(No Model.)

2 Sheets—Sheet 1.

A. B. LANDIS.

GRINDING MACHINE.

No. 425,230. Patented Apr. 8, 1890.

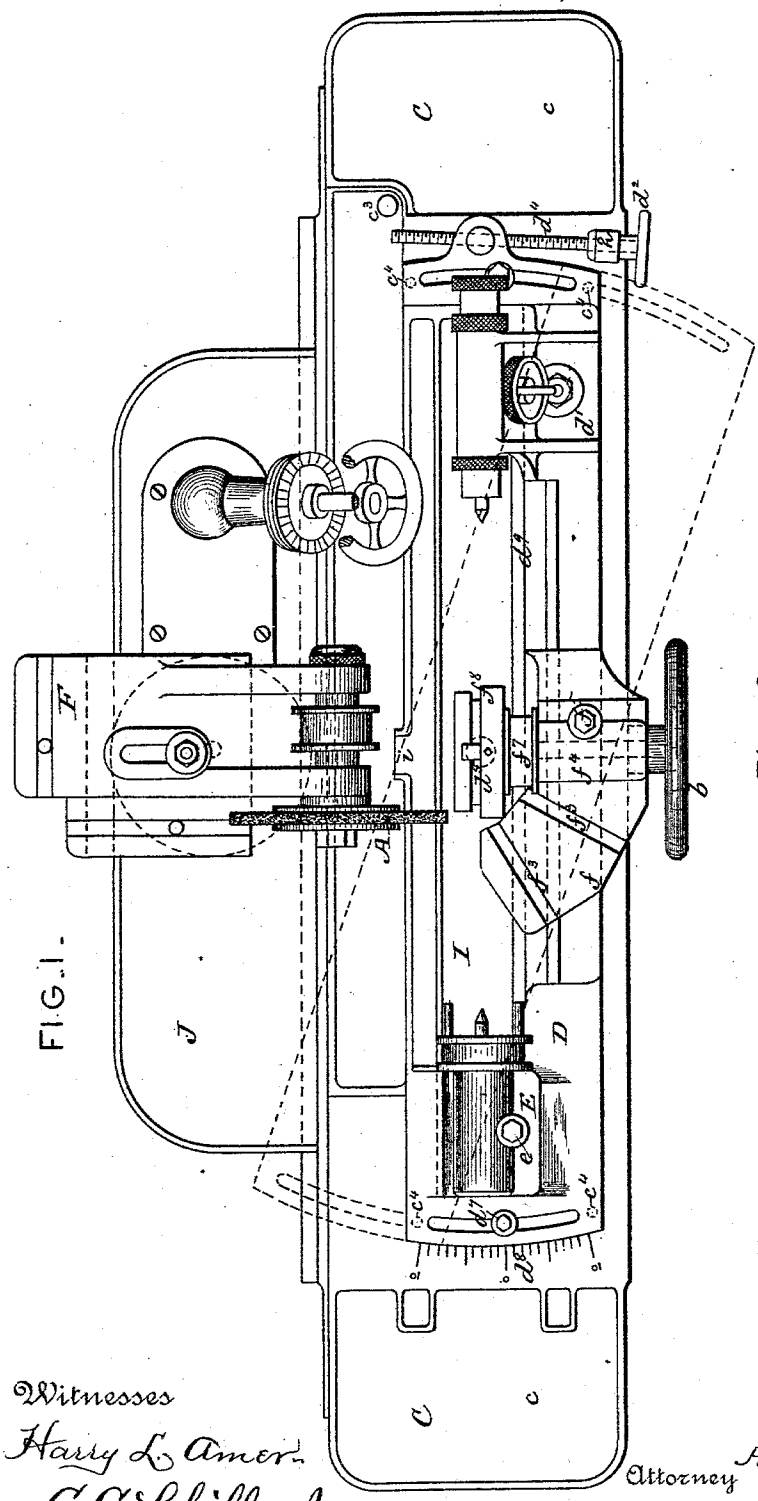


FIG. 1.

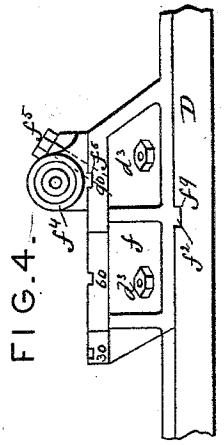


FIG. 4.

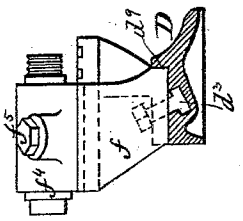


FIG. 3.

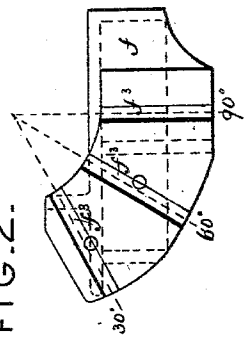


FIG. 2.

Witnesses

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(No Model.) 2 Sheets—Sheet 2.

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GRINDING MACHINE.

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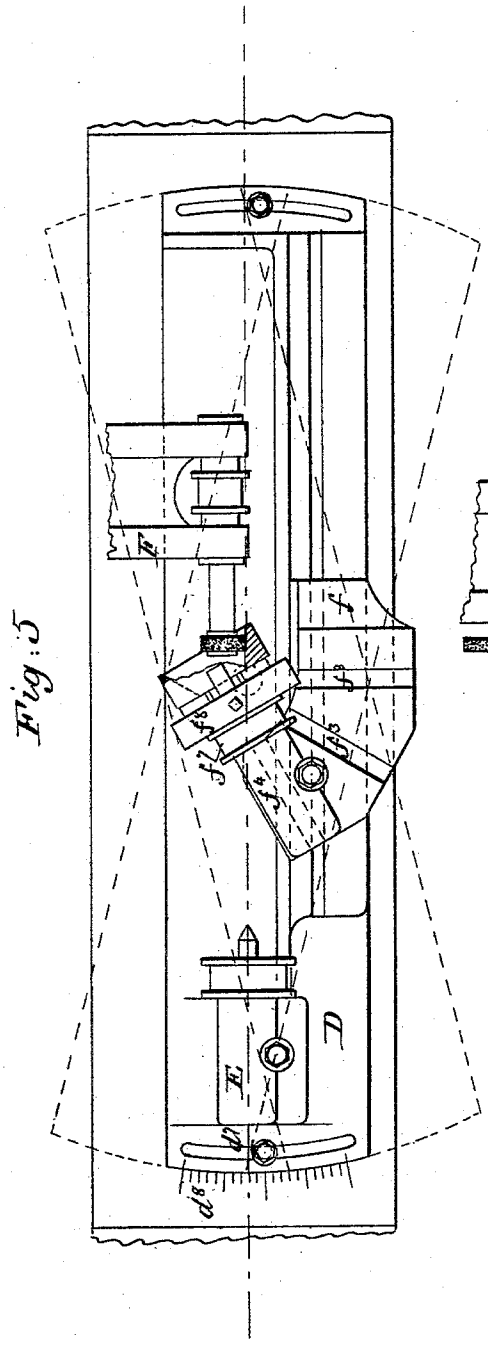


Fig. 5

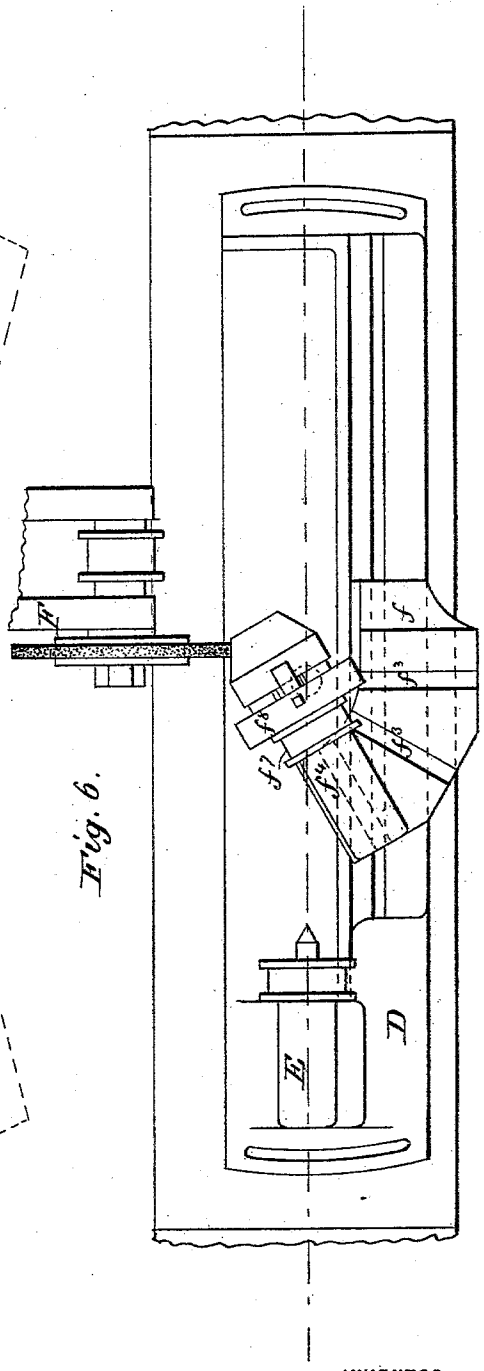


Fig. 6.

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UNITED STATES PATENT OFFICE.

ABRAHAM B. LANDIS, OF WAYNESBOROUGH, PENNSYLVANIA.

GRINDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 425,230, dated April 8, 1890.

Application filed January 8, 1890. Serial No. 336,239. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM B. LANDIS, a citizen of the United States, residing at Waynesborough, in the county of Franklin, State of Pennsylvania, have invented certain new and useful Improvements in Grinding-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to universal grinding-machines, adapted to do a great variety of work, as straight and tapering, either inside or outside; and my invention consists in the arrangement of the parts by which the relative positions of the table, the head-block, and the grinding-wheel can be adjusted, and in the means for retaining the spindle-head block connected with the table between the head-stock and foot-stock, as will be hereinafter described, and pointed out in the claims, some of the features being more fully described in a companion application, bearing Serial No. 311,681, filed May 22, 1889.

In the accompanying drawings, Figure 1 is a top view of a grinding-machine constructed in accordance with my invention. Fig. 2 is a top view of the supporting-plate for adjustably carrying a spindled head on the side of the machine opposite the grinding-wheel. Fig. 3 is a side view of the spindled head and its supporting-plate with a portion of the supporting-table in section, and Fig. 4 is a front view of the same. Fig. 5 is a top view of a portion of the machine, showing its application to grinding inside tapering work. Fig. 6 is a top view of a portion of the machine, showing its application to grinding outside tapering work.

The machine consists of a base having a bed mounted thereon, in which are located all the feed or traverse gearing. On top of this bed is located a plate C, and on this table is pivoted a table D, which can be swung horizontally around the central bolt d^5 and is secured in position by bolts d^7, passing through curved slots in the ends thereof and adjusted accurately by degrees and fractions thereof (indicated at d^8) by means of the screw d^4, which is pivoted in a bearing 2 and the hand-wheel d^2. Upon this pivoted table are mounted the head and foot stocks, having center pins to revolve the work upon, the head-stock E having a fixed position, while the head-block f^4 is adjustable. The foot-stock is made to overhang a pan I the entire length of its adjustment, so that the water which drops off the shaft that is being ground will drop into this pan and run off at the spout i, located at the center of its length so that it will run into the channel c^2, whatever may be the position of the pivoted table, and thence through the hole c^3.

The head-block f is secured to the table D by bolts d^3, set at an angle, which brings said head-block firmly against the long shoulder d^9 on said table. For angular grinding, when it is desired to move the table D to an extreme position, as shown by dotted lines in Fig. 1, and to secure it in that position the bolt d^7 is removed from its seat and inserted in one of the holes c^4 for either extreme, and the screw d^4 and its bearing 2 are removed from the machine to give a wide range of angle for taper work.

The grinding-wheel A is carried by a frame F, which is adapted to be swung around upon its pivot-bolt to properly locate the wheel for the work.

To grind face-work in a chuck, either straight or at an angle, a supporting-plate f is used. Said plate is mounted on the table D in the center of its length opposite the pivotal point, and is secured in precisely the same manner as the foot-stock, only with two screws and a tongue f^3 entering a groove f^9 in the table D, the purpose of said tongue being to retain the plate f centrally opposite the pivotal point d^5 of the table. The top of the supporting-plate f has three radial grooves f^3, in either one of which the spindled head-block f^4 can be secured, having a tongue f^6 to engage with the groove f^3, and is retained by the inclined bolt f^5. In Fig. 1 the supporting-plate f is shown at right angle to the table D. Angular positions can now be obtained for any angular work by means of the large protractor-scale d^8, and said positions are carried to its limit. For more acute angles the spindled head f^4 is transformed to one of the side slots f^3.

The advantage obtained by the means above described are that a large protractor-scale can be used for this angular grinding, and thus fractions of degrees can be used and

greater accuracy be obtained, and for face-grinding the automatic traverse can be used and also a comparatively large emery-wheel, the object operated upon being thrown forward to about the pivotal point of the table D, as shown; and further, the advantage of this position for face-grinding is that it brings the work directly over the water and grindings receiving pan I, and avoids the ordinary slop of water over the finished portions and sides of the machine. To help attaining these results the pulley f^7 for driving the chuck f^8 is placed immediately behind said chuck, and said pulley is thus brought in correct alignment with the shaft above the same, as for straight grinding.

Having now fully described my invention, I claim—

In a grinding-machine, the combination of a pivoted table D, with a spindled head and its supporting-table f, having a series of radial grooves f^3, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ABRAHAM B. LANDIS.

Witnesses:

JNO. B. RUSSELL,

ALF. N. RUSSELL.