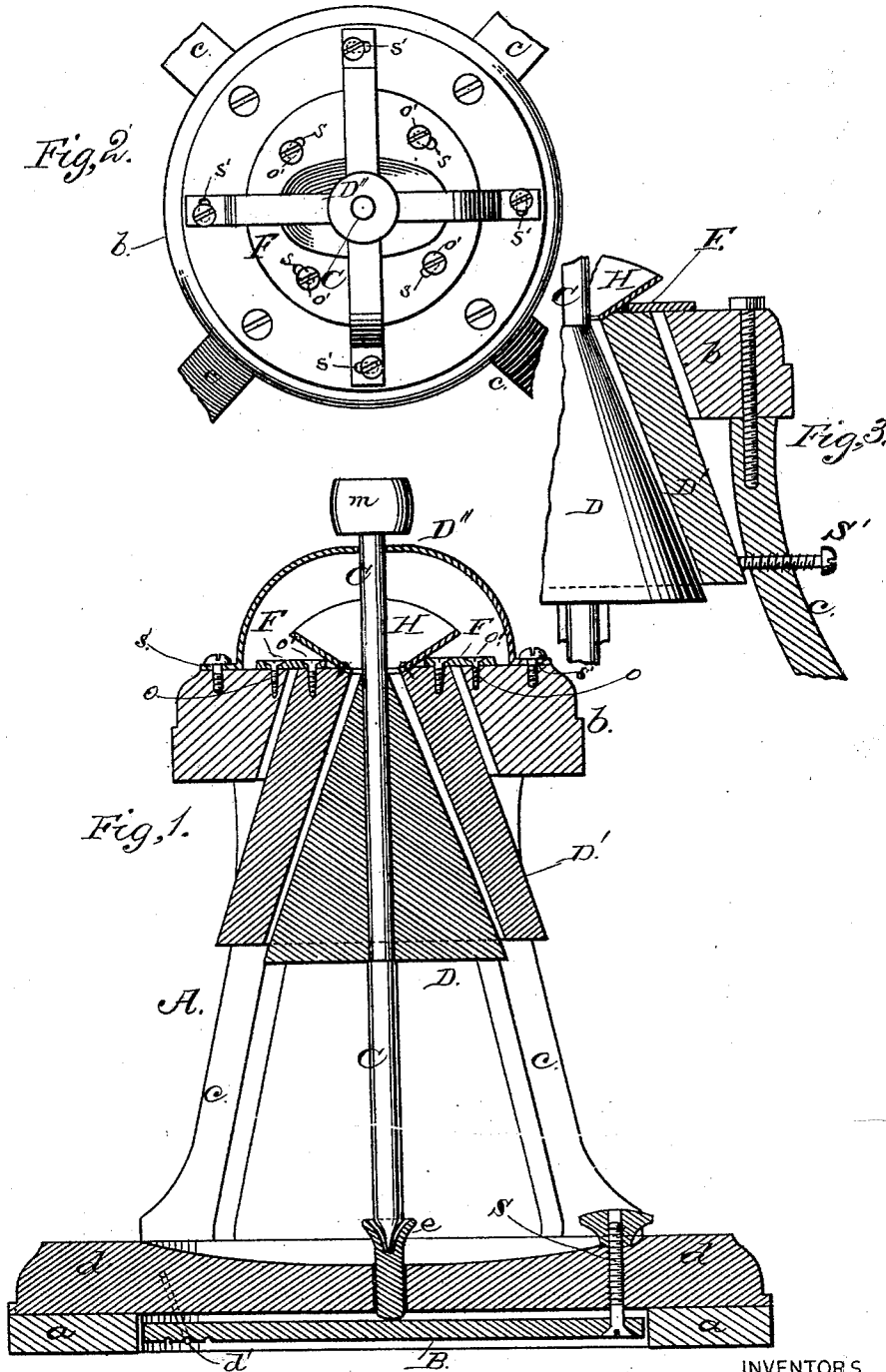


(No Model.)

J. B. SWISHER J. R. MERSHON.
Grinding Mill.

No. 232,779.

Patented Sept. 28, 1880.



WITNESSES
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UNITED STATES PATENT OFFICE.

JACOB B. SWISHER AND JAMES R. MERSHON, OF NEWTON, IOWA.

GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 232,779, dated September 28, 1880.

Application filed May 25, 1880. (No model.)

To all whom it may concern:

Be it known that we, JACOB B. SWISHER and JAMES ROWE MERSHON, of Newton, in the county of Jasper and State of Iowa, have
5 invented a new and valuable Improvement in Grinding Cereals, Ores, Spices, Paints, Medicines, &c.; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same,
10 reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a vertical central section of my improved
15 grinding-mill. Fig. 2 is a plan view thereof, and Fig. 3 is a detail section.

This invention has relation to improvements in mills for grinding ores, bark, breadstuffs, and other substances; and the nature of the
20 invention consists in a mill constructed and operated substantially as hereinafter shown and described.

In the annexed drawings, the letter A designates an upright wooden or metallic frame,
25 consisting, usually, of a strong annular base, *a*, and an annular table, *b*, supported therefrom by means of the legs *c*. The base and table are concentric, the centers of both being in the same vertical line, and the latter being
30 of less diameter than the former.

Extending diametrically across the annular base *a* is a brace, *d*, to which is secured at one end, by means of a metallic bail, *d'*, the bridge-tree B. This tree is supported at the other
35 end, and is adjusted vertically, by means of a lighter screw, S, extending through brace *d* into the tree before said.

Extending centrally through the brace *d*, and bearing upon the bridge-tree, is a metallic step or ink, *e*, in which the lower end of the vertical spindle C is journaled, its upper end
40 having its bearings in a spider, D'', erected on the table *b* and bridging its central opening. The longitudinal axis of the spindle C is exactly
45 vertical, and passes through the centers of the annular base and table aforesaid.

D indicates the running stone, which is formed of any suitable material, and usually of conical form. This stone may be smooth or
50 dressed, and is keyed or otherwise secured to the spindle C. It may be, however, of the

form of a conical frustum, in which event there will be attached to the spindle, below the hopper, a curved spreader, arranged with its convex side upward, which will conduct the substance to be ground into the interval between
55 the runner and the conically-hollowed shell D', which constitutes the bed-stone. This shell may be made of any suitable material, and may be dressed or not, as may prove desirable
60 in pulverizing various substances. The running stone may sometimes be dressed and the shell or bed-stone smooth, or the reverse; or they may be both dressed or both smooth.

It will be observed, by reference to Fig. 1, that while the skirts or lower ends of the
65 stones D D' are in contact with each other the interval between them gradually increases from below upward, the cones or frustums thereof being described with different radii; hence
70 the article being ground will be gradually comminuted and pulverized from above downward, and discharged at the skirts in a condition more or less fine, according to the adjustment of the runner to the shell. This adjustment
75 is had by means of the lighter screw aforesaid.

The shell or bed-stone is secured to a metallic plate, F, of annular form, by means of screws or other suitable attachments passing
80 through slots *s* in said plate into the annular table *b*. The object of the slots *s s'* in the plate and spider is to enable the miller or manufacturer to adjust the bed-stone and runner horizontally, so that the axes of the running and
85 bed stones may be made to correspond precisely with the vertical axis of the spindle.

The shell is supported almost entirely from the adjusting-plate by its bearing on the table, and its adjustment is facilitated by means of
90 set-screws S', extending through the legs *c* and bearing against the shell. By manipulating these screws S' the position of the shell as to the coincidence of its vertical axis with the axis of the spindle may be readily secured.
95

The material to be ground is fed to the stones by means of the hopper H. The ground material is delivered from the stones at their skirts or lower ends and falls into a receptacle
100 or hopper, or, if desired, onto an endless apron, which conveys it away.

The spindle is actuated, by means of a pul-

ley, *m*, and an endless belt, from a suitable motor; or a system of gearings may be used for the purpose.

It is well known that a conical running
5 stone working in connection with a conical shell or bed-stone is not new, and consequently these devices are not broadly claimed.

What we claim as new, and desire to secure by Letters Patent, is—

10 In a grinding-mill, the combination, with the frame having concentric openings in its horizontal base and table, and the vertical spindle C, journaled in said base and table, of a hollow conical running stone, D, secured
15 thereon, the adjustable plate F, having the slots *s* and fastening-screws *o'*, securing the

said plate to the table, the conical shell D', secured to said plate and inclosing the conical running stone in contact with its skirt, and diverging therefrom from below upward, and 20 the horizontal adjusting-screw S', extending through the legs *c* and bearing against the conical shell, substantially as specified.

In testimony that we claim the above we have hereunto subscribed our names in the 25 presence of two witnesses.

JACOB B. SWISHER.

JAMES ROWE MERSHON.

Witnesses:

JOHN H. DOWNS,

GEO. W. BLAIR.