(Model.)

C. WING.

TOOL GRINDING MACHINE.

No. 457,755. Patented Aug. 11, 1891.

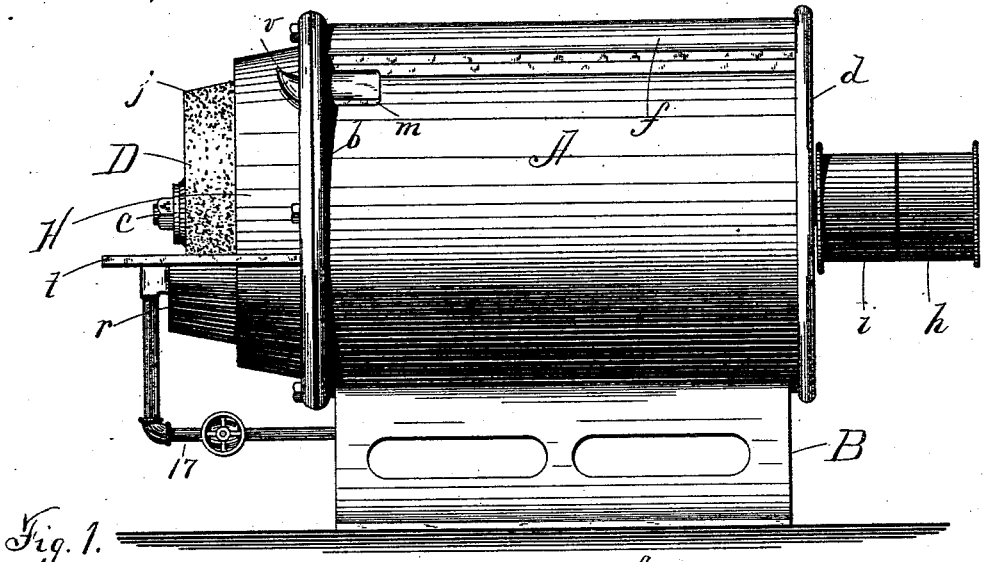

Fig. 1.

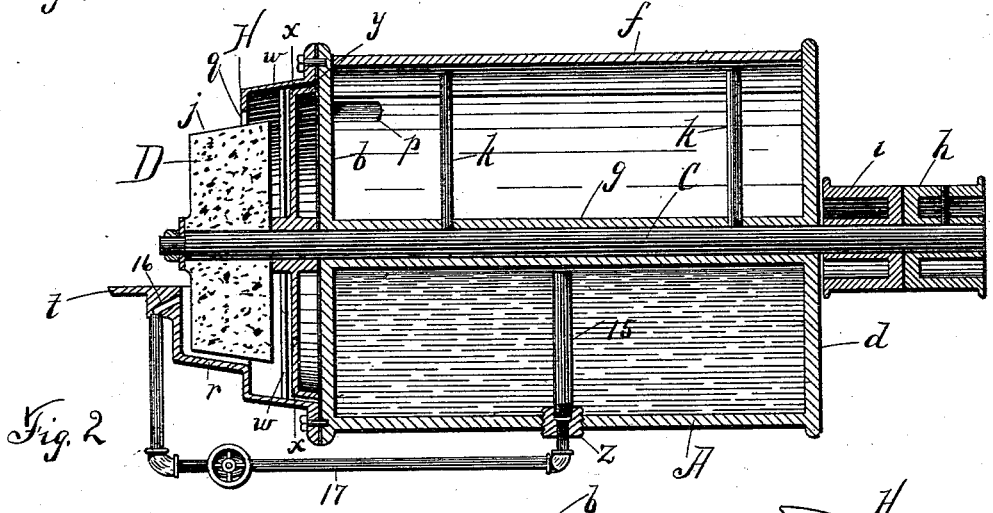

Fig. 2

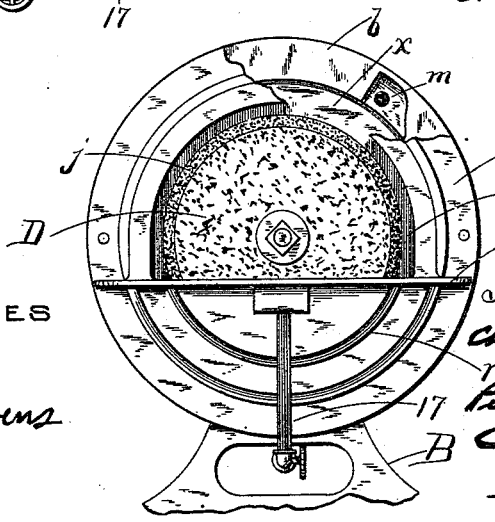

Fig. 3

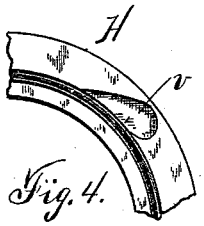

Fig. 4.

WITNESSES

M. Dwyer

S. A. Stevens

INVENTOR

Chauncey Wing

per C. A. Seward & Co.,

ATTORNEYS

UNITED STATES PATENT OFFICE.

CHAUNCEY WING, OF GREENFIELD, MASSACHUSETTS.

TOOL-GRINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 457,755, dated August 11, 1891.

Application filed October 6, 1890. Serial No. 367,164. (Model.)

To all whom it may concern:

Be it known that I, CHAUNCEY WING, of Greenfield, in the county of Franklin, State of Massachusetts, have invented a certain new and useful Improvement in Tool-Grinding Machines, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of my improved grinding-machine; Fig. 2, a vertical longitudinal section of the same; Fig. 3, a front elevation, a portion of the cap being broken away to show a water-duct; and Fig. 4, a sectional elevation of the inner face of the cap.

Like letters and figures of reference indicate corresponding parts in the different figures of the drawings.

My invention relates to machines for grinding tools; and it consists in certain novel features hereinafter fully set forth and claimed, the object being to produce a more simple, cheap, and effective device of this character than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A represents the body of the machine, which consists, primarily, of a metallic cylinder closed at its ends by heads *b d* and mounted on a base B. The top of the cylinder is removed, forming a cover *f*. The heads *d* are preferably formed integral with the body and are connected by a horizontally-arranged tube *g*, which forms a box or bearing for the driving-shaft C. Said shaft is provided at one end with a fast pulley *h* and a loose pulley *i*, and the grinding-wheel D is mounted on its opposite end. The wheel D has its working-face *j* beveled or converged outwardly. Two vertical oil ducts or tubes *k* are mounted in the tube *g* and open under the cover *f*, the purpose of said tubes being to keep the journal lubricated when the body or tank A is filled with water. Water-ducts *m p* open through the head *b* into the body A, respectively at each side of the cover *f*. A cap or casing H is bolted to the head *b*, and the stone D works in the mouth *q* thereof, the highest edge of the working-face *j* being within the cap. A trough *r* is formed on the lower edge of the cap or casing and is extended horizontally to form a table or rest *t*. The cap is provided with grooves *v*, curved inwardly toward the tank, (see Fig. 4,) which register with the ducts *m p* in the head *b*. An annular rib or fin *w* is formed on the inner face of the cap, and between said rib or fin and the head *b* a disk or force-wheel *x* is secured to the shaft. Said disk has a beveled peripheral flange *y*, which rotates adjacent to the grooves *v*. The body A is provided in its bottom with a nipple *z*, in which a vertical pipe 15, projecting into said body, is secured. The trough *r* is provided near the table *t* with a duct 16, connected with the nipple *z* by a pipe 17. The mouth of the pipe 15 opens slightly above the horizontal plane of the duct 16.

In the use of my improvement the tank A is filled with water. Its level being higher than the duct 16, the water flows from the tank into the trough *r* and is projected against the outer face of the wheel. The shaft being in motion, the stone D rotates and is employed for grinding in the usual manner. The rough surface of the stone causes the water received from the duct 16 to cling thereto until sufficient centrifugal force is imparted by the rotary motion of the stone to cause it to flow. The face of the stone being beveled, as described, the tendency of the water is to seek the highest point of its diameter, capillary attraction retaining it in contact with the surface of the stone until overcome by the centrifugal force, which causes it to fly from the highest edge of the face *j* into the trough and cap. The trough being inclined, as shown, the water is directed into contact with the force-wheel *x*, which imparts a rotary movement thereto, causing it to travel on the inner face of said cap into the curved grooves or water-ducts *v*, and thence through the ducts *m p* into the tank. A continuous circulation of water is thus created between the tank and trough, and clear water is constantly de-

livered against the stone from the duct 16, the sediment or refuse from the stone and tools being collected in the bottom of the tank.

Having thus explained my invention, what I claim is—

1. In a grinding-machine, the combination of a tank, a grinding-wheel mounted on a rotary shaft and provided with an outwardly-beveled working-face, a hollow cap partially inclosing said wheel and connected by ducts with said tank, and a pipe connecting the tank and cap, substantially as described.

2. In a device of the character described, a rotary grinding-wheel mounted to work in a trough connected by a pipe with a water-supply, said wheel being provided with a beveled edge, and a cap or guard partially encircling said wheel, whereby moisture centrifugally discharged therefrom may be directed into ducts leading to said supply, substantially as and for the purposes specified.

3. In a device of the character described, a rotary grinding-wheel mounted to work in a trough and provided with a beveled edge, in combination with a supply-tank connected with the trough by pipes and supply-ducts, and a force-wheel mounted on the journal of said grinding-wheel, substantially as described.

4. In a device of the character described, the combination of a supply-tank, a shaft journaled therein and bearing a beveled grinding-wheel, a cap connected by ducts with the tank and partially inclosing said wheel, a pipe connecting a trough on the tank with the supply, and a beveled disk or force-wheel mounted on the shaft between the grinder and the tank, substantially as described.

5. In a device of the character described, the combination of a supply-tank, a shaft journaled therein and bearing a beveled grinding-wheel without the tank, a cap encircling said wheel and provided with a trough, a pipe connecting the trough and tank, ducts connecting the cap and tank, an annular fin in said cap, and a beveled disk or force-wheel mounted on the shaft between said fin and the tank-ducts, substantially as described.

6. The tank, shaft, and beveled grinder, in combination with the cap H, provided with a trough, as *r*, and secured to the tank-head, a pipe connecting the trough and tank, a duct *m* connecting the upper portion of the cap and tank, and a beveled force-wheel, as *x*, mounted between the grinder and the tank-head, substantially as described.

7. In a grinding-machine, a rotary grinding-wheel having a beveled working-face, a cap or casing therefor connected by supply and discharge ducts with a water-supply, a force-wheel so arranged that moisture centrifugally discharged from the grinding-wheel will be conducted to the supply by said discharge-ducts, and a continuous circulation set up between said supply and casing, substantially as described.

CHAUNCEY WING.

Witnesses:
C. E. MARTIN,
O. G. STRATTON.