No. 665,916. Patented Jan. 15, 1901.

J. W. LATIMER.

SICKLE GRINDER.

(Application filed Aug. 10, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

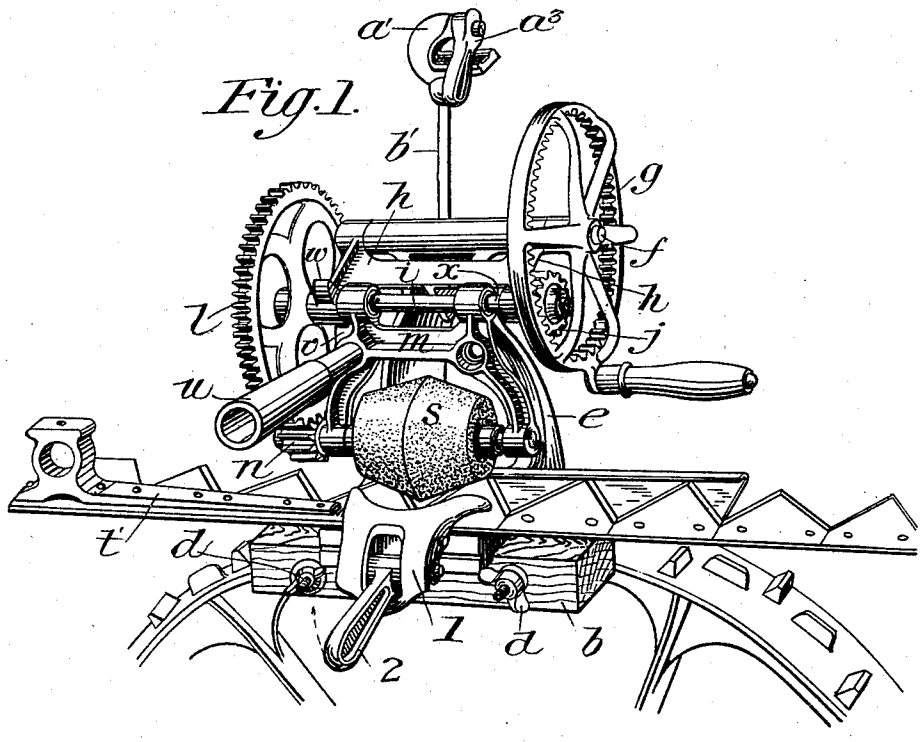
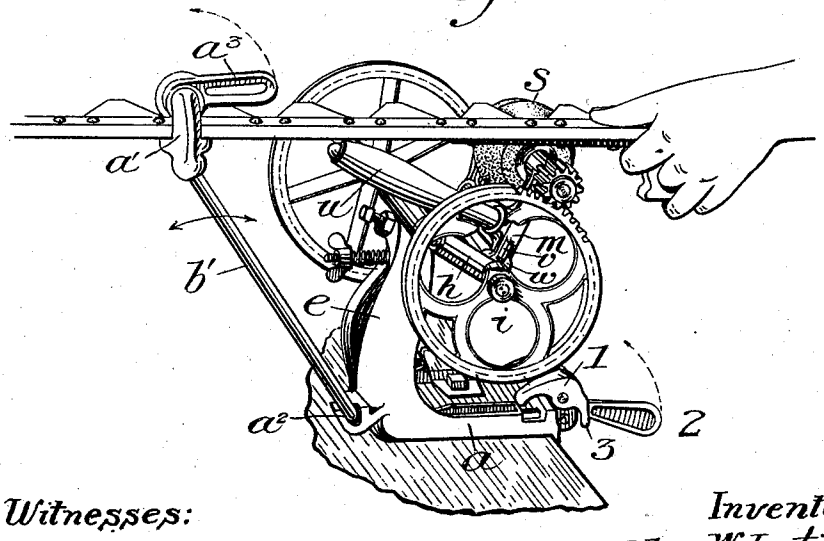


Fig. 2.



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Fig. 3.

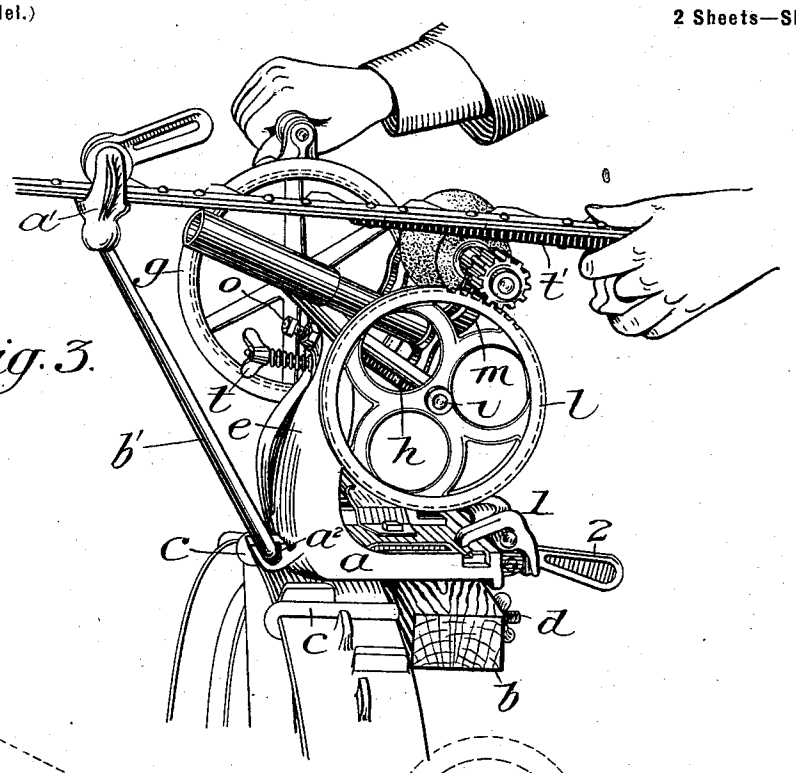
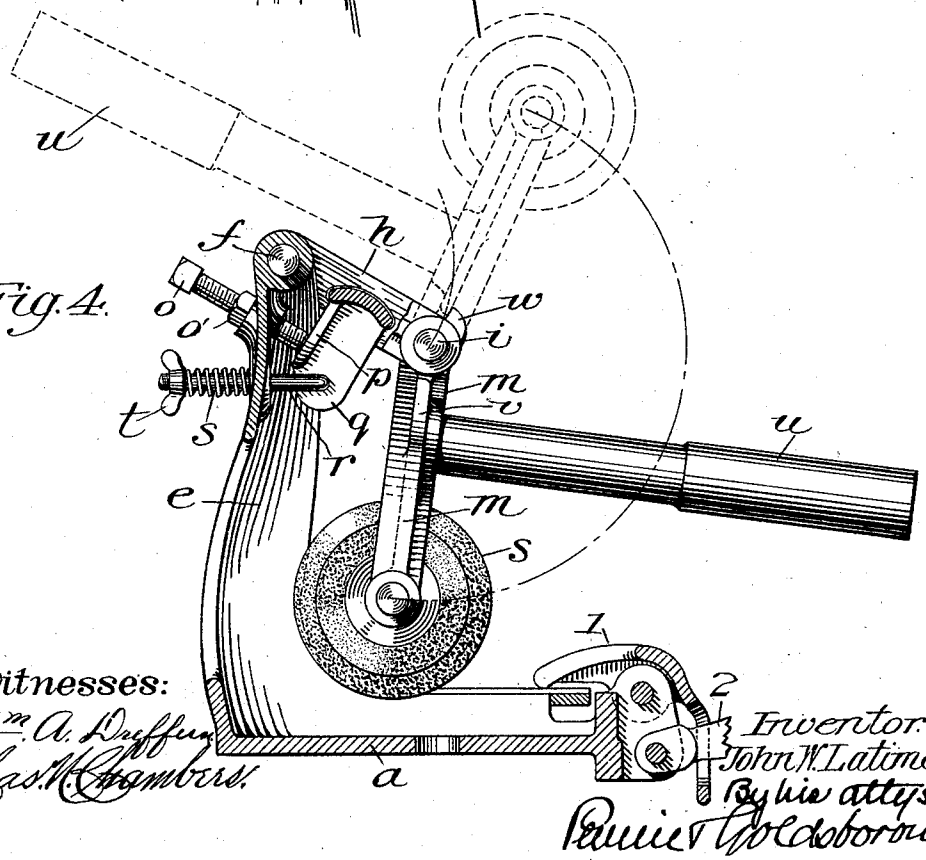


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN W. LATIMER, OF CHICAGO, ILLINOIS.

SICKLE-GRINDER.

SPECIFICATION forming part of Letters Patent No. 665,916, dated January 15, 1901.

Application filed August 10, 1900. Serial No. 26,482. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. LATIMER, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have invented certain new and useful Improvements in Sickle-Grinders; 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.

The invention relates to grinders for the sickles or cutter-bars of mowers, reapers, and like machines, and particularly to that class of devices where the grinder-stone is journaled in a swinging yoke or frame which is adapted to be moved by hand to and fro, so as to cause the stone to traverse the edges of the cutters. Heretofore it has not been possible in this class of grinders to sharpen the knives at the heel end of the sickle owing to the fact that the swinging movement of the grinder-stone is interfered with by the knife-head; and it is characteristic of the invention that provision is made for grinding the knives at this point by elevating the stone and locking it in a position where without interference with other parts of the device the position of the sickle may be shifted and the sickle supported, so as to afford easy access to the edges of these heel-end cutters.

The invention also provides for a lateral movement of the grinder-stone, so that the operator can swing it in different vertical planes for the purpose of sharpening one edge of the cutters at a time and grinding out nicks or broken edges.

The invention is illustrated in the accompanying drawings, forming part of this specification, wherein—

Figure 1 is a perspective view showing the grinder attached to the wheel of a machine and the sickle properly secured in place. Fig. 2 is a perspective view looking endwise at a grinder, the stone being thrown up in elevated position for a purpose to be described later on, and one of the spokes of the gear-wheel *l* being broken away to show the means for holding the grinder-stone in elevated position. Fig. 3 is a view similar to Fig. 2, intended to more clearly illustrate the purpose of the elevation of the stone; and Fig. 4 is a central cross-section of the grinder, showing the means for holding the stone yieldingly to its work, and the stop for limiting its downward movement.

Referring to the views, the main frame of the grinder comprises a rectangular base *a*, adapted to be bolted to a block *b*, that is provided with hooked clamping-rods *c c*, extending horizontally therethrough and provided on their opposite ends with thumb-nuts *d*, by means of which the grinder-frame and the block are securely clamped upon the wheel of a mower or reaper in a manner that will be clearly understood from the drawings. Rising from one end of the base-plate *a* is a standard *e*, in a bearing in the upper end of which is journaled the shaft *f*, carrying a hand-operated internally-toothed gear *g*. The base *a* of this frame is provided with a clamp 1 for holding the sickle down upon its seat in the manner best illustrated in Figs. 1 and 4, and a hand-latch 3 is provided for the purpose of locking the clamp in place upon the sickle. No particular novelty is claimed for this means of clamping the sickle in position; but it will be noted that the clamp 1 is provided with a tailpiece 3, which is acted upon by a projection on the latch 2 and presses the front end of the clamp down upon the sickle. This completes the construction of the main frame of the grinder. The shaft and gears for operating the grinding-stone *s* are carried by a supplemental frame consisting of arms *h h*, pivoted to the upper end of the standard *e* coaxially with and upon the shaft *f* already referred to. The shaft *i* is journaled in the outer ends of these arms and carries at one end a pinion *j*, which meshes with the teeth of the gear *g* and is provided at its other end with a speed-gear *l*. Pivoted to the outer end of this supplemental frame is a yoke *m*, in the outer ends of whose arms is journaled the shaft of the grinding-wheel *s*, and on one end this shaft carries a pinion meshing with the speed-gear *l*. The yoke *m* is pivoted upon the shaft *i* and there is sufficient clearance *x* between the inner end of the yoke and the outer end of the frame *h* to permit the yoke to slide lengthwise on the shaft for the double purpose of permitting the adjustment of the stone laterally, so as to swing it in different

vertical planes and also for locking the stone in elevated position, as will be more fully described later on.

The construction of the main frame and the manner of mounting the gearing-frame being as thus described, it will be understood that the stone swings in the arc of a circle of which the shaft *i* is the center. At the same time the vertical position of this arc may be altered by raising or lowering the gearing-frame, for which purpose there is provided a set-screw *o*, which is tapped into the upper part of the standard *e* and against the other end of which a projection *p* on one of the arms *h* abuts, the particular object of this arrangement being to arrest the movement of the stone at the proper point to prevent it from rounding the apexes of the cutters. A jam-nut *o'* is provided to lock the screw in its adjusted position.

For the purpose of holding the stone elastically down to its work I provide the gearing-frame *h* with a projection *q*, and from this projection a link or pin *r* is passed through a hole in the standard *e* and has a coiled spring *s* encircling its outer end and reacting between an adjustable thumb-nut and the standard. This connection allows the frame carrying the yoke to yield as the yoke is swung to carry the stone over the edges of the cutters.

As will be understood from the drawings, the stone swings in an arc transverse to the sickle. It is intended to be manually operated by means of a handle *u*, so as to cause the stone to traverse the edges of the cutters, the sickle being adjusted lengthwise on its seat from time to time. In the ordinary operation of the grinder, when the vertical position of the grinder-stone has been properly adjusted, the yoke is operated by the handle so as to cause the stone to grind the edges of the sections from the rear toward their points, the stone being so shaped with relation to the sections that the two edges of adjoining sections are sharpened at the same time. It often happens, however, that one of the edges is nicked or broken and has to be ground separately, and the adjustment of the stone-carrying yoke in the arms of the gear-frame heretofore described permits it to be shifted without disengagement of the pinion *n* from the speed-gear *l*, so as to clear the edge of one of the cutters and act only upon the edge of the adjacent one.

Owing to the position of the knife-head the cutters at the heel end of the sickle cannot be conveniently ground in the way above described, and I provide for raising the yoke *m* into an elevated position, as best shown in Fig. 3, in which position the sections may be ground by removing the sickle and securing it in a corresponding position in a supplemental clamp, which will be presently described. For the purpose of locking the stone in this elevated position I provide the gearing-frame *h* with a stop *w* at the outer end of one of its arms, and a lug *v* on the yoke *m* is adapted to hook behind this stop when the yoke is elevated and hold the parts in the position shown in dotted lines in Fig. 4. In order to permit the lug *v* to pass the stop *w* when the yoke is elevated, the yoke is slid longitudinally on the shaft *i*, the clearance *x*, heretofore described, between the inner end of the yoke and the outer ends of the arms *h* permitting this. When the yoke has been adjusted into this position, it may be held from falling over backward by the handle *n* resting upon the main frame or may be locked by a cotter or other suitable means. When the stone is locked in this elevated position, the implement may be used for grinding tools of any description, and the cutters at the heel end of the sickle may also be ground, as indicated in Fig. 3. This adds greatly to the efficiency of the grinder, and I regard it as an important feature of the invention. On reference to Fig. 1 the interference of the knife-head *t'* with the swinging movement of the stone crosswise the sickle at the heel end will be clearly understood. In order to provide for sharpening the cutters at this end of the sickle, I contemplate removing it from its seat on the base *a* of the grinder-frame and provide a supplemental clamp *a'*, supported by an arm *b'*, which is universally pivoted at a^2 to the base *a* of the main frame. The clamp *a'* is provided with a suitable lock-lever a^3 for securing the sickle therein, and the supporting-arm *b'* is connected at its pivotal point, so as to be detachable from the grinder when not required. When the knife is locked in the supplemental clamp *a'*, the supporting-arm *b'* swings on its pivot and permits the sickle to be adjusted laterally or vertically into any desired position, so as to grind the edges of the cutters in the manner indicated in Figs. 2 and 3, the stone in this case sharpening the edges laterally instead of traversing them longitudinally, as when the knife is clamped in its seat at the base of the frame.

Having thus described my invention, what I claim is—

1. In a sickle-grinder, the combination of a main frame, having a vertical standard, a substantially horizontally extending frame pivoted thereto and carrying the gearing for driving the grinding-stone, a yoke suspended from and pivoted to the gearing-frame and carrying the stone, and means for limiting the downward movement of the gearing-frame, whereby the swinging of the yoke is arrested at the proper time to prevent the rounding of the points of the cutters.

2. In a sickle-grinder, the combination of a main frame having a vertical standard, a gearing-frame consisting of arms extending substantially horizontally and pivoted to the main frame, said arms carrying the stone-driving gearing, a depending yoke pivoted at the outer ends of the arms and carrying the stone, and means for adjustably limiting the depression of the arms to which the yoke is

pivoted and thereby limiting adjustably the downward sweep of the stone.

3. In a sickle-grinder, the combination of a main frame having a vertical standard, a gearing-frame consisting of arms extending substantially horizontally pivoted to the main frame, said arms carrying the stone-driving gearing, a depending yoke pivoted to the outer ends of the arms and carrying the stone, means for adjustably limiting the depression of the arms to which the yoke is pivoted, and an adjustable elastic connection between the arms and the main frame for varying the pressure of the stone in grinding.

4. In a sickle-grinder, the combination of a main frame, a frame pivoted thereto and carrying the gearing for driving the grinding-stone, a pivoted yoke for carrying the stone, means for locking the yoke in an elevated position, and means for clamping the sickle in elevated position with the cutters crosswise of the stone, whereby the cutters near the heel end of the sickle may be ground.

5. In a sickle-grinder, the combination of a main frame, a gearing-frame consisting of arms pivoted to the main frame and carrying the stone-driving gearing, and a yoke pivoted at the outer ends of the arms and carrying the stone, and means for locking the yoke in an upright position so as to elevate the stone.

6. In a sickle-grinder, the combination of a main frame, a gearing-frame consisting of arms pivoted to the main frame and carrying the stone-driving gearing, and a yoke pivoted at the outer ends of the arms and carrying the stone, a lug on the yoke, and a stop on the pivoted arms, whereby the yoke is thrown up and locked in elevated position without changing the position of the arms.

7. In a sickle-grinder, the combination of a main frame, a gearing-frame consisting of arms pivoted on the main frame and carrying the stone-driving shaft and gears, a stop on one of the arms, a stone-carrying yoke pivoted on the shaft so as to move lengthwise thereon, and a lug on the yoke adapted to be hooked behind the stop when the yoke is elevated and hold it up.

8. In a sickle-grinder, the combination of a main frame, a frame pivoted thereto and carrying the gearing for driving the grinding-stone, a pivoted yoke carrying the stone, means for locking the yoke in an elevated position, and an arm pivoted to the main frame and carrying a sickle-clamp at its upper end.

9. In a sickle-grinder, the combination of a main frame, a frame pivoted thereto and carrying the grinder-stone and its driving-gearing, and means permitting the lateral movement of the stone so as to adjust it in different vertical planes for the purpose of sharpening the edge of one section or the adjacent edge of two adjoining sections.

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

JOHN W. LATIMER.

Witnesses:
ARTHUR JOHNSON,
CARL DETZER.