

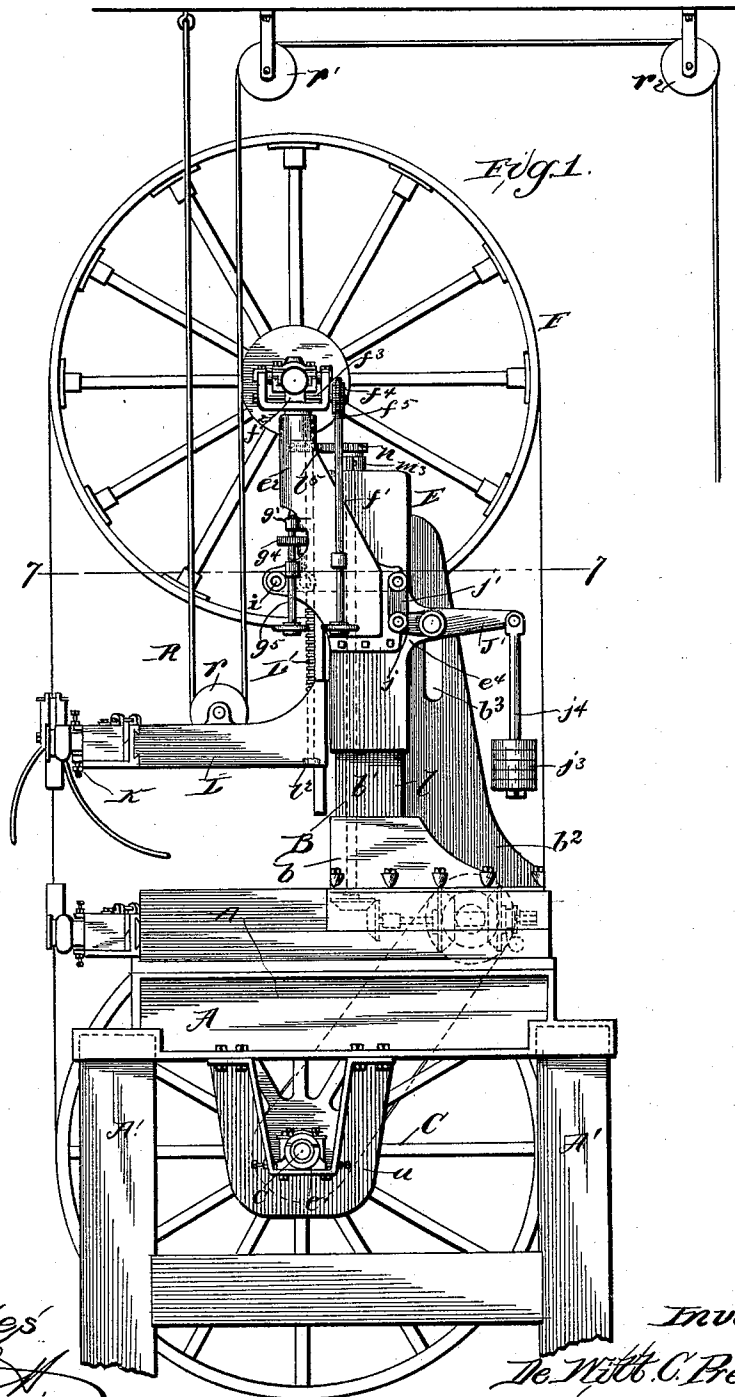
(No Model.)

5 Sheets—Sheet 1.

DE WITT C. PRESCOTT.
BAND SAW MILL.

No. 478,817.

Patented July 12, 1892.



witnesses:
Jm. H. Felt.
A. W. Best.

Inventor
De Witt C. Prescott

By Commethacher
Atty.

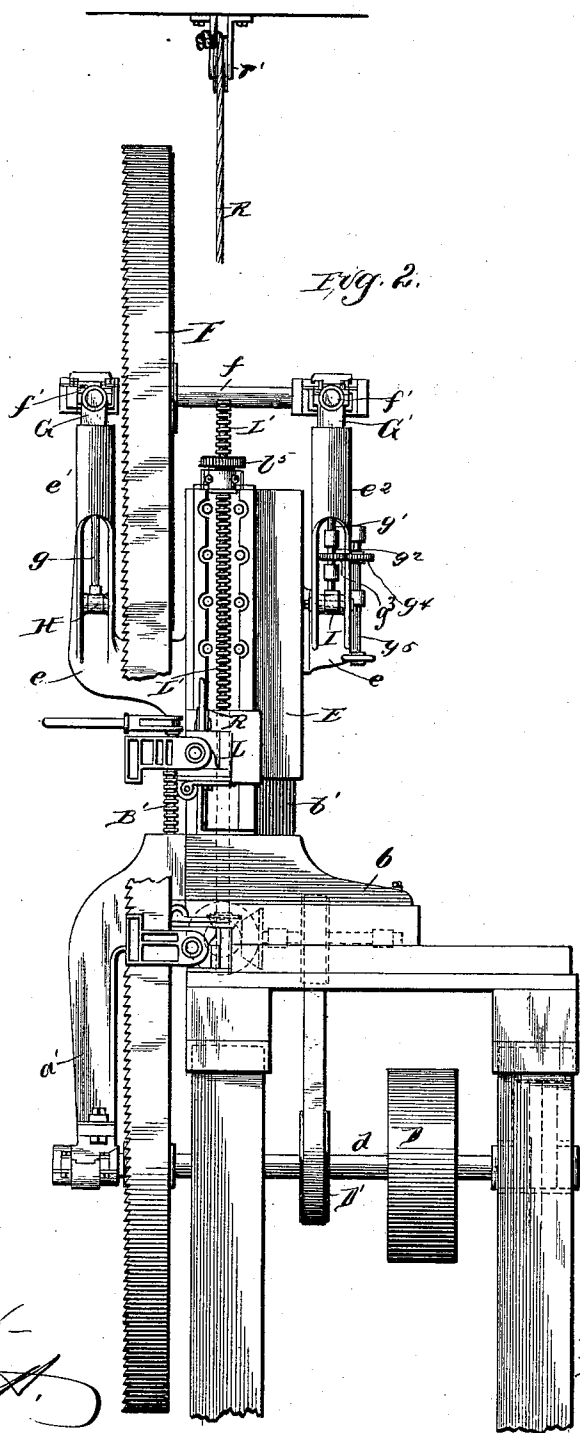
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Witnesses-
J. H. J. A.
A. H. Beat.

Inventor
De Witt C. Prescott

By *Coburn & Thacher* Attys

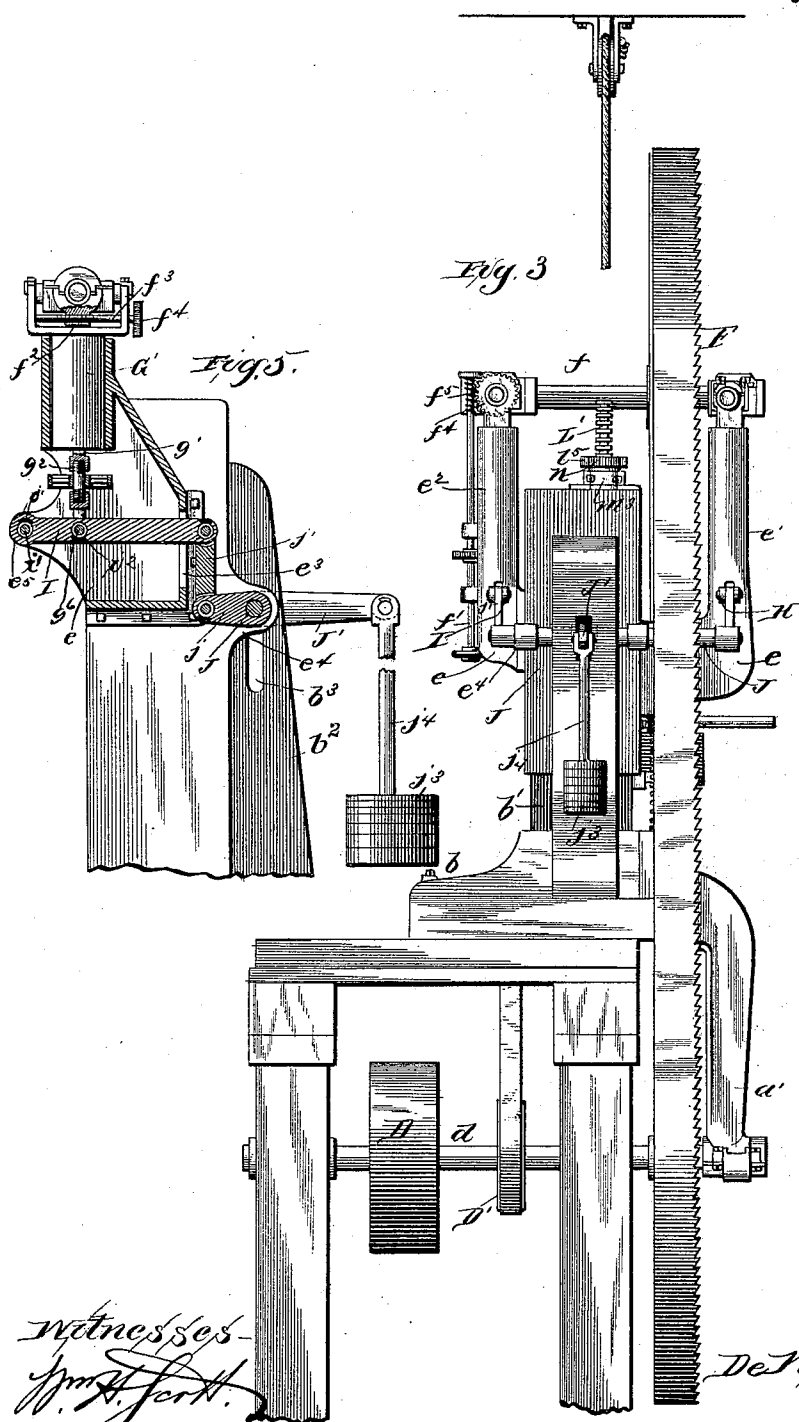
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BAND SAW MILL.

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Witnesses
Jm. H. Scott.
A. M. Best.

Inventor
De Witt C. Prescott

By *Cornwall* *Alley*

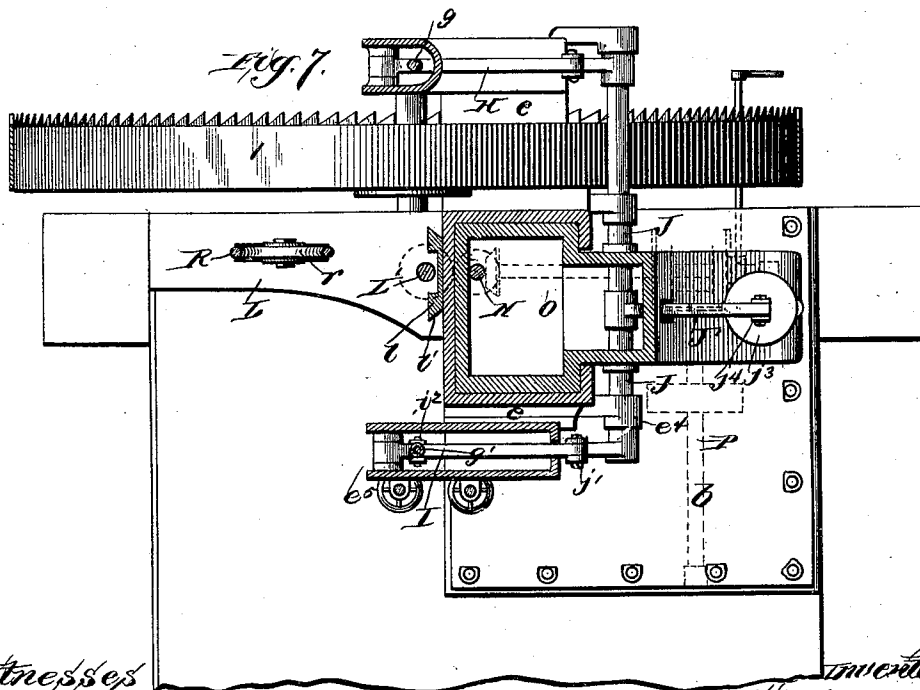
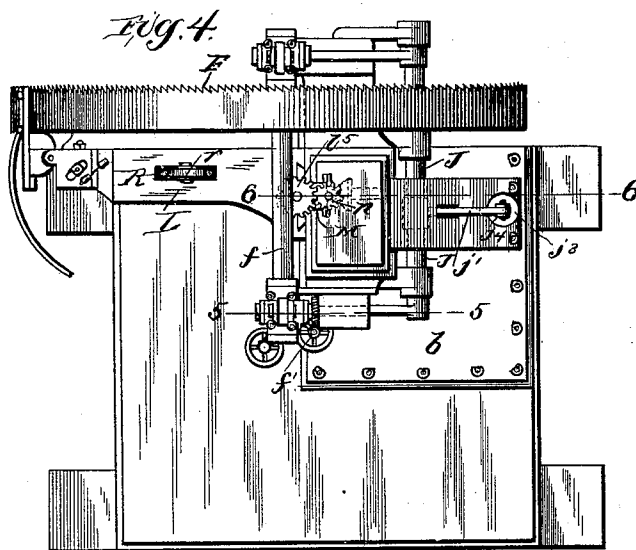
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5 Sheets—Sheet 4.

DE WITT C. PRESCOTT.
BAND SAW MILL.

No. 478,817.

Patented July 12, 1892.



witnesses
J. H. Smith
A. M. Beet

Inventor
De Witt C. Prescott

By *Robert M. Smith*
Att'y

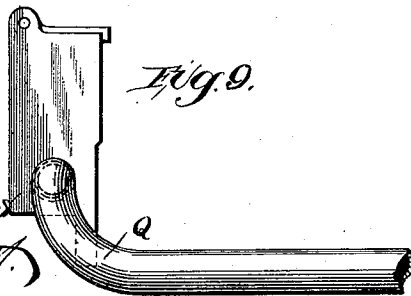
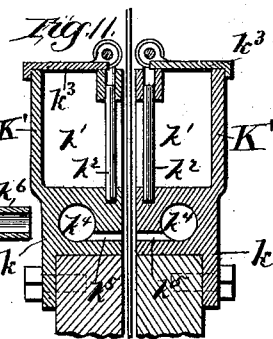
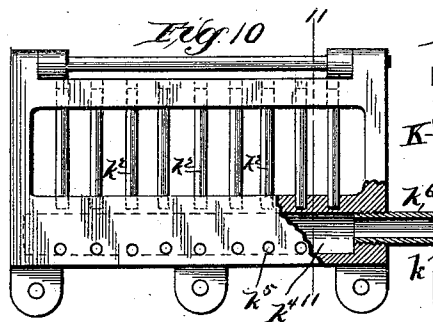
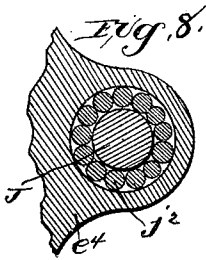
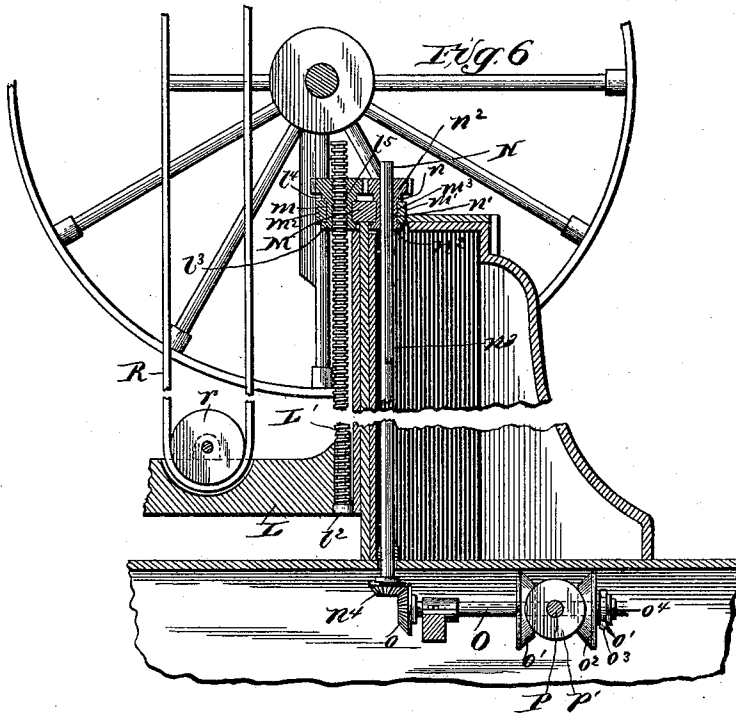
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No. 478,817.

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Witnesses
J. H. Scott.
A. M. Best

Inventor
De Witt C. Prescott

By
Coburn & Mather
Attys

UNITED STATES PATENT OFFICE.

DE WITT C. PRESCOTT, OF MARINETTE, WISCONSIN.

BAND-SAW MILL.

SPECIFICATION forming part of Letters Patent No. 478,817, dated July 12, 1892.

Application filed March 6, 1890. Serial No. 342,838. (No model.)

To all whom it may concern:

Be it known that I, DE WITT C. PRESCOTT, a citizen of the United States, residing at Marinette, in the county of Marinette and State of Wisconsin, have invented certain new and useful Improvements in Band-Saw Mills, which are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a rear elevation of a mill embodying my improvements; Fig. 2, a side elevation of the same, taken on the right side of the mill looking from the front; Fig. 3, a similar elevation taken on the left side, looking from the front; Fig. 4, a plan view of the same; Fig. 5, a detail section taken on the line 5 5 of Fig. 4 and on an enlarged scale; Fig. 6, a detail section, partly broken away, taken on the line 6 6 of Fig. 4, showing the gearing for adjusting the guide, and on an enlarged scale; Fig. 7, a plan section taken on the line 7 7 of Fig. 1 and on an enlarged scale; Fig. 8, a detail section showing one of the roller-bearings, taken on the line 8 8 of Fig. 4 and on an enlarged scale; Fig. 9, an end elevation of the guide-lubricator detached; Fig. 10, an inside elevation of the same; and Fig. 11, a cross-section of the same, taken on the line 11 11 of Fig. 10, these three last figures being on a much enlarged scale.

My invention relates to band-saw mills, and more particularly to that class of mills employed in rough-sawing, or, in other words, in operating upon a log or cant to saw it up into lumber for the market.

The object of the present invention is to provide a band-saw mill which shall be adapted for operation upon logs or cants of extra large size—such, for instance, as logs from large pine-trees and other trees of like nature found upon the Pacific slope. The logs cut from these trees are not only of great dimensions, but are also heavily impregnated with pitch and other like gummy or oily substance, and for these reasons present certain difficulties to the work of sawing, which render band-mills of ordinary construction practically inapplicable.

It is the purpose of my present improvements to provide a band-saw mill which is especially adapted for this particular work.

I will proceed to describe in detail the con-

struction and operation of a mill in which I have practically carried out my invention in one way, and will then point out definitely in claims the particular improvements which I believe to be new and desire to protect by Letters Patent.

In the drawings, A represents the base of a band-saw mill, which is mounted upon a supporting frame-work A', belonging to the general structure of the mill. This base is provided with a flat upper surface, upon the outer side of which is mounted a column B, which serves to support the upper band-wheel and other portions of the mechanism in the manner hereinafter set forth. The lower band-wheel C is mounted on a shaft c, which has its bearings in boxes c', one of which is supported by a bracket a, attached to the under side of the base, near its outer edge, while the other is supported by an arm a', which is secured to the lower part of the column or to the base on the inside thereof, from which it bends outward and downward, as seen in Fig. 2 of the drawings.

The main driving-pulley D is mounted on a shaft d and is driven by a belt from any suitable source of power. A second pulley D' is also mounted on the same shaft and serves to impart motion to gearing by which the upper saw-guide is adjusted, as will be described presently.

The column B is hollow and consists of a lower portion b, which serves as a foot and is bolted to the base A, and thereby secures the column thereto. The vertical portion b' of the column rises something like a shaft from this foot, is rectangular in cross-section, and serves as the part to which the main supporting-piece for the upper portion of the band-saw device is secured and on which it is vertically adjusted. The support E, on which the upper band-wheel is mounted, is sleeved upon the upper end of this column, so as to be, held thereto, but at the same time movable vertically thereon. The sleeve portion is of course conformed to the column; but on the outer side it is not entire, a wide vertical space being left open, as seen in Fig. 4 of the drawings. The upper band-wheel is mounted on this movable section upon the same general plan as in my patent, No. 369,881, dated September 13, 1887. In said patent, however,

the shaft of the upper band-wheel lies centrally over the sleeve. Of course the size of the log which can be sawed is determined by the distance between the inside of the column and the saw. Under the construction shown in Patent No. 369,881 the only way of increasing this distance so as to accommodate larger logs is to increase the diameter of the band-wheels, and this increase is practical only within certain limits. It is desirable to provide for working on larger logs by some means other than increasing the size of the wheels. This I accomplish in the present instance by a construction which brings the shaft of the upper band-wheel into a position overhanging the column on the inner side thereof, thereby very considerably increasing the space between the column and the operative edge of the saw without increasing the size of the band-wheels. In order to effect this arrangement, the sleeved support E is provided with wings e , projecting at both front and rear thereof, and each of these wings is also projected at right angles to the main body thereof out toward the saw, upon the inside of the column, and is extended upward, the upper portion being formed into vertical tubes e' e^2 , standing, respectively, in front and rear of the column. The upper band-wheel F is on a shaft f , which is mounted in boxes f' , which latter are mounted on the upper ends of standards or posts G and G', arranged, respectively, within the tubes e' e^2 , which serve as sleeve-bearings for the said standards, within which they are free to move vertically. It is not necessary to describe the particular means by which the journal-boxes of the band-wheel shaft are mounted upon these vertical standards, for they are substantially the same as in my aforesaid prior patent. These short supports G and G' are in turn supported by small posts g g' , respectively, the latter at the rear of the column being divided, with its two parts connected by a short double screw g^2 , which is provided with a pinion g^3 . These lower supports are also substantially as in my former patent. The screw g^2 is for the purpose of adjusting the length of the support for the band-wheel shaft at the rear of the column for the purpose of leveling said shaft. The device for turning the screw is a pinion g^4 on a hand-wheel shaft g^5 , as seen in Figs. 1 and 2 of the drawings. These lower supports g g' rest at their lower ends upon levers H and I, the former in front and the latter in rear of the column, which are similar to the supporting-levers in Patent No. 369,881, except that they are arranged parallel to each other and extend from the inner side of the column to the back thereof. They are pivoted at their inner ends to the front projections of the wings e , and preferably by knife-edge bearings. The lower ends of the small posts g g' are also mounted on the levers by knife-edge bearings, this being accomplished with the latter by setting a pivot-pin g^6 in the lower

end of the said post, having knife-edges on the under side, which rest upon a bearing-plate i^2 , set in openings in the lever I, adapted to receive the pivots, while the former has a knife-edge at its lower extremity, which sets directly on a bearing-plate on the lever H, as in my said former patent. The levers H and I extend outward in front and rear of the column and parallel to each other, passing out through slots e^3 in the wings of the movable support. Each of these wings also has a lug e^4 extending outward a little beyond the outer side of the column, and these lugs serve as bearings, in which is mounted a rock-shaft J, the latter being extended at the front, where its front end is mounted in a similar bearing-lug e^5 , which, however, projects from the wing at its extreme forward extension. This shaft J is provided with crank-arms j at its front and rear ends, and these arms are connected by links j' , respectively, with the other ends of the levers H and I, the pivotal joints at both ends of the links being provided with knife-edge bearings similar to those already described and as shown in Fig. 5 of the drawings. The shaft J is provided with roller-bearings at each of its three points of support. These bearings are of any ordinary construction and are illustrated in Fig. 6 of the drawings, in which the shaft is shown surrounded by short rollers j^2 , the journal-openings in the supporting-lugs of the shaft being made sufficiently large to receive these rollers. At the outer side of the column a portion b^2 in the nature of a web projects outward and widens somewhat down to the base for the purpose of giving strength and stability to the column. In order to accommodate the rock-shaft, this projecting portion of the column is provided with a vertical slot b^3 , which slot is elongated to provide for the vertical adjustment of the supporting-piece E, which of course carries the shaft up and down with it. A lever J' is also fastened to the shaft J and extends outward beyond the column, having suspended upon its outer end weights j^3 by means of a suspending-rod j^4 , which is also preferably hung on knife-edge bearings at its pivotal connection with the lever. It will be seen from this description that the support E for the upper band-wheel overhangs the column, and the band-wheel shaft being mounted upon the projecting or overhanging portion of this support will of course itself overhang said column, thus considerably enlarging the space between the inside of the column and the working edge of the saw, as seen in Fig. 1 of the drawings, where it is evident that this space is much wider than it would be if the said upper shaft were mounted directly and centrally over said column, as is the case in my aforesaid prior patent. This arrangement therefore results in adapting the mill to large logs without at all increasing the size of the band-wheels, and as the latter may also be increased con-

siderably without objection it is evident that with the overhanging arrangement of the upper shaft, as described, a mill may be easily constructed capable of working logs of the largest size. It will be seen that the upper band-wheel shaft is also supported upon a system of levers mounted and arranged in such a manner as to provide a sensitive support for said shaft, this sensitiveness being increased by the knife-edge bearings described and roller-bearings for the main rock-shaft. The general plan of this mounting, it will be seen, is the same as in my patent, No. 369,881; but there is a different arrangement of the levers and counterpoise-weight to adapt this general plan to the overhanging arrangement of the upper shaft and the increased size of the mill. The purpose and result of the lever system of mounting in the present case are, however, the same in kind as in the patent aforesaid. The support E is adjusted vertically by means of a jack-screw B', set underneath the front portion of the support, the same as in Patent No. 369,881, this adjusting device being also substantially like the device in the said patent.

The saw is of course provided with upper and lower guides, as usual, which, however, require no special explanation, except as to the upper one. This upper guide K is mounted on a guide-arm L, which is vertically adjustable, so as to move the guide up and down to suit logs of different sizes. On the inner side of the support E there is provided a dovetail spline l , running up and down the support, and the inner end of the guide-arm is constructed with a dovetail groove l' , which is adapted to receive this spline, thereby connecting the arm to the latter and at the same time providing for vertical movement thereon. A screw-shaft L' is connected loosely at its lower end to the inner end of the guide-bar, being provided with a head l^2 , set into the bar, so that the vertical movement of the shaft will carry the bar with it; but at the same time the former may turn in the latter. At the upper end of the support E there is secured a bracket M, which is provided with half-bearings $m m'$ upon its inner and outer ends, adapted to accommodate the shafts or their journals. A nut l^3 , which is fitted to the screw-shaft, is received in the inner bearing m , and is held in place by a cap-piece m^2 , placed in front thereof and secured to the bracket, thus constituting the other half of the bearing, and is held in place vertically by means of flanges or collars l^4 above and below the bracket. It will be seen that the nut is free to turn, but is held stationary so far as vertical movement is concerned, and also that the nut, secured as described, provides the means for securing the upper end of the screw-shaft in place. The nut is provided with a gear-pinion l^5 immediately above the upper flange, by means of which it is rotated. A vertical shaft N is mounted at its upper end in the outer bearing m' of the bracket. This mounting is effected by the

hub of a gear-pinion n , which is provided with an elongated hub n' , mounted in the bearing m' and secured by an inclosing cap m^3 , fastened to the bracket, as in the former case. The hub is also provided with flanges or collars n^2 above and below the bracket, so as to hold the gear in position, and the latter, with its hub, is secured to the shaft N by means of a spline n^3 , which fits a corresponding groove in the hub and its gear. The pinion n engages with the nut-pinion l^5 , so that the revolution of the shaft N will rotate the nut, and consequently draw up or force down the screw-shaft to correspondingly adjust the guide-bar to which it is connected. The connection of the driving-pinion to its shaft N by spline-and-groove attachment is to provide for the vertical movement of the pinion by the corresponding movement of the bracket whenever the support E is adjusted vertically, as the shaft N must stand in a fixed position. This shaft N is mounted at its lower end in suitable bearings on the base of the column and is provided with a bevel friction-pinion n^4 . A short horizontal shaft O is mounted in suitable bearings at the base of the mill and is provided at its inner end with a bevel friction-pinion o , adapted to engage with the similar pinion at the lower end of the shaft N. On this shaft are mounted, also, two bevel friction-wheels $o' o^2$, the former nearer to the pinion o than the latter and both connected by a sleeve, which is free to slide back and forth on the shaft O, so that these pinions may be moved thereon, this being accomplished by means of a short rock-shaft O' , extending out to the front of the machine and provided at its inner end with a forked arm o^3 , which engages with a grooved collar o^4 on the sleeve. The outer end of the shaft is provided with a suitable handle, whereby it may be rocked to slide the sleeve and friction-wheels on the shaft. A short counter-shaft P is mounted parallel to the main-pulley shaft d and is provided with a pulley p , by which it is driven from the pulley D' , heretofore referred to, on the main-pulley shaft. This shaft P is also provided at its inner end with a bevel friction-pinion p' , which is arranged between the friction-wheels $o' o^2$, either one of which may be brought into engagement with the said pinion p' by moving the sleeve which connects them on the shaft O, as already described. It will be understood, of course, that the connecting-sleeve is secured to the shaft O by spline and groove or some other similar device, and hence it is obvious that through the connecting-gearing already described the screw-shaft L' will be rotated in one direction or the other, according as one or the other of the friction-wheels $o' o^2$ is brought to engagement with the pinion p' . This provides, therefore, for turning the screw in a direction to draw it upward or to force it downward, as may be desired, for the adjustment of the guide-arm, and when the required adjustment is obtained the sliding wheels $o' o^2$ are set in

a position where both will be out of contact with the driving-pinion p' . I have shown, also, the upper guide K provided with a lubricator, which consists of two parts K' , which
 5 are the counterpart of each other. These parts consist of a base k and a compartment k' above, the inner face of which is cut away its entire length and is protected by grating-bars k^2 . The compartment is covered by a
 10 hinged lid k^3 , and each part is set upon one of the divisions of the guide, being fastened thereto by bolts passing through lugs on the base, as seen in Figs. 10 and 11. The hinged lids provide for the introduction of oil waste,
 15 and at the same time protect the same from dirt. A conduit k^4 runs nearly the length of each base and is provided with small conduits or passages k^5 , extending inward from each to the inner face of the base, so as to discharge immediately upon each side of the saw. At one end of the base there is also an aperture k^6 , leading through the end of the base and adapted to receive the nozzle of a pipe or flexible hose Q. This lubricator is adapted
 25 for oil and water, either or both. For oil-lubricating oil waste is placed in the compartments, and of course the oil will gradually escape through the grating to the saw, while the grating prevents the escape of the waste.
 30 If it is desired to use water, the latter is sent through the pipes Q into the conduits in the base, whence the water passes in small quantities through the little openings k^5 to the saw. In some cases it will be found very desirable
 35 to use water, as it is efficient in dissolving some of the gums found in the timber. In some cases it will be found better to use water alone and in some cases both oil and water.

It is desirable to provide for the lateral adjustment of at least one of the boxes of the upper-band-wheel shaft. This adjustment I usually provide for the rear box and have thus shown it. This box is made movable laterally on its bearings and is provided with a
 45 short tail-piece f^2 , projecting from its lower side, and through this tail-piece is made a threaded passage. A short screw-shaft f^3 is mounted in bearings below the box and passes through the tail-piece, its threaded section fitting in the threaded passage of the latter.
 50 This shaft carries upon one end, outside of its bearings, a worm-pinion f^4 , and a vertical hand-shaft F' , mounted on one of the wings of the support E, is provided at its upper end with a worm f^5 , which engages with the said gear. The worm-shaft is also provided with a hand-wheel, by which it is turned, thereby rotating the screw-shaft in either direction,
 60 according to the desired adjustment of the box. I have also shown a device for assisting in the raising of the upper guide-arm. This consists in a rope R, one end of which is fastened to some part of the frame-work above the saw, and thence is passed down
 65 up and over two pulleys r' r^2 , also fastened to the same upper support, and thence down-

ward, being provided with a weight at its lower end, which of course acts as a counterpoise to the arm.

I do not wish to be understood as limiting myself to all of the special details of construction which have been described above and are shown in the drawings, for there may be many changes made in these particulars without departing from the main features of my invention.

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

1. In a band-saw mill, an upright supporting-column B, in combination with a separate supporting-frame E, sleeved and adjustable vertically thereon and constructed with a portion of the frame-body itself overhanging or
 85 jutting beyond said column, at one side thereof, and the upper-band-wheel shaft mounted on the said overhanging portion of the supporting-frame, substantially as described.

2. In a band-saw mill, the upright column B, in combination with the separate supporting-frame E, sleeved and adjustable vertically thereon and provided with wings e , projecting from the frame at both front and rear of the column and in a plane therewith and then bent
 95 inward beyond the column and upward in a plane inside the latter, and the upper-band-wheel shaft mounted upon the said extensions of said wings, substantially as described.

3. In a band-saw mill, the upright column B, in combination with the independent supporting-frame E, sleeved and adjustable vertically thereon and provided with wings e , projecting at front and rear thereof and extending inward beyond the column, the levers
 105 H and I, arranged parallel to each other at front and rear of the column, pivoted to the inward extensions of said wings inside of the column, and extending outward therefrom, the horizontal rock-shaft J, mounted
 110 in the outer or back portion of the column and provided with arms linked to said levers, the standards G G', supported, respectively, on said levers inside the plane of the column, the upper-band-wheel shaft F,
 115 mounted on said standards, and a counterpoise on the said rock-shaft, substantially as described.

4. In a band-saw mill, the upright column B, having an outside projecting web b^2 , with slot b^3 , in combination with the rock-shaft J,
 120 passing through said slot, the upper-band-wheel support E, sleeved on the column and adjustable vertically, the wings e at front and rear of said support, provided with slots e^3 ,
 125 and the supporting-levers H and I for the upper-band-wheel shaft, pivoted to said support and extending outward through the slots in the wings and linked to the rock-shaft, substantially as and for the purposes specified.

5. The upper guide-arm L, secured to and adjustable vertically on the support E, in combination with the screw-shaft L', the stationary nut l^3 , provided with a gear-pinion l^5 ,

the shaft N, provided with pinion *n*, meshing with the pinion *l*³, the shaft O, arranged to drive the shaft N, provided with sliding wheels *o'* *o*², and the driven shaft P, provided with a pinion *p'*, adapted to engage with either of the wheels *o'* *o*², substantially as and for the purposes specified.

6. The adjustable band-wheel support E, in combination with the bracket M, provided with the two bearings *m* *m'*, the screw-shaft L', the nut *l*³, mounted in a fixed position in said bracket, the shaft N, the gear-pinion *n*, provided with hub *n'*, also mounted in a fixed position in said bracket and connected to the

shaft N by spline and groove, and the gear-15 pinion *l*⁵ on the nut, substantially as and for the purposes specified.

7. The guide-lubricator K', consisting of an upper grated compartment *k'* and conduit *k*⁴ in the base, having small passages *k*⁵ passing 20 through therefrom to the saw, in combination with the water-pipes Q, connected to said base-conduit, substantially as and for the purposes specified.

DE WITT C. PRESCOTT.

Witnesses:

E. B. LEWIS,

C. T. PRESCOTT.