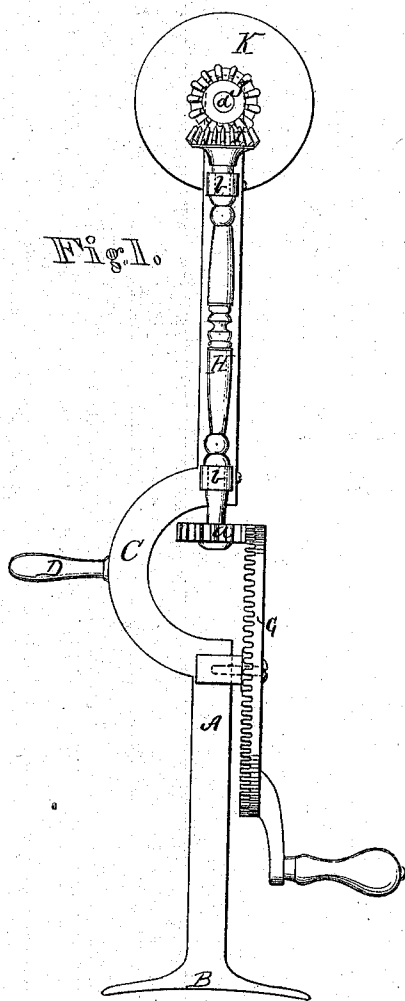
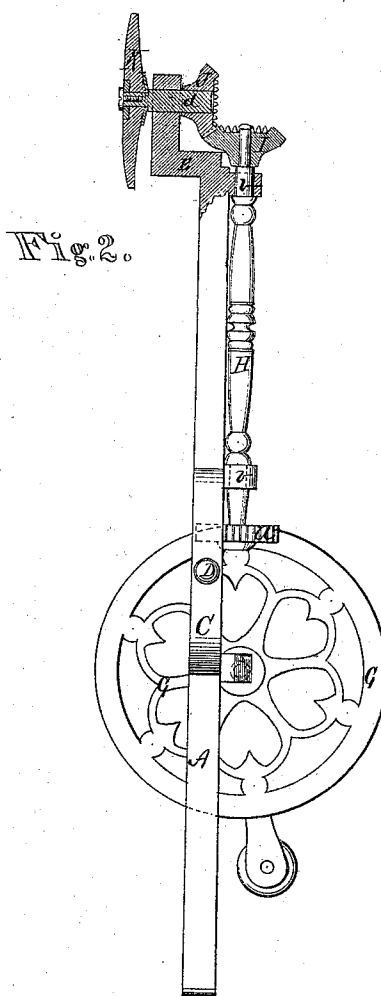


H. C. Fisk,
Grinding Mower Cutters.
No. 112,330. Patented Mar. 7, 1871.



Witnesses.
Chas. Kenyon
Villette Anderson



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United States Patent Office.

HENRY CLAY FISK, OF WELLSVILLE, NEW YORK.

Letters Patent No. 112,330, dated March 7, 1871.

IMPROVEMENT IN MACHINES FOR GRINDING THE CUTTERS OF MOWERS, &c.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, HENRY CLAY FISK, of Wellsville, in the county of Allegany and State of New York, have invented a new and valuable Improvement in Mowing and Reaping-Machine Gummers or Grinders; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of my invention in plan view.

Figure 2 is a central vertical section of the gummer-head; also side view.

My invention has relation to means for grinding and sharpening the teeth of reapers and mowers without removing the knife from the cutter-bar of the machine; and

It consists in the construction and novel arrangement of devices whereby I am enabled to use a flattened grinding-wheel, designed to reach with facility every part of the edge of the tooth from heel to point to form a strong cutting-edge thereon, and to operate readily on both edges of the tooth without turning the machine over.

The letter A. of the drawing represents the main bar of my instrument, having at one end the pressure-bar B, adapted to be held against the side in operating the same.

C designates a semicircular bar, which connects the two portions of the main bar A.

From the middle portion of this curved bar C extends outward the handle D.

At its forward end the main bar A forms an elbow, at or about the angle of ninety degrees, with the said main bar, as shown at E.

This elbow extends downward at right angles with the plane of the curve C, and from its lower end extends forward the bearing *z* in a direction parallel, or nearly parallel, with the bar A.

G represents the driving-wheel, made of good size to act as a fly. This wheel rotates on a journal attached to the bar A at the rear end of the arc C, and its plane of rotation is perpendicular to the plane of the said arc.

This driving-wheel is provided with teeth on the side next the main bar, in the manner of a crown-wheel, and is placed in engagement with the pinion *a* on the rear end of the shaft H, which is placed on the upper side of the bar A, and has its bearings in boxes, *b b*, extending upward therefrom.

The shaft H is somewhat longer than the forward portion of the main bar A, so that the pinion *a* will lie within the arc C.

To the forward end of the shaft H, which extends beyond the bar A, is secured a bevel-wheel, I.

This bevel-wheel I engages with a similar bevel-wheel, J, on the upper end of the shaft *d*, which is journaled in the bearing *z* and carries on its lower end the grinding-wheel K. It will be observed that the shafts *d* and H are parallel to the plane of the driving-wheel, and form with each other an angle of about ninety degrees, so that, if the shaft H be held in a horizontal position, the shaft *d* will be vertical, and the wheel K will have a horizontal motion of rotation. The object of the above-described construction is, therefore, the production of a horizontal rotation of the grinding-wheel by a vertical rotation of the driving-wheel.

The grinding-wheel K may be made of stone, emery, composition tanite, or other grinding material, and its grinding-surface is designed to be flat, or nearly so. Usually the stone is made reversible, and its form may be described as the frustums of two right cones, placed base to base, the axes of the cones being much less than the radiuses of their bases.

It will be observed that, although the grinding-wheel is small and portable, the curvature of the grinding-face is of large radius and approximates to the plane. Indeed, a plane-wheel may be employed with good results; but the preference is given to the flat cone, as thereby the operator is enabled to reach with facility the re-entering angles of the cutter-bar.

As the plane of rotation of the grinding-surface forms a low angle with the plane of the surface being ground, the grinding-lines will be circular arcs, whose radiuses are nearly parallel with the surface being ground, hence there will be little or no concavity in the ground edge of the tooth. The bevel of the cutting-edge will approximate a plane surface, which is regarded as stronger than the concave or razor-edge, and most suitable for mowers and reapers.

An important advantage gained in my improvement will be observed in changing from one edge of the tooth to the other.

The instrument is adapted to grind these opposite bevels by simply giving the wheel K a slight dip toward the edge of the tooth being ground, and at the same time raising or lowering the right hand operating the crank-wheel G. Therefore the shafts H and *d* have an angular position with reference to each other, and lie parallel with the plane of the driving-wheel. Also, in consequence of having the stone symmetrically placed with reference to the main bar, the operator is enabled to feel his work with confidence.

When gaps occur in the cutting-edges, in consequence of contact with refractory substances, the flat grinding-wheel serves an excellent purpose in restoring the edge. To remove such a gap or nick the wheel

is first turned so that it will rotate vertically, when, upon being brought in contact with the cutting-edge, it will grind the edge down even with the bottom of the gap, and true. The wheel is then changed to the horizontal position, and the edge is sharpened there-with, in the manner above described.

What I claim as my invention, and desire to secure by Letters Patent, is—

A hand-instrument for grinding reaper-teeth, provided with a flat stone, K, and having the shaft *d* of said stone K coincident or parallel with the plane of

the crank-wheel G, and forming an angle with the connecting-shaft or main bar, substantially as and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

HENRY CLAY FISK.

Witnesses:

C. H. FISHER,
HENRY N. LOUR.