

(No Model.)

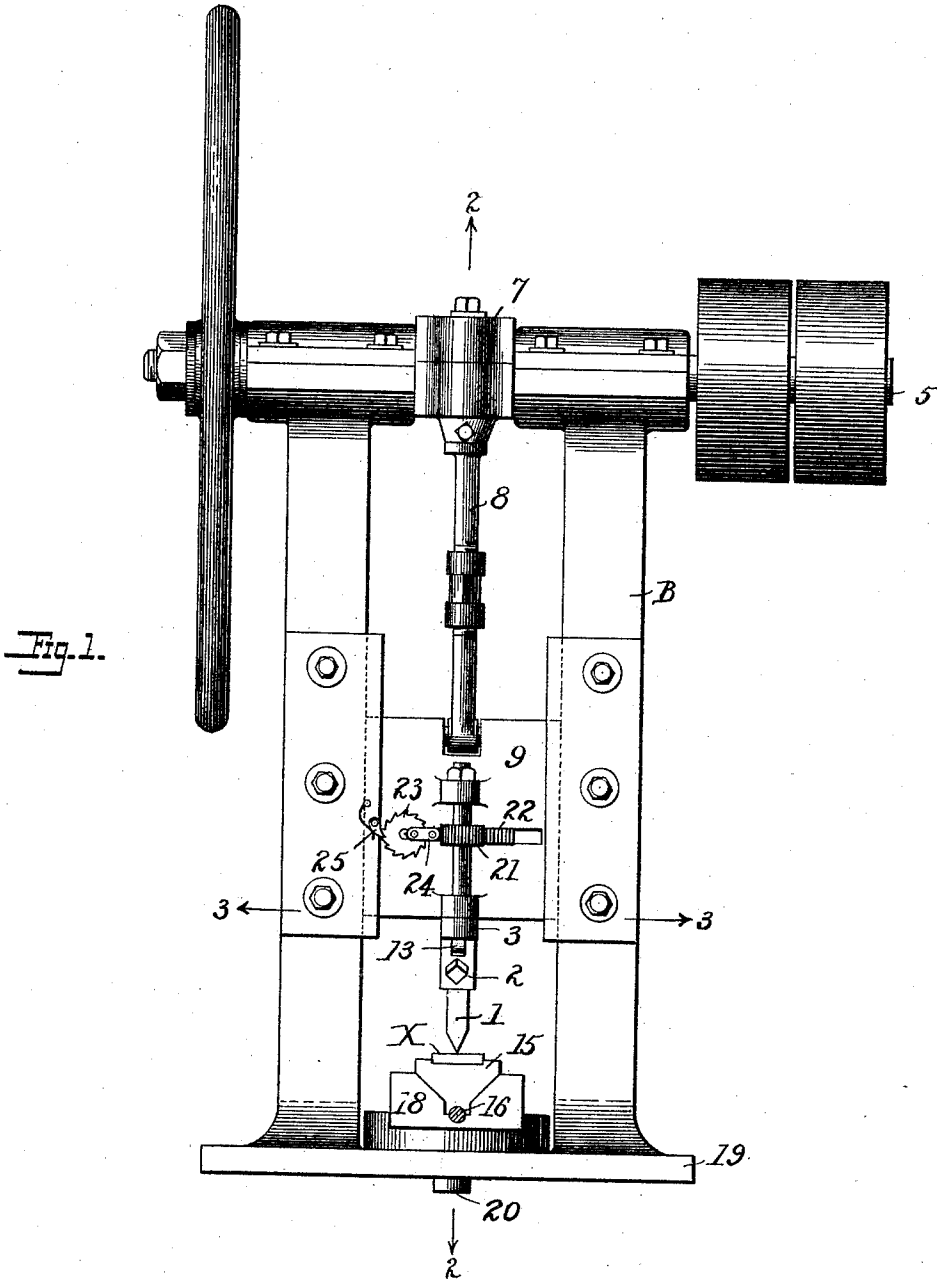
3 Sheets—Sheet 1.

A. WEED.

MACHINE FOR CUTTING FILES AND RASPS.

No. 460,355.

Patented Sept. 29, 1891.



WITNESSES
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(No Model.)

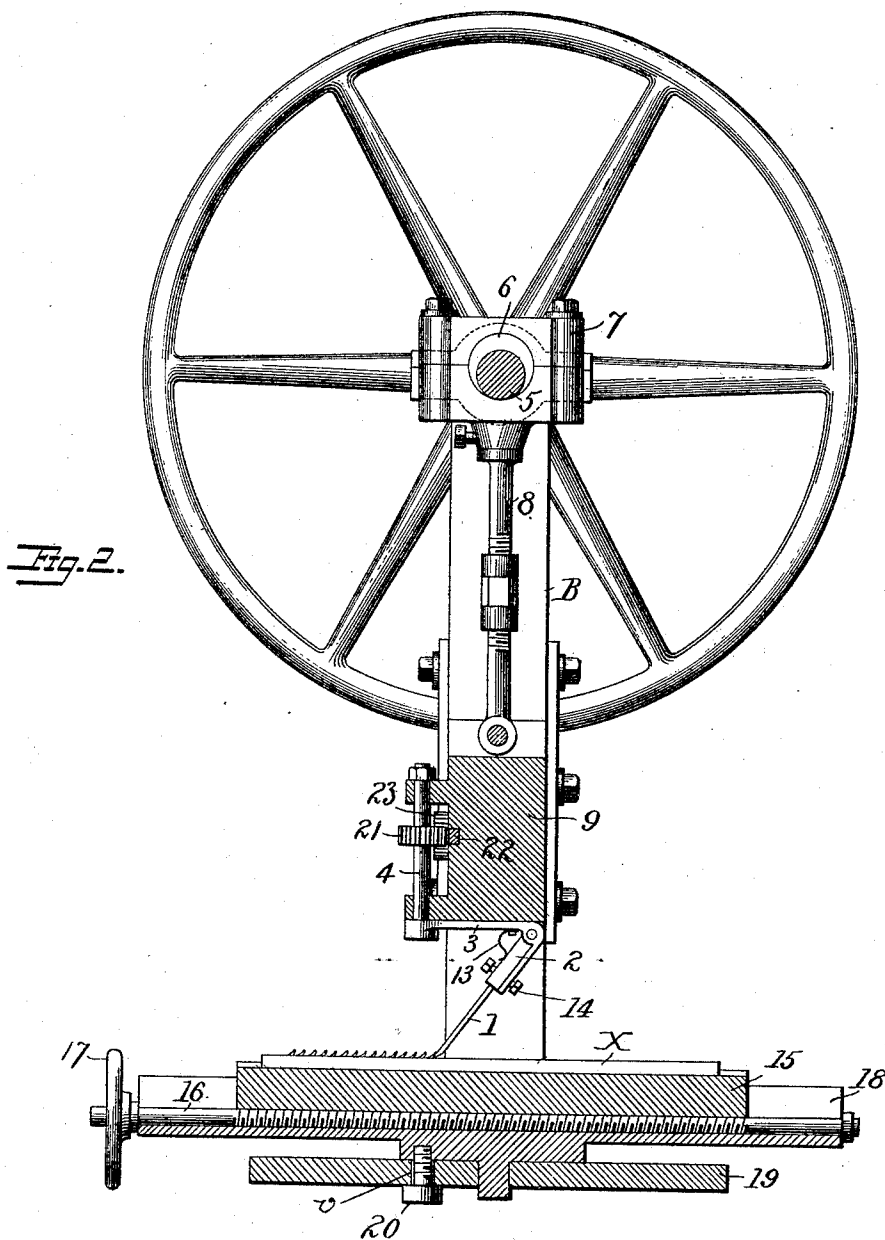
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3 Sheets—Sheet 3.

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Fig. 3.

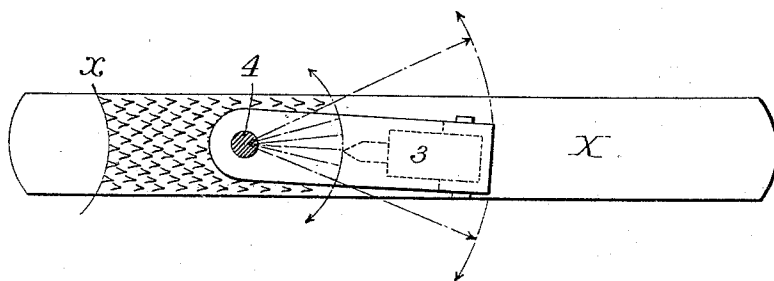


Fig. 4.

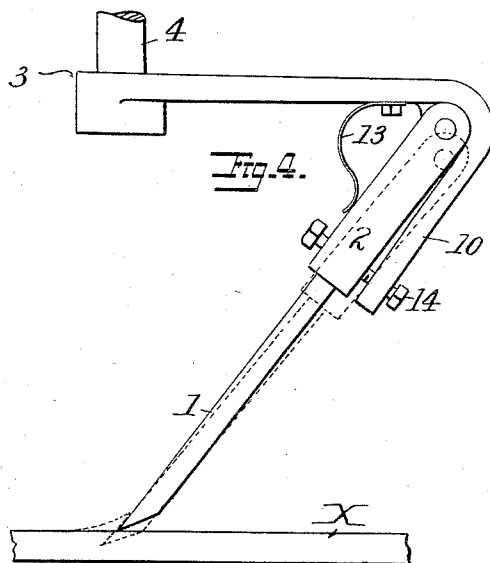
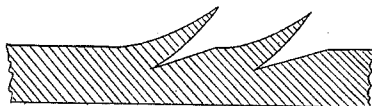


Fig. 5.



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UNITED STATES PATENT OFFICE.

ALFRED WEED, OF TARRYTOWN, NEW YORK, ASSIGNOR TO THE KEARNEY
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MACHINE FOR CUTTING FILES AND RASPS.

SPECIFICATION forming part of Letters Patent No. 460,355, dated September 29, 1891.

Application filed April 15, 1891. Serial No. 389,053. (No model.)

To all whom it may concern:

Be it known that I, ALFRED WEED, a citizen of the United States, residing at Tarrytown, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Manufacture of Files and Rasps, of which the following is a specification.

My invention relates to the manufacture of files and rasps; and it consists in operating upon the blank in a peculiar manner to raise the teeth thereon and in means for operating the cutter, as fully set forth herein-after, and as illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of an improved machine for carrying out my method of manufacture. Fig. 2 is a longitudinal sectional elevation; Fig. 3, a section on the line 3 3, Fig. 2, the frame removed; Fig. 4, an enlarged sectional view illustrating the operation of the tool; Fig. 5, an enlarged view illustrating the formation of the teeth.

In machines as heretofore constructed for cutting files and rasps it has been common to support the blank upon an inclined bed and to move the tool in a right line back and forth to and from the blank, or in some instances the blanks have been supported horizontally and the tools have been forced against the same in an inclined direction, either percussively or otherwise, and in some instances the tools after being forced or driven into the blanks have been swung outward, imparting a back curve to the ends of the teeth. These operations result in imparting to the teeth shapes which are not desirable for various reasons, and I have therefore departed from the movements ordinarily imparted to the cutting-tool and have brought the same in an inclined position against the face of the blank, and while forcing the tool into the blank at the cutting end by percussion or direct pressure have also swung the other end toward the blank turning upon the cutting edge or end as a pivot, and have thereby produced upon the blank cutting-teeth of a character much preferable to those formed in the ordinary manner, inasmuch as they are more durable, retaining their cutting-edges for a greater length of time, and are

also more effective in their operation upon the material to be reduced by the file.

The movements of the tool of any suitable form will best be understood from reference to Fig. 4, in which 1 represents the tool; 2, a stock in which the tool is secured or of which it forms part, and X the blank. The edge of the tool 1 is in the first instance brought against the blank by moving the tool vertically downward until the cutting-edge penetrates and gets a hold upon the metal of the blank, after which the downward movement of the tool is continued, but the pressure is applied only to the upper end of the tool or its stock, which is so connected to its support that as the downward pressure is continued and the cutting-edge is forced into the metal the heel of the stock will be carried forward, the blank forming a more acute angle therewith than at first, the tool swinging about its cutting-edge as a center. By this means the fin or tooth raised upon the blank X is turned outward with a slight curve, but without being bent back at the extreme end, and I have found in practice that the tooth thus formed is far more effective and more durable.

In the manufacture of rasps I have further found that it is preferable to arrange each row of teeth upon a curved line *x*, Fig. 3, instead of being upon a straight line extending transversely or diagonally across the face of the blank, as thereby the points of the teeth are more uniformly arranged over the surface of the blank and better clearance is afforded for the filings or raspings, and to this end I connect the stock of the tool to a carrier 3, swinging about a vertical pivot 4, passing through the end opposite to that to which the stock is connected.

The tool and its carrier may be secured to a reciprocating or moving head in any suitable manner, operated by any available appliances. I have shown in Figs. 1, 2, and 3 a complete apparatus that has proved effective.

B represents the frame of the machine, in which turns a shaft 5, having an eccentric 6 to receive the strap 7 of a connecting-rod 8, jointed at the lower end to the head 9, which reciprocates between its vertical guides. In

bearings upon the head turns the vertical shaft 4, to which the carrier 3 is attached, and the stock 2 is pivoted at one corner of the carrier. An inclined arm or bearing 10 of the carrier serves as a rest, against which the stock 2 may lie in an inclined position, a spring 13 tending to keep the stock against the arm 10 or against an adjusting-screw 14, passing through said arm.

10 The blank X is secured to a sliding carriage 15, which may be moved as usual by a screw 16, turned by means of a hand-wheel 17. The carriage 15 slides in a supporting-bed 18, centrally pivoted to the base 19 of the machine to swing to any desired inclination and secured after adjustment by means of a screw-bolt 20, passing through a slot *v* in the base 19. While the carrier 3 may be swung by hand to its different angles or positions, as indicated by the radial lines Fig. 3, I prefer to swing the same automatically by means of any suitable operating devices. As shown, the shaft 4 is provided with a pinion 21, engaging with a rack 22, sliding in the head 9, and said rack is reciprocated by the revolution of a wheel 23, to which the rack is connected by a link 24. The wheel 23 is turned step by step automatically in any suitable manner. For instance, it is provided with ratchet-teeth which engage a spring-pawl 25 as the head 9 rises after each tooth is formed by the tool 1.

Without limiting myself to the precise construction and arrangement of parts shown and described, I claim—

1. The combination, in a file-cutting machine, of a support for the blank, a reciprocating head, a tool supported in an inclined position upon said head, and means, substantially as described, for swinging the tool upon

its cutting point or edge as a center as the latter enters the blank to thereby raise the tooth upon the blank, substantially as set forth.

2. The combination, in a file-cutting machine, of a support for the blank, a head reciprocating substantially at right angles to the blank, and a cutting-tool arranged at an angle to said head and blank and having its support pivotally connected to swing at its upper end and about its cutting edge or point as a center when the head descends, substantially as set forth.

3. The combination, with a reciprocating head, of a tool having its support pivoted to the head at its upper end, and an inclined arm 10 and spring 13, substantially as set forth.

4. The combination, with a reciprocating head, of a carrier pivoted at one end to swing horizontally on said end, and an inclined tool having its support pivoted to the free end of the carrier, substantially as described.

5. The combination of the reciprocating head, a tool-carrier pivoted to the head and supporting an inclined tool, and means, substantially as set forth, for vibrating the tool-carrier step by step, substantially as described.

6. The combination of the reciprocating head, shaft 4, carrier supporting the cutting-tool, pinion and rack, and wheel 23, connected to reciprocate the rack, and means for turning the wheel with a step-by-step movement, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALFRED WEED.

Witnesses:

CHARLES E. FOSTER,
DANIEL E. DELAVAN.