(No Model.) 2 Sheets—Sheet 1.

J. H. LANDIS.

MACHINE FOR SHARPENING AND SETTING SAWS.

No. 490,410. Patented Jan. 24, 1893.

Fig. 1.

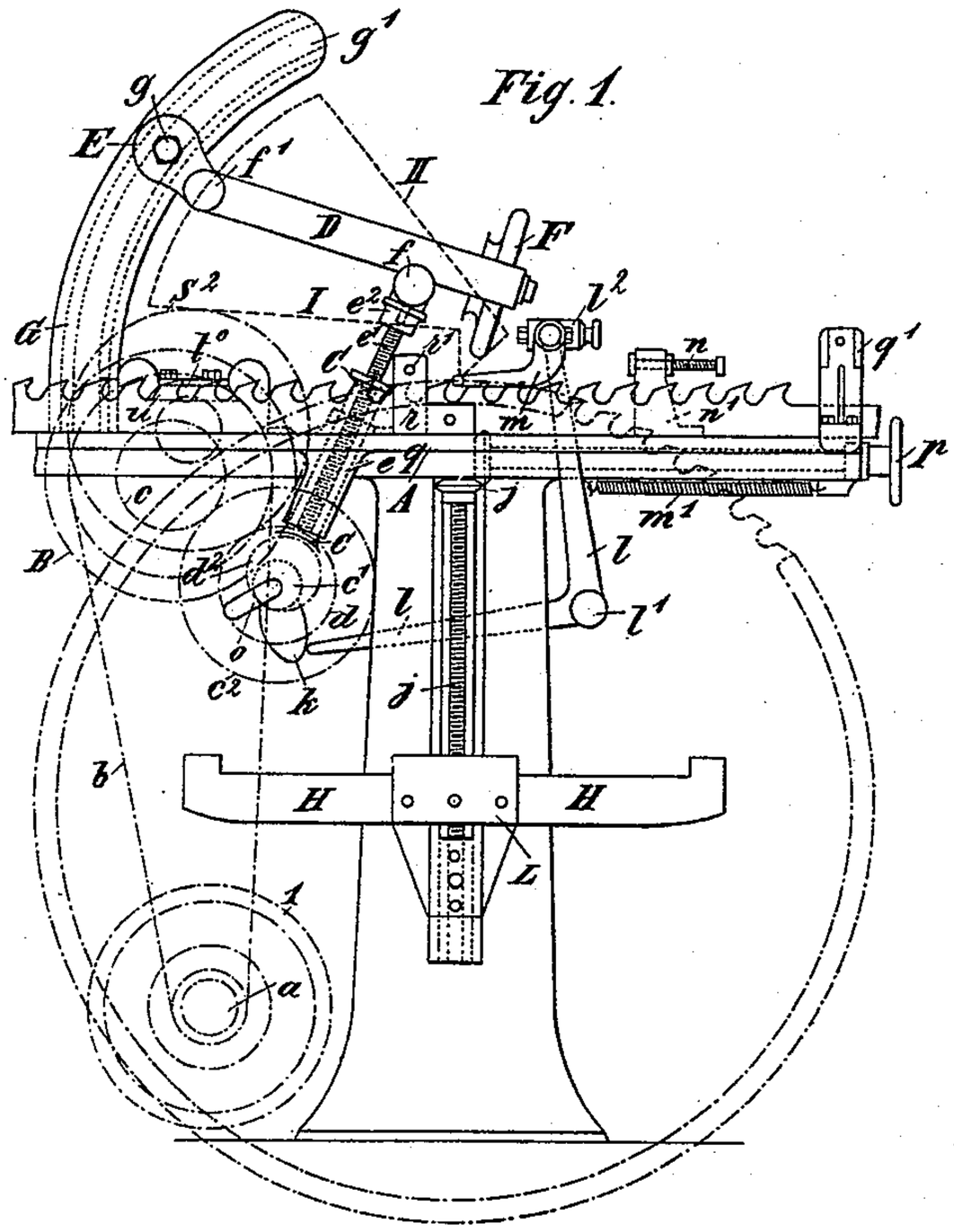


Fig. 2.

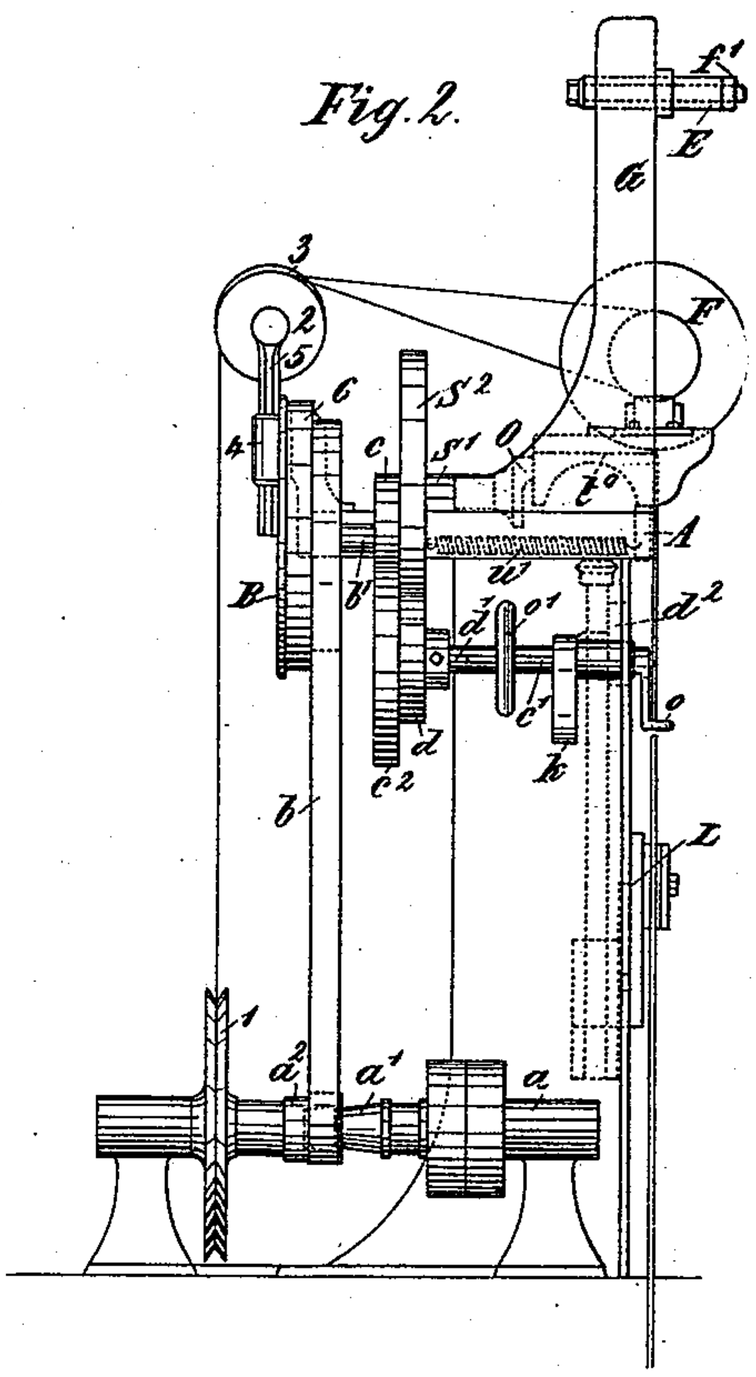
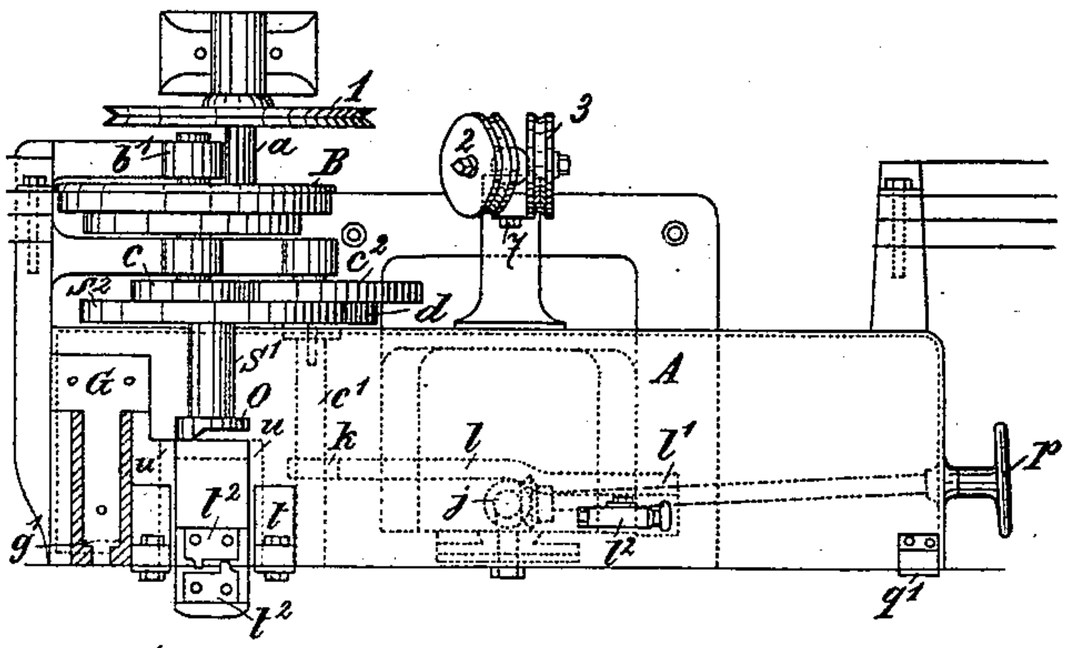


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 10.

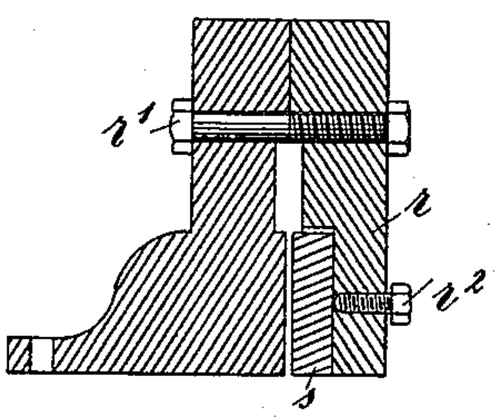


Fig. 9.

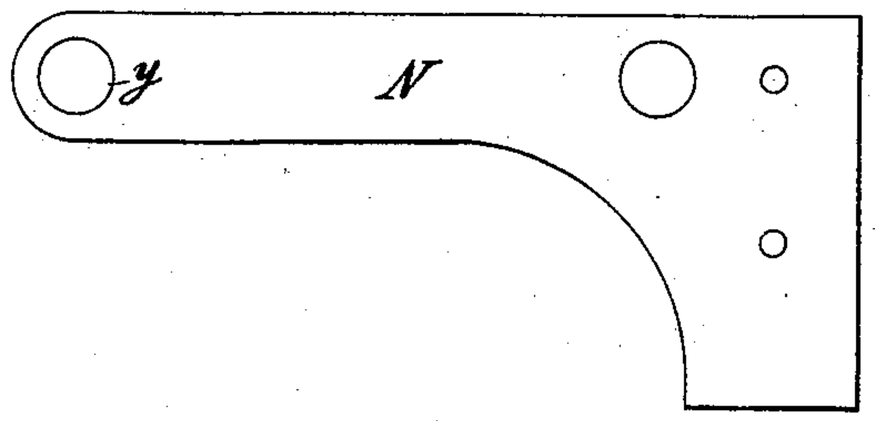


Fig 5.

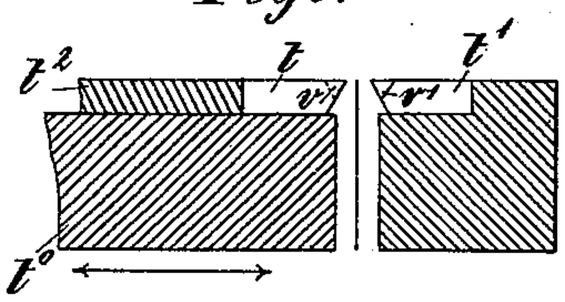


Fig. 7.

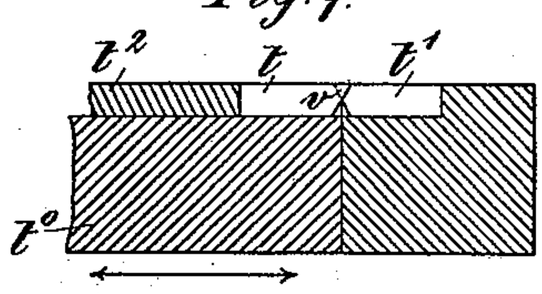


Fig. 6

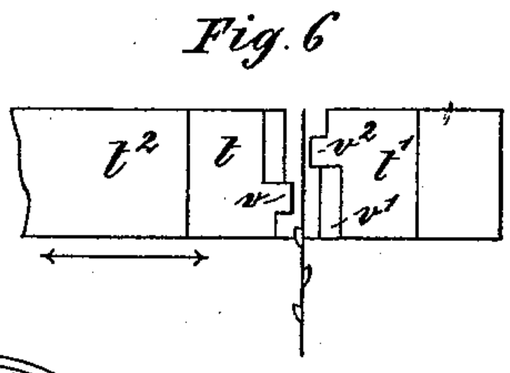


Fig. 8.

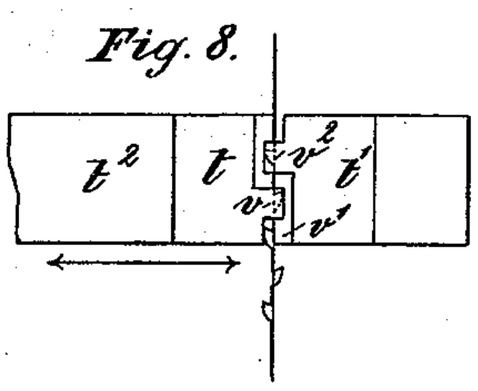
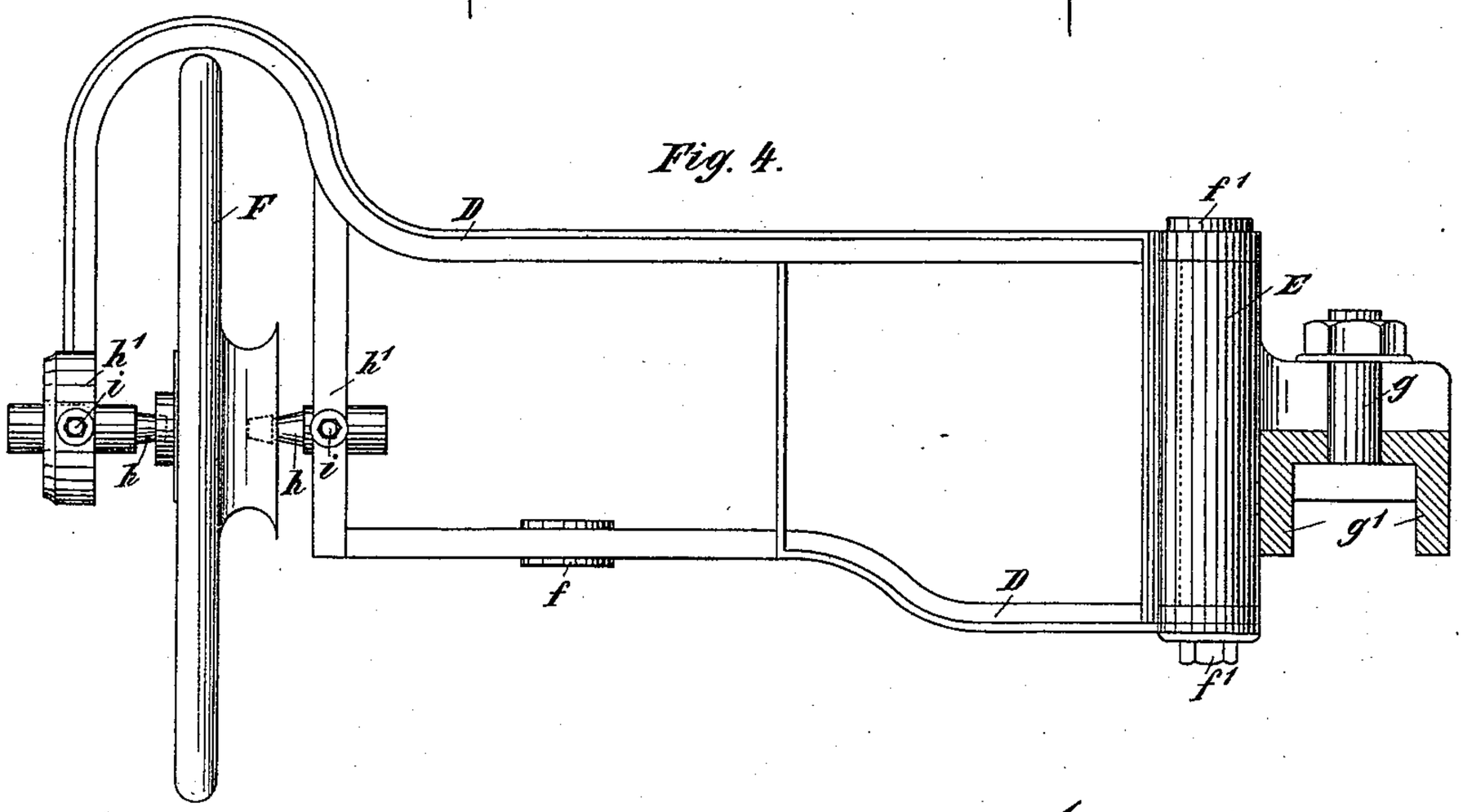


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHANN HEINRICH LANDIS, OF OERLIKON, NEAR ZURICH, SWITZERLAND.

MACHINE FOR SHARPENING AND SETTING SAWS.

SPECIFICATION forming part of Letters Patent No. 490,410, dated January 24, 1893.

Application filed May 18, 1892. Serial No. 433,486. (No model.) Patented in France September 26, 1890, No. 208,474; in Switzerland September 29, 1890, No. 2,693, and in Germany October 2, 1890, No. 57,216.

To all whom it may concern:

Be it known that I, JOHANN HEINRICH LANDIS, sawmill-owner, a citizen of Switzerland, residing at Oerlikon, in the canton of Zurich, Switzerland, have invented certain new and useful Improvements in Machines for Sharpening and Setting Saws; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has been patented in France, No. 208,474, dated September 26, 1890; in Switzerland, No. 2,693, dated September 29, 1890, and in Germany, No. 57,216, dated October 2, 1890.

This invention relates to machines for sharpening and setting saws, and consists in the construction and combination of devices hereinafter particularly set forth and claimed.

In the accompanying drawings Figure 1 is a front view; Fig. 2 a side elevation; Fig. 3 a plan of the improved machine; Fig. 4 is a plan on a somewhat enlarged scale of the bent frame or yoke carrying the emery-wheel. Figs. 5 to 8 are detail views of various parts of the setting device. Fig. 9 shows the support used in setting circular saws, and Fig. 10 is a cross section of the saw-blade guide.

The combined mechanism is arranged upon table A resting upon a suitable pillar or support and receives motion from the main shaft *a*. By means of the beveled friction-wheels a' a^2 motion is conveyed to it through the medium of a strap *b* upon a strap-pulley B. Upon the shaft b' of this pulley is mounted a toothed wheel *c* gearing with the wheel c^2 rigidly secured upon the shaft c'. The wheel *d* follows the movement of the shaft c' and in addition to this is capable of moving to a slight extent along the said shaft upon the feather d'. By means of a set screw the wheel *d* is retained in the adjusted position. By throwing this wheel *d* into or out of gear, as the case may be, the setting mechanism, hereinafter to be described is set in motion or arrested. The saw-blade is guided, and the emery wheel oscillated, from the shaft c'. Upon this shaft c' also an eccentric d^2 (Fig. 1) is keyed, upon the periphery of which rests the slide C working in the guide *e* in the supporting table A. Into this slide C is screwed the spindle e', in the head e^2 of which the roller *f* is loosely journaled, so that this roller does not necessarily follow the movements of the spindle e'. Upon the said roller *f* lies the bent frame or yoke D carrying the emery-wheel and adapted freely to turn about the bolt or rod f' of the adjustable, pivoted bracket E (Figs. 1 and 4.)

The emery or grinding wheel F is mounted in the frame D in such a manner that its axis in each position exactly coincides with the vertical plane of the saw-blade, whereby an uneven sharpening of the teeth is effectively prevented. As the arm of the yoke D enters a groove provided for the purpose in the roller *f* the rising and sinking movements of the slide C are transmitted to the emery-wheel. The pivoted block E is adjustable along a grooved or slotted supporting segment G, and by tightening the screw *g*, the head of which moves in the groove g' of G, it may be retained in any desired position. The support G is secured to the table by screws or the like. The conical trunnions or bearings *h* of the emery or like grinding-wheel F are supported at h' thereby rendering the said grinding wheel adjustable sidewise, bolts or screws *i* serve to retain it in the adjusted position. To secure a strong and reliable support for the grinding-wheel F, the conical trunnions *h* are truncated, so that the wear of these trunnions both at the end surface and on the circumference is always uniform.

The size and shape of the grinding-wheel may vary according to the desired shape of the teeth. As the grinding wheel in addition to its rotation on its own axis, is adapted to oscillate on the bolt or spindle f', the back of each tooth is so sharpened as to assume a somewhat concave shape and the grinding is directed toward the point of the tooth, which is one of the requirements for a good saw-cut.

Lines I and II show the two extreme positions of which the shifting yoke is capable of reaching upon the supporting segment G. The grinding wheel is driven from the pulley 1 by means of a band, cord or equivalent and through the medium of two guide-pulleys 2 and 3, whence the band or cord returns to the pulley 1. The socket 4 of the guide roller-

support 5 is supported by a disk 6 and may be retained in any required position thereon by means of the bolt or screw 7. The feeding or guiding mechanism is also operated from the shaft c', provided for this purpose with a tappet or cam k, which at each revolution once depresses the horizontal arm of the bell-crank lever l pivoted at l'. The vertical arm of the bell-crank lever carrying the blade or arm m, adjustable in the guide l^2 and exchangeable, then performs a movement in the forward direction and causes the saw-blade to advance the space of one tooth, whereupon the spring m' pulls the bell-crank lever back to its initial position, in which its vertical arm rests against the set-screw n. According as this screw, to a greater or less extent is screwed into the support n', the displacement of the vertical arm of the bell-crank lever will be confined within narrower or wider limits, and the adjustability of the feeding device will vary accordingly. The feeding takes place for each successive tooth separately, in such a manner that after one tooth is sharpened the next tooth is fed forward and for this purpose the curve of the tappet is such that the return of the feeding blade, though very rapid, causes no violent shock of the bell-crank lever against the screw n.

To secure all the parts of the guiding or feeding mechanism in the proper positions, previously to setting the machine in operation, the shaft c' is acted upon, being for this purpose adapted for operation by hand; for example, if no circular saw is to be sharpened or set a crank-handle o may simply be fitted to c'. Where the front end of c' is made inaccessible by a circular saw blade, the shaft c' may be driven by means of a hand wheel o'.

H is a device for guiding band and veneer-saw-blades.

By turning the hand-wheel p the bevel pinion J and through it the vertical screw spindle j are set in motion, whereby the blade-guide is caused to rise or fall along with the saw-blade which it guides at the center and at both ends.

q q' are the central and lateral guides for the vise or screw-holder and the brakes for the saw-blades. These guides are constructed as follows:—The removable front part r of the guide shown in Figs. 1 and 10 is connected with the portion secured to the supporting table by means of a screw r'. The saw blade passes between the two parts and is retained in position by the slightly yielding action of the front portion which at the same time acts upon it as a check or brake. By means of a set screw r^2 the result is secured, that the plate s is always in contact with the surface of the saw-blade, which is desirable both for correctly guiding and properly checking the saw. When a saw-blade is inserted or removed all the front parts of the guides are turned up about the screws r', whereby free access is obtained on the front side. The saw-blade is secured in the well-known manner to a support L which may also be raised and lowered by means of the vertical screw spindle j.

In operating the saw-setting mechanism the wheel d is thrown into gear with the wheel s^2 mounted upon the shaft s'. The front end of this shaft s' carries a disk or cam O adapted to actuate the setting mechanism proper. This mechanism consists of two cheeks t t', one of which t is movable, and the other t' stationary. The movable cheek t is supported by the piece t^0 fitted within a dovetailed groove u. t^2 designates two rails, by leaning against which the cheeks t t' retain the proper position. The cheeks t t' are adjustable according to the pitch of the saws, screws being provided for fixing them in the adjusted position. The spring u', one end of which is secured to the supporting table A, while the other end is attached to the sliding piece t^0 of the cheek t, constantly presses the slide t^0 into contact with the disk O and causes it to shift inwardly and outwardly to suit the projections and recesses of the saw. When the cheek t is thus moved inwardly the inclined setting tooth v presses the tooth of the saw passing between the two cheeks t and t' against a correspondingly inclined surface v' provided on the stationary cheek t', Figs. 5 to 8. A similar movement in the opposite direction is performed by the setting tooth v^2 of the stationary cheek t', so that two teeth are set simultaneously. The movable cheek t then recedes and the steering or feeding mechanism above described causes another pair of saw-teeth to advance for setting. The saw-blade is constantly kept in contact with the movable cheek by spring-action applied in any suitable manner. The stationary setting cheek with its support may be removed when the setting device is not required, so that free access to the front part of the table is afforded to the saw-blades.

N Fig. 9 is an auxiliary support intended to replace the guide H when a circular saw is to be set, which saw the said support receives at y. The circular saw is moreover held between two leather disks, which by their friction exercise a convenient checking action upon it. The sharpening and setting may not take place simultaneously. When the piece H is raised by means of the hand-wheel p both the saw-blade and the grinding-wheel may during the operation be brought into any desired position by suitably screwing up the arm m in the guide l^2 and correspondingly screwing inward or outward the screw-spindle.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I claim is;—

1. In a saw grinding machine the grinding wheel F having its axis in the vertical plane of the saw in combination with its supporting frame D, the block E to which the said frame is pivoted, the segment G in which the said

block is adjustably secured, the rotating cam d^2, the slide C in contact with the said cam and an attachment of the said slide arranged in contact with the said frame for raising and lowering the free end thereof as the said cam turns substantially as set forth.

2. In combination with a grinding wheel and a pivoted frame in which it is mounted, a cam, a slide acted on by the said cam and a spindle which supports the free end of the said frame and is screwed into the said slide to allow adjustment substantially as set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOHANN HEINRICH LANDIS.

Witnesses:

A. BOURRY SÉGUIN,

HENRY LABHART.