R. McCHESNEY.

Scroll-Sawing Machine.

No. 199,845. **Patented Jan. 29, 1878.**

Fig. 1.

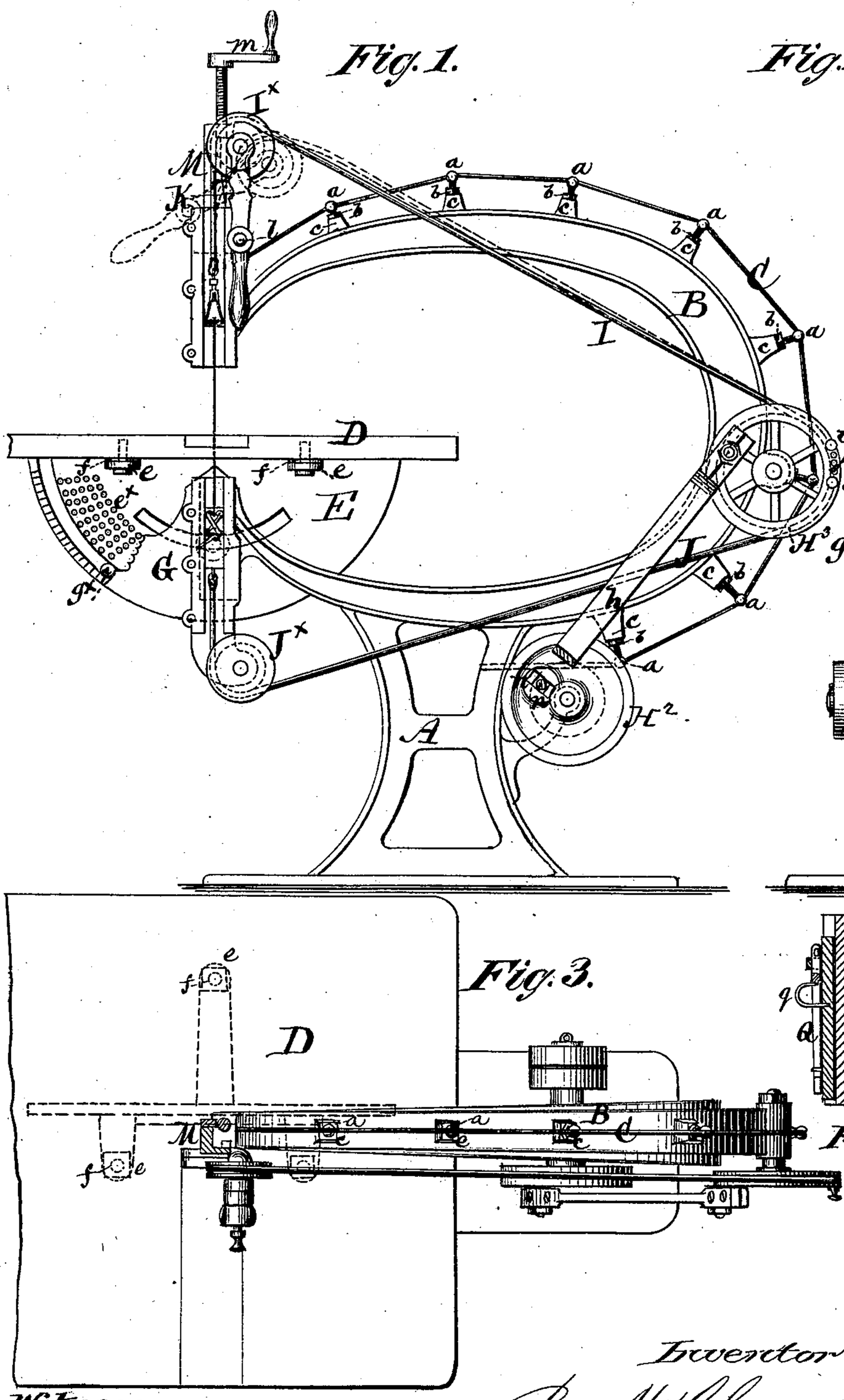

Fig. 2.

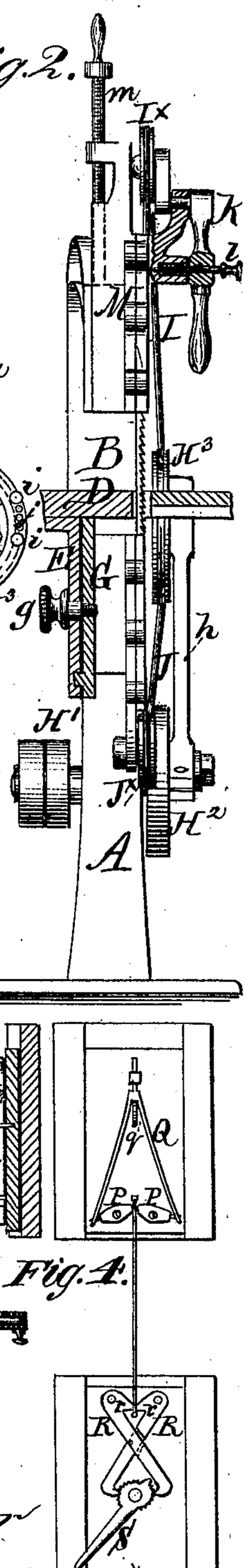

Fig. 3.

Fig. 4.

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UNITED STATES PATENT OFFICE.

REUBEN McCHESNEY, OF ILION, ASSIGNOR OF ONE-THIRD HIS RIGHT TO THOMAS B. DAVIS, OF NEW YORK, N. Y.

IMPROVEMENT IN SCROLL-SAWING MACHINES.

Specification forming part of Letters Patent No. **199,845**, dated January 29, 1878; application filed June 8, 1874.

To all whom it may concern:

Be it known that I, REUBEN McCHESNEY, of Ilion, in the county of Herkimer and State of New York, have invented certain Improvements in Scroll-Sawing Machines, of which the following is a specification:

This invention relates to scroll-sawing machines; and consists of a peculiar construction and combination of parts, to be hereinafter described.

In the accompanying drawing, Figure 1 is a side elevation of my improved sawing-machine. Fig. 2 is a transverse vertical section. Fig. 3 is a top view, and Fig. 4 is a detail view.

The pedestal A and trussed arm B are made in one piece of cast metal, the arm being of nearly elliptical form, and the upper end of the pedestal terminating near the minor axis of the ellipse. The ends of the arm are sufficiently far apart to admit the work between them, the distance varying according to the size of the machine. The lower end of the arm B supports the table and the lower saw-gate, and the upper end supports the upper saw-gate. On the outer periphery of the arm B, from the pedestal around to the upper end of the arm, at regular distances apart, are studs *a*, with screw-shanks, passing through nuts *b* and into conoidal or pyramidal bases *c* on the arm. Over these studs, in notches or depressions formed for the purpose, passes a tension-brace, consisting of a wire cable or iron rod, C, one end of which is attached to the upper end of the arm, and the other end is attached to the pedestal. By turning the nuts *b* the cable is tightened, so as to strengthen and prevent vibration of the arm B when the machine is at work.

The table D is attached to the lower end of the arm by means of a semicircular plate, E, the straight edge of which is formed with lugs *e*, through which bolts or screws pass into the under side of the table. Between the lugs *e* and the table are cushions or pads *f*, of rubber or other elastic substance, lying in depressions formed for their reception, by means of which the table may be adjusted to a perfectly level position by tightening or loosening the bolts.

To the lower end of the arm B is rigidly attached a sector-shaped plate, G, to which the plate E is pivoted, so as to oscillate in a vertical plane. A set-screw, *g*, passes through a curved slot in the plate E and into the sector-shaped plate G, and serves to hold the table in any position in which it is placed.

The plate E is provided with a number of holes, $e^{\times}$, arranged at such points as to indicate a number of degrees in a circle, from one to forty-five degrees. A pin, $g^{\times}$, is inserted in one of the holes, and the table is inclined until the pin rests against the edge of the sector-shaped plate G, when the set-screw is tightened, so as to hold the table steadily and securely in position. When the pin $g^{\times}$ is in the position shown in Fig. 1, the table is perfectly level and at right angles with the line of travel of the saw; but when the pin is in one of the holes $e^{\times}$, the table is inclined, so that the saw cuts the work with a bevel or inclined edge, and the angle of inclination may be varied at the pleasure of the operator by inserting the pin $g^{\times}$ in the hole corresponding with the desired angle of inclination.

The main driving-pulley H^1 has its bearings in boxes formed on or attached to the pedestal A, and the other end of its shaft carries a crank-wheel, H^2, which is connected by a pitman, *h*, with a wheel, H^3, which oscillates on a stud attached to the rear portion of the trussed arm B. The connection of the pitman *h* with the oscillating wheel H^3 is made on the inner side of said wheel, or between its center and the saw, so that when the machine is in operation the weight of the pitman is made to assist the downstroke of the saw. The radius of the wheel H^3 being greater than the radius of the circumference described by the crank-pin of the wheel H^2, it oscillates through an arc of about one-seventh of its circumference. To the wheel H^3 is attached one end of a catgut band or cord, I, the other end of which is attached to the upper saw-gate, passing over a pulley, $I^{\times}$, and one end of a similar cord, J, the other end of which is attached to the lower saw-gate, passing around a pulley, $J^{\times}$. The bands I J are attached to the wheel H^3 by means of pins *i* inserted in holes *j* in the portion of the wheel opposite

the pitman-connection, by which means the bands may be adjusted to accommodate saws of different lengths. The lower pulley J× has a fixed bearing. The upper pulley I× has its bearing in the upper end of a lever, K, which is pivoted to a sliding frame, which carries the upper saw-gate and works in the upper end of the arm B. Below the fulcrum of the lever K is a spring-catch, *l*, which serves to hold the lever in the position shown in full lines in Fig. 1, and by releasing which the lever may be inclined to the position shown in dotted lines. When in this position, the lower band having been previously attached to the lower saw-gate, the upper band is easily passed over the pulley I× and attached to the upper saw-gate. Tension is then put upon the saw by placing the lever K in the vertical position, where it is held by the spring-catch *l*. The sliding frame M, which carries the lever K and the upper saw-gate, works in a grooved recess in the end of the arm B, and is provided with a screw, *m*, the point of which bears on a projecting portion of the arm.

By tightening or loosening the screw *m* the frame is raised or lowered, and the tension of the bands I and J is regulated. By means of this screw and the pivoted lever the saw may be brought to precisely the tension required, and it may be done without stopping the machine.

As the wheel H³ only oscillates while the wheel H² revolves, it will be seen that once in each revolution of the crank-wheel the motions of the oscillating-wheel, the bands or cords, and the saw are in an opposite direction to that of the crank-wheel. Those parts being connected by the pitman *h*, the result is such, when the belt is thrown from the driving-pulley, that the momenta of the parts, being opposed to each other, produce a neutral effect, and the machine stops suddenly.

In order to prevent injury to the machine, in consequence of the shock occasioned by the sudden stoppage, the crank-pin of the wheel H² is provided with a rubber block or cushion, *n*, on two opposite sides, said crank-pin and cushions occupying a slot which runs in a radial direction from the center of the wheel. By means of these blocks or cushions the shock and jar occasioned by sudden stoppage are lessened, and the general running of the machine is smoother and easier than if the crank-pin were not provided with them.

The saw-gates are provided with clamping devices. (Shown in detail in Fig. 4.) The upper gate is provided with two levers, P P, pivoted about midway of their length, with their inner ends close to each other, and their outer ends connected to the ends of a forked bar, Q, having its upper end held in place by a keeper, and provided with a spring, *q*, which has a tendency to force the bar upward and press the inner ends of the levers toward each other. The upper end of the saw is clamped between the inner ends of the levers P P, and may be released by pressing downward on the bar Q.

The lower clamping device consists of a pair of levers, R R, and a cam-lever, S. The levers R are pivoted near their upper ends, and have hooks or jaws *r* projecting inward toward each other. The levers cross each other, and their rear ends engage with a cam-lever, S, pivoted to the gate. The lower end of the saw is clamped between the jaws *r*, and by turning the cam-lever S toward the left hand the jaws are pressed toward each other and the saw firmly held in position. The faces of the jaws *r* form plane surfaces parallel with the sides of the saw-blade, so that the saw is held stiffly between them, and is prevented from falling to either side when the machine is used for fret-work.

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

1. The combination, with the base or pedestal A and its trussed arm B, provided with the studs *a* on its outer edge, of the wire cable or rod C, passing around the trussed arm and over the ends of the studs, in the manner and for the object specified.

2. The combination of the trussed arm B, provided with the stationary sector-plate G and the table D, with the semicircular plate E pivoted to the sector-plate, and provided with the series of perforations *e*×, pin *g*×, and set-screw *g*, for inclining said table D, substantially as herein shown and described.

3. The sliding frame M, carrying the lever K, and provided with a vertical screw, *m*, for moving said frame vertically in the grooved recess in the end of the arm B, substantially as and for the purpose described.

4. The oscillating wheel H³, provided with a series of openings, *j*, near its periphery, in combination with the two bands I and J, connected with said wheel by pins *i* passing through the openings *j* for adjusting the bands, substantially as and for the purpose described.

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