M. D. WHIPPLE.

File Cutting Machine.

No. 50,647. Patented Oct. 24, 1865.

Fig. 1,

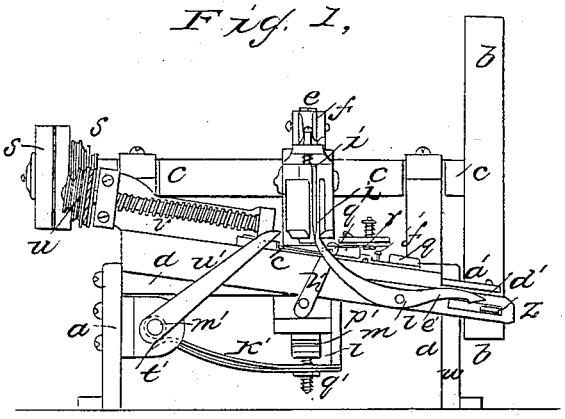


Fig. 2,

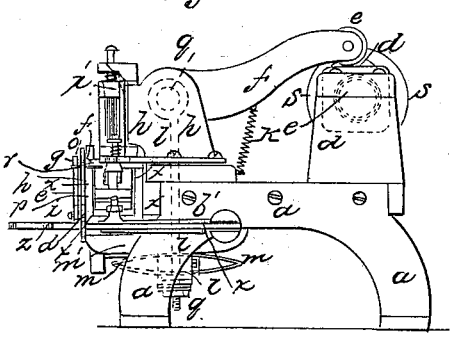


Fig. 3,

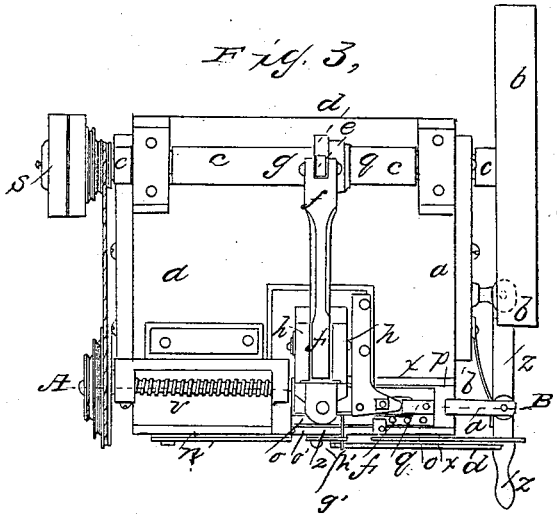
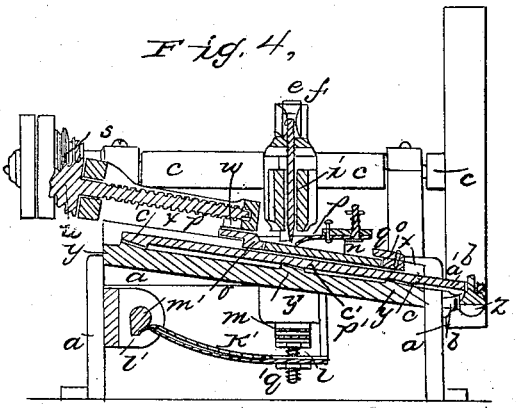


Fig. 4,



Witnesses:
Samuel McBarton
George W. Mann

Inventor:
M. D. Whipple
by his atty
Joseph Gavitt

# UNITED STATES PATENT OFFICE.

MILTON D. WHIPPLE, OF BOSTON, MASSACHUSETTS.

## IMPROVEMENT IN FILE-CUTTING MACHINES.

Specification forming part of Letters Patent No. **50,647**, dated October 24, 1865.

*To all whom it may concern:*

Be it known that I, MILTON D. WHIPPLE, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in File-Cutting Machines; and I do hereby declare that the following description, taken in connection with the accompanying plate of 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.

The objects of the present invention may be stated as follows: first, to produce the teeth upon a file by pressure instead of by percussion, and in such a manner that the pressure shall be uniform, whatever may be the variation or irregularity in the blank; second, to so cut the teeth of the file that the space between them shall regularly increase in distance from each other from point to tang, the superior advantage of such arrangement of teeth being well known; third, to increase the pressure of the cutting-chisel regularly as the blank is fed along from point to tang, so as to form teeth of uniform depth, whatever may be the width of the file; fourth, to cause the blank to be returned automatically to its original position after having been fed through the machine its entire length.

I have also made other improvements, which will be hereinafter fully explained.

I will now proceed to describe in detail the arrangement of devices in my machine by which the above-stated results are accomplished.

The figures in the accompanying plate of drawings represent my improvements.

Figure 1 is a front elevation of my improved file-cutting machine; Fig. 2, a side elevation of the same; Fig 3, a top view, and Fig. 4 a vertical longitudinal section of the same, taken through the plane of the line A B.

*a a a* in the drawings represent the supporting frame-work of my improved file-cutting machine.

*b b* is the driving-wheel, placed upon a horizontal shaft, *c c*, that carries a cam, *d*, acting upon a roller, *e*, in one end of a lever, *f*. The lever *f* turns upon a fulcrum at *g* in a standard, *h*, and has attached to the end opposite to the roller *e* the cutting-chisel *i*, so arranged in its bearings as to be adjustable in a vertical direction. The chisel *i* receives a short up-and-down motion through the medium of the lever *f*, acted upon by the cam *d* and the retracting-spring *k*. The shaft or fulcrum *g*, upon which the lever *f* turns, is free to play up and down a little, and passes through the eye of a vertical rod, *l*, upon which a continuous pressure is exerted by means of an elliptic spring, *m*. The object of this arrangement is to cause the pressure upon the bearing *g* of the lever *f*, and consequently upon the cutting-chisel, to be adapted to the varying thickness of the blank, whatever it may be.

The blank to be indented is placed upon a bed, *n*, set in a traveling carriage, *o*, that is made to travel on a plate, *p*, the bed *n*, carriage *o*, and plate *p* being set at an angle with the platform of the machine, so as to form an inclined plane. The tang of the blank is set in a suitable socket, *q*, and an adjustable spring-guard, *r*, bears upon the blank immediately behind the chisel, to hold the former down upon its bed.

I will now proceed to describe the manner in which the blank is fed along from point to tang.

To the main shaft *c* is attached a pulley, *s*, which, by means of a belt, *t*, revolves another pulley, *u*, placed upon one end of a screw-shaft, *v*. The threads of the screw-shaft *v* increase in width from the lower to the upper end by regular gradations. A stud or projecting plate, *w*, attached to the upper end of the traveling carriage *o*, is made to be engaged with or disengaged from the screw-shaft *v* by means to be presently described. When so engaged with the screw-shaft *v* it will be seen that the traveling carriage *o*, and consequently the blank to be cut, will be fed forward to the chisel up the inclined plate *p* with a constantly-increasing speed, owing to the peculiar form of the screw-shaft *v*, hereinabove described, thereby causing the distances between the teeth to be regularly increased or a coarser cut to be obtained as the tang approaches the chisel.

The stud or projecting plate *w* is made to engage with the threads of the screw-shaft *v*, and at the same time the plate *p*, traveling carriage *o*, and the bed *n* raised so as to bring the blank

sufficiently high to receive the pressure of the cutting-chisel by the following means: The plate *p* rests in ways *x x*, upon the bottom of which are raised projections *y y*, Fig. 4. The plate *p* can be moved back and forth longitudinally by means of a hand-lever, *z*, being connected thereto by a short bar, *a'*. The lever *z*, and consequently the plate *p*, is retracted by a spring *e'*.

On the under side of the plate *p* are wedge-shaped pieces *c' c'*, similar to the raised projections *y y* of the ways *x x*. When the plate *p* is moved forward the wedge-shaped pieces *c' c'* travel up upon the projections *y y*, and thus raise the plate *p*, and consequently the traveling carriage *o* and blank, into the desired position, as well as bringing the stud *w* in connection with the threads of the screw-shaft *v*. The plate *p*, when thus placed, is held by means of the barb *d'* of a lever-arm, *e'*, which hooks over the arm of the lever *z*. After the blank has been fed along its entire length the plate *p* is made to return to its original position, and the traveling carriage *o*, carrying the blank, is left free to slide back again by its own weight, as follows: As the traveling carriage *o* moves forward a pin, *f'*, thereon, at the proper time, abuts against a stud, *g'*, in a short arm, *h'*. One end of the stud *g'* bears against the curved arm of the lever *e'*, and as this lever turns upon a fulcrum at *i'* the barb *d'* will be disengaged from the hand-lever *z* when the pin *f'* strikes the stud *g'*, and consequently the plate will be drawn back to its first position by means of the spring *b'*, at the same time disengaging the stud *w* from the screw-shaft *v*. As more pressure is required to be exerted by the chisel upon the blank as the tang of the latter approaches the former, I increase the tension of the elliptic spring *m* by means of an additional spring, *k'*, which is acted upon so as to exert a continually-increasing force by means of a cam, *l'*. The cam *l'* is placed upon a shaft, *m'*, which receives a partial rotation through an arm, *n'*, attached to one end of the shaft *m'*. The arm *n'* receives its motion through a stud, *o'*, in the traveling carriage *o*, thereby causing the cam *l'* to act continually upon the spring *k'* as the cutting progresses with an increasing force. One end of the spring *k'* bears against a standard, *p'*, and the vertical shaft *l* passes through the said spring, the latter being kept thereon by a nut, *q'*.

Having thus described my improvements, I shall state my claims as follows:

What I claim as my invention, and desire to have secured to me by Letters Patent, is—

1. The combination of the lever *f* and elliptic spring *m*, elongated journal-boxes, and rod *l*, operating as described, and for the purpose specified.

2. The combination and arrangement of the arm *n'*, cam *l'*, and spring *k'* with the rod *l*, for the purpose specified.

MILTON D. WHIPPLE.

Witnesses:

JOSEPH GAVETT,
JAMES W. MALOY.