

No. 742,848.

PATENTED NOV. 3, 1903.

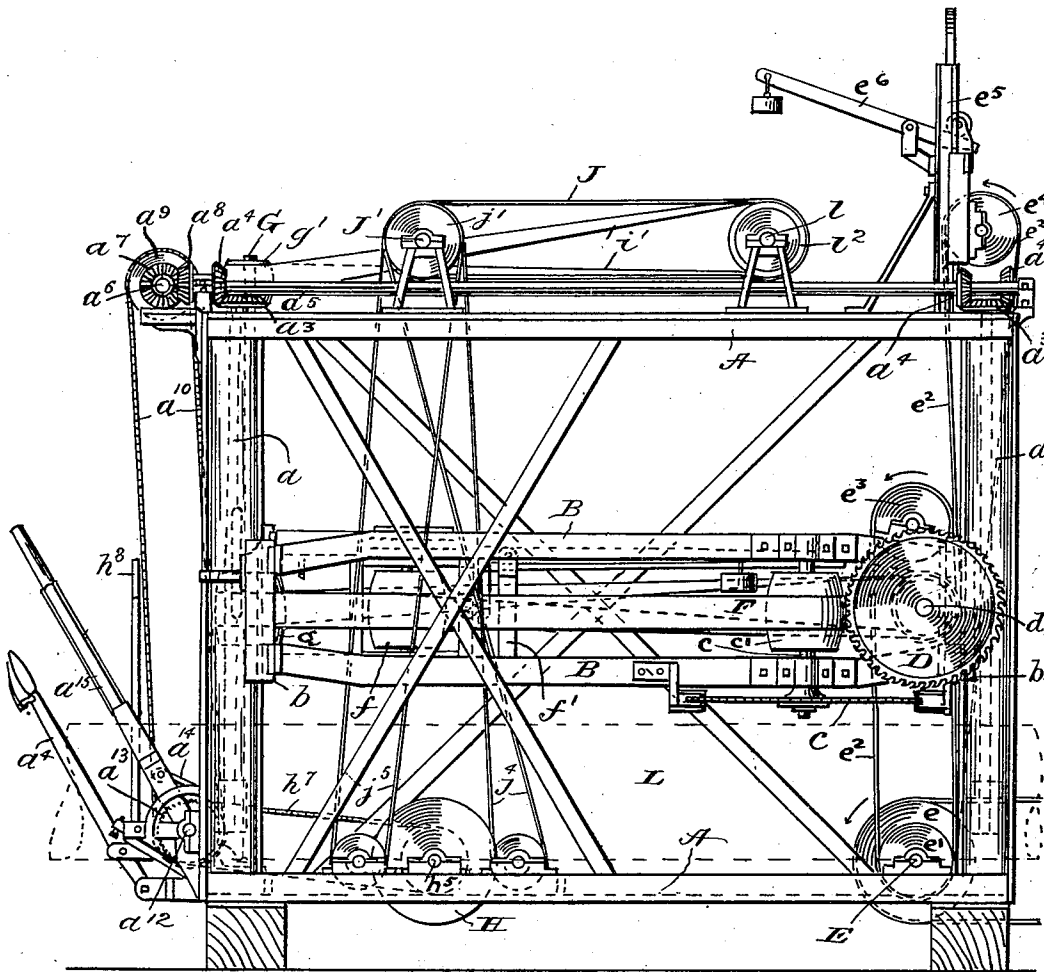
E. DYER.  
SAWMILL.

APPLICATION FILED MAR. 10, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

FIG. 1



WITNESSES:

Walter F. Vane.  
Leon Boillon

INVENTOR:

Elbert Dyer  
by Wm F. Booth  
his atty

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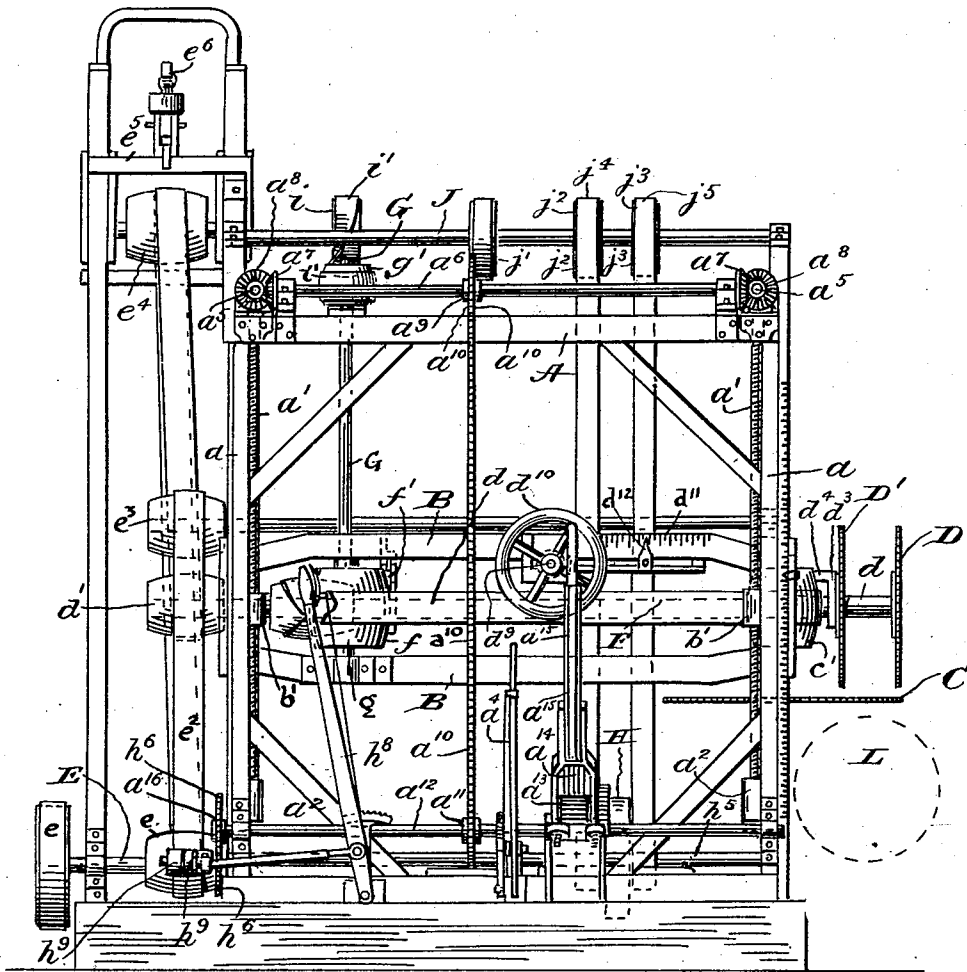
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NO MODEL.

3 SHEETS--SHEET 2.

FIG. 2



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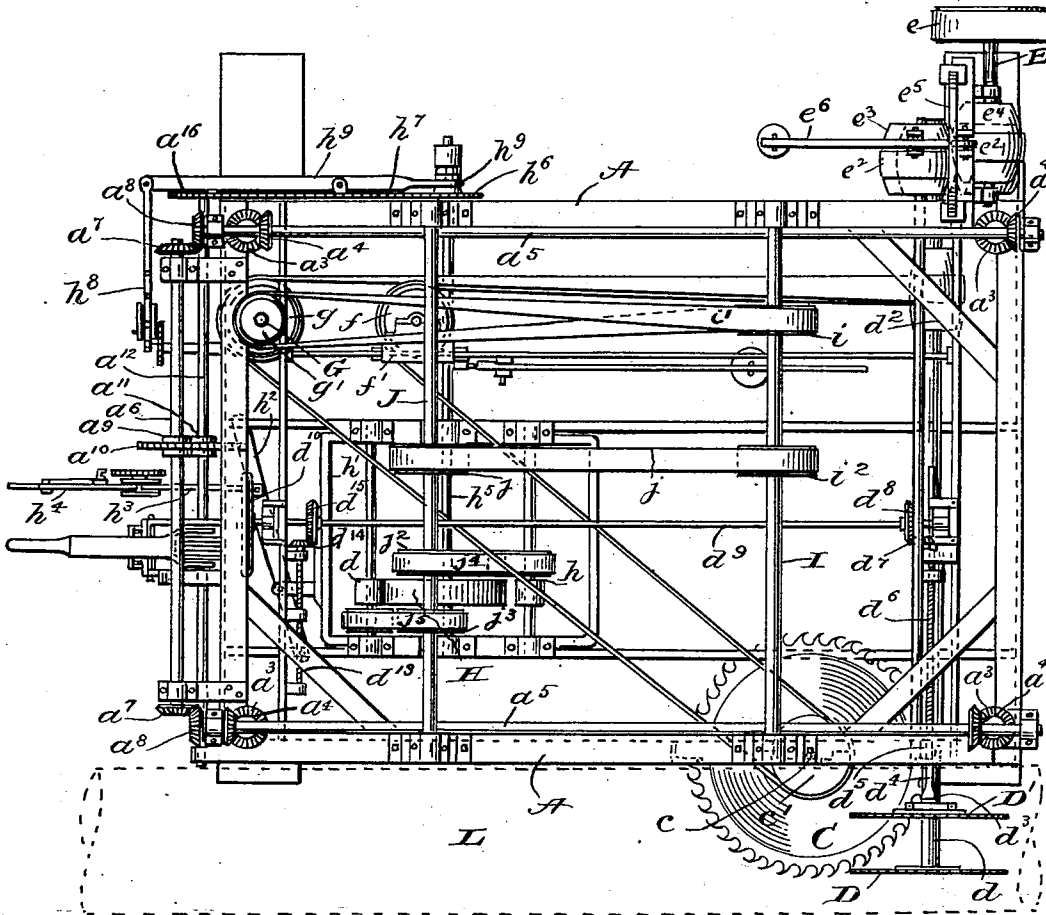
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NO MODEL.

3 SHEETS—SHEET 3.

FIG. 3



**WITNESSES:**

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## UNITED STATES PATENT OFFICE.

ELBERT DYER, OF BANDON, OREGON.

## SAWMILL.

SPECIFICATION forming part of Letters Patent No. 742,848, dated November 3, 1903.

Application filed March 10, 1903. Serial No. 147,114. (No model.)

*To all whom it may concern:*

Be it known that I, ELBERT DYER, a citizen of the United States, residing at Bandon, Coos county, State of Oregon, have invented certain new and useful Improvements in Sawmills; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the class of sawmills.

The object of my invention is to provide a sawmill capable of cutting successive pieces horizontally throughout the depth of the log in given successive sections of the same, whereby the whole log of whatever size may be conveniently and economically cut up with comparatively small saws; and to this end my invention consists in vertically-adjustable saws disposed and operating at right angles to each other.

It also consists, in connection with said saws, of a third saw parallel to and adjustable to and from the vertical saw to define the width of the pieces cut according to the material.

It also consists in the novel construction, arrangement, and combination of parts, which I shall now fully describe by reference to the accompanying drawings, in which—

Figure 1 is an elevation of the mill, taken from the saw side. Fig. 2 is an elevation taken from the head end. Fig. 3 is a plan of the mill.

A is a main stationary frame, to which is fitted and adapted to move vertically the supplementary or saw-carrying frame B, Figs. 1 and 2. Upon frame B is mounted the vertical shaft or arbor *c*, Fig. 1, which carries the horizontally-disposed saw C. Upon frame B is also mounted a horizontal shaft or arbor *d*, which carries the vertically-disposed fixed saw D and the vertically-disposed adjustable saw D', which is parallel to the saw D. The saws C and D thus operate in planes at right angles, and their relative disposition is such that the saw C cuts horizontally into the side of the log, and the saw D cuts down into it from the top, their peripheral planes being such as to enable them to cut out a sector or segment from the log. It will be read-

ily seen if the frame B, which carries the saws, be lowered only sufficient to permit saw D to penetrate the log to the depth of, say, an inch the horizontal saw C will cut a sector having a maximum depth of an inch. Then if the frame be lowered another inch for a second cut a piece or board an inch thick will then be cut out, but wider than the previous piece, being nearer the horizontal diameter of the log. Likewise a third cut will make a board or piece wider still, and so on, until the plane of the horizontal diameter of the log is passed, whereupon the boards will grow narrower. The saw D' being adjustable to and from the saw D is intended to cut off square the edge of each piece or board and define its width, being set close up toward saw D to begin with and successively withdrawn as the boards grow wider and caused to approach again as they grow narrower. The prime adjustments of the saws are therefore successive lowerings during work on a log and a complete return when the depth of the log is cut in order to begin again on another part of the same log or on a fresh log. These adjustments are effected by the vertical movement of the frame B, which carries the saws and such parts of the mechanism as are affected by its movement. The vertical adjustment of the frame B may be various. I have here shown the following constructions: The corners of the frame B are provided with slides *b*, Fig. 1, movable upon the corner-posts *a* of frame A. Mounted upon these corner-posts are long screws *a'*, Fig. 2, upon the lower ends of which are stops *a''* to limit the downward movement of nuts *b'*, secured on the slides *b* and engaging the hanger-screws *a'*. The upper ends of these screws have miter-pinions *a'''*, Fig. 3, which engage with miter-pinions *a''''* on the ends of horizontal shafts *a'''''*, mounted on top of frame A. At the head of frame A, on top, is a cross-shaft *a''''''*, the ends of which have pinions *a'''''''*, engaging with pinions *a''''''''* on the shafts *a'''''''*. Upon this head cross-shaft *a''''''* is a sprocket *a''''''''*, from which a chain *a'''''''''*, Fig. 1, extends down to a sprocket *a''''''''''*, Fig. 2, mounted on a shaft *a'''''''''''*, carried by frame A below. Now it will be seen that if shaft *a''''''''''* be turned movement

will be transmitted to the hanger-screws  $a'$ , which by their engagement with the nuts  $b'$  will raise or lower the frame B.

In practice the downward feed of the frame B is best effected by hand, while its return is best done by power. Accordingly I have on shaft  $a^{12}$  a ratchet  $a^{13}$ , Fig. 1, with which engage the pawls  $a^{14}$  of a hand-lever  $a^{15}$ . This is the hand device. The power device will be best understood by leading up to it through the general power-transmitting connections.

E is the shaft, Fig. 2, having pulley  $e$ , through which power is led into the machine from suitable source. This shaft is mounted in frame A, and it carries a second pulley  $e'$ , from which a belt  $e^2$  extends to an idler-pulley  $e^3$ , thence to a pulley  $d'$  on the shaft or arbor  $d$ , which carries the saws D and D', whereby they are driven. Thence the belt  $e^2$  extends upwardly to and over a tightener-pulley  $e^4$ , mounted in a sliding carriage  $e^5$  in the top of frame A and held up to automatically keep the tension on belt  $e^2$ , by means of a weighted lever  $e^6$ , whereby the frame B may move up and down and the belt  $e^2$  still be kept taut.

F (seen best in Fig. 3) is the belt which drives the arbor  $c$  of saw C. This belt passes from a pulley  $d^2$  on the arbor  $d$  of saws D and D' to a pulley  $g$ , carried by frame B, but slidably mounted on a vertical counter-shaft G at the head of frame A, Fig. 2. Thence the belt passes to a pulley  $c'$  on arbor  $c$ , thence to a tightener-pulley  $f$  on frame B, said pulley being carried in a weight-controlled sliding carriage  $f'$ , and thence to pulley  $d^2$  and point of beginning.

H, Fig. 3, is a friction-gear mounted on a shaft  $h^5$  on frame A, and  $h$   $h$  are friction-pinions adapted to engage with opposite sides of said gear H alternately. These pinions are carried by a sliding frame  $h'$  on frame A, which sliding frame is operated by a lever  $h^2$ , link  $h^3$ , and pawl-controlled lever  $h^4$ , by means of which latter the friction-pinions may be alternately thrown into and out of engagement with the gear H, Fig. 3.

On top of frame A is a cross-shaft I, on which is a pulley  $i$ , from which a belt  $i'$  extends to a pulley  $g'$  on the upper end of the counter-shaft G, whereby rotation is imparted to shaft I. A second cross-shaft J is mounted on top of frame A and is driven by a belt  $j$  from a pulley  $i^2$  on shaft I to a pulley  $j'$  on shaft J. On shaft J are pulleys  $j^2$   $j^3$ , from which belts  $j^4$   $j^5$  extend down to drive the friction-pinions  $h$   $h$ . One of these belts is crossed, as shown in Fig. 1, in order to drive the friction-gear H in opposite directions to either raise or lower frame B by power.

On the end of the shaft  $h^5$  which carries the friction-gear H is a loose sprocket  $h^6$ , Fig. 3, from which a chain  $h^7$  extends to a sprocket  $a^{16}$  on the shaft  $a^{12}$ . A lever  $h^8$  operates a clutch  $h^9$  on a feather on shaft  $h^5$  to throw the loose sprocket  $h^6$  into and out of

gear. Now it will be seen that when the power connections are to be used to adjust the frame B—as, for example, to rapidly return it—the first thing is to throw the pawls  $a^{14}$  back from their engagement with the ratchet  $a^{13}$  of shaft  $a^{12}$ , so as to free said shaft. Then the lever  $h^2$  is moved to throw the proper pinion  $h$  into gear with the large friction H, and finally the lever  $h^8$  is operated to throw the clutch  $h^9$  to its engagement with sprocket  $h^6$ , thereby connecting said sprocket with shaft  $h^5$ . Motion is thus transmitted to shaft  $a^{12}$ , which through the devices heretofore described in connection with the hand mechanism will lift frame B. The frame B may also, if desired, be lowered by the same power mechanism.

As heretofore mentioned the saw D' is adjustable to and from the saw D in order to define the width of the boards. For this purpose its hub  $d^3$  is mounted on a feather, which hub has an arm  $d^4$  with a nut  $d^5$  with which a feed-screw  $d^6$  engages. (See Fig. 3.) This screw is operated by a bevel-pinion  $d^7$  on its head end engaging a bevel-pinion  $d^8$  on a rod  $d^9$ , extending to the head of the machine and there provided with a hand-wheel  $d^{10}$ . In order to gage the feed of screw  $d^6$  and the consequent adjustment of saw D', I have at the head of the machine a scale  $d^{11}$ , over which moves a pointer  $d^{12}$ , actuated by a screw  $d^{13}$ , which is operated by bevel-pinions  $d^{14}$  and  $d^{15}$  from the rod  $d^9$ , Figs. 2 and 3.

The operation of the sawmill is as follows: The log, which I have designated by L, must be supposed to be mounted upon a suitable carriage to which by proper mechanism the necessary travel is given, and suitable means will also be provided to shift said log as required. These form no part of my invention, and I have not, therefore, described or illustrated them. The log being adjusted to position with relation to the saws, the latter are then brought down by lowering frame B to such a position as will give the thickness of board or piece determined upon. The first piece being thus cut out the saws are again lowered to the required point and a second cut is made, and so on down through the thickness of the log. Meanwhile the saw D' is adjusted away from or toward saw D, as the width of the sawed-out piece requires. When the depth of the log is reached, the frame B is run up again to lift the saws to their highest point, the log is shifted for a new position, and the operation is repeated.

I am aware that it is not new to cut out from a log a sector or segment by saws at right angles to each other; but as this is done to get from a large log a smaller piece adapted to be sawed up the saws themselves have been non-adjustable—that is, with no means to raise or to lower them to successively cut out pieces of given thickness; nor, as far as I am aware, has a specially-adjustable second saw, such as D', been employed to define

the width of the pieces according to the material.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a sawmill, the combination of a pair of saws disposed and operating in planes at right angles to each other, a third saw parallel with and adjustable to and from the vertical saw of the pair, and means for raising and lowering said saws.

2. In a sawmill, the combination of a pair of saws disposed and operating in planes at right angles to each other, a third saw parallel with and adjustable to and from the vertical saw of the pair, a frame carrying all of said saws and means for raising and lowering the frame.

3. In a sawmill, the combination of a main frame, a supplementary frame, screw-hangers supporting the latter frame in the main frame, nuts on the supplementary frame engaging the screw-hangers, means for turning the screw-hangers to raise and to lower the supplementary frame, a pair of saws carried by the supplementary frame and disposed and operating in planes at right angles to each other, a third saw carried by said supplementary frame, said saw being parallel with and adjustable to and from the vertical member of the pair of saws, and means for

adjusting said third saw consisting of the hand-wheel rod carried by the supplementary frame, the feed-screw operated by said rod and the nut of the saw engaged by said screw. 35

4. In a sawmill, the combination of a main frame, a supplementary frame, screw-hangers supporting the latter frame in the main frame, nuts on the supplementary frame engaging the screw-hangers, means for turning the screw-hangers to raise and to lower the supplementary frame, a pair of saws carried by the supplementary frame and disposed and operating in planes at right angles to each other, a third saw carried by said supplementary frame, said saw being parallel with and adjustable to and from the vertical member of the pair of saws, means for adjusting said third saw consisting of the hand-wheel rod carried by the supplementary frame, the feed-screw operated by said rod and the nut of the saw engaged by said screw, and the gage mechanism carried by said frame, comprising the scale, the pointer and the screw operated by said rod. 45 50 55

In witness whereof I have hereunto set my hand.

ELBERT DYER.

Witnesses:

WALTER F. VANE,  
D. B. RICHARDS.