(No Model.) 3 Sheets—Sheet 1.

C. H. NORTON

GRINDER.

No. 458,036. Patented Aug. 18, 1891.

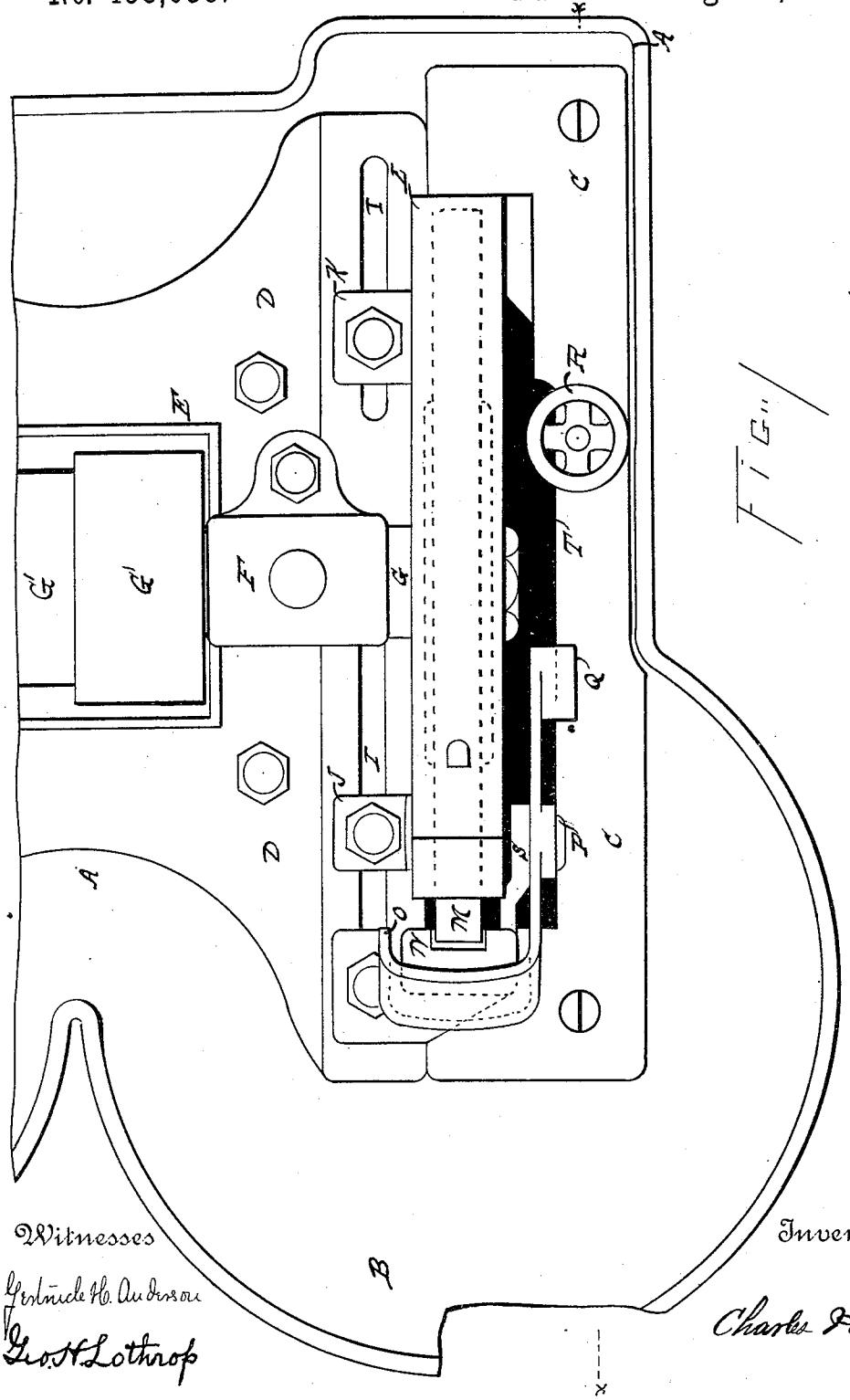


FIG. 1.

Witnesses
Gertrude H. Anderson
Geo. H. Lothrop

Inventor
Charles H. Norton

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 3 Sheets—Sheet 2.

C. H. NORTON.

GRINDER.

No. 458,036. Patented Aug. 18, 1891.

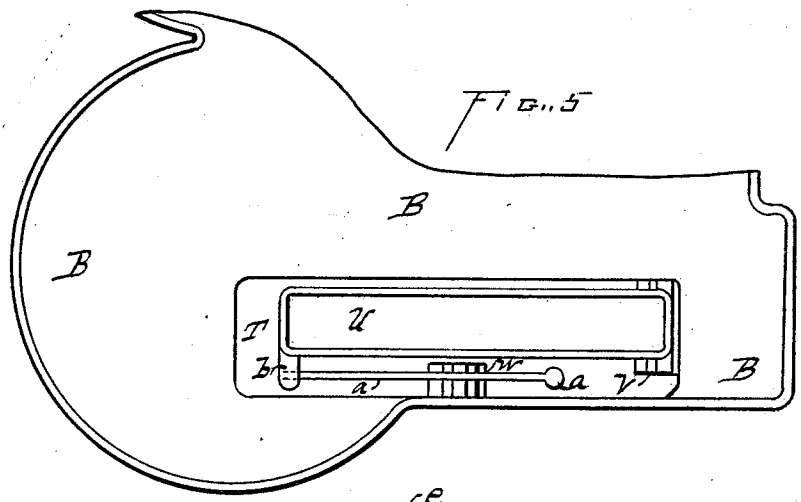


Fig. 5

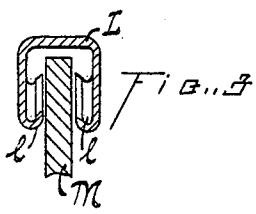


Fig. 3

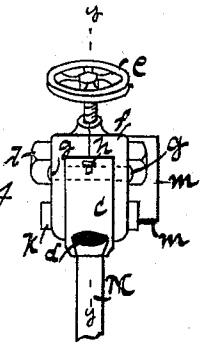


Fig. 4

Fig. 2

Witnesses

Gertrude H. Anderson

Geo. H. Lothrop

Inventor

Charles H. Norton

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 3 Sheets—Sheet 3.

C. H. NORTON.

GRINDER.

No. 458,036. Patented Aug. 18, 1891.

FIG. 7

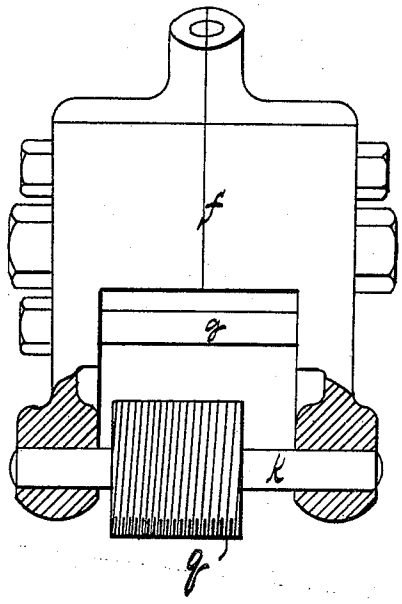
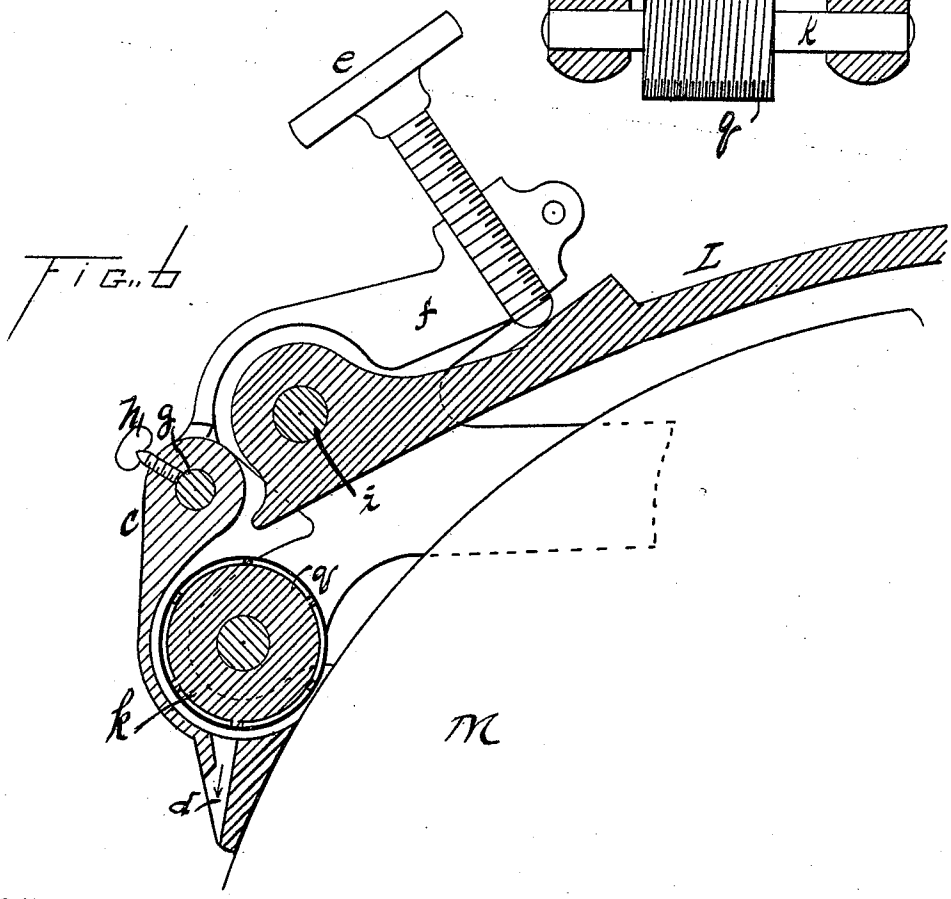


FIG. 6



Witnesses

Gertrude H. Anderson

Geo. H. Lothrop

Inventor

Charles H. Norton

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES H. NORTON, OF DETROIT, MICHIGAN, ASSIGNOR TO THE LELAND, FAULCONER & NORTON COMPANY, OF SAME PLACE.

GRINDER.

SPECIFICATION forming part of Letters Patent No. 458,036, dated August 18, 1891.

Application filed January 27, 1891. Serial No. 379,261. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. NORTON, of Detroit, in the county of Wayne and State of Michigan, have invented a new and useful Improvement in Grinders, of which the following is a specification.

My invention consists in an improved grinder, hereinafter fully described and claimed.

The machine from which the drawings were made is a double machine containing two emery-wheels carried on the ends of an arbor G; but one-half of the machine is omitted in the drawings, (being broken away,) and my invention is equally applicable to a single machine.

Figure 1 is a plan view. Fig. 2 is a vertical section on line *x x*, Fig. 1. Fig. 3 is a section on line *z z*, Fig. 2. Fig. 4 is an elevation of the front end of the water-guard. Fig. 5 is a plan view with the bed-plate, stone, &c., removed. Fig. 6 is a section on line *y y*, Fig. 4; and Fig. 7 is an elevation of the front end of the forked lever with the water-guard partly omitted to show the truing-roller.

A represents the base of the machine, consisting of a hollow cast standard of suitable size and strength.

B represents a cast-iron water-pan, having a well T formed in the bottom thereof, and a plugged drain-opening *p* in the bottom of said well, and is secured on the top of standard A. For a double machine this pan B is approximately pear-shaped, as indicated in Figs. 1 and 5, though the shape is not material and may be varied at will, and has two wells T.

U represents a water-trough lying in well T, large enough to freely admit the lower side of the stone, one end of which is pivoted at the point V to pan B, and *b* represents a lug on the side of said water-trough at its free end.

w represents a bracket cast in pan B and extending upward at the side of water-trough U.

a represents a lever fulcrumed on bracket *w* by a pin W, one end of which extends under lug *b* on water-trough U, and the other end extends under a set-screw R, by which it can be forced down or permitted to rise, thus enabling the operator to raise or lower the free end of water-trough U to different heights in the water-pan.

C represents a plate bolted in pan B, forming a partial top for the water-well T therein and carrying the set-screw R, hereinbefore described.

D represents a bed-plate having slots I I therein, through which pass bolts J and K, by which said bed-plate is adjustably fastened in the pan B. This bed-plate carries boxes F, in which rotate an arbor G, carrying on one or both ends a stone or emery wheel M. The arbor G is provided with a cone-pulley G′ to receive the driving-belt and permit variations in the speed of the arbor.

L represents a water-guard, which is bolted to bed-plate D back of the stone and rises over the stone so as to cover about half thereof, as shown in Fig. 2. At the upper part of this water-guard the sides thereof which embrace the stone are curved inward toward the stone and upward to form troughs, (shown at *l*, Figs. 2 and 3,) the object of these being to catch and collect water which is thrown off from the stone and at their forward ends. These troughs are connected with a discharge-spout *n*.

f represents a forked rocking frame or lever pivoted by the pin *i* to the forward end of the water-guard L. One end of lever *f* has a threaded opening therethrough to receive the adjusting-screw *e*, by means of which the position of said lever may be varied, and it is also provided with a counter-weight *m*, the tendency of which is to raise the forked end of lever *f* away from the stone.

q represents a hard steel roller screw-threaded on its periphery, journaled on a shaft *k*, carried in a forked end of lever *f*, and by means of adjusting-screw *e* this roller *q* can be pressed against the face of the stone for the purpose of truing it when it becomes unevenly worn. In addition to this the roller *q*, in connection with the forward end of the water-guard, (to be hereinafter described,) aids in preventing the stone from spattering out from the machine the water which runs along the under side of water-guard L and drops on the stone under the forward end of said guard. Instead of falling upon the stone,

such water falls upon the roller *q* and is distributed in a thin sheet over said roller, flowing off from the under side thereof instead of being thrown off from the stone in drops.

c represents the mouth of the water and roller guard, which is pivoted in the forked end of lever *f* on the pin *g* above the shaft *k*.

h represents a set-screw pivoted through the mouth *c*, adapted to impinge upon pivot *g*, whereby the mouth *c* may be set at any desired angle. This mouth *c* extends around in front of and below the roller *q*, passing when in the position shown in Fig. 6 beyond the center of said roller, and its lower part is provided with a water-opening *d*, the front of which is cut away, as shown in Fig. 6.

I have found that when water is discharged at the front end of the water-guard through a mouth whose opening is approximately radial with the stone the air-current caused by the stone tends to cause said water to spatter, and that when said mouth is formed as shown in Fig. 6, approximately tangential with the stone, the effect of the air currents is to carry the water discharged from said mouth smoothly and quietly down upon said stone without spattering, and therefore I form the front side of the mouth of the passage *d* as shown in Fig. 6, so as to form an acute angle with the periphery of the stone and approximately tangential thereto.

N represents the grinding-rest bolted to and rising from the bed-plate D, and preferably gained out just enough to receive the edge of the stone, as shown in Fig. 1. For the purpose of preventing the stone from spattering water off from this grinding-rest when the machine is running but not being used, I provide a pivoted water-guard O, which is pivoted on a pin P, secured in a bracket S, extending rearwardly from the work-rest M and counterweighted, as shown at Q, so that when the operator desires to use the machine the guard O readily swings down out of the way and automatically returns to position when released.

With this machine when the operator desires to grind dry, he turns down adjusting-screw R until the free end of trough U is raised above the water-level in pan B, when the rotation of the stone soon takes out of the trough U all the water therein contained, which is thrown out into pan B. If he desires to use a small amount of water upon the stone, he raises the adjusting-screw R until the free end of trough U comes to the level of the water in pan B, when a small amount of water flows into said trough and slightly wets the stone. As the stone removes the water from trough U and throws it back into pan B, an equal amount flows over the end of the trough U, thus keeping the water-supply to the stone constant. If more water is desired, the free end of trough U is lowered by raising the adjusting-screw R, thus permitting a larger amount of water to flow through the trough U. It is evident that by this means the stone can be kept supplied with a constant amount of water, and this can be increased or diminished at will.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a grinding-machine, the combination, with a stone and means for rotating the same, of a water-pan beneath the stone, and an inner adjustable trough embracing the lower edge of the stone and arranged in the water-pan below the stone, substantially as and for the purposes set forth.

2. In a grinding-machine, the combination, with a stone and means for rotating the same, of a water-holding pan located beneath the stone, a water-trough arranged within the pan, supplied with water therefrom and pivoted thereto at one end above the water-level in the water-holding pan, and adjustable mechanism, substantially such as described, for adjusting the free end of the water-trough to different heights in the water-pan, substantially as described.

3. In a grinding-machine, the combination, with a stone and means for rotating the same, of a water-pan B, carrying the bracket *w*, water-trough U, pivoted at one end in the pan B, the pivoted lever *a*, having one arm connected with the free end of trough U, and an adjusting-screw R, governing the other arm of said lever, substantially as and for the purposes set forth.

4. In a grinding-machine, a water-guard rising over the stone and having water-troughs formed in its depending sides at the upper part of the stone, substantially as shown and described.

5. In a grinding-machine, the combination, with a rotating stone, of a water-guard rising over the stone and having water-troughs formed in its depending sides at the upper part of the stone, and a spout *n*, connected with the troughs for conducting water therefrom, substantially as described.

6. In a grinding-machine, the combination, with a stone and means for rotating the same, of a water-guard extending upward and over the stone, a rocking frame pivoted on the end of said water-guard, and a mouth adjustably pivoted to the rocking frame and provided with a discharge-opening having its front formed approximately tangential with the face of said stone, substantially as and for the purposes set forth.

7. In a grinding-machine, the combination, with a stone and water-guard extending out and over the stone, of a counterweighted lever pivoted to the end of said water-guard, a screw for adjusting the position of said lever, and a threaded roll pivoted in said lever, substantially as shown and described.

8. In a grinding-machine, the combination, with a stone and a water-guard extending out and over the stone, of a counterweighted lever pivoted to the end of said water-guard, a screw for adjusting the position of said lever,

a threaded roll pivoted in said lever, and an adjustable mouth extending over and under said threaded roll, substantially as shown and described.

9. In a grinding-machine, the combination, with a stone and means for rotating the same, of a rest for supporting the work, and a pivoted counterweighted water-guard normally held by the weight to shield the stone above said rest and adapted to yield downward for placing the work on the work-rest, substantially as shown and described.

CHARLES H. NORTON.

Witnesses:
GERTRUDE H. ANDERSON,
GEO. H. LOTHROP.