3 Sheets—Sheet 1.

C. MAJER.

GRINDING-MACHINES.

No. 179,037. Patented June 20. 1876.

Fig. 1.

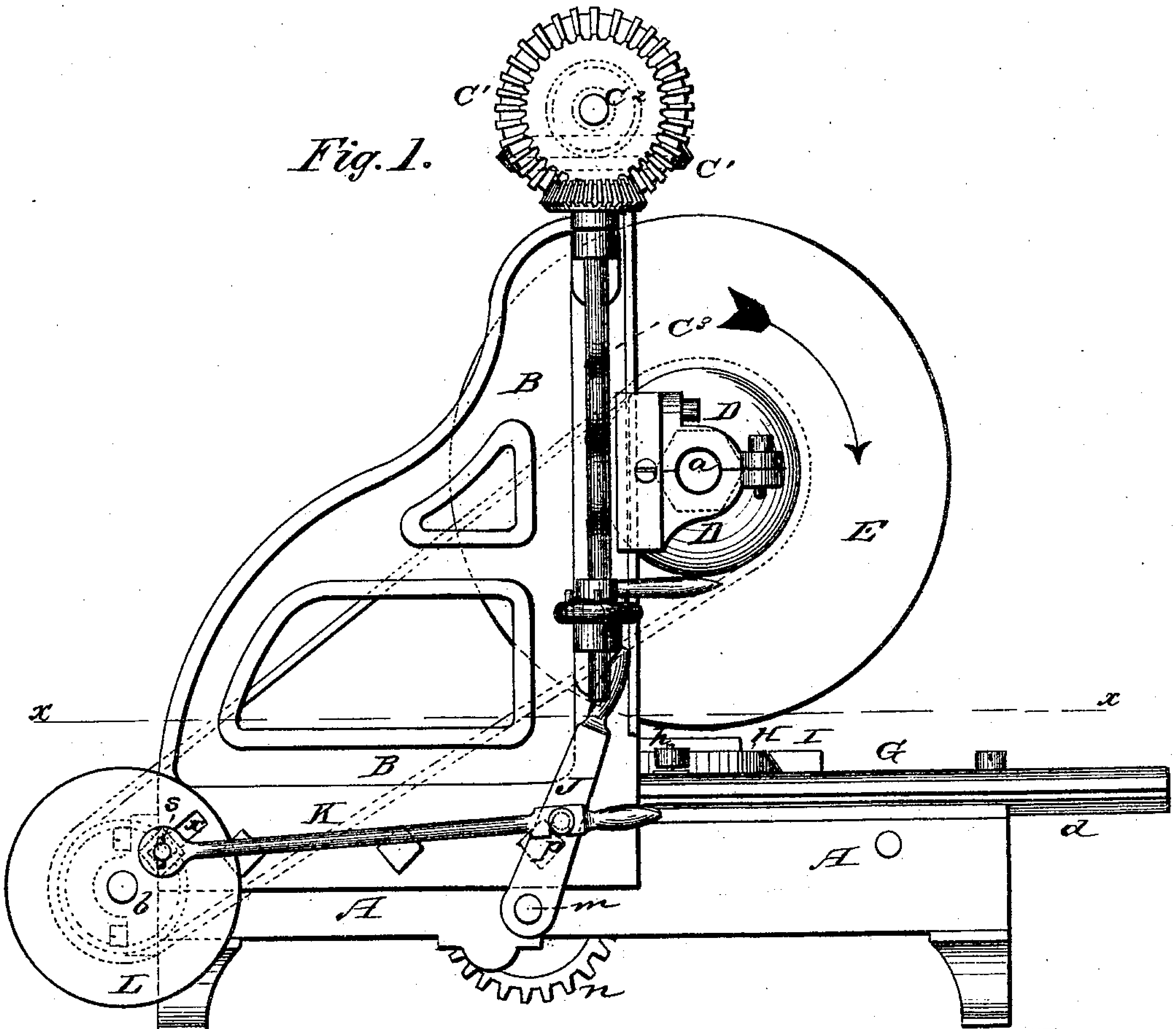
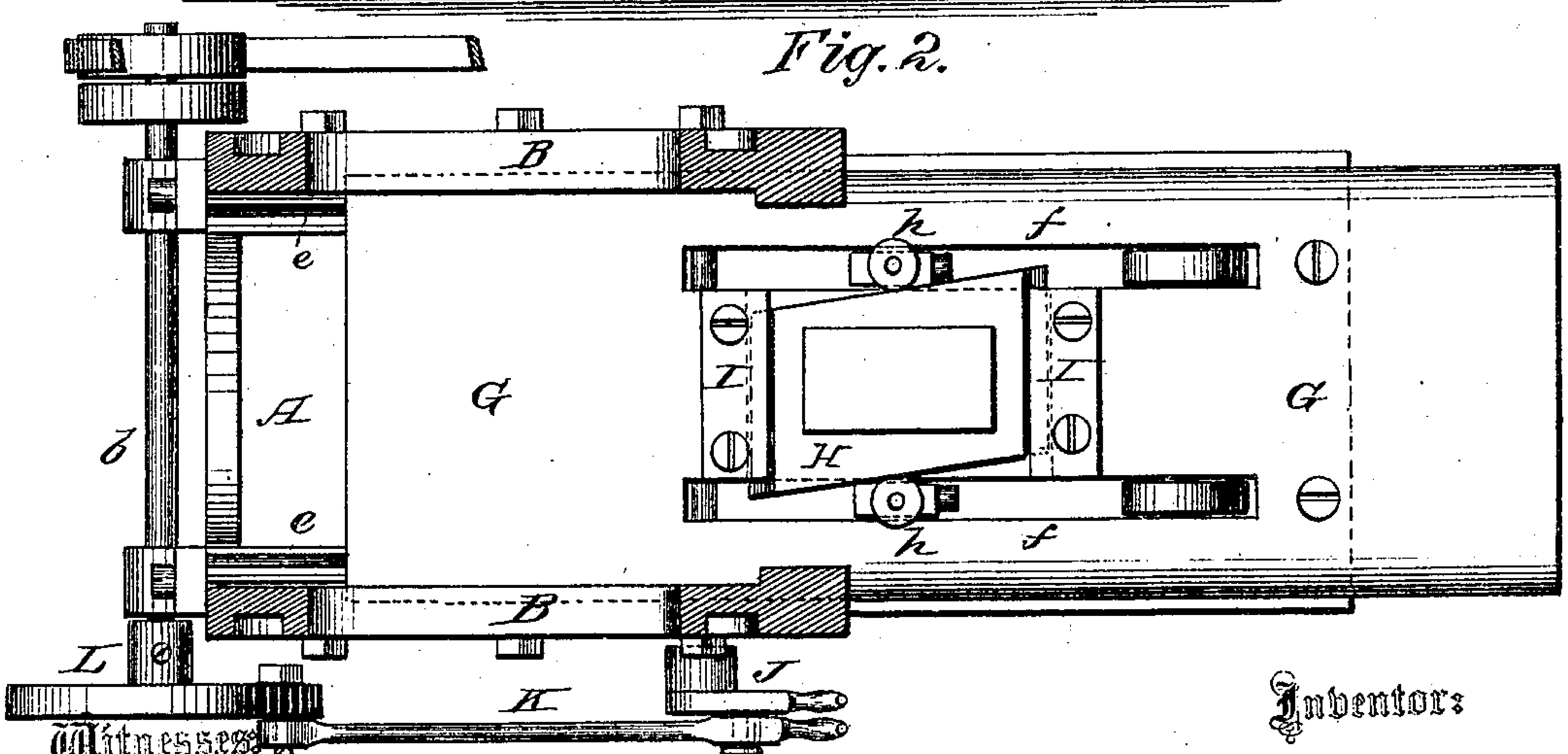


Fig. 2.



Witnesses:

P. C. Dieterich

Wm. Bluepperman.

Inventor:

Chas. Majer

Per: C. H. Watson & Co. Attorneys.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

C. MAJER.

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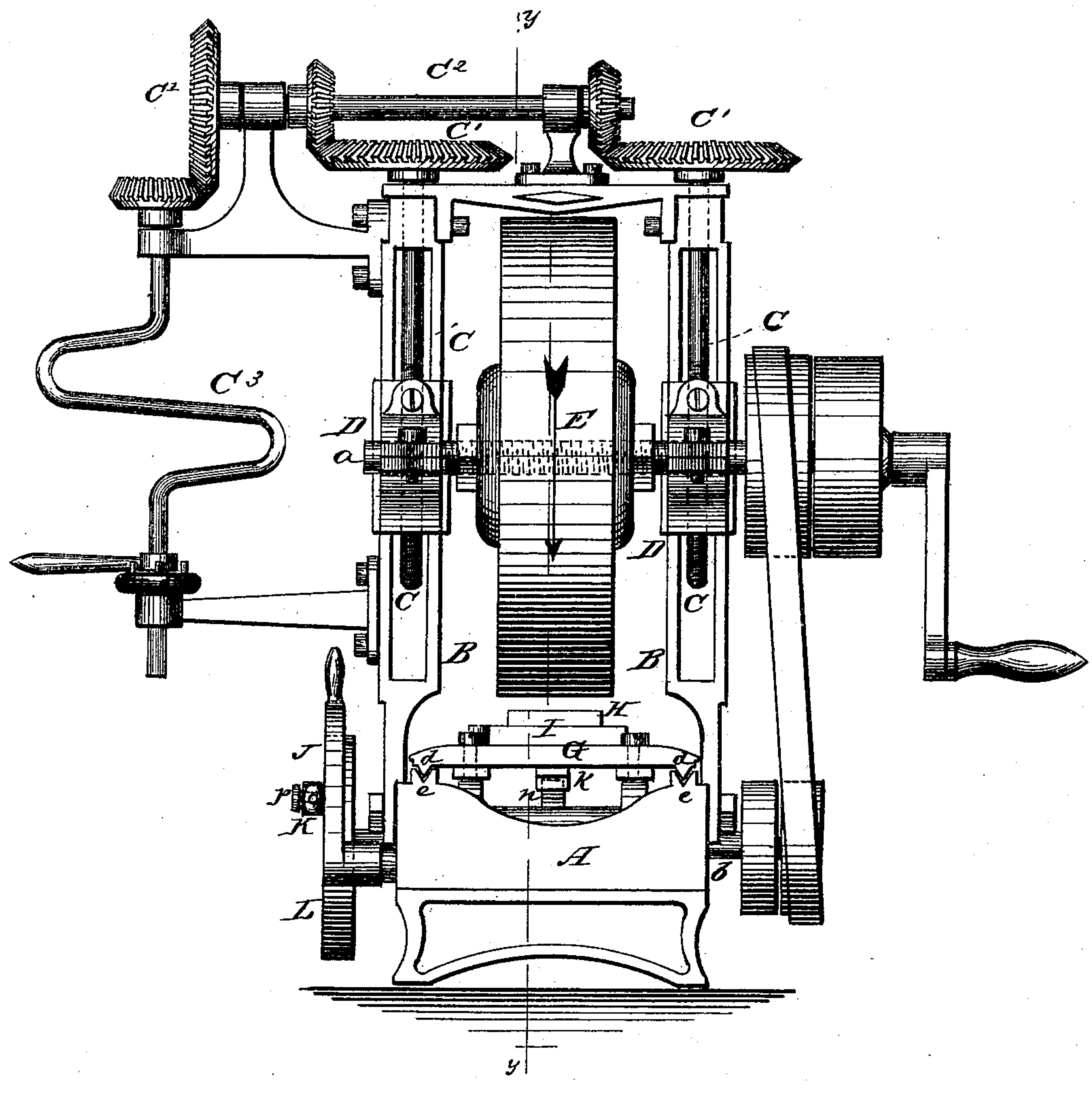
Fig. 3.



Witnesses:
P. C. Dietrich
Wm. Zupperman.

Inventor:
Chas. Majer

Per: C. H. Watson & Co Attorneys.

3 Sheets—Sheet 3.

C. MAJER.

GRINDING-MACHINES.

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Fig. 4.

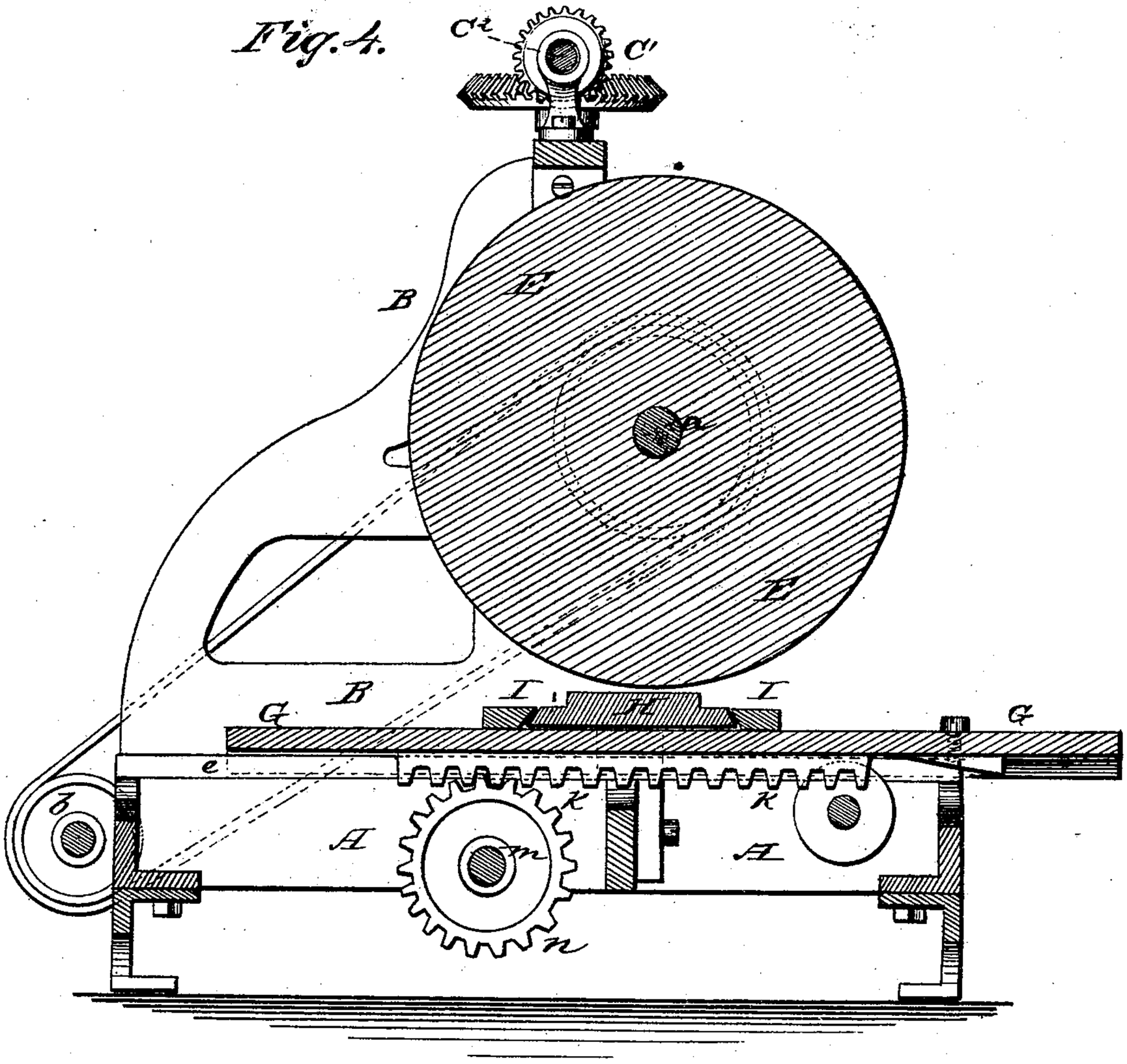
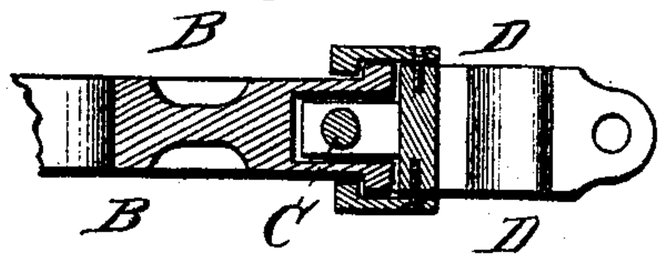


Fig. 5.



Witnesses:

P. C. Dieterich

Wm. Ruppersman

Inventor:

Chas. Majer

Per: C. H. Watson & Co. Attorneys.

UNITED STATES PATENT OFFICE.

CHARLES MAJER, OF BROOKLYN, NEW YORK, ASSIGNOR TO EDWARD J. HOLDEN AND BERTRAND CLOVER, OF SAME PLACE.

IMPROVEMENT IN GRINDING-MACHINES.

Specification forming part of Letters Patent No. **179,037**, dated June 20, 1876; application filed May 1, 1876.

To all whom it may concern:

Be it known that I, CHARLES MAJER, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Grinding-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The nature of my invention consists in the construction and arrangement of a grinding-machine, as will be hereinafter more fully set forth.

In the annexed drawings, Figure 1 is a side elevation. Fig. 2 is a cross-section on line *x x*, Fig. 1. Fig. 3 is a rear elevation. Fig. 4 is a central vertical section on line *y y*, Fig. 3; and Fig. 5 is a detail view of my invention.

A represents the base or base-frame of my machine, provided with side pieces B B, each of which is provided with a vertical groove or slot for the passage of vertical screw-shafts C C. These screws pass through sliding heads D D, held to the side pieces by suitable flanges, and through which heads passes the shaft *a*, carrying the grindstone E. To this shaft the power is applied, and by a suitable belt communicated to a counter-shaft, *b*, at the end of the frame A. The grindstone E is raised and lowered as required by the screw-shafts C C, the upper ends of which are, by bevel-gears C^1, connected with a horizontal shaft, C^2, and this shaft, by similar gearing, connected with an upright shaft, C^3, provided with suitable devices for rotating the same in its bearings. To these devices, however, I lay no claim, as they are well known in this class of machines.

G represents the bed-plate, provided on the bottom, near each side, with a V-shaped flange, *d*, fitting in corresponding grooves *e* in the sides of the frame A, forming the track upon which the bed-plate slides back and forth. In the bed-plate G are formed two parallel longitudinal slots, *f f*, a suitable distance apart, through each of which projects a stud with frictional roller *h*, said studs being fastened to the frame A. These rollers are directly opposite each other, and bear against the sides of a diagonal sliding plate, H, which is placed on top of the bed-plate, and has its ends dovetailed under gibs I I, secured to the bed-plate, whereby the said diagonal plate is guided in its lateral movement. It will readily be seen that as the bed-plate moves back and forth it carries with it the plate H, and, by means of the projecting rollers *h h*, said plate obtains also a lateral movement, first to one side and then to the other, making its combined movements diagonal in the direction. On the under side of the bed-plate G is secured a longitudinal rack-bar, *k*, which meshes with a pinion, *n*, on a shaft, *m*. On one end of this shaft is an arm or lever, J, provided with a projecting headed stud, *p*, upon which is hooked a pitman, K. The other end of this pitman is placed upon a wrist-pin, *s*, made fast in a radial slot, *x*, in a wheel or disk, L, secured upon the end of the counter-shaft *b*. By the revolution of this wheel the pitman acts upon the arm J, so as to rock the shaft *m* alternately in opposite directions, and, through the medium of the pinion *n* and rack-bar *k*, impart the required reciprocating motion to the bed-plate G.

By moving the wrist-pin *s* to or from the center it will give the rocking shaft a shorter or longer movement, as may be required, for grinding metal articles, either flat, beveling, tapering, convex, or concave.

The combined longitudinal and lateral movements are of great advantage and importance in grinding-machines for grinding metal articles of all kinds, such as files, knives, plane-irons, screw-drivers, cabinet-scrapers, &c.

By this combination of movements the surface or face of the grindstone is also kept true, and the work is prevented from being ground in ridges.

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

1. The combination of the reciprocating slotted bed-plate G, stationary studs *i i*, with rollers *h h*, the diagonal sliding plate H, and the

end guides I I, all substantially as and for the purposes herein set forth.

2. The combination, with the rocking shaft *m*, operating the bed-plate G, of the lever or arm J, with stud *p*, the pitman K, adjustable wrist-pin *s*, and radially-slotted disk L on the counter-shaft *b*, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

CHARLES MAJER.

Witnesses:
EDWD J. HOLDEN,
HUBBARD HENDRICKSON.