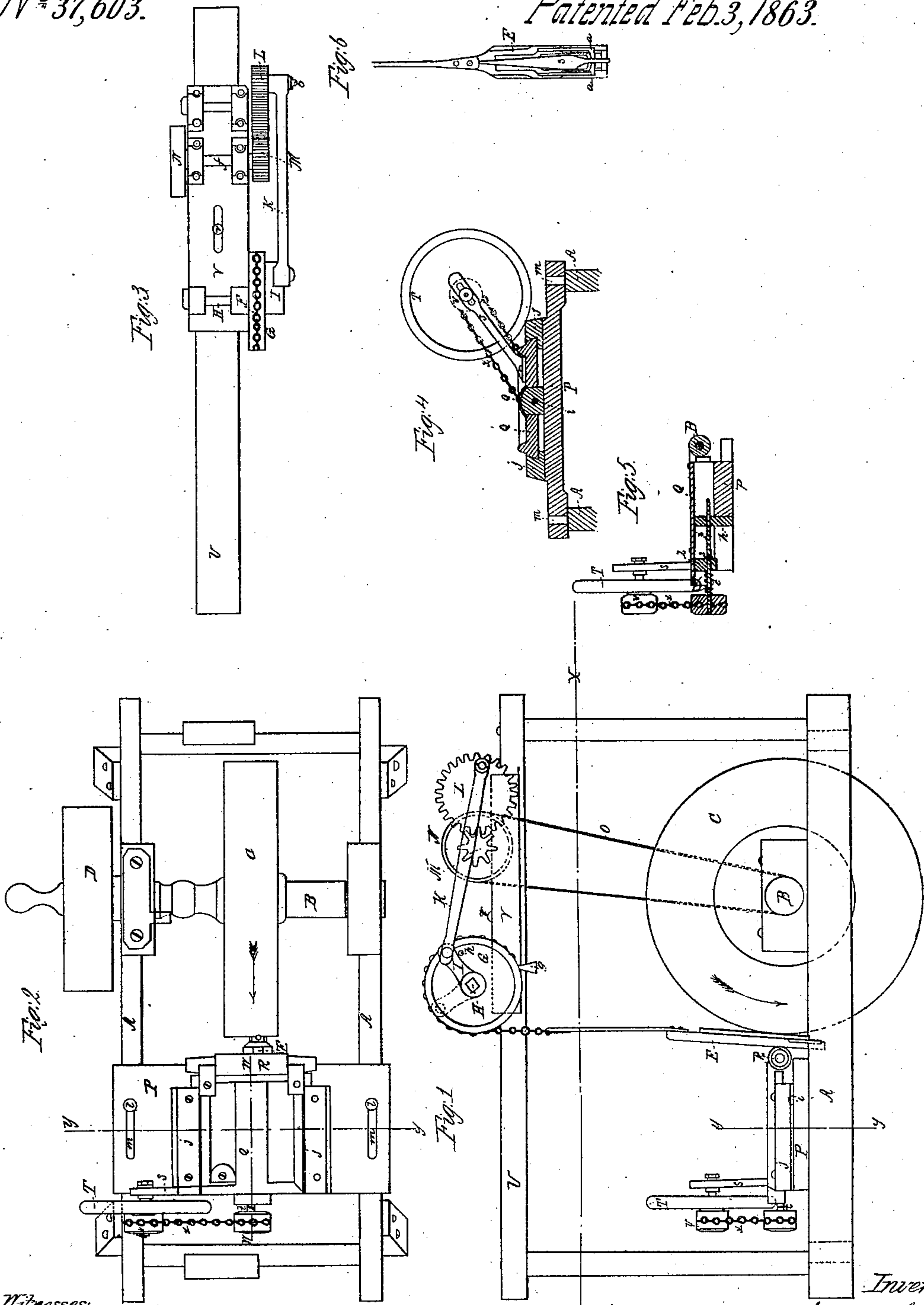


A. B. Southwick,
Grinding File Blanks.

N^o 37,603.

Patented Feb. 3, 1863.



Witnesses:
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UNITED STATES PATENT OFFICE.

ALPHEUS B. SOUTHWICK, OF BALLARD VALE, ASSIGNOR TO WM. P. PIERCE, PRESIDENT OF THE WHIPPLE FILE MANUFACTURING COMPANY, OF BOSTON, MASS., AND WM. P. PIERCE ASSIGNOR TO SAID COMPANY.

IMPROVEMENT IN GRINDING FILE-BLANKS.

Specification forming part of Letters Patent No. 37,603, dated February 3, 1863.

To all whom it may concern:

Be it known that I, ALPHEUS B. SOUTHWICK, of Ballard Vale, in the county of Essex and State of Massachusetts, have invented certain Improvements in Machines for Grinding File-Blanks and other Articles, 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 side elevation; Fig. 2, a plan of the parts below the line X X of Fig. 1; Fig. 3, a plan of the parts above the line X X; Fig. 4, a section on the line Y Y of Figs. 1 and 2; Fig. 5, a section on the line W W of Fig. 2; Fig. 6, a front view of the holder in which the blank is secured while being ground.

To enable others skilled in the art to understand my invention, I will proceed to describe the manner in which I have carried it out.

In the accompanying drawings, A is the frame-work, in suitable boxes, upon which runs a shaft, B, to which is secured a grindstone, C, and a driving drum or pulley, D. The file-blank to be ground is secured temporarily in the holder E, Fig. 6, by the springs *a*. This holder is suspended by the chain F, secured to the wheel G, which moves freely upon the axle H, to which is secured the crank I. This crank is connected by means of the rod K with a crank-pin, *b*, upon the face of the gear L, which is revolved by means of the pinion M upon the shaft *f*, to which is also secured the pulley N. A band, O, from the driving-shaft B passes over the pulley N, and thus an oscillating motion is communicated to the crank I, as will be readily understood by an inspection of the position of the crank, as represented in the red lines of Fig. 2. The crank *b* is made adjustable more or less near to the center of the gear L, whereby a greater or less extent of vibration is obtained for the crank I, according with the length of the file-blank to be ground.

The moving parts represented in Fig. 3 are carried by the table V, which is adjusted in position and secured to the top rail, U, of the machine by the screw *r*.

The weight of the holder and its chain, in conjunction with the friction of the stone against the article being ground, tends to re-

volve the wheel G constantly in one direction, and thus keep the pin *b*, projecting from the wheel G, constantly in contact with the crank I, so that the wheel, and consequently the file-holder, vibrates in unison with the crank, by which means the blank within the holder is kept constantly in motion—up and down—as the grinding proceeds. At the same time that this is taking place the file-blank is borne up to the stone by a spring-pressure under the control of the workman, by the following means:

A table, P, is secured to the frame-work by the screws *l*, the slots *m* allowing the table to be adjusted in position. To the upper surface of this table are secured the ways *j*, in which slide a carriage, Q, to the forward end of which is pivoted the roller R, which bears against the back of the holder.

Upon a standard, S, rising from the carriage, revolves a hand-wheel, T, upon the shaft of which is secured a hub or small drum, *v*, upon which runs an endless chain, *x*, that also passes around the head of the screw *i*, both the drum *v* and the head of the screw having suitable depressions to enable the drum to carry round the chain, and the chain to communicate a rotary motion to the screw.

The screw works in a nut, K, rising from the table P, and between the head of the screw and an ear projecting down from the sliding carriage is a spring, *t*, which tends to force the roller R against the holder E. Upon the screw *i* is a collar or pin, 3, which draws the carriage and its roller away from the holder. Whenever the hand-wheel is turned in the proper direction, the workman has it thus within his power to relieve the holder of the pressure of the roller, though this pressure can never exceed that which is exerted by the spring *t*.

That the file-blank may receive the right taper from the center toward each end, a pattern of suitable form is secured to the back of the holder E, or the pattern may be formed directly upon the back of the holder, and thus by the simple elevation or depression of the file-holder, as described, during the process of grinding the required form is given to the blank.

Operation: The file-blank S, Fig. 6, being secured in the holder and placed against the

grindstone, the roller R is allowed to bear against the pattern upon the back of the holder, and the machine is set in motion by power suitably applied to the drum D. The workman now moves the holder back and forth over the face of the stone, at the same time that with the other hand he regulates the pressure upon the holder by means of the hand-wheel T. The double motion of the file-blank—up and down and across the face of the stone—tends to equalize the grinding of the article as well as the wear of the stone. When one blank is finished, the operator replaces it with another without the necessity of stopping the machine for the purpose, the wheel G remaining stationary until the weight of the holder is again put upon it, the counterpoise-weight *g* being sufficient to overbalance the weight of the chain F when the holder is raised up, and keep the pin *h* out of contact with the arm I. When the blank is ground and the pressure of the roller R is removed from the holder E, the counterpoise *g* turns the wheel G about one quarter of a revolution, and thus brings the pin *h* away from the path of the crank I, and at the same time raises up the holder and blank, so that the latter can be readily removed and replaced by another, and so long as the counterpoise acts and the frame is held up, so long the crank I will have no effect upon the wheel G, which consequently stands at rest; but when the new blank is placed in the holder and both are drawn down until they take the bite or pressure of the roller R and

stone C, then the pin *h* comes in contact with the crank, and the latter prevents the wheel G from turning by means of this pin any faster than the crank itself goes. When the crank returns from the end of its range of motion, it takes against the pin *h* and turns the wheel G backward, thus drawing up the holder and blank, so that both the forward and backward oscillation of the crank acts by a positive motion in lowering and raising the file-blank while it is pressed against the grindstone; and the holder and blank only have a motion independent of the motion of the crank when the bite or pressure is removed from them, for then the counterpoise draws the pin *h* away from the crank, and the wheel remains at rest.

What I claim as my invention, and desire to secure by Letters Patent as an improvement in machines for grinding files and similar articles, is—

1. The method of connecting the crank I with the wheel G by means of the pin *h*, whereby the blank may be inserted in the holder without stopping the machine.

2. The combination of the spring *t* and screw *i* with the hand-wheel T and roller R, for the purpose of graduating the force with which the article is pressed up to the stone, as set forth.

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Witnesses:

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