

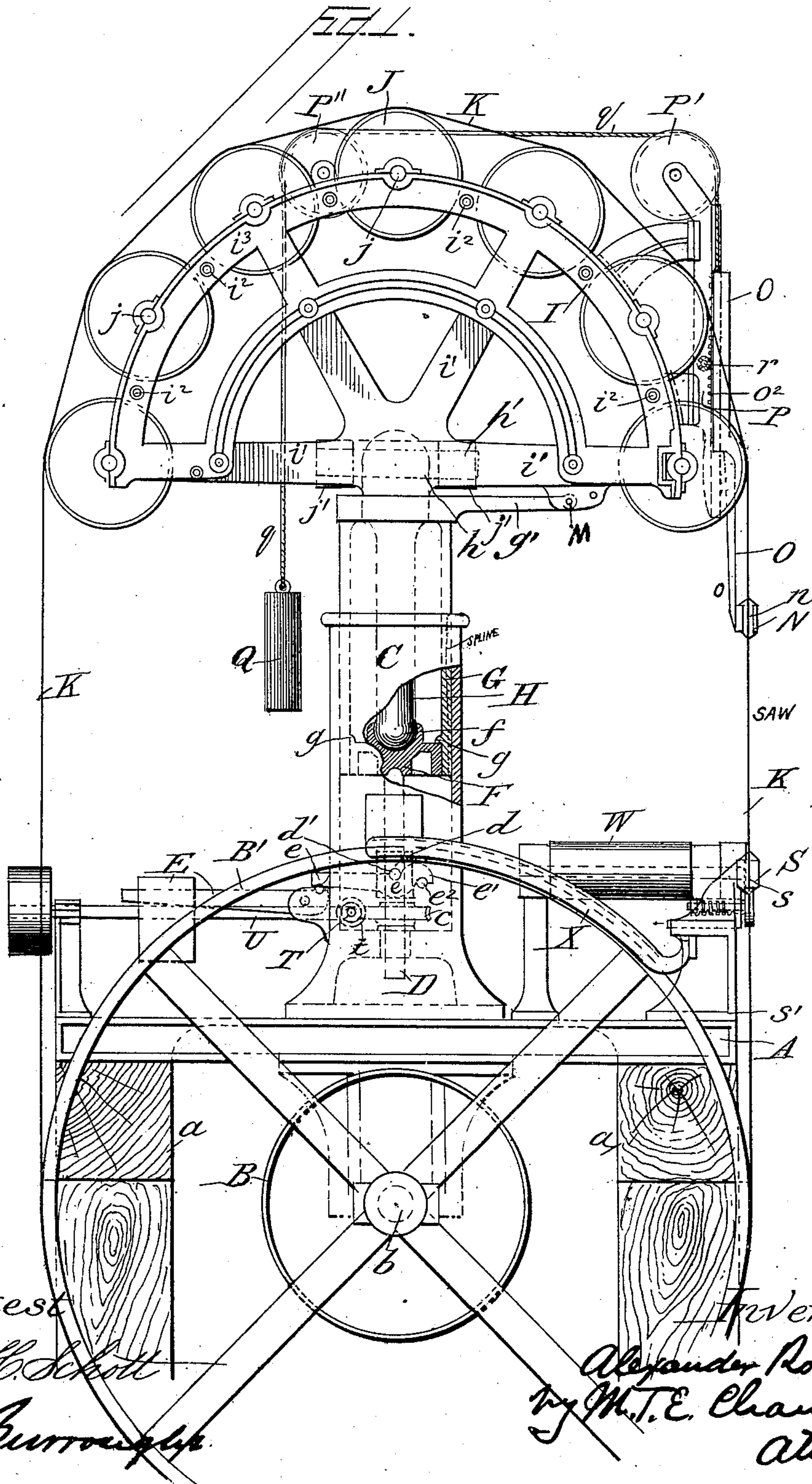
(No Model.)

3 Sheets—Sheet 1.

A. RODGERS.  
BAND SAW MILL.

No. 428,785.

Patented May 27, 1890.



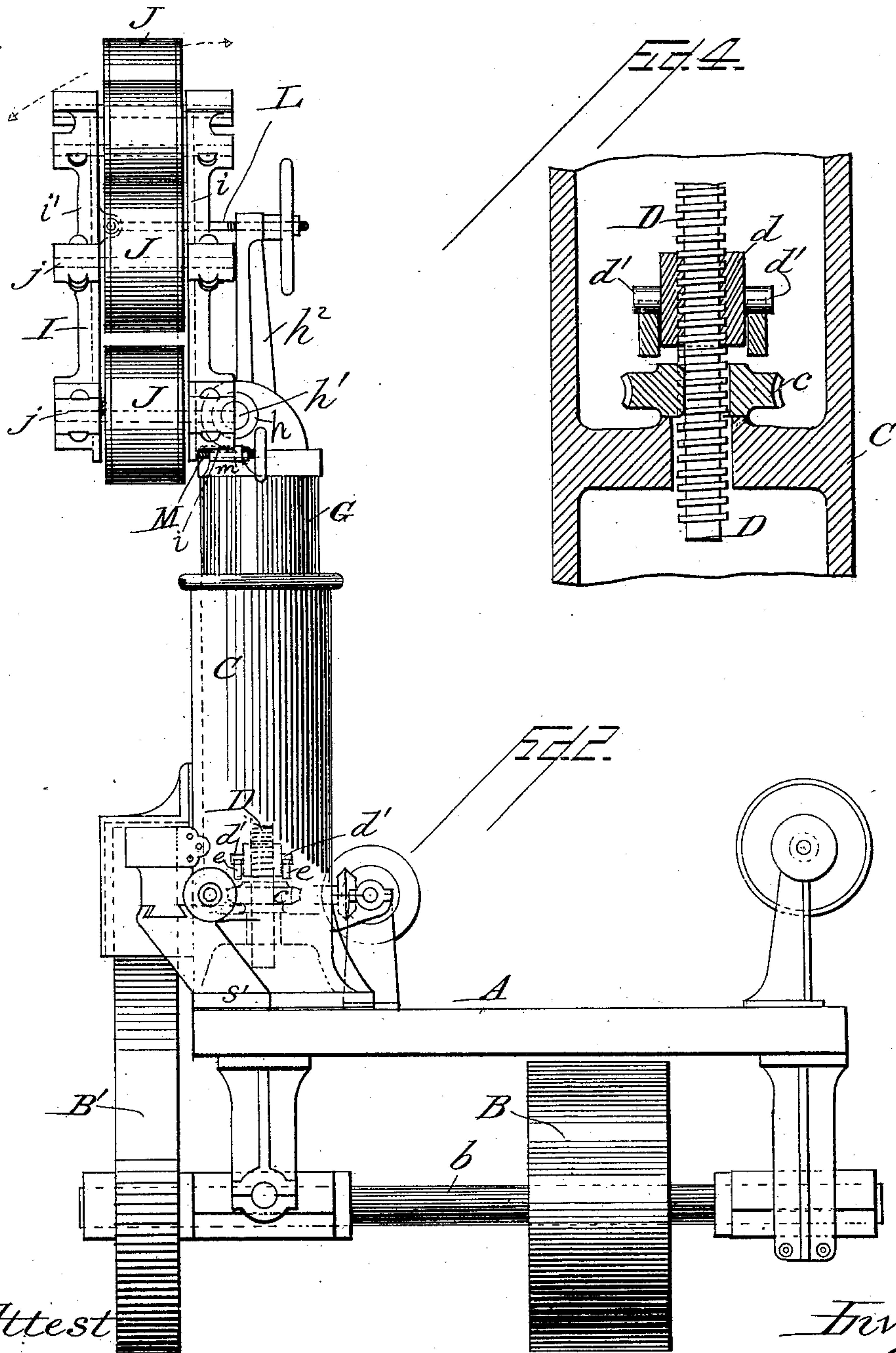
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3 Sheets—Sheet 2.

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F. H. Schott  
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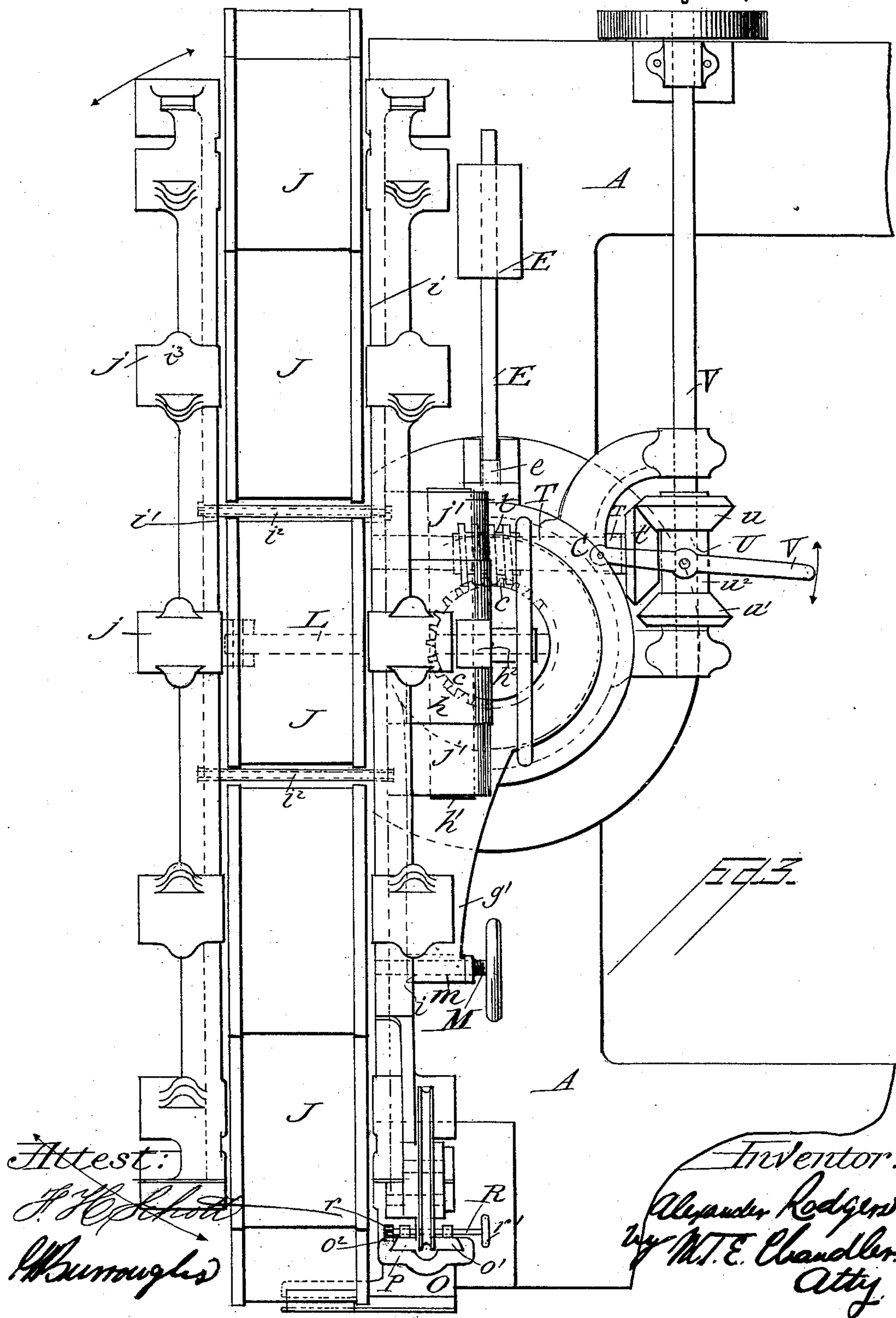
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# UNITED STATES PATENT OFFICE.

ALEXANDER RODGERS, OF MUSKEGON, MICHIGAN.

## BAND-SAW MILL.

SPECIFICATION forming part of Letters Patent No. 428,785, dated May 27, 1890.

Application filed October 22, 1889. Serial No. 327,767. (No model.)

*To all whom it may concern:*

Be it known that I, ALEXANDER RODGERS, a citizen of the United States, residing at Muskegon, in the county of Muskegon and State of Michigan, have invented certain new and useful Improvements in Band-Saw Mills; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The invention relates to improvements in band-saw mills to permit the distance between the upper and lower pulleys, and consequently the length of the band-saw, to be shortened while not preventing the machine from sawing logs of as great diameter as band-mills of similar proportions having unshortened standards.

A further object of this invention is to provide means whereby the standard that supports the upper pulleys upon the bed-plate may be lengthened or shortened, as desired; and it consists, mainly, in substituting for the upper pulley a number of pulleys of much less diameter arranged on a semicircle corresponding to the upper half of the said upper pulley, so that more space is left between the said upper pulleys and the lower pulley than if they were of equal diameters.

It furthermore consists in certain details of the construction and arrangement of parts, hereinafter described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the accompanying drawings, in which similar letters of reference indicate corresponding parts, Figure 1 is a front elevation of a machine embodying the invention, partly broken away to show the interior of the standard. Fig. 2 is a front elevation thereof. Fig. 3 is a plan of the same. Fig. 4 represents a detail longitudinal sectional view of the standard, showing the screw and worm-wheel therein.

Referring to the drawings by letter, A designates the bed-plate of the machine supported upon the timber-frame *a*, standing on a suitable foundation, and B is the driving-pulley

actuated by a belt from any suitable motor and secured upon a shaft *b*, journaled in hanging bearings depending from the bed-plate, as shown. Upon this outer or front shaft is the lower pulley B' of the band-saw.

C designates a hollow standard rising centrally from the bed-plate and having near its lower end a cross-bar to support a worm-wheel *c*, which is splined upon a screw D, that stands centrally in a standard C and engages a nut *d* above the worm-wheel and provided on opposite sides with the trunnions *d'*. The screw can move freely up and down in said worm-wheel, and passes through a suitable opening in the cross-bar.

E is a weight-lever pivoted between lugs standing from the side of the standard C, with its short inner arm bearing upward against the outer end of a second lever *e*, of which the outer end passes outward through a vertical slot in said standard. The inner end of the lever *e* is bifurcated and the arms of the bifurcations are notched on their upper edges to receive the trunnions *d'*, which rest in said notches. The outer ends of said arms are hooked downward at *e'* and engage over the transverse projections *e<sup>2</sup>* on the inside of the standard C.

The weight-lever E causes the hooked ends of the lever *e* to fulcrum on the projections *e<sup>2</sup>* and hold or lift the nut *d*, and consequently the screw D, by means of the trunnions *d'*. The upper end of the said screw is rounded and rests in a similar central recess in the floor of a supporting-block F, that has on its upper side a central hemispherical step *f*.

G is a sleeve fitting within the upper part of the standard C, surrounding the block F at its lower end and supported on said block by the internal circumferential flange *g*, which bears on the upper surface thereof. The sleeve G is splined within the standard, so that while moving up and down it cannot turn therein, and it has at its upper end the horizontal arm *g'*, connected by a screw to allow the adjustment of the pulley-frame.

H is a vertical shaft or stem with its rounded lower end mounted in the step *f* of the block F, and having at its upper end the horizontal cross-piece or head *h*, in which is axially mounted the short shaft *h'*, with its ends projecting on each side of said head, and *h<sup>2</sup>* is a ver-



tical arm standing from the upper end of the stem II. The described stem and block support the frame of the upper pulley or pulleys upon the screw D, which moves upward the block-stem and frame by the described means, and the sleeve G prevents said frame and stem from turning.

The frame I of the upper pulleys is constructed as follows, the said frame being semicircular:  $i$   $i'$  are two similar parallel side sections, each composed of equidistant radial arms, the lower two of which are aligned and horizontal, and the semicircular upper bars, as shown. The said sections are connected by bolts  $i^2$  at proper points and held at a proper distance apart by tubes—such as sections of gas-pipe—surrounding said bolts, or by other suitable means. To the outer surface of said sections are secured metallic reinforcements  $i^3$ , sufficiently thick to have formed thereon the journals  $j$  of the upper set of saw-pulleys J, which are set equidistantly apart, and the most outward portions of the peripheries of which lie in a semicircular arc equal in diameter to the lower pulley. From the opposite lowest radial arms of the sections  $i$  stand the perforated lugs  $j'$ , in which the extended ends of the short shaft  $h'$  are journaled, so that the upper pulley-frame is in fact hinged upon the head  $h$  of the stem II.

K is the band-saw that passes around the pulleys B' and J, and is actuated thereby.

The upper pulley-frame is adjusted by the following means:

L, Fig. 2, is a rod passing through a threaded perforation in the head of the arm  $h^2$ , being similarly threaded to engage therein, and through a suitable opening in the section  $i$ , its inner end being pivoted to a lug standing inward from the section  $i'$ . The said rod has on its outer end a hand-wheel, by means of which it can be turned and the pulley-frame swung slightly inward or outward on its bearings on the short shaft  $h'$  to adjust it vertically.

M is a rod having a hand-wheel on its outer end and threaded where it passes through the threaded perforations in a base  $m$ , standing from the section  $i$ , and having its inner end pivoted at the arm  $g'$  of the sleeve G. The rod M, being situated to one side of the center of the pulley-frame and near the bottom thereof, will, when its hand-wheel is turned, swing and adjust the said frame for short distances laterally.

The saw-guides and their operative mechanism are constructed as follows:

N is the upper saw-guide block, of general rectangular shape, and provided with the vertical groove  $n$ , through which the saw K moves. The said guide-block is at the lower end of a slide-bar O, which has the lateral bend  $o$  at its junction with the block, whence it extends vertically, having an inward bend at about the middle of its length. Above said bend the inner face of the slide-bar is provided with a guide-groove  $o'$ , dovetailed

in cross-section to receive the fixed depending portion of the saw-guide, and has on one side the straight rack  $o^2$ .

P is the fixed depending bar of the upper saw-guide standing vertically and dovetailed in cross-section to fit in the groove  $o'$ . The bar P is secured to lugs or brackets rising from the frame of the upper pulleys, and has its upper end bifurcated and bent inward. In said bifurcation is journaled the pulley P', and in a bifurcated lug rising from the pulley-frame inward from said rod is journaled a similar pulley P<sup>2</sup>.

Q is a weight secured to the depending end of a rope  $q$ , which passes over the pulleys P' P<sup>2</sup>, the rims of which are grooved to receive it, and has its outer end secured to the top of the slide-bar O.

R is a short transverse shaft journaled in bearings secured to the rod P, or to an adjacent part of the upper pulley-frame, and having on its inner end a pinion  $r$ , which meshes with the rack  $o$ , to raise or lower the guide-block N, which can be accomplished by turning a hand-wheel  $r'$  on the outer end of said rod. The weight Q keeps the upper guide-block N at the height to which it is raised by the described means, because it counterbalances the combined weights of the said block and the slide-bar O.

S is the lower guide-block, similar in shape to the upper guide-block and having a guide-groove similar to the guide-grooves  $n$ . The block S is rendered adjustable inward and outward by means of its foot, which rests in a corresponding groove in a standard rising from the bed-plate, a shaft journaled in bearings thereon, and a screw-pin on said shaft, its pinion meshing with a rack on the foot of the block S. This method of adjustment is common and forms no part of the present invention, as any other ordinary means of adjustment may be used, the object being to cause the saw K to be guided vertically.

T is the transverse shaft journaled in bearings in the standard C and having upon it a screw that meshes with the worm-wheel  $t$ . On the outer end of the shaft T is a bevel gear-wheel  $t'$ , that meshes either with the similar gear-wheel  $u$  or  $u'$  on the shaft V, at right angles to the shaft T and journaled in bearings rising from the bed-plate. Upon the outer end of the shaft V is a pulley driven from a counter-shaft, (not shown,) that drives the shaft V and the bevel-gears  $u$   $u'$  thereon. The said gears are connected by a sleeve  $u^2$ , that slides on the shaft V, and can be moved back and forth by the lever V', that has its inner end pivoted upon the standard C and its central portion pivoted on the sleeve. By this means the motion of the shaft T can be reversed, and consequently, by means of the worm-wheel and worm, the screw D can be raised or lowered and will correspondingly raise or lower the upper pulley-frame to give space for logs of different diameters.

W is the lumber or log roller, of ordinary



construction, which is attached to the bed-plate at a proper point and fulfills the ordinary duty. Both the shaft of the lumber or log roller and the shaft V are driven by suitable pulleys and belts from a counter-shaft, (not shown,) in the ordinary well-known manner.

If desired, a set of saw-pulleys similar to the upper set may be substituted for the lower saw-pulleys, and more room be gained thereby; but the described construction is preferable.

X is a guard-covering standing over the part of the periphery of the pulley B adjacent to the lumber-roller, and preventing the motion of said pulley from being obstructed by the sawed lumber.

Having described my invention, I claim as new and desire to secure by Letters Patent the following:

1. The combination, with the band-saw and a single band-saw pulley, of the upper support for said band-saw consisting of the two semicircular frames held a suitable distance apart and parallel with each other, and the pulleys mounted in journal-boxes carried on the peripheries of said frames, and the means, substantially as described, to vertically adjust said upper support, for the purpose specified.

2. The combination, with the band-saw, the lower single saw-pulley, the hollow standard rising from the bed-plate, and the frame of the upper set of saw-pulleys supported upon said standard by means substantially as described, of the vertical screw within the standard, the nut on said screw provided with opposite trunnions, the pivoted weighted lever E, and the bifurcated lever e, having its hooked inner end engaged over projections of the standard and bearing upward on the trunnions on the said nut to lift the screw and thereby support the upper pulley-frame, substantially as specified.

3. The combination, with the hollow standard rising from the bed-plate, and the frame of the upper set of pulleys supported on said standard by means substantially as described, of the axial screw within the standard, the trunnioned nut on said screw, the pivoted weighted lever E, and the bifurcated lever e, bearing up the said nut and screw and sup-

porting the upper pulley-frame, substantially as specified.

4. The combination, with the hollow standard, the axial screw, the trunnioned nut and the levers E e, of the block F, supported in the standard by the axial screw, the upper pulley-frame, and the stem or shaft supporting said frame upon the block F, substantially as specified.

5. The combination of the stem or shaft supported within the hollow standard, the transverse short shaft journaled axially in the cross-head of said stem, the upper pulley-frame provided with perforated lugs mounted on the projecting ends of said shaft, and the adjusting-screw L, pivoted at its inner end to said frame, having a hand-wheel or lever on its outer end and engaging in a threaded perforation in the head of the arm  $h^2$ , rising from the stem or shaft in the standard, substantially as specified.

6. The combination, with the hollow standard rising from the bed-plate, the block in said standard supported upon the axial screw therein, and the sleeve in said standard supported by said block splined in the standard and provided with a horizontal arm at its upper end, of the stem or shaft supported by said block, and the upper pulley-frame hinged or pivoted to the upper end of said stem and having the arm of the sleeve pivoted to it at one side near its lower edge, substantially as specified.

7. The combination, with the hollow standard, the block supported by the axial screw in said standard, and the splined sleeve in said block, of the axial stem supported by said block, the upper pulley-frame hinged or pivoted to said stem and having the end of the horizontal arm  $g'$  pivoted upon it at one side, and the laterally-adjusting screw M, pivoted at its inner end to said arm and engaging the perforated internally-threaded bars  $m$  on the pulley-frame, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

ALEXANDER RODGERS.

Witnesses:

JAMES C. McLAUGHLIN,  
DAVID McLAUGHLIN.