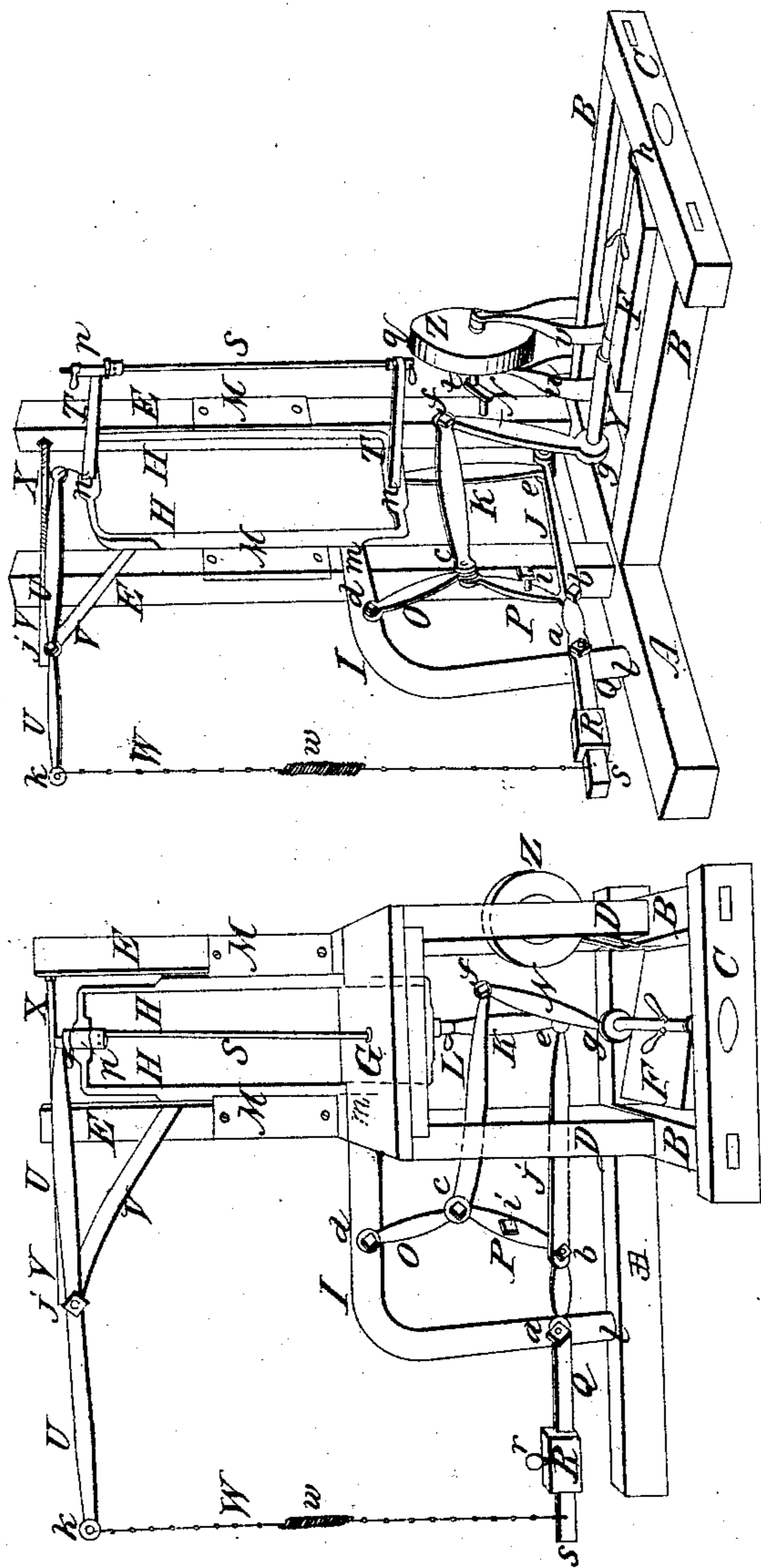


*Z. Swope,*  
*Scroll Sawing Machine,*

*No 55,738,*

*Patented June 19, 1866.*



*Witnesses:*

*Reuben H. Long*  
*Abner D. Campbell*

*Inventor.*

*Zuriel Swope*

# UNITED STATES PATENT OFFICE.

ZURIEL SWOPE, OF LANCASTER, PENNSYLVANIA.

## IMPROVEMENT IN SAWING-MACHINES.

Specification forming part of Letters Patent No. 55,738, dated June 19, 1866.

*To all whom it may concern:*

Be it known that I, ZURIEL SWOPE, of the city of Lancaster, in the county of Lancaster and State of Pennsylvania, have invented a new and useful Improvement in Sawing-Machines; and I do hereby declare that the following is a clear and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a perspective view, and Fig. 2 a side view with saw-table G removed.

The letters in each figure represent like parts.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

Letter A in the accompanying drawings represents a horizontal scantling or piece, to which are framed horizontally at right angles the two parallel pieces B B, with a suitable distance between them for the treadle F to work between. To the front ends of these two pieces B B is framed the horizontal head-piece C.

On top of the piece A are framed, parallel to each other, the two perpendicular pieces E E, and on front side of these two pieces, above the saw-table G, are fastened the two guide-plates M M, for the saw-sash H H to work between them.

In advance and opposite to the two upright pieces E E are framed, on top of the two horizontal pieces B B, the two upright pieces D D, which are the two front supports for the saw-table.

G represents the saw-table, resting its two back corners on two supports fastened on the front side of the two upright pieces E E, and in front resting on the two upright supports D D, and is made in height above the treadle F to reach to the operator's waist.

F represents the treadle for the operator to stand on while operating the saw. This is generally made of a stout board or plank fastened to and across the shaft Y; is made in breadth or width to fill the space between the two horizontal pieces B B, and in depth extends from head-piece C, along the shaft Y, to a proper distance below the saw-table G, and on the top surface is made on a level with the center of the bearings of the shaft.

Y represents the shaft resting its bearing at the one end on the horizontal head-piece C at *h*, and at the other end resting its bearing on the horizontal piece A at *g*. On the one end of this shaft, inside of the bearing at *g*, is permanently fastened the crank N. At the end of this crank, to a permanent bolt or pin at *f*, is connected the one end of pitman L, and the other end of this pitman L is connected by a pin at *c* to the toggle-joints O and P.

The toggle-joint O is connected and supported at *d* to a stationary pin or bolt in the permanent support I, which support is fastened at the lower end, at *l*, to the horizontal piece A, and at the upper end is fastened permanently at *m* to the upright piece E. The other toggle-joint, P, is connected at its lower end by a pin or bolt at *b* to the lever J, which is connected and supported at *a* by a stationary pin or bolt in the lower end of support I, and upon which pin this lever J rocks when the saw is in operation. The other end of this lever J is connected by a pin at *e* to the lower end of pitman K. The other or upper end of this pitman K is connected by a pin at *n* to middle of the lower end of sash H H. All these joints connected by these bolts are made so as to allow movement of the levers and pitmen on the bolts at *b*, *d*, *e*, *f*, *c*, and *n*, respectively, when the saw is in operation.

Q represents an extension backward of lever J, and upon this extension is placed a movable weight, R, which serves as a counter-balance to the weight of the saw-sash H H. This weight R has a set-screw, *r*, to fasten the weight on extension Q at any desired point as the action of the saw may require. When light stuff is sawed the weight ought to be moved farther out toward the end; then, when heavy work is to be done, in the latter case the weight is moved inward toward the support I. Thus by this means an equilibrium in the action of the saw may be attained at pleasure.

V V represent a braced support fastened to and extending out from the upper end of upright piece E. On the outer end, *j*, of this support or pin rests the rocking bar U U. The one end of this rocking bar is fastened by a cord or wire to the middle of the top of sash H H, as seen in Fig. 2 at *n*, and the other end, at *k*, has suspended a cord or chain, W, which

is fastened at the lower end, at *s*, to the rear end of extension *Q*, and in this chain *W*, at *w*, there is placed a spiral spring to keep the different connections all in proper tension. The rocking bar *U U* and chain *W*, as connected with extension *Q* and top of sash *H H*, are designed to give a more steady motion to the operation of the machine.

*X* represents an iron bar passing through the top ends of the two upright pieces *E E*, with set-screws in and outside of the upright pieces *E E*, to regulate the distance between them.

The sides of the sash *H H* are parallel, and on the outside thereof have a triangular outline or wedge, and the guides *M M* have a corresponding triangular depression to receive said sides.

From the center of the upper and lower parts of the saw-sash *H H*, and in a direction perpendicular to the plane thereof, there proceeds two arms, *T T*, extending about half the width of the table *G*, toward the operator, and carrying the saw *S*. The saw is mounted at the ends of these arms by means of a swivel and screw, whereby its direction and the amount of its tension may be changed and regulated at pleasure. The swivels *p* and *q* are thus formed. There is a flat head with slit therein to receive the saw. The shank is attached to this head and extends in a direction from the saw through an orifice in the arms *T T*, has a screw cut thereon, and is furnished with a nut on its end. Pins pass through the head of the swivels to retain the saw. The lower swivel, *q*, has one pin-hole. The upper one has two or more, whereby the saw may be caused to lean forward if desired.

*Z* represents a pulley or fly wheel resting on supports *u* and *v*, and is furnished on its shaft with crank *t*, designed to be connected by a connecting-rod or pitman to the pin *i*, on the toggle-joint lever *P*. It will operate as a fly-wheel to regulate the motion of the saw. When treated as a pulley it can be used to apply, if desired, power for propelling the saw, instead of the operator furnishing the power himself. This is an adjunct to the invention, and can be used in connection therewith, or be dispensed with, at pleasure.

In operating the saw by man-power the operator will place himself on the treadle *F*, facing the table *G*, with his feet about in the position represented near *Y* in Fig. 1, and also represented on the surface of the treadle in Fig. 2. His heels will be close together, and be situated about vertically over the shaft

*Y*. The toes will be extended so that the line of direction of each foot makes an angle of about forty-five degrees with the shaft *Y*. A portion of his weight is now brought to rest upon each foot (or the front part thereof) alternately, thereby alternately raising and depressing each side of the treadle *F*. Supposing the operator, in commencing, rests his weight upon the left foot, thereby depressing the left side of the treadle *F*, it follows that the end *f* of the crank *N* advances toward the operator's left, extending the pitman *L* horizontally in the same direction. This motion of the pitman *L* operates upon the toggle-joint *c* to move said joint and the ends of the short levers *O* and *P*, immediately connected therewith, in the same direction. The effect of this is to move the general direction of said two last-mentioned levers, connected at *c*, from a perpendicular and diminish the distance between the ends *b d* of the said two levers. As the end *d* of the lever *O* is secured on the permanent support *I*, this motion raises the lever *P*, which acts in raising the lever *J*, which is secured at *u* on said permanent support *I*. This action of the lever *J* raises the pitman *K*, therefore, also, the saw-sash *H H*, and the action being continued will raise it to the end of its stroke. The operator now throws his weight on the right foot, depressing the right side of the treadle, and the reverse of all this takes place. The saw-sash *H H* is depressed, and the action being continued until the levers *O P* and toggle-joint *c* shall become situate on the same straight line, the saw-sash *H H* will be found to have attained the end of its return or downward stroke, and the action of depressing the right side of the treadle being further continued, the pitman *L* advances horizontally to right, and end *b* of the lever *P*, the lever *J*, and pitman *K* raised as before, when the saw-sash *H H* is raised for another stroke.

I do not claim the treadle *F*, the toggle-joint, the saw-frame, nor the respective levers and pitmen in themselves as my invention independent of my mode of combining them, for these are old devices; but

I claim—

Operating a reciprocating saw by means of a treadle and the devices connected thereto when they are constructed and arranged to operate in the manner and for the purposes substantially as specified.

ZURIEL SWOPE.

Witnesses:

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