(No Model.) 3 Sheets—Sheet 1.

R. H. HOYT.

SAWING MACHINE.

No. 399,900. Patented Mar. 19, 1889.

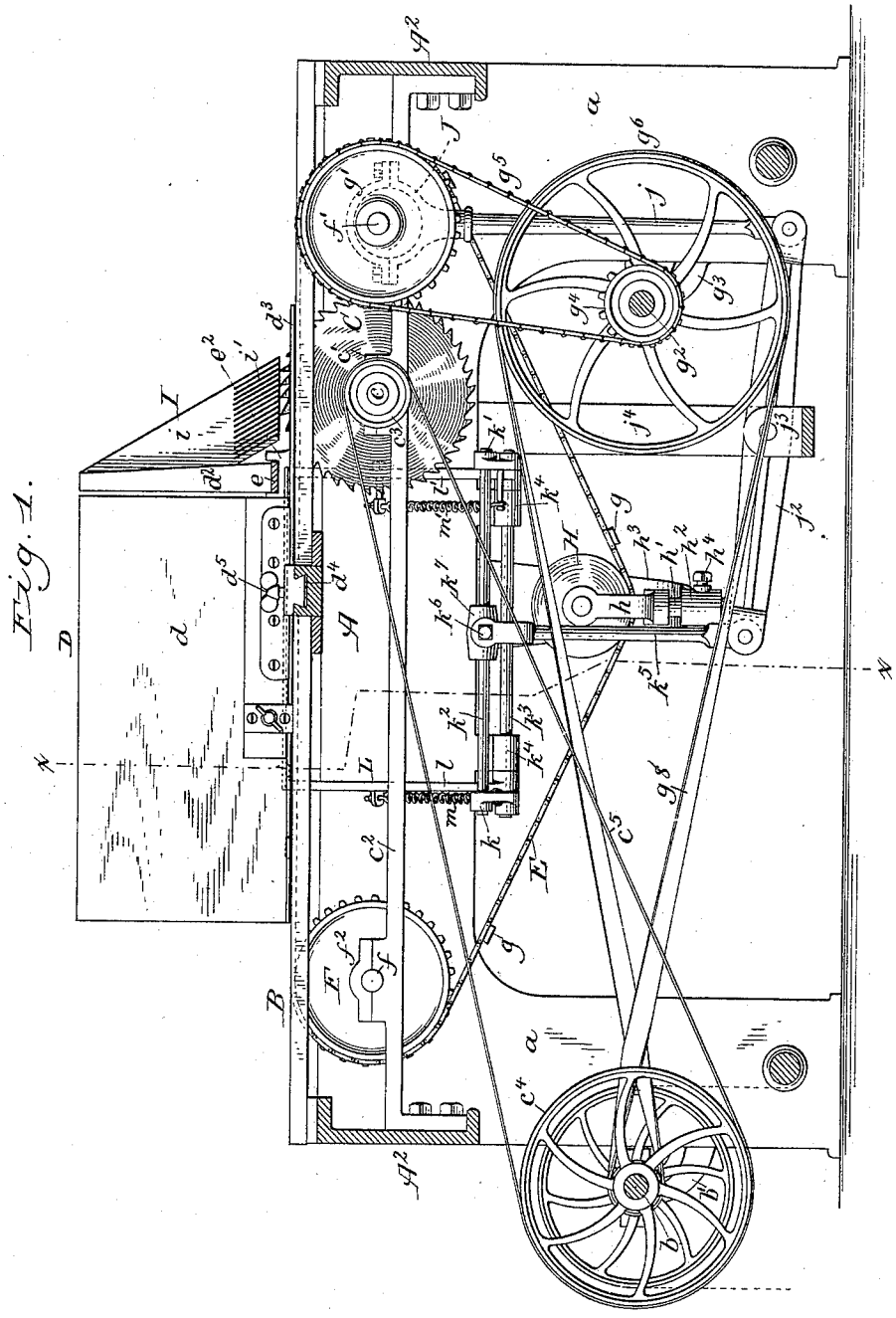


Fig. 1.

Chas. J. Buchheit.
Theo. L. Popp. } Witnesses.

R. H. Hoyt Inventor.
By Wilhelm & Bonner.
Attorneys.

N. PETERS. Photo-Lithographer. Washington, D. C.

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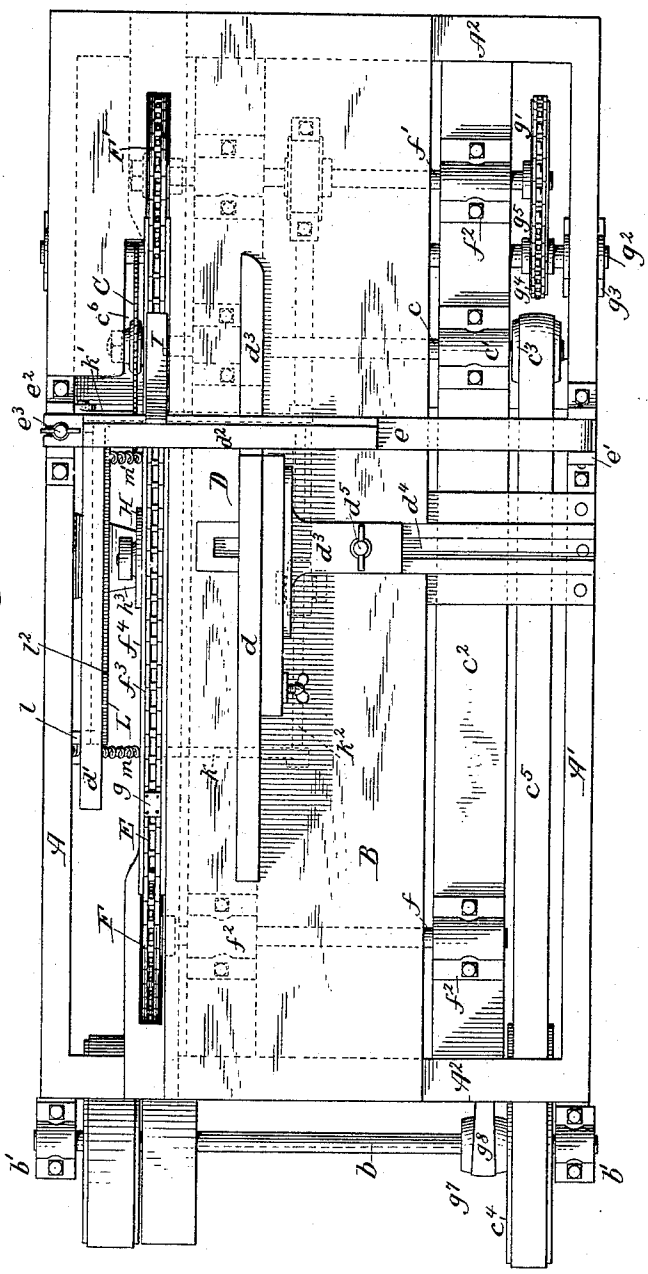
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Fig. 2.



Witnesses.
Chas. J. Buchheit.
Theo. L. Popp.

Inventor.
R. H. Hoyt
By Wilhelm Bonnell
Attorneys.

N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) 3 Sheets—Sheet 3.

R. H. HOYT.

SAWING MACHINE.

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Fig. 3.

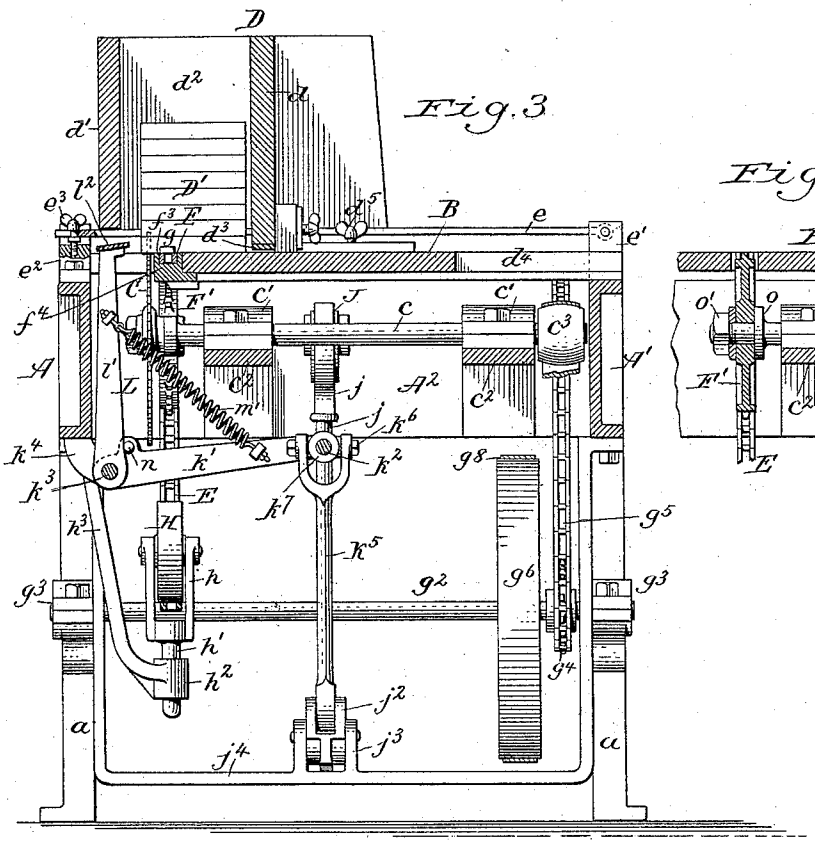
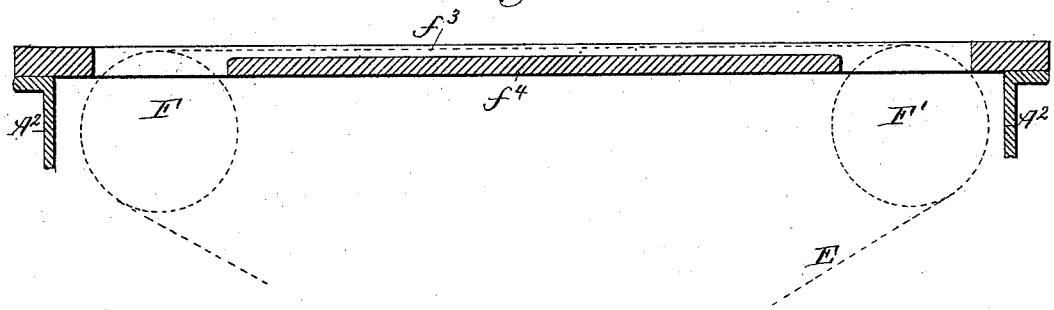


Fig. 4.

Fig. 5.



Witnesses.
Chas. J. Buchheit
Theo. L. Popp.

R. H. Hoyt Inventor.
By Wilhelm & Bonner
Attorneys.

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

RICHARD H. HOYT, OF BUFFALO, NEW YORK, ASSIGNOR OF ONE-HALF TO HOBART B. LOOMIS, OF SAME PLACE.

SAWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 399,900, dated March 19, 1889.

Application filed May 8, 1888. Serial No. 273,171. (No model.)

To all whom it may concern:

Be it known that I, RICHARD H. HOYT, of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Sawing-Machines, of which the following is a specification.

My invention relates more particularly to that class of sawing-machines in which a circular saw is employed; and it has for its object to provide simple and reliable feeding and aligning devices, whereby the boards to be sawed are automatically aligned and fed to and past the saw; also to improve the machine in various other respects.

My invention consists to these ends of the improvements which will be hereinafter more fully set forth, and pointed out in the claims.

In the accompanying drawings, consisting of three sheets, Figure 1 is a longitudinal sectional elevation of my improved sawing-machine. Fig. 2 is a top plan view of the same. Fig. 3 is a cross-section in line x x, Fig. 1. Fig. 4 is a sectional elevation of the wheel by which the endless chain is driven and connecting parts. Fig. 5 is a longitudinal sectional elevation of the bar for guiding the feed-chain.

Like letters of reference refer to like parts in the several figures.

A A′ represent the longitudinal side pieces of the frame having legs a; A^2, the end pieces of the same, and B the top or table portion thereof.

b represents the horizontal driving-shaft arranged at one end of the machine and journaled in bearings b', formed on the legs a of the side pieces, A A′, of the frame.

C represents the circular saw secured to one end of a horizontal shaft, c, journaled in bearings c', formed on longitudinal supporting-bars c^2, which are secured to the end pieces, A^2, of the frame.

c^3 represents a pulley secured to the opposite end of the shaft c, and c^4 represents a pulley secured to the driving-shaft b, and which transmits motion to the pulley c^3 by a belt, c^5.

The saw C is preferably arranged near one side of the machine and projects with its upper portion through an opening, c^6, formed in the table B.

D represents a receptacle arranged above the table B, and in which the pile of boards, D′, to be sawed is placed, as shown in Fig. 3. The receptacle D is preferably open at its top and front end, as shown in Fig. 2, and is composed of two parallel longitudinal walls, d d', and a transverse end wall, d^2. The inner longitudinal wall, d, is secured to the upper side of a laterally-movable side guide or gage bar, d^3, so as to be moved therewith, and the latter is secured in a dovetailed way, d^4, by a set-screw, d^5, in the usual manner. The end wall, d^2, is secured to the upper side of a vertically-adjustable gage-bar, e, which is arranged above the table B a distance about equal to the thickness of the boards to be sawed, so as to allow but a single board to be fed to the saw at a time, and the outer longitudinal wall, d', is preferably secured to the outer end of the end wall, d^2. As shown in Fig. 2, the gage-bar d^3 extends beyond the rear end of the side wall, d, underneath the end gage-bar, e, and terminates, preferably, opposite the rear end of the saw C. The gage-bar e is pivoted at one end to a standard, e', secured to the top of the side piece, A′, of the frame, and is guided vertically at its opposite end in jaws formed in a standard, e^2, secured to the top of the opposite side piece, A, of the frame.

e^3 represents a shouldered thumb-screw arranged in the standard e^2, and between the shoulders of which engages the gage-bar e, as shown in Fig. 3, and whereby the latter can be adjusted vertically, as the thickness of the boards may require.

E represents the endless feed-chain, arranged lengthwise in the table B on the inner side of the saw C and passing underneath the pile of boards in the receptacle D, so as to feed the boards successively from the bottom of the pile to the saw. The feed-chain moves around a guard-wheel, F, at the front end of the machine and a driving-wheel, F′, at the rear end of the machine. The wheels F F′ are secured, respectively, to transverse shafts f f', journaled in bearings f^2, formed on the supporting-bars c^2. The upper horizontal portion of the chain E is flush with the table B and moves in a channel or groove, f^3, formed in a longitudinal bar, f^4, which is arranged at

the edge of the table nearest the saw, whereby the chain is held against lateral displacement. The bar f^4 is supported at its ends upon the end pieces, A^2, of the frame, and the channel f^3 is formed in the top of the bar between the slots formed in the bar for the sprocket-wheels F F'.

g represents a series of equidistant projections or shoulders formed with or secured to the outer side of the chain E, and which are adapted to engage against the rear end of the lowest board of the pile D', and move the same under the gage-bar e toward and past the saw C. These shoulders are arranged so far apart that they engage successively against the ends of the boards and move them out from under the pile in the receptacle.

g' represents a sprocket-wheel secured to one end of the shaft f', and g^2 represents a counter-shaft arranged below the shaft f' and journaled in bearings g^3, formed on the legs a of the side pieces, A A', of the frame.

g^4 represents a sprocket-wheel secured to the shaft g^2, and from which motion is transmitted to the sprocket-wheel g' by a chain belt, g^5.

g^6 represents a pulley secured to the counter-shaft g^2, and which receives motion from a pulley, g^7, on the driving-shaft b by a crossed belt, g^8.

H represents a tightener-pulley, which bears upon the lower portion of the feed-chain and keeps the same taut. The pulley H is mounted in a bifurcated frame or yoke, h, having a downwardly-projecting shank, h', which enters a socket, h^2, formed at the lower end of a hanger, h^3, secured to the side piece A of the frame. The shank is secured in position in the socket by a set-screw, h^4.

I represents a yielding presser-foot arranged adjacent to the saw C, on the inner side thereof, and secured to the rear side of the end wall, d^2, of the board-receptacle D. The presser-foot I is preferably formed of a block of wood, i, having its lower portion provided with a series of saw cuts or slits extending from the lower end of the block upwardly into the block and in line with the grain of the wood and forming between the cuts or slits a series of flexible fingers, i'. The fingers i' have their lower ends arranged slightly below the lower edge of the gage-bar e, so that they will bear upon the board which is being fed past them and exert a downward pressure on the board and prevent the same from swinging away from the longitudinal gage d^3 when the board is fed against the saw C. The end wall, d^2, being made vertically adjustable by means of the end gage, e, upon which it is supported, the presser-foot, which is secured to the end wall, is also made vertically adjustable, and its lower end is adjusted toward and from the table by the adjustment of the end gage, e.

J represents an eccentric secured to the shaft f' between the sprockets-wheels F' and g', and j represents the eccentric-rod connected at its upper end with the eccentric J and at its lower end to the outer end of a rock-lever, j^2. The latter is arranged lengthwise of the machine and pivoted about midway of its length in a bearing, j^3, formed in a U-shaped frame, j^4, secured to the side pieces, A A', of the main frame.

$k\ k'$ represent inwardly-projecting arms arranged transversely underneath the table B, and which are connected at their inner ends by a horizontal bar or rod, k^2, and pivoted at their outer ends to a rod, k^3, journaled in bearings k^4, formed on the lower side of the side piece A of the frame.

k^5 represents a vertical rod, which is connected at its lower end with the inner end of the rock-lever j^2, and at its upper bifurcated end by screws k^6 with a sleeve, k^7, mounted centrally on the horizontal connecting-bar k^2 of the arms $k\ k'$.

L represents a transversely-swinging aligning frame arranged vertically on the inner side of the side piece A of the main frame. The frame L consists of two vertical arms, $l\ l'$, pivoted at their lower ends to the rod k^3, adjacent to the outer ends of the arms $k\ k'$, and a horizontal plate, l^2, arranged above the top of the table B, and which is formed with or secured to the upper ends of the vertical arms $l\ l'$.

$m\ m'$ represent spiral springs secured at one end to the arms $l\ l'$ and at their opposite ends to the arms $k\ k'$, so that when the latter are moved downwardly the frame L is swung inwardly, so as to cause the plate l^2 of the same to engage against the outer side of the lowest board in the pile D' and move the same toward and against the gage d^3.

$n\ n$ represent pins or studs secured to the inner sides of the arms $k\ k'$, and which are adapted to engage against the lower ends of the vertical arms $l\ l'$ of the aligning frame L and move the same outwardly toward the side piece A of the frame and away from the pile D', when the arms $k\ k'$ move upwardly. The aligning frame L remains at rest against the board until the studs $n\ n$, by the upward movement of the arms $k\ k'$, strike the arms $l\ l'$ and move the plate l^2 of the frame L away from the board toward the side piece A of the frame. In this manner the board is held against the gage d^3 by the frame L until it has been fed up to the saw sufficiently to insure its further straight movement between the saw and the gage.

The springs $m\ m'$ form a flexible connection between the arms $k\ k'$ and frame L, so as to allow the frame L to adapt itself to any variation existing in the width of the boards.

The shoulders g of the feed-chain E are so arranged and timed with reference to the aligning frame L that as soon as the latter has moved the lowermost board against the side gage, d^3, one of the shoulders g will be in position to engage against the rear end of the board and move the same under the end gage-bar, e, toward the saw.

As clearly shown in Fig. 4, the sprocket-wheel F′, from which the chain E is driven, is clamped on the shaft f' between a collar or shoulder, o, formed with or secured to the shaft f' and a screw-nut, o', so that the wheel F′ will turn with the shaft f' and move the chain E, but will slip between these parts without moving the chain, should an obstruction be encountered, and whereby danger of breaking the parts is avoided. This construction also permits the chain to be adjusted to bring the shoulders g of the same in proper position with reference to the aligning frame L to feed boards of greater or less length by simply loosening the nut o' and adjusting the chain and then again tightening the nut o'.

My improved sawing-machine is particularly adapted for sawing boards used in the construction of boxes, but may be applied to many other uses.

I claim as my invention—

1. The combination, with the supporting-frame, table, and saw of a sawing-machine, of a board-receptacle and an end gage-bar, e, pivoted at one end to said supporting-frame and made vertically adjustable at its opposite end on the supporting-frame, substantially as set forth.

2. The combination, with a table and saw of a sawing-machine, of a board-receptacle arranged in front of said saw and having its end wall vertically adjustable, a yielding presser-foot secured to said rear wall and arranged adjacent to said saw, and an endless feed-chain, whereby the boards are successively fed under said end wall and presser-foot to said saw, substantially as set forth.

3. The combination, with the table and saw, of a board-receptacle arranged on said table, a side gage, a laterally-movable aligning frame, whereby the boards are successively moved against the side gage, and a feeding device whereby the boards contained in the receptacle are successively fed to the saw, substantially as set forth.

4. The combination, with the table and saw, of a board-receptacle having one of its side walls laterally adjustable on said table, a laterally-movable aligning frame, whereby the boards contained in the receptacle are successively moved against one of the side walls of said receptacle, and a longitudinal feeding device, whereby the boards contained in the receptacle are successively fed to the saw, substantially as set forth.

5. The combination, with the table and saw, of a board-receptacle arranged on said table in front of said saw, a laterally-movable aligning frame, L, actuating-arms k k', and springs connecting the actuating-arms with the laterally-movable frame L, substantially as set forth.

6. The combination, with the table B, saw C, and the board-receptacle D, of a laterally-movable aligning frame, L, actuating-arms k k', springs m m', connecting the actuating-arms with the aligning frame L, and whereby the latter is moved in one direction, and studs n n, arranged on the arms k k', and whereby said aligning frame is moved in the opposite direction, substantially as set forth.

7. The combination, with the table B, saw C, and receptacle D, of a longitudinal feeding device, E, moving in said receptacle, a laterally-movable aligning frame, L, actuating-arms k k', connected yieldingly with said aligning frame, a rock-lever, j^2, connected with said actuating-arms, and an eccentric whereby the rock-lever j^2 is actuated, substantially as set forth.

Witness my hand this 28th day of April, 1888.

RICHARD H. HOYT.

Witnesses:

JNO. J. BONNER,

FRED. C. GEYER.