for keeping the hands *s s* against the ratchet bar Y.

f is a spring attached to the sliding frame O by one of its ends while its other end bears against the vibrating arm *a*, keeping it against the gage bar (*g*) also attached to the sliding frame, *h* is the fulcrum of the gage bar.

i is a pin for holding the gage bar in any required position by being inserted into one of the holes in the arm *j* fastened to the sliding frame. This gage bar is for the purpose of graduating the sweep of the arm *a* causing it to stop nearer to or farther from the teeth of the tappet wheel R in order to increase or diminish the motion of the carriage in sawing hard or soft timber.

K, Figs. 4 and 13, is a sliding shield running in grooves in the carriage intended to cover a portion of ratchet bar to prevent the feed of the carriage, and consequently stop its motion while adjusting the log for a new set, or for any other purpose, by coming between the hands *s* and the teeth Y as represented in Fig. 4, the points of said hand slipping over the shield and producing no effect on the carriage.

K' is the bar or handle of said shield notched to receive a key *m* attached by a pin to the end of the carriage on which it turns for holding the shield firmly.

n is a lock plate or drop holder for locking the transverse sliding frame *o* to the main frame A to prevent its moving to the right or to the left during the operation of sawing and gigging back. It is attached to the sliding frame by a pin *p*, or bolt, on which it turns. It is notched on the under edge for dropping over a plate *q* Fig. 3—fastened to the main frame *r* is a lifting lever for lifting said lock plate *n* to disengage it from the main frame when the sliding frame is about to be moved to the right or to the left. *s* is the fulcrum of said lifting lever. *t* is its weighted end.


u is an inclined block fastened to the side of the carriage which comes in contact with the light end of the lifting lever *r* and presses it down and at the same time raises its weighted end and with it the notched end of the lock plate at the moment before the sliding frame is to be moved to engage the hands *s* with the ratchet Y.

v is a stop for holding the sliding frame from moving back while setting the end of a large log by hand when the shield is used as represented in Fig. 4 and the lock plate *n* is disengaged from the plate *q*, and when the sliding frame might have a tendency to move back before the log is set, said stop bearing against the inner side of the inclined block *u*, which, during the operation comes directly behind it. *w* is the pin that attaches this stop to the sliding frame and on which it plays or vibrates vertically.

x is a notched arm attached to the head block for holding the pinion P in gear with the rack W after leaving the rack Q, in moving the sliding frame O with the feed hands *s* toward the rack Y, by means of the upper axle N on which there is an anti-friction roller N² coming in contact with the inner side of the head *x*'.

y is a spring attached to the underside of the block bearing against the rack V (which turns on a pin *z*) for allowing it to recede at one end from the pinion when the teeth of the pinion happen to strike against the teeth of the rack so the teeth of the pinion may be made to mesh into the rack gradually, without liability of breaking the parts or binding one against another. *v*² is

a stop against which the rack is pressed by the spring.

(20) is a continuous, or  shaped way formed on the underside of the tail block along which the upper end of the shaft N passes in the direction of the arrow No. 1, as the carriage moves forward toward the saw until the teeth of the pinion become engaged with the teeth of the rack V when the pinion (which is constantly turning) moves with the shaft toward the rack Q in the direction of the arrow No. 2, or at right angles to the motion of the carriage, carrying with the sliding frame and the hands *s* which are disengaged from the ratchet bar Y until the teeth of the pinion P become fairly engaged with the teeth of the rack Q of the carriage when the motion of the carriage becomes instantly reversed causing it to run back at an increased speed, the head of the axle or shaft N leaving the way 20 in the direction of the arrow No. 3.

21, 21, represent parallel ribs or plates fastened to the under side of the tail block between which the grooved slide (22) slides while being set to the right distance from the edge of the tail block for sawing the edge with or without stub short. 23, 23, Fig. 11, show the grooves in the slide that admit the ways 21, 21, the holes in the slide for the insertion of a pin or bolt 25, which passes through the tail block for holding the slide in any required position are represented at 24, 24. When it is required to have stub short this slide with the rack must be moved toward the saw, and when no stub short is required the slide must be moved from the saw. 25 in Figs. 1 and 2 represents the pin for holding the slide firmly from moving over the ribs or ways. 26 is a key for securing the tail block to the carriage. It passes vertically through an opening in the tail block down into the spaces between the teeth of the rack of the carriage. By withdrawing this key the tail block may be moved toward or from the saw at pleasure.

27, is a rectangular slide to which the log is dogged at either end at pleasure according as the sawyer may wish to set the log from the right or left side.

28 and 29 are two half bale dogs for dogging the head end of the log to the slide.

30 and 31, are parallel ribs or ways fastened to the head block over which the slide is made to move, the under side of the slide being grooved in two parallel grooves corresponding with the ribs or ways aforesaid. 32 is a row of cogs on the under side of the slide. There is a pinion 35 on the horizontal axle 34 turning in boxes in the head block which meshes into the rack 32 on the under side of the slide. 36 is a ratchet wheel on said axle. 37 is a pall working into said ratchet wheel. 38 is a lever to which said pall is attached working loosely on the outer

end of the axle for moving the slide and log by hand or lever and cam power in the usual manner. The large end of this lever through which the axle passes is formed into the eccentric cams C' C'' to be acted on by an eccentric cam C''' attached to the head block by a pin 59 for turning the eccentric end of the lever and operating the slide 27. The said eccentric C''' will operate the double eccentrics C' C'' of the lever 38 whichever way the lever may be placed. If the lever be thrown over to the right it will lift the long end of the lever in the arc of a circle and will cause the slide and dogs to move to the left.

If the position of the lever be changed and it be thrown over to the left the action of the lower eccentric upon the other eccentric C'' of the lever will cause the lever to rise in the arc of a circle and move the slide and dogs to the right. This right and left action of the lever is produced by making its end attached to the pinion axle with the two eccentrics C' C'' acted on by the eccentric C''' alternately as may be required. The tail end 39 of the lower eccentric C''' hangs down below the bottom of the head block so as to be struck by an arm 40 of the sliding frame O while performing its traverse and while the saw is back in the groove of the head block which sets the log just before commencing to advance the carriage by which arrangement the saw is entirely out of danger of being broken during the operation of setting the log.

The apparatus for dogging and setting the tail end of the log is made, arranged and operated in the same manner as the apparatus attached to the head block, except that the ratchet wheel axle (41) is made with an endless screw that works into a female thread formed in the concavity of a semi cylindrical cap 42 to which the half bale dogs 43 are affixed for dogging the log to the slide and that the lower eccentric C' is operated for actuating the double eccentric C^5 C^6 by its ends 44 tripping against fixed stops 45 and 46 fastened to the frame, in gigging back. Both setting apparatus thus becoming self setting. But they may be operated by hand in the usual manner by taking hold of the arms 38 and 47 of the double eccentric levers. 50 is an inclined plane block the same as that lettered u and for a like purpose affixed to the underside of the projecting end of the tail block for unlocking the sliding frame from the main frame.

When the log is dogged by the right hand dogs the log will be moved toward the saw from the right side of the carriage, and when it is dogged by the opposite dogs the log will be brought toward the saw from the left side of the carriage.

The parallel ways on which the carriage

runs incline down from the tail end of the mill toward the saw at an angle of one, two, three or more degrees so as to give the carriage a tendency to move toward the saw with such force as to overcome the drag of the saw.

Operation: The operation of this saw mill is the same as others in use except in the before described particulars which render it a self feeding, and self gigging back, self setting mill—requiring no attendance after the log has been slabbed, turned down, and dogged until it be entirely sawed up into boards (or any other kind of lumber). The operation of the several parts having been described in giving a description of their combination and arrangement, it would create unnecessary prolixity to repeat it here. The operation, however, of the inclined plane 50 on the tail block not having been fully described, I will here give a more full description of that part of the operation. When the carriage has advanced toward the saw nearly as far as it is intended to proceed and just before the pinion P has become engaged with the rack V of the tail block to be conducted transversely into gear with the rack of the carriage the said inclined plane comes in contact with the lifting lever r and raises the lock plate n and disengages it from the frame so as to liberate the sliding frame O and allow it to move with the pinion P the moment the latter has become engaged with the rack V . When the tail block is moved nearer to the saw or farther from it, the said inclined plane will of course be moved with it.

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

1. The method of changing the motions of the carriage to feed or gig back by the employment of the transverse sliding frame O containing the feed hands s s and tappet wheel R and pinion P which latter traverses the lines of cogs V W on the head and tail blocks and those on the side of the carriage for gigging back the carriage for resetting the log and immediately throwing the feed hands into gear which feed hands advance the carriage to the saw while the motions of the saw and carriage are continuous and uninterrupted—except by momentary pauses consequent upon engaging the pinion with the racks of the tail blocks and carriage and disengage it from the rack of the head block as described.

2. I also claim the combination of the double eccentrics C' C'' on the lever 38 with the single eccentrics C''' attached to the head block for moving the slide 27 to which the log is dogged to the right or to the left by inclining the lever 38 to the right or to the left, and causing the arm (40) of the transverse sliding frame to actuate the ec-

centric C''' previously to the reversing the movement of the carriage, and while the saw is in the groove of the head block for setting the log at the head block.

5 3. I claim the employment of the shaft N pinion P and tappet R cog wheel M and worm T in combination with the main shaft J for operating the carriage C and transverse sliding frame O and other parts as described.

10 4. I claim the employment of the transverse sliding frame O in combination with the propelling shaft N pinion P and racks Q, V, W for setting the log on the head block and changing the motion of the carriage as described.

15 5. I claim the method of adjusting the rack V for the purpose of leaving a stud short on the board by bringing the rack into gear with the pinion P before the saw has passed through the log and also the method

for sawing boards without stub short by bringing the rack into gear with the pinion after the saw has passed through the log and entered the groove of the tail block, 25 effected by moving the slide toward or from the saw and securing it permanently to the tail block by the pin (25) which is inserted into a hole in the slide.

6. I claim the employment of the shield 30 K in combination with the ratchet bar Y and carriage for preventing the action of the feed hands upon the carriage during the operation of setting large logs by hand.

In testimony whereof I have hereunto 35 signed my name before two subscribing witnesses.

WM. FINK.

Witnesses:

WM. P. ELLIOT,
R. W. FENWICK.