F. P. OLDS.

BLADE SHARPENING MACHINE.

APPLICATION FILED APR. 19, 1910.

979,879. Patented Dec. 27, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

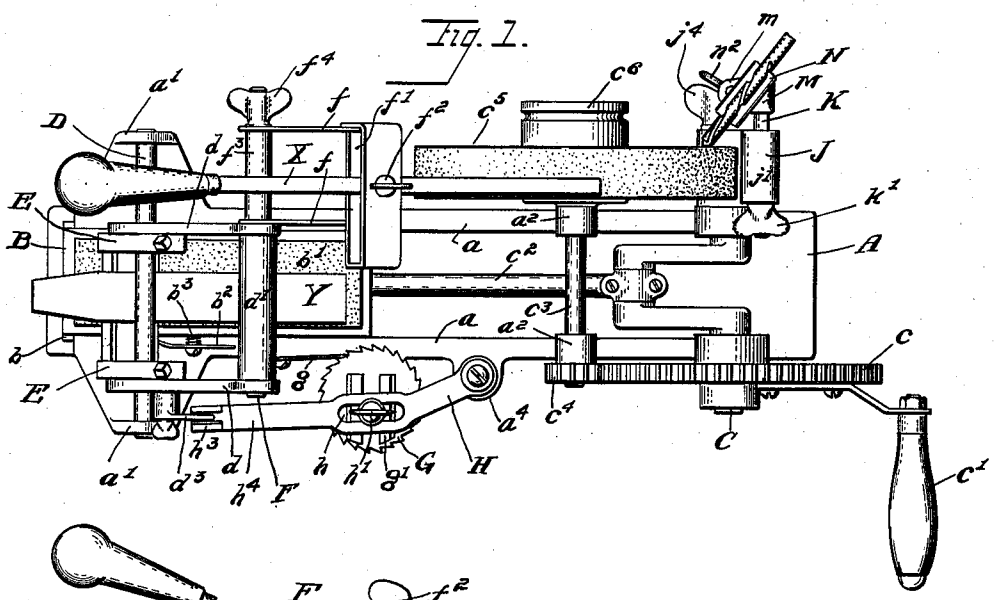
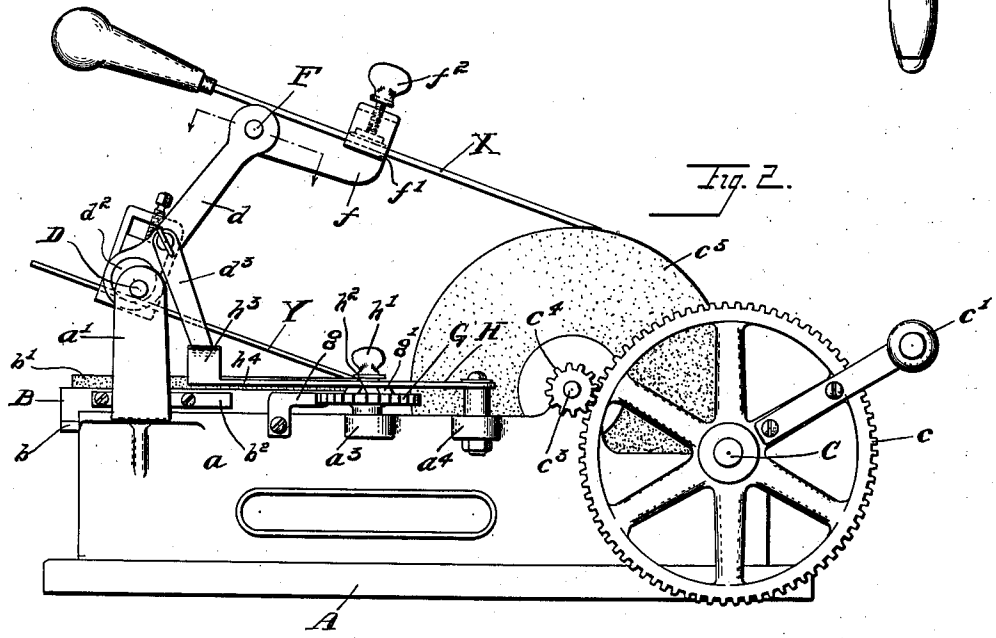


Fig. 2.



Witnesses

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2 SHEETS—SHEET 2.

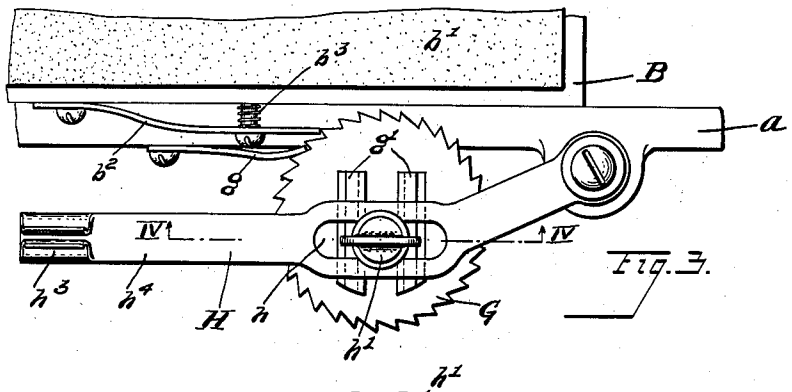

Fig. 3.

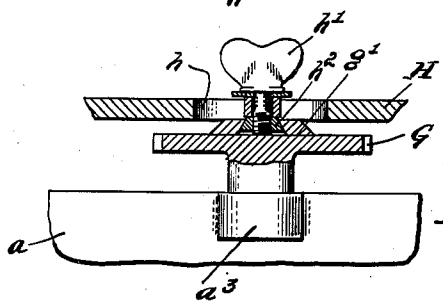

Fig. 4.

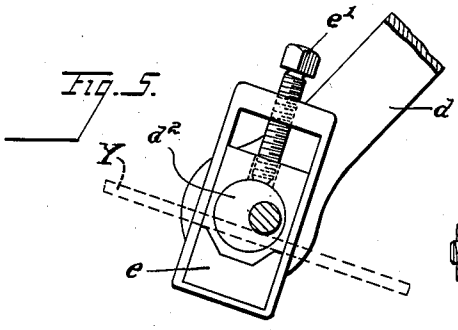

Fig. 5.

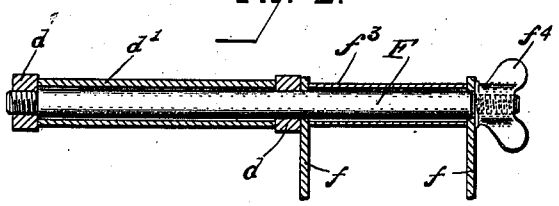

Fig. 6.

Witnesses

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UNITED STATES PATENT OFFICE.

FREDERICK P. OLDS, OF BEREA, OHIO, ASSIGNOR OF ONE-HALF TO WILLIAM F. WIELAND, OF BEREA, OHIO, AND ONE-HALF TO FRED H. LEICK, OF CLEVELAND, OHIO.

BLADE-SHARPENING MACHINE.

979,879. Specification of Letters Patent. Patented Dec. 27, 1910.

Application filed April 19, 1910. Serial No. 556,373.

To all whom it may concern:

Be it known that I, FREDERICK P. OLDS, a citizen of the United States, resident of Berea, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Blade-Sharpening Machines, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

This invention has reference broadly to a blade-sharpening machine in which the blade-clamping member may be automatically reciprocated in a direction transversely of a longitudinally reciprocable abrading member.

Other features, each in its coöperative relation, contribute toward making the invention as such comprise the combination of several specific improvements upon the blade-sharpening machine shown, described and claimed in Patent No. 945,137, issued to me January 4, 1910; such improvements consisting in turn of means hereinafter fully described and particularly set forth in the claims.

The annexed drawings and the following description set forth in detail certain means embodying my invention, the disclosed means, however, constituting but one of various mechanical forms in which the principle of my invention may be employed.

In the said annexed drawings:—Figure 1 is a plan of my complete machine, Fig. 2 a side elevation with one feature omitted, Fig. 3 an enlarged plan of certain automatic mechanism, Fig. 4 a vertical section on line IV—IV of Fig. 3 looking in the direction of the arrows, Fig. 5 is an enlarged view of the clamping mechanism, and Fig. 6 is an enlarged vertical section of a part of such clamping mechanism.

In these several views like letters and numerals of reference designate similar parts throughout.

A suitable elongated base-block A has mounted upon it two side plates *a*, and each of these is provided with an inwardly disposed groove. These as oppositely disposed form a channel which is adapted to serve as a guide-way for the base flanges *b* of the carriage B. This carriage is constructed in such a way that it will properly hold the standard type of whet-stone abrading member *b'*, and upon one side is provided with an actuating pawl b^2, as shown. This pawl is laterally movable with respect to the carriage and against the action of the spring b^3. The specific use of the pawl in its relationship to my construction will in due time be disclosed.

Upon one end of the machine I mount a crank shaft C, and this, besides being provided with any conventional type of gear wheel *c* and handle *c'*, is operatively connected to the carriage B through the medium of a pivoted connecting rod c^2. In Figs. 1 and 2 another shaft c^3 will be seen mounted across the machine upon two upwardly projecting bosses a^2. A gear pinion c^4 mounted upon one end meshes with this gear wheel *c*, while on the other end, that is, on the opposite side of the machine, a circular grindstone c^5 is provided. The latter has a pulley c^6 affixed upon its exterior face, and for a perfectly obvious purpose. It is accordingly apparent that the turning of the crank will rotate the stone c^5 and simultaneously impart a sliding reciprocable motion to any abrading member in the carriage. Further, the machine is manually operable on one side and power-operable on the other. Upon the opposite end of the frame and specifically upon two upwardly extending standards *a'* which form its bearings, I mount a rod D. Two lever arms *d* support a connecting handle *d'* and also inclosing an integral eccentric collar d^2 are oscillatorily mounted upon the rod D. This collar serves to effect the clamping of the blade in conjunction with coöperative parts presently more particularly explained. The length of the collar is sufficiently less than the length of the rod to permit of its being slid laterally, that is, in the direction of its axis, and in fact a distance corresponding approximately to the width of the abrading member in the reciprocable carriage B. Between the lever arms *d* and so necessarily mounted upon the eccentric collar d^2 is a supplemental clamping member E. This comprises the plate *e* against which the blade is clamped, when the collar is turned with a view to having the eccentric accomplish its function.

The theory of operation is precisely the same as in my patent previously referred to, where it constitutes the essence of invention, save that the supplemental clamping member is suspended below, in order to permit an

adjustment by means of the set screws e', whereby blades varying in thickness may be more readily accommodated. The depending arm d^3 is adjustably secured to one of the lever arms d, for an operative purpose to be presently noted.

A rod F passes through the handle d and by reason of its being somewhat longer, projects a sufficient distance to permit two other lever arms f to be likewise and in turn oscillatorily mounted upon it. These arms support a second clamping mechanism comprising the rest-plate f' and set screw f^2, and between which a chisel blade X may be readily clamped, as clearly represented in Fig. 2. A loose collar f^3 for the rod F is interposed between the lever arms f, while the end of the rod F is threaded to receive a wing-nut f^4, whereby the lever arm and accordingly the blade may be fixed at different points of oscillation and hence, when in use, at different angles with respect to the stone c^5. As in the case of the planing blade Y, which is represented in position for grinding upon the whetstone b' in Figs. 1 and 2, the distance at which the blade is clamped from its cutting edge will determine the bevel to be imparted thereto.

Mounted upon an ear a^3 approximately midway of the length of the machine, and as shown in the path of movement of the pawl b^2 is a horizontally disposed ratchet G. A spring detent g properly disposed upon the frame and adjacent to the ratchet G engages the latter to serve its well-known and customary function. Upon the upper face of this ratchet I secure two parallel and under-cut members g' adapted to form a slide-way, for a purpose to become hereinafter apparent. Intermediately of the ratchet G and gear pinion c^4 and specifically upon another ear a^4, I pivotally mount a bent lever H. This lever is slotted at h, as is best seen in Fig. 3, and is devised to extend across, so that the slotted portion will rest upon, the member g' on the upper face of the ratchet. A wing-screw h' in passing through the slot h to coöperate with a suitably beveled binding nut h^2 in the slide-way, is adapted to fix the lever H in various positions eccentrically with respect to the axis of the ratchet. In this way, the free end h^4 of the lever H may be given, when the ratchet is rotated, any reciprocatory stroke desired, as should be readily understood. This free end h^4 of the lever H carries two uprights h^3 between which the depending arm d^3 is capable of being adjusted, and for the obvious purpose of transmitting the reciprocation of the free end h^4, to the clamping mechanism.

The operation of the parts already described insofar as they relate to the automatic feature of this invention is as follows: The turning of the shaft C either directly by hand or indirectly by power applied to the pulley on the stone and then transmitted through the medium of the shaft c^3 and gear pinion c^4 will reciprocate the carriage B and incidentally the pawl b^2. The latter will as positioned engage the ratchet upon each revolution of the shaft C, and in so doing intermittently rotate the ratchet G a predetermined number of teeth. Consonantly, the ratchet will intermittently move the clamping mechanism to one side or the other until the connection between the ratchet and lever passes either one of the two dead centers, at which point the lateral direction of such movement begins to reverse. In this manner the desired reciprocable movement is intermittently or automatically imparted to the clamping mechanism. This assurance of a steady and uniform lateral movement of a blade upon an abrading member simultaneously with the longitudinal reciprocation of the latter, must and does produce an absolutely true beveled edge upon the blade, and moreover wears the abrading member in a way that necessarily maintains a flat uniform surface at all times. Upon that side of the machine at which the rotary stone c^5 is situated, I attach a standard J adapted to support an adjustable tool rest N. My improved construction of tool rest permits a multiple adjustment thereof, and specifically a movement of the rest N in five distinct directions with relation to the stone c^5. This constitutes, however, the subject matter of a divisional application under even date herewith.

It will be noted that my machine entire presents various features in combination, all of which, however, concur in purpose toward the accomplishment of a single object, namely, the perfection of minute and exact adjustability of any blade to be sharpened with respect to the abrading member. This ready adaptation to meet different conditions insofar contributes to heighten the serviceableness by lessening the probability of improper or at best indeterminate grinding results.

Having fully described my invention, what I claim and desire to secure by Letters Patent is:

1. In a blade-sharpening machine, the combination of a reciprocable abrading member; means for effecting such reciprocation; a clamping member; and means for automatically effecting the movement of said clamping member.

2. In a blade-sharpening machine, the combination of a reciprocable abrading member; means for effecting such reciprocation; a clamping member; and operatively connected means, including a lever and a ratchet for automatically effecting the reciprocation of said clamping member.

3. In a blade-sharpening machine, the combination of an abrading member; a clamping member; and means operatively connecting said members, whereby the reciprocation of one effects the transverse movement of the other.

4. In a blade-sharpening machine, the combination of an abrading member; a clamping member; and means operatively connecting said members, whereby the reciprocation of the former effects the intermittent transverse reciprocation of the latter.

5. In a blade-sharpening machine, the combination of a suitable frame; an abrading member; means for reciprocating it longitudinally; a pawl secured to said member; a ratchet mounted in the path of said pawl; a clamping member slidably mounted across said frame; and means comprising a lever operatively connecting said ratchet and clamping member, whereby the rotation of the former effects the reciprocation of the latter.

6. In a blade-sharpening machine, the combination of a suitable frame; an abrading member; means for reciprocating it longitudinally; a pawl secured to said member; a ratchet mounted in the path of said pawl; a clamping member slidably mounted across said frame; and a lever connecting said ratchet, eccentrically of its axis, with said clamping member, whereby the rotation of said ratchet effects the reciprocation of said clamping member.

7. In a blade sharpening machine, the combination of an oscillatory blade-clamping member; a second blade-clamping member oscillatorily mounted upon said first-mentioned clamping member; and means for fixing said second member against oscillation.

Signed by me, this 12th day of April, 1910.

FREDERICK P. OLDS.

Attested by—
CURT B. MUELLER,
FRED H. LEICK.