J. H. HOPKINS.

SCROLL-SAWING MACHINE.

No. 191,239. Patented May 29, 1877.

Fig. 1.

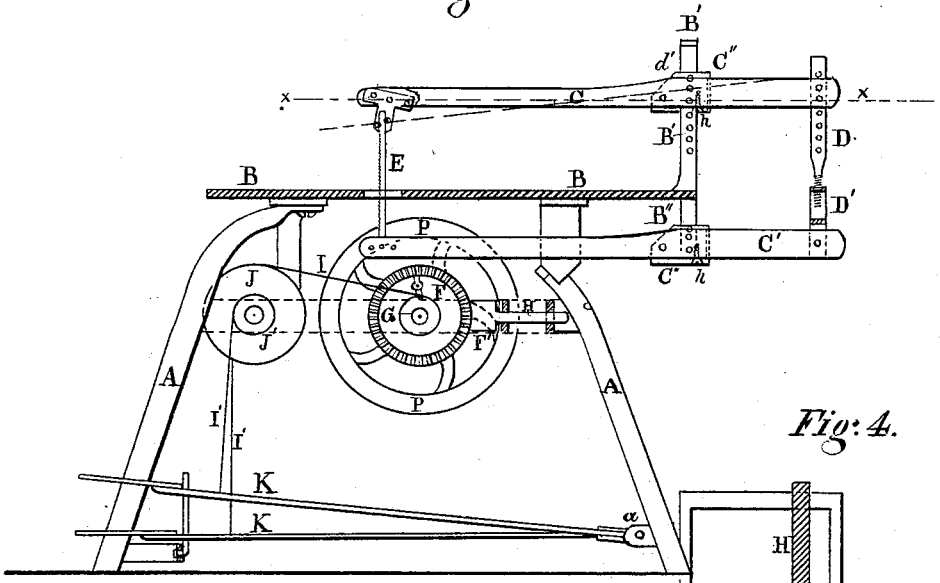


Fig. 4.

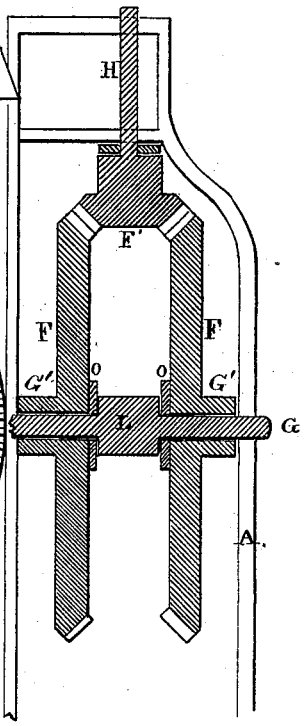


Fig. 2.

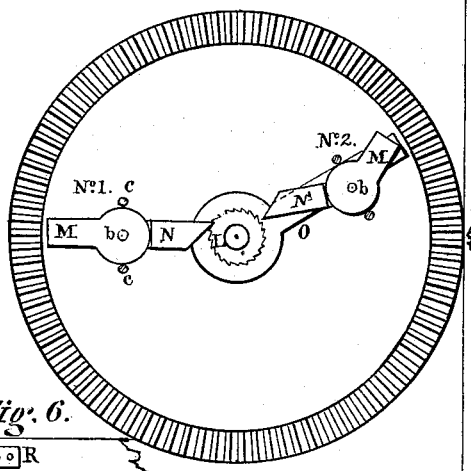


Fig. 3.

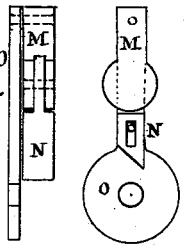


Fig. 5.

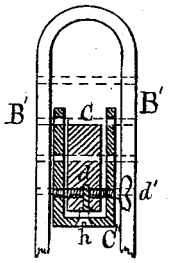
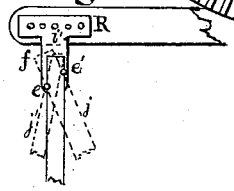


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN H. HOPKINS, OF REYNOLDSVILLE, PENNSYLVANIA.

IMPROVEMENT IN SCROLL-SAWING MACHINES.

Specification forming part of Letters Patent No. **191,239**, dated May 29, 1877; application filed November 8, 1876.

To all whom it may concern:

Be it known that I, JOHN H. HOPKINS, of Reynoldsville, in the county of Jefferson and State of Pennsylvania, have invented certain new and useful Improvements in Scroll-Sawing Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to certain improvements in scroll-sawing machines, whereby the continued rotary motion of the driving-shaft is produced by the reciprocating movements of two treadles. It further consists in the means of adjusting the vertical movements of the saw-frame, all of which will be hereinafter more fully described in this specification, and set forth in the claims.

Figure 1 is a longitudinal elevation of the machine, partly in section. Fig. 2 is a side view of one of the beveled gear-wheels, showing the ratchet-clutch in different positions. Fig. 3 represents details of the ratchet-clutch. Fig. 4 is a section of the gear-wheels. Fig. 5 is a section of the saw-lever, and Fig. 6 is a view of the device for hanging the saw.

A represents the main frame of the machine, on which is supported the table B, which has the usual standard B′, on which the upper vibrating lever C is supported by an adjustable pivot-rod in a metallic shoe, C″, the lower vibrating lever C′ being supported in a similar manner under the table B by pendent brackets B″. The rear ends of these levers are connected by an extension-bar, D, which is adjusted by a turn-buckle, D′, and has at its upper end several holes, so that the distance of these levers may be regulated to suit the different lengths of saws used. Holes at similar distances are made in the standards B′ for the same purpose. The upper hole is for the reception of the adjusting-screw *d′*, which should be placed above the level of a line drawn through the points *x x*, for the purpose of taking the rake or circular motion out of the saw-arm. E is the saw. F F are beveled spool-wheels, working loosely on a shaft, G, having between them a beveled pinion, F′, also working loosely on a shaft, H, transverse in direction to the other shaft G. On the wheels F F are spools G′, on the outside, to which are attached the ends of two straps, I I′, the other ends of which are fastened to the wheels J J, under the table B. These wheels work loosely on a shaft, J′, and to the spools of the wheels are attached other straps I′ I′, which are connected to the treadles K K. These treadles are pivoted at the same point, *a*, on the frame A. On the shaft G is a balance-wheel, P, to which is attached the pitman by which the saw-frame takes its motion, as usual.

Between the two beveled spool-wheels F F, on the shaft G, and permanently fastened to it, is a ratchet-wheel, L. On the inside of each wheel F is a toggle-jointed ratchet-pawl, composed of the two parts M and N, connected by a hinge-joint, *b*. This pawl M N is connected to a flat bar, O, which moves freely around the shaft G, and is controlled in its movements to and fro by two pins, *c c*, in the side of one of the wheels F, so that when said wheel is rotated it carries the pawl M N around with it, and the play between the pins *c c* (No. 1) of the bar O is sufficient for the necessary movement of the end N of the pawl. The purpose of this pawl is to nip the notches in the ratchet, acting as a clutch, as seen at No. 1 in Fig. 2, so that said wheel, by means of the pawl M N becomes fastened to the shaft G, and as said wheel is moved around by the straps or bands I′ I′ the shaft G is rotated and the crank and pitman operate the saw-frame; and this is produced by the action on the treadles, for so soon as the opposite treadle is brought down, the other beveled gear, F, by the pinion F′, draws the loose one up ready for action again. By this alternate movement of the wheels F F a direct rotation is given to the shaft G and balance-wheel P, and the pawl M N releases the wheel, which it had fastened to the shaft G, by means of the ratchet, and takes the position shown in Fig. 2 at No. 2, and allows the ratchet-wheel L to continue its rotation by the action of the other pawl operated in the same manner by the other wheel. By this alternate movement of the two treadles K K the sawing motion is continued.

The sawing-frame is composed of the two

levers C C′ and extension-bar D. The levers C C′ are pivoted one to the standards B′ above the table, and the other below to the pendent bracket B″, upon pivots which are sustained in metallic shoes C″ C″, having sides so wide that the pivot may be at any given distance desired whereby the rake of the saw can be regulated, holes being made in the shoe and standard for this purpose. The pivot-point of the lever can be so far above its axis that the saw in its upward movement will not draw back from the work.

A section of the levers C C′ is shown in Fig. 5, where the pivot-bearing is held in the standards B′ B′, C being a section of the lever, showing embedded in it a nut, *d*, and a thumb-screw, *d′*, by which the lever can be drawn in or out to regulate the saw horizontally in the slot in the table, and the shoe C″ being fastened to the under side of the lever by a common wood-screw, *h*, around which the shoe plays when operated by the thumb-screw *d′*.

In Fig. 6 is shown the method of hanging the saw. A T-shaped piece, R, has in its upper limb a series of holes, and in the stem two holes, one being some distance above the other, where the end of the saw-blade *f* is shown attached to the pins *e e′*. Should the saw be broken, it is only necessary to cut notches on the edges of the saw to correspond with the pins *e e′*, when it will be firmly held between them. The T-shaped piece R is sustained in the slot of the lever by a pin, *i*, which may be placed in either of the holes to suit the width of the saw to be held, which, at *j*, is shown as a wide saw, and at *j′* a narrow one.

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

1. In a scroll-sawing machine, the toggle-jointed ratchet-pawl M N, substantially as and for the purpose described.

2. In a scroll-sawing machine, the combination of the toggle-jointed pawl M N, wheel F, and ratchet-wheel L, arranged to operate substantially as and for the purpose set forth.

3. In a scroll-sawing machine, the combination of the toggle-jointed pawl M N, ratchets L L, wheels F F, and pinion F′, all substantially as and for the purpose herein described.

4. The combination of the toggle-jointed pawl M N, ratchet-wheels F F, pinion F′, wheels J J, straps I I′, and treadles K K, substantially as shown and described.

5. The saw-frame lever C, supported and pivoted in a shoe having means of vertical adjustment, substantially as and for the purpose shown and described.

6. The saw-frame having a horizontal adjusting-screw, *d′*, and pivoted in the shoe C″, substantially as and for the purpose described.

In testimony whereof I have hereunto affixed my signature this 3d day of November, 1876, in presence of two witnesses.

JOHN H. HOPKINS.

Witnesses:
WM. R. SINGLETON,
HUGH T. TAGGART.