(No Model.)

A. FOLSOM.

MACHINE FOR GRINDING THE SURFACE OF STONE.

No. 267,783. Patented Nov. 21, 1882.

Fig. 4.

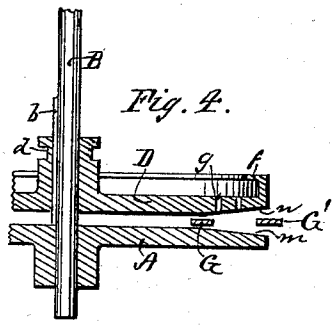


Fig. 1.

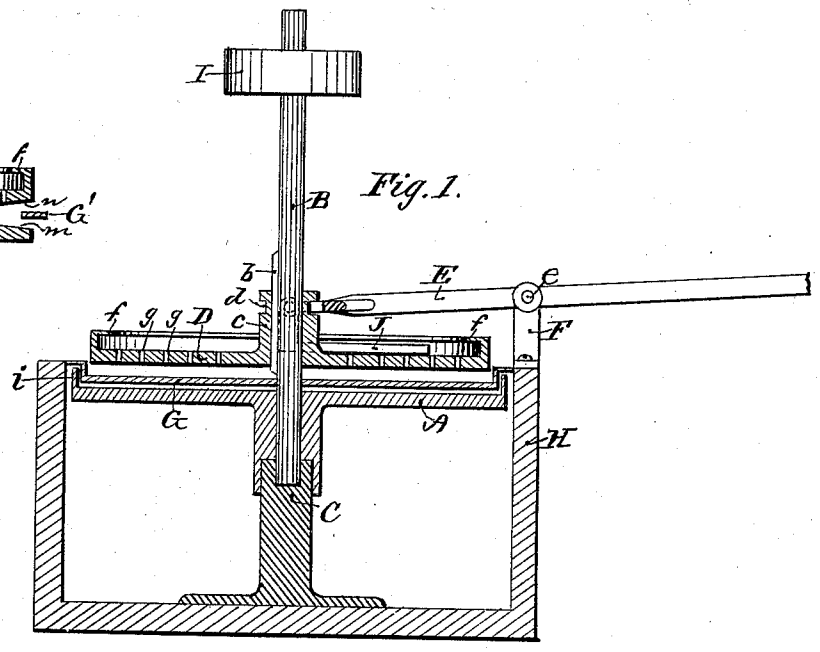


Fig. 2.

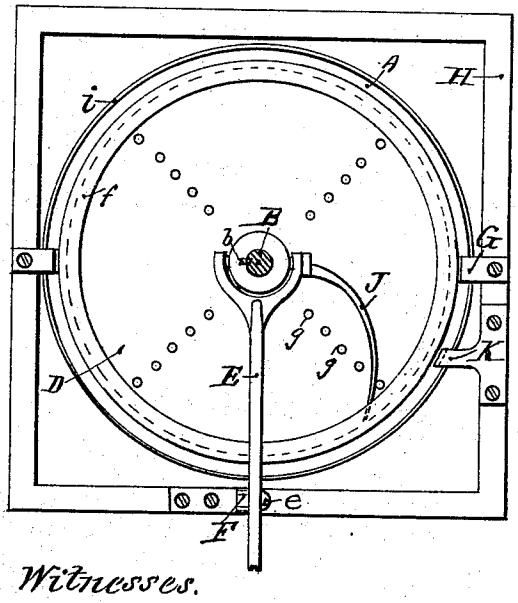
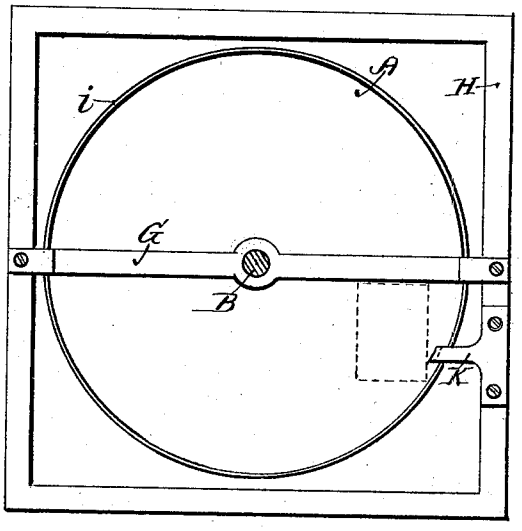


Fig. 3.



Witnesses.

Wm. Walther

Geo. W. Breaux

Inventor:

Andrew Folsom

per S. Scholfield

Attorney

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

ANDREW FOLSOM, OF WARREN, ASSIGNOR TO HIMSELF AND WILLIAM D. HILTON, OF PROVIDENCE, RHODE ISLAND.

MACHINE FOR GRINDING THE SURFACE OF STONE.

SPECIFICATION forming part of Letters Patent No. 267,783, dated November 21, 1882.

Application filed July 24, 1882. (No model.)

To all whom it may concern:

Be it known that I, ANDREW FOLSOM, of Warren, in the county of Bristol and State of Rhode Island, have invented an Improvement in Machines for Grinding the Surface of Stone, of which the following is a specification.

My invention relates to that class of grinding-machines in which two horizontally-revolving grinding disks or wheels are employed for grinding both sides of the stone at one operation; and it consists in the combination of the upper and lower grinding-disks, arranged concentrically with each other, with means for raising and lowering the upper disk, and for driving the said grinding-disks both in the same direction, and with a rest for holding the stone against the action of the disks, as hereinafter fully set forth.

Heretofore in grinding stone between the two parallel and concentrically-arranged disks the upper and lower disks have been caused to revolve in opposite directions; but the movement of the disks in opposite directions tends to produce a rolling movement of the stone placed between the disks, which tendency to rolling movement becomes greater as the width of the stone is diminished or the thickness increased. The machine is not therefore adapted for grinding stone of all dimensions, but is restricted to such pieces of stone as are comparatively thin and have an extended flat surface, as in grinding school-slates; and in order to adapt the machine to the grinding of narrow and comparatively thick stones, as in grinding hones or whetstones, I operate both grinding-disks in the same direction, and thus avoid the tendency toward rolling the pieces of stone placed loosely between the two disks, thus extending the scope of the machine and producing a better class of work.

Figure 1 represents a vertical axial section of the machine. Fig. 2 represents a plan view of the same. Fig. 3 represents a plan view of the lower grinding-wheel and the rest for supporting the stone when under the operation of grinding. Fig. 4 represents a detail section of grinding-wheels adapted for grinding stone with inclined surfaces.

In the drawings, A is the lower grinding-wheel, keyed to the upright shaft B, which is held at its upper end by a suitable bearing and at its lower end in a step, C.

Upon the shaft B, above the grinding-wheel A, is placed the grinding-wheel D, adapted for longitudinal movement upon the shaft B by means of the spline *b*. The hub *c* of the grinding-wheel D is provided with the circumferential groove *d*, made to receive the forked end of the lever E, which is pivoted to the fixed standard F at the point *e*, so that by the movement of the outer end of the lever E in a vertical plane, the grinding-wheel D may be made to approach to or recede from the lower grinding-wheel, A, by sliding upon the shaft B. The grinding-wheel D is provided at its outer edge with the upward and inwardly turned flange *f*, which serves to prevent the outward movement and waste of the sand and water applied to the upper surface of the wheel D. The grinding-wheel D is also provided with the perforations *g*, adapted for the passage of the sand and water used for grinding purposes to the space between the wheels A and D, for operation upon the upper and lower surfaces of the stone, held in contact with the adjacent surfaces of the two wheels. The lower grinding-wheel, A, is provided at its edge with the upward-turned flange *i*, in order to prevent the free escape and waste of the sand and water from the surface of the grinding-wheel, and between the two grinding-wheels A and D is placed the bar or rest G, which serves to prevent the stone inserted between the grinding-wheels from revolving therewith, and to support the stone under the grinding action of the two wheels. The rest G is made to encircle the shaft B, and is firmly secured at its ends to the opposite sides of the wooden tank H, which incloses the grinding-wheels, and is offset upward at its ends, in order to clear the flange *i* of the grinding-wheel A.

To the shaft B is secured the pulley I, which serves to drive the grinding-wheels A and D in the same direction, and in operating the machine the upper grinding-wheel, D, is to be raised by means of the lever E until the stone can be inserted between the wheels, so as to bear at its rear edge against the rest-bar G.

The wheel D is then allowed to drop to the surface of the stone, and the amount of pressure with which it bears upon the stone may be adjusted by properly weighting the lever E. The proper amount of grinding sand and water is then fed to the upper surface of the wheel D, which grinding material will be turned by the curved scraper J, which is secured to the side of the lever E, to within the range of the perforations *g g*, so as to pass through the wheel D to the grinding-surfaces of the wheels A and D to act upon the stone to grind the same at two opposite and parallel surfaces.

The position of the stone against the rest-bar G is shown by the dotted lines in Fig. 3, the outer corner of the stone being prevented from contact with the inner surface of the flange *i* by means of the guide K, secured to the edge of the tank H.

Two or more stones may be ground at the same time by arranging them between the wheels A and D, and upon opposite sides of the shaft B, the operation of the grinding-wheels being such as to bring the stones to a uniform thickness by simultaneously grinding their opposite surfaces, and the work is thus very rapidly and economically accomplished.

A modification of the grinding-wheels is shown in Fig. 4, which represents the wheels A and D as provided with conically-beveled surfaces *m n*, adapted to grinding stone, so that the opposite surfaces thereof will be inclined to each other, as in a certain class of oil-stones, and in this case the rest G does not, as in Fig. 3, extend diametrically across the face of the grinding-wheel, but in the line of a chord of the wheel at about the truncated point of the conical surface of the grinding-wheels, and an additional rest or guide, G′, may be employed for securely holding the stone against the action of the grinding-wheels. The stones are in this case to be forced across the face of the grinding-wheels, between the rests G and G′, and will become properly beveled in their passage.

The flange *i*, attached to the rim of the wheel A and moving therewith, may be employed to grind a circular edge to the stone placed between the two wheels, the guide K being removed, and the radius of the curve thus imparted to the stone will correspond to the radius of the circular flange *i*. The wheel D is made of less diameter than the wheel A, to provide space for the upright portion of the offset of the rest G, between the edge of the wheel D and flange *i*.

I claim as my invention—

1. In a machine for grinding the surface of stone, the combination of an upper and lower grinding-wheel secured to an upright shaft, so as to revolve in parallel planes in the same direction, with means for raising and lowering the upper grinding-wheel, and an intermediate rest for holding the inserted pieces of stone against the conjoint action of the upper and lower grinding-wheels in the same direction, substantially as described.

2. In a machine for grinding the surface of stone, the combination of the grinding-wheel A, provided with the flange *i*, and the grinding-wheel D, provided with the flange *f* and openings *g*, and moving in the same direction as the wheel A, with the upright shaft B, rest G, and means for raising and lowering the wheel D, substantially as described.

3. In a machine for grinding the surface of stone, the combination of the grinding-wheel A, provided with the flange *i*, and the grinding-wheel D, provided with the flange *f* and openings *g*, and made of less diameter than the wheel A, and moving in the same direction, with the guide K, offset-rest G, upright shaft B, and means for raising and lowering the wheel D, substantially as described.

ANDREW FOLSOM.

Witnesses:
HARMON S. BABCOCK,
SOCRATES SCHOLFIELD.