2 Sheets--Sheet 1.

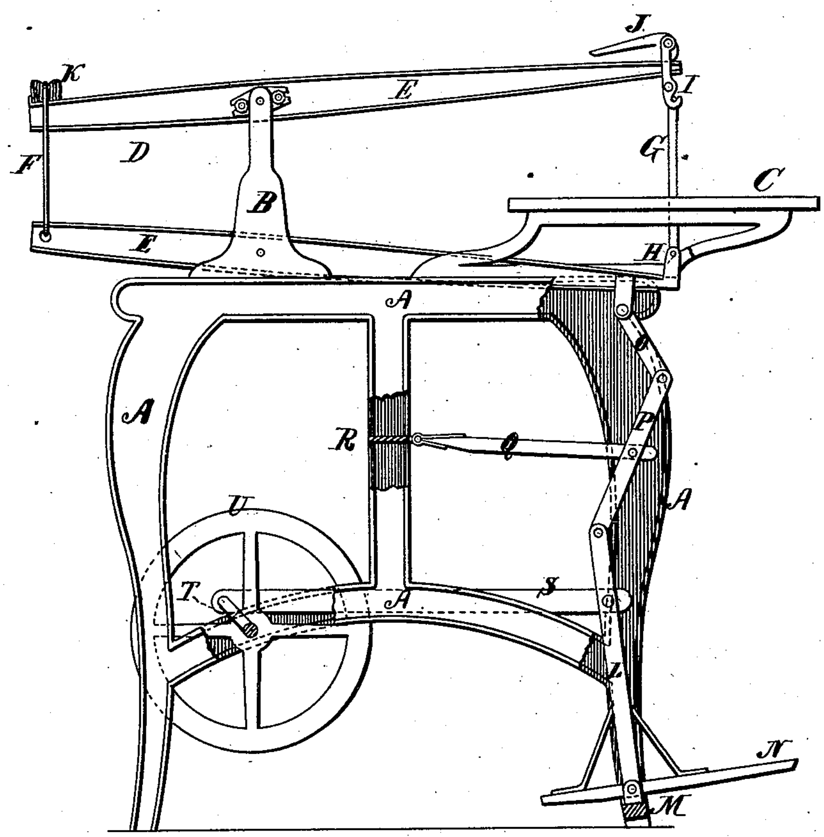
G. S. WILLIAMS.

Jig-Saw.

No. 161,583.

Patented March 30, 1875.

Fig. 1



Witnesses.

C. F. Brown

M. Church

Inventor.

Giles S. Williams

By Hill & Ellsworth

His Attys

2 Sheets--Sheet 2.

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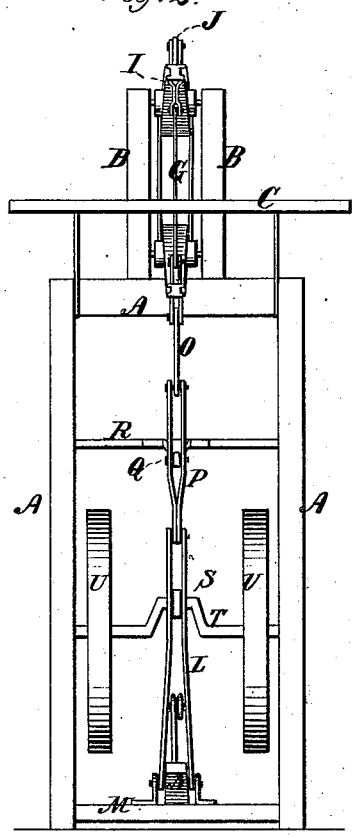
Fig. 2.



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UNITED STATES PATENT OFFICE.

GILES S. WILLIAMS, OF MADISON, WISCONSIN.

IMPROVEMENT IN JIG-SAWS.

Specification forming part of Letters Patent No. **161,583**, dated March 30, 1875; application filed December 10, 1874.

To all whom it may concern:

Be it known that I, GILES S. WILLIAMS, of Madison, in the county of Dane and State of Wisconsin, have invented certain new and useful Improvements in Jig-Saws; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation, partly in section, showing my improvements; and Fig. 2 is a front elevation of the same.

Similar letters of reference in the accompanying drawings denote the same parts.

My invention has for its object to improve the construction of jig-saws for the general purpose of rendering them more complete and efficient in their operation. To this end the invention consists, first, in vibrating the saw-frame by means of a compound double toggle-lever, connecting it directly with the operating-treadle. It also consists in connecting the compound double toggle-lever to the frame of the machine, by means of a vibrating pivot-arm, for the purpose of increasing the reciprocations of the saw. It also consists in connecting the compound double toggle-lever with one or more balance-wheels by means of a crank-shaft and connecting-rod, for the purpose of equalizing the movements of the saw.

In the accompanying drawings, A is the frame of the machine, made of the requisite height, and provided at its rear end with the upright B, and at its front end with the sawing-table C. D is the saw-frame, composed of the beams E E, pivoted or hung between the uprights, and connected at their rear ends by a strap or loop, F. G is the saw, passing through the table C in the usual manner, and connected to the forward ends of the saw-frame by the loops H I. The loop I fits over the end of the upper arm, so as to move up and down thereon, and is provided with a cam-lever, J, bearing upon the top of the arm, by the operation of which the saw is strained or loosened. Between the loop F at the rear end of the saw-frame and the top of the upper beam a metal or rubber spring, K, is interposed to assist in preserving the tension of the saw, and to compensate for the wear of the locking-cam lever. L is an upright, pivoted in a foot-bar, M, at the front of the frame, and N is the treadle, mounted upon the pivot of the upright. O is a short bar or rod, pivoted at its upper end to the lower beam of the saw-frame beneath the saw; and P is a longer intermediate bar, pivoted to the top of the upright and lower end of the bar O, so as to connect the two, as shown in Fig. 1. Q is an arm, hinged at its inner end to a central cross-bar, R, of the frame, and pivoted at its outer end to the center of the bar P.

The several bars, together with the upright, form a compound lever, by the operation of which the saw-frame is vibrated, while the arm Q, holding the center of the bar P in position, causes it to oscillate upon a central pivot, and therefore increases the vibrations of the saw when the treadle is operated.

The inner end of the pivot-arm Q is necessarily hinged to the central cross-bar, because its outer end moves through a short arc when the compound lever is in operation. Otherwise the connections must either give way, or the lever become immovable.

S is a pivoted rod, connecting the upper end of the upright with the crank of a cross-shaft, T, arranged at the rear of the frame, and carrying two balance-wheels, U U.

When the compound lever is in operation the oscillations of the upright communicate motion to the balance-wheels through the medium of the connecting-rod and crank-shaft, for the purpose of steading the movements of the compound lever, and therefore equalizing the strokes of the saw. Instead of employing two, one large balance-wheel may be used, if preferred.

By my invention the mechanism for operating jig-saws is greatly simplified and cheapened, while the efficiency of the machine is increased by doubling the vibrations of the saw within a given time, and rendering such vibrations steady and uniform.

Instead of applying the compound lever to a saw-frame it may be applied to various other devices where a vibrating or reciprocating motion is required without departing from the spirit of my invention, as will be readily understood.

Having thus described my invention, what I claim as new is—

1. The compound double toggle-lever connecting the saw-frame of a jig-saw directly with the operating-treadle, substantially as described, for the purpose specified.

2. The vibrating pivot-arm Q, connecting the compound lever to the frame of the machine, substantially as described, for the purpose specified.

3. The combination of the compound lever, vibrating pivot-arm Q, and the balance-wheels with the saw and frame of the machine, substantially as described, for the purpose specified.

GILES S. WILLIAMS.

Witnesses:
OLIVER SWIFT,
BENONI S. WILLIAMS.