F. D. Smith,

Sawing Machine.

No. 109,351. Patented Nov. 15. 1870.

Fig: 1.

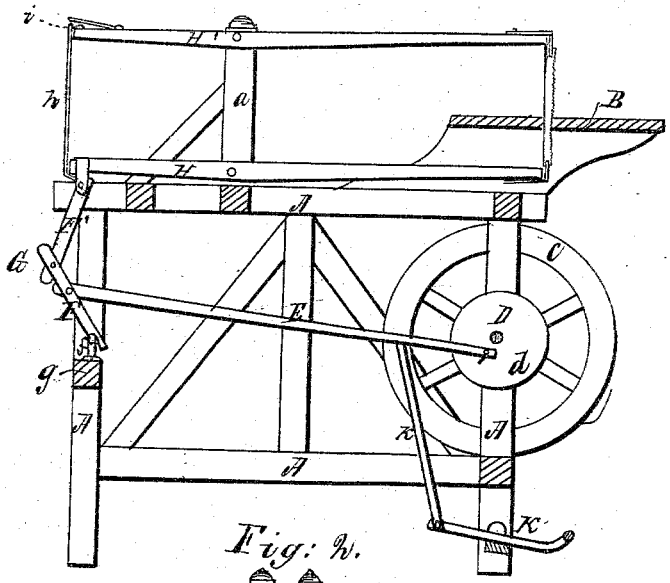
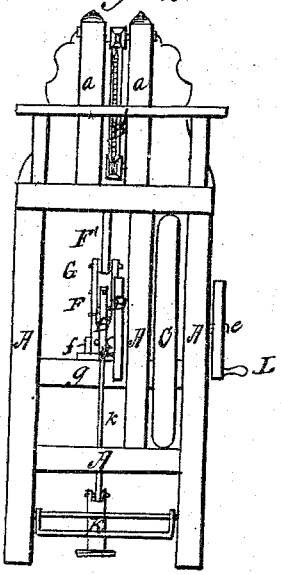


Fig: 2.



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FRED. D. SMITH, OF CHICAGO, ILLINOIS.

Letters Patent No. 109,351, dated November 15, 1870.

IMPROVEMENT IN SAWING-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

I, FRED. D. SMITH, of Chicago, in the county of Cook and State of Illinois, have invented certain Improvements in Wood-Sawing Machines, of which the following is a specification.

My invention relates to a gig or whip-saw, such as is used for sawing scroll-work, driven by a foot-treadle worked by the operator, or driven by any desired power; and

It consists, particularly, in a novel mechanism to convey an accelerated motion from the treadle or driving-shaft to the saw.

In the accompanying drawing, which, together with the letters and figures of reference marked thereon, forms part of this specification—

Figure 1 represents a side elevation of my machine, a portion of the frame-work being cut away.

Figure 2 represents an end or front elevation of same.

General Description.

A is a substantial frame-work, built of suitable material, supporting the uprights *a a* and the sawing-table B.

C is a balance or fly-wheel, carried upon the shaft *c*.

At the inner end of the shaft *c* is attached the small wheel D, having a slot, *d*, cut through it in a radial direction from the center.

Instead of this wheel D, I can use a simple crank, as will be readily perceived.

E is a horizontal connecting-rod, attached to the wheel D by a pivot through the slot *d*.

This rod is pivoted at the other end to the lever F of the pair of toggle-jointed levers F F'.

The lever F is pivoted to a bearing, *f*, upon the cross-beam *g* of the frame A, and is connected at the toggle-joint G to the lever F'.

This lever F' is in turn pivoted to the lower one H of the parallel vibrating levers H H'.

These levers H H' are connected at one end by the strap *h*, which may be of leather, metal, or other suitable material.

Beneath the strap *h*, and between the said strap and the top of the lever H', is placed an elastic cushion, of rubber or similar substance, *i*.

At the other end of the levers H H' is attached the vertical whip or gig-saw J, secured by any ordinary contrivance to the levers, and connecting them.

The said saw passes through an aperture in the sawing-table B, as clearly shown in fig. 1.

K is an ordinary foot-treadle, communicating, by means of the rod *k*, motion to the rod E and fly-wheel C.

L is a crank, attached to the outer end of the shaft *c*, to be worked by the hand of the operator, when desired.

In place of this crank a band-wheel may be employed when it is desired to use other than man-power.

The operation of my machine will be as follows:

The power is applied, say, and actuates the shaft *c* and balance-wheel C.

The crank-wheel D communicates a reciprocating motion to the horizontal rod E, by means of which the toggle-jointed levers F F' are swung back and forth, communicating an accelerated motion to the parallel vibrating levers H H', and thence to the saw.

Owing to this peculiar mechanical combination the levers H H' vibrate twice at each revolution of the crank-wheel D, and this accelerated motion is acquired in an extremely simple manner, and with very slight loss by friction, thus avoiding complex and disadvantageous gearing.

Intricate and difficult scroll-work may be sawn by my machine with ease.

When foot-power is used no time is lost in stopping the saw by throwing machinery out of gear, to change the saw from one aperture to another, and the speed may be readily and promptly governed.

The purpose of the elastic cushion *i* is to preserve an equal and steady strain upon the saw.

It is obvious that when the levers H H' are swung either up or down to the extent of their vibration, the vertical distance between the outer extremities of the said levers is slightly increased, the minimum distance being when the said levers stand at right angles to a line drawn through the center of their axes or pivots, supposing them always to remain parallel. The elastic cushion allows this variation without straining the saw.

The saw may be changed from one aperture to another in sawing scroll-work, by loosening it from its attachment to the upper lever H', when the said lever may be readily uplifted upon its pivot out of the way.

The crank-wheel D is slotted at *d*, and the lower toggle-jointed lever F is also made with a vertical slot, so that the connecting-rod E may be adjusted at different points.

Claim.

Having thus fully described the construction and operation of my invention,

What I claim as new, and desire to secure by Letters Patent, is—

The combination, in a sawing-machine, of the parallel vibrating levers H H', connected by the strap *h*, the toggle-jointed levers F F', rod E, balance-wheel C, and crank-wheel D, substantially as and for the purpose specified.

FRED. D. SMITH.

Witnesses:
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