

D. HOLLINGER.  
Machine for Grinding Harvester-Knife.  
No. 218,269. Patented Aug. 5, 1879

Fig. 1.

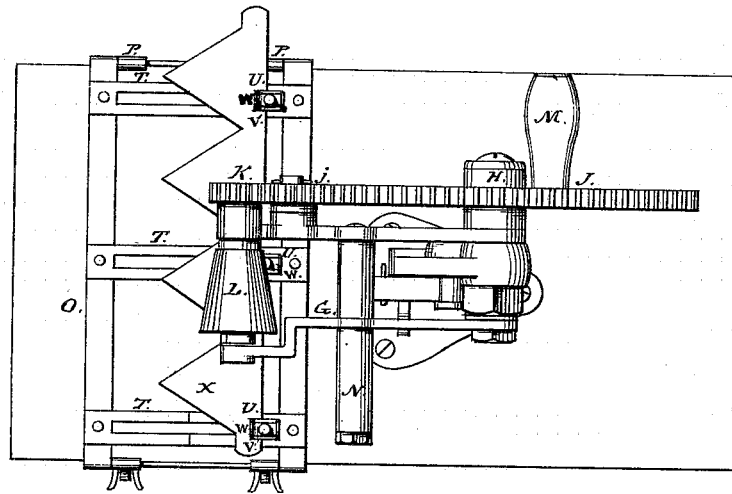
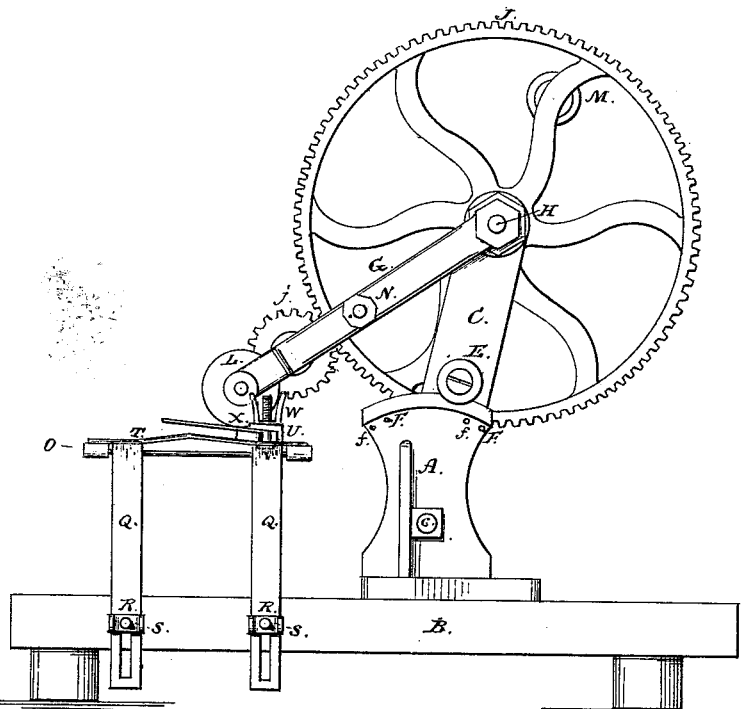


Fig. 2.



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Fig. 3.

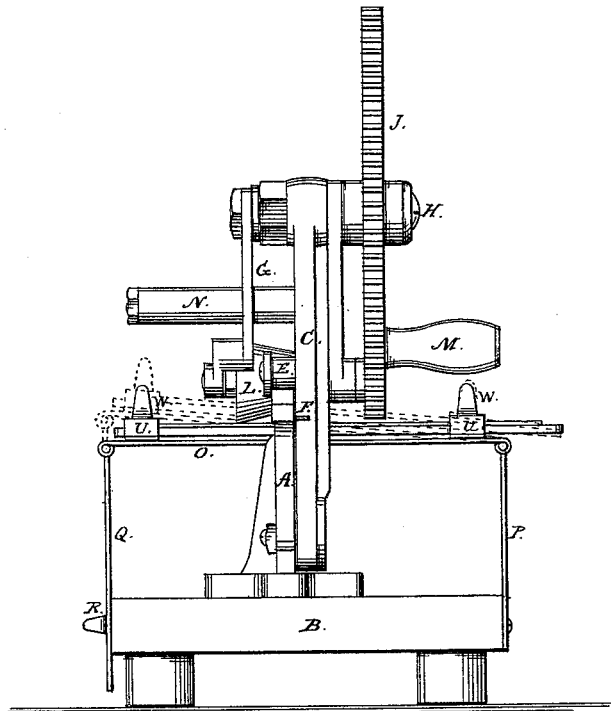
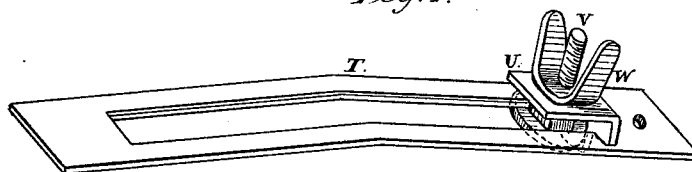


Fig. 4.



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# UNITED STATES PATENT OFFICE.

DAVID HOLLINGER, OF LEBANON, PENNSYLVANIA.

## IMPROVEMENT IN MACHINES FOR GRINDING HARVESTER-KNIVES.

Specification forming part of Letters Patent No. **218,269**, dated August 5, 1879; application filed May 16, 1879.

*To all whom it may concern:*

Be it known that I, DAVID HOLLINGER, of Lebanon, in the county of Lebanon and State of Pennsylvania, have invented new and useful Improvements in Machines for Grinding Harvester-Knives, of which the following is a specification.

My improved grinding-machine is constructed with a single conical grinding-head or emery-wheel adapted to operate on one side of a knife-section, and mounted in a gravitating frame carrying an idle-pinion, which transmits motion from the driving-wheel to a pinion on the shaft of the grinding-wheel, so as to operate the latter under any position of the gravitating frame. The gravitating frame is hinged on the shaft of the driving-wheel at the upper end of a standard hinged at bottom, and secured by a flanged roller against the face of a stationary guiding-standard, so as to permit the gravitating frame to be moved forward and backward to carry the grinding-wheel over the edge of the knife-section. The knife is secured by movable clips of peculiar construction in a rest-frame formed with slotted bars, which incline downward in both directions from their center in such a way as to permit the knife to be adjusted with its points in either direction for grinding the respective edges of the sections, as hereinafter explained.

In order that the invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a plan view of my improved grinding apparatus. Fig. 2 is a side elevation of the same. Fig. 3 is a rear elevation thereof. Fig. 4 is a perspective view of one of the holding-clamps and its accessories on a larger scale.

A is a stationary standard fixed to a bed, B, and having at its upper end a curved or segmental crown concentric with the axis *c* of a standard, C, which is hinged to said stationary standard A so as to move in a longitudinal vertical plane. E represents a flanged roller running on a stud fixed to the moving standard C, so as to hold the face thereof in contact with the face of the stationary standard A. F are adjustable pins, which may be set in either of the holes, *f*, provided for them, to limit the

stroke or forward and backward movement of the standard C, as may be required to suit the length of the knife-sections. G is a gravitating frame hinged on a shaft, H, secured to the top of the moving standard C, on which shaft is also mounted a cogged driving-wheel, I, gearing with an idle-pinion, J, which gears with the driving-pinion K of a conical grinding-wheel, L, mounted in the extremity of the gravitating frame G. M represents a crank-handle for turning the driving-wheel I. N is a handle projecting from the side of the gravitating frame G, for raising or depressing the same.

The knife-rest consists of a frame, O, hinged at one end to standards P P, secured to the bed B, and at its other end to standards Q Q, which are fixed adjustably to the bed by means of clamp-nuts R R on stud-screws S S, projecting from the side of the bed B through vertical slots in said adjustable standards Q.

On the rest-frame are two or more slotted longitudinal guide-bars, T T T, for the reception of clips U U, which are held by means of bolts V, projecting upward through the slots of the bars T and receiving thumb-nut W, by which the holding-clips U are forced down on the head or bar of the knife, which is shown at X.

The operation is as follows: The knife being clamped in the position shown in full lines in Fig. 1, the operator revolves the driving-wheel by means of the crank-handle M. At the same time, grasping the handle N with the other hand, he moves the frame backward and forward, and holds the grinding-wheel down on the edge of one of the knife-sections with sufficient force until one edge is completely ground. The knife is then shifted endwise until the next edge parallel with the first is brought in position for grinding, and so on until one edge of each knife-section is ground from end to end of the knife, the intermediate slotted guide-bar, T, being useful for clamping the extremity of the bar in operating on the knife near the respective ends thereof. All the parallel edges being thus ground, the knife is reversed and secured in the position, the holding-clamps being reversible to admit of doing this with perfect facility. The inclination of the slotted bars downward in both directions from their

centers causes the points of the knife to be presented slightly upward in the most advantageous position for sharpening.

This operation effects the regular grinding of all the edges of the knife-sections to a proper bevel, such as they have when the knife is new or has been properly ground.

For operating on old knives which have been ground to a shorter bevel, one end of the rest is elevated, as illustrated in dotted lines in Fig. 3, by means of the clamp-nuts S S. The grinding-wheel may be covered with emery, sand, corundum, or other preferred material.

My improved machine possesses the following important advantages: By mounting the gravitating frame in a double standard, as described, the grinding-roller is regulated and perfectly controlled in its motions backward and forward over the surface to be ground, so as to produce perfectly uniform work.

The use of a single conical grinding-wheel enables me to grind the edge with greater uniformity from one extremity to the other than is possible with a double conical grinding-wheel.

The rest and reversible clips as constructed and employed afford the greatest facility for clamping the knife in both positions for grinding its edges in succession. The movable rest, adjustable in inclination transversely to the machine, enables the operator to grind a longer or shorter bevel at pleasure. Thus, if the rest be level, as shown in full lines in the drawings, the result will be a long bevel, such as is usually found in a new knife. By slightly elevating the rest and fixing it with the clamp-nuts, the machine will be made to grind a shorter bevel, such as is often found in knives that have been used for a limited period. By raising the rest still more to the position shown in dotted lines in Fig. 3, it will be adapted to grind a still shorter bevel, such as is usually found in old and nearly worn-out knives.

This arrangement will enable the operator to grind a knife which has been worn to a

short bevel, and by successive grinding gradually lengthen the bevel and restore the edge to its proper form.

The mode in which the grinding-roller is mounted in a gravitating frame hinged to a moving standard, and the latter guided in its front and back movements, insures a straight uniform edge to the knife to be ground, no matter how much the knife may have been impaired by previous bad grinding.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The combination of the stationary segmental standard A, the hinged standard C, guided in a vertical plane by said standard A, guide-roller E, and the gravitating frame G, hinged to the moving standard C, and carrying a grinding-wheel, L, substantially as herein set forth.

2. The combination of the standards A and C, gravitating frame G, and movable plus F, for regulating the length of stroke, and the guiding-roller E, substantially as and for the purposes set forth.

3. The knife-rest constructed with longitudinally-slotted and inclined guide-bars T, substantially as and for the purpose set forth.

4. The knife-rest O, hinged at one end and adjustable in height at the other by means of slotted standards Q, clamp-nuts R, and studs S, substantially as set forth.

5. The combination of the rest-frame O, slotted bars T, reversible clips U, bolts V, and nuts W, substantially as and for the purposes set forth.

6. The flanged roller E, mounted on the hinged standard C, and engaging over the stationary segmental standard A, so as to guide said hinged standard in a vertical plane, substantially as and for the purposes specified.

DAVID HOLLINGER.

Witnesses:

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