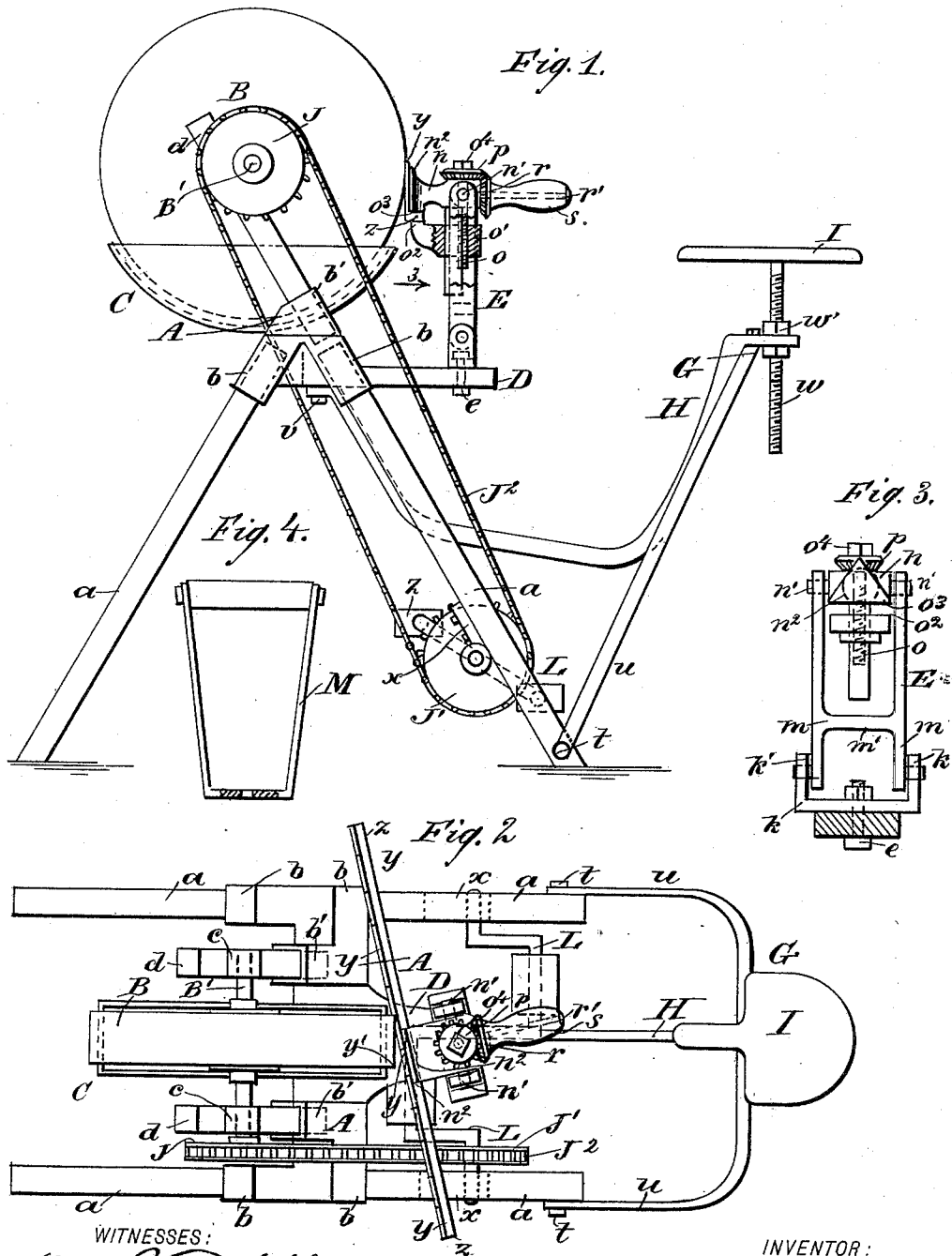


(No Model.)

A. KNOBEL.
SICKLE GRINDING MACHINE.

No. 465,712.

Patented Dec. 22, 1891.



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ABRAHAM KNOBEL, OF WILSON, LOUISIANA.

SICKLE-GRINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 465,712, dated December 22, 1891.

Application filed April 22, 1891. Serial No. 389,977. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM KNOBEL, of Wilson, in the parish of East Feliciana and State of Louisiana, have invented a new and useful Sickle-Grinding Machine, of which the following is a full, clear, and exact description.

The object of this invention is to provide a simple, compact, and efficient device which will afford means to grind the sickle-blades of harvesters or mowing-machines while on the cutter-bar, giving them a correct beveled cutting-edge, a further object being to adapt such a sickle-grinding machine for use to sharpen cutting-tools of various kinds.

To these ends my invention consists in the construction and combination of parts, as is hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the device with a portion broken away and in section. Fig. 2 is a plan view. Fig. 3 is a detached view of the work-holding bracket-stand as seen opposite the arrow 3 in Fig. 1; and Fig. 4 is a side view of a detached tool rest or table, which may be substituted for the bracket-stand shown in Fig. 3.

A supporting-frame is provided for the machine, which is composed of four legs *a*, held properly inclined in pairs forwardly and rearwardly by the insertion of their upper ends in depending sockets *b*, that are formed on a metallic head-piece *A*, which sustains the stone and some other parts of the device.

The grindstone *B*, which, if preferred, may be an emery-wheel, is mounted to rotate in boxes *c*, that are secured upon the inclined standards *d*, which have their lower portions inserted in upwardly and rearwardly inclining sockets *b'* of the head-piece *A*.

Below the stone *B* a water-trough *C* is secured on the head-piece *A* to furnish water for grinding purposes if a grindstone is preferably employed as a tool-sharpener.

Forwardly at the transverse center of the head-piece *A* an arm *D* projects horizontally, whereon the bracket-stand *E* is secured by a swivel-bolt *e*, which will, when drawn tight, retain the bracket-stand in a vertical posi-

tion. The bracket-stand *E* is composed of a base-plate *k*, having parallel upwardly-extended ears *k'* at each side, between which a rocking frame-piece is pivoted at its lower ends, said frame being provided with parallel side bars *m*, that are held spaced apart by the cross-bar *m'*. Between the upper end portions of the frame-bars *m* of the bracket-stand *E* there is a holding-clamp loosely secured, which consists, in part, of a head-stock *n*, having opposite trunnions *n'*, that rock in bearings formed for their reception in the upper ends of the side bars *m*. The portion of the head-stock *n*, that projects toward the periphery of the stone *B*, is given a triangular form on its edge, and has a flat face on the side nearest said stone or other similar rotary grinding-wheel.

The size of the head *n*² of the head-stock *n* is proportional to that of the triangular sickle blades or knives to be operated upon, and should be small enough as compared thereto to allow the grindstone *B* to engage the beveled cutting-edges of said knives.

A vertical screw *o* is inserted in a perforation of the head-stock *n* and is rotatably secured therein by any proper means, said screw depending below the head-stock sufficiently to engage a clamping-jaw *o'*, that is perforated and threaded for the reception of the screw, its portion that extends toward the stone *B* having a vise-jaw face *o*², that is parallel with the similar face *o*³ on the head-stock.

Upon the upper face of the head-stock mentioned a bevel toothed pinion *p* is seated, which is axially penetrated by the shank of the screw *o* and is thereto secured, the screw having a squared head *o*⁴ formed on its upper end, that projects above the pinion, to be turned by a wrench of similar means for the adjustment of the lower jaw to clamp work between the faces *o*² *o*³.

On the outer vertical face of the head-stock *n* a bevel-pinion *r* is supported to have engagement therewith, said pinion *r* being mounted upon the projecting stud *r'*, (shown by dotted lines in Fig. 1,) the pinion and a handle *s* being attached and both adapted for rotating manipulation when necessary.

Upon the front legs *a* two parallel limbs *u* of an upwardly and outwardly inclined seat-

support are pivoted, as at *t*, said limbs being depending portions of an arch-piece *G*, whereon the seat-brace *H* is imposed and affixed by its outer end, the inner end portion being attached to the head-piece *A*, as at *v* in Fig. 1.

A seat *I* is mounted on the outer end portion of the brace *H* by means of a screw *w*, that passes through a nut *w'*, furnishing means for the vertical adjustment of the seat, as may be required to suit the stature of the operator.

One end of the shaft *B'* on which the stone *B* is secured projects exterior of the standard whereon it is journaled, and on said end portion a sprocket-wheel *J* is secured in the same vertical plane with a similar wheel *J'*, a sprocket-chain *J²* engaging said wheels to transmit rotary motion from the cranks and treadles *L* to the grindstone *B*, said cranks being formed at right angles on the same shaft, which is journaled at its ends in boxes *x*, that are attached to the legs *a*, the position of the cranks allowing the operator occupying the seat *I* to engage the treadle-blocks *z* with his feet and communicate a steady rotary movement to the stone in a proper direction.

In use the cutter-bar of a grain-harvester or mowing-machine has one of its triangular sickle-blades *y* clamped in position so as to cause the bevel edge on one side to be imposed on the circular periphery of the stone *B*, the cutter-bar *Z*, whereon the knives are secured in sequence, being gripped by the holding-clamp already described and as indicated in Fig. 1. The entire sickle-bar is set at a proper inclination to the face of the stone to facilitate the grinding operation by swiveling the bracket-stand *E*, which is then firmly secured in the desired position by the bolt *e*.

The operator, seated on the seat-piece *I* while he rotates the grindstone *B*, presses the sickle-knife operated upon toward the stone by grasping the handle *s*, which, by its slight rocking movement, will afford means to properly adjust the blade to grind the edge with precision, the pivotal connection of the bar-holder with the side bars *m'* of the bracket-stand *E*, as at *n'*, and the rocking joints of the side bars with the ears *k'* on the base-plate *k* serving to facilitate the accurate and speedy adjustment mentioned. When the knives of the cutter-bar have been all correctly ground to the same bevel on corresponding edges, the remaining side edges are brought into contact with the grindstone or emery-wheel by swinging the sickle-bar and bracket-stand *E* in a plane that will cause one of said knife-edges to be impinged upon the edge *y'* of the grindstone, which is near the opposite side of the stone previously operated upon, when the knives may be suc-

cessively sharpened in the manner previously explained.

If the device is to be used for grinding tools of various kinds, such as plane-bits, draw-knives, or similar implements needing a sharp edge, the bracket-stand *E* is removed and the tool-supporting rest *M* substituted for it, the swivel-bolt *e* being utilized to retain the same in position in front of the stone *B*, which will enable the operator to manipulate the articles to be ground and effect the same in an obvious manner by supporting them on the upper face of the rest *M*.

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

1. The combination, with an upright frame having four legs that are projected from a head-piece, a rotatable grinding-wheel sustained by standards projected upwardly from the head-piece, a sprocket-wheel on the end of the center shaft, which sustains the grinding-wheel, a double-crank shaft provided with pedals and journaled on the frame-legs below, a sprocket-wheel on said shaft, and a chain on the wheels, of an adjustable seat, a bracket-stand on an arm projected horizontally from the head-piece of the frame, adapted to swivel and rock thereon, and a sickle-bar-clamping device on the upper part of the bracket-frame, which is adapted to rock toward or from the face of the grinding-wheel and be rocked laterally, substantially as described.

2. In a grinding-machine, the combination, with a swiveled bracket-stand, of a head-stock mounted to rock in the bracket-stand, a clamping-jaw mounted in the bracket-stand below the head-block, and means for adjusting the said jaw toward and from the head-block, substantially as described.

3. In a grinding-machine, the combination, with a pivoted bracket-stand, of a head-block having a triangular portion and provided with trunnions fitting in bearings in the bracket-stand, a clamping-jaw below the head-block, and means for adjusting the said clamping-jaw, substantially as described.

4. In a grinding-machine, the combination, with a bracket-stand, of a head-block pivoted in the stand, a clamping-jaw, a screw passing through the head-block and engaging the clamping-jaw, a bevel-pinion on the screw, and a bevel-pinion mounted on the handle projecting from the head-block and engaging the pinion of the screw, substantially as herein shown and described.

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Witnesses:

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