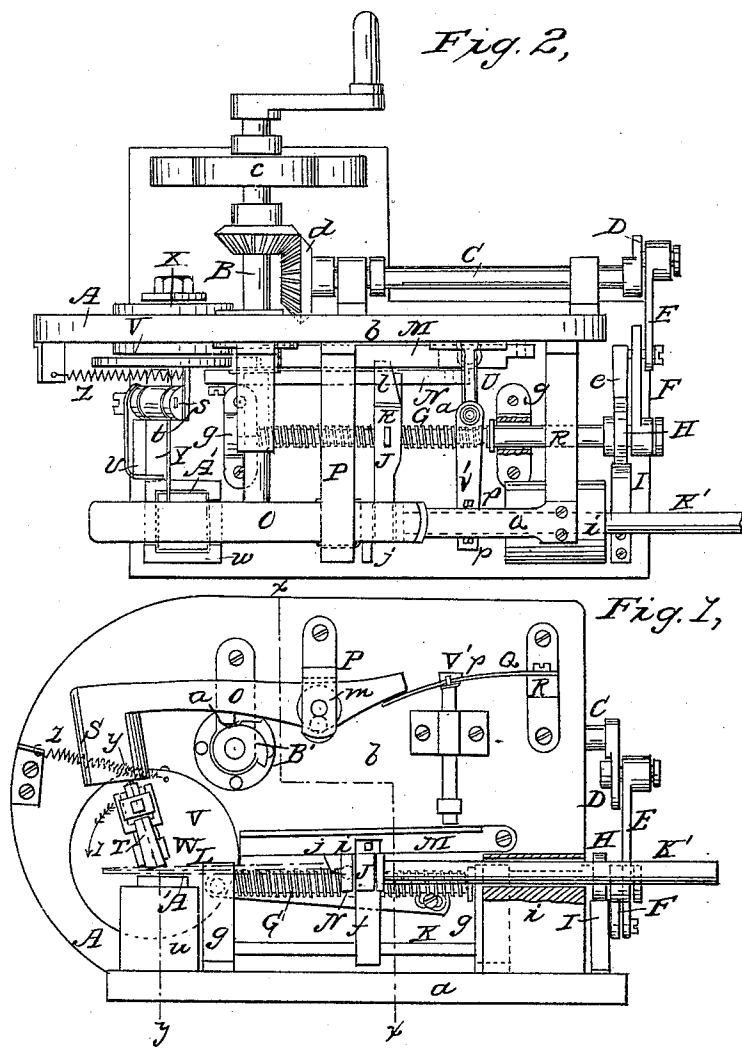


S. A. SUTTON.
File Cutting Machine.

No. 67,374.

Patented July 30, 1867.



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Fig. 3,

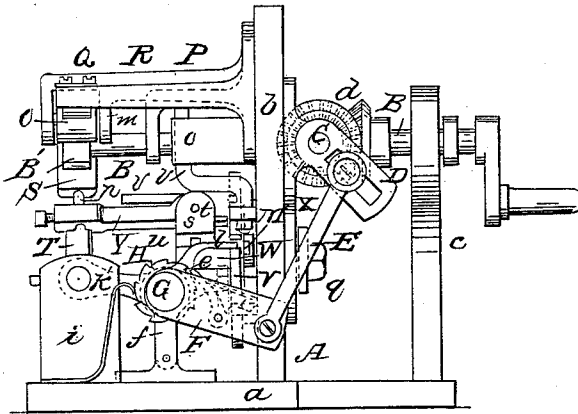


Fig. 4

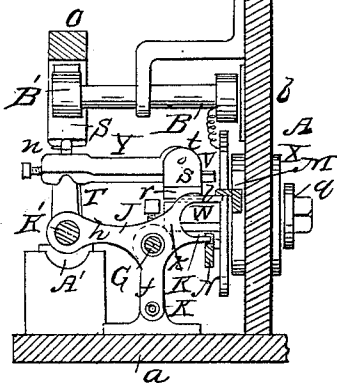


Fig. 5,

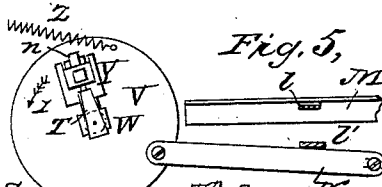


Fig. 6,

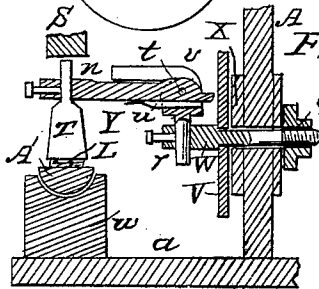
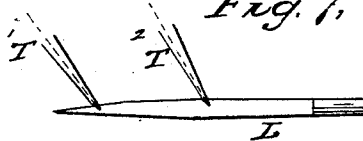


Fig. 7.



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Letters Patent No. 67,374 dated July 30, 1867.

IMPROVED APPARATUS FOR CUTTING FILES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, S. A. SUTTON, of Pawtucket, in the county of Providence, and State of Rhode Island, have invented a new and improved Machine for Cutting Files; and that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, by which my invention may be distinguished from all others of a similar class, together with such parts as I claim, and desire to have secured to me by Letters Patent.

This invention relates to a new and improved machine for cutting files; and it consists in a novel means employed for adjusting the cutter relatively with the file-blank, as hereinafter fully shown and described, whereby the blank is cut uniformly throughout, however curved longitudinally its faces or sides may be. The invention also consists in a means for regulating the force of the blow of the hammer, so that the blow may be at all times commensurate with the breadth of the blank. The invention further consists in a novel arrangement of the cutter arm and the bed, whereby the cutter is made to operate similarly to a drawing cutter, and perform its work in a thorough and efficient manner. In the accompanying drawings—

Figure 1, Sheet No. 1, is a side view of my invention.

Figure 2, a plan or top view of the same.

Figure 3, Sheet No. 2, an end view of the same.

Figure 4, a transverse vertical section of the same, taken in the line *x x*, fig. 1.

Figure 5, a detached face view of the cutter and mechanism connected therewith.

Figure 6, a section of a portion of the invention, taken in the line *y y*, fig. 1.

Figure 7, a diagram illustrating the positions of the cutter.

Similar letters of reference indicate like parts.

A represents the frame of the machine, composed of a base-plate, *a*, and an upright plate, *b*, and a standard, *c*, all of which may be of cast iron; and B is a driving-shaft, which is connected by bevel-gears *d* with a horizontal shaft, C, having at one end of it a slotted crank, D, in which the upper end of a connecting-rod, E, is secured, the lower end of the latter being attached to the outer end of an arm, F, which is fitted loosely on a screw-shaft, G. This arm F has a pawl, *e*, attached to it, which engages with a ratchet, H, on the screw-shaft, said ratchet having a holding-pawl or catch, I, engaging with it, to prevent a casual backward movement of the same, (see fig. 3.) J is a nut, which is fitted on the screw-shaft G, and is provided with a pendent arm, *f*, which works on a guide-rod, K, the ends of which are fitted in the same uprights, *g g*, which support the screw-shaft G. The nut J is also provided with a lateral arm, *h*, in which one end of a shaft, K', is fitted, said shaft being allowed to slide freely in a bearing, *i*, on the base-plate *a*. The file-blank L to be cut is fitted in one end of this shaft K', and it has a collar, *x*, secured on one end of it, provided with a handle, *j*, for the convenience of turning the shaft and file-blank when required. The nut also has another arm, *k*, extending laterally from it, the outer end of the latter being forked, with the upper prong *l* bearing against the under side of a pivoted bar, M, attached to the plate *b*, and the lower prong *l'* bearing upon a similar pivoted bar, N, and also attached to the plate *b*. O represents a hammer-arm, which is secured by a pivot, *m*, in the outer part of a horizontal arm, P, attached to the plate *b*, and Q is a spring, which is attached at one end to an arm, R, which also projects from the plate *b*, the opposite end of said spring bearing against the under side of the hammer-arm O, as shown clearly in fig. 1, and having a tendency to keep the hammer S down upon the shank *n* of the cutter T, as will be fully understood by referring to fig. 1. U is a curved rod, fitted in a guard, *o*, attached to plate *b*, and having its lower end bearing upon the bar M. A horizontal arm, U', extends from the upper end of the rod U and passes underneath the spring Q, the latter being between pins *p p* on the spring, as shown clearly in fig. 2. The lower bar N, at the end opposite to that where it is attached to the plate *b*, is pivoted to a circular plate, V, fitted on a rod or bolt, W, which passes through a collar, X, in the plate *b*, and has a nut, *q*, on its outer end, (see fig. 6.) In the inner end of the rod or bolt W there is fitted the shank *r* of a forked bearing, *s*, in which a cutter-arm, Y, is secured by a pin, *t*, said cutter-arm having a spring, *u*, bearing against its under side. To this bearing *s* there is attached a bar, *v*, by adjusting which the upward movement of the cutter-arm Y given

by the spring *u* may be regulated as desired. The circular plate *V* has a spiral spring, *Z*, attached to it, which has a tendency to draw or pull the plate around in the direction indicated by arrow 1, (see figs. 1 and 5.) *A'* represents the file-bed, which is of semi-cylindrical form, and is fitted in a corresponding-shaped recess in a support, *w*, on the base plate *a*, (see more particularly fig. 6.) The driving-shaft *B* extends through the upright plate *b*, and has a cam, *B'*, on its end directly underneath the hammer-arm *O*, the cam acting against a pendent lip, *a^x*, at the under side of the hammer-arm, as shown clearly in fig. 1. File-blanks are most generally a little rounding at each side longitudinally near the point, as shown clearly in fig. 7, and this rounding surface is frequently the cause of the file-blank being imperfectly cut, owing to the surface of the blank having a different relative position with the cutter *T* at different points of its length. The cutter should have a more inclined position when operating upon the rounding surface, as shown at 1, than when operating upon the surface which is nearer a plane, as shown at 2. The cutter is moved or adjusted to compensate for this variation in the surface of the file by means of the bar *N* being depressed by the lower prong *V'* of the arm *k* of nut *J*. The bar *N* is slightly inclined from a horizontal line, the end which is attached to the circular plate *V* being the most elevated, and sufficiently so to admit of the bar *N* turning the plate *V* and consequently the cutter *T* from the inclined position as shown at 1 to that as shown at 2, and hence the cutter will have about the same angular position or degree of inclination relatively with the surface of the blank at all points. The file-blank is fed along underneath the cutter by the rotation of the screw-shaft *G*, motion being given the latter from shaft *C* each time the cutter *T* ascends by means of the crank *D*, connecting-rod *E*, and arm *F* provided with the pawl *e*, which engages with the ratchet *H* on the screw-shaft, the screw-shaft moving the nut *J* along, and consequently the shaft *K'* and file-blank. The hammer *S* is operated by the cam *B'* and the spring *Q* raised by the former and forced down by the latter, and as the file-blank is fed along underneath the cutter, it will be seen that the stroke of the cutter *T* is gradually diminished, owing to the gradually increasing thickness of the file-blank, and in order to compensate for this decreasing stroke of the cutter, the strength of the spring *Q* is gradually increased by the pressure of the arm *U'* against it. This result is attained by the upper prong *l* of the arm *k* bearing against the under side of the bar *M* as the nut *J* is moved along. This operation will be fully understood by referring to fig. 1. By having the cutter *T* attached to the arm *Y*, which works on a pin, *t*, the cutter is forced down with what may be termed a drawing cut, that is to say, its whole length does not act at once or at the same time on the file-blank, but commences at one edge of the latter and works across the bed *A'*, adjusting itself so that the file blank will always conform to the action of the cutter.

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

1. The adjusting of the cutter *T* relatively with the face or surface of the file-blank by means of the pivoted bar *N*, circular plate *V*, with the cutter-arm *Y* attached, and the arm *k* of the nut *J* to act upon the bar *N*, substantially as shown and described.
2. The regulating of the force of the blow of the hammer by means of the arm *U'* bearing against the spring *Q*, and operated by the arm *k* of the nut *J* and the pivoted bar *M*, substantially as shown and described.
3. The cutter-arm *Y*, pivoted in the bearing *s* of the bolt *W*, in combination with the cutter *T* and semi-cylindrical bed *A'* for the file-blank, substantially as set forth.

The above specification of my invention signed by me this 12th day of March, 1867.

SEDGWICK A. SUTTON.

Witnesses:

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ALEX. F. ROBERTS.