2 Sheets—Sheet 1

W. H. HOWE.

Machine for Filing Saws.

No. 212,699. Patented Feb. 25, 1879.

Fig. 1.

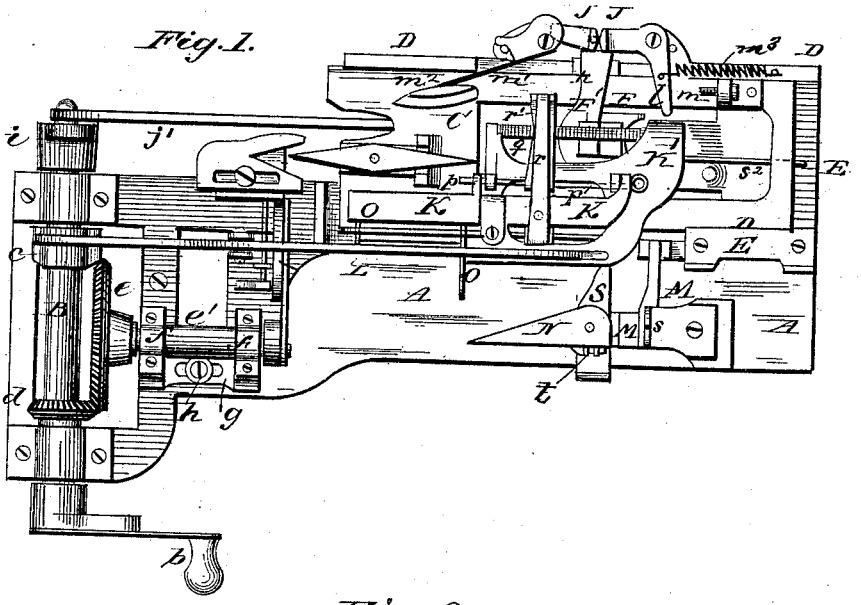


Fig. 2.

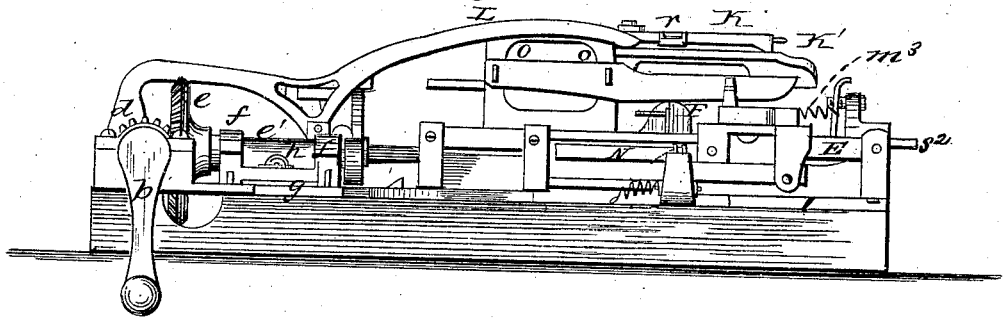
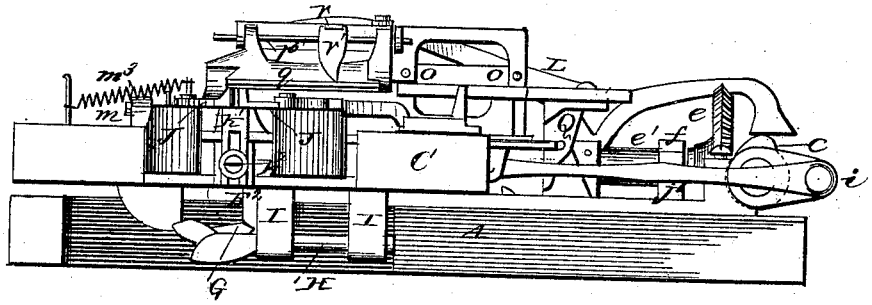


Fig. 3.



Witnesses
Fred. G. Dieterich
George Birkenbuhl

Inventor
William H. Howe
by A. Peterson & Co
his Attorneys

2 Sheets—Sheet 2.

W. H. HOWE.

Machine for Filing Saws.

No. 212,699. Patented Feb. 25, 1879.

Fig. 5.

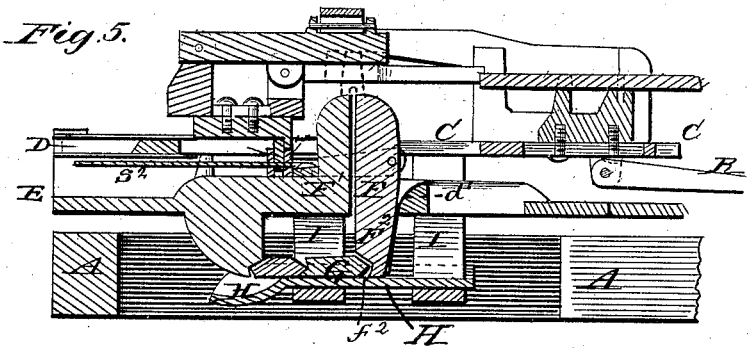


Fig. 4.

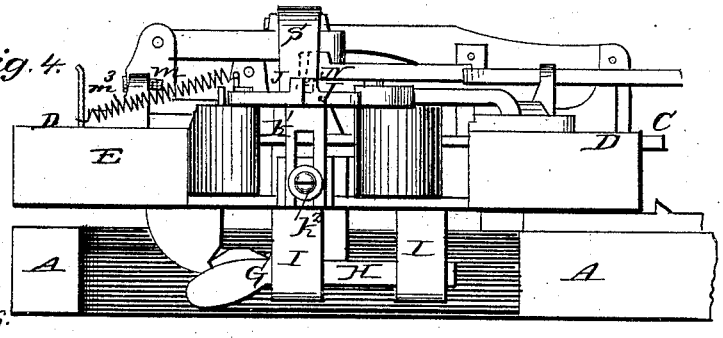
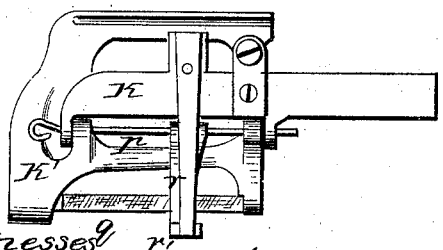


Fig 6.



Witnesses
Fred. L. Dieterich
George Binkenburg

Inventor
William H. Howe.
by. A. Peterson & Son
his attorneys

UNITED STATES PATENT OFFICE.

WILLIAM H. HOWE, OF MILFORD, NEW HAMPSHIRE.

IMPROVEMENT IN MACHINES FOR FILING SAWS.

Specification forming part of Letters Patent No. **212,699**, dated February 25, 1879; application filed October 14, 1878.

To all whom it may concern:

Be it known that I, WILLIAM H. HOWE, of Milford, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Machines for Filing Saws; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention consists in the construction and combination of parts of a saw-filing machine, substantially as hereinafter more fully described.

In the two sheets of drawings hereto annexed, Figure 1 is a plan view of my machine. Fig. 2 is a side elevation of the same. Fig. 3 is a similar view of the opposite side. Fig. 4 is an enlarged side elevation of the feeding device of my machine. Fig. 5 is a vertical section of the same, showing also the construction of the reciprocating carriage; and Fig. 6 is a top view or plan of the file-holder detached from the machine.

Similar letters of reference indicate corresponding parts in all the figures.

In the drawings, A is a bed-piece, which may represent a bench or other suitable or convenient support. Upon one end of bed-piece or support A is journaled a shaft, B, provided at one end with an operating crank or handle, *b*, with a cam, *c*, and pinion *d*, meshing with a beveled gear-wheel, *e*, whose shaft *e'* is supported upon the bed-piece A in bearings or journals *f f*, connected together by a slotted plate, *g*, which receives an adjusting-screw, *h*, to permit of the moving of the gear-wheel *e* to and from the pinion *d*.

The several parts denoted, respectively, by letters *d*, *e*, *e'*, *f f*, *g*, and *h* refer to certain mechanism, the function of which is described in another application filed by me for Letters Patent for certain improvements in machines for setting saws, and this applies also to such other parts which are shown, but not designated or pointed out by letters, on the drawings hereto annexed.

At the other end of the shaft B is affixed a crank, *i*, connecting by a pitman, *j'*, with the file-holder or saw-set carriage C. The carriage C travels back and forth in grooved ways D D, cast or otherwise attached to a plate, E, bolted or cast with an extension of one of the journal-boxes of the shaft B, and arranged with its dependent portion extending beyond the bed-piece A.

F F^1 are the saw-holding jaws, one stationary and one movable, or rather pivoted in position, with an arm, F^2, extending down into contact with a jointed or toggle lever, G, the fulcrum of which rests on a plate, H, suspended by supports I I, fastened to the carriage C. The edge of the toggle-lever G is beveled or pointed to fit into a correspondingly-shaped notch, f^2, in the lower end of arm F^2, as seen more clearly in Fig. 5, and this arm receives pressure by a spring, *d'*, the lower end of which impinges upon it, so as to tilt the upper part, F, of the jaw, of which arm F^2 forms a continuation, backward or away from the jaw F^1, opposite, except when arm F^2 is operated by the toggle-lever G.

It will be seen that by the movement of the carriage back and forth the toggle lever or levers will be so operated on as to cause them to open and close the jaws F F^1, and thus cause them (the latter) to alternately grasp and release their hold upon the saw, to conform to the motion of the forwardly-feeding device.

k is the saw-rest, which is rendered susceptible of vertical adjustment by the slotted extension k^1 and adjusting-screw k^2, to accommodate saws of greater or less widths in presenting their teeth to the file or set.

J J mark the forwardly-feeding device for moving the saw at regular intervals forward one tooth at a time after the same is sharpened or filed. This device consists of two curved-faced meeting levers, J J, one of which is provided with a short lever, *l*, which is acted upon by a screw, *m*, on the carriage C, so as to cause the meeting faces of the levers J J to rock back and forth on each other, and thus produce the feeding of the saw forward, it being placed between said faces or ends of levers.

m^3 is a coiled spring, one end of which is attached to an upright upon frame D, while its other end is secured in the short lever-arm *l*, above referred to, thus operating to throw

the head of the angle-lever J, of which arm *l* forms a part, against the head of the lever opposite. This opposite feeding-lever has a raised flange, forming its head, which is provided with a perforation, into which is inserted loosely a pin projecting laterally from the head of its meeting lever, as shown in dotted lines in Figs. 1 and 4, so that the two feeding-levers J J will rock or oscillate in unison with each other. In feeding, the saw-blade is inserted between the meeting heads of levers J J, beneath the projecting pin or lug above referred to, and is caused to be clamped firmly, so as to be fed regularly forward without slipping by means of a spring, m^1, the free end of which is pressed against alternately upon one side and the other by a reciprocating cam, m^2, secured upon the bed-plate of the carriage C, as shown in Fig. 1.

K is the file-holder support, detachably connected to the carriage C, as at *o o*, by pins or otherwise. Hung from the support K by a pin or rod, *p*, is the file-holder K′, having the file *q*, one of the corners of which is held down in contact with the saw-tooth during the forward movement of the carriage C by a spring, *r*, and an interposed bearing or lever, *r′*, for the spring bearing upon the file. As the file, with the carriage, is moved backward, at which time a second tooth is fed forward to be sharpened, the file, with its holder, is elevated by the downwardly-moving end of a lever, L, the shorter arm of which is acted upon by the cam *c* on the shaft B to effect such movement of the lever.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In combination, the reciprocating carriage C, having stirrups or hangers I I, supporting-plate H, jointed levers G, stationary clamp-jaw F^1, pivoted jaw F, having downward-projecting arm or extension F^2, and spring *d′*, all arranged and operating substantially as and for the purpose herein shown and specified.

2. The combination of the reciprocating carriage C, provided with the cam m^2 and set-screw *m*, with the horizontally-pivoted feed jaws or levers J J, and springs m^1 m^3, substantially as and for the purpose herein shown and specified.

3. In combination, the shaft B, having pitman J′ and cam *c*, the tripping-lever L, the reciprocating carriage C, carrying the detachable support K, and pivoted file-holder K′, receiving downward pressure by the spring *r*, substantially as and for the purpose herein shown and specified.

4. The file holding and operating device, consisting of the following parts: detachable support K, provided with the laterally-projecting spring *r*, fulcrum-pin *p*, hinged frame K′, holding the file *q*, and pivoted bearing-lever *r′*, all combined and operating substantially as and for the purpose herein shown and specified.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

WILLIAM H. HOWE.

Witnesses:
JUNIUS M. COLE,
RICHARD M. DOLLIVER.