J. H. Rector,

Filing Saws.

No. 54,206. Patented Apr. 24, 1866.

Fig 1.

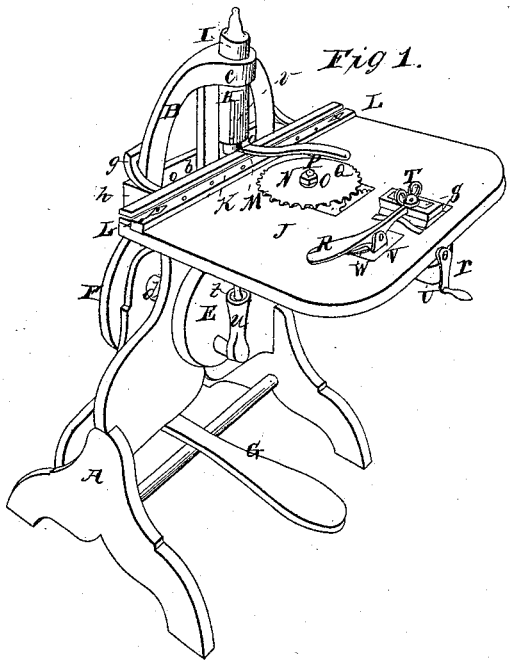


Fig 2.

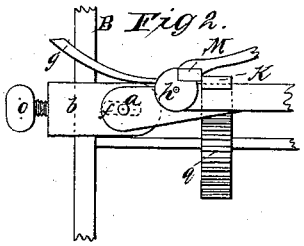


Fig 3.

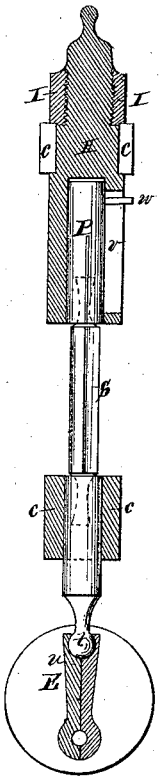


Fig 4.

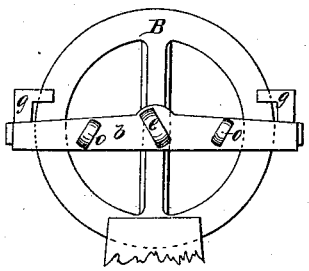
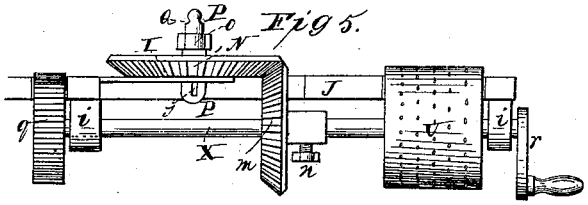


Fig 6.

Fig 5.



Inventor.
John H. Rector

UNITED STATES PATENT OFFICE.

J. H. RECTOR, OF SYRACUSE, NEW YORK.

IMPROVED SAW-FILING MACHINE.

Specification forming part of Letters Patent No. **54,206**, dated April 24, 1866.

To all whom it may concern:

Be it known that I, JOHN H. RECTOR, of Syracuse, in the county of Onondaga and State of New York, have invented a new and useful Improvement in Saw-Filing Machines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and the letters of reference marked thereon.

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

Figure 1 is a perspective view of my improved machine, in which A represents the frame; B, a dial, which, by its lower edge, is firmly fastened to the frame and is immovable; *c*, a piece attached to the upper part of the dial to increase its thickness. There is a similar piece attached to the lower part of the dial for the same purpose. (Not shown in the figure.) Through *c* there is a hole made vertically, in which is placed the cylinder H. This cylinder is inserted into the hole in *c* from below until a shoulder on H strikes against the under surface of *c*, and is held in place by the nut I on the top. This is more fully shown in Fig. 3, where the cylinder H is represented as having been passed up through the hole in *c* and fastened by the nut I.

Returning to Fig. 1, at the back of the dial is a cross-bar, (marked *b*,) more fully shown in Fig. 4. This cross-bar is fastened to the back of the dial to its center-piece by the thumb-screw *e*, Fig. 4.

In Fig. 1, again, J represents a table of any convenient width, which is attached to the ends of the cross-bar *b* by hinges, more clearly shown in Fig. 2, (marked *a*.) These hinges have a slot in them, (marked *f*, Fig. 2,) which enables the table to be drawn back and forth when necessary. Directly over these hinges in Fig. 1 are the curved pieces *g g*, one end of which is screwed to the back part of the table J, and the other end terminates in a side projection which strikes against the back of the dial and prevents the table tipping down when drawn clear out. These projections are more fully shown in Fig. 4 by *g g*.

In Fig. 1, K represents a rack placed nearly to the back side of the table and of the same length as the table. This rack forms a carriage for the saw, and is moved in the direction of its length by a pinion-wheel underneath the table, which is shown by *q*, Fig. 2.

L L in Fig. 1 represent two buttons, which aid in supporting the saw in position upon the rack K.

M represents a clamp extending the length of the rack K, with a lever at right angles with it extending toward the front of the table, by which it is operated. The object of this clamp is to hold the saw down firmly upon the rack while the filing is going on. The pressure is removed from this clamp when the saw is fed along each tooth by the rack and pinion-wheel.

G represents an ordinary treadle with its fulcrum upon the connecting-rod of the frame A, and turning the wheel F by an ordinary crank and pitman at the back of the frame. (Not shown. This wheel F is fastened to the back end of the shaft *d*, and upon the front end of the same shaft is attached the crank-wheel E, carrying the pitman *u*. To the upper end of this pitman *u* is attached the cylinder *t* by a ball-and-socket joint, the upper end of this cylinder fitting easily into and moving in the hole in the piece above described as attached to the lower part of the dial B, and similar in all respects to the piece attached to the upper part of the dial, and marked *c*. This crank-wheel E, pitman *u*, and cylinder *t*, with its ball-and-socket joint moving in the piece above described, are more clearly shown in Fig. 3, where the piece above described is marked *c' c'*. The center of the hole in *c*, Fig. 1, and of the one in *c'*, Fig. 3, are in the same vertical line.

In the upper end of the cylinder *t*, Fig. 3, in a slot therein, is fastened in any convenient manner a file, (marked *s*,) of any required shape and length, by its lower end. The upper end of this file *s* is fastened in the same manner to the piston *p*, Fig. 3, moving in the lower end of the cylinder H, which is made hollow for that purpose.

w, Fig. 3, represents a pin projecting from the side of the piston *p*, and moving in a slot, *v*, in the hollow part of the cylinder H, to prevent the piston *p* from turning when in operation.

It will readily be seen that when the crank-wheel E is made to revolve, as shown in Fig. 3, the cylinder *t*, the file *s*, and the piston *p* will be raised and lowered at each revolution; or, in other words, a suitable motion will be given to the file *s* for filing.

In Fig. 1, *r* represents a crank, by which motion is communicated to the machinery directly under the table, (more fully shown in

detail in Fig. 5,) which I will now describe. In this figure J represents the edge of a section of the table; *r*, the crank above mentioned, attached to the front end of the shaft *x*. This shaft is in length about equal to the width of the table, and is placed underneath the table, reaching from the front to the back thereof, and turns in the hangers *i i*, fastened to the under surface of the table at about the center of its length. To the back end of this shaft is fastened the pinion-wheel *q*, which gears into the under side of the rack K, and moving it, when turned to the right or left, in the direction of its length. To this shaft, also, near its front end, just back of the hanger next the crank, is attached an index-drum, (marked U,) with several rows of holes around its circumference, the spaces between them varying in each row. The upper surface of this drum projects through the table a trifle above its top surface. Upon this shaft, also, and back of the drum U, is slipped the bevel-gear wheel *m*, movable along the shaft at pleasure, and fastened in the desired place by the set-screw *n*. This gears into and turns another bevel-gear wheel situated upon the top of the table, (marked N,) which revolves, in a plane parallel with the surface of the table, about the short upright shaft, (marked P,) and is held in place by a nut, (marked Q.) This short upright shaft P has at its lower end a shoulder, which rests upon the upper surface of the table, and also a flat slotted shank, (marked *j*,) which passes down through the table in a long slot cut directly over the shaft *x* in the direction of its length for that purpose, and is fastened in the desired place with a key. This wheel N forms a revolving carriage for circular saws when they are being filed, and is made adjustable to those of different diameters by the slotted shank and key above mentioned and the set-screw *u* of the wheel *m*. The saws are held upon the wheel N by the nut marked O.

Upon the top of the table in Fig. 1, and directly over the drum U, is the end of a lever, S, made rectangular, and slotted in the direction of the length of the drum. In this slot is fastened a pivot by the thumb-screw T, which fits into the holes in the surface of the drum, and by the same set-screw is made adjustable to the different rows of holes. The handle of this lever is represented by R, the fulcrum by V, and the spring which keeps the point pressed into the holes in the drum by W.

In Fig. 6, X represents a spring, which is fastened by one end to the back edge of the table by the screw *y*, and from the other end there projects a V-shaped piece, (marked *z*,) which drops into the spaces between the saw-teeth one by one while the saw is being filed, to aid in holding it in place when the index-drum U is not in use.

It will be seen from the foregoing description of the cross-bar *b* and table J, Fig. 1, that the table is fastened to nothing but the cross-bar *b*, and that the cross-bar *b* is fastened to the back of the dial B by a thumb-screw (shown in Fig. 4, marked *e*,) and that in whatever position this cross-bar *b* may be placed the table will assume a corresponding position. By means of the thumb-screw *e*, Fig. 4, the cross-bar *b* can be placed and held at any angle desired upon the dial B, and the table will take the same angle in front of the dial. Through this cross-bar *b*, Fig. 4, are two set-screws, which strike against the back edge of the table and regulate the depth of the teeth in the saw.

In Fig. 3 it will also be seen that the file *s* can be set so as to file at any desired angle by loosening the nut I and turning the cylinder H in the hole in *c* and tightening the nut again.

Having now described the construction of my improved machine, I will proceed to describe its operation in filing both straight and circular saws: The machine being in position, as shown in Fig. 1, I place a straight saw upon the rack K, the teeth thereof toward the dial B and projecting beyond the back edge of the rack a trifle more than their length, and fasten it there with the buttons L L, so that it cannot be moved in the direction of its length. I then set the set-screws *o o* in the cross-bar *b* so that the table carrying the rack and saw can only be pushed back, so that the file will reach to the bottom of the teeth in the saw. I then set the point in the lever S, by the screw T, in that row of holes in the index-drum U the spaces between which are equal to the spaces between the teeth in the saw. I then set the file, by the cylinder H and nut I, so that the teeth of the saw will be filed as hooked as desired, and, by means of the thumb-screw *e*, I set the table and rack and cross-bar at such an angle upon the dial B as will give the desired bevel to the teeth. I then hold the saw firmly upon the rack K by the clamp M, and set the file in motion by means of the treadle G and its connections. When one tooth of the saw is filed I release the pressure from the handle of the clamp M, and, by means of the crank *r*, I turn the drum U so that the point will drop into the next hole in the drum, which carries the rack K and the saw along in the proper direction one tooth through the action of the pinion-wheel upon the rack, the pinion-wheel being attached to the same shaft as the drum U, as above described, and so continue in the same manner until the saw is filed.

In filing circular saws I place the saw upon the wheel N and fasten it by the nut O. I then move the wheel N toward the file, so that the teeth of the circular saw shall reach just their length beyond the back edge of the rack K, and fasten the wheel there by the key in the slotted shank of its shaft, above described. I then slide the wheel *m* along the shaft, so that it will gear into the wheel N, and fasten it with the set-screw *n*, as above described. I then set the point in the lever S in that row of holes in the index-drum U the spaces between which are equal to the spaces between the teeth in the circular saw, and then proceed in all respects as if the saw was

straight, the wheel N being operated by the same crank *r* as the rack K, as above described.

I do not claim as my invention the table J, the dial B, the rack K, the pinion-wheel *q*, or the manner of attaching and adjusting the file, as above described; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the index-drum U, the lever *r*, point S, the table J, the dial B, the rack K, and the pinion-wheel *q*, all arranged substantially as described.

2. The combination of the adjustable wheels N and *m* with the table J, the dial B, the rack K, and the pinion-wheel *q*, all arranged substantially as described.

3. The combination of the treadle G, the index-drum U, the lever and point S, the wheel N, and the wheel *m* with the table J and rack K, constructed substantially as and for the purposes above described.

JOHN H. RECTOR.

Witnesses:
JAMES NOXON,
O. C. BARBER.