(No Model.) 2 Sheets—Sheet 1.

J. H. JONES.

CIRCULAR SAWING MACHINE.

No. 321,976. Patented July 14, 1885.

Fig. 1.

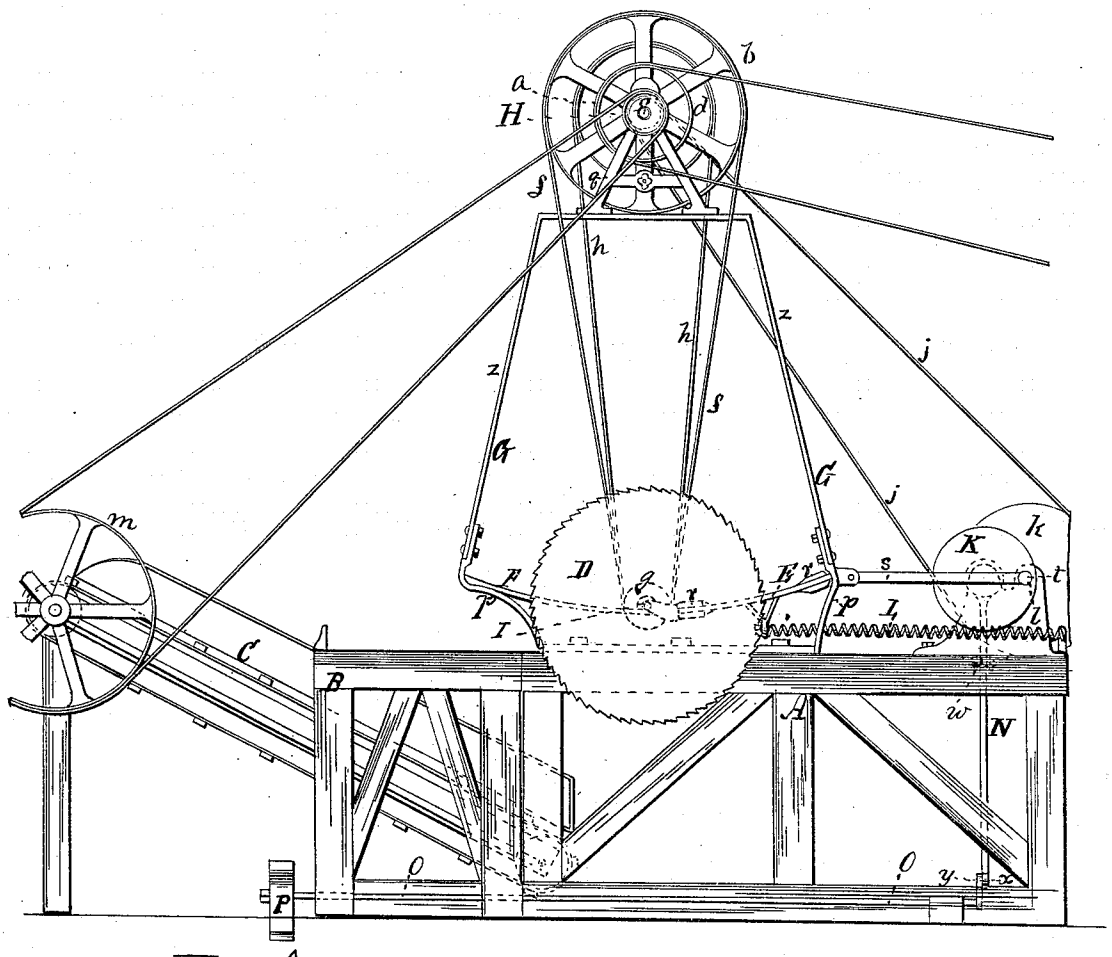


Fig. 4.

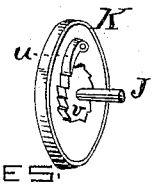
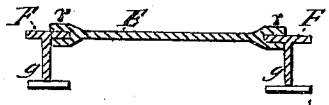


Fig. 5.



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(No Model.)

2 Sheets—Sheet 2.

J. H. JONES.

CIRCULAR SAWING MACHINE.

No. 321,976. Patented July 14, 1885.

Fig. 3.

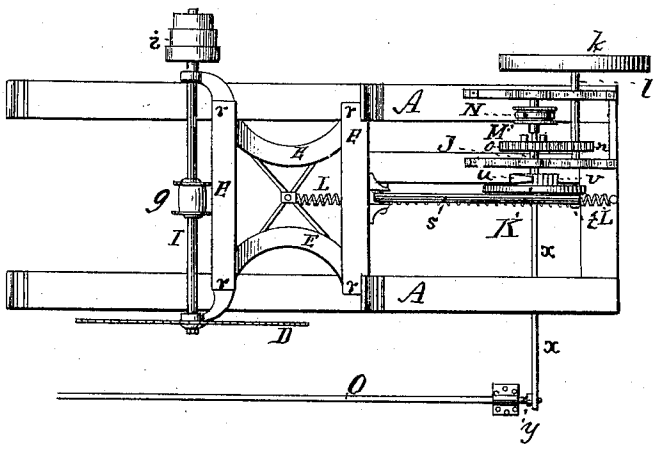


Fig. 2.

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UNITED STATES PATENT OFFICE.

JOEL H. JONES, OF LYNCHBURG, VIRGINIA.

CIRCULAR SAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 321,976, dated July 14, 1885.

Application filed May 1, 1885. (No model.)

To all whom it may concern:

Be it known that I, JOEL H. JONES, of Lynchburg, in the county of Campbell and State of Virginia, have invented an Improved Sawing-Machine; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

Letters Patent No. 296,334 were granted to me April 8, 1884, for improvements in sawing-machines, the general construction and arrangement of which I adopt in the present invention except as to the features which I herein claim, and which I now proceed to describe.

The present improvements are partly designed to make a sawing-machine having the general character described in the above designated Letters Patent, a portable machine, and partly to make additional improvements on the machine.

The present invention consists, first, in an improvement in the sliding saw-frame and its guides; second, in an improved device for automatically feeding the saw slowly to the work and moving it back quickly, thereby not only improving on the original device for the purpose, as described in the aforesaid Letters Patent, but especially adapting it to a portable machine; and, third, in combining with the saw-feed device a mechanism for readily throwing the feed out of action and again bringing it into action by the operator of the machine while standing at his work.

In the accompanying drawings, Figure 1 is a side view of the improved machine; Fig. 2, a rear elevation of the same; Fig. 3, a top view of the main part of the machine, the upper driving-gear being removed to show the parts below more fully; Fig. 4, a view of a part detached; Fig. 5, a vertical transverse section of the saw-frame and its guides.

Like letters designate corresponding parts in all of the figures.

In the drawings, A represents the main frame; B, the feed-frame of the machine; C, the endless platform for carrying away the material sawed off; D, the saw; E, the sliding saw-frame; F F, the saw-frame guides; G G, the standards of the main frame, on which the driving-shaft is mounted and to which the saw-frame guides are secured; and H, the driving-shaft having thereon a pulley, *a*, by which it receives its motion from the driving-power—a pulley, *b*, which drives the saw, and a pulley, *c*, which drives the endless platform; and also mounted loosely thereon is a pulley, *d*, which receives motion from the saw-arbor, for driving the feed-gear, and another pulley, *e*, which transmits the motion to the feed-gear. A belt, *f*, travels from the pulley *b* to a pulley, *g*, on the saw-arbor I. Another belt, *h*, travels froma nother pulley, *i*, on the saw-arbor to the pulley *d*, and another belt, *j*, travels from the pulley *e* to a pulley *k* on a transmitting-shaft, *l*, for driving the feed-gear. A fourth belt travels from the pulley *c* to a pulley, *m*, by which the endless platform is driven.

The feed-driving pulleys and belts above set forth are such as to reduce the speed from the rapidly-revolving saw-arbor to the slow rotation required for the feed-device; and to still further reduce the speed thereof a smaller cog-wheel, *n*, on the transmitting-shaft *l* gears into a larger cog-wheel, *o*, on the feed-shaft J.

In order to vary the speed of the feed according to the size of logs or timber to be operated upon, the pulley *i*, on the saw arbor or shaft, has two or more steps or sizes, and the pulley *d*, which is connected by belt with the said pulley *i*, has a longitudinal movement on the long pulley or cylinder *e*, by which it may be brought into line with either step of the pulley *i*.

Now, first, as to the saw-frame E and its guides F F, the said guides are preferably formed as parts of frames *p p*, which are bolted to the main frame of the machine and from which standard-irons *z z* of the form substantially as shown in Figs. 1 and 2, extend upward, and upon the flat tops of these irons the bearings *q q* of the driving-shaft are bolted. The upper plates of these frames *p p* constitute the guides for the saw-frame, and for that purpose are formed in comparatively thin plates, curved concentrically with the center or axis of the driving-shaft, as shown in Fig. 1, whereby the saw-frame may slide thereon

without changing the tautness of the driving-belt *f*. The saw-frame may properly have the form shown in Figs. 1 and 2, and it has four guide-hands, *r r r r*, which embrace the inner edges of the guides, as shown most clearly in Fig. 5, whereby the saw-frame is accurately guided laterally both in a horizontal and a vertical direction and is held in four places. With this means of guiding no swaying of the saw is perceptible, and I am enabled to do very accurate work both in sawing off and in slitting any material.

Then, as to the improved automatic feed device, I connect it directly with the sliding saw-frame by means of a connecting-rod, *s*, pivoted to the saw-frame and to the crank-pin *t* on the regulating crank-disk K, which has the same operation and effect as the corresponding part in my former Letters Patent. It has a pawl, *u*, taking into a ratchet-wheel, *v*, on the feed-shaft J, so that, as the said shaft revolves, the pawl holds upon the teeth of the ratchet-wheel and turns the crank-disk to move the saw-frame forward slowly, and as soon as the crank-pin passes its forward dead-point the pawl slips over the teeth of the ratchet-wheel and allows a counter-spring, L, attached to the saw-frame and at the other end to a fixed part of the main frame, as shown in Fig. 1, to instantly slide back the saw-frame in the manner set forth in my former Letters Patent, before referred to. There is a special advantage in this counter-spring L over the weight and cord described in the said Letters Patent in this, that the spring exerts most force when it begins to draw the saw-frame back, and this acts promptly on the same, while its force is nearly expended when the saw-frame has reached its rearmost position, so that very little concussion and jar result therefrom.

Third, I combine with the feed device a coupling and uncoupling mechanism extended to a convenient position where the attendant can reach it with convenience as he stands in front of the feed-frame B. As represented in the drawings, this mechanism is constructed and arranged as follows: The cog-wheel *o* on the feed-shaft J is loose upon the said shaft, so that when not coupled to the same it does not operate the feed. A sliding clutch, M, is located on the shaft, being prevented from turning thereon by a feather or spline in any ordinary manner. A forked lever, N, held between the flanges of the clutch, as usual, is pivoted to the frame at *w*, Fig. 1, and from its lower end a connecting-rod, *x*, extends laterally, in the proper direction, to an arm, *y*, on a rock-shaft, O, which is suitably mounted in the frame, and reaches forward to a position in front of the attendant where he stands at the work. On the forward end of the rock-shaft is a treadle, P, so arranged that when tilted in one direction, as shown in Fig. 2, the rock-shaft, lever, and connecting-rod hold the clutch away from the cog-wheel *o*, leaving it not coupled to its shaft and on tilting the treadle in the other direction the clutch is brought to the cog-wheel and couples it to the shaft, thereby setting the feed in motion. Thus the attendant can with the greatest ease stop the feed at any time, either while the saw is cutting or not, and as readily start it again.

I claim as my invention—

1. The combination, with the driving-shaft H, the saw D, and their connecting-belt and pulley-gear, of the curved guide-plates F F, concentric with the shaft, and sliding saw-frame E, having guide-hands *r r r r*, which clasp the said guide-plates, substantially as and for the purpose herein specified.

2. The combination, with the reciprocating saw-frame E, feed-shaft J, crank-disk K, pawl *u* on the crank-disk, and ratchet-wheel *v* on the feed-shaft, of the rod *s*, connecting the crank-disk directly with the saw-frame, and the counter-spring L, substantially as described, whereby not only is the saw fed forward slowly and drawn back quickly, but the back-moving force is made strong at the beginning and weak at the ending, for the purpose herein specified.

3. The combination, with the reciprocating saw-frame E, driving-shaft H, feed-shaft J, and feed mechanism, as K L *s u v*, herein described, connecting the feed-shaft and saw-frame, of a separate transmitting-shaft, *l*, belt and pulleys connecting it with the driving-shaft, feed gear-wheels *n o*, connecting the transmitting and gear shafts, clutch M, for coupling and uncoupling the said connecting gear-wheels, and means, as the lever N, rock-shaft O, connecting-rod *x*, and treadle P, connected with the clutch, whereby the attendant may stop the saw-feed and start it from his position for feeding the material to the machine, substantially as herein specified.

JOEL H. JONES.

Witnesses:
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A. S. BROWN.