(No Model.)

D. W. PERRY.

SCROLL SAWING MACHINE.

No. 322,748. Patented July 21, 1885.

Fig. 1.

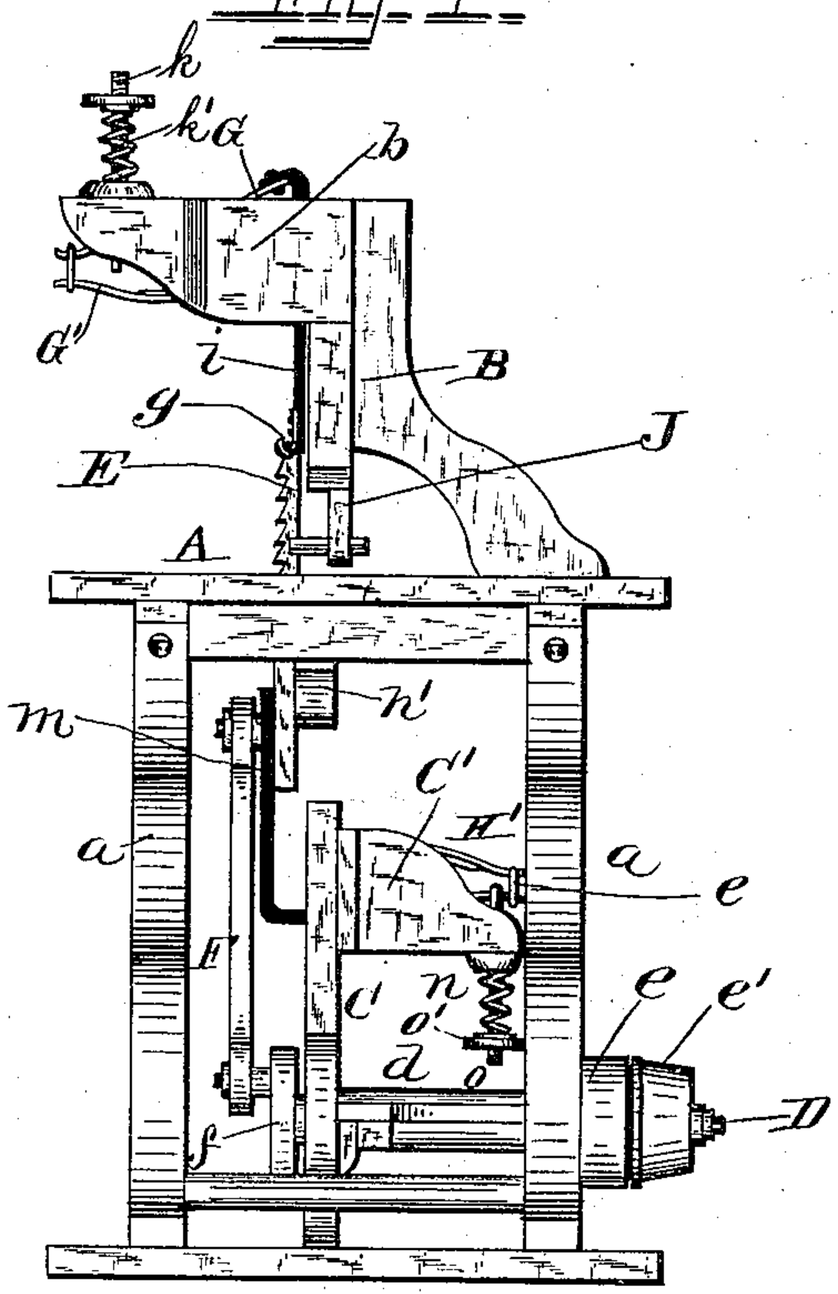


Fig. 2.

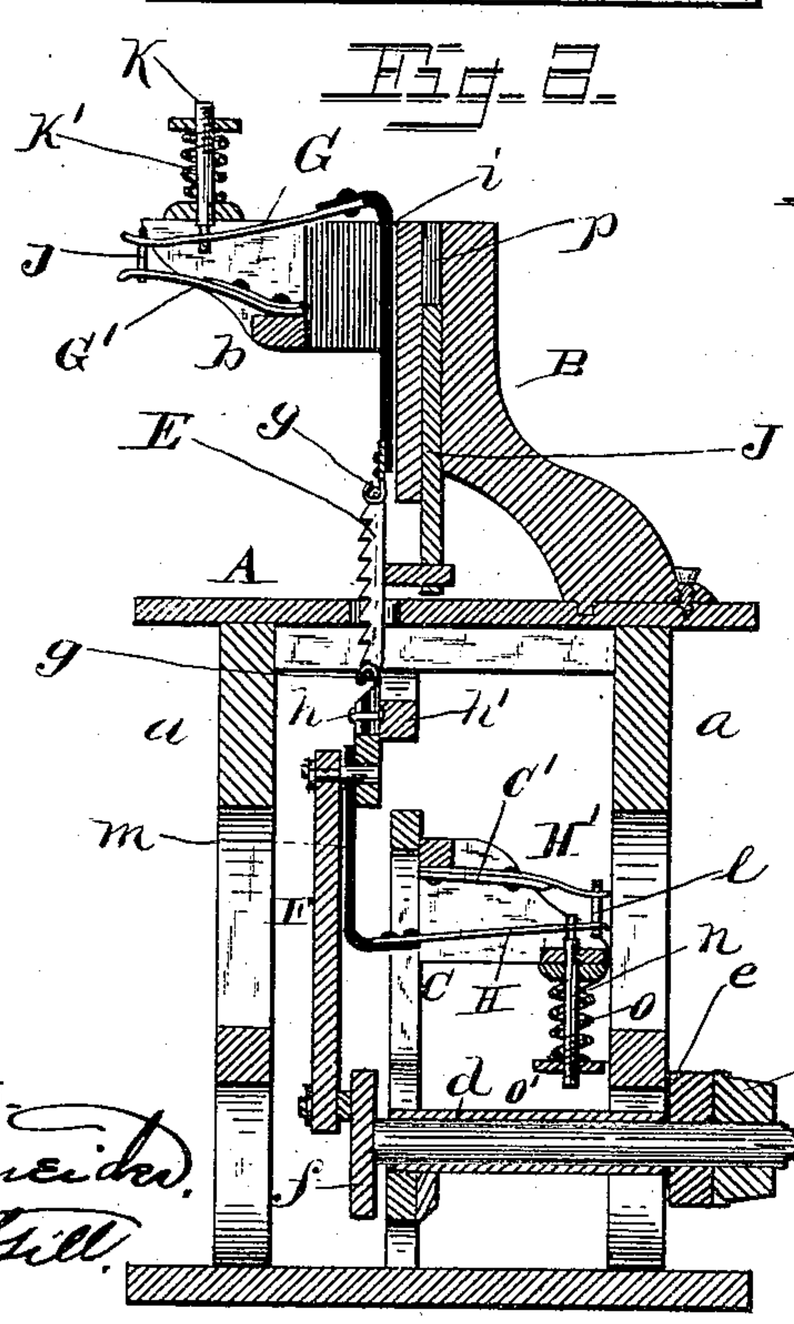
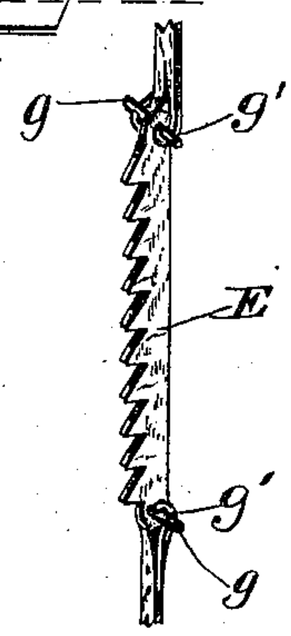


Fig. 3.



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DANIEL W. PERRY, OF HARRISBURG, PENNSYLVANIA.

SCROLL-SAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 322,748, dated July 21, 1885.

Application filed February 12, 1885. (No model.)

To all whom it may concern:

Be it known that I, DANIEL W. PERRY, a citizen of the United States of America, residing at Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Sawing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to avoid inequality of strain or tension upon the saw occasioned by subjecting, as heretofore practiced, the saw to a single usually upward pull or strain, and to equalize the strain upon the upward and downward strokes of the pitman, which inequality of strain produces a concussion or thud at the end of each stroke of the saw, thus shaking or vibrating the table, it being next to impossible to secure sufficient rigidity of strain or tension to overcome the difference of momentum between the upward and downward strokes of the pitman when the entire strain is maintained or applied at one end or in one direction.

Further objects of my invention are to prevent the transmittal of the vibrations or concussions resulting from the action of the driving-shaft to the work or saw table, permitting of the performance of better work, and to produce a smooth-running saw and one capable of being driven at a high speed.

To these ends my invention consists, broadly, in subjecting both ends of the saw to strain or tension and in supporting the driving-pulley shaft independently of the work-table or the frame of the latter, substantially as hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of my improved sawing-machine. Fig. 2 is a sectional elevation thereof, and Fig. 3 is a detail view of my invention.

In the embodiment of my invention I make use of the ordinary work-table, A, together with its supporting-frame *a*. Mounted upon said table at one side is a bracket, B, having a hollow arm, *b*, with its lower side open and overhanging the table, the function of which will appear further on.

Below the table A, I dispose and secure independently of the latter a separate frame, C, upon lower cross-pieces of which is supported the boxing *d* of the driving-shaft D, carrying the fixed and loose pulleys *e e'* upon one end and the eccentric *f* at the other end. By thus supporting the driving-shaft intact with the work-table and its frame or legs the concussions or vibrations arising from the action of said shaft are prevented from being transmitted to the work-table, permitting the performance of the work to the best possible advantage.

E is the saw, of the usual gig-pattern, having its ends provided with retaining or holding pins *g*, which rest in hooks *g'*, one bolted to a cross-head, *h*, connected or bolted to a pitman, F, in turn connected by a wrist-pin to the eccentric *f*, said ends of the saw entering slots in said hooks, whereby with the keys or pins *g* in place in said hooks can be readily connected to or disconnected from said hooks. The other hook is connected or bolted to a strap, *i*, passed into and through the open hollow arm *b* of the bracket B, and connected to a spring, G. The outer end of the spring G is coupled or connected by a bolt, *j*, to the outer end of a second spring, G', bolted or fastened to a cross-bar within said open hollow arm *b*, whereby the saw is strained or put under tension from its upper end.

To the spring G is connected one end of a screw-rod, *k*, which passes through an upper cross-bar of said arm *b*, and is encircled by a spring, *k'*. Said rod *k* is provided above its said spring with a nut to more or less compress and vary the tension of said spring to accordingly effect the tension of the spring G. The saw is also put under tension or strain from its lower end by the action of a spring, H, one end of which spring is connected or coupled by a bolt, *l*, to a second spring, H', fastened or bolted to an upper cross-piece of an open hollow arm, C', of the frame C. The opposite end of the spring H is connected by a flexible strap, *m*, to the wrist-pin connecting the pitman F to the cross-head *h*. It will be noticed that while the upper spring or springs are adapted to exert upward pressure or strain upon the saw-blade the lower spring or springs are designed to exert downward

pressure or strain upon said saw-handle, the purpose of which is to overcome momentum, as is produced by the application of strain to only one end of the saw-blade, as presently more clearly illustrated.

The tension of the spring H may be varied by a screw-rod, *n*, connected to said spring and passed through a lower cross-bar of the arm C′, said rod being encircled by a spring, *o*, which is capable of being more or less compressed, to vary its tension, by a nut, *o′*, screwed upon said rod.

Fastened to and depending from an underneath cross-piece of the work or saw table A is a guide, *h′*, disposed so as to guide the saw in its movement.

J is a guide, which comprises a vertical bar fitted in an aperture or channel, *p*, at the conjunction of the bracket B and its arm *b*, and a horizontal bar with its rear edge connected to the lower end of said vertical bar, and having at its front corner edges projections disposed alongside of the saw, as seen in Fig. 1.

The principle upon which my invention is constructed—*i. e*, by applying opposite strain or tension to both ends of the saw-blade, as above described, the strain is distributed upon the upward and downward strokes of the saw—is based upon the fact that if the strain all be applied to one end of the saw-blade, which strain is usually applied at the upper end, the upward stroke will receive a momentum equal to the number of pounds of strain required to stiffen the blade, whereby an inequality in the movement of the blade in its upward and downward strokes will follow the upward stroke, being very rapid because of the great momentum thus produced. For example, it being assumed that only one spring is used—*i. e.*, strain applied to the upper end of the blade—say that it requires twenty (20) pounds strain to stiffen the blade, that the downward stroke involves, say, five (5) pounds force to effect the cut, and that the weight of the pitman, say, is three (3) pounds, it will thus be seen that a downward cut will require a pressure or force of twenty plus five (5) less three (3) equals twenty-two (22) pounds, while the upward stroke, with no resistance to overcome save the weight of the pitman, but which is simply to return the blade to again effect the cutting operation, is only lessened three (3) pounds, the weight of the pitman thereby wasting nineteen (19) pounds of pressure or force, and consequently requiring the overcoming of a rapid momentum of seventeen (17) pounds. With the saw running at the rate of eight hundred (800) strokes per minute it would be necessary to overcome a force equal to seventeen (17) pounds × eight hundred (800) equals thirteen thousand and six hundred (13,600) pounds weight for every minute, and for a day's work of ten hours it would require the movement of nine million and one hundred and twenty thousand (9,120,000) pounds through a space equal to the stroke of the saw, which is wasting a great deal of unnecessary force, producing an inequality of momentum in the downward and upward stroke of the saw, which inequality or difference of momentum exceeds the power exerted by the spring twenty (20) pounds and the resistance of cut five (5) pounds less weight of pitman three (3) pounds equals twenty-two (22) pounds, plus spring above twenty (20) pounds, making a total difference of forty-two (42) pounds on each stroke of the saw. By my improvement there may be an almost exact amount of momentum maintained on up and down motion of the saw.

Further advantages of my invention are that a smooth-running saw is obtained and one capable of being run at a very high speed arising from the aforesaid disposition of the work-table and frame independently of the saw-supporting frame.

It will be understood that I do not confine myself to the particular disposition of arrangement of the parts or to the manner shown of supporting the upper spring-arm upon the work-table, as the same may be suspended from the ceiling in the usual way, leaving the work or saw table wholly free for supporting and manipulating the work or material being sawed; nor do I confine myself to the special arrangement or number of springs shown; but I do, however, restrict the application of my invention to that class of saws operated by means of driving-pulleys, as above specified.

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

The combination, with the separate frame C, disposed below and independent of the work-table, supporting on its lower cross-pieces boxing for reception of the driving-shaft, of the bracket mounted upon one side of said table and having a hollow arm, the spring G′, secured therein and connected to the spring G, and the spring H′, secured in an open hollow arm, C′, of the frame C, and the tension-regulating devices or contrivances for acting upon the springs G and H, constructed and arranged substantially as shown, and for the purpose herein set forth.

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

DANIEL W. PERRY.

Witnesses:

FRANKLIN SANDERS,

A. J. EYLER.