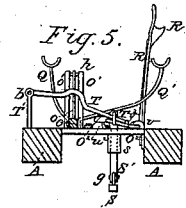
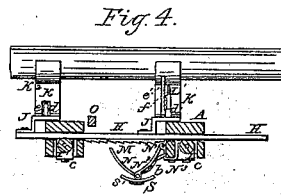
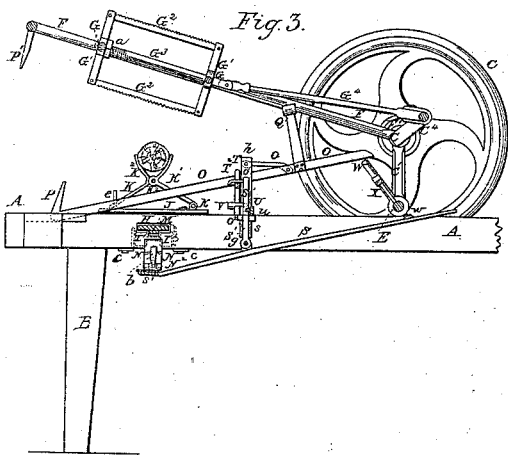
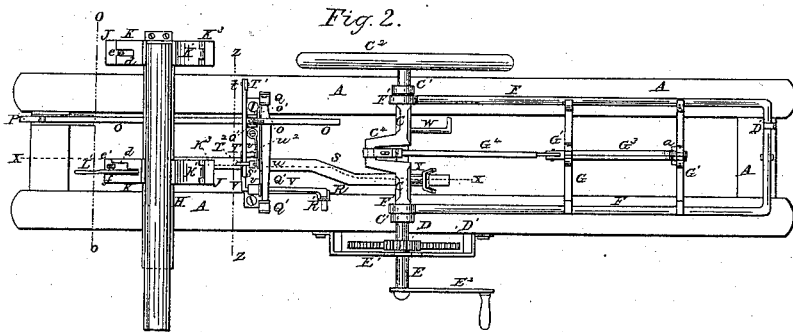
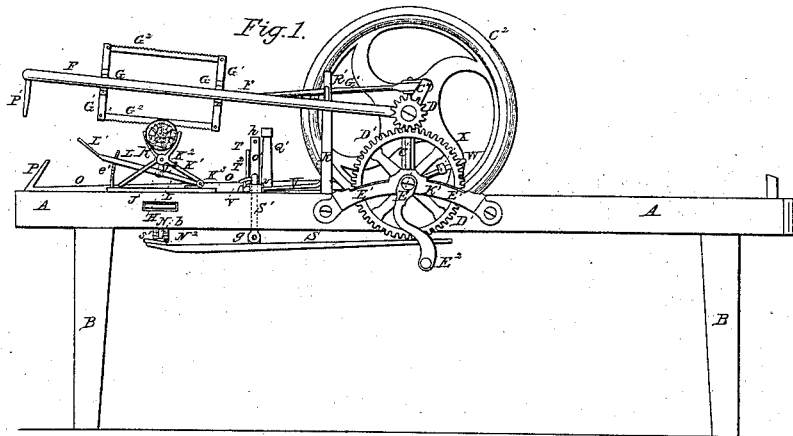


*S. Lewis,  
Drag San.*

N<sup>o</sup> 7,381.

*Patented May 21, 1850.*



# UNITED STATES PATENT OFFICE.

SPENCER LEWIS, OF TIFFIN, OHIO.

## IMPROVEMENT IN MACHINES FOR SAWING WOOD.

Specification forming part of Letters Patent No. 7,381, dated May 21, 1850.

*To all whom it may concern:*

Be it known that I, SPENCER LEWIS, of Tiffin, in the county of Seneca and State of Ohio, have invented a new and useful Machine for Sawing Wood; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawings, constituting part of this specification.

Figure 1 represents an elevation of the machine, the wood being clamped in the jaws, the feeding-lever depressed, and the saw in the act of operation. Fig. 2 is a plan or top view of the same, the saw, with its swinging sash, being turned over to the right end of the machine. Fig. 3 is a longitudinal section through the left portion of the machine on the dotted plane *x x* of Fig. 2, the wood having been cut and the lifting-lever moved forward and the saw, with its swinging sash, elevated therewith, and the feeding-lever raised in a position to feed the slide and log for another cut. Fig. 4 is a vertical transverse section on the dotted plane *o o* of Fig. 2, showing the jointed reaching-arm, rack, slide-bar, &c. Fig. 5 is the same on the dotted plane *z z* of Fig. 2, showing the bent arm to lift the feeding-lever, &c.

Similar letters refer to the same parts on the above figures.

The distinguishing characteristic of my invention consists in reducing and alleviating the laborious business of sawing fuel-wood into short cuts, suitable for burning in stoves, &c., by the combination and arrangement of certain mechanical devices with a reciprocating saw, by which the wood to be cut is held firmly between self-clamping hinged jaws, the descent of the swinging sash (after the wood has been cut) serving to advance a horizontal suspended lever in a position to be struck and lifted by a rotating lifting-arm fixed to a horizontal transverse shaft and elevate the swinging sash over a spring-catch and at the same time raise the feeding-lever, through the agency of a transverse bent lifting-arm, to be actuated by a forked arm on the transverse shaft to operate a jointed reaching-arm to move the slide-bar and wood in a position for another cut by simply continuing to turn the crank-handle.

A is the frame, constructed of suitable size

to contain the several parts of the machine, and is supported by four legs B B.

C is the crank-shaft arranged midway the frame, having its bearings in the upper ends of two posts C' C', mounted upon the frame, on one end of which there is a pinion D, which matches with a cog-wheel D', and on its opposite end is a balance or fly wheel C<sup>2</sup> for steadying the motion of the crank-shaft. Directly below the crank-shaft there is a shaft E, having its bearings in the posts C' and in a plate E', to support its outer end, on which the cog-wheel D' is secured and to which the crank-handle E<sup>2</sup> is attached for operating the machine.

F is a swinging sash made of rod or bar iron in the form of three sides of a parallelogram, having its bearings F' F', upon which it swings on the crank-shaft, so as to permit it to be changed to either end of the frame, the sides of the sash serving as ways for the saw-frame.

The saw-frame consists of two horizontal transverse bars G G, whose ends are made to fit and move over the sides of the sash, and two vertical end bars G' G', to the ends of which are secured the saws G<sup>2</sup> G<sup>2</sup>. These bars are connected at their centers and braced by a central rod G<sup>3</sup>, on one end of which a screw-thread is cut to receive a nut *a*, which is screwed against the inside of the bars G G' at their intersection when it is desired to strain the saws. To the opposite end of said central rod G<sup>3</sup> the connecting-rod G<sup>4</sup> of the crank C<sup>4</sup> is attached.

H is a slide-bar placed transversely in openings in the side beams of the frame upon rollers I I', over which it slides with the wood. These rollers I I' are secured in cavities in the beams by having their gudgeons in plates *c c*, screwed therein.

To the slide-bar H are secured two horizontal plates J J by screw-bolts passed through flanges projecting therefrom in such manner as that the plates shall be on a line with the tops of the beams, as seen in Fig. 4. Upon these plates J J are secured self-clamping and self-adjustive jaws consisting of two plates K K', curved at their upper ends and connected by a hinged joint K<sup>2</sup>. The portions K' of the jaws are secured to the plates J by hinged joints K<sup>3</sup> K<sup>3</sup>, which act as fulcra to

said jaws in expanding and contracting the same. The adjacent portions K are not confined, but are permitted to slide over the plates J in raising or lowering the jaws to open or close the same, having slits  $d$  therein, which move over pins or bars  $ee'$ , projecting from the plates J J, which serve as guides to the jaws. The jaws next to the crank-handle is provided with a clamping-lever L, attached to the joint  $K^2$ , and extending through the slot  $d$  of the loose plate of the jaw and formed into a handle  $L'$ . This lever L is also attached to the hinged joint  $K^2$  by a short connecting-bar  $L^2$ . (See Fig. 1.) The guide-bar  $e'$  is notched, over which a point  $f$ , Fig. 2, on the side of the lever L moves to hold said jaws in a clamped position.

M, Fig. 4, is a rack secured to the under side of the slide-bar H, into the teeth of which a jointed reaching-arm is made to impinge to move said slide-bar. The roller I' is grooved or divided, as seen in Fig. 3, to allow the rack to pass through with the motion of the slide-bar.

N is the jointed reaching-arm attached to the inside of the beam A by a hinged joint  $N'$ , Fig. 4. This reaching-arm is made in two parts connected by a joint  $N^2$ , and when contracted resembles a pointed arch inverted, and is for the purpose of impinging against the teeth of the rack M to move the slide-bar H. This jointed reaching-arm is held in a proper position, when contracted, by a staple  $N^3$ , against which it rests, and its loose or reaching end is prevented from falling or sagging by a spring  $b$  on the under side of the hinged part with its end fastened in the knuckle of the joint  $N^2$ , as seen in Fig. 4.

O is the lifting-lever, suspended by a rod  $o$  to the top of two bars  $o' o'$ , fixed to a horizontal bar  $o^2$  nearly midway between the crank-shaft C and end of the frame, as seen in Fig. 3. This lifting-lever O is situated near the back beam A and extends longitudinally to near the end of the frame, and is turned upward at its end to form an inclined plane P, against which a short bar  $P'$ , projecting from the extreme end of the swinging sash, is made to strike (upon the descent of the same) when the wood has been cut to move said lever O inward to be elevated by a rotating lifting-arm W and with it the swinging sash, as shown in Fig. 3.

Q Q' are two arms bolted to the lever O near its inner end and projecting upward and outward in such a manner as to catch under the sides of the sash in lifting it over the catch R' of the spring-catch R. The outer end of the lifting-lever is made to slide back and forth in a groove in the end cross-beam.

R is the spring-catch, bolted to the inside of the beam, having near its upper end a catch R' over which the swinging sash catches, and is supported during the operation of feeding the wood for another cut.

S is the feeding-lever, suspended to a vertical bar  $S'$  near its center by a pin  $g$ , on

which it vibrates, said bar  $S'$  moving vertically as the lever S is raised and lowered through an opening in the bar  $o^2$ , and a box  $s$  projecting from the under side of the same for guiding said vertical bar. The outer end of the lever S has a plate  $s'$  thereon for pressing against the reaching-arm, said lever extending inward beyond the shaft of the crank-handle to receive the action of the forked arm thereon.

T is the bent lifting-arm, attached to the frame by a stud  $T'$  by a pin  $t$ , on which it turns, and extending transversely adjacent to the upright bars  $o' o'$  to the vertical bar  $S'$ , for raising the same simultaneously with the ascent of the lifting-lever O by its end striking against a pin  $T^2$  projecting from the top of the bar  $S'$ , when the feeding-lever S is down, and thus raise said feeding-lever by the ascent of the lifting-arm T.

U is a spring attached to the horizontal bar  $o^2$  and extending against the inner side of the vertical bar  $S'$ , having a pin  $u$  on its end, which enters an opening in said bar to hold it in a raised position, as seen in Fig. 3.

V is a bent rod secured to the horizontal bar  $o^2$  by a box  $v$ , in which it turns. One end of this bent rod is attached to the inside of the spring-catch R, and its other end bent so as to project inward and over an inclined jog  $w^2$  on the end of the spring U, so that when the spring-catch R is pressed inward to relieve the swinging sash after the wood has been set the inner end of the bent rod V will be depressed over the inclined jog  $w^2$ , and unlock the vertical bar  $S'$  of the feeding-lever.

W is a rotating lifting-arm, attached to the shaft of the crank-handle by a screw  $w$  for elevating the suspended lever O upon its advance thereto by the descent of the saw.

X is a forked arm also attached to the shaft of the crank-handle and revolving with the same for alternately depressing the inner end of the feeding-lever to elevate its opposite end to operate the reaching-arm.

Operation: The slide-bar H being in a proper position at the commencement of the operation, and the wood to be cut into short pieces clamped between the self-clamping jaws and held by the clamping-lever L, should the weight of the wood not be sufficient, the feeding-lever S is depressed and the suspended lifting-lever O in the position represented in Fig. 1, and the swinging sash with its saw being relieved from the spring-catch R, the operator then lays hold of the crank-handle  $E^2$  and actuates the saw. When the wood has been cut, the sash F by its weight descends slightly, and the bar  $P'$ , projecting from its end, strikes the inclined end P of the suspended lever O and causes it to advance, when its inner end will be elevated by the rotating lifting-arm W in the arc of a circle. Simultaneously with this movement the bent lifting-arm T will also be raised, and with it the vertical bar  $S'$ , which raises the

feeding-lever S, and the swinging sash F will be made to pass over the catch R' of the spring-catch R. The lifting-lever O is then relieved from the arm W and made to resume its position, as before, by its weight and peculiar connection with the suspending-rod o. The operator continuing to turn the crank-handle E<sup>2</sup>, and the forked arm X revolving with the shaft of the same, bears down the inner end of the feeding-lever S and elevates its opposite end, and thus elevates or expands the jointed reaching-arm N, which impinges against the teeth of the rack M, and thus moves the slide-bar and wood in a position for another cut. The operator then presses the spring-catch R inward and relieves the swinging sash F, with its saw, which descends upon the wood, and at the same time unlocks the spring U from the vertical bar S', by the inner end of the bent rod V bearing upon the inclined jog u<sup>2</sup> of the spring U and forcing the pin u from the hole in the bar S', when the feeding-lever will descend and the operation of sawing be continued. In this manner logs of wood are cut into the required number of pieces. A similar arrangement of parts to produce a like effect may be secured to the opposite end of the frame.

Having described the construction and operation of my machine, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination and arrangement of the

suspended vibrating feeding-lever S and rotating forked arm X, jointed reaching-arm N, rack M, and slide-bar H, with the self-clamping self-adjustive hinged jaws K K', for holding the wood firmly during the operation of sawing, the feeding of the log being effected by means of the rotating forked arm X actuating the feeding-lever S, in the manner described and represented.

2. The combination and arrangement of the suspended lifting-lever O and rotating lifting-arm W on the shaft E with the swinging sash F, as described, by which the descent of the swinging sash will cause the lever O to advance toward the rotating lifting-arm W when the wood is cut, and thus elevate the swinging sash F, in the manner and for the purpose herein set forth.

3. The combination of the transverse bent lifting-arm T and suspended lifting-lever O with the suspended feeding-lever S, bent rod V for unlocking the spring-dog U, and vertical spring-catch R, as described, by which the feeding-lever S is engaged with the jointed reaching-arm N simultaneously with the ascent of the swinging sash, in the manner and for the purpose set forth.

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

SPENCER LEWIS.

Witnesses:

LUND WASHINGTON,  
WM. P. ELLIOT.