No. 836,813. PATENTED NOV. 27, 1906.

G. A. KIMBER.

GRINDER.

APPLICATION FILED DEC. 18, 1905.

2 SHEETS—SHEET 1.

FIG. 1

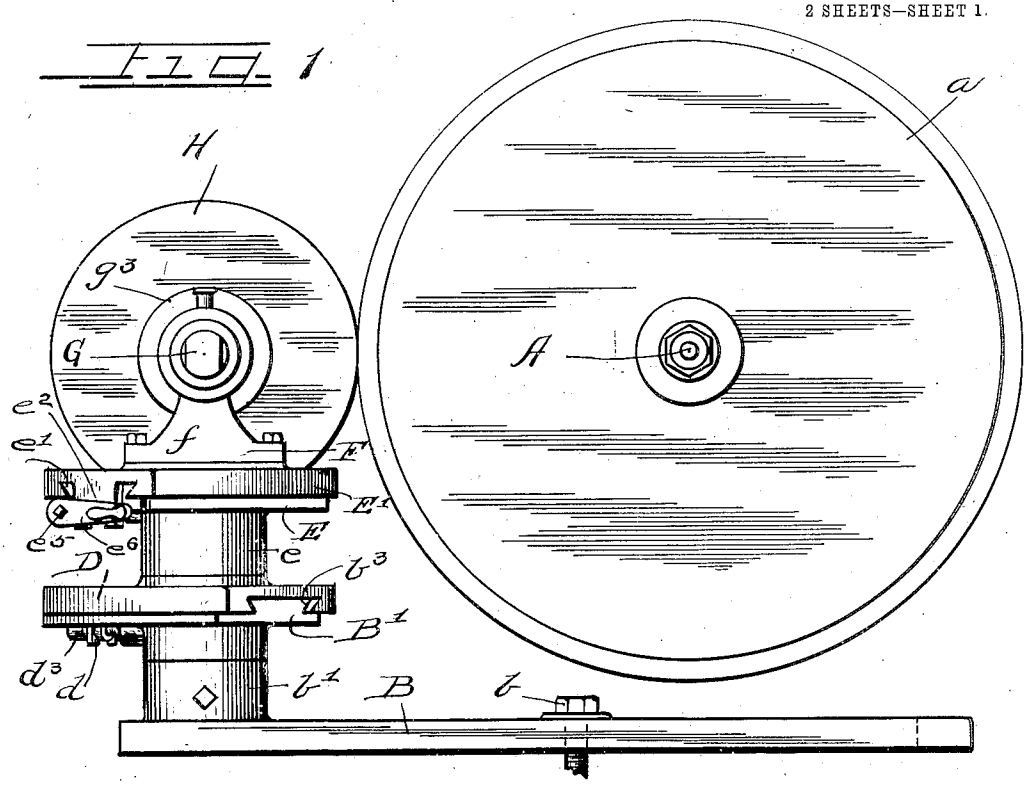
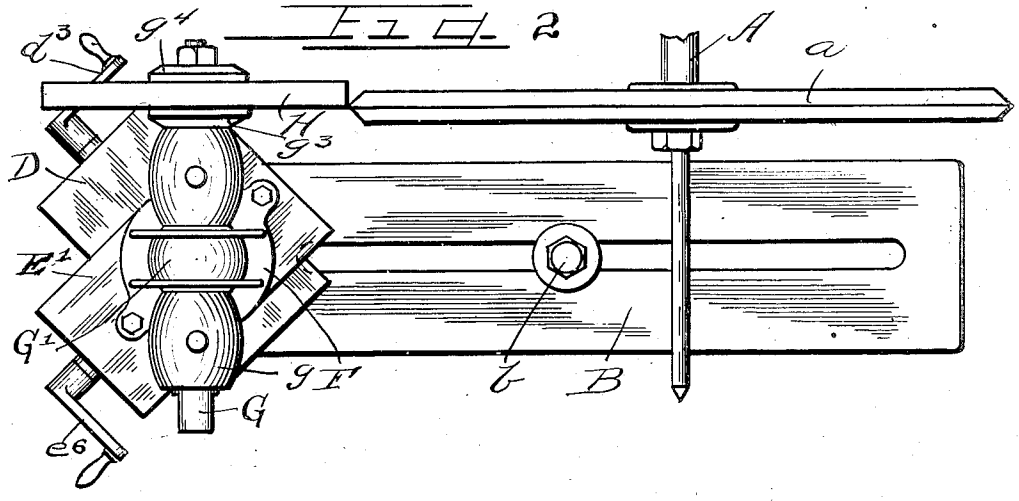


FIG. 2



Witnesses
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Fig. 3

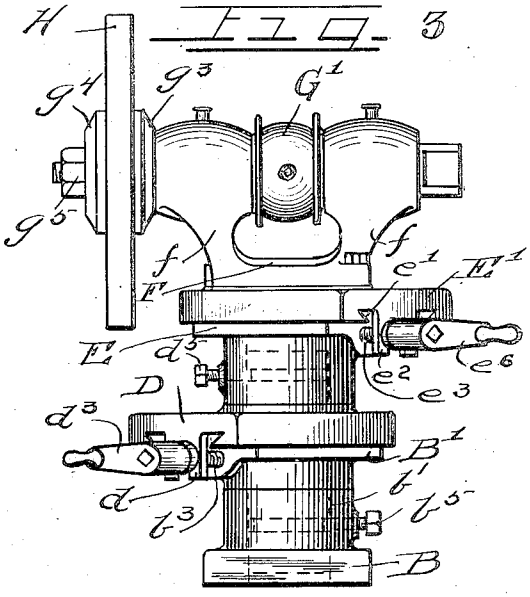


Fig. 4

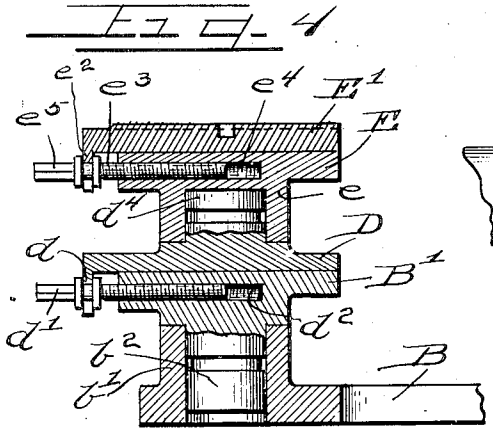
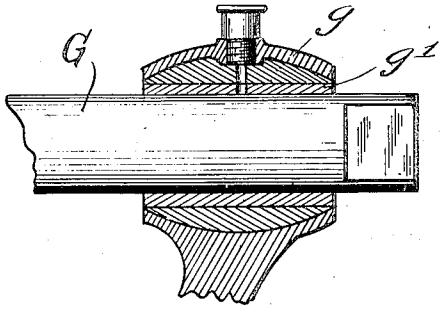


Fig. 5



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UNITED STATES PATENT OFFICE.

GEORGE ALFRED KIMBER, OF CHICAGO, ILLINOIS.

GRINDER.

No. 836,813. Specification of Letters Patent. Patented Nov. 27, 1906.

Application filed December 18, 1905. Serial No. 292,174.

To all whom it may concern:

Be it known that I, GEORGE ALFRED KIMBER, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Grinders; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in grinding-machines, and more particularly to a grinding-machine adapted for use in dressing abrasive wheels such as those employed in glass-cutting. Heretofore the dressing of glass-cutters' wheels has been performed entirely by hand, and in consequence, owing to slight variations of hardness of stone or inequalities of other kinds, the stone soon becomes untrue and is therefore worthless. In grinding said stones it is necessary to provide a central sharp cutting edge on the stone, perfectly true and having an unvarying angular edge, for any variation in the edge of the glass-cutter's stone is certain to injure the glass, even chipping it.

With this in view the object of the invention is to provide a grinding-machine adapted to dress glass-cutters' and like stones with absolute precision, thereby securing uniformity of edge and adapted to be operated by one not thoroughly skilled.

The invention also has for its object the construction of a grinding-machine having maximum flexibility of adjustment of the grinder and wherein the grinding operation may be performed at any desired angle with the plane of rotation of the disk or cutter's wheel operated upon.

The invention consists in the matters hereinafter described, and more fully pointed out and defined in the appended claims.

In the drawings, Figure 1 is a side elevation of a device embodying my invention, showing the glass-cutter's stone in position to be operated upon. Fig. 2 is a top plan view of the same. Fig. 3 is a rear elevation of the grinder. Fig. 4 is a vertical section thereof. Fig. 5 is an enlarged longitudinal section of one of the bearings for the arbor of the grinder.

As shown in said drawings, A indicates any suitable arbor suitably journaled to rotate the glass-cutter's stone *a* with precision and at a high rate of speed.

B indicates a bottom clamping member adapted to be rigidly, though adjustably, secured to the bed-plate or ways of the machine or lathe upon which the grinding operation is to be performed by means of a clamping-bolt *b*. Said clamp is provided at its outer end with a tubular upwardly-extending cylindric boss b', which is bored to afford a cylindric vertical socket in which is secured the cylindrical end b^2 of a slide-rest B′, which, as shown, extends horizontally and is provided in its top with dovetailed ribs b^3, as shown in Figs. 1 and 3, and with which is slidably engaged a slide D, provided, as shown, with a dovetailed seat in its under face complemental with the width and adapted to engage the dovetailed ribs on the slide-rest B′. As shown also, said slide is provided at its outer end with a downwardly-turned flange *d*, slotted upwardly from the bottom, as shown in Figs. 3 and 4, and in which is journaled the end of a screw-shaft d', the inner threaded end of which engages in a complementally-threaded bore d^2 in the slide-rest B′. As shown, said screw-shaft is provided at its outer end with an angular head adapted to be engaged by a suitable crank or wrench d^3 and whereby rotation of said shaft acts to move the slide longitudinally of the rest. Located centrally on said slide D and extending vertically upward therefrom is an integral cylindric boss d^4, corresponding with the cylindric boss or stud-shaft b^2. Said cylindric boss fits closely in a cylindric socket *e* in a slide-rest E, corresponding with the slide-rest B′, and likewise is provided at its top with dovetailed ribs e', extending longitudinally thereof and fitted into a complemental dovetailed groove or seat in a slide E′, corresponding with the slide D, and which is provided with a downturned flange e^2 at one end thereof. Rotatably engaged therein is a screw-shaft e^3, the threaded end of which is engaged in a complementally-threaded socket e^4, as before described, and

the outer end of which, e^5, is rectangular to be engaged by a wrench or suitable crank. The top of said slide E′ is shown as flat, and rigidly supported and bolted thereon is a standard F, having upwardly-directed arms *f*, the upper ends of which, as shown, extend obliquely with and at an angle of approximately forty-five degrees with the longitudinal axis of the slide E′. Journaled in said arms is the grinding-arbor G. As shown, said arbor is secured axially in the upwardly-directed end of said arms, in which is provided an oval babbitting-chamber *g*, and bearing-sleeves *g′* are secured in the shaft or arbor, and the bearings are then babbitted, thus insuring perfect alinement. As shown, a belt wheel or pulley G′ fits closely between the bearings for said arbor in said upturned arms *f* and is rigidly secured on said shaft by means of one or more set-screws and acts to hold the shaft from movement longitudinally in its bearings, and, as shown, at the outer end of said arbor is secured complemental collars g^3 and g^4, between which and secured upon the arbor by means of the nut g^5 is the grinding or abrasive wheel H. Said arbor, as shown, is shaped at its opposite end to be engaged by a wrench or other tool. Said slide-rests and the slides are held at a definite angle with and are adjustable relative to each other by means of set-screws b^5 and d^5, which are seated in the bosses *b′* and *e*, respectively, and which engage the cylindric studs or shafts b^2 and d^4 in suitable grooves therein and not only hold the parts from lifting, but as well rigidly engage the same in the proper angular adjustment to dress the glass-cutter's stone *a* at the desired angle.

The operation is as follows: The grinder-stone having been secured upon the arbor as desired and the operator having assured himself that the arbor and stone revolve accurately, the slides are adjusted upon their rests to insure a suitable angle at the edge of the cutting-stone H, as shown in Fig. 2. The arbor G is of course driven from any suitable source of power by means of a belt trained around the pulley G′ to rotate the abrasive wheel H oppositely from the direction of rotation of the glass-cutter's wheel, and the grinding-wheel is rotated at a high rate of speed relatively to the cutting-wheel's speed. The slide D and the slide E are each adjusted to the desired angle—as, for instance, at approximately a right angle with each other, or, in other words, each forty-five degrees with the plane of rotation of the wheel *a* and on opposite sides of the cutting-wheel—and the angular edge of the abrasive wheel H is adjusted against the wheel to be shaped, as shown in Fig. 2, by rotation of the crank e^6, thus cutting away the stone *a* at the angle shown in Figs. 1 and 2 or at any desired angle or to afford any desired peripheral conformation, dependent upon the angle at which the slide E′ is adjusted relatively of the plane of rotation of the wheel *a*. Having completed the cut on one side of the stone, the grinding-wheel is retracted by means of a crank and adjusted with the opposite cutting edge thereof at the cutting edge of the wheel and by means of the crank d^3 is moved inwardly, thus cutting the opposite face of the stone. In this manner the sides of the stone are cut alternately, and, owing to the precision, the speed, and the accurate adjustment of the abrasive stone H relatively to the cutting-wheel, said cutting wheel or stone is shaped with the utmost precision to afford the desired cutting edge and refitted for the work of the glass-cutter. It is of course immaterial that the glass-cutter's stone sharpened in this manner may vary in hardness at spots in its periphery, for the reason that, owing to the mechanical precision, the stone will be accurately ground nevertheless.

While I have shown very simple forms of slide-rests and slides and a simple form of arbor secured thereon, it is obvious that details of construction and arrangement may be varied, and I therefore do not purpose limiting this application for patent otherwise than necessitated by the prior art.

I claim as my invention—

1. The combination with two slide-rests adapted to be arranged at equal angles relatively a common plane of a wheel rotating in said plane, a grinding-wheel carried on one of said slide-rests and movable by either or both of said slide-rests to dress the periphery of the wheel.

2. In a machine of the class described the combination with a rotative arbor of a cutting-wheel secured thereon, a slide-rest adjustably supported on the frame for said arbor and adapted for adjustment at an angle for said wheel and a second slide-rest supporting the same and adjustable thereto and at an angle therewith.

3. In a device of the class described the combination with two slide-rests each pivotally supported and one mounted upon the other and adapted to be adjusted at angles one with the other, of an arbor mounted on the uppermost of said rests and at an oblique angle with the longitudinal axis thereof and a grinding-wheel carried on said arbor at one end thereof.

4. In a machine of the class described a frame, a slide-rest pivoted on the frame, a second slide-rest pivotally mounted thereon and adjustable at an angle therewith, an arbor journaled on said upper slide-rest at an oblique angle with its longitudinal axis and means for adjusting said rests relatively to each other and to a common plane.

5. In a device of the class described the combination with an adjustable frame, of a

slide-rest pivotally supported thereon, a slide on said rest provided with a cylindric boss thereon, an upper slide-rest journaled on said boss, an upper slide thereon, a frame rigidly engaged on said upper slide, an arbor journaled thereon and a grinding-wheel carried on said arbor.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

GEORGE ALFRED KIMBER.

Witnesses:
C. W. HILLS,
W. W. WITHENBURY.