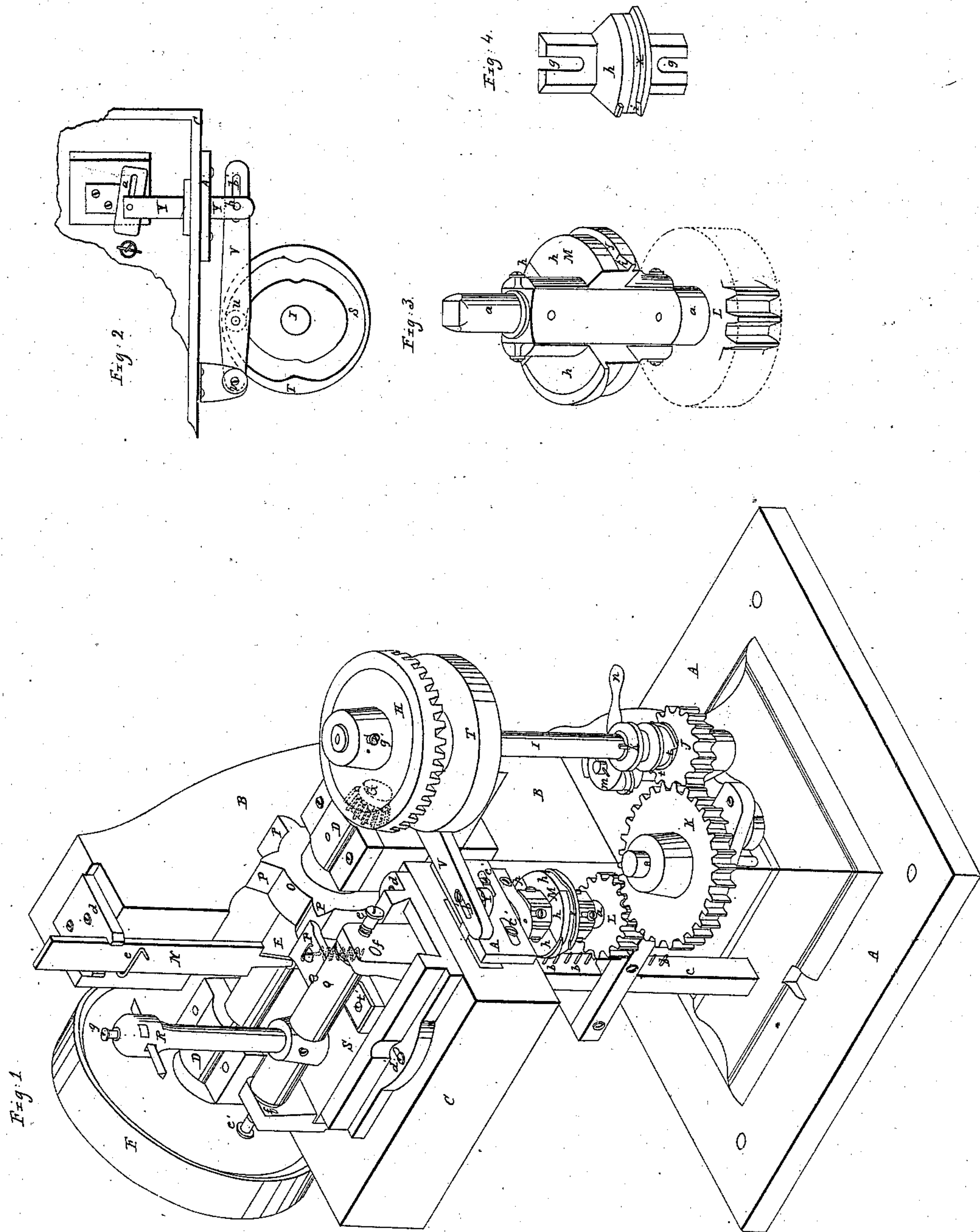


Smith & Southwick,

Cutting Rasps,

No 39,781,

Patented Sept. 1, 1863.



Witnesses:

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UNITED STATES PATENT OFFICE.

TIMOTHY SMITH, OF CHARLESTOWN, AND A. B. SOUTHWICK, OF BALLARD VALE, MASSACHUSETTS, ASSIGNORS TO THE WHIPPLE FILE MANUFACTURING COMPANY.

IMPROVED MACHINE FOR CUTTING RASPS.

Specification forming part of Letters Patent No. 39,781, dated September 1, 1863.

To all whom it may concern:

Be it known that we, TIMOTHY SMITH, of Charlestown, in the county of Middlesex and State of Massachusetts, and A. B. SOUTHWICK, of Ballard Vale, in the county of Essex and State aforesaid, have invented certain Improvements in Machines for Cutting Rasps, 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 a perspective view of our improved machine. Fig. 2 is a plan of the under side of the cam-wheel T and a portion of the table C, showing the manner in which the cutter-carriage S is moved back and forth; Fig. 3, an enlarged view of the worm-wheel detached, one of the segments being removed; Fig. 4, a view of one of the segments *h* detached.

To enable others skilled in the art to understand and use our invention, we will proceed to describe the manner in which we have carried it out.

In the accompanying drawings, A is the bed-plate, from which rises a heavy standard, B, which supports the table C. In suitable bearings, D, on this table runs the driving-shaft E, which carries at one end the driving-wheel F, and at the other a pinion, G, (shown dotted in Fig. 1,) which engages with the bevel-wheel H on the shaft I. This shaft I gives motion through the gears J K L to the shaft *a*, which runs in bearings in the frame-work, and carries the worm-wheel M, which engages with the pins *b* on the square rod *c*. This rod slides up and down in guides projecting from the standard B, and has a mortise in its upper end, in which is inserted the tang of the rasp-blank N, which is thus fed up as required. The blank N is supported by a rest, *d*, projecting from the top of the standard B, and is held in place by the bent wire *e*.

As it is necessary that the blank should be fed up intermittently after each traverse of the cutter across its face, the thread *x* upon the worm-wheel M is constructed with four inclines or lifts, *i*, the portions of the thread between these inclines being horizontal. The thread *x* and the inclines *i* are arranged to

play between the pins *b*, and thus, as the wheel M revolves, the inclines elevate the pins and the rod *c*, and the blank is fed up as required.

For the purpose of regulating the feed of the rod *c*, and consequently the distance between the rows of teeth, the wheel M is made with four segments, *h*, which are secured to the shaft *a* by screws passing through the slots *g*, Fig. 4, by which means they can be raised or lowered on the shaft *a*, and the amount of rise can be adjusted as required.

For the purpose of throwing the feeding mechanism out of gear when it is desired to run down the rod *c* in order to introduce a new blank, the shaft I is furnished with a collar, *k*, which is secured to it by a spline and feather, whereby it may be raised or lowered on the shaft. This collar has on its under side a tooth, (not shown in the drawings,) which engages with either one of four ratchet-teeth, *t*, on the wheel J, and thus, when thrown into gear, the feeding up of the blank at the proper time is insured, and the wheels J and K, being always in gear, after the machine is once properly adjusted, there is no liability of this adjustment being disturbed. This feeding of the blank takes place immediately after the cutter has made the last tooth of a row. The collar *k* has a groove cut in it, in which plays the thread *l* upon the wheel *m*, to which is secured a handle, *n*, and thus, as this handle is turned, the collar *k* is raised or lowered, and the shaft I is coupled or uncoupled with the gear J.

The wheel O, which carries the cams *p*, that operate the chisel or cutter, is secured to the driving-shaft E. These cams operate upon an arm, P, projecting from the cutter-shaft Q, from which projects the cutter-head R. The cutter is secured in a mortise in this head by a screw, *q*. The wheel O may be replaced by one having a different number of cams, the number of teeth in a row on the rasp corresponding to the number of cams on the wheel. The cutter is thrown, after being released from the cams, by a spring, *r*, (seen dotted in Fig. 1,) and the arm as it descends strikes against a spring, *t'*, by which the cutter is raised from off the blank the instant it has made its cut. The cutter-shaft Q is pivoted to a carriage, S, which is moved back and forth to carry the

cutter across the face of the blank to form the rows of teeth in the following manner: The shaft I carries a wheel, T, in the under side of which is cut a cam-groove, s, Fig. 2. In this groove runs the roll *u* on the lever V, which is pivoted at one end to the frame-work at *v*, and at the other end is attached to the arm Y by a screw and slot, *b'*. The arm Y plays in a mortise in a piece, A', which is attached to the table C by screws and slots *c'*. This arm passes through a slot in the side of the table C, and is then secured to the under side of the cutter-carriage S by a screw and slot, *a'*, and thus, as the wheel T is revolved, the cutter-carriage (through the roll *u*, lever V, and arm Y) is moved back and forth as required. For the purpose of regulating the length of traverse of the cutter carriage, the arm Y is made adjustable in the slots *a' b'*, the piece A', in which it slides, being allowed to move with it by the slots *c'*, Fig. 1, and thus the traverse of the carriage is made to conform to the width of the rasp being cut.

The slots *d'* in the frame of the cutter-carriage are for the purpose of regulating the distance of the cutter from the rasp, and con-

sequently the inclination of the cutter and the cutter-shaft may be pivoted farther back by changing the screws *e'* into the holes *f* for a similar purpose. The wheel H is adjusted on the shaft I by the set-screw *g'*, and may be moved to regulate the distance of the cut from the edge of the blank at the commencement of each row.

The frame or standard B is made of the shape seen in the drawings, increasing in size from the top, so as to form a solid bed to receive the blow of the cutter.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The worm-wheel M, with its horizontal thread *x* and inclines *i*, in combination with the pins *b* or their equivalents upon the rod *c*, for the purpose described.

2. Constructing the worm-wheel M in segments, as set forth, for the purpose described.

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