3 Sheets—Sheet 1.

M. D. WHIPPLE.

MACHINE FOR CUTTING FILES.

No. 37.554. Patented Jan. 27, 1863.

Fig: 1.

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W Stearns

Inventor:
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Sam Cooper

3 Sheets—Sheet 2.

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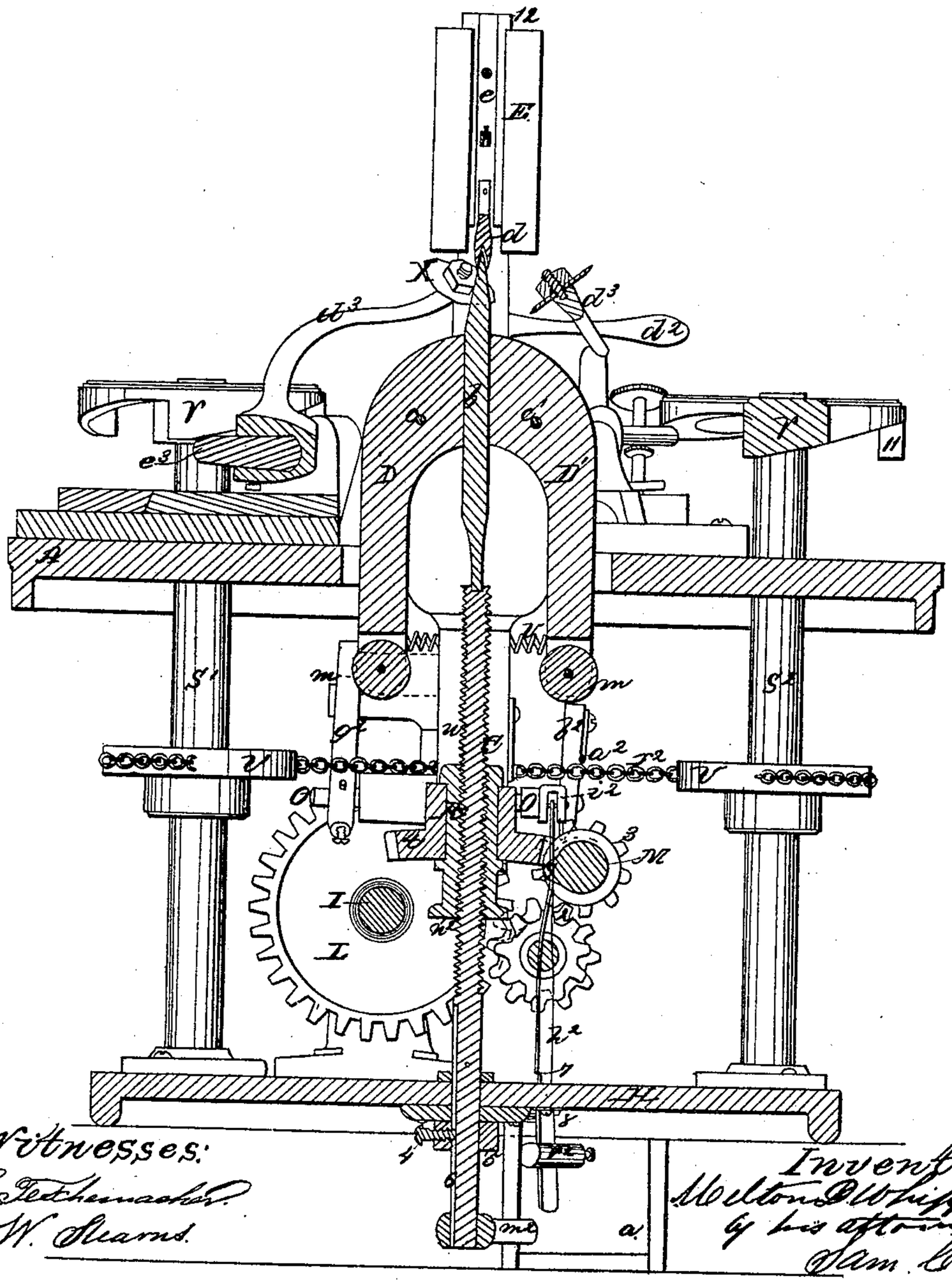
Fig: 2.



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3 Sheets—Sheet 3.

MACHINE FOR CUTTING FILES.

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Fig: 3.

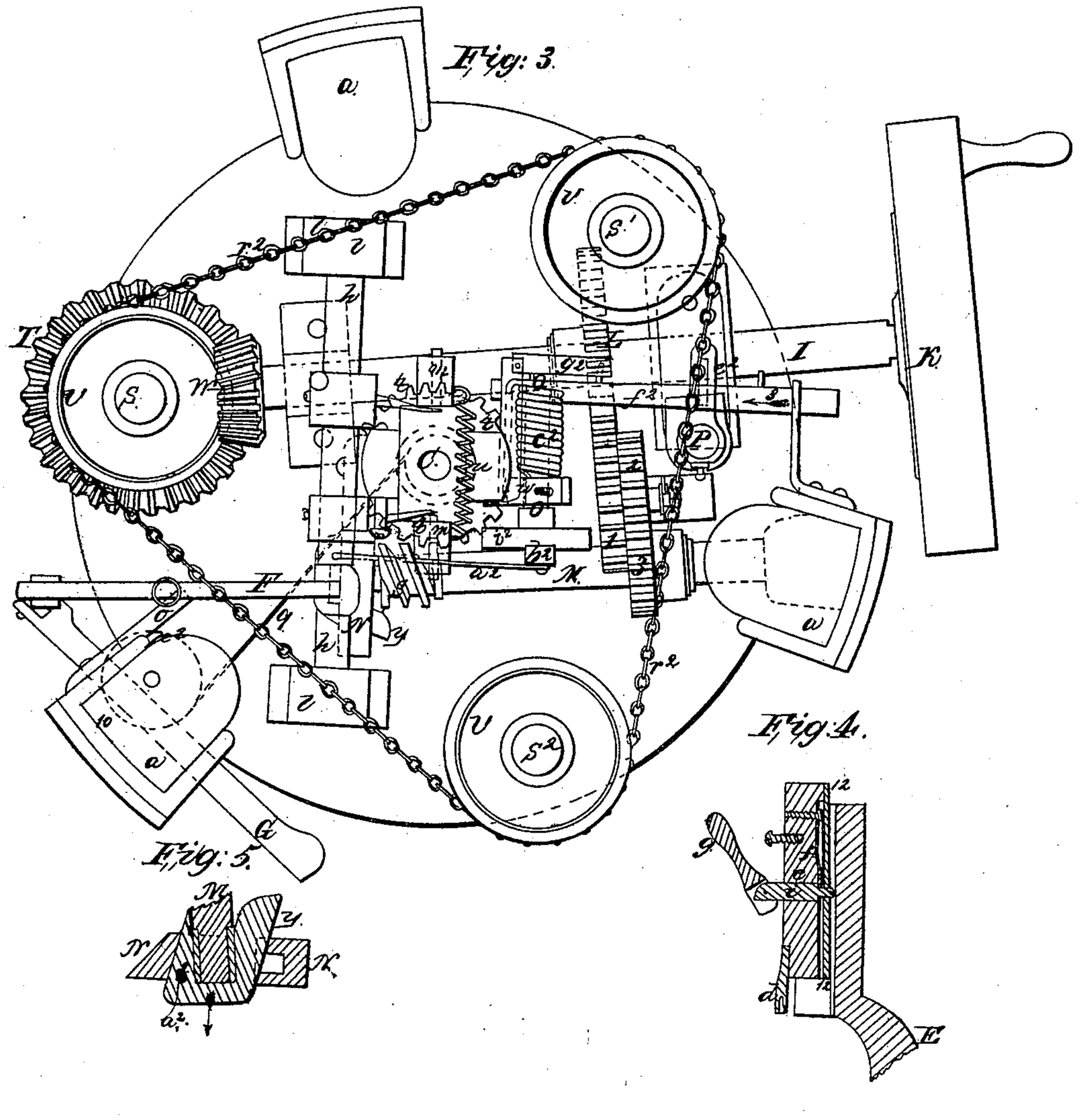

Fig: 4.

Fig: 5.

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Sam Coop

UNITED STATES PATENT OFFICE.

MILTON D. WHIPPLE, OF CAMBRIDGEPORT, ASSIGNOR TO THE WHIPPLE FILE MANUFACTURING COMPANY, OF BALLARD VALE, MASS.

IMPROVEMENT IN MACHINES FOR CUTTING FILES.

Specification forming part of Letters Patent No. **37,554**, dated January 27, 1863.

To all whom it may concern:

Be it known that I, MILTON D. WHIPPLE, of Cambridgeport, in the county of Middlesex and State of Massachusetts, have invented an Improved Machine for Cutting Files, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is an elevation; Fig. 2, a vertical section on the line *x x* of Fig. 1; Fig. 3, a plan of the parts beneath the table A; Figs. 4 and 5, details to be referred to.

The machine which is the subject of my present invention is designed for cutting the several faces of a file at one operation, a cutter striking on each face of the blank, which is supported and fed forward as the cutting proceeds.

That others skilled in the art may understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A is a bed or table supported on legs *a*. In the center of this table is placed a head or block, B, in which is pivoted, at *c c'*, a pair of nippers, D D', which close upon and hold the file-blank *b*. This blank rests on and is fed up vertically by a screw-shaft, C, (the movement of which will be presently described,) the upper end of the blank being steadied and held by a cap, *d*, attached to a block, *e*, which slides in dovetail grooves in a standard, E, rising from the table A. Sufficient friction is applied to the block *e* to hold it steady by means of a spring, *f*, Fig. 4, attached to a strip, 12, on the back of the block; but when it is required to raise the block by hand to remove the finished file, the pressure of the spring is taken off from the standard by pressing down a hand-lever, *g*, which is connected by a strap, *i*, to the strip 12, and the end of which bears against the front edge of the block *e*.

The nippers D D', the jaws of which are of a proper form to hold the file-blank to be cut, (in this case a three-sided file,) are operated in the following manner: A lever, F, is attached to a shaft, *h*, hung in hangers *l* from the under side of the table A. To this shaft *h* are attached two beveled or cam-shaped arms, *k*, each of which presses on a roll, *m*, on the lower end of the nipper D or D', the outer end of the lever being drawn down and the pressure applied by a spring, *n*, attached to the lever, and to a bracket, *o*, projecting from one of the legs *a* of the stand. A rod, *p*, is pivoted to the outer end of the lever F, and to a treadle, G, pivoted to the leg *a*, by which the operator raises the outer end of the lever and relieves the nippers from the pressure of the cams *k*, when the lower ends of the nippers are drawn together by springs *u*, Fig. 2, and their grasp on the file is released, so that it may be removed. A lower bed or table, H, attached to the legs *a* of the frame, has rising from it standards *r*, with suitable bearings, in which rests the main or driving shaft I, which is revolved by a belt applied to the pulley K. A cog-wheel, L, on the shaft I gives motion through the gears 1 2 3 to shaft M, (supported in bearings attached to the frame,) which has on it a worm-gear, *s*, which engages with a pinion, *t*, attached to a nut, R, which embraces the screw-shaft C, and rests in a collar, *v*, suspended by hangers *w* from the under side of the table A, and as the nut is revolved the shaft C is raised or lowered. (A pin, 4, passes through a block, 5, attached to the under side of the bed H, and enters a groove, 6, in the shaft C, to prevent it from turning round.)

In order to stop the feed when the cutting of the file has been completed, and to disengage the worm-gear *s* from the pinion *t* when the shaft C is to be run down, preparatory to introducing a fresh blank, I have adopted the following device: The box in which one end of the shaft M rests is made to slide in a recess in an arm, N, attached to one of the hangers *w*, and is moved toward or from the pinion *t* by a wedge-shaped block, *q*, (shown in Fig. 5,) which is caused to slide in behind the box by a rod, a^2, attached to the wedge, and to an arm, b^2, on a short shaft, O, supported on one of the hangers *w*, and which is turned in one direction (as indicated by arrows 2, Fig. 1) by a coiled spring, c^2, to throw the worm *s* out of gear, and is turned in the opposite direction to engage the gear *s* and set the feed in operation by turning the hand-lever d^2, by which the attendant revolves a vertical shaft, P, to which is attached a slotted arm, e^2. A pin in a sliding bar, f^2, enters the slot in the arm e^2, and the bar is moved in the direction

of the arrow 3, when a pin on the bar strikes a lever, g^2, attached to the shaft O, and through the connections of arm b^2 and rod a^2 moves the wedge q and forces the worm-gear s on the shaft M into contact with the pinion t, and the screw-shaft C is fed upward. There is also attached to the shaft O a short horizontal arm, i^2, from which hangs a flat bar, h^2 which passes down through the bed H, and has a block, l^2, attached to its lower end. When the shaft O is vibrated and the worm s is thrown into gear, this bar h^2 is depressed, and a notch, 7, in it catches under a plate on the lower side of the bed H, (a spring, 8, pressing it to one side,) and the parts are held in gear until the screw-shaft C has been fed up sufficiently far to complete the cutting of the file, when a block, m^2, attached to the lower end of the shaft, C, strikes the block l^2 and pushes back the bar h^2 against the resistance of the spring 8, and releases its notch from under the bed H, when the coiled spring c^2 revolves the shaft O in the opposite direction, (as indicated by arrow 2,) and the wedge q throws the worm s out of gear and the feed is stopped. The ends of the blocks l^2 and m^2 are beveled, and the former one is made adjustable on the bar h^2.

As a convenient method of running down the screw-shaft C when the feed is completed and the feed-gears are thrown out of contact, I have attached a spool, n^2, to the lower part of the nut R. A cord, 9, is wound up on this spool as the feed progresses, and is drawn off from a barrel, p^2, (supported on a bracket, 10, attached to one of the legs a,) in which a spring is coiled, so that when the pinion t and nut R are set free this spring will retract the cord 9 and revolve the nut R in the opposite direction and run the shaft C down, ready for a fresh blank to be placed in the machine.

I will now describe the mechanism by which the several faces of the file are cut at the same time. Three vertical shafts, S S′ S², rest in steps on the bed H and rise through the table A. The shaft S carries a beveled gear, T, which engages with a pinion, W, on the end of the driving-shaft I. Each of these vertical shafts carries an indented pulley or "sprocket-wheel," U, a chain, r^2, passing around all the wheels U. The motion given to the first shaft, S, is communicated to the other shafts, S′ S². Each of these shafts carries on its upper end above the table A a cam-wheel, V, which operates the hammer or cutter which makes the cut to form the teeth of the file. (As the three are similar, I will describe but one.) Two standards or housings, a^3, rising from the table A, support a shaft, b^3, to which is attached a collar, c^3, carrying a curved arm, d^3, and two short arms or studs, e^3 f^3. The cutter X is secured to the arm d^3, and the arm e^3 rests against the edge of the cam-wheel V. A spring, g^3, presses on the arm f^3 to throw down the cutter as the arm e^3 drops off from one of the shoulders 11 of the cam-wheel V. The end of the spring g^3 is held in a short shaft, h^3, and the pressure of the spring is regulated by turning down a thumb-nut, i^3, which revolves the shaft h^3 and applies more pressure to the spring. The arm f^3 strikes on a stop, m^3, which is adjustable in height, so as to regulate the force of the blow or the depth of the cut made by the cutter.

The following is the operation of the machine: The operator presses his foot on the treadle G, which vibrates the lever F, throws down the cams k, and permits the spring r to draw the lower ends of the nippers D D′ together and open their jaws for the reception of the file-blank b. The pulley K and shaft I are now revolved in the direction of the arrow, Fig. 1, and the hand-lever d^2 is turned in the direction of its arrow, which, through the shaft P, arm e^2, sliding bar f^2, and arm g^2, revolves the shaft O, which vibrates the arm b^2 in a direction contrary to its arrow 2, and through the rod a^2 pushes the wedge-block q in the direction of its arrow 5. This moves the box in which the end of the shaft M revolves up toward the pinion t and engages the worm-gear s with the pinion, which turns the nut R and feeds up the screw-shaft C, on top of which the blank b rests. At the same time the shaft I, through the gears W and T, wheels U, and chain r^2, revolves the shafts S S′ S³, and the three cutters X are caused to strike one on each face of the blank b, making the necessary cuts as the blank is fed up. When the file has been cut and the shaft C has been fed up sufficiently high, the block m^2 on the lower end of it strikes the block l^2, and disengages the rod h^2 from the bed H, when the spring c^2 revolves the shaft O in the opposite direction and throws the gear s out of contact with the pinion t, and the feed is stopped. The belt is now thrown off from the pulley K and the cutters cease to operate. A shipper may be attached to the end of the sliding bar f^2 to throw the belt onto or off from the pulley K by the operation of the machine. As the shaft C was being fed up the cord 9 was wound up on the spool n^2. As soon as the gear s and pinion t are disengaged the retraction of the spring in the barrel p^2 revolves the nut R in the opposite direction and runs the shaft C down, ready for a fresh blank to be placed in the nippers and for the operation to be repeated.

The several faces of a file being cut by this machine at one operation, or while the blank is being fed up once, a great saving of time and labor of the attendant is effected.

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

The central rest or block, B, with its jaws or nippers D D′, for holding the file-blank, in combination with a feed mechanism for feeding the blank, and the several cutters X, each of which cuts one face of the file during a single feed, substantially as specified.

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