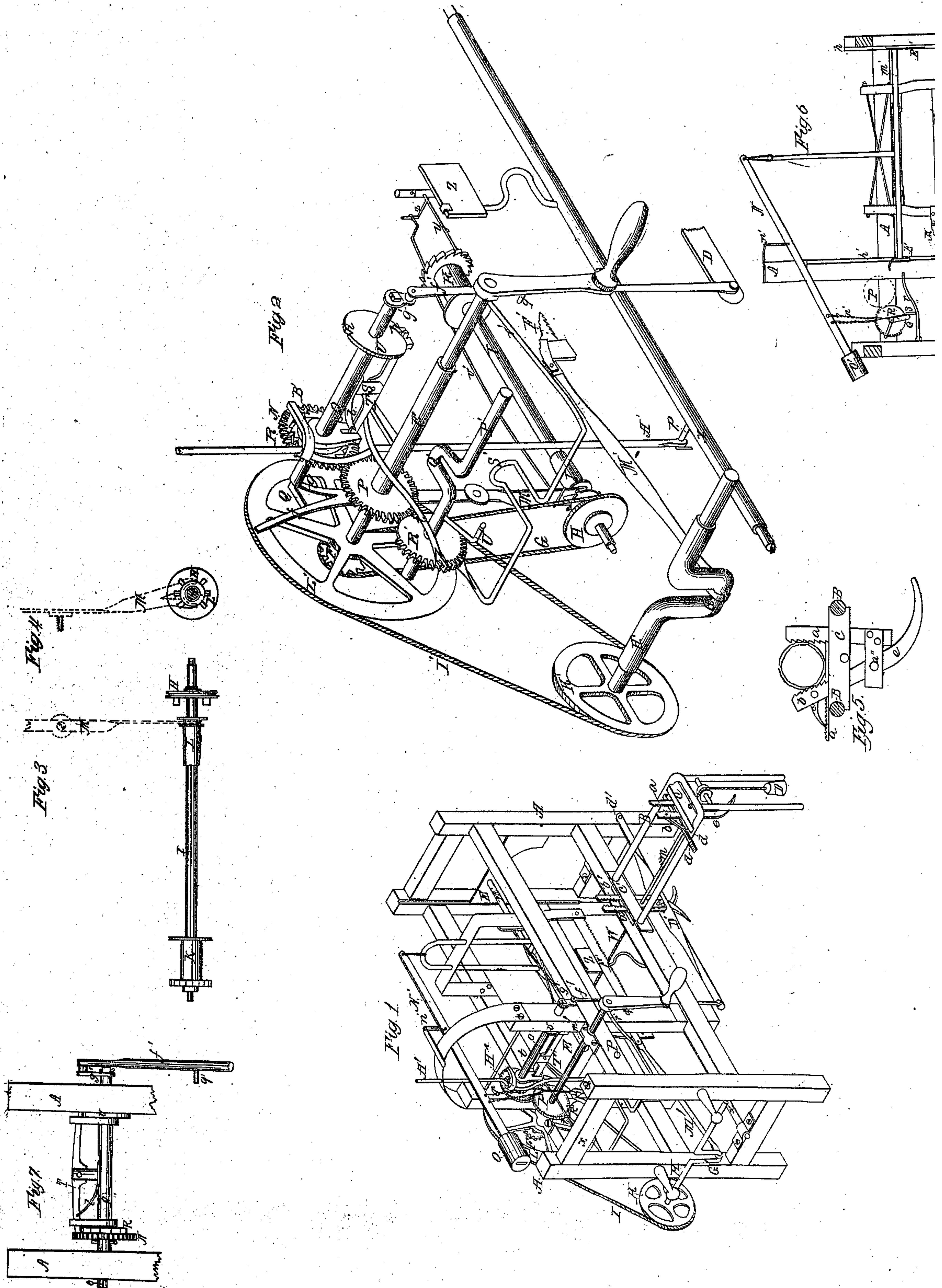


E. A. Tubbs,

Drag Saw,

No 12,809

Patented May 1, 1855.



UNITED STATES PATENT OFFICE.

E. A. TUBBS, OF HAMPTON, NEW HAMPSHIRE, ASSIGNOR TO E. A. TUBBS AND H. T. CROXON.

MACHINE FOR SAWING FIRE-WOOD, &c.

Specification of Letters Patent No. 12,809, dated May 1, 1855.

To all whom it may concern:

Be it known that I, E. A. TUBBS, of Hampton, in the county of Rockingham and State of New Hampshire, have invented a new and useful Machine for Sawing Fire-Wood and for other Purposes, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, in which—

Figure 1 is an isometric view of the machine. Fig. 2, an isometric view of certain of the operating parts of the machine detached from the framework, and upon an enlarged scale. Figs. 3, 4, 5, 6, and 7, details which will be referred to hereafter.

To enable others skilled in the art to understand my invention I will proceed to describe the manner in which my machine is constructed and operated.

The several steps in the operation of sawing wood succeed each other in the following order: 1st. The log is fed to the machine. 2d. It is clamped and held stationary while the saw is in operation. 3d. The saw is dropped upon the log and vibrated back and forth until the cut is made. 4th. The saw is raised and held up until the log has been again fed forward and has become stationary, when it is dropped upon the log as before and the steps succeed each other in like order continuously.

The above operations will now be described in order.

A is the frame work which supports all the operating parts of the machine. From one of the side timbers project at right angles the ways B, upon which the feeding clamp traverses; this clamp is seen detached in Fig. 5, and is constructed as follows:

a is the rigid jaw which is secured to the body C, of the clamp, to which is pivoted the movable jaw *b*.

c is a pawl pivoted to the jaw *b*, and engaging with the rack bar *d* which is also secured to the body of the clamp.

The movable jaw is pivoted at *a*² and is operated by the arm *e*, and thus the log is securely clamped as seen in Fig. 5. This clamp is drawn back into the position seen in Fig. 1 by the weight D, and cord *n*, attached thereto. It is fed forward intermittently to bring the log up to the action of the saw in the following manner:

E is the driving shaft to one end of which is secured the pulley F; from this pulley

motion is communicated by means of the band G to the pulley H which runs freely upon the feeding shaft I.

K is a drum upon the shaft I and revolving with it; upon this drum is wound the cord or chain W which is secured to the end of the rod *m*, attached to the dog C.

Motion is communicated to the drum K at the required moment to feed the log by the alternate clutching and unclutching of the pulley H with the shaft I in the following manner:

L is a clutch which slides freely upon the shaft I and with which it revolves; its teeth are engaged with those upon the wheel H and disengaged therefrom by means of the forked lever M, which is moved as follows:

N is a gear which engages with the gear P and together with the ratchet-wheel R runs loosely upon the shaft O; the ratchet-wheel R and the gear N are secured together and they are clutched at intervals with the shaft by the following means:

S is a stud secured to the center of the shaft O in which is pivoted the lever T, one end of which rests upon the periphery of a circular disk U secured to the frame work, the other end engaging at times with the teeth of the ratchet wheel R; there are two notches or depressions in the disk U—*h* and *i*—into either one of which the end of the lever T is pressed by the spring *l*. When this end of the lever is thus depressed the other end is raised out of the notches or teeth of the wheel R, and this wheel together with the gear N revolves freely upon the shaft O. When the lever T is raised out of the notches *h* and *i*, and rests upon the periphery of the disk U, the other end of the lever engages with one of the teeth of the ratchet wheel R, and the wheel and gear are clutched with the shaft, and the latter is thereby caused to revolve until the opposite end of the lever drops into the other notch in the disk U, when the motion of the shaft O is again interrupted. Upon the end of this shaft and projecting at right angles therefrom is the shipping finger Q, which strikes alternately one or other of the prongs *f*, *g*, of the forked lever M, by which means this lever is moved and the clutch L and pulley H are locked or unlocked. The lever T is operated in a manner which will be hereafter described. As the drum K is revolved by the connections thus explained,

the cord W is wound upon it, and the log is fed in beneath the saw. When it has reached the desired point its motion is stopped by the following means: While the log is being fed in, the lever T is above the shaft in the position seen in Fig. 7, and opposite to that seen in Fig. 2—one end resting in the notch *i*. When the parts are in this position the gear N and toothed wheel R revolve without the shaft O.

X is a shaft running longitudinally through the machine, from which rises the stop Z against which the log strikes as it is fed into the machine.

p is a short arm projecting from the shaft X to which is connected the upright rod A'.

B' is an arm attached to the rod A' which projects horizontally over the shaft O and lever T.

As the log is fed in it strikes the "stop" Z, by which means the shaft X is revolved, and the arm B' is made to press upon the lever T disengaging one end of it from the notch *i*, and locking the other end with the ratchet wheel R, by which means the shaft O is set in motion, and the shipping finger Q, striking against the prong *f*, of the clutch lever M, releases the clutch L from the revolving pulley H, and thus the feed is stopped.

The second step in the operation is to clamp the log previous to the descent of the saw. This is effected by the stationary clamp C' which will now be described. This clamp consists of two jaws *a'* *b'*, which are pivoted to the hanger *c*. These jaws are closed in the following manner:

D' is a spring bar pivoted at *d'* to the frame work, and having a slot near its center through which pass the bent ends of the jaws *a'*, *b'*. The lever D' is connected by means of the rod *f'* to a crank *g'*—and the parts are so adjusted to each other that when the crank descends as in Fig. 1, the jaws shall be closed, and when the crank *g'* ascends the jaws shall be left at liberty to open. In order that this clamp may operate alike upon a large log or a small one the lever D' is made to spring in the center that it may yield after it has put a certain pressure upon the jaws, and thus the clamp can accommodate itself to the varying size of the logs as required, without constant readjustment. The log being now held firmly it remains to show the manner in which the saw is dropped, and vibrated to make the cut.

E' is a frame which slides vertically up and down in grooves *h'*, (Figs. 1 and 6).

The ends of this frame are connected by the longitudinal rods *m'*. These rods serve as ways upon which vibrates the saw F', which is driven by the crank G' upon the revolving shaft H', the latter being set in motion by the band I' upon the pulleys K' L' as seen

in the drawings. The saw frame is connected with the crank G' by the pitman M'. Besides the vibration of the saw it is necessary that it be made to descend upon the log at the proper moment and to ascend again the moment it has finished the cut. This is accomplished automatically in the following manner:

N' is a lever suspended from the point *n'*, (Fig. 1,) to one end of which is suspended the frame E', a portion of the weight of this frame, together with that of the saw which it sustains being counterbalanced by the weight O'.

P' is a shaft having a crank Q' in its center and the wheel R' upon one end. This wheel is cogged upon one half only of its periphery for a purpose which will be presently explained. The crank Q', is connected with the lever N' by means of the chain *p'*, the latter being of such length that when the crank is in its lowest position as seen in Fig. 6 the saw and frame are raised, the crank Q' being caught against the spring stop S', and prevented from revolving further. The crank is released from this stop at the required instant for the purpose of dropping the saw by the pin *q'*, which strikes against the rod *r'* and depresses the stop. The crank is thus permitted to turn sufficiently to drop the saw upon the log, but not sufficiently far to cause the teeth of the wheel R' to engage with those of the wheel P. The saw is kept constantly vibrating by the crank G' as before explained, and when the cut is finished the saw descends so low that the teeth of the wheel R' are caused to engage with the wheel P, by which means the crank Q' is again carried round to the position seen in Fig. 6, and the saw is raised. This happens whenever the saw passes through the log and descends so low as to engage the wheels R' and P with each other. The saw remains thus elevated and the lever T remains in the position seen in Fig. 7 above the shaft O and resting in the notch *i* until the log, as it is fed in, again presses upon the stop Z and the lever T is depressed by the descent of the arm B'. The shaft O then makes a semi-revolution, causing the pin *q'* to release the crank Q' from the stop S' at the same time that the finger Q strikes the prong *f* of the shipping lever M, and the feed is stopped as before explained. The saw having commenced to ascend, the stationary clamp is opened by the revolution of the crank *g'*, and the drum K is made to revolve for the purpose of making a new feed by the following mechanism:

t' is a spring shipping lever, one end of which is attached to the frame work at *x* Fig. 1, the other end projecting beneath the lever T when the latter is in the position seen in Figs. 1 and 2. As now the shaft P' continues to revolve the shipper U' attached

to it strikes the lever b' , and presses it against the lever T, and thus the shaft O is caused to make another semirevolution with the wheel N, by which means the finger Q is caused to strike against the prong g of the shipping lever, which closes the clutch L, and causes the drum K to commence a new feed.

It now remains only to describe the manner in which the revolution of the drum K is stopped after the movable clamp C has been fed up so as to come in contact with the frame work of the machine. At the instant before this takes place the rod m attached to the clamp strikes against the arm y' (Fig. 2) by which means the post x' is revolved. z' is an arm also secured to the post x' , which is connected by means of the rod v' to the shipping lever M, and thus as the rod m strikes the arm y' the clutch L is opened and the feed ceases.

Operation: I will now explain more particularly the continued operation of the machine recapitulating all the steps in the order in which they succeed each other. Starting with the saw elevated as seen in Fig. 6 and the shaft O and lever T in the relative position seen in Fig. 7 the log is thrown on and secured in the movable clamp C, and power is applied to the main shaft E. The finger Q upon the shaft O having already closed the clutch L, the drum K feeds the log into the machine and as the crank g' is in its highest position the stationary clamp C' is open, the lever D' being raised clear of the bent ends of the jaws a' , b' , the log is thus permitted to feed through this clamp, until it strikes against the stop Z, by which means the shaft X is revolved and the arm B' being thereby depressed presses the lever T out of the notch i , and into one of the teeth of the wheel R, which clutches the shaft O with the cog wheel N, and this shaft is caused to make a semirevolution, by which it is brought into the position seen in Figs. 1 and 2, the lever T being disengaged from the wheel R, and entering the notch h of the plate U. While this is taking place the shipping finger Q has opened the clutch L, by which means the feed is stopped, and the pin q' has depressed the rod r' , permitting the crank Q' which supports the saw to escape from the catch S', and the saw descends upon the log, and commences to operate; the crank g' also having descended to its lowest position depresses the lever D', and closes the clamp C' upon the log, by which it is held firmly until the cut is made. While the saw is operating upon the log, the

parts remain in the position seen in Fig. 1 the crank Q' not being raised sufficiently high by the descent of the saw to bring the teeth of the wheel R' into gear with those upon the wheel P. So soon however as the cut is finished the weight of the saw causes it to descend so as to raise the crank Q' into its highest position, whereby the wheels R' and P engage, the former being driven by the latter, a semirevolution and the saw and its frame are raised into the position seen in Fig. 6, the crank Q' resting against the stop S' as before. While this is taking place the shipper U' in revolving presses the lever t' against the lever T by which means the shaft O is again set in motion, the shipping finger Q striking against the prong g closes the clutch for the purpose of operating the feed, and the clamp C is opened as already explained. The operations thus succeed each other automatically until the log is sawed up and the rod m striking against the apparatus opens the clutch L and stops the feed.

The above described machine may be driven by steam, water, horse or other power, and may be employed whenever it is desired to reduce timber to certain lengths, whether it be for fire wood, or for the purpose of producing bolts for shingles, clapboards, or other articles.

I claim—

1. I claim the method substantially herein described of bringing the saw into operation by the pressure of the log, upon the stop Z as set forth.

2. I claim the method substantially herein described of causing the weight of the saw after it has passed through the log to bring into operation the mechanism which raises it out of the way preparatory to making another feed.

3. I claim the method herein described of operating the clamp C', by means of the spring bar D', whereby the clamp is rendered capable of holding logs of varying thicknesses without constant readjustment as set forth.

4. I claim the device herein described for the purpose of stopping and starting the feed at the required moment, consisting essentially of the combination of the shaft O, the lever T, the wheel N, and the shipping finger Q constructed and operating in the manner substantially as herein set forth.

ELIAS A. TUBBS.

Witnesses:

SAM COOPER,
JOHN S. CLOW.