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Patented Feb. 4, 1902.

H. CAVICCHI.
GRINDING OR POLISHING APPARATUS.

(Application filed Apr. 24, 1901.)

(No Model.)

2 Sheets—Sheet 1.

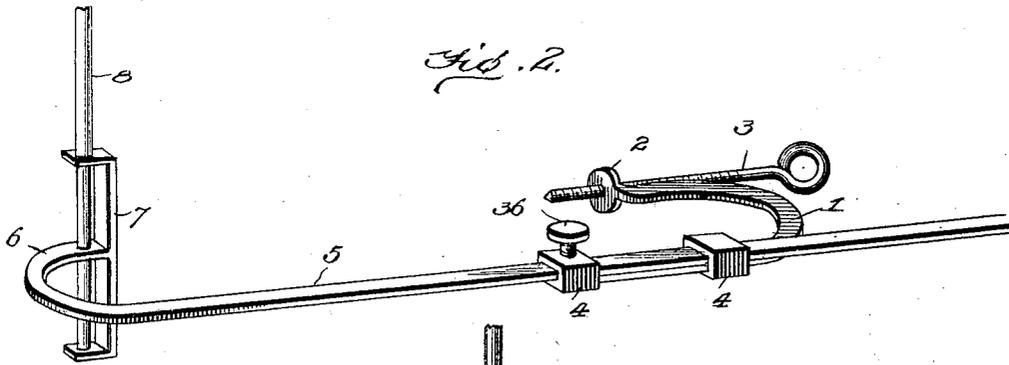
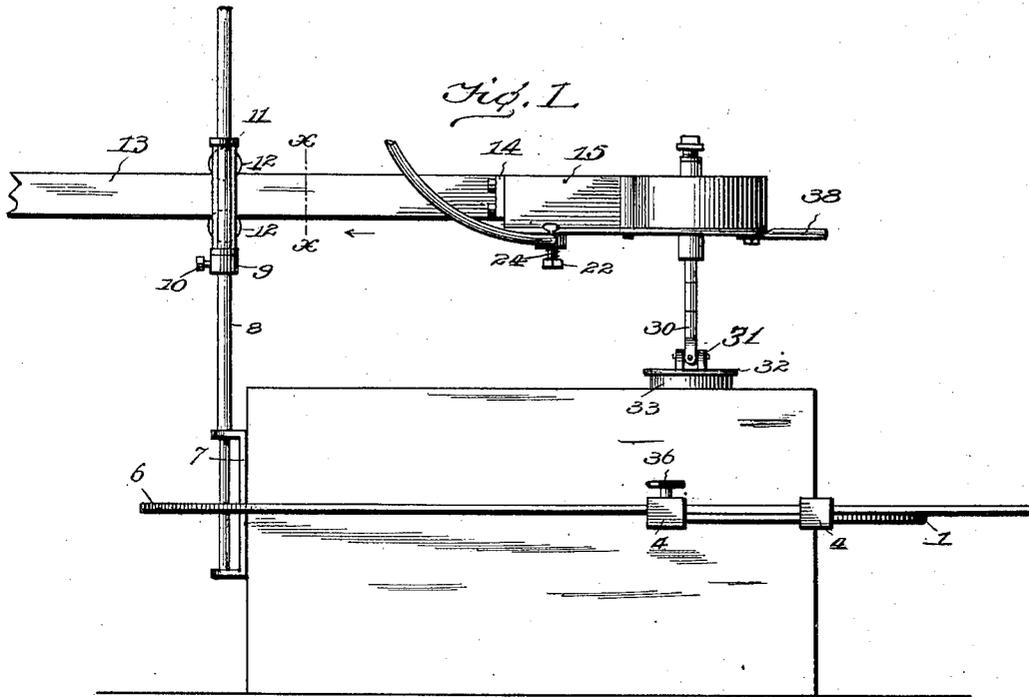
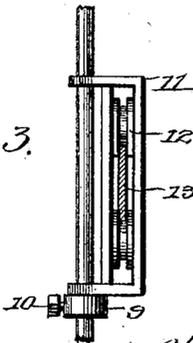


Fig. 3.



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2 Sheets—Sheet 2.

Fig. 4.

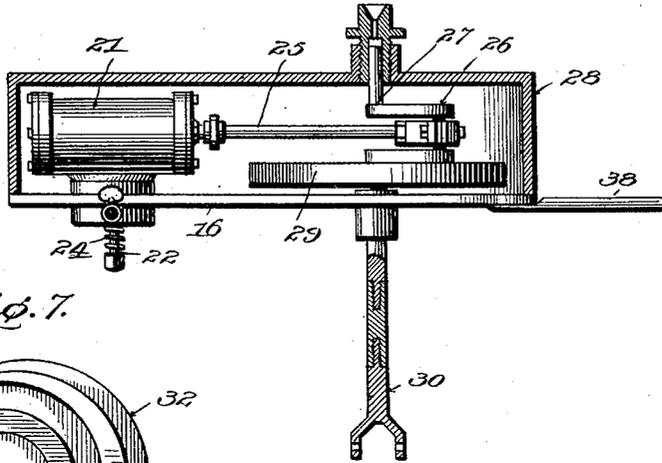


Fig. 7.

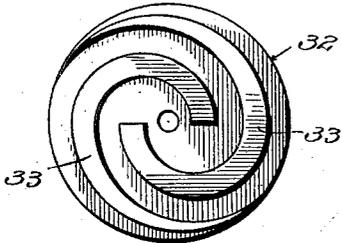


Fig. 5.

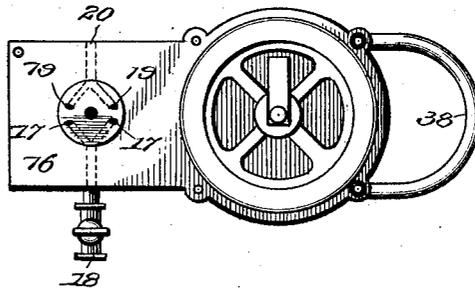


Fig. 8.

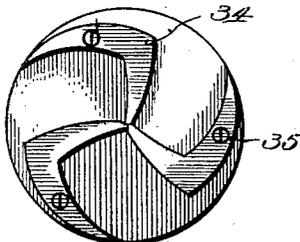


Fig. 6.

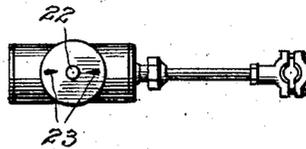
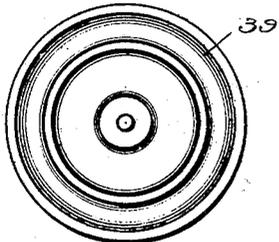


Fig. 9.



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UNITED STATES PATENT OFFICE.

HERCULES CAVICCHI, OF BARRE, VERMONT.

GRINDING OR POLISHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 692,425, dated February 4, 1902.

Application filed April 24, 1901. Serial No. 57,215. (No model.)

To all whom it may concern:

Be it known that I, HERCULES CAVICCHI, a citizen of the United States, residing at Barre, in the county of Washington and State of Vermont, have invented new and useful Improvements in Grinding or Polishing Apparatus, of which the following is a specification.

This invention relates to new and useful improvements in grinding-machines, especially adapted for grinding or polishing blocks of stone; and its primary object is to provide a device of simple construction having a motor which is arranged adjacent to the grinding-disk and which is moved back and forth therewith.

A further object is to provide means whereby the apparatus may be readily secured to a block and the grinding-disk may be easily moved from point to point upon the surface thereof.

With these and other objects in view the invention consists in providing a clamp of peculiar construction adapted to be secured upon a block of stone or similar material and having a rod or standard extending upward therefrom. A sleeve is locked upon this rod and serves to support a bracket which is revoluble upon the vertical rod and is provided with rollers therein, between which is mounted a strip, which is secured at its forward end to a casing. Within this casing is mounted the motor, which comprises a rocking cylinder having a piston therein which is connected, by means of a piston-rod, to the crank of a shaft journaled within the casing, and a fly or balance wheel is secured to this shaft, and a grinding-disk of peculiar construction is suitably secured to one end of the shaft. Suitable valve mechanism is provided, whereby steam, &c., is admitted to an exhaust from the cylinder.

The invention also consists in certain features of construction and combination of parts, which will be hereinafter fully described and claimed, and illustrated in the accompanying drawings, showing the preferred form of my invention, and in which—

Figure 1 is an elevation of the device in position upon a block of stone. Fig. 2 is a perspective view of the clamp. Fig. 3 is a section on line *x x* of Fig. 1. Fig. 4 is an enlarged vertical longitudinal section through

the casing. Fig. 5 is a plan view of the casing with the top, the cylinder, and its piston-rod removed. Fig. 6 is a detail view of the cylinder and its piston-rod. Fig. 7 is a bottom plan view of one form of grinding-disk. Fig. 8 is a similar view of a modified form. Fig. 9 is a bottom plan view of another modification.

Referring to the drawings by numerals of reference, 1 is a hooked strip having a threaded eye 2 at one end thereof, within which is mounted a bolt 3. Sleeves 4 are secured to this strip, and slidably mounted therein is a second strip 5, which is hooked at one end, as at 6, and is formed with a bracket 7, within which is secured a vertical rod 8. A sleeve 9 incloses this rod and is adapted to be held in position thereon by means of a set-screw 10. Loosely mounted upon the rod at a point above and bearing upon the sleeve 9 is a bracket 11, within which are journaled grooved rollers 12, which are arranged one above the other. A strip 13 is mounted between these rollers and fits within the grooves therein and is provided at its forward end with a right-angular extension 14, which is adapted to be bolted or otherwise secured to the rear end of a casing 15. This casing may be formed of any suitable material and comprises a base 16, having four apertures therein, two of which, 17, communicate with a steam-inlet 18, while the remaining two, 19, open into a steam-outlet 20. (Shown in dotted lines in Fig. 5.) A rocking cylinder 21 is mounted upon a pin 22, which is arranged at a point equidistant from the apertures 17 and 19, and this cylinder is provided with inlets and outlets 23, which are adapted when the cylinder is rocked to register with one of each of the apertures 17 and 19.

The pin 22, before referred to, extends through the base 16 of the casing and is inclosed by a coil-spring 24, which serves to hold the cylinder tightly against that portion of the valve which is formed with the base 16. The piston within the cylinder is connected, by means of a piston-rod 25, with a crank 26, formed with a shaft 27, which is journaled within the bottom of the casing, the remaining end of this shaft being journaled within the removable cover 28 of said casing. A balance or fly wheel 29 is secured to the shaft 27 at a point within the casing and permits

of a steady revolution of said shaft. That portion of the shaft 27 which projects through the base 16 is adapted to be secured in any suitable manner to a forked bar 30, which is adapted to extend between and be secured to ears 31, which extend upward from the top of a grinding-disk 32. As shown in Fig. 7, this disk is provided upon its lower surface with scroll-shaped shoulders 33, which interlock, as shown; but I do not limit myself to this construction, as, if desired, substantially L-shaped shoulders 34, such as shown in Fig. 8, may be employed. These shoulders are preferably formed with the disks, but, if desired, may be detachably secured thereto, as by means of screws 35.

When it is desired to grind or polish a block of stone, the clamp shown in Fig. 2 is placed so that the bracket 7 will rest upon one end and the screw 3 will engage the opposite end of said block. The set-screw 36, which is fitted within one of the sleeves 4, is then clamped upon the strips and will hold the same firmly together. The rod 8 will thus be supported in a vertical position, and after the sleeve 9 has been adjusted to the desired height from the stone the device is ready for use. Steam is admitted to the cylinder by any suitable means, as through a flexible hose 37, and this will cause the piston therein to reciprocate, thereby revolving the shaft 27 and imparting rotary motion to the grinding-disk. The casing 15 may then be grasped by means of a handle 38 and can be readily swung in either direction or slid back and forth upon the stone. Where it is desired to grind spherical stones, a grinding-plate such as shown in Fig. 9 is employed, said plate being provided in its lower surface with a circular groove 39, which is substantially semi-circular in cross-section. This plate is adapted to be fitted over a similar base-plate. (Not shown.) It will thus be seen that when the top plate is revolved the stone placed within the groove 39 will be rapidly turned and rounded into the desired shape.

In the foregoing description I have embodied the preferred form of my invention; but I do not wish to be understood as limiting myself thereto, as I am aware that modifications may be made therein without departing from

the principle or sacrificing any of the advantages thereof, and I therefore reserve to myself the right to make such changes as fairly fall within the scope of this invention. 55

It will of course be understood that in lieu of steam gas, compressed air, or other motive power may be employed for operating this device.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is— 60

1. The combination with a clamp; of an upright supported thereby, a bracket revoluble upon the upright, a strip slidably mounted within the upright, a motor secured at one end of said strip, and a grinding-plate adapted to be revolved by said motor. 65

2. The combination with a clamp; of an upright supported thereby, a bracket revoluble upon the upright, grooved rollers journaled within the bracket, a strip mounted between the rollers and within the grooves, a casing secured to said strip, a shaft journaled within the casing, a motor within the casing for imparting motion to the shaft, and a grinding-disk secured to the shaft. 70

3. The combination with a hooked strip; of a screw therein, a second hooked strip, means for clamping the strips together, a rod supported by one of said strips, a sleeve adjustably secured thereon, a bracket loosely mounted upon the rod and bearing upon the sleeve, grooved pulleys journaled within the bracket one above the other, a strip mounted between the pulleys and extending into the grooves therein, a casing secured to said strip, inlet and exhaust ports to said casing, a rocking cylinder pivoted adjacent to said ports and having an inlet and an exhaust port, a crank-shaft journaled within the casing, a piston-rod connecting said crank with a piston in the cylinder, a balance-wheel upon said shaft, a forked bar secured to the shaft, a grinding-disk secured within the fork of said bar, and a handle to the casing. 85

In testimony whereof I affix my signature in presence of two witnesses. 90

HERCULES CAVICCHI.

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