(No Model.) 2 Sheets—Sheet 1.

F. H. CLEMENT.

BAND SAWING MACHINE.

No. 301,095. Patented July 1, 1884.

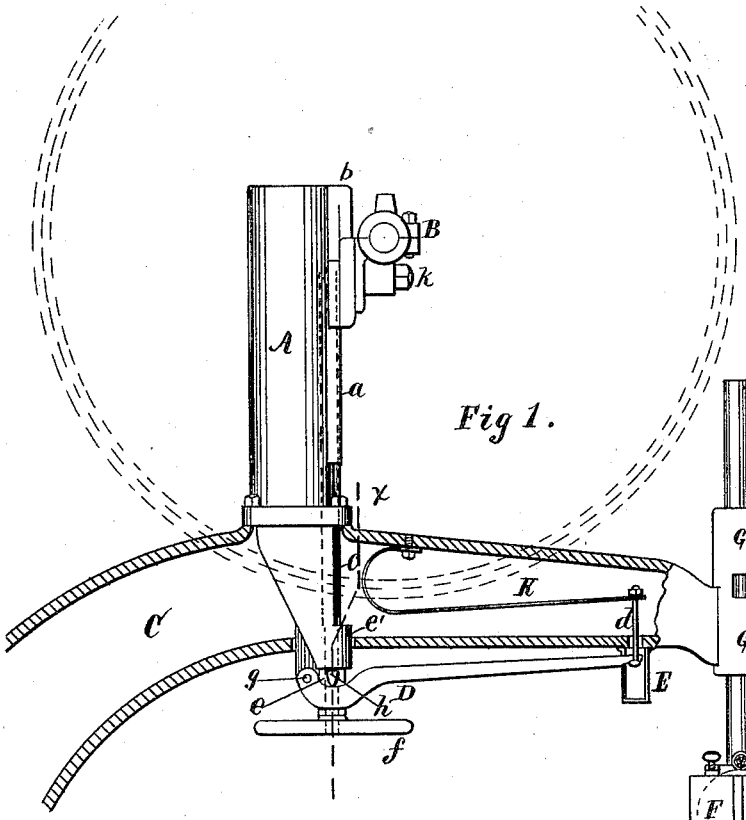

Fig 1.

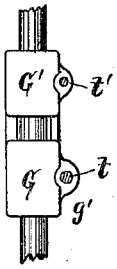

Fig 9.

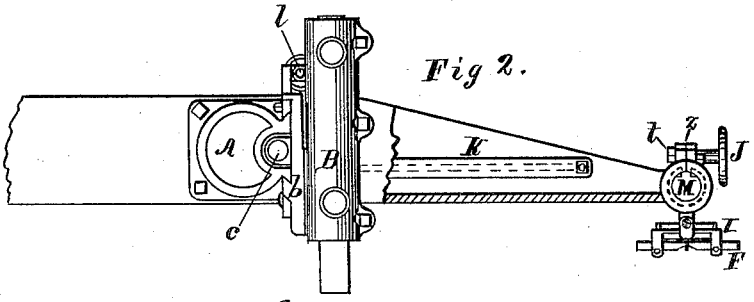

Fig 2.

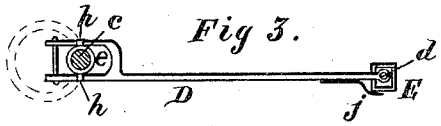

Fig 3.

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(No Model.) 2 Sheets—Sheet 2.

F. H. CLEMENT.

BAND SAWING MACHINE.

No. 301,095. Patented July 1, 1884.

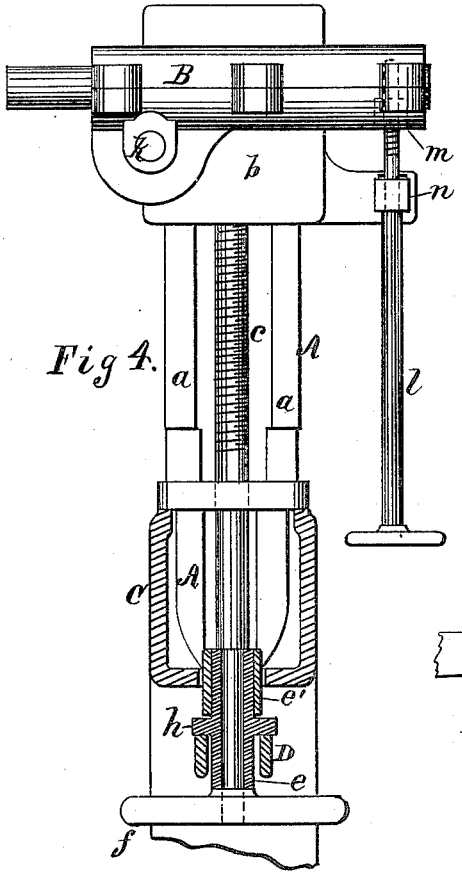

Fig 4.

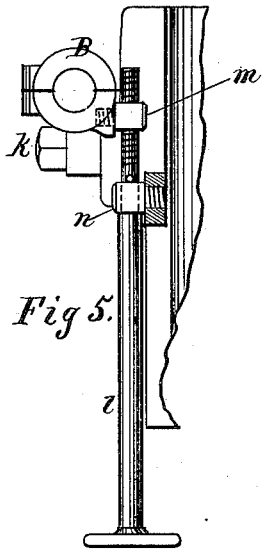

Fig 5.

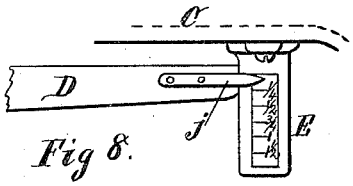

Fig 8.

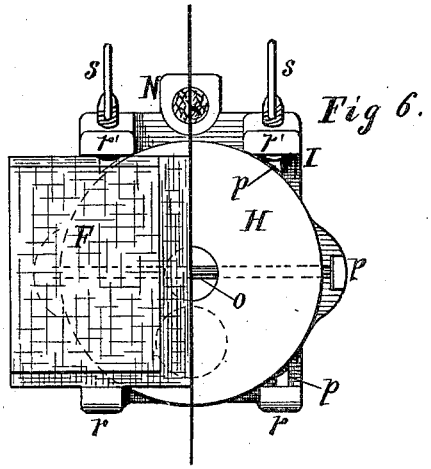

Fig 6.

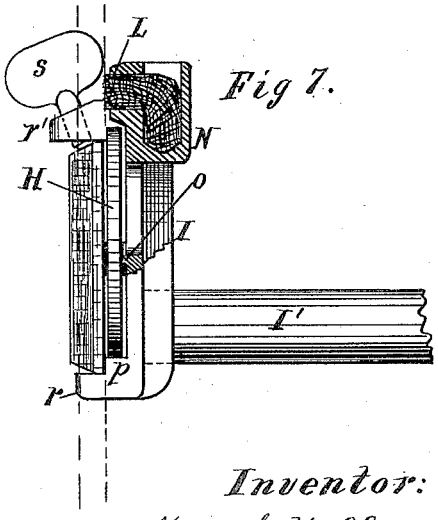

Fig 7.

Witnesses:
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Inventor:
Frank H. Clement

UNITED STATES PATENT OFFICE.

FRANK H. CLEMENT, OF ROCHESTER, NEW YORK.

BAND SAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 301,095, dated July 1, 1884.

Application filed August 11, 1883. (No model.)

To all whom it may concern:

Be it known that I, FRANK H. CLEMENT, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Band Sawing Machines, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional side elevation of the upper portion of a band sawing machine with my improvements attached. Fig. 2 is a plan view of the same. Fig. 4 is a sectional elevation at right angles to Fig. 1 at the line *x*. Figs. 6 and 7 are elevations of the blade-guide, drawn to a larger scale. Figs. 3, 5, 8, and 9 show details.

The nature and objects of my invention will appear in the subjoined description.

A is a hollow column, which is suitably secured to the main frame C, and is provided with ways *a* for the attachment of the sliding bearing B *b* of the upper saw-wheel in the usual manner. The straining-screw *c*, Figs. 1, 2, and 4, is threaded into a nut attached to the plate *b*, Fig. 2, and is shouldered into the sleeve *e*, Figs. 1, 2, and 4, its lower extremity carrying a hand-wheel or crank, *f*. The sleeve *e* is fitted to slide easily in a socket, *e'*, secured to the lower part of the column A, and is provided with lugs or knife-edge bearings *h* on opposite sides, as is more fully shown in Figs. 3 and 4.

D is a lever bifurcated at one end, as shown in Fig. 3, to embrace the sleeve *e*, and its arms extend past the latter, so as to be pivoted at *g*, Fig. 1, to a projecting lug on the column A. The long arm of the lever D extends under the main frame C, and is connected at its extremity by a suitable link or rod, *d*, to a spring, K, (which I prefer to make in the form shown,) secured at one end to the frame C.

E, Figs. 1, 3, and 8, is a tubular case, secured to the frame C, and through its core the rod *d* and end of the lever D pass, the latter entering it through a slot in one side. Upon the side of the case E, facing the operator, a scale is provided, as shown in Fig. 8, over which an index, *j*, moves, which is secured to the lever D. This scale may be laid off for pounds or for widths of saws, or for both, as desired.

From the above it will be seen that while the screw *c* is free to move the slide *b* up and down for various lengths of blades, as soon as the blade begins to tighten on the wheels the lever D and spring K take the strain through the sleeve *e* and knife-edges *h*, the amount of such strain being indicated on the scale E. Of course, the tension of the spring must be sufficient to sustain the weight of the wheel and movable parts before the blade is strained, and this can be adjusted by a nut on the rod *d*. A coiled spiral or other desirable form of spring may be used in place of the one shown, and a lever without bifurcation receiving the strain through one knife-edge *h*, would operate in a similar manner; but I prefer the construction shown.

The advantages of this tension device are that the operator can always see the amount of strain on the blade and regulate it without moving from his post. The strain is always elastic for any width of blade. An unwieldy counter-weight is avoided, as well as the common tendency to overstrain narrow blades by neglect in adjusting the weight. The upper bearing, B, is pivoted to the slide *b* by a stud, *k*, or in any suitable manner; and in order to adjust the bearing laterally to the wheel, I provide a rod, *l*, Figs. 2, 4, and 5, threaded at its upper end to fit a nut, *m*. This nut is really the bead of a screw which is threaded into the box B. *n* is a similar screw threaded into a projecting arm on the slide *b*. The rod *l* is shouldered into *n*, and a pin or other equivalent device is provided on the opposite side of *n* to prevent end motion. As the rod *l* is turned by means of a crank or hand-wheel in reach of the operator, the box B will be adjusted about the center *k*, *m* and *n* swiveling in their screw-bearings sufficiently to allow such movement without cramping the rod *l*. Instead of *m* and *n* being screws, they may have plain round shanks riveted or otherwise secured in their seats loosely, so as to allow the necessary oscillation.

G G' is a hollow socket, either cast with the frame C or bolted thereto. This socket is divided or split vertically (as indicated at *z*, Fig. 2) on one side only, and is made in two sections longitudinally, separated from each other as to about one-half their circumference, but formed together as to the other half. The guide-spindle M is provided with longi-

tudinal rabbets or grooves, as shown in Fig. 2, and the sections G G′ of the socket may be recessed and filled with soft metal, as described in my Patent No. 219,148, dated September 2, 1879; or they may be bored out and provided with a pin or spline, to prevent axial motion of the guide-spindle.

J is a clamp-wheel threaded to receive the cap-screw *t*, and *t′* is a cap-screw passing through lugs on the section G′, and is either provided with a nut or is threaded into one lug. The wheel J is used to clamp the guide-spindle in any desired vertical position, while the screw *t′* can be so adjusted as to prevent the guide-spindle and guide from suddenly falling when the clamp G is slacked, the friction produced by compressing the section G′ being practically a counter-balance therefor. It will be seen that the sections G G′ are independent, so far as the clamping of the spindle M is concerned, but assist each other in holding the latter firmly by being cast in one piece.

I, Figs. 1, 2, 6, and 7, is a casting supporting the parts of my improved guide; and I′ is a shank, by which it is adjustably attached to the spindle M in any suitable manner.

H is a disk of hardened steel, fitted loosely between the lugs *r r′*, projecting from the face of the casting I. The back of this disk rests against a V-shaped ledge, *o*, located at (or nearly at) right angles to the path of the saw-blade.

F are the side guides, of wood or other suitable material, cut to fit between the lugs *r r′*. These side guides are beveled on their upper and lower edges, and are clamped in position by set or thumb screws *s*, which are threaded into the lugs *r′* at right angles to the above-mentioned beveled edges. Lugs *p*, projecting a little forward of the surface of the disk H, prevent the guides F from pressing against the latter, and, if desirable, an additional lug may project through the central opening in the disk for the same purpose. Thus it will be observed that the disk H is independent of the side guides, and will adjust itself to a full bearing against the back of the blade, while at the same time it may be revolved to a new position when abraded or grooved by the action of the latter, or reversed and used upon the other side.

N is an oil-cup, into which a wick, L, is introduced, so as to project therefrom, and just touch the back of the blade. The vertical portion of the cup is intended to be kept full of oil. The wick thus provides sufficient oil to lubricate the back of the blade, but not so much as to be carried around to the wheels and destroy their rubber coverings.

It will be seen that the fastenings of the side guides can be manipulated without the use of a wrench, and are above and away from the work, so as not to interfere with following lines thereon.

For convenience, the side guides may be thinned down at one end for narrow blades, as indicated in Fig. 2, and where it is desired to use a wide blade they can be reversed, the other end being left full thickness, as shown.

What I claim as my invention is—

1. In a band sawing machine, the combination of the upper wheel-bearing and its adjusting-slide, a balance-lever, the pivoting-point of which is stationary, and a blade-straining screw threaded into the adjusting-slide, and suitably fulcrumed on said balance-lever, whereby the strain of the blade is received by the lever through the screw and conveyed to a counterbalancing-spring attached to the long arm of said lever, substantially as and for the purposes set forth.

2. In a band sawing machine, the combination of the upper wheel-bearing, its sustaining and adjusting screw, a balance lever and spring arranged to receive the strain of the blade, and an index-plate for showing the amount of such strain, substantially as set forth.

3. In a band sawing machine, the combination of the upper wheel-bearing, its adjusting and sustaining screw, a balance-lever arranged to take the strain of the blade, and a sleeve or collar shouldered upon said screw, and provided with knife-edge bearings resting upon the balance-lever, constructed to operate substantially as described.

4. The combination of the pivoted wheel-bearing B and its adjusting-slide, the tilting screw *l* and its nut and bearing *m n*, both of which latter are made to swivel, essentially as described, whereby the swing of the upper wheel-bearing while being tilted does not cramp the screw *l*, substantially as set forth.

5. In a band-saw guide, the combination of a knife-edge bearing located on the body of the guide at right angles, or nearly so, to the face of the blade, and a loose bearing-plate for the back of the latter, suitably supported in the body of the guide and resting against the knife-edge at or near the center of its rear face, whereby said bearing-plate adjusts itself to the angular path of the blade, substantially as described.

6. In a band-saw guide, side guide-blocks beveled upon their upper edge and arranged to be clamped by suitable screws bearing upon the beveled edge, whereby the clamp-screws are removed from a position near the work being sawed, for the purposes set forth.

7. In a band-saw guide, a self-adjusting back plate, H, and side guides, F, in combination with lugs *p*, formed on or secured to the body of the guide, substantially as and for the purposes set forth.

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Witnesses:
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JACOB SPAHN.