(No Model.)

W. H. PENROSE.

SAW FILING MACHINE.

No. 424,724. Patented Apr. 1, 1890.

Fig 1.

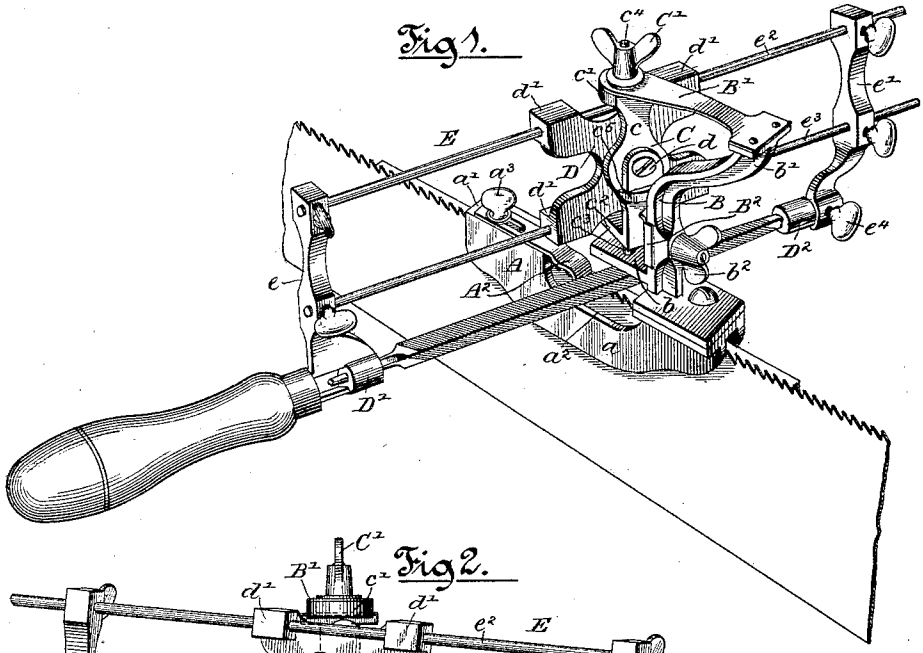


Fig 2.

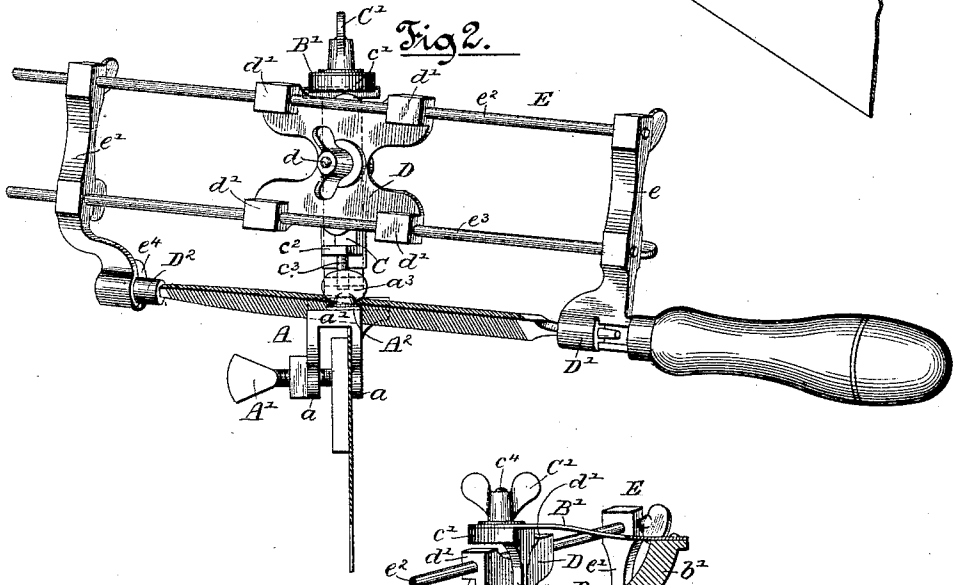
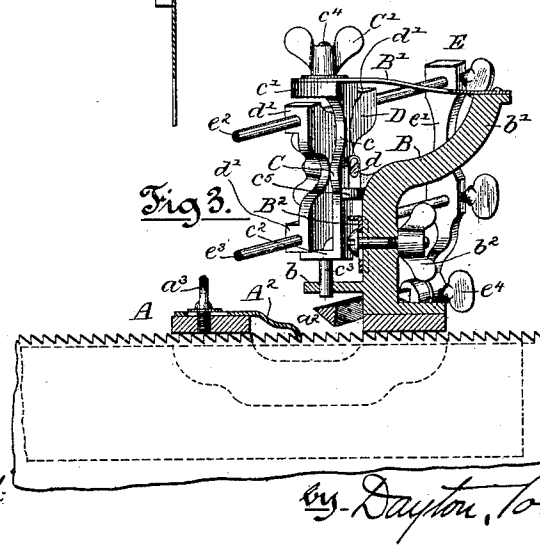


Fig 3.



Witnesses
Wm. H. Fleming.
Louis M. Whitehead.

Inventor
William H. Penrose
by Dayton, Poole & Brown
Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM HENRY PENROSE, OF THE UNITED STATES ARMY.

SAW-FILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 424,724, dated April 1, 1890.

Application filed September 26, 1889. Serial No. 325,161. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENRY PENROSE, of the United States Army, have invented certain new and useful Improvements in Saw-Filing 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 improvements in saw-filing machines, and more particularly to improvements in the machine of this class shown and described in Letters Patent of the United States No. 409,866, granted to me the 27th day of August, 1889.

In the accompanying drawings, illustrating the present invention, Figure 1 is a perspective view of my improved device clamped upon a saw in position for use. Fig. 2 is a view looking lengthwise of the saw-clamp. Fig. 3 is a vertical section in the plane of the saw-blade.

A represents a clamp for securing the device to the saw-blade, consisting of two jaws *a a*, united by a back *a'*. The clamp A is removably secured to the saw-blade by means of a set-screw A', threaded through one of the jaws *a*, and arranged to bear against the saw-blade or against an interposed block of wood. Commonly the saw should bear directly against the jaw opposite that through which the set-screw passes. The back and upper parts of the jaws of the saw-clamp A are centrally cut away to allow the working of the file upon the saw-teeth, as shown at a^2. Upon the back *a'*, at one end of the clamp A, is fastened a plate-spring A^2 by means of a thumb-screw a^3, the free end of said plate projecting into the gap a^2 of the clamp, and being bent downward to engage a notch between adjacent teeth of a saw-blade and to bear into the bottom of said notch, where the clamp-back rests upon the points of the saw-teeth. This device will be herein called a "tooth-gage."

B is a standard secured to the back of the clamp A at the opposite end thereof and rising in the plane of the saw-blade. This standard B is provided with a lug *b* near its lower end, which projects over the gap a^2 in the saw-clamp, and at its upper end is inclined in the opposite direction. To the upper extremity of this inclined portion *b'* of the standard is secured a plate-spring B', the free end of which projects over the lug *b*. Upon that side of the standard B from which projects the lug *b* and upon the vertical portion of said standard is located an adjustable slide B^2, adapted to be secured at variable elevation upon the standard by means of a thumb-screw b^2. This slide is called the "stop-gage."

C is a yoke consisting of a vertical part *c*, provided at its ends with lugs *c' c²*, projecting at one side of the part *c*. The lower of these lugs c^2 is provided with a pin c^3, which projects through a closely-fitting hole in the lug *b* of the standard, and is long enough to allow a limited vertical motion of the yoke while retaining its position in the hole. The upper lug *c'* is also provided with a pin c^4, which projects through the end of the spring B', and, being screw-threaded, receives above said spring a thumb-screw C'. The pins c^3 and c^4 serve as vertical pivots on which the yoke C may swing laterally, and the thumb-screw C' secures the yoke in any position to which it may have been turned. The vertical axis of the yoke is in the central plane of the saw-blade. On the back side of the yoke C the latter is provided with a shoulder or projection c^5, intended to strike the upper end of the stop-gage to limit the depth to which the filing is to be done.

D is a plate, called the "guide-plate," which is centrally pivoted to the vertical portion *c* of the yoke C on a clamp-screw *d*, which has its axis in the vertical plane of the saw, and is provided at each of its four corners with a lug or thickened portion *d'*. Through these corner lugs are formed horizontal holes in the plane of the vertical axis of the yoke C, the holes in the upper lugs *d'* of the guide-plate being parallel with those in the lower ones.

E is the file-frame, consisting of the end bars *e e'* and parallel rods e^2 e^3, joining the end bars. These rods are secured to one or the other of the end bars by set-screws, so as to allow the file-frame to be lengthened or shortened to adapt it for the insertion of files

of different lengths, substantially as set forth in my said former patent. The parallel rods e^2 e^3 of the file-frame pass through the holes in the guide-plate D and slide therein in the reciprocating motions of said file-frame. The end bars e e' are provided with rotatable file-sockets D′ D² at their lower ends to receive the shank and point of a three-cornered file, and one of these sockets is held from rotation in its end bar by means of a thumb-screw e^4. To insert a file, one of the end bars is loosened, which allows it to be slid outward, and after the file has been inserted it is forced inward or toward the other sufficiently to cause the ends of the file to bind in the sockets. The securing of one of said sockets against rotation by the set-screw e^4 therefore prevents rotation of the file in use.

The spring B′ is intended in part to yieldingly support the yoke C and the parts connected therewith, and it is contrived to normally sustain the lowermost surface of the file clear of the saw-teeth when the device is applied to the saw. It is, however, adapted to yield to moderate downward pressure, so that in working the file-frame the file may be made to enter the saw-blade as it does its work.

The device above described is to be manipulated as follows: After loosening the stop-gage and tooth-gage, place the saw-clamp upon the saw with the latter in contact with the back of the clamp. The guide-plate D having been set to give the desired inclination to the file, and the yoke being set by the thumb-screw with reference to the pitch and bevel of the saw-teeth, bring the file down into a notch between teeth of the saw, and then secure the clamp upon the saw-blade by means of the set-screw A′, or any equivalent device that may be employed. This done, work the file to the proper depth, and while holding it in the bottom of the notch of the saw-blade just cut by it set the stop-gage in contact with the shoulder c^5 on the yoke C and set the tooth-gage with its free end in the second notch from that occupied by the file. Now release the saw-clamp and carry it to the heel of the saw, placing the file in the first notch to be deepened, or, in other words, back of the first tooth to be sharpened. Secure the saw-clamp upon the saw and work the file till the shoulder c^5 on the yoke strikes the stop-gage, then loosen the saw-clamp and move it along far enough to bring the tooth-gage into the notch just filed, and fasten the saw-clamp again to the saw. In this position of the saw-clamp the file is again operated to deepen the third notch from the heel of the saw. Proceeding in this way to file each alternate notch or tooth from heel to point of the saw-blade, the latter may be reversed end for end, and the intermediate notches may be cut in order from point to heel, completing the sharpening of all the teeth without resetting the yoke C or the guide-plate D. If preferred, however, the yoke and guide-plate may be reset and the intermediate notches successively cut from heel to point, as in the first run over the saw.

As the depth of the notches of a saw determines the number of teeth to the inch, the standard B may be graduated on that face to which the stop-gage is applied, so that the latter may be set in the first place to give a desired number of teeth to the inch.

While a vise will be convenient for holding the saw while being filed, it is manifestly not necessary. The use of the device described must plainly insure perfect uniformity in the size of the teeth throughout the whole length of the saw.

I claim as my invention—

1. The combination of a saw-clamp, a standard secured thereto, a laterally-swinging and vertically-movable yoke supported by the standard and having its vertical axis in the plane of the space within the saw-clamp occupied by the saw, a file frame or carrier, and a vertically-swinging guide for the file-frame attached to the said yoke.

2. The combination of a saw-clamp, a standard secured thereto, a laterally-swinging and vertically-movable yoke supported by the standard, a spring arranged to lift the yoke with respect to the saw-clamp, a file-frame, and a guide for the file-frame pivoted to the standard, both the pivot of the guide for the file-frame and the axis of the yoke being in the plane of the saw.

3. The combination of a saw-clamp provided with a standard, a laterally-swinging and vertically-movable yoke supported by the standard, a file-carrying frame, a vertically-swinging guide for the file-frame pivoted to the yoke, and a stop limiting the downward movement of the yoke.

4. The combination of a saw-clamp provided with a standard, a laterally-swinging and vertically-movable yoke supported by the standard, a file-carrying frame, a vertically-swinging guide for the file-frame pivoted to the yoke, an adjustable stop mechanism for limiting the downward motion of the yoke, and an adjustable tooth-gage.

5. The combination of saw-clamp A, having central gap a^2, standard B, spring B′, rigidly attached to the standard, yoke C, having its upper vertical pivot in the spring B′ and provided with a clamp-nut, guide-plate D, pivoted to the yoke by a pivot-pin provided with a clamp-nut, adjustable stop-gage regulating the down motion of the yoke, and an adjustable spring tooth-gage attached to the saw-clamp and projecting over the gap thereof.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

WILLIAM HENRY PENROSE.

Witnesses:
FERGUS FERGUSON,
CLESSON S. KINNEY.