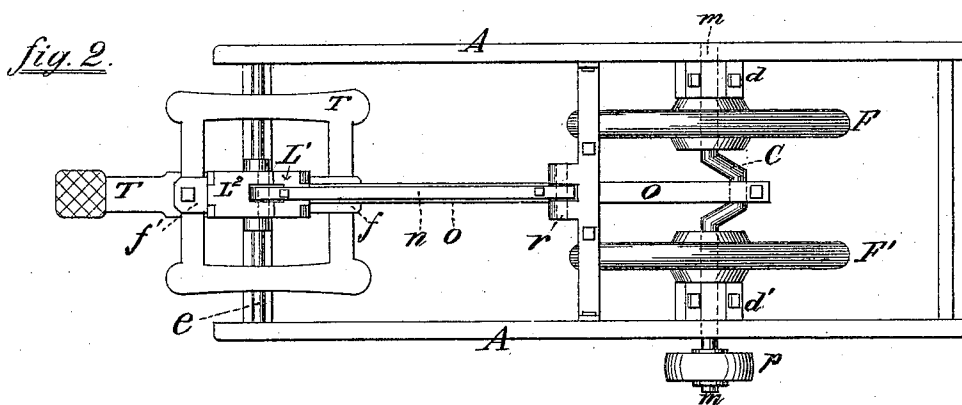
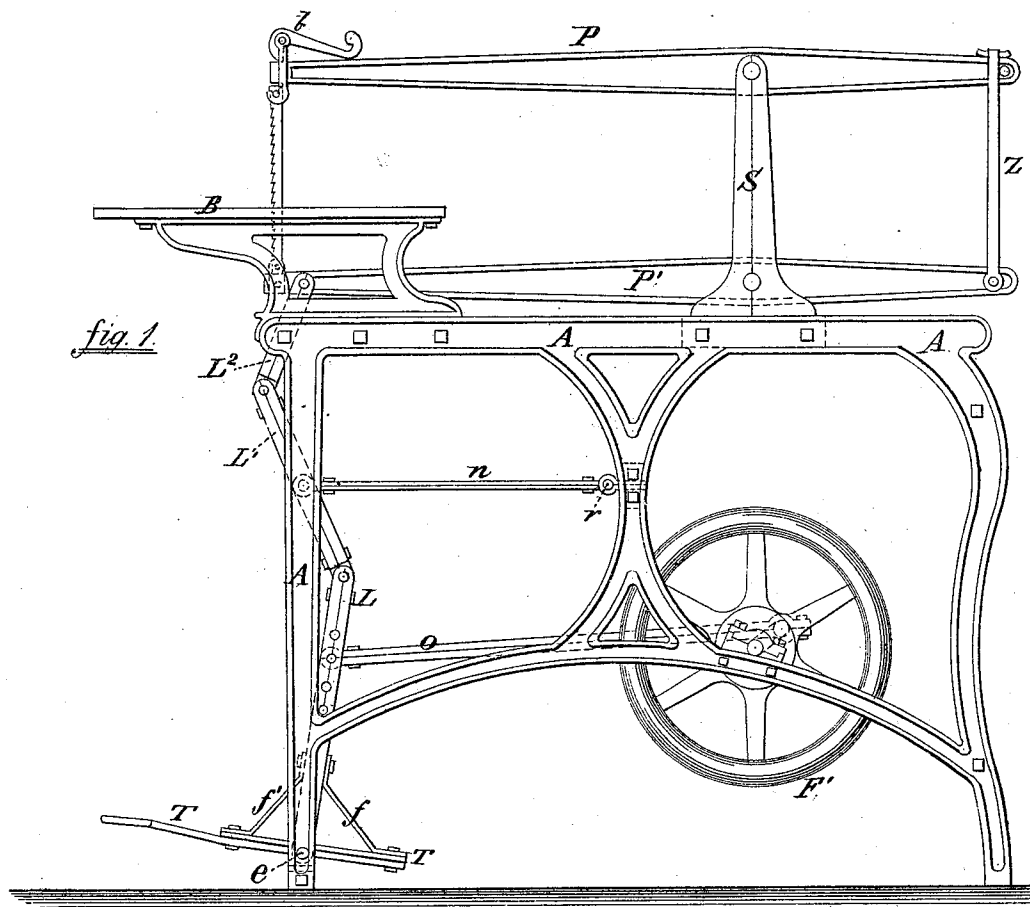


F. D. SMITH.
 SCROLL-SAWING MACHINE.

No. 170,456.

Patented Nov. 30, 1875.



Witnesses.

W. Otto-Grouen.
 John E. Silsbee

Inventor.

Fred. D. Smith

UNITED STATES PATENT OFFICE.

FRED. D. SMITH, OF DAVENPORT, IOWA.

IMPROVEMENT IN SCROLL-SAWING MACHINES.

Specification forming part of Letters Patent No. **170,456**, dated November 30, 1875; application filed May 11, 1875.

To all whom it may concern:

Be it known that I, FRED. D. SMITH, of Davenport, Iowa, have invented an Improvement in Scroll-Sawing Machines, of which the following is a specification:

The nature of my invention relates to the kind of sawing-machines as invented by me, and secured by Letters Patent No. 109,351, November 15, 1870; and its object is to form, instead of a double toggle-jointed set of levers, a triple toggle-jointed combination of levers, as a direct connection between the walking-beam P' and the treadle T , in this way reducing the angle of deflection of the levers, and thereby increasing the power of the machine, which, in the double toggle-jointed-lever combination, could not be obtained without reducing the stroke of the saw, and therefore presented serious imperfections.

The machine is fully illustrated in the accompanying drawings, in which—

Figure 1 is a side view of the machine; Fig. 2, a plan view of the same, with the working table B and the walking-beams P and P' and their supports S removed.

A represents the frame of the machine, made of cast-iron; S , an ordinary support to carry the two walking-beams P and P' , which are connected at their rear ends by means of a stirrup, Z . The front ends of the walking-beams P and P' receive the saw-blade in the usual manner, the upper walking-beam P being provided with an eccentric lever to clamp the saw and stretch it tight. d d' are two bearings, in which revolves the crank-shaft m m , with the crank C at its center, on each side of which are fastened on the shaft the two fly-wheels F and F' . On the end of the crank-shaft m is attached a pulley, P , in case that the machine should be driven by power. T is a treadle, swinging around a shaft, e . To this treadle T is fastened firmly, by means of the braces f and f' ,

the lower lever L , to which latter attaches the one end of a connecting-rod, o , extending from the crank C on the lever L , provision having been made to adjust the length of the stroke by changing the point of connection of the connecting-rod o . n is a rocking lever, having its fulcrum at r , and being pivoted with its other end at about the middle of a second lever, L^1 , the lower end of which hinges to the upper free end of the lower lever L . The upper end of the second lever L^1 hinges to a third lever, L^2 , and the free upper end of this latter attaches to the lower walking-beam P' .

It will be evident that the combination of the three levers L , L^1 , and L^2 requires only half of the amount of throw of the connecting-rod for the same amount of stroke of the saw than the application of only two levers; but with the reduction of the travel of the connecting-rod o the angle of deflection that the swinging levers L , L^1 , and L^2 form with the position, where they are in a straight line, must necessarily be also reduced at the same rate, and the smaller this angle is the greater will be the power that is exerted by the levers L , L^1 , and L^2 .

Another feature that gives this machine such a power is the direct connection in a straight line between treadle and saw by means of the levers L , L^1 , and L^2 .

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

The application of toggle-jointed levers L , L^1 , and L^2 in combination with the rocking lever n , treadle T , connecting-rod o , and crank-shaft m , substantially as and for the purpose set forth in the above specification.

FRED. D. SMITH.

Witnesses:

W. OTTO GRONEU,
CHAS. E. SILSBEE.