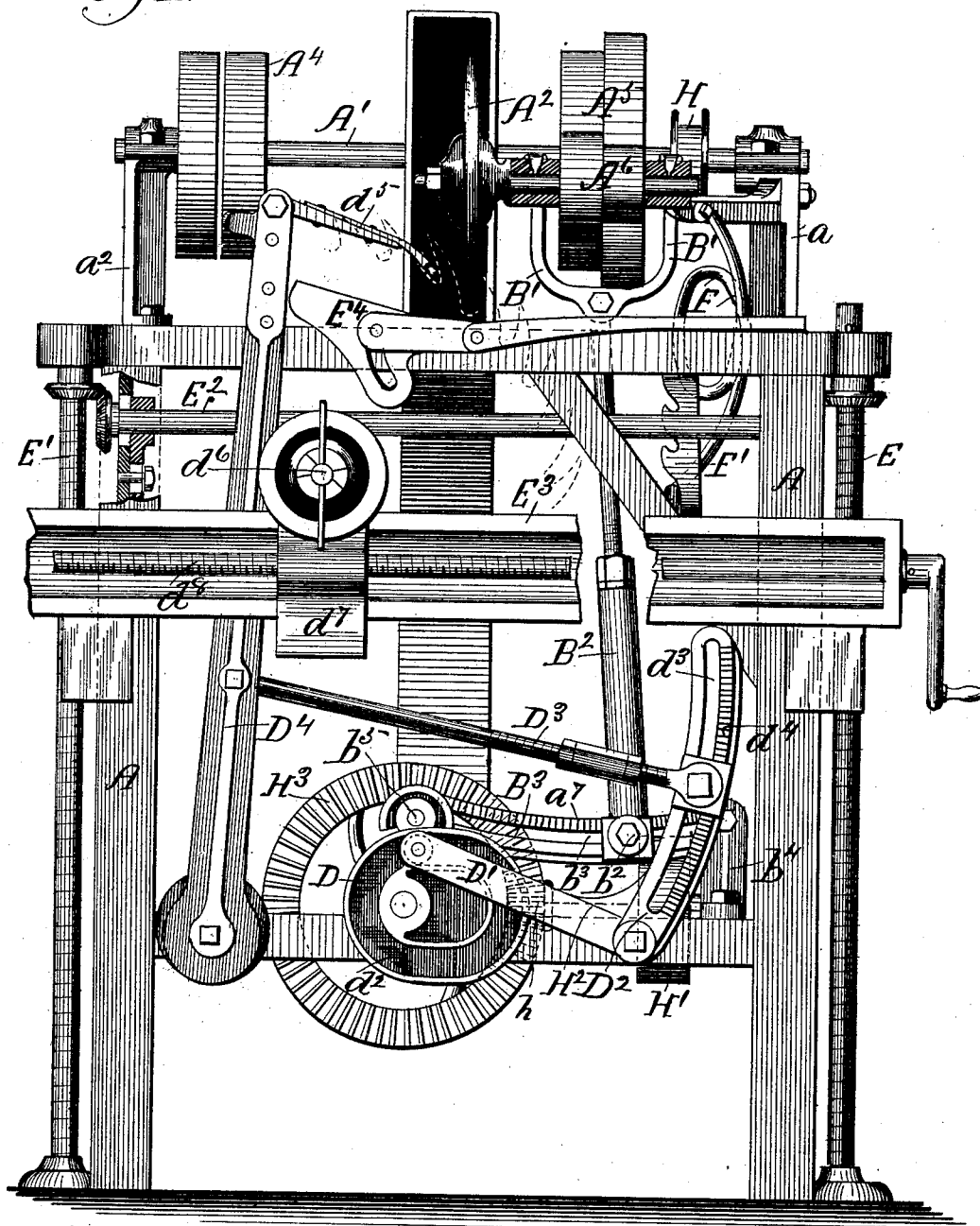


3 Sheets—Sheet 1.

SAW SHARPENING MACHINE.

Patented Mar. 8, 1887.

Fig 1.



Witnesses:
Chas. E. Gaylord.
L. M. Freeman.

Inventor
Hilo Cord.
By G. B. Coupland & Co
Att'y's

M. COVEL.

SAW SHARPENING MACHINE.

No. 359,133.

Patented Mar. 8, 1887.

Fig. 2.

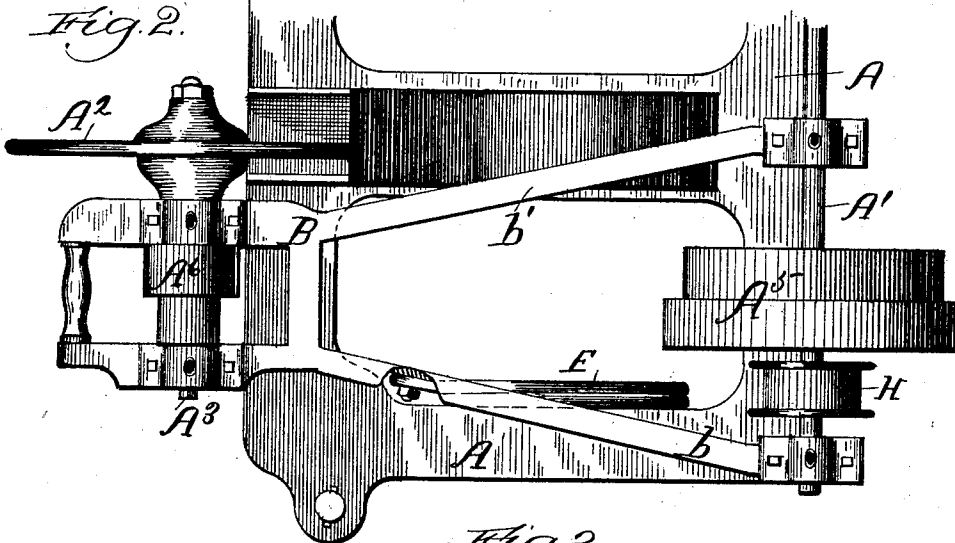


Fig. 3.

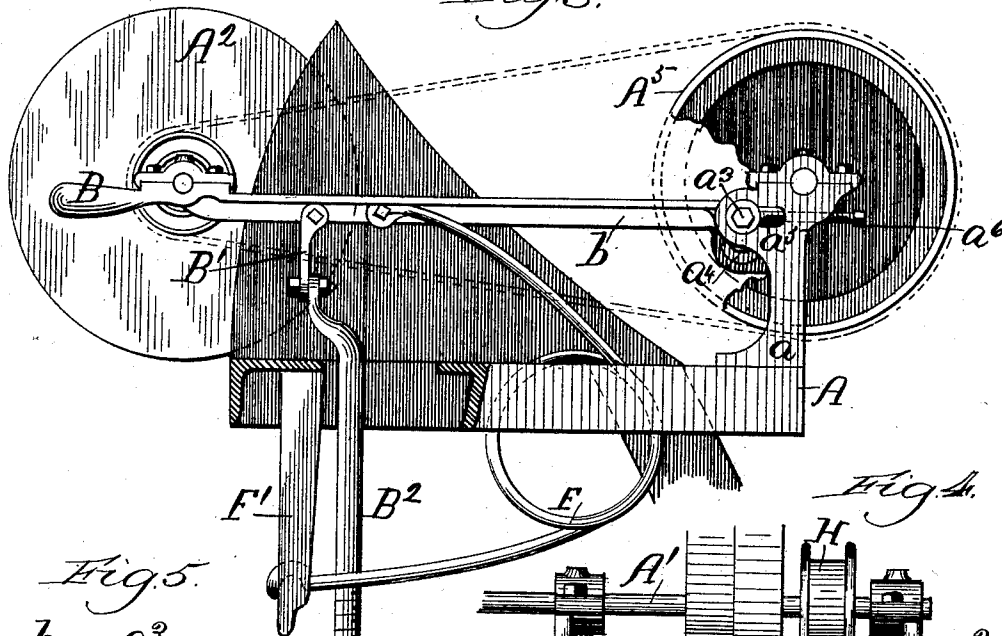


Fig. 5.

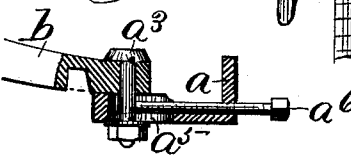
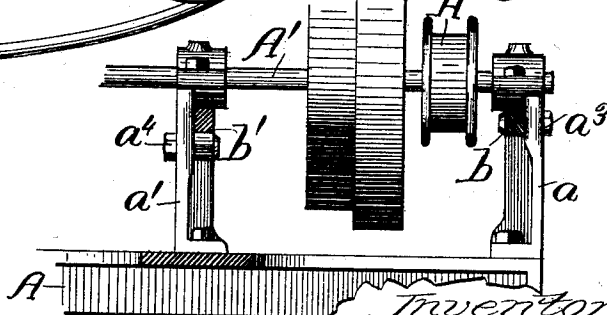


Fig. 4.



Witnesses:
Chas. E. Gaylord.
L. M. Freeman.

Inventor:
Milo Covel.
By L. B. Coupland & Co.
Attys

(No Model.)

3 Sheets—Sheet 3.

M. COVEL.

SAW SHARPENING MACHINE.

No. 359,133.

Patented Mar. 8, 1887.

Fig. 6.

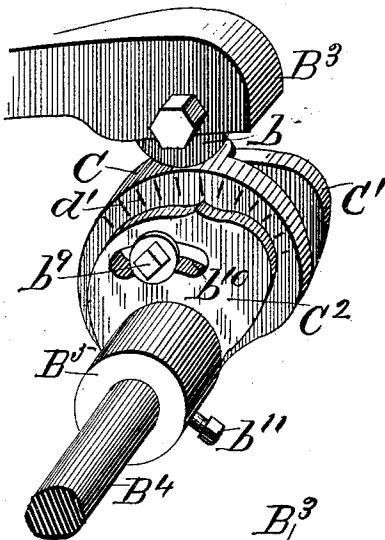


Fig. 7.

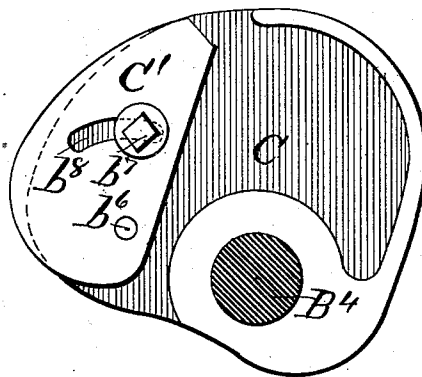
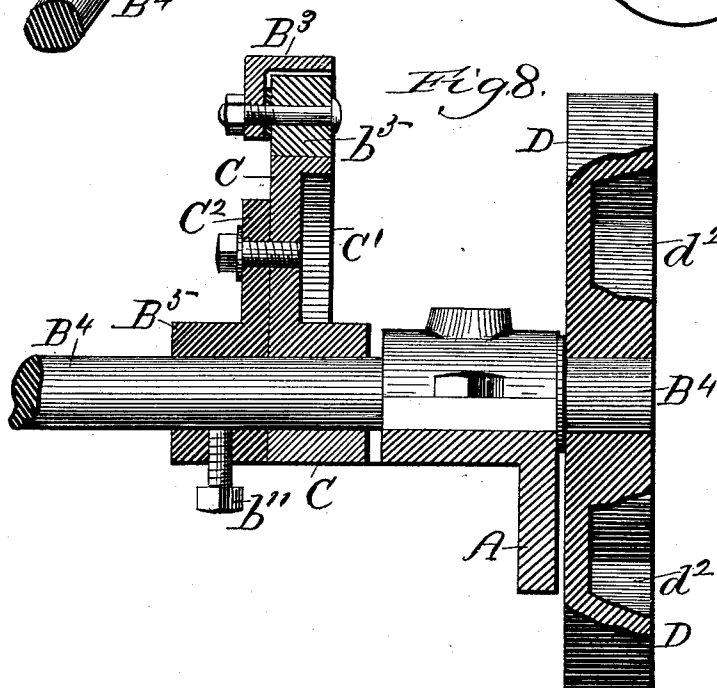


Fig. 8.



Witnesses:
Chas. E. Gaylord
L. M. Freeman.

Inventor:
Milo Covell
By L. B. Coupland & Co.
ATTYS

UNITED STATES PATENT OFFICE.

MILO COVEL, OF CHICAGO, ILLINOIS.

SAW-SHARPENING MACHINE.

SPECIFICATION forming part of Letters Patent No. 359,133, dated March 8, 1887.

Application filed November 16, 1885. Serial No. 1:3,020. (No model.)

To all whom it may concern:

Be it known that I, MILO COVEL, of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Saw-Sharpener Machines, of which the following is a full, clear, and exact description, that will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to improvements in that class of machines set forth in my Letters Patent No. 319,794, issued on the 9th day of June, 1885; and it consists of certain novel features in the construction, combination, and operation of parts, as will be hereinafter set forth.

Figure 1 is a front elevation of a machine embodying my improved features; Fig. 2, a plan view of a part of the machine; Fig. 3, a partial side elevation; Figs. 4 and 5, sectional details; Fig. 6, a view in perspective of an adjustable compound cam; Fig. 7, a detached portion of the same, and Fig. 8 a sectional elevation of the same.

Referring to the drawings, A represents the frame-work supporting the different parts; A', the main driving-shaft, placed on the back part of the frame and supported on the standards $a' a'$; and A², the emery or sharpening wheel, mounted on the arbor A³, journaled in the front part of the sweep B, as shown in Figs. 1 and 2. Motion is transmitted to the emery-wheel from the pulleys A⁴, A⁵, and A⁶.

The sweep B consists of two members, $b b'$, as shown in Fig. 2, the back ends of which are secured in the standards $a a'$, just below the journal-bearings of the driving-shaft A', by the adjustable pivot clamping bolts $a^3 a^4$, as shown in Figs. 3, 4, and 5. The standards $a a'$ are each provided with an elongated slot, a^5 , as shown in Fig. 3, by which means the sweep may be shortened or lengthened, thus moving the emery-wheel forward or back, as may be required in bringing the same to the proper position relative to the saw. The adjusting-screws a^6 are inserted from the back part of the standards $a a'$ and have a bearing on the pivot-bolts $a^3 a^4$, as shown in Fig. 5, whereby the back ends of the sweep B may be adjusted to a fixed position.

The inner side or member, b' , of the sweep B is set lower at the back end than the com-

panion member, as shown in Fig. 4. The object in having one side of the sweep lower than the other is to impart a slight tilting and lateral movement to the emery-wheel, in order to bring the grinding-surface of the same square against the face of the saw-tooth after the emery-wheel is well down in the gullet. This prevents the edge of the emery-wheel from coming in contact with the point of the tooth at first and rounding off the same before the wheel is steadied. The front end of the sweep B supports the emery-wheel, the same being provided with suitable journal-bearings therein.

The upper ends of the yoke B' (shown in Figs. 1 and 3) are detachably secured to the under side of the sweep B, the lower end of this yoke being connected to the upper end of the rod B², the lower end of said rod being adjustably connected to the horizontal curved bar B³ by means of the clamping-bolt b^2 , inserted through the elongated slot b^3 in said bar, as shown in Fig. 1. The bar B³ is also provided with the notched surface a^7 , by which means the lower end of the rod B² may be set to an exact position. The outer end of the bar B³ is pivoted to the post b^4 , while the inner end is provided with the journaled roller b^5 , as shown in Figs. 1, 6, and 8. This roller has a frictional or rolling contact with the irregular compound cam C, by which means this end of the bar B³ is made to rise and fall, imparting a corresponding movement to the sweep and emery-wheel. Shifting the lower end of the rod B² toward the compound cam has the effect of raising the emery-wheel higher, and set in the opposite direction shortens the stroke.

The irregular compound cam is composed of three parts, the center part, C, being the cam proper, which is loosely mounted on its rotating shaft B⁴, as shown in Fig. 8. A second part of this cam consists of the piece C', pivoted at b^6 to the front side of the cam C, and adjustably secured in relation to the same by the clamping-bolt b^7 , inserted through the segmental slot b^8 in the piece C' and tapped into the cam proper. By this arrangement the piece C' may be set outward to any desired degree and caused to project beyond the surface of the cam C at one point in the plane of rotation, as shown in Figs. 6 and 7. When set outward the piece C' has the effect of producing a slimmer tooth with a finer point, and

when set inward a more stubby tooth with a heavier point is the result. This construction readily enables the operator to conveniently adjust the machine to impart the proper form to the teeth, as may be required in accordance with the nature of the material to be cut, and also when there is frost in the wood.

The third part of the compound cam is the piece C², attached to the back side of the same by means of the clamping-bolt b⁹, inserted through the segmental slot b¹⁰, and tapped into the cam C, as shown in Figs. 6 and 8. The piece C² is provided with the hub B⁵, and mounted on the shaft B¹, and secured to the same by the set-screw b¹¹. The raised sharp surface d on the part C² forms a guide for the shifting and the setting of the cam C, which is provided on that side with the scale of graduating-lines d'. By slacking back the bolt b⁹, the cam C may be rolled either backward or forward on its shaft and set to any desired degree or position. By this arrangement the size of the gullet in the saw-plate between the teeth is determined and gaged, the cam C being rolled or set in one direction to produce a smaller gullet or throat and in the opposite direction for a larger gullet. The shaft B⁴ extends from the front to the back end of the machine at right angles to the main driving-shaft and is journaled in the supporting framework.

The cam D is mounted on the projecting front end of the shaft B⁴ and is provided with the continuous groove d², as shown in Figs. 1 and 8. The inner end of the lever D¹ is provided with a roller, as indicated by dotted lines, which has a rolling engagement in the groove d² as the cam revolves. The opposite end of this lever is pivoted to the lower end of the curved swinging bar D², the upper end of said bar being loose, so as to admit of a swinging movement on its pivot. This bar is provided with the elongated slot d³ and the notched rack-surface d⁴, so that the connecting end of the rod D³ may be conveniently adjusted or set to a positive position relative to the bar D². The opposite end of the connecting-rod D³ is pivoted to the feed-arm D⁴, which is in turn pivoted at the lower end to the frame. The back end of the feed-finger d⁵ is pivoted to the upper end of the feed-arm, the loose end of said feed-finger being adapted to engage with the teeth of the saw and feed the same forward in regular order as the process of sharpening progresses. Motion is communicated to said feed-finger from the grooved cam D through the intermediate connections described. By lowering the end of the rod D³ connected to the bar D², the throw of the feed-finger is shortened, while by raising the same the throw is lengthened, thus enabling the proper adjustment to be conveniently and quickly made for different saws. The saw is supported on the spindle d⁶ and clamped between the two collars thereon, as shown in Fig. 1. The slide d⁷ is connected with said spindle and the horizontal screw-shaft d⁸, by

which means a lateral adjustment is given to these parts to bring them to the proper horizontal position. The vertical adjustment of the saw is accomplished through the medium of the vertical screw-shafts E E', motion being transmitted from one to the other by the shaft E², having beveled pinions mounted on each end and engaging with corresponding pinions on the shafts E E'. The cross-bar E³ has a threaded engagement with said vertical screw-shafts.

E⁴ is an adjustable device for clamping and stiffening the saw-plate near the edge.

One end of the spring F (shown in Figs. 1, 2, and 3) is connected to the sweep B, the opposite or lower end being hooked in one of the notches of the rack-bar F'. The function of this spring is to assist in the movement of the sweep when it is necessary to operate the same by hand. When the machine is operated by power, the loose end of the spring is disengaged from the rack-bar. Motion is transmitted from the main driving-shaft to the shaft B⁴ through the medium of the pulley H, mounted on said main shaft and having a belted connection with the pulley H' on the shaft H². (Indicated by dotted lines in Fig. 1.) The shaft H² is provided on one end with the pinion h, also shown in dotted lines, which engages with the gear-wheel H³, mounted on the shaft B⁴.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a saw-sharpening machine, a sweep supporting a grinding-wheel in the front end and provided with pivotal bearings at the back end, and having an endwise adjustment, as described, in combination with the spring F and means for supporting the loose end of said spring, substantially as and for the purpose set forth.

2. In a saw-sharpening machine, a sweep consisting of the members b b', provided with pivotal bearings at the back ends and having one of the sides or members comprising said sweep set at a lower point than the companion member, substantially as and for the purpose set forth.

3. In a saw-sharpening machine, the combination, with a sweep consisting of the members b b', of the standards a a', provided with the elongated slot a³, the pivotal bolts a³ a⁴, and the adjusting screw or screws a⁵, whereby said sweep is adapted to have an endwise adjustment, substantially as and for the purpose set forth.

4. In a saw-sharpening machine, the combination, with a sweep, as described, having the pivotal bearing of one side lower than that of the companion side, of an emery or grinding wheel journaled in the front end of said sweep, substantially as set forth.

5. In a saw-sharpening machine, the combination, with a sweep provided with pivotal bearings at one end and supporting a journaled grinding-wheel in the opposite end, of the yoke B', the rod B², the curved bar B³, pro-

vided with an elongated slot and a notched surface, as described, the roller b^5 , the cam C, and the shaft B^4 , whereby the required movement is imparted to the sweep and grinding-wheel, substantially as set forth.

6. In a saw-sharpening machine, a compound cam consisting of the part C, provided on the back side with graduating lines and loosely mounted upon its rotating shaft, the part C' , adjustably secured in relation to the part C, and the part C^2 , rigidly mounted on its shaft and provided with means for securing said part C^2 to the part C, whereby the latter may be adjusted to any desired position, in combination with the shaft B^4 , the bar B^3 , provided with the roller b^5 , the sweep B, and the means described for connecting said bar and sweep, substantially as and for the purpose set forth.

7. In a saw-sharpening machine, the combination, with the grooved cam D, mounted upon the outer end of the rotating shaft B^4 , of the lever D' , having a roller engagement with said cam, the swinging bar D^2 , the rod D^3 , the feed-arm D^4 , and the feed-finger d^5 , substantially as and for the purpose set forth.

8. In a saw-sharpening machine, the combination, with the curved swinging bar D^2 , provided with the elongated slot d^3 and the notched rack-surface d^4 , of the connecting-rod D^3 , the feed-arm D^4 , and the feed-finger d^5 , whereby the throw of said finger may be lengthened or shortened, as required, substantially as set forth.

MILO COVEL.

Witnesses:

L. M. FREEMAN,
L. B. COUPLAND.