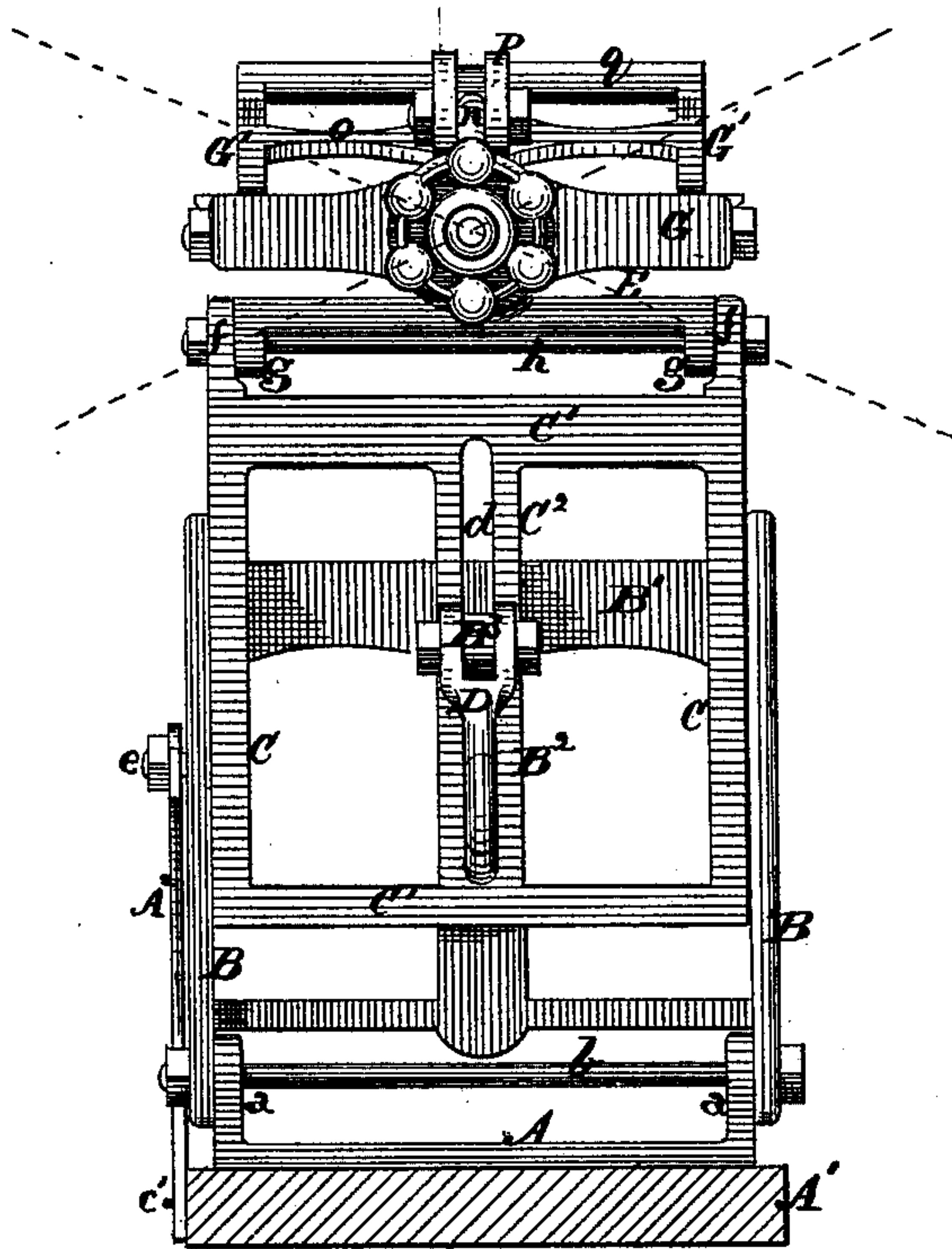
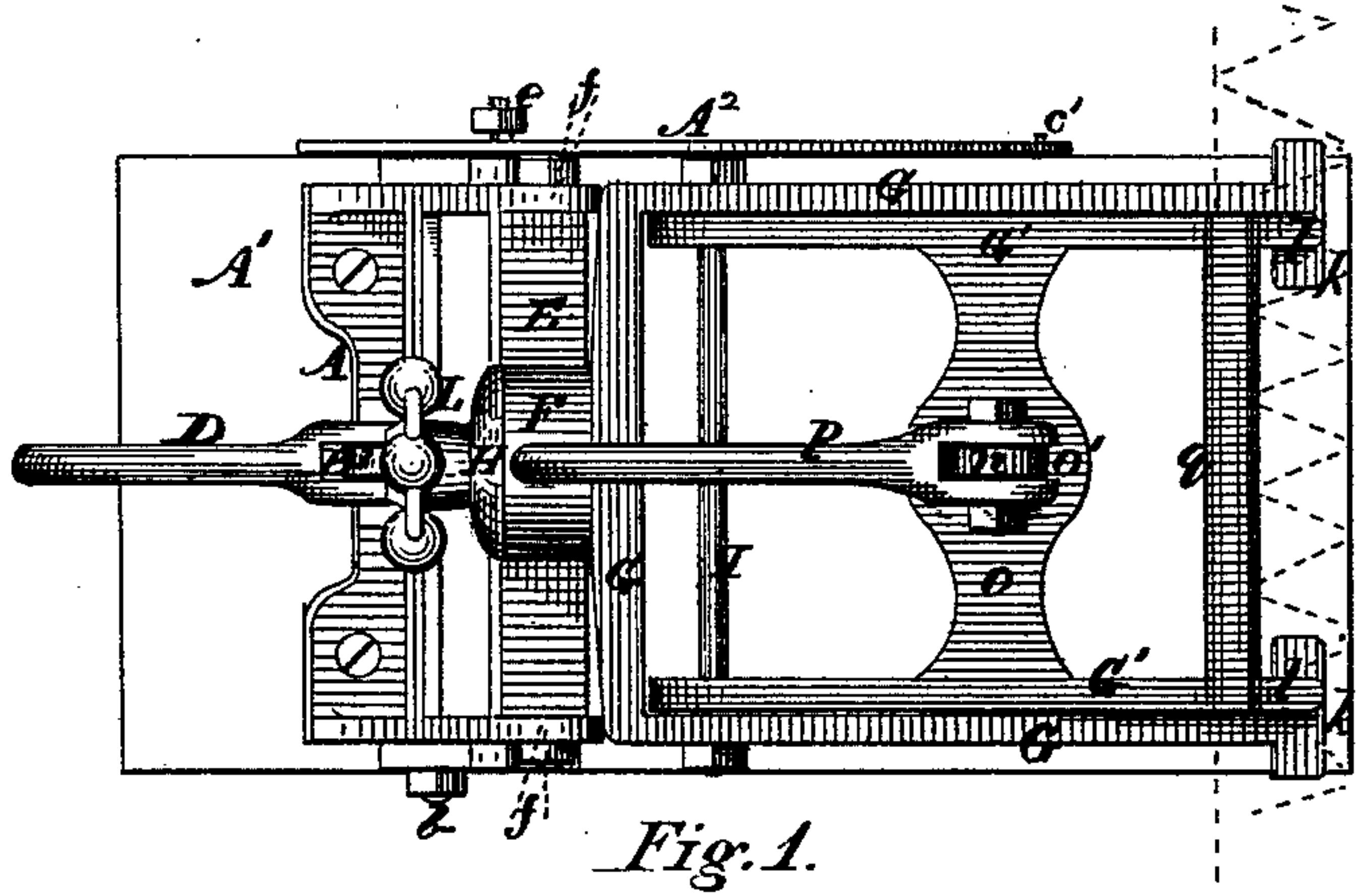


R. P. CLARKE.
Harvester-Grinder.

No. 213,873.

Patented April 1, 1879.



Witnesses.

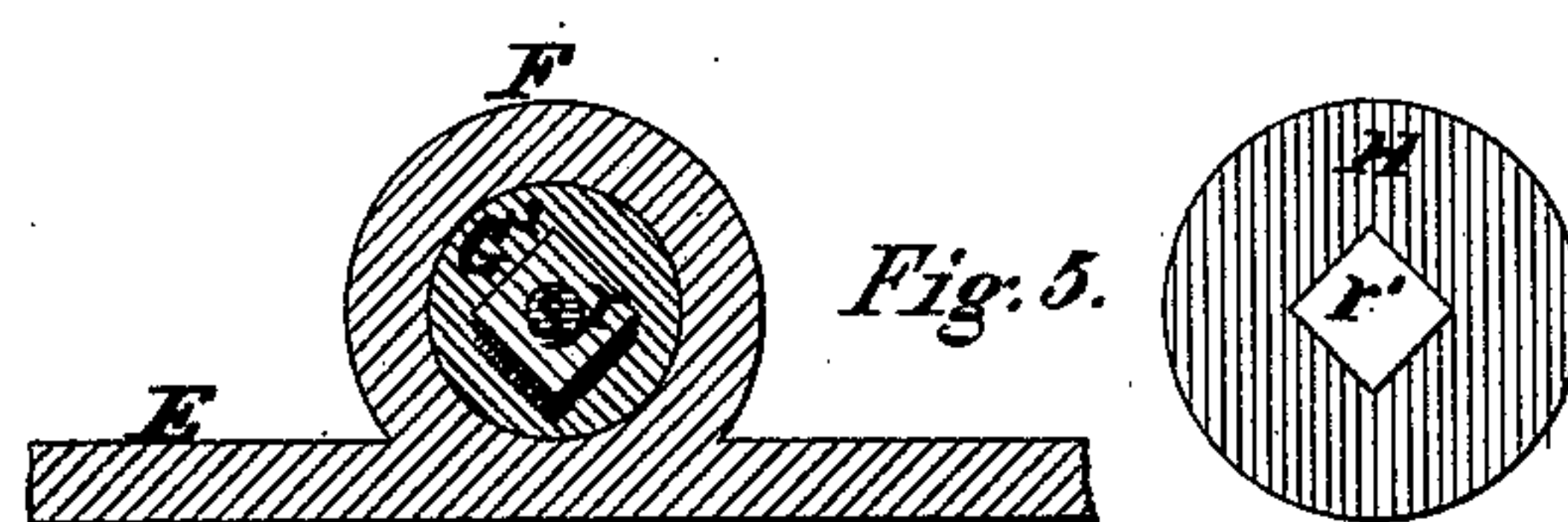
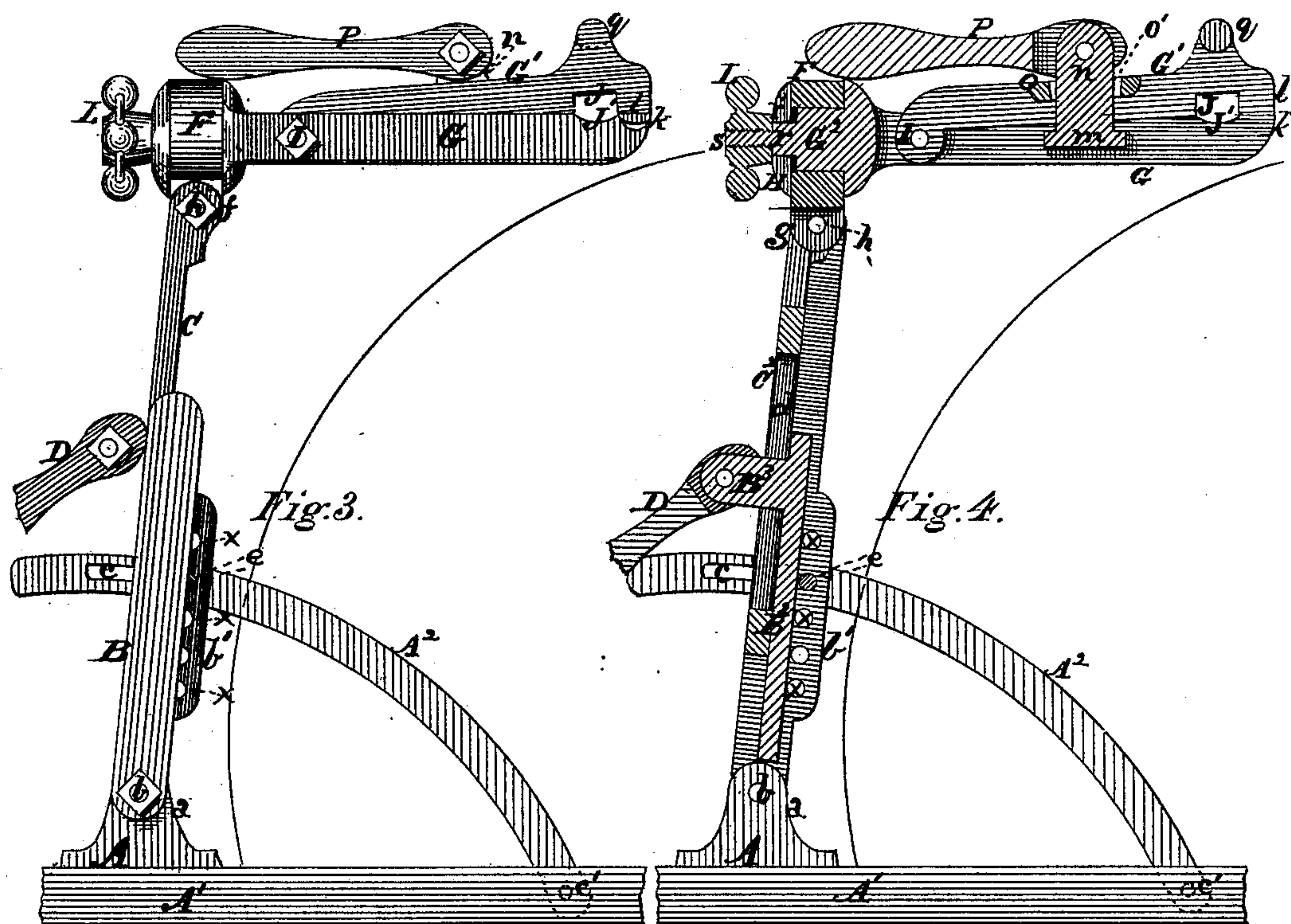
Thos. H. Munro
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R. Phillips Clark
by his atty Alex. Selwick
Inventor.

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by his atty Alex. Selkirk
Inventor.

UNITED STATES PATENT OFFICE.

R. PHILLIPS CLARKE, OF GREEN ISLAND, ASSIGNOR TO ALBERT S. ROBINSON
AND NELSON LYON, OF ALBANY, NEW YORK.

IMPROVEMENT IN HARVESTER-GRINDERS.

Specification forming part of Letters Patent No. **213,873**, dated April 1, 1879; application filed
January 24, 1879.

To all whom it may concern:

Be it known that I, R. PHILLIPS CLARKE, of Green Island, in the county of Albany and State of New York, have invented certain new and useful Improvements in Devices for Holding and Grinding Knives of Cutter-Bars of Mowers and Reapers, which improvements are fully described in the following specification and accompanying drawings in two sheets, in which—

Figure 1 represents a view from above of the improved device. Fig. 2 is a view of the same from the rear. Fig. 3 is a side elevation. Fig. 4 is a sectional elevation; and Fig. 5 is a detailed view of the locking device of the swiveled holding-jaws used in my invention.

My invention relates to certain improvements in devices for holding and grinding knives of reapers and mowers, as will be hereinafter fully described.

The object of my invention is to produce a device for holding harvester and mower knives at any angle with the face of the grinding-stone, and be capable of being adjusted to any diameter of stone used, and at the same time be fully under the control of the operator for shifting the knives in a ready manner, and imparting to the knives a reciprocating movement on the stone from their heels to points, as may be required.

In the drawings, A represents the base-plate, employed for attachment to the frame A¹ of the grindstone. From said base-plate project the ears *a a*, to which the frame B B B¹ is pivoted or connected by a hinge-joint, by means of the rod *b*, passing through ears *a* and the lower ends of the frame-pieces B B. Made with frame B B B¹ is the vertical bar B², with ear B³ attached to the same. Made with one of the sides of frame B B B¹ is the flange *b'*, provided with several pin-holes, *x x*. A² is a check rod or bar, made with a curved form, preferably, and provided with a curved slot, *c*, which slot receives the pin *e*, which passes through one of the holes *x* in the flange *b'*, made with frame B B B¹. The opposite end of said check-bar is pivoted to the frame of the grindstone, as at *c'* in Figs. 1, 3, and 4, so that the slotted end may be

raised or lowered in relation to frame B B B¹, as may be required.

The frame B B B¹ carries the adjustable frame C C C¹, which latter frame works between the sides of the former, and may be elevated or lowered in relation to the same to the distance equal to the length of the slot *d*, made in the vertical bar C² of frame C C C¹. The ear B³, made with the vertical bar B² of the pivoted frame, works through the slot *d*, made in the vertical bar of the adjustable frame. Pivoted to the ear B³ is the cam-lever D, which cam-lever, when its lever end is thrown up, operates on the vertical bar C² at the sides of slot *d*, to bind or crowd the same tight against the vertical bar B² of the pivoted frame, and thereby firmly hold the adjustable frame secure with the pivoted frame.

When the lever end is thrown down the lock of the two frames will be opened, so that the adjustable frame may be freely moved upward or downward on the pivoted frame.

Made with the side pieces of the adjustable frame, and extending from their upper ends, are the ears *f f*, with which ears is pivoted the rock bar or plate E, from ears *g g*, by means of the rod *h*, which serves as pintles for the hinged connections of said rock-plate with the adjustable frame. Made with or secured to rock-plate E is the sleeve F.

G and G¹ constitute the knife-holder, connected with the rock plate or bar E by means of the cylindrical arm G², working in the sleeve F. The parts G and G¹ of the knife-holder are pivoted together by means of the rod I, passing through the rear portions of said parts, as shown, or by short pintles, as may be selected. Made in the front ends of the side portions of the holding parts G and G¹ are the recesses J and J'. At the extreme ends of the side portions of the part G are made the rests *k k'*. With the extreme ends of the side portions of the part G¹, and forward of recesses J, are made the holding-jaws *l l*.

The side portions of part G are connected by the transverse bar *m*, cast with said side portions, and provided with ear *n*. The side portions of part G¹ are connected by the transverse bar *o*, and are provided with a slot, *o'*,

through which ear *n* of bar *m* projects. Pivoted to said ear is the cam-lever *p*, which cam-lever, when its lever end is raised, throws the cam end against the bar *o* and crowds it downward toward bar *m*, and forces the front ends of the part *G*¹ and jaws *l l* downward toward the rests *k k*, made with the ends of the sides of the part *G*. Made with the part *G*¹, also, is the handle-bar *q*.

As I have before stated, the knife-holder formed by the parts *G* and *G*¹ is connected to the rock bar or plate *E* by the cylindrical arm *G*², working in sleeve *F*. Being thus connected the knife-holder may be turned to any angle from a horizontal position, as shown by full lines in Fig. 2, to that shown by dotted lines in the same figure. To retain the said knife-holder set in an inclined or horizontal position, I make with the end of arm *G*² the square, or equivalent, angular projection *r*, from the center of which extends the screw-threaded stem *s*. With the end of the said arm and its angular projection *r* and screw-threaded stem *s* is used the clamping-washer *H*, provided with a square hole, *r'*, corresponding with the projection *r* and the hand-wheel screw-nut *L*.

To place my improved device in position with the grindstone it is to be used with, I first secure the device to the frame of the stone by means of screws or bolts, as shown in the several figures. I then secure the pivot end *C*¹ of the check-bar *A*² to the frame, as shown in Figs. 1, 3, and 4, and the slot end *c* to the pivoted frame *B B B*¹ by the pin *e*, passing through one of the holes *x* in flange *b* of the said frame.

To adjust the parts of the device to the height or diameter of the stone, the operator will, by throwing down the lever end of the cam-lever *D*, release the adjustable frame from a lock with the pivoted frame, when the said adjustable frame, with the knife-holder, may be either raised or lowered in relation to the pivoted frame, as the diameter of the stone may require.

To operate with this device, the knife-bar with its attached knives is placed between the jaws *l l* of the part *G*¹ of the knife-holder, and the rests *k k'* made with the part *G*, which may be readily done by simply throwing the lever end of the cam-lever *p* down, when the free end of part *G*¹ may be raised to carry the jaws *l l* up from the rests *k k'*, made with the part *G*, when the knife-bar with its knives may be placed in the holder, as shown in Fig. 1, with the bar to which the knives are attached in the notches *J J'*, and the knives projecting forward, as shown in said figure.

When the knife-bar and its knives are in position, the parts of the holder are to be locked together, to firmly hold the knives for operation with the grinding-stone, by turning the lever end of the cam-lever downward, as shown in Figs. 3 and 4.

When the knives are to be shifted in either direction, the operator will throw the lever of the cam-lever down to a short distance with

one hand, and with the other move the knife-bar in between the jaws of the holder to any distance required, when he will again clasp the same by raising the same lever.

If the circumference of the stone is plane from side to side, the operator will first place the knife-bar in position in the knife-holder. He will then loosen the hand-wheel nut *L* slightly, when the knife-holder *G G*¹ may be turned in either direction and to any angle that may be required, to cause the angular edges of the knives to bear fully on the stone, when the said hand-wheel nut is to be tightened.

When the grinding-face of the stone is made angular in form—that is to say, with two inclined faces running downward from the middle of the width of the stone to each side—the knife-holder will be set as shown in Fig. 2 by full lines, in which case the incline faces will each operate with the opposite edges of two adjoining knives, while, when set for a flat-face stone, but a single edge of a single knife will be operated with.

The stone may be revolved by either a hand-crank, or by a foot-treadle and crank, or by power.

When the stone is revolved the operator will grasp the handle *q*, and by it move the holder backward and forward alternately, so as to give to the interlocked adjustable and pivoted frames a vibratory movement to a distance which the slotted check-bar *A*² will allow, when the edge of the knife will be ground from heel to point, and the reverse.

When the edge of a knife is nicked, the operator may stop for a moment the vibratory movement of the device, and permit the stone to operate with the nicked portion of the edge until it be ground out or sharpened up.

It will be readily seen that by my improvements the several parts may be readily adjusted and secured, and that the grasp of the knife-holder with the knives may be loosened or tightened by a simple movement of the cam-lever in an instant of time.

It will also be observed that, as the vibratory movement of the device is independent of the revolving of the stone, and is wholly effected by the hand of the operator, the stone may be more or less rapidly revolved, and that the vibratory movement given to the knife may be either quicker or slower, and that the pressure of the knife against the grinding-surface of the stone may, at the will of the operator, be increased or diminished.

As the diameter of the stone is decreased by wear, the pivot-jointed connection of the rock-plate, by which the knife-holder is secured to the adjustable frame, will permit the holding end of the knife-holder to drop, while, at the same time, it permits the operator to raise the knives up from contact with the stone at any moment.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of the frame, pivoted upon a base and supported adjustably in relation to the surface of the stone, with the supplementary sliding frame carrying the knife-holder, and capable of being fixed at any desired point on the pivoted frame, as set forth.

2. The combination, with the pivoted frame B B B¹, provided with ear B³, of the adjustable frame C C C¹, provided with the slotted vertical bar C², and the cam-lever D, substantially as and for the purpose set forth.

3. The combination, with the pivoted frame and the adjustable frame provided with mechanism to lock the latter with the former, of the rock-plate E, pivoted to said adjustable frame, and the knife-holder G G¹, substantially as and for the purpose set forth.

4. The combination, with the rock-plate E,

provided with sleeve F, of the knife-holder provided with the cylindrical arm G², and the locking device composed of the squared projection *r*, screw-threaded stem *s*, clamping-washer H, and hand-nut L, substantially as and for the purpose set forth.

5. The knife-holder formed by the combination, with the part G, provided with rests *k k'* and ear *n*, of the part G¹, pivoted to part G, and provided with recesses J and jaws *l l*, and the cam-lever *p*, substantially as and for the purpose set forth.

Dated December 16, 1878.

R. PHILLIPS CLARKE.

Witnesses:

HENRY ADAMS,
F. E. THOMPSON.