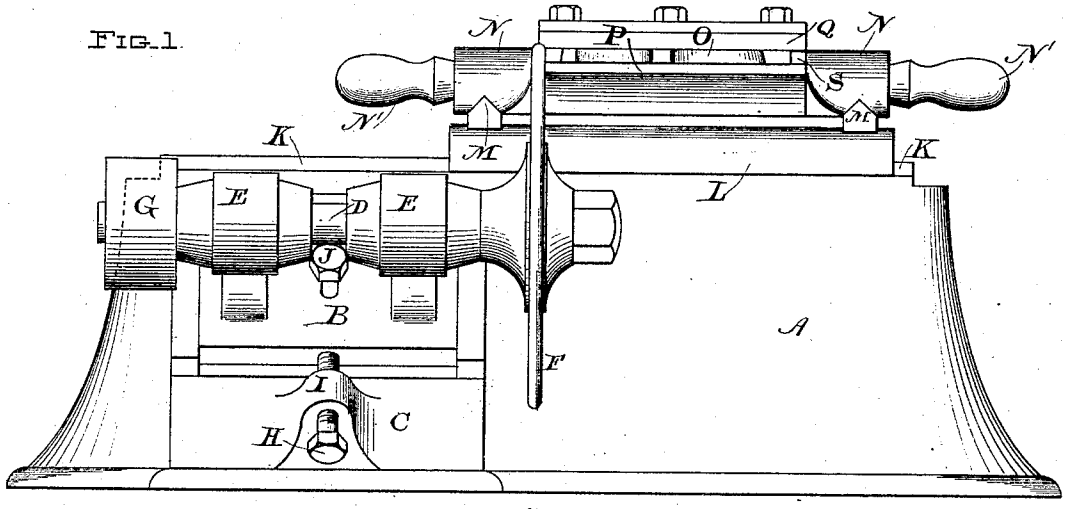
(No Model.) 2 Sheets—Sheet 1.

E. S. DRAKE.

MACHINE FOR GRINDING MOLDING CUTTERS.

No. 353,415. Patented Nov. 30, 1886.

FIG. 1.



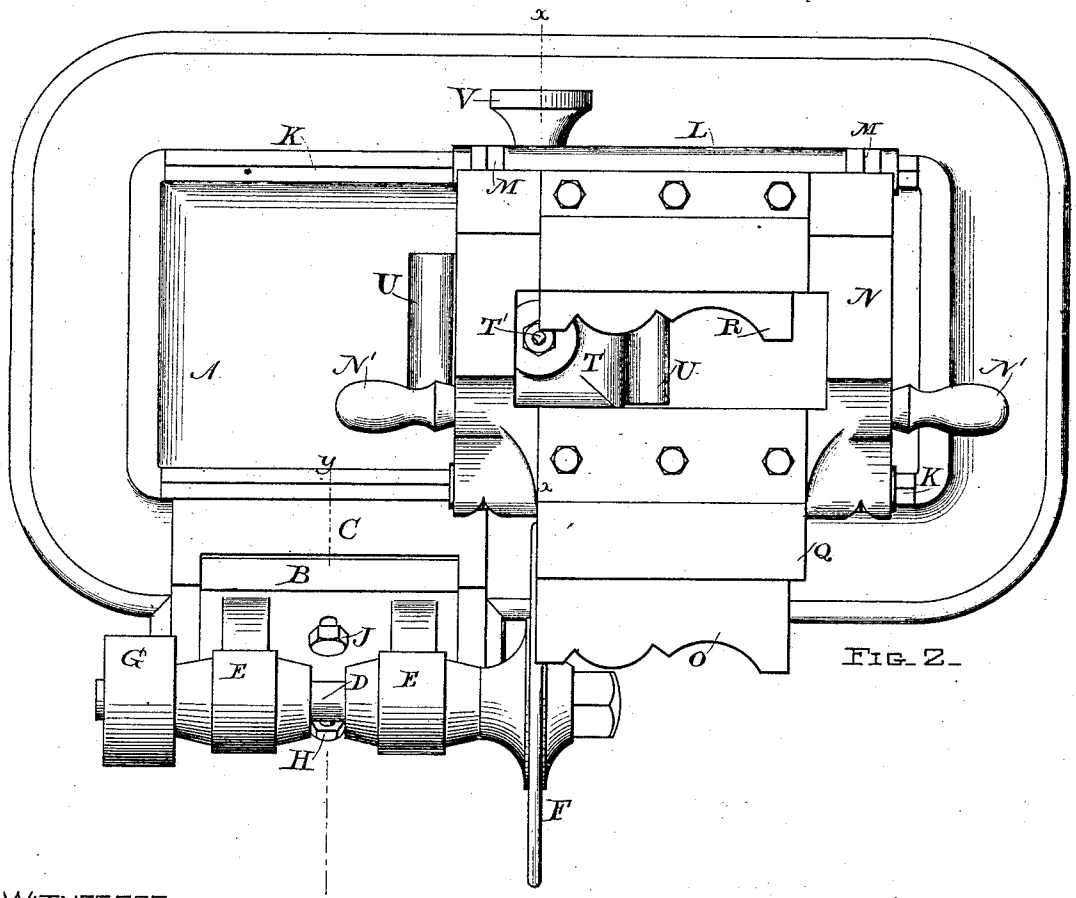


FIG. 2.

WITNESSES

D. W. G. Humphrey

T. McPorter

INVENTOR

Edwin S. Drake

per Eugene Humphrey

his Attorney

N. PETERS. Photo-Lithographer, Washington, D. C.

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FIG. 3.

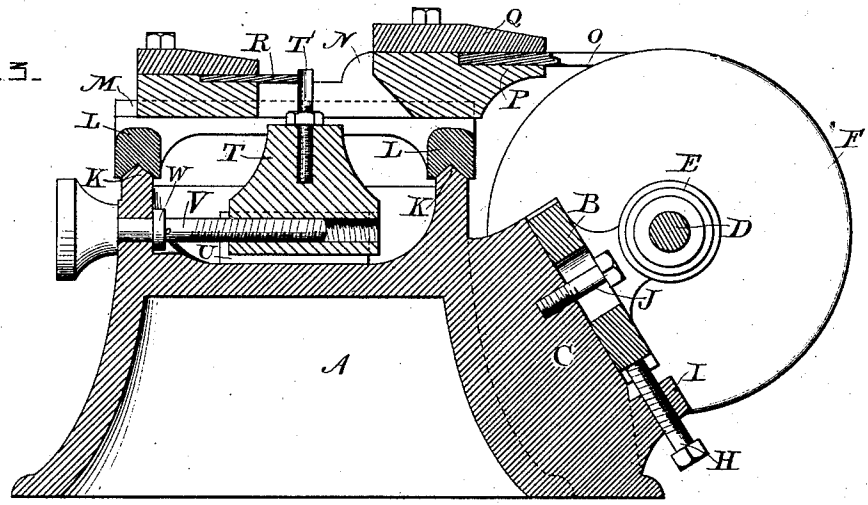
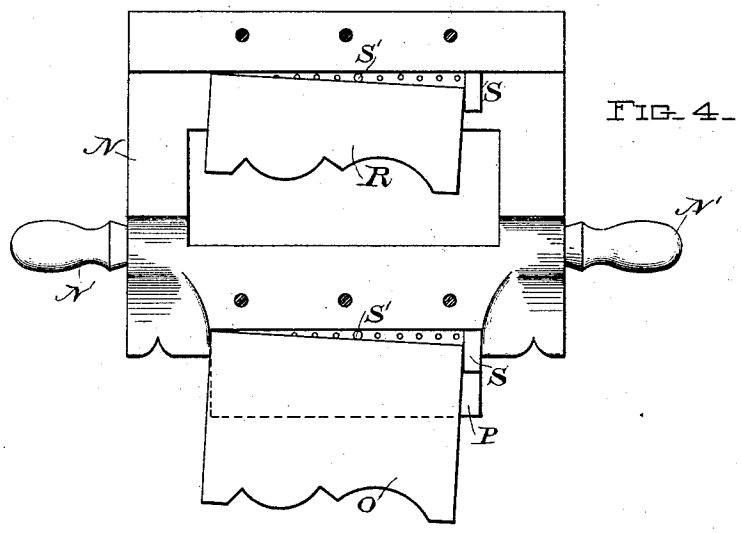


FIG. 4.



WITNESSES

D. W. G. Humphrey

T. M. Porter

INVENTOR

Edwin S. Drake

per Eugene Humphrey

his Attorney

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

EDWIN S. DRAKE, OF AUGUSTA, MAINE.

MACHINE FOR GRINDING MOLDING-CUTTERS.

SPECIFICATION forming part of Letters Patent No. 353,415, dated November 30, 1886.

Application filed February 18, 1886. Serial No. 192,376. (No model.)

To all whom it may concern:

Be it known that I, EDWIN S. DRAKE, of Augusta, in the county of Kennebec and State of Maine, have invented a new and useful Improvement in Machines for Grinding Molding-Cutters, which will, in connection with the accompanying drawings, be hereinafter fully described, and specifically defined in the appended claims.

My invention relates to machinery for grinding the cutting-edges of machine-knives of plain or irregular configuration—such as molding-cutters and knives or cutters of analogous construction; and the invention consists in the construction and combination of the divers devices embodied therein, as hereinafter more fully and particularly described, and defined in the appended claims.

In the accompanying drawings, Figure 1 is a rear elevation of a machine embodying my invention, and shows the manner in which the grinding-wheel is secured to the side of the machine-bed, and the relation of the cutter-holding carriage to the wheel when mounted in position upon the top of the bed. Fig. 2 is a top view or plan of the same, showing more fully the tool-holding carriage and other devices connected therewith. Fig. 3 is a vertical section taken through different portions of the machine, as on lines *x x* and *y y*, Fig. 2. Fig. 4 is a detached plan of the carriage, and showing a templet and cutter thereon as adjusted to give clearance to certain portions of the cutter, as will be hereinafter explained.

Upon the rear side of an iron bed, A, is secured an adjustable journal-stand, B, the base of which is fitted to slide obliquely in a recess cut in a projection, C, formed upon the bed. To an arbor, D, journaled in bearings E E, is secured a grinding-wheel, F, and to the opposite end of the arbor a driving-pulley, G. The journal-stand B and its attachments are adjustable in the recess in projection C, by means of a set-screw, H, threaded in a lug, I, and acting against the lower edge of the journal-stand B, to move the same into the required position; and when the desired adjustment is made the stand is further secured by bolt J, which is threaded into projection C, through a slot in the base of the journal-stand, as shown. Wheels of a diameter of about ten inches are employed, and give the required concave bevel to the cutting-edge ground therewith.

As the grinding-wheel becomes reduced in diameter by wear it requires to be adjusted toward the cutter in a line at right angles with the bevel formed by grinding upon the cutting-edge of the knife, and this adjustment is secured by the oblique movement of the journal-stand B, already described.

Upon the top of bed A are formed two longitudinal ribs, K K, which are parallel with the axis of wheel F, and are finished to constitute the ways upon which a sliding frame, L, moves when mounted thereon, as shown. This frame L, the side bars of which are longitudinally grooved to fit upon ways K, has its end or cross bars, M M, fitted to serve as ways upon which a carriage, N, moves when mounted thereon, as shown. Thus the carriage N has an independent movement to and from the edge of the grinding-wheel upon the transverse ways M M, and, in connection with frame L, it has a movement lateral to the edge of the grinding-wheel upon the longitudinal ways K K.

To the back side of the carriage N is secured the cutter O, which is supported upon a ledge, P, planed upon the carriage, and secured thereon by being clamped between said ledge and a cap, Q, which cap is bolted to the carriage behind the cutter, as shown. Upon the front side of the carriage is secured a templet, R, in precisely the same manner as the cutter is secured to the rear side, as just described. This templet is an exact counterpart, in configuration, of the cutting-edge of the knife, for which it is to serve as the gage and guide in grinding.

To facilitate the adjustment of the cutter and templet in their respective positions upon the carriage, and in their proper relative positions, stops S S are secured to the respective ledges upon which the cutter and templet rest, and against which the ends of the cutter and templet are placed, and are thereby brought into exact alignment.

Upon bed A, between the ways K K, is secured an adjustable post, T, which is capable of forward and backward movement between guides U U, which are parallel with ways M M of the carriage. This post is adjusted in

position by a screw, V, which is threaded into the post and turns freely in the front side of the bed, through which it passes, having on its outer end a knob by which it is turned, and is secured against lineal movement in the bed by a collar, W, as shown. Into this post T is screwed a vertical gage, guide, or tracing-iron, T′, against which the edge of the templet is guided when the machine is in practical operation. This tracing-iron T′ is so formed that the portion thereof which is in contact with the templet when the machine is in practical operation is the exact counterpart of that portion of the grinding-wheel which is operating at the same time upon the knife-edge, and that portion of the tracer or guide T′ which is in contact with the templet must be in the same vertical plane with the corresponding portion of the grinding-wheel, which is at the same time in contact with the knife-edge.

Handles N′ are provided for carriage N, by which the operator may move the carriage on ways M M to and from the grinding-wheel, and in connection with frame L, at right angles thereto on ways K K, being gaged and guided in such movements when grinding a cutter by the contact of the edge of the templet R with the tracing-iron T′, so that in whatever position the carriage may be placed, in the proper operation of the same upon the machine-bed, corresponding parts of the cutter-edge and templet will be in alignment with the operative portions of the grinding-wheel and tracing-iron.

It is sometimes desirable, in grinding or forming molding-knives, to give to some portions of the irregularly-outlined cutting-edges a lateral as well as lineal clearance, and for this purpose I have made provision for setting the cutter and the templet at a corresponding angle on their respective holders, whereby the desired result is secured. To secure the cutter at the required angle, I provide a series of holes, S′, Fig. 4, into which a pin may be inserted between the back edge of the knife and the shoulder on the knife-holder at any point, according to the angle which it is desired to give to the cutter, to secure the required amount of lateral clearance in grinding, the pins used being short and not interfering with the screwing down of the cap which holds the cutter in place. A corresponding angle is given to the templet in precisely the same manner. To form or grind molding-knives "rights and lefts," as is sometimes required, it is only necessary to turn the templet over upon its holder to change from a "right" to a "left" knife, or vice versa.

By the use of this invention knife-edges of irregular outline—such as molding-knives—are ground to a standard form or design, and as such knives are usually employed in pairs, the two knives of a pair are thus kept in precise conformity to the design upon which they are formed—a result which is impracticable by the usual mode of sharpening by hand; and, besides being more perfect, the machine-sharpening is much more expeditious and inexpensive; and moldings cut or formed by knives so ground, and the configuration of whose cutting-edges is thus preserved, are much improved, in that when cut with a view to forming a corner joint they will miter more perfectly.

I claim—

1. In a grinding-machine, the combination, with a grinding-wheel mounted in stationary bearings, of a sliding frame adapted to move in a direction parallel to the arbor of the said wheel, a carriage movable on the said sliding frame toward or from the said grinding-wheel, a cutter or tool-holder and a templet, both fixed to and thus movable with the said carriage, and a stationary gage against which the said templet impinges to control the movements of the said carriage toward or from the said grinding-wheel, substantially as set forth.

2. The combination, with the frame A, having the ways K, extending lengthwise of the machine, the sliding frame movable on the said ways and provided with the transverse ways M, the sliding carriage movable on the said transverse ways and having a cutter or tool-holder and a templet, and the adjustable gage T′, against which the said templet impinges to control the movement of the said carriage toward or from the grinding-wheel, substantially as set forth.

3. The combination, with the frame A, having the inclined projection C, of the journal-stand B, adjustably secured to the said projection and having the bearings E, the arbor D, journaled in the said bearings, the grinding-wheel F, carried by the said arbor, the sliding frame L, movable lengthwise of the frame A, the sliding carriage N, movable transversely of the machine on the frame L, and provided with the cutter or tool-holder P Q, and the templet R, the gage T′, and its supporting-post T, substantially as set forth.

4. The combination, with the frame A, of the sliding frame L, movable lengthwise of the said frame A, the sliding carriage N, movable transversely of the machine on the said sliding frame and having a cutter or tool-holder and a templet, the gage T′, against which the said templet impinges, and the adjustable post T, by which the said gage is supported, substantially as set forth.

EDWIN S. DRAKE.

Witnesses:
EUGENE HUMPHREY,
S. O. ORNE.