

1,060,170.

2 SHEETS—SHEET 1.

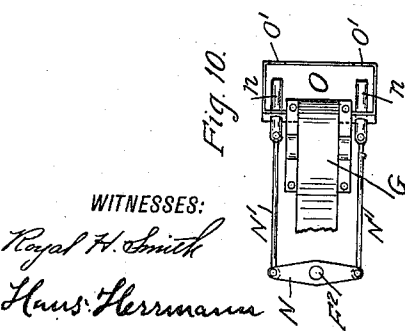


Fig. 10.

**WITNESSES:**

Royal H. Smith  
Hans. Herrmann

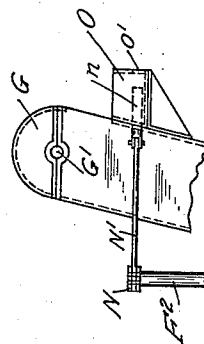


Fig. 9.

**INVENTOR**

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*ATTORNEY*

1,060,170.

2 SHEETS—SHEET 2.

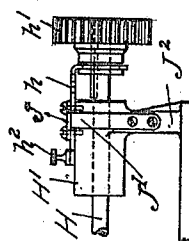
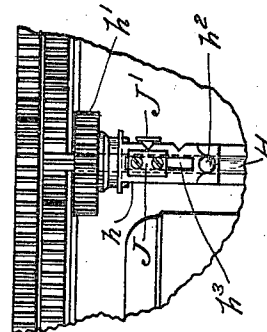
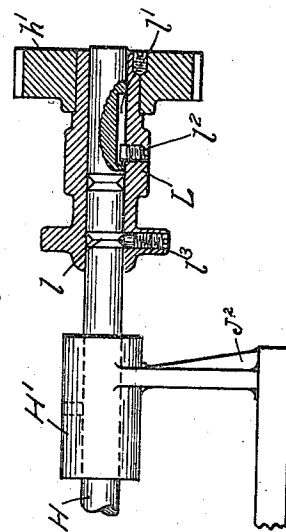
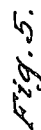
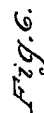
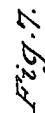
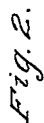
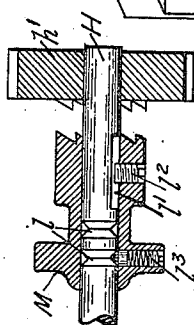


Fig. 8.



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# UNITED STATES PATENT OFFICE.

CHARLES H. J. DILG, OF NEW YORK, N. Y.

GRINDING AND POLISHING MACHINE.

1,060,170.

Specification of Letters Patent.

Patented Apr. 29, 1913.

Application filed April 30, 1910. Serial No. 553,587.

*To all whom it may concern:*

Be it known that I, CHARLES H. J. DILG, a citizen of the United States of America, and a resident of New York, in the county and State of New York, have invented a certain new and useful Grinding and Polishing Machine, of which the following is a specification, the same being a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to apparatuses whereby the surface of articles may be cleansed and made smooth by attrition, as by the friction of rotary bodies, and in particular to a machine for grinding and polishing, having an automatic conveyer for the abrasive, detergent or polishing material, and it has for its object the provision of an apparatus of the kind set forth, simple in construction, inexpensive to manufacture, and which operates efficiently in practical use.

To attain the desired end, this invention consists in the construction, arrangement and operation of parts herein set forth.

In order to enable the invention to be fully understood, I shall proceed to explain the same by reference to the drawings, illustrative of one embodiment of the invention, which accompany and form a part of this specification, and in which—

Figure 1 represents a central longitudinal sectional view of an apparatus constructed according to my invention; Fig. 2 is a plan view of the same; Fig. 3 is a detail sectional view, and Fig. 4 is a plan view in detail respectively showing one embodiment of my powder propelling mechanism; Fig. 5 is a detail view in elevation, and Fig. 6 a plan view respectively of a gear interlocking mechanism controlling the grinding device; Fig. 7 is a view in elevation, partly in section, and Fig. 8 is a detail sectional view of other forms of engaging mechanism to interlock the gears and grinding wheel embodying my invention, and Figs. 9 and 10 are detail side and plan views respectively of another powder dispensing device constructed according to my invention.

Like letters of reference indicate like parts in all the views.

Referring particularly by reference characters to the drawings, A, A' denote a pair of polishing rolls or wheels mounted on a

base B, and having gears *a*, *a'* attached to the same, and constructed and arranged to be driven in opposite directions by means of gears *b*, *b'* which latter gears are connected with the driving motor C, by means of the intermediate train of gears and pinions *d*, *d'*, *d*<sup>2</sup>, *d*<sup>3</sup>, *d*<sup>4</sup>, *d*<sup>5</sup>. The polishing rolls or wheels A, A' are constructed in such a manner that when an article is placed between the same—when in operative relation—its surface will become cleaned or finely ground, and smoothed or polished, both sides of the same being simultaneously engaged in frictional contact with the said rolls. Mounted on the frame B and located beneath the said rolls A, A' is located a reciprocatory slide E formed with an upturned rim or edge *e* formed on the front and side edges thereof, and also ordinarily running up through the center of the same thus constituting a bifurcated slide, the open central portion of which may provide for the use of a knife guide (not shown) if so desired. The powder or other abrasive or polishing material in use drops from the rolls and falls on the said slide, so that the said powder, when the slide is reciprocated, is propelled toward a conveyer or elevator. The slide is preferably reciprocated by means of the following mechanism: The shaft D<sup>4</sup> of the pinion *d*<sup>4</sup> carries another pinion D<sup>3</sup> which drives the gear D<sup>2</sup> on the shaft D', which latter shaft carries the cam D. The said cam D contacts the lower end of the spring controlled lever or crank F fastened to the lower part of the spindle F<sup>2</sup>, at the upper end of which spindle is secured a lever F' which communicates motion to the slide by means of the intermediate link or pitman E'.

At each revolution of the cam D the lever F is moved forward against the tension of the spring *f*, until it has passed the highest point of the cam, whereupon the crank or lever F is drawn rapidly backward, together with the link E', thus producing a sudden impulsive movement to the slide E, the continued succession of which movements causes the material located thereon to approach and to drop into the opening *b*<sup>3</sup> in the base B, and thence into the lower trough-shaped portion of the casing G, which serves as a receptacle for the abrasive material.

The casing G of my conveyer contains an endless belt *g* equipped with buckets *g'*.

The said belt  $g$  runs on a pulley  $g^6$  of the shaft  $G'$  and pulley  $d^6$  of the shaft  $D'$ , the said pulley  $d^6$  being furnished with wing-like projections  $d^7$  for the purpose of distributing the powder in the receptacle toward the buckets and thereby prevent the clogging up of the belt. The said buckets serve to remove the polishing material from a trough or receptacle at the bottom of the casing  $G$  and to deliver it out of the opening in the upper part of the casing to the chute  $G^2$ , whence it reaches the rolls and is carried thereon and distributed along the periphery thereof until it again falls into the slide  $E$  to be again returned to the conveyor, as before.

If it is desired to deposit a certain predetermined amount of the abrasive material onto the rolls with each revolution of the same, or of the cam, the following means may be used: A box or receptacle  $O$  is attached to the casing  $G$ , as shown in Fig. 10, in such a manner as to catch the polishing material that drops from the buckets. The shaft  $F^2$  is extended upwardly to hold the crank or lever  $N$  attached to which are the plungers  $n^2$  by means of the intermediate links  $N'$  which are attached respectively to the ends of the lever  $N$ . These plungers serve to alternately shove the powder through the orifices or openings  $O'$  in the side of the box  $O$ , whence it will fall on the rolls.

A grinding wheel  $K'$  is so situated on the base  $B$  that an article of varying dimensions, as to length and width, may be treated thereby, so that one of any ordinary length can be conveniently placed across its peripheral face. The wheel  $K'$  is driven by means of a shaft  $K$  which is connected by means of the bevel gears  $k, k'$  with the main train of driving gears. A gear wheel  $h'$  moving on a feather or key on the shaft  $H$  is adapted to be engaged with and disengaged from the main train of gears, the said shaft  $H$  being supported in a bearing  $H'$  having a foot or post  $J^2$ .

A bifurcated shifter plate  $h$  is provided with a plurality of notches into which a spring key or finger  $J'$  is engaged, the said notches being so situated that when one notch is engaged with the spring key, the sliding gear wheel  $h'$  will be in an engaged position as regards the train of gears, as is shown in Fig. 2, and when the other notch is engaged with the spring key, the sliding gear will be in its disengaged position as illustrated in Fig. 6. The gear  $h'$  is actuated for shifting purposes by the knob  $h^2$ , and the screws of the retaining plate  $J$  thereof are constructed and arranged so as to work in the slot  $h^3$  of the plate  $h$ .

In the structure shown in Figs. 7 and 8 grooves 1 may be formed in the shaft instead of having notches in the plate, in

which grooves the spring plunger  $l^3$  alternately rests, and the shaft  $H$  passing through the hub  $L$  of the gear  $h'$  has a slot or keyway  $l'$  in which works a spring key or screw  $l^2$ . In Fig. 8 the gear may be stationary and the clutch member  $M$  may be moved in and out of engagement with the other clutch member attached to the gear  $h'$ .

The grinding wheel  $K'$  is provided with a frame  $K^2$  inclosing one side of the same, and having a notched guide or rest, on which notches  $k^2$ , formed on the upper face of the said rest, articles of different widths may be placed. For instance table knives and carving knives can be drawn back and forth and reversed so as to produce a uniform slant or bevel to the cutting edge; in other words, if the article be narrow, it is placed in a pair of the notches nearer to the wheel, or if it be wide, it is placed in a pair of notches farther away from the periphery of the wheel.

As a convenient method of removing the used polishing material from the machine, I provide suitable means, as by furnishing the bottom of the casing  $G$  with a hinged door  $G^7$  which may be held in its upward operative and closed position by any approved means, as a spring  $g^7$ .

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

What I claim is:—

1. In a polishing machine, a polishing roll, rotating means for the polishing roll, a receptacle for abrasive material, means operated by the rotating means for feeding abrasive material from the receptacle to the polishing roll, and means operated by the rotating means for returning the abrasive material which is deposited from the polishing roll to the receptacle.

2. In a polishing machine, a polishing roll, rotative means for the polishing roll, a receptacle for abrasive material, means operated by the rotative means for returning the abrasive material which is deposited from the polishing roll to the receptacle, and means for feeding abrasive material to the polishing roll.

3. In a machine of the class described, a base, a polishing roll mounted thereon, means to drive the polishing roll, means to hold polishing material, means actuated by the polishing-roll-driving means to actuate the polishing material holding device with a reciprocatory movement to propel the polishing material from beneath the roll.

4. In a machine of the class described, a base, a polishing roll mounted thereon, means to drive the polishing roll, means to hold polishing powder, means actuated by the polishing-roll-driving means to elevate

the polishing material, and means to direct the polishing material toward and upon the polishing roll.

- 5 5. In a machine of the class described, a base, a polishing roll mounted thereon, means to drive the polishing roll, means to hold polishing material, means actuated by the polishing-roll-driving means to actuate the polishing material holding device to  
10 propel the polishing material from beneath the roll, means actuated by the polishing roll driving means to elevate the polishing material, and means to direct the polishing material toward and upon the polishing roll.
- 15 6. In a polishing machine, a polishing roll, rotative means for the polishing roll, a receptacle for abrasive material, means to hold the polishing material deposited from the polishing roll, means operated by the rota-  
20 tive means to actuate the polishing-material-holding device with a reciprocatory movement to propel the polishing material held

thereby into the receptacle, and means for feeding abrasive material to the polishing roll. 25

7. In a polishing machine, a polishing roll, rotative means for the polishing roll, a receptacle for abrasive material, means operated by the rotative means for returning  
30 abrasive material which is deposited from the polishing roll to the receptacle, means for feeding abrasive material from the receptacle to the polishing roll, and distributing means in the receptacle operative to deliver abrasive material to the feeding means. 35

In testimony of the foregoing specification I do hereby sign the same in the city of New York, county and State of New York, this first day of September, 1909.

CHARLES H. J. DILG.

Witnesses:

ROB. SCHWARZ,  
J. ODELL FOWLER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."