(No Model.)

C. S. FARRAR.

MACHINE FOR SHARPENING SAWS, &c.

No. 384,613. Patented June 19, 1888.

Fig. 1.

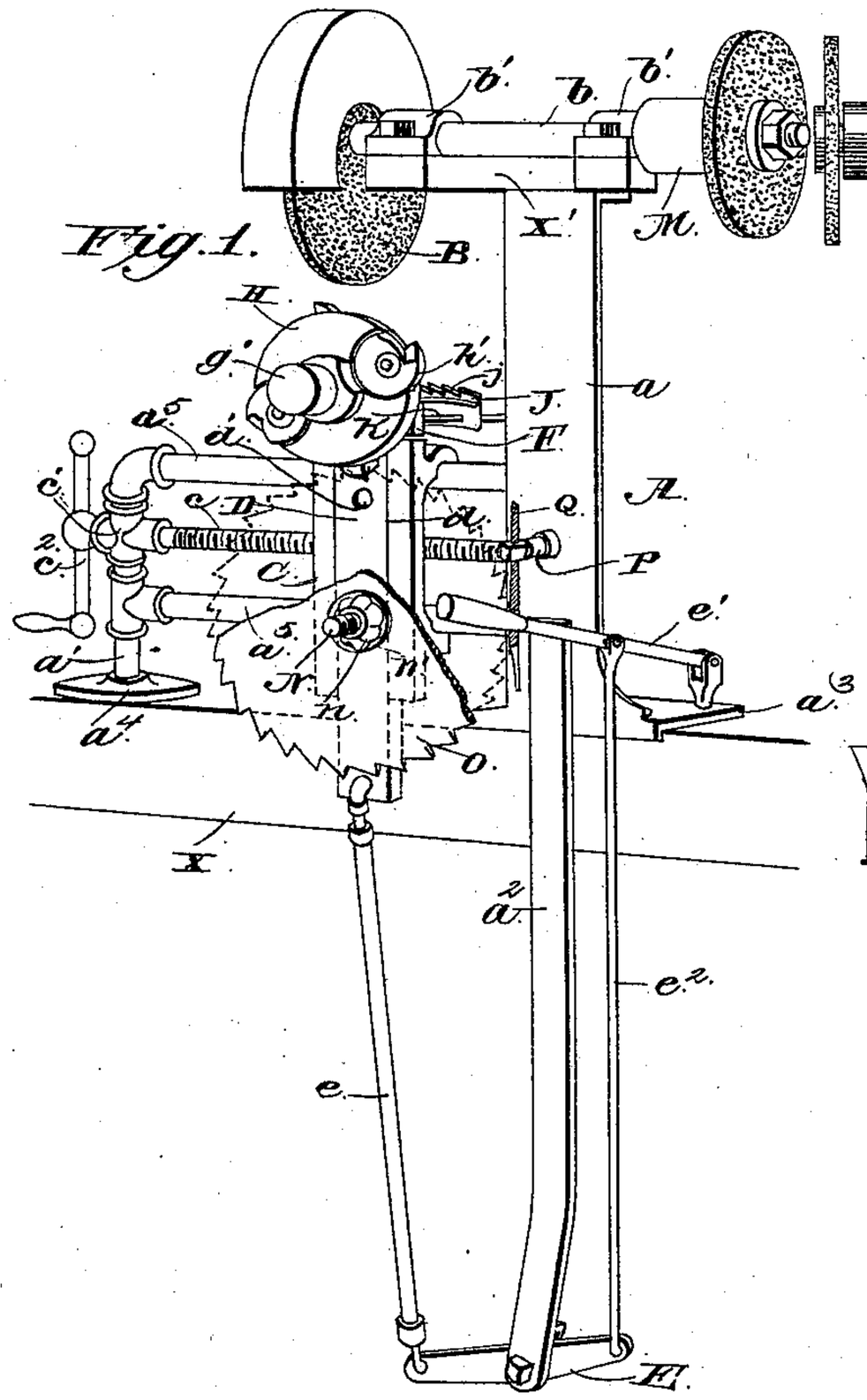


Fig. 2.

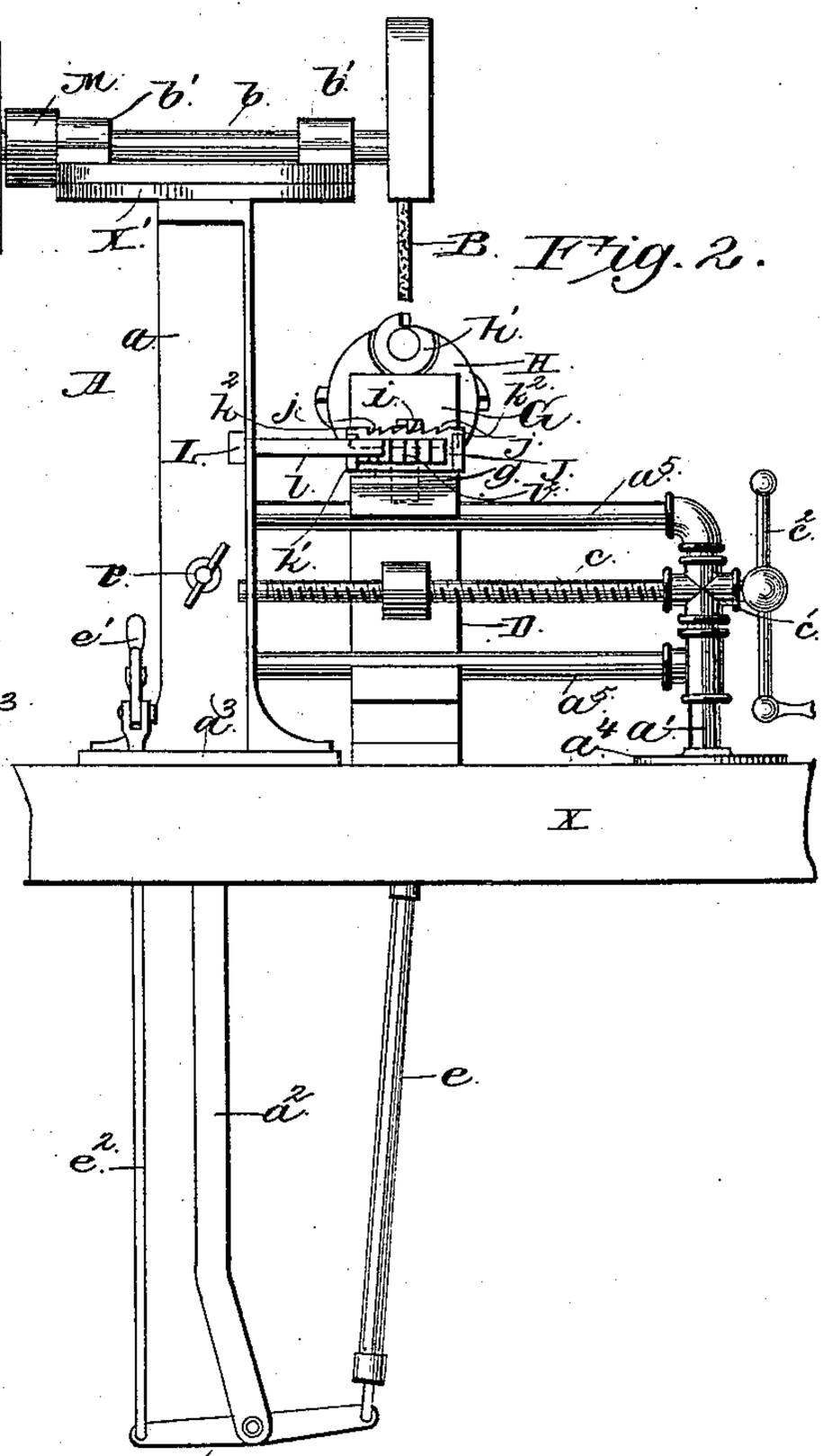


Fig. 4.

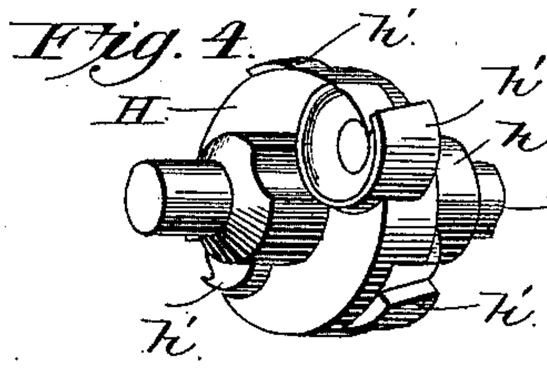
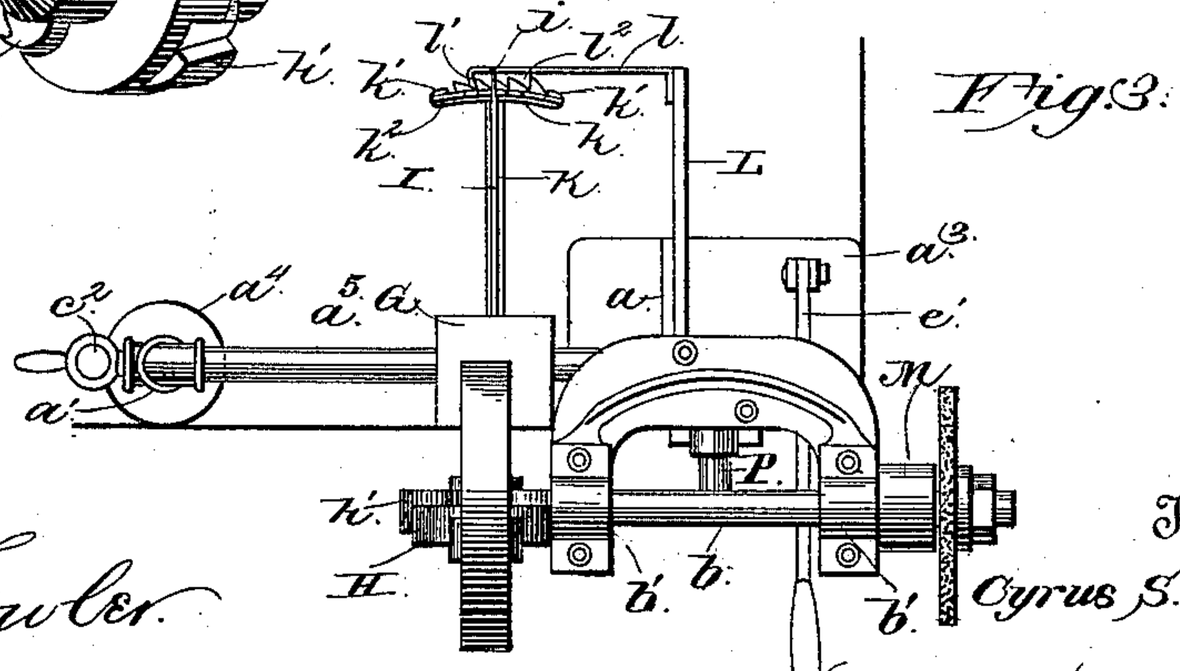


Fig. 3.



Witnesses,
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C. G. Riggs.

Inventor,
Cyrus S. Farrar.
By his Attorneys.
C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

CYRUS S. FARRAR, OF EAST SAGINAW, MICHIGAN, ASSIGNOR OF ONE-HALF TO FRED B. WIGGINS, OF SAME PLACE.

MACHINE FOR SHARPENING SAWS, &c.

SPECIFICATION forming part of Letters Patent No. 384,613, dated June 19, 1888.

Application filed January 25, 1888. Serial No. 261,831. (No model.)

To all whom it may concern:

Be it known that I, CYRUS S. FARRAR, a citizen of the United States, residing at East Saginaw, in the county of Saginaw and State of Michigan, have invented a new and useful Improvement in Tool-Sharpening Machines, of which the following is a specification.

The invention relates to improvements in tool-sharpening machines, being especially adapted to sharpen saws and cutter-heads for planers; and it consists in the construction and novel combination of parts hereinafter described, illustrated in the accompanying drawings, and pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view, taken from one side, of a sharpening-machine embodying the improvements. Fig. 2 is a rear view showing the opposite side. Fig. 3 is a plan view of the machine. Fig. 4 is a perspective view of a cutter-head and attached bits or blades.

Referring to the drawings by letter, A designates the main frame of the machine, provided with the standards a a' at its opposite end, and the arm a^2 depending from the standard a. The said standards a a' are respectively provided with the base-pieces a^3 a^4, by means of which the main frame is secured when in operation to a suitable support, X, such as a work-bench.

a^5 a^5 are suitable horizontal guide and way bars connecting the said standards, and serving a purpose hereinafter explained.

B is the emery grinding-wheel, secured on the inner end of the grinder-shaft b, which is journaled in the bearings b' b', secured to and extending frontward, or from the support X', from the top of the standard a. If desired, a second emery-wheel for general use may be secured on the outer end of the grinder-shaft.

C is a vertical carriage, provided with transverse openings near its ends to move on the guide-bars a^5, and a central transverse tapped opening in which engages the horizontal screw-bar c, which has a bearing at c' in the standard a', and a crank-handle, c^2, outside of said bearing, for the purpose of turning the screw and making the carriage travel on the guide-bars. The said carriage has a central vertical dovetailed groove, d, on its outer or front surface to receive the correspondingly-edged slide D, which is provided with a vertical series of openings, d', in its outer face, for a purpose hereinafter explained. The said slide is reciprocated in the groove in the carriage by means of the double-armed lever E, pivoted in the bifurcated lower end of the depending arm a^2, the pitman e connecting the end of the inner arm of said lever with the lower end of said slide, the lever-handle e', pivoted on the base a^3 of the standard a, and the link-rod e^2, connecting a suitable point of said handle with the end of the outer arm of the pivoted lever E.

Upon the upper end of the slide is secured the pivotal block F, provided with a central vertical opening for the reception of the depending pivot-pin g of the head-block G.

g' is a horizontal cylindrical arm extending frontward from the head-block, and upon which the tubular shank h of the cutter-head H is secured when the circumferential bits or blades h' of said head are to be sharpened. The edges of alternate blades are preferably beveled in opposite directions from the cutter-head, as shown in Fig. 4.

I is a spring-arm extending inward or rearward from the head-block G, and having a detent edge, i, formed on the lower edge of its end to engage in one of the notches, j, in the upper edge of the segmental templet J.

K is an arm standing inward or rearward from the pivotal block F, and having on its end a plate, k, curved on a circle parallel to but somewhat smaller than that on which the templet is curved.

The templet rests against the back of the plate k, and has its ends inserted in the bench formed by the ends k' of said plate bent back on themselves, as seen in Fig. 3, and is supported by the projections k^2 in line with its upper edge, which projections rest on the upper edges of the bends of the plate k.

L is a longitudinal arm standing rearward from the standard a, and having secured at right angles to it, near its end, the inwardly-standing spring-detent arm, l, provided at its end

with a detent-point, l', to engage in one of the series of vertical notches, l^2, on the rear surface of the templet. The carriage can, by the said detent and notched templet, be held in any desired position to which it has been moved. By means of the spring-arm I and the notches i in the upper edge of the templet, the head-block, and consequently the cutter-head, can be held at any desired angle to the plane of the emery-wheel, and, by means of the double-armed pivoted lever, the lever-handle, link-rod, and pitman, the slide can be raised to bring the blades up to the emery-wheel. Thus the right bevel in either direction can be given to the edges of the blades and the faces of the blades can be given the desired inclination to the radius of the cutter-head simultaneously.

M is a pulley, secured at a suitable point on the shaft b, and capable of rotating said shaft and the attached emery-wheel by means of a belt from any suitable motor.

N is a rod passing through any one of the openings d', its head resting in the countersunk inner orifice of said opening, and its outer end, which projects a sufficient distance beyond the outer orifice of said opening, being tapped and engaging the nut n.

n' n' are washers on said rod to lie against the opposite surfaces of a circular saw, O, bound on the projecting end of the rod N by the said nut and washers.

P is a supporting-arm, having its outer end bifurcated and its inner end pivoted at a suitable point in the standard a, and bound in position thereon by the nut p on its tapped end.

Q is a file secured between the arms of the bifurcated end of the support P, so that by turning the said support and fixing it by the nut p, the file can be turned and held at any angle.

When operating on a saw, the head-block is turned laterally on or detached from the pivoted block, as it would prevent the said saw from rising to the emery-wheel.

By means of the openings d' saws of different diameters can be attached to the machine and be ground by the emery-wheel.

As the wheel is turned tooth by tooth in the operation of grinding, the backs of the teeth, one by one, are passed over the file, which is set at the proper angle, and by means thereof the points of the teeth are all kept equally distant from the center of the saw.

The saw is first rounded by rotating it with its teeth against the file, the latter serving to prevent the teeth from getting unequal when grinding, or when the saw is much out of round it may be trued up on the grindstone, both the stone and saw being rotated.

Having described my invention, I claim—

1. In a grinding-machine, the combination of the main frame, grinding-wheel shaft journaled in the main frame of the carriage, the actuating means causing the carriage to travel, the slide moving in a groove or way in the carriage, the head-block pivoted to the slide, and means, substantially as described, whereby the slide can be raised and lowered, substantially as described.

2. The combination, with the main frame and the grinding-wheel shaft, of the carriage-actuating screw, the slide-lever E, the pitman e, and link-rod e^2, substantially as specified.

3. The combination, with the main frame, emery-wheel, and emery-wheel shaft, of the carriage, actuating means therefor, the slide moved up and down by means substantially as described, the pivotal block secured on the slide, the spring-arm K, extending rearward from said block, the retaining-plate k, the pivoted head-block being provided with an arm, g', for the attachment of the cutter-head, the spring-arm I, having the detent-edge i, and extending from said head-block, and the templet provided with notches on its edge, substantially as specified.

4. In a grinding-machine, the combination, with the reciprocating slide, the pivotal block secured thereto, the spring-arm extending from said block, the retaining-plate secured to the end of said arm, and the templet J, having the notches j on its upper edge, of the pivoted head-block G, provided with the pivotal pin g and retaining-arm g', and the spring-arm I, provided with the detent-edge i, substantially as specified.

5. In a grinding-machine, the combination, with the carriage, the slide moving in a vertical groove or way in the carriage, the pivotal block secured to the top of the slide, the spring-arm K, the curved plate k, having the bent ends k', and the curved templet J, provided with the notches j and l^2, respectively, on its upper edge and rear side, of the pivoted head-block G, provided with the pivot-pin g and retaining-arm g', the spring-arm I, having the detent-edge i, and the spring-detent arm l, provided with the detent-point l', substantially as specified.

6. In a grinding-machine, the combination, with the grinder-shaft journaled to the main frame, and the grinding-wheel secured to said shaft, of the carriage, the slide moving in a vertical groove in the carriage and provided with the vertical series of openings d', the rod N, nut n, the supporting-arm P, attached to the standard a, and the file Q, attached to said arm, substantially as specified.

7. In a grinding-machine, the main frame carrying the grinding-wheel shaft, the laterally-movable carriage, and the slide vertically movable in the carriage, as set forth.

8. In a grinding machine, the main frame carrying the grinding-wheel shaft, the guide-bars a^5, the standard a', the screw working in the standard a', and the carriage working laterally on the guide-bars and engaged by the screw, as set forth.

9. In a grinding-machine, the main frame, the grinding-wheel shaft, the laterally-movable

carriage, the slide movable vertically in the carriage and carrying the head-block at the upper end, as set forth.

10. In a grinding-machine, the combination of the emery-wheel, the pivotal block, the head-block for the attachment of the cutter-head, and the operative mechanism, substantially as described, whereby the knives may be ground without removal from the cutter-head, and may thereby be made harder than when sharpened by the file, so that they will remain sharp longer, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

CYRUS S. FARRAR.

Witnesses:
HERBERT A. FORREST,
ALBERT C. BORDEN.