(No Model.)

C. E. COE.

TOOL GRINDING MACHINE.

No. 418,309. Patented Dec. 31, 1889.

Fig. I.

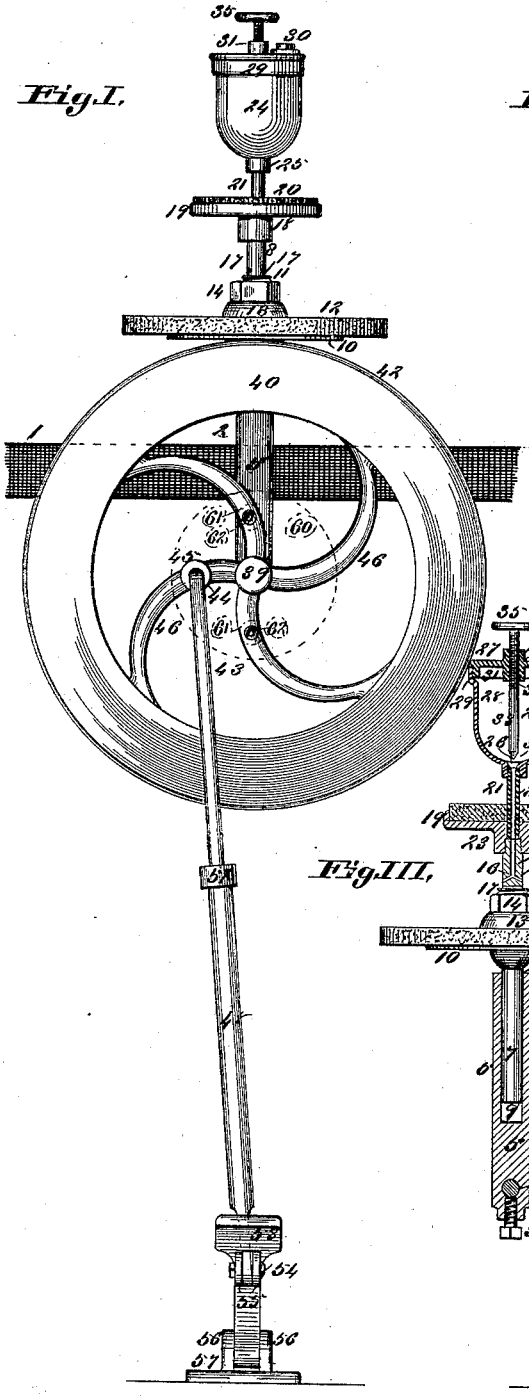
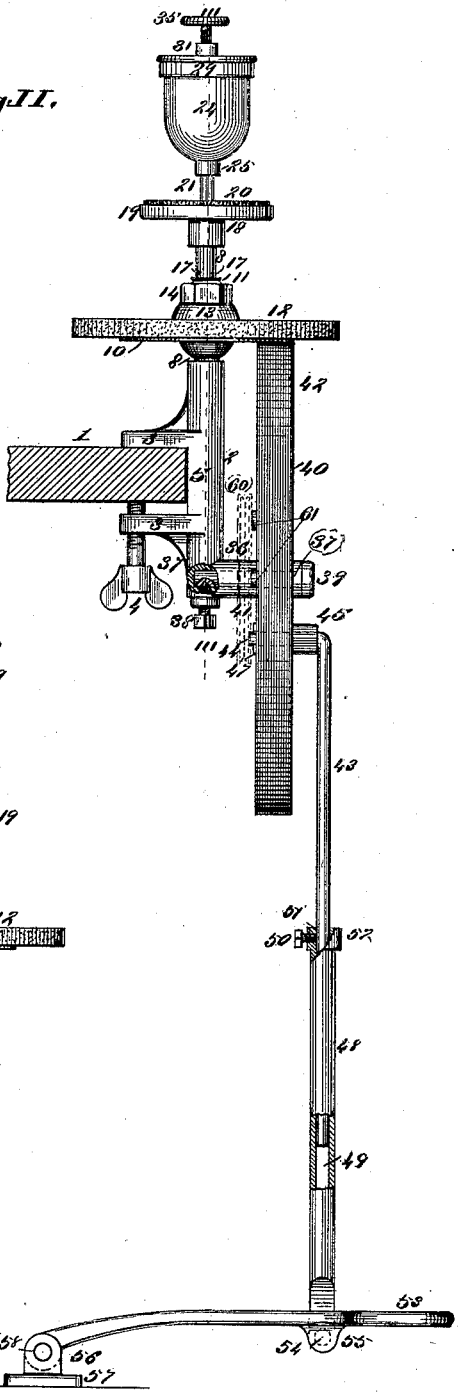


Fig. III.

Fig. II.



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UNITED STATES PATENT OFFICE.

CHARLES E. COE, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO THOMAS J. CHENEY, OF SAME PLACE.

TOOL-GRINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 418,309, dated December 31, 1889.

Application filed December 27, 1888. Serial No. 294,738. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. COE, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Tool-Grinding Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a machine for grinding tools, &c., operated by a treadle and friction-roll, in which the grinding-disks of varied grades are run on a horizontal plane, one above another, on a rotary pedestal common to all the disks; and the invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a front elevation of the machine set up in running order. Fig. II is a side view of the same. Fig. III is a vertical section taken on line III III, Fig. II, and shows the socket-bearing of the rotary pedestal and the water-shed on the lower disk.

Referring to the drawings, in which similar figures of reference indicate like parts in all the views, 1 represents a bench or table to which my machine is secured by the clamping-bracket 2, projecting braced arms 3, from which embrace the edge of the bench to which the bracket is tightly clamped by the thumb-screw 4. The vertical arm 5 of the bracket is provided with a socket-bearing 6 from the top down for a sufficient distance to supply an efficient bearing for the foot 7 of the lower section 8 of the rotary pedestal, and the open space at the bottom of said socket forms an oil-box 9 for lubricating the bearings. A horizontal screw-threaded bracket-table 10 is turned into engagement on the lower end of the screw-threaded portion 11 of the rotary pedestal, and said table supports the lower grinding-disk 12, which is preferably an emery disk, but may be of stone. The collar-washer 13 fits closely on the grinding-disk 12 around the pedestal, and may or not, as preferred, be provided with an inner screw-thread to engage with the screw 11. The said collar-washer is surmounted by the screw-nut 14, which rigidly holds down the said collar-washer when said collar has smooth bearings, and serves as a jam-nut to prevent its working loose when the collar is screwed to its seat, so that the grinding-disk is tightly clamped on its seat. The summit of the lower section of the pedestal has a tubular center 15, that branches outwardly with a downward incline into a number of radial ducts 16 at the foot of said tube, which thus provide outlets 17 at intermittent distances around the pipe above the nut 14 for discharging a fine spray of water over the lower grinding-disk 12, the said supply being provided by means hereinafter described.

18 represents a screw-threaded bracket-table, the attachment-screw of which engages on the screw around the summit of said lower section of the pedestal. A peripheral flange 19 around said table incloses the oil-stone 20 of the machine, through a central opening in which oil-stone and in the bracket-table the foot of the tubular upper section 21 of the rotary pedestal is seated, resting down on the summit of the lower section, with the central tube of which the tube 22 of the upper section coincides, and said section engages in its screw-seat 23 within the central opening in the bracket-table. When desired, a fine emery disk may replace the oil-stone 20.

24 represents a water-urn, which terminates at the bottom in a perforate collar 25, with the inner screw of which the outer screw of the upper section of the pedestal engages. At the entrance to said perforate collar from said water-urn is a bevel valve-seat 26.

27 represents the cap to the urn, an inner flange 28 of which is seated within the upper peripherally-expanded flange 29 of the water-urn. A screw-stopper 30, that engages in a corresponding threaded aperture in the cap when removed, provides the requisite opening for replenishing said water-urn.

31 represents a perforate screw-flange that passes through the center of the cap with which it is integral, and in which engages the screw 32 of the pin-valve 33, whose bevel-point 34, when said valve is screwed down to its seat by the hand-disk 35, stops the flow of water from the urn, and by which also said flow is adjusted to regulate the supply.

36 represents a socket-bearing arm that projects at a right angle from the vertical arm 5 of the clamping-bracket, and in the socket of

which the journal-spindle 37 is seated and wherein it is held by the set-screw 38. The said spindle has a head 39 at its outer end.

40 represents a combined balance and friction drive-wheel whose hub 41 is mounted on the journal-spindle 37, which spindle is seated in said hub preparatory to the insertion of its set end in the socket-bearing 36 of the clamping-bracket in which it is held by the set-screw 38, and the head 39 on the outer end of said spindle holds the wheel on its journal-seat.

42 represents a leather tire around the balance-wheel. This leather tire has the threefold functions of a friction-cushion that transmits rotation from the balance-wheel to the bracket-table 10 and the rotary pedestal that carries the grinding-disks, of a strop for putting a finishing edge on the finer tools, and of a buffer or polisher for effecting a surface-finish on the article.

43 represents the upper section of the treadle-rod, whose angle-turned spindle end 44 is seated in the tube-boxing 45, that is cast integral with one of the radial arms 46 of the balance-wheel and is held in its seat by the key 47, that is seated in a perforation through the projecting end of said spindle.

48 represents the lower section of the treadle-rod, in the tubular socket 49 of which the lower end of the upper section 43 is adjustably seated and secured to its adjustment by the set-screw 50, which is seated and works in its screw-seat 51 in the surmounting collar 52 of said lower section of the treadle-rod. The treadle-rod can thus be adjusted to adapt it to the height of the bench and convenience of the operator.

53 represents the treadle, which is pivotally connected to the treadle-rod by the bolt 54, that passes through the perforations in the lugs 55, which project from beneath said treadle and in the foot of said rod. The fast end of the treadle is pivotally connected between the lugs 56, that surmount the base-plate 57, by the bolt 58, which passes through perforations in said lugs and treadle.

In operation the treadle-rod is adjusted to the length required, the urn replenished with water, the pin-valve adjusted to discharge the required amount of spray on the lower grinding-disk, and oil is applied to the oil-stone. The treadle is then set in motion, which rotates the combined balance and friction-wheel, the friction of the leather tire of which wheel transmits its movement to the bracket-table 10, that carries the lower grinding-disk and with it turns the rotary pedestal and the surmounting oil-stone or fine grinding-disk. As the pedestal rotates, a light spray of water percolates through the outlets 17 from the ducts which discharge from the tube-channel that is supplied from the water-urn, and the water is projected by centrifugal force in the form of a fine spray over the whole surface of the lower grinding-disk to keep it moist while grinding.

A drive-pulley 60 (shown in broken lines in Figs. I and II) is secured to the lugs 61, that project inwardly from two of the arms of the balance-wheel, to which it is secured by the screws 62, that pass through perforations in said arms and in the lugs and into screw-socket seats in the pulley when it is desired to run the machine by power.

I claim as my invention—

1. The combination of a horizontal rotating grinding-disk and table on which it is mounted, with a rotating pedestal carrying them, and a wheel having a soft friction-tire adapted to bear on the under side of said table and rotate the disk, substantially as set forth.

2. The combination of the friction drive and buffing wheel 40, the horizontal spindle it turns on, and the removable grinding-disk, with the vertical pedestal it turns with, substantially as set forth.

3. The combination of a clamp-bracket 2, extension treadle-rod 43 48, treadle 53, and the balance, friction drive, buffer, or strop wheel 40, with its leather tire, substantially as and for the purpose set forth.

4. The combination of the treadle 53, extension-rod 43 48, friction drive-wheel 40, bracket 2, and the removable grinding-disk, substantially as set forth.

5. In a tool-grinder, the combination of the drive-wheel, treadle and rod for operating the drive-wheel, the clamping-bracket with screw to attach the machine to the operating-bench, the bracket-table 10, the rotary pedestal that carries said table and has socket foot-bearings in said bracket, the grinding-disk 12 on said table-bracket, and the friction drive-wheel 40, with its leather tire that turns said table-bracket, substantially as and for the purpose set forth.

6. In a tool-grinder, the combination of the friction drive-wheel, the tube-bearing box 45 on one of the arms of said wheel, the upper section 43 of the treadle-rod whose angle-spindle is seated in said tube-boxing, the lower section 48 of said treadle-rod in which the lower end of the upper section telescopes, the set-screw that secures the sections at their adjusted attachment, and the treadle that operates said rod and the rotary elements of the machine, substantially as and for the purpose set forth.

7. In a tool-grinder, the combination of the friction drive-wheel, the treadle and its adjustable section-rod that operates the drive-wheel, the screw-clamping bracket, the lower section 8 of the rotary pedestal, the lower end of which telescopes in the socket-bearing of said bracket, the upper end of which pedestal is provided with a central water-tube having radiating divergent outlets at bottom, the bracket-table 10 on said pedestal, the grinding-disk 12 on said table, and the upper tubular section 21 of the rotary pedestal, substantially as and for the purpose set forth.

8. In a tool-grinder, the combination of the

friction drive-wheel, the treadle and its adjustable section-rod that operates said wheel, the sectional rotary pedestal provided with a water-tube with radial outlets, the lower grinding-disk with its supporting-table, the water-urn that surmounts said tubular rotary pedestal, the pin-valve 33, that adjusts the water-feed to the tube of the pedestal and to the spray on the lower grinding-disk, the screw-stopper 30 in the cap of the water-urn, and the actuating drive-pulley 60 on the balance-wheel, substantially as and for the purpose set forth.

CHARLES E. COE.

In presence of—
BENJN. A. KNIGHT,
SAML. KNIGHT.