2 Sheets—Sheet 1.

H. S. STEVENS.

SICKLE-GRINDER.

No. 189,279. Patented April 3, 1877.

Fig. 2.

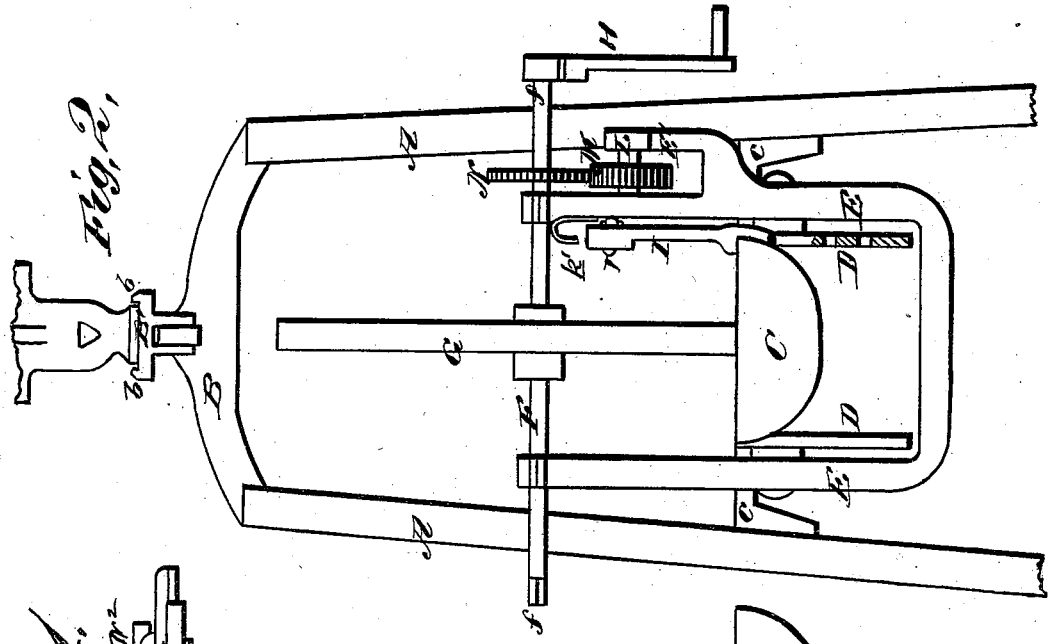
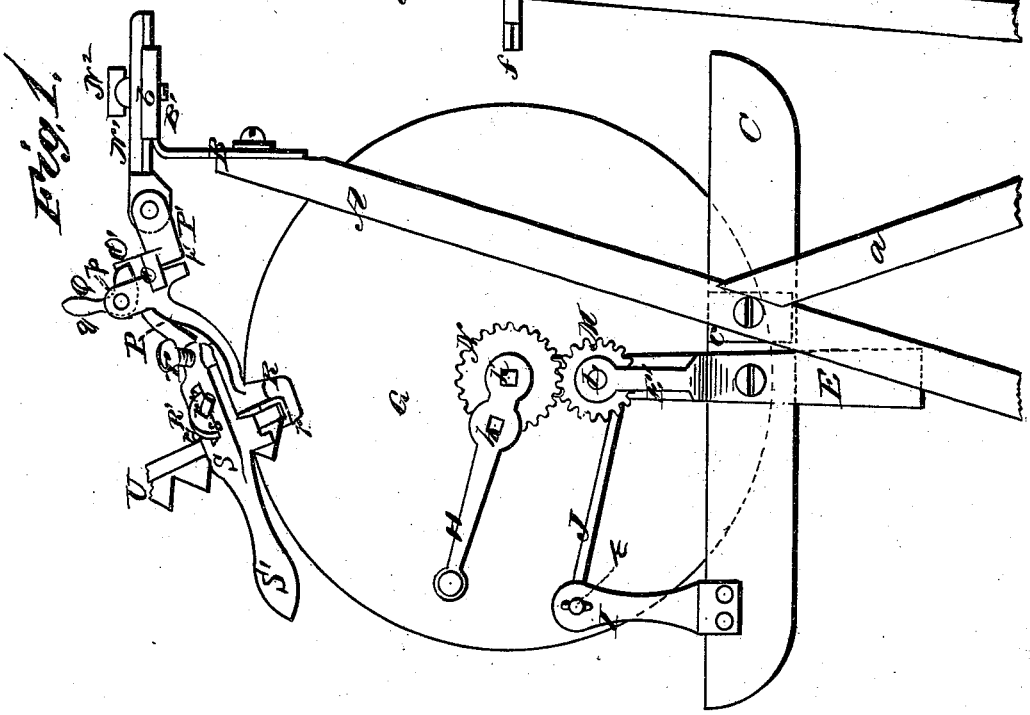


Fig. 1.



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2 Sheets—Sheet 2.

H. S. STEVENS.

SICKLE-GRINDER.

No. 189,279. Patented April 3, 1877.

Fig. 3.

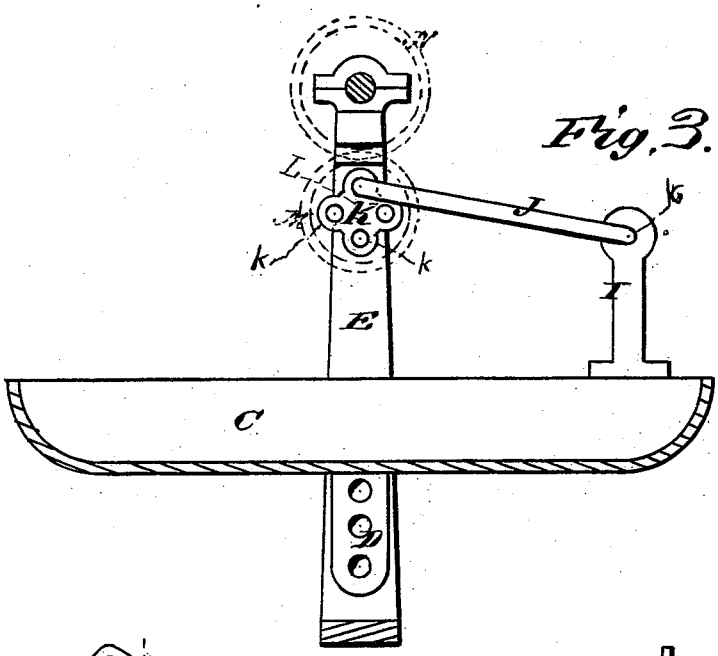
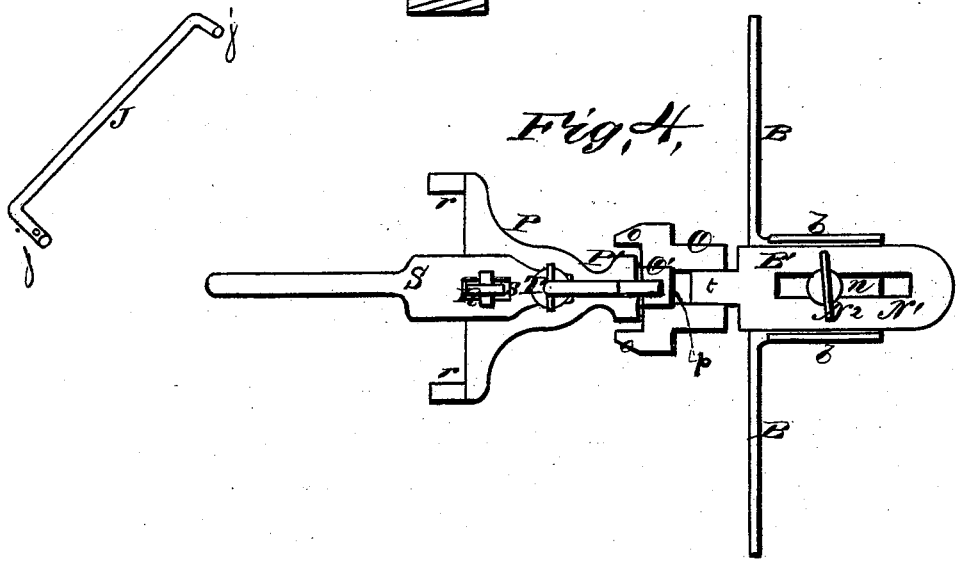


Fig. 4.



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UNITED STATES PATENT OFFICE.

HOMER S. STEVENS, OF WAUKEGAN, ILLINOIS, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN F. POWELL, OF SAME PLACE.

IMPROVEMENT IN SICKLE-GRINDERS.

Specification forming part of Letters Patent No. **189,279**, dated April 3, 1877; application filed November 18, 1876.

To all whom it may concern:

Be it known that I, HOMER S. STEVENS, of Waukegan, in the county of Lake and State of Illinois, have invented a new and valuable Improvement in Sickle-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 drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a front elevation of my sickle-grinder, and Fig. 2 is a side elevation of the same. Figs. 3 and 4 are detail views thereof.

This invention relates to improvements in machines for grinding harvester-sickles; and it consists in certain improvements therein, as hereinafter particularly set forth and claimed.

In the annexed drawings, A A designate two inclined standards or supporting-bars, each of which is provided with a brace, *a*, and which are connected at the top by a vertical cross-piece or cross-plate, B, thus completing the frame of my device. C designates a trough, supported between said standards A A by means of angular arms or bars *c c*, which are cast with, or otherwise rigidly attached to, the sides of said trough at the middle thereof. Said trough is also provided, in front of said supporting-arms, with two rigid downwardly-extending bars or plates, D D, (one of said bars being upon each side of said trough,) which are provided with perforations for adjusting the pivotal points of a U-shaped metal tilting frame, E. This tilting frame has its axis near its middle, and is provided on its upwardly-turned ends with bearings for the support of a grindstone-shaft, F, carrying grindstone G. Said shaft is extended on each side of said grindstone, and is provided with prismatic ends *f f*, either of which may receive a detachable crank, H, prismatically perforated at *h h'*. The above construction of the shaft and crank enables the grindstone to be conveniently operated from either side, when the tilting of the sickle, or other tool which is being ground, (as hereinafter described,) prevents it from being operated from the other side. The above construction of the shaft and crank also enables the length of said crank to be adjusted by shifting the prismatic shaft end from one hole to another, so as to conform to the diminished size of a worn grindstone, and to the amount of power required in turning it.

It is desirable to give to a grindstone used for sharpening harvester-sickles a forward and backward and upward and downward oscillatory motion, so that it will reach and effectually grind all parts of each cutting-blade. This oscillatory motion is not new in such applications; but I employ a new combination of devices to produce it. To one side of the trough C, near the front end thereof, I attach a rigid metal standard, I, to the upper end of which is pivoted a crank-arm, J, the other end of which is secured to a socketed block, K, on a small shaft, L, which is journaled in one side of U-shaped tilting frame E, and in a rigid bar, E', parallel therewith, and secured thereto. The block K is provided with sockets *k k* near its outer edge, one of which receives one of the bent ends of the arm J. Said short shaft L carries between said tilting frame E and said rigid bar E' a cog-wheel, M, which gears with and is turned by a similar cog-wheel, N, on grindstone-shaft F. By means of these connections, when shaft F is rotated, crank-arm J is made to tilt frame E backward and forward, producing the desired oscillatory motion of the grindstone.

If it be desired to impart only a rotary motion to the grindstone, the bent end *j* of the connecting-arm J can readily be detached from its seat in one of the sockets *k* of the block K, when the rocking or oscillating motion of the grindstone will cease, and a rotary motion only will be imparted to it.

The devices for holding the sickle while being ground are as follows: Top plate or cross-plate B is provided with a horizontal rearward extension or guideway, B', which is provided at the side with vertical guide-flanges *b b*. (Shown in Figs. 1 and 4.) N^1 designates a plate, which is longitudinally slotted at *n*, and sets on said guideway between said flanges. It is longitudinally adjustable therein, and is

amped therein by means of a thumb-screw, ', to receive which said guideway B′, is screw-pped. To a lug, *t*, on the front end of adjust-le plate N¹ is pivoted a block or clip, O, nich is capable of vertical vibration. To e front of said block O is pivoted the rear d P′ of a sickle-holder, P, which is capable lateral vibration thereon. Said rear end is extended both upward at *p* and down-ard at *p′*, as shown in Fig. 1. The face of ock O is provided with two rigid lugs, *o o*, nich prevent said holder from being turned o far to either side. Said block is also pro-led with one upward-extending lug, O′, and ward extension *p* of end P′ is provided with angular pivoted catch, Q, which may be rned down on either side of said upper lug , so as to lock said holder in either lateral justment. Said catch is pivoted between o lugs on said upper extension *p*, and is pro-led with a tail or small handle, *q*, whereby may be raised or lowered for locking or re-sing.

The forward part of holder P consists of a ver support, R, having a forward-extending *r*, at each side, and of an upper clamping ite or bar, S, having a forward-extending ndle, S′. Said lower supporting plate or r R is provided with a lug, R′, which passes through a slot, *s*, in upper plate S, and is ovided with cross-pins or studs *r′ r′*, so as make a pivotal connection between said ites or bars. The rear end of said upper mping-plate S is vertically screw-tapped to eive an adjusting thumb-screw, T, which ars against lower supporting-plate R. This ew regulates the tightness of the gripe of d holder upon sickle U.

By means of plate N¹ and extension or guide-y B′ above described, said sickle may be usted toward or from the said grindstone

By means of the vertical pivoting herein-ore described, said sickle may be raised so to be no longer operated on, and the same angement also allows a slight yielding of d holder P, which may prevent injury to sickle, or to parts of the apparatus here-efore described. By means of the lateral oting hereinbefore described, said sickle y be tilted to either side. This enables both edges of each triangular blade to be properly sharpened.

The devices above described may be used for grinding other tools besides harvester-sickles. In such cases the oscillating motion of the grindstone will not be required. This motion is readily stopped by detaching crank-arm J from block K, and hooking it into catch *k′* on frame E. To facilitate this removal, said crank-arm is provided with cylindrical hooks *j j* at each end, (shown in detail.) These cylindrical extensions set into corresponding recesses or sockets *k k* in eccentric K.

The vertical adjustment, hereinbefore described, of U-shaped grindstone-supporting frame E enables said grindstone to be brought into contact with the water in the trough C, after the diameter of said grindstone has been decreased by friction.

Cross-piece or cross-plate B may be made vertically adjustable on the standards A A by means of longitudinal slots and clamping screws or nuts, which are not shown, being contained in my previous patent, and forming no part of the present invention.

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

1. A rotating and oscillating grindstone, provided with a connecting-arm which is made detachable, for the purpose of causing the oscillating motion of the stone to cease at the will of the operator, and the rotary motion to continue, substantially as described.

2. In combination with fixed trough C, the vertically-adjustable tilting frame E and the grindstone G, supported thereby, substantially as set forth.

3. The pivoted block O, having lugs *o o*, and upward extension O′, in combination with the pivoted sickle-holder P, provided with projections *p p′* and catch *g*, substantially as described.

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

HOMER S. STEVENS.

Witnesses:

FRANCIS E. CLARKE,

O. S. LINCOLN.