(No Model.) 3 Sheets—Sheet 1.

H. SLACK.

GRINDING MACHINE.

No. 301,168. Patented July 1, 1884.

FIG. 1.

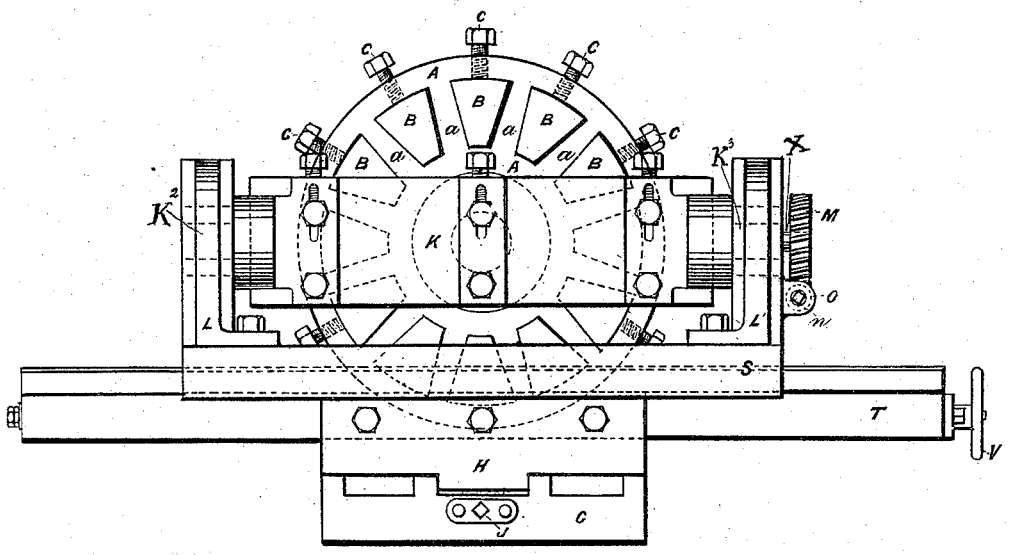
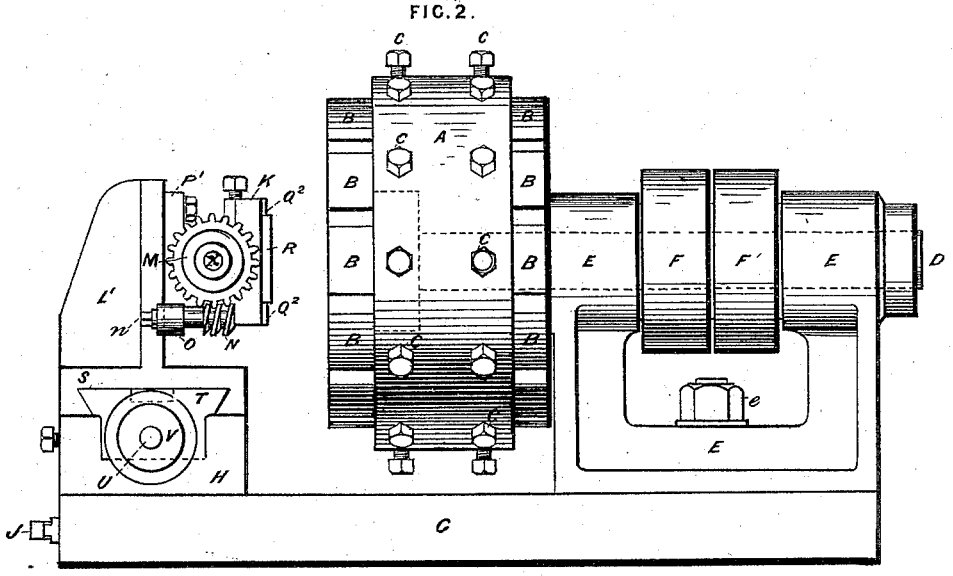


FIG. 2.



Witnesses
Chas. B. Burr
F. A. Lehmann

Inventor
Henry Slack
by Wm. H. Babcock
Attorney

(No Model.) 3 Sheets—Sheet 2.

H. SLACK.

GRINDING MACHINE.

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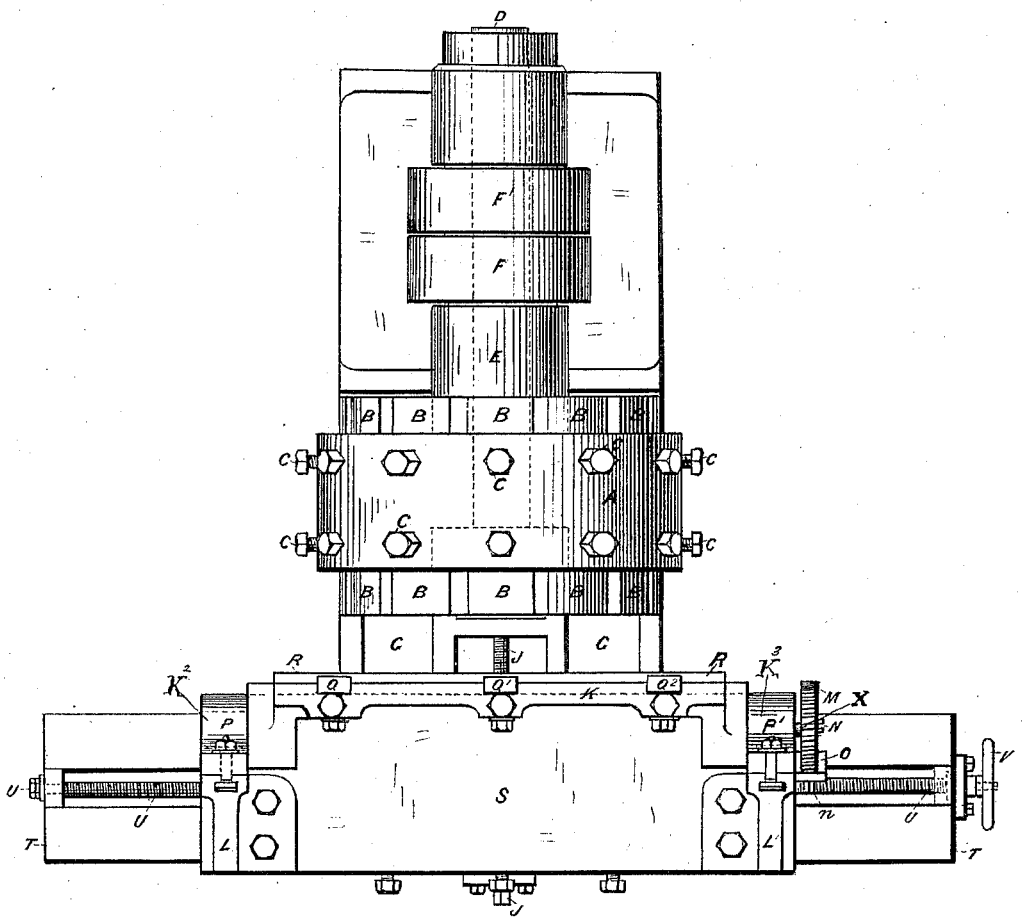
FIG. 3.



Witnesses
Chas. R. Burr
F. A. Lehmann

Inventor
Henry Slack
by Wm. H. Babcock
Attorney

(No Model.) 3 Sheets—Sheet 3.

H. SLACK.

GRINDING MACHINE.

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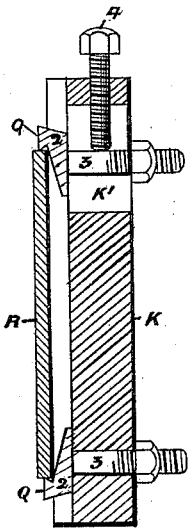

FIG. 4.

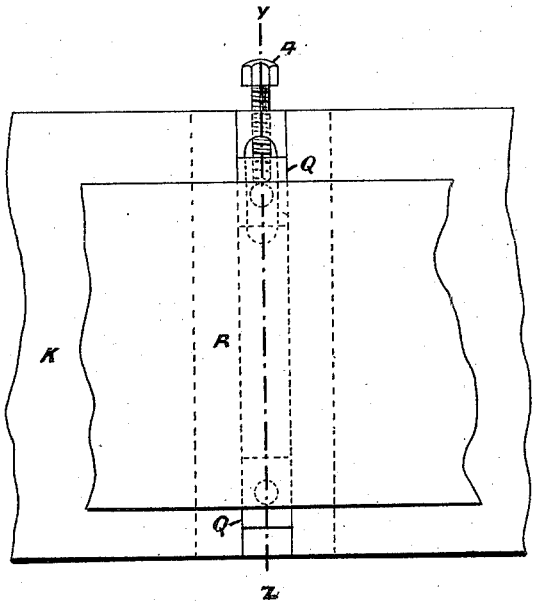

FIG. 5.

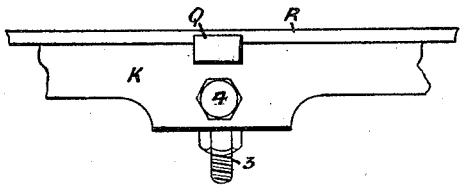

FIG. 6.

Witnesses
George Tilghman
W. R. Haight

Inventor
Henry Slack
by Wm. H. Babcock
Attorney

UNITED STATES PATENT OFFICE.

HENRY SLACK, OF SHEFFIELD, COUNTY OF YORK, ENGLAND.

GRINDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 301,168, dated July 1, 1884.

Application filed November 26, 1883. (No model.) Patented in England September 14, 1882, No. 4,370; in Germany April 24, 1883, No. 18,184; in France June 9, 1883, No. 143,599, and in Belgium June 9, 1883, No. 44,996.

To all whom it may concern:

Be it known that I, HENRY SLACK, a citizen of Great Britain, residing at Sheffield, in the county of York, England, have invented a new and useful Side Grinding and Polishing Machine, (for which I have obtained a patent in Great Britain, No. 4,370, bearing date September 14, 1882; in France, No. 143,599, bearing date June 9, 1883; in Belgium, No. 44,996, bearing date June 9, 1883; in Germany, No. 18,184, bearing date April 24, 1883,) of which the following is a specification.

This invention relates to improvements in side grinding and polishing machines using a disk provided with a series of taper grinding or polishing blocks; and the nature of said invention consists in the peculiar construction and combination of parts, as hereinafter set forth and more particularly pointed out in the claim.

In the accompanying drawings, Figure 1 is a front view, in elevation, of the entire machine. Fig. 2 is a side view thereof. Fig. 3 is a plan view or top view thereof. Figs. 4, 5, and 6 are enlarged views showing the action of the clamps Q Q′ Q² in securing the bar R to the swing-table K. Fig. 4 is a transverse section, in elevation, as taken through the dotted line Y Z, Fig. 5. Fig. 5 is in part a view of the face of the swing-table K and bar R as presented to the face of the blocks B B. Fig. 6 is in part a plan of the swing-table K, clamps Q, and bar R.

Similar letters refer to similar parts throughout the several views.

A is the disk or chuck, having ribs *a a*.

B B are segmental taper grinding-blocks, of natural or artificial stone, or compounds of emery, as ordinarily employed for grinding or polishing, being considerably wider at the outer than the inner edge.

C C are set-screws, which secure the blocks B in position.

D is the shaft, to which the disk A is fixed and with which it rotates.

E is the head-stock, in which the shaft D rotates, which can be swiveled for grinding concave, being adjustable on the bed G by the bolt and nut *e*.

F is the pulley, fixed to the shaft D.

F′ is a loose pulley.

G is the base-plate of the machine.

H is a sliding bed, which is moved toward and from the disk A by the screw J, having a screwed nut, into which the screw J is fitted.

J is a screw rotating in bearings on the bed G, and fitting into the screwed nut on the sliding bed H, which screw can be turned by hand-wheel or spanner fitted on the square at the front end thereof.

K is a swing-table, on which the bar R to be ground is secured, having trunnions K² K³ (shown in dotted lines) at the ends thereof.

L L′ are standards with vertical slotted faces, which are bolted to the sliding table S.

M is a worm-wheel fixed to an extension, X, of trunnion K³ of the swing-table K.

N is a worm fixed to shaft *n* and geared to the worm M.

O is a boss or bracket on the sliding pedestal or bearing P′, which carries the shaft *n* and worm N.

P P′ are pedestals or bearings, which slide in vertical slots in the standards L L′, and in which the trunnions on the swing-table K turn.

Q Q′ Q² are three pairs of vises or clamps of ordinary construction, which secure the bar (to be ground) to the swing-table K.

R is the bar to be ground.

S is a sliding table, on which the standards L L′ are secured, and on which the swing-table K is moved across the faces of the grinding-blocks B B, the said table S having a screwed nut on its under side, into which the screw U fits.

T is a bed fixed to or forming part of the sliding bed H.

U is a screw rotating in bearings on the end of the bed T, by which the table S is slid.

V is a hand-wheel, by which the screw U is rotated.

In the construction and use of this machine the segment-blocks B B are secured in the disk A by the set-screws C C. When the blocks B B wear down to the disk A, the set-screws C C are loosened and the blocks B B are moved outward toward the table K, and the set-screws are tightened, by which the blocks are firmly secured in the disk. To place the bar (to be ground) in position, the table S is drawn back from the disk A by rotating the screw J, the clamps or vises Q Q′ Q² are drawn back, and the bar is placed in position. The said clamps are then tightened onto the bar, by

which it is firmly secured to the table K. To grind the bar taper in cross-section, or to taper it at its edge or edges, the table K is canted by means of the worm N and worm-wheel M by a spanner fitted onto the square on the shaft *n*. In grinding the bar the tables H and S are slid to the blocks B B by the screw J until the bar on the table K is in contact with them, the said table being moved right and left across the faces of the blocks B B by the screw U and hand-wheel V; and as the blocks B B wear, the tables H and S are moved inward by the said screw J, the said screw J being rotated by a spanner or hand-wheel on the square on the screw J.

The clamps hereinbefore described, and shown in Figs. 4, 5, and 6, are formed with heads 2, recessed to receive the edges of the bar R, and have also screwed hems 3, by which they are fixed to the swing-table K. The clamps Q are adjusted in the slot K′ to hold various widths of bars, and are prevented from rising by the set-screw 4, screwed through the top of the swing-table K. The bottom clamps of the pairs of clamps Q Q′ Q² are similar to the top ones, but are not adjustable.

I do not claim, broadly, the construction of a grinding-disk with segmental blocks; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

In a side-grinding machine, the combination of disk A with grinding-blocks B B, set-screws C, for securing the same, head-stock E, bed G, bolt and nut *e*, which secure said head-stock to said bed, swing-table K, having trunnions K^2 K^3, the standards L L′, which support said table, the worm-wheel M, secured to an extension, X, of trunnion K^3, and the worm N, which gears with said worm-wheel, substantially as and for the purposes set forth.

HENRY SLACK.

Witnesses:

E. EDWARDS HEWETT,

E. A. HARRISON.