Sheet 1
2 Sheets.

H. Thompson.

Sawing Mach.

No. 94,668. Patented Sept. 7, 1869.

Fig. 1.

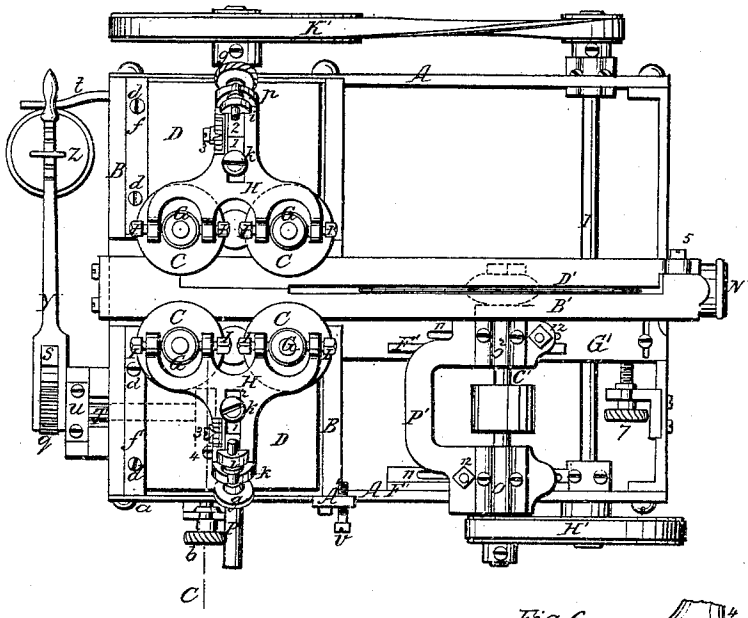


Fig. 5.

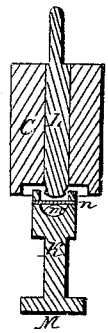


Fig. 6.

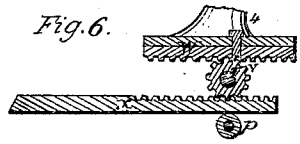
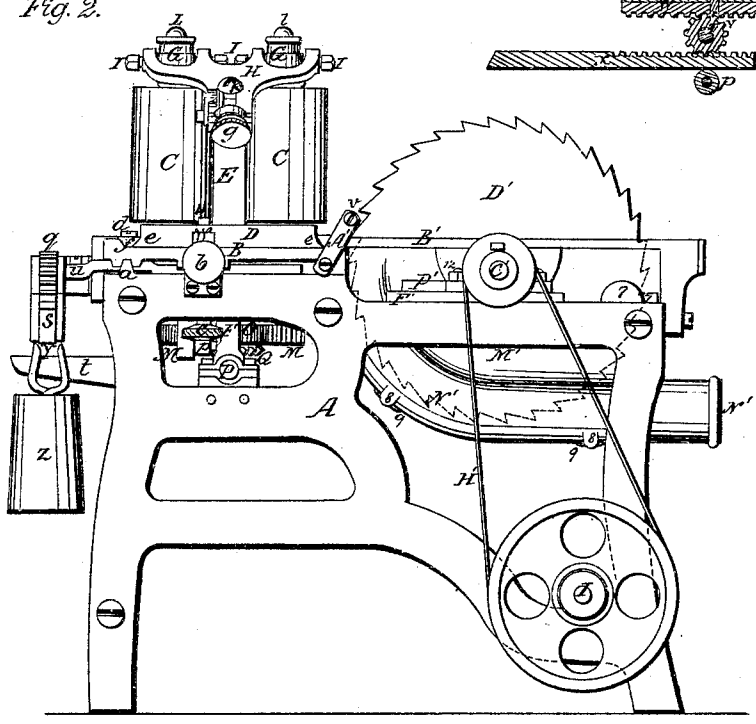


Fig. 2.



Witnesses.
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Sheet 2
2 Sheets.

H. Thompson.

Sawing Mach.

No. 94,668. Patented Sept. 7, 1869.

Fig. 3.

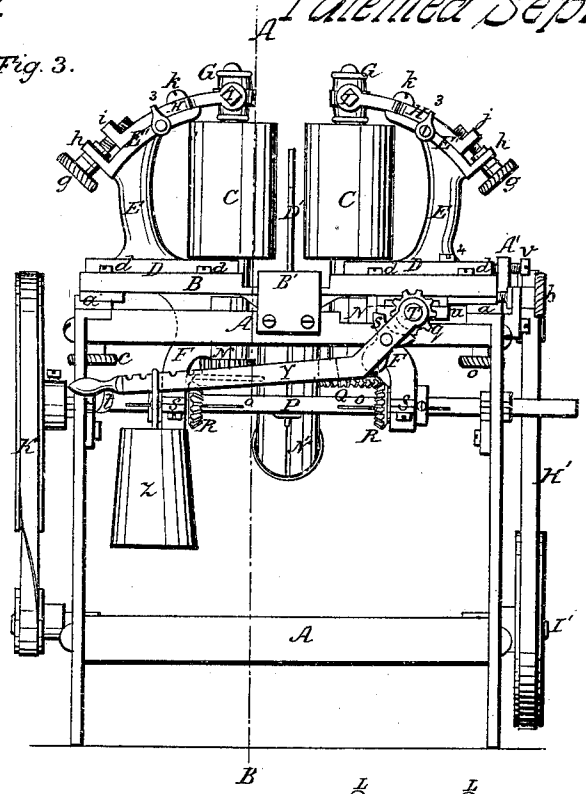
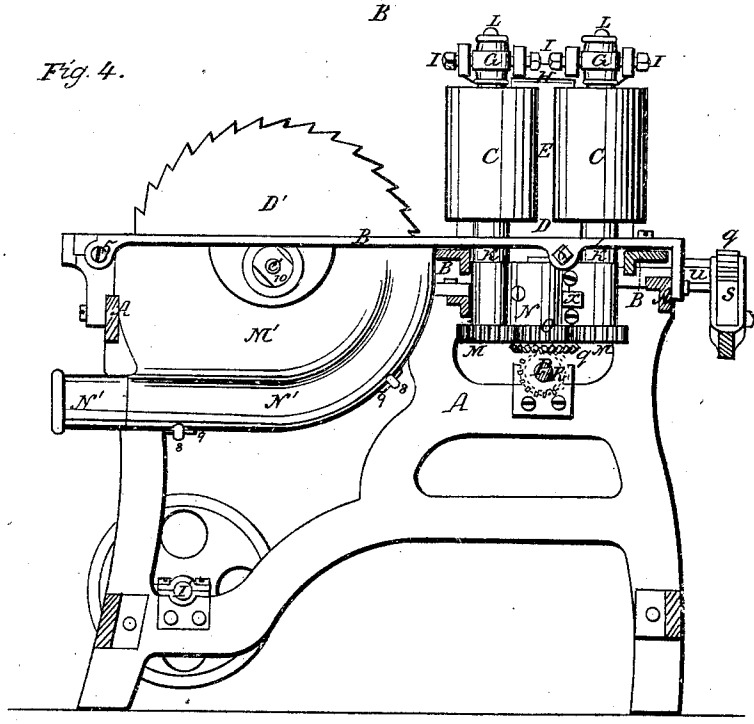


Fig. 4.



Witnesses.
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Albert E. Seiss

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United States Patent Office.

HIRAM THOMPSON, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO RICHARD BALL AND E. P. HALSTED, OF SAME PLACE.

Letters Patent No. 94,668, *dated September* 7, 1869.

IMPROVEMENT IN SAWING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

Know all men by these presents:

That I, HIRAM THOMPSON, of the city and county of Worcester, and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Resawing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a plan view of my improved resawing-machine;

Figure 2 represents a view of the right-hand side of same;

Figure 3 represents a front view;

Figure 4 represents a section on line A B, fig. 3;

Figure 5 represents a central vertical section of one of the feed-rolls; and

Figure 6 represents a section of the devices for changing the position of the feed-rolls, taken on line C, fig. 1.

To enable those skilled in the art to which my invention belongs, to make and use the same, I will proceed to describe it more in detail.

The nature of my invention consists—

First, in a peculiarly-constructed frame for supporting the feed-rolls, and the gearing by which they are operated.

Second, in the combination and relative arrangement of a series of feed-rolls with each other, and their gear-shafts, substantially as hereafter explained.

Third, in the combination, with the upper ends of the feed-rolls, of a forked roll-supporting adjustable frame, provided with a scale, as hereafter explained.

Fourth, in the combination, with the frames which support the feed-rolls, of adjusting-mechanism, as hereafter explained.

Fifth, in the combination of devices for adjusting the saw and its arbor, as hereafter set forth.

Sixth, in the combination, with the saw, of a peculiarly-constructed shield and dust-pipe, as hereafter described, and in the peculiar devices for supporting the arbor of the saw.

Seventh, in a resawing-machine, the parts of which are combined together, and arranged to be operated substantially as shown and hereafter described.

In the drawings—

The part indicated by letter A is the main frame of the machine, which may be made of any suitable material.

Upon the forward part of the frame A, is mounted a carriage, B, which may be moved laterally upon said frame, ways *a* being provided for its support and guidance, while a screw, *b*, is arranged at one side, for moving and adjusting it to any desired position, where it can be securely retained by means of the clamp-screws *c*, that pass up through slotted flanges formed on the inside of the main frame A, and screw into the under side of the carriage B.

Upon the carriage B, are arranged sliding frame-plates D, to which are attached the feed-rolls C, one pair to each plate, as shown in the drawings.

These frame-plates are formed with bevel edges *e*, that fit into corresponding grooves upon the frame of the carriage B, at one of their edges, and under the bevelled strips *f* at their other edge.

The strips *f* are secured to the frame of the carriage B by screws or bolts *d*, in such a manner that they can readily be adjusted to compensate for the wearing of the parts, or be taken out, when necessary to remove the plates or parts of the machine connected thereto, for repairs or other purposes.

On the top of slide-plates D, are cast standards E, and upon their under sides, hangers F, for supporting the bearings of the feed-rolls.

The bearings G, at the top of the rolls, are pivoted to the curved forks H by bolts I, that pass through the ends of the forks, with their points resting in depressions formed in the sides of the bearings G, which are thereby allowed to conform automatically to the inclination of the rolls C, when the latter are placed in an oblique position.

The forks H are supported upon the curved flanged tops E′ of the standards E, as shown in the drawings, and may be adjusted back and forth thereon, to give the rolls C the desired degree of inclination, by means of the adjusting-screws *g*, arranged in the flanges *h* and *i*.

The forks are guided by projections 1, raised upon the tops of the standards, which fit into slots 2, formed in the forks H, as shown in fig. 1 of the drawings.

Clamp-screws *k* are arranged in the projections 1, by means of which the forks can be held securely in any position; and a scale is cut upon or combined with one side of the forks H, which, in connection with the index-points 3, fastened to the sides of the flanged tops E′, greatly facilitate the accurate and proper adjustment of the parts.

The rolls C are constructed as shown in fig. 5, the lower part K of their shafts being connected to the upper part L by a universal joint at the lower end of the roll C.

The joint is made by forming a ball, *m*, on the lower end of the upper part or roll-shaft L, and a socket in the top of the lower part or gear-shaft K, into which the ball is inserted, and retained by a pin, *n*, that passes through from side to side of the shaft K, the hole in the ball *m*, through which the pin passes, being made larger at the sides than at the centre, to allow of the required inclination.

The pin *n* is fitted closely in the socket *k*, whereby

the socket is rendered sufficiently tight to contain the oil for lubricating the joint.

The lower part K of the shaft, to which the operating-gears M are attached, is held in an upright position in the bearings N, fixed to the hangers F, said bearings being made to accommodate the journals of a pair of rolls, each, as well as the journal of the intermediate gear O, from which the gears M and feed-rolls C derive their motion, which is transmitted through them from the shaft P, they being connected thereto by the bevelled gears Q and R, one gear, Q, being secured to the intermediate gear O, and the other gear, R, to the shaft P.

The hubs of gears R are recessed, to receive the bearings S, formed by the prolongation of the hangers F, for the purpose of sliding the gears along the shaft P, to keep them in the correct relative position, as regards gears Q, when the feeding-rolls are moved to and from each other.

Grooves *o* are formed in the shaft P, to which the gears are secured by means of splines or screws.

The device for moving the feed-rolls to and from each other consists of a horizontal shaft, T, which extends from the front of the machine backward, beneath the right-hand slide-plate D, nearly to its centre, as shown in dotted lines, fig. 1.

It is supported by bearings U, attached to the under side of the carriage B, and has, secured to its rear end, a pinion, V, which meshes into two racks, W and X, as shown by fig. 6.

The rack W, at its upper side, is secured, by the screw 4, in a groove formed in the lower side of the right-hand slide-plate, while rack X, at the lower side of the pinion V, extends across and is fastened to the hanger F, beneath the left-hand slide-plate.

A friction-roller, *p*, is arranged below the rack X, by which the latter is held in gear and guided.

A gear, *q*, is fixed to the front end of shaft T, which is operated on by a dog, *s*, pivoted in the fork of the balance-lever Y, which lever is fulcrumed on the shaft T at each side of the gear *q*, and extends across at the front side of the machine, as fully indicated in the drawings.

A weight, Z, is suspended from the lever Y, which gives the required pressure on the feed-rolls C.

Dog *s* is so formed that its weight causes it to engage the cogs of the gear *q* with its lower arm, which operation tends to press the feed-rolls toward each other; but by raising the rear part thereof, it may be made to engage the cogs with its upper arm, which will move the rolls apart.

An arm, *t*, projects from the frame A, at the left side of the machine, upon which the end of lever Y rests, to prevent it from falling too low.

When it is desirous to operate but a single pair of the feed-rolls, a stop-piece, A′, secured to carriage B at it its right-hand rear corner, may be swung forward, and the set-screw *v* screwed against the edge of the right-hand slide-plate D, which is thereby prevented from moving any further outward. Then, by removing the screw 4, the rack W is allowed to move along the groove in said plate without operating it, while at the same time the opposite pair is moved as usual.

The saw-table B′ extends the length of the machine, and is screwed or bolted to the front and rear transoms of the main frame A. One of its sides is arranged to swing up, to facilitate the removal of the saw.

The movable side is pivoted at its rear end by the screw or bolt 5, and secured at its front end by the bolt or screw 6, as shown in fig. 4.

The arbor C′ of the saw D is supported and turns in bearings O^1 and O^2, united by a curved frame-piece, P′.

Said bearings can be adjusted forward or back, as desired, they being supported on ways F′, one of which is on the main frame A, and the other on the longitudinal central frame G′, the latter being fitted into a groove formed in the bottom of the arbor-bearing O^2, while the former rests on a planed surface under the bearing O^1.

It will be seen that by the above described construction of the parts, that when the rear end of the central frame G′ is swung either to the right or left, to adjust the saw on a line with the feed-rolls, that the grooved bearing O^2 will be retained in its relative position as respects the frame G′, while the bearing O^1 will slide laterally upon the way F′, thus rendering the adjustment of the saw very easy and perfect, while the parts are not liable to derangement.

Slots 11 are formed in the frames parallel to the ways F′, in which are arranged clamping-bolts 12, for securing the arbor-bearings O^1 and O^2 in the desired positions.

The saw-arbor is operated by a belt from the driving-shaft, suitable pulleys being arranged for that purpose.

The shaft P, which operates the feeding-devices, is driven from the saw-arbor by belts H′ and K′, running from opposite ends of the shaft I′, as fully indicated in the drawings.

The longitudinal central frame G′ has an adjusting-screw, 7, arranged at its rear end, by means of which the saw can be adjusted in perfect alignment with the feed rolls.

The lower half of the saw is enclosed in a case, M′, for carrying off the saw-dust, which is driven out through the tube N′ by the current of air raised by the saw.

The case M′ is formed in two parts, said parts being held together by the hooks 8, cast upon one of the parts, which hook on to flanges 9, cast upon the other part.

By this method of construction, the case may be readily taken apart, to facilitate the removal of the saw D′ from its arbor C′, it being only necessary to take out the bolt 6, and raise or swing up the movable side of the table, and lift off the side of the case M′, when, by removing the nut 10, the saw D′ is freed from the machine without disturbing any other parts. Thus it will be seen that the saw may be changed for another of different size, with but little trouble in comparison to other methods.

By the use of two pairs of feed-rolls, the boards are passed through the machine in a much more even and regular manner than with a single pair of rolls, as the rolls engage the end of one board before releasing the one in advance, thereby obviating the necessity of crowding the boards between the rolls.

Again, by the use of my weighting-device, an equal pressure is preserved on each pair of rolls when both are in gear, so that the boards are sawed accurately in the centre, while if but one pair is in gear, the same amount of pressure is retained, without any alteration of the weights.

It will be seen that by casting the slide-plates D, standards E, and hangers F in a single piece, the process of manufacture is greatly facilitated, and at the same time a much more substantial machine is produced than would be the case were these parts cast separately and bolted together, for when so constructed, there is great liability of the parts becoming loose and displaced, or out of adjustment. But with my method of construction, such displacement is impossible, and a firm and stiff frame produced.

It will be observed that, by the use of the laterally-adjustable carriage B, the whole of the feeding-mechanism can be adjusted either to the right or left, as the case may be, by simply loosening the clamp-screws *c* and turning the adjusting-screw *b*.

By this arrangement, the machine can be easily adjusted to saw more or less from one side of the stick

of timber without changing or disturbing the position of the saw, or without even stopping it.

This is a great advantage, as will readily be seen by those skilled in the art to which my invention belongs.

Having described my improved resawing-machine,

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

1. The combination, with the feed-rolls C C C C and roll-shafts L, of the gear-shafts K and pins *n*, passing through both said shafts, substantially as shown in the drawings, and herein described.

2. The combination, with the upper ends of the feed-rolls C C, of the roll-supporting adjustable frame H, forked so as to hold each pair of rolls, substantially as and for the purposes set forth.

3. The combination of the slotted forked frame H with the flanged standard E, provided with the projection 1, substantially as and for the purposes set forth.

4. The combination, with the adjustable roll-supporting frame H, of a scale and index, substantially as and for the purposes set forth.

5. The combination, with the slotted forked frame H and flanged standard E, of the adjusting-screw *g*, substantially as shown and described.

6. The combination, with the sliding frame-plates D D, of the rack-bars W X, cog-wheel V, and shaft T, the parts being constructed and arranged in relation to each other, substantially as shown and described.

7. The combination, with the rack W and slide-plate D, of the screw 4, substantially as and for the purposes set forth.

8. The combination, with the adjustable carriage B, of the sliding frame-plates D D, connected with and held upon said carriage, substantially as shown and described.

9. The combination, with the adjustable carriage B, of the clamping-screws *c c* and adjusting-screw *b*, substantially as and for the purposes set forth.

10. The combination, with the sliding frame-plate D, of a swinging stop-device, A′ *r*, as shown and described.

11. The combination, with the saw D′, of the divided shield M′ and dust-pipe N′, when constructed substantially as and for the purposes set forth.

12. The combination, with the main frame A and laterally-moving frame G′, pivoted and adjusted as described, of the grooved bearing O^2, bearing O^1, and elevated ways F′, said bearings being capable of a longitudinal adjustment, as shown and described.

13. A machine for resawing lumber, the parts of which are constructed, arranged, and combined together, substantially as shown and described.

Witnesses: HIRAM THOMPSON.

THOS. H. DODGE,

ALBERT E. PEIRCE.