(No Model.) 2 Sheets—Sheet 1.

M. O. MILLAR.

HORIZONTAL KNIFE GRINDER AND SHARPENER.

No. 279,785. Patented June 19, 1883.

Fig. 1.

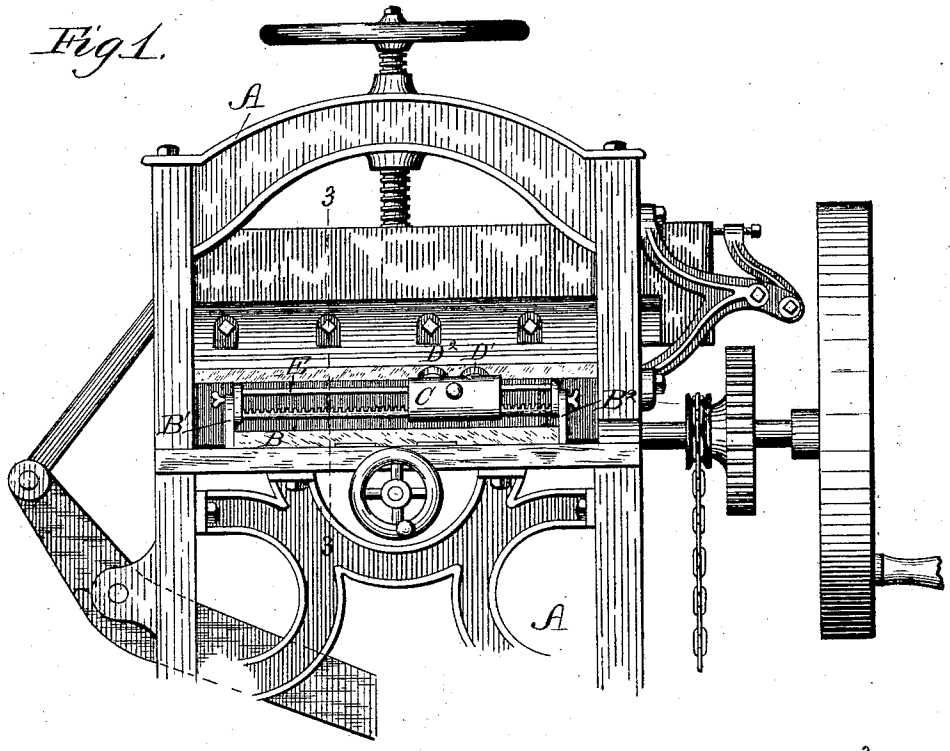
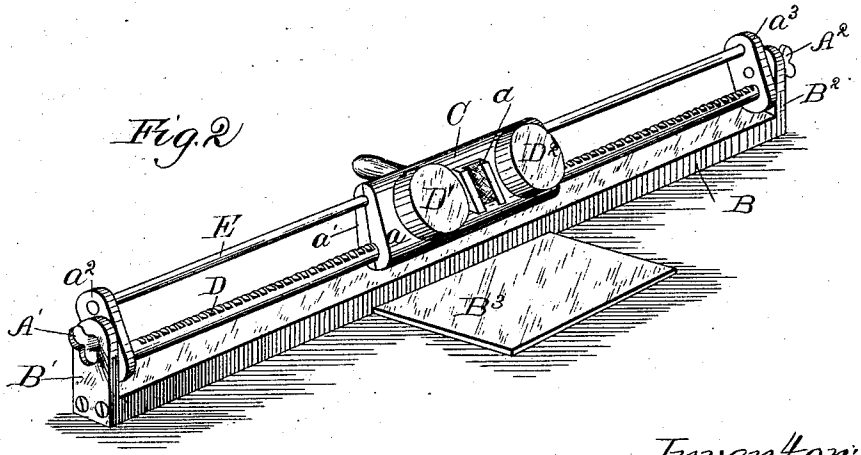


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

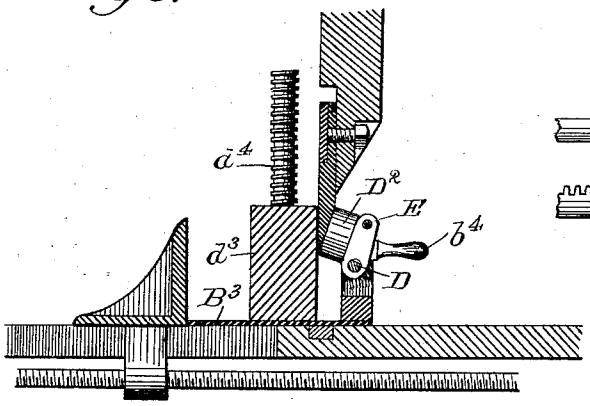


Fig. 7.

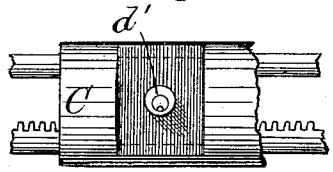


Fig. 8.

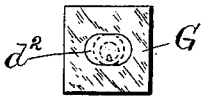


Fig. 4.

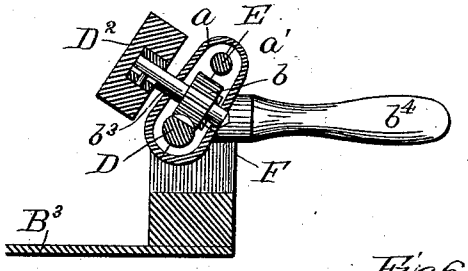


Fig. 5.

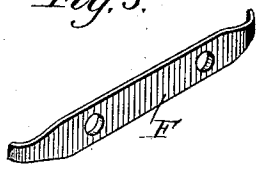
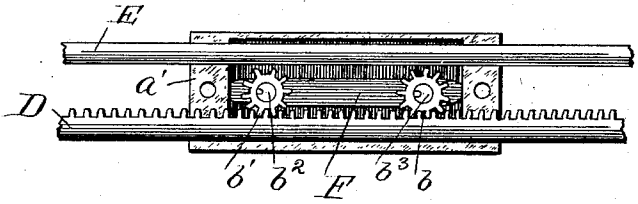


Fig. 6.



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UNITED STATES PATENT OFFICE.

MAURY O. MILLAR, OF CHICAGO, ILLINOIS.

HORIZONTAL KNIFE GRINDER AND SHARPENER.

SPECIFICATION forming part of Letters Patent No. 279,785, dated June 19, 1883.

Application filed March 29, 1883. (No model.)

To all whom it may concern:

Be it known that I, MAURY O. MILLAR, of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in a Knife Grinding and Sharpening Machine, 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, and to letters of reference marked thereon, forming a part of this specification.

The object of this invention is to provide a device that is adapted to grind or sharpen knives without the necessity of having to first remove them from the machines in which they are placed.

Figure 1 is a front elevation of a paper-cutting machine, showing my improved device in position for sharpening the knife; Fig. 2, a perspective of the knife-grinding device; Fig. 3, a vertical transverse section, in part, of a paper-cutting machine and the sharpening device, showing their relative position, in the plane 3 3, Fig. 1; Fig. 4, a vertical transverse section of the sharpening device; Fig. 5, a perspective of a spring. Fig. 6 is a view of the interior of the traveling block carrying the sharpening mechanism; Fig. 7, a face view of the traveling block carrying the sharpening mechanism; Fig. 8, a face view of a square-shaped plate for holding a grinding-surface.

Referring to the drawings, A represents the frame-work of the paper-cutting machine, the different parts of which will, however, not be described in detail; but only such parts are referred to as have connection with or relate to my improvement, the paper-cutting machine being merely made use of to illustrate the application and operation of my sharpening device.

In referring to my improvement, B represents a horizontal rectangular supporting base-piece, having the ends $B' B^2$ projecting upward therefrom, while the attaching flange or plate B^3 projects outward in a horizontal plane from the middle and one side of the base-piece, as shown in Fig. 2 of the drawings.

The carrier or traverser C is composed of the two longitudinal halves $a\ a'$, secured together at each end by means of screws. The inner or joining faces of the carrier are grooved, so as to form circular apertures for the reception of the rack-bar D and the guide-rod E. The ends of the rack-bar and guide-rod are supported in the flanges $a^2\ a^3$, which are adapted to rotate on the clamping thumb-screws $A'\ A^2$, which pass through the ends B' B^2 and are inserted in the flanges $a^2\ a^3$, as shown in Fig. 2 of the drawings.

The carrier C may be constructed to carry two grinding-wheels, $D'\ D^2$, placed near each end, as shown in Fig. 2 of the drawings, or made so as to carry but one sharpening device, as shown in Fig. 7 of the drawings. In the former case the grinding or sharpening process is accomplished by two disk-wheels, composed of any suitable substance, which are adapted to rotate, while in the latter case the sharpening-surface is caused to have a reciprocating or waving movement similar to that as when the sharpening is done by holding a stone in the hand. The precise form of construction to produce this effect will be explained farther along.

The inner part of the carrier C is recessed for the reception of the pinions $b\ b'$, placed on the arbors $b^2\ b^3$, which are journaled in the two sides of the carrier C, one end projecting outward beyond the surface of the carrier to receive and support the grinding-disks. The pinions engage with the rack-bar D, and are thereby caused to rotate as the carrier is pushed back and forth by means of the handle b^4, attached to the opposite side of the carrier from the grinding devices. The rotary movement of the pinions of course imparts a corresponding action to the grinding-disks. The arbors or shafts $b^3\ b^4$ are adapted to have a slight longitudinal movement for the purpose of automatically adjusting or accommodating the grinding-disks to any unevenness between the carrier C and the object being sharpened. This automatic adjustment is accomplished through the medium of the spring F, which is perforated, so as to engage with the arbors carrying the pinions, the ends of the spring being slightly bent or curved in order to impart the required tension, as shown in Fig. 5 of the drawings, the functions of the spring being to exert a constant pressure in the direction of the object being sharpened, and to re-

tain the grinding or sharpening device in contact with the same, and to yield readily, so as to permit an inward longitudinal movement of the arbors should any irregularity be encountered.

The bracket *d* is for the purpose of holding a dampened sponge or oil-swab against the surface being sharpened.

By slacking back on the thumb-screws A′ A^2, the carrier and supporting parts may be rotated for the purpose of bringing the grinding or sharpening surface to any required angle, so as to either correspond to the bevel of the knife or tool or to change the bevel or face of the cutting-edge. By this arrangement the grinding mechanism can be readily adjusted to different angles and securely clamped at any point in the plane of rotation.

In order to impart an eccentric or waving movement to the grinding or sharpening surface, the circular grinding-disk should be removed and an eccentric cam-sleeve, *d′*, placed on the outer projecting end of the arbor, as shown in Fig. 7 of the drawings. This sleeve may be keyed onto the arbor or otherwise removably secured thereto.

The plate G (shown in Fig. 8 of the drawings) is provided with the elongated aperture d^2, the dotted lines indicating the arbor and cam-sleeve. This plate is adapted to fit into the exterior recess on that side of the carrier shown in Fig. 7 of the drawings, which prevents the same from having a rotary motion, but has an eccentric or waving movement as the arbor rotates. The stone or other sharpening-surface may be secured to the plate G in any suitable manner.

The flange B^3 of the sharpening device projects underneath and is retained in place by the clamping-block d^3 and screw d^4, forming a part of the paper-cutting machine. By this arrangement the knives and cutting-tools of many different machines may be properly sharpened without the necessity of removing them from their working position in the machines to which they are attached.

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

1. The carrier or traverser C, consisting of the two parts *a a′*, secured at each end, the inner joining faces of which are grooved and recessed, in combination with the rack-bar D, the guide-rod E, the pinions *b b′*, the arbors b^2 b^3, and the grinding-wheels D′ D^2, substantially as described.

2. The combination, with the carrier C, of a grinding or sharpening device attached thereto, the arbors b^2 b^3, the pinions *b b′*, the rack-bar D, the guide-rod E, the supporting-flanges a^2 a^3, the end pieces, B′ B^2, the thumb-screws A′ A^2, and the part B, substantially as and for the purpose set forth.

3. The combination, with the carrier C, of pinions *b b′*, the arbors b^2 b^3, the spring F, and the rack-bar D, whereby the carrier C is adapted to have a reciprocating movement in a horizontal plane, and the grinding-surfaces a rotary movement simultaneously therewith, substantially as set forth.

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