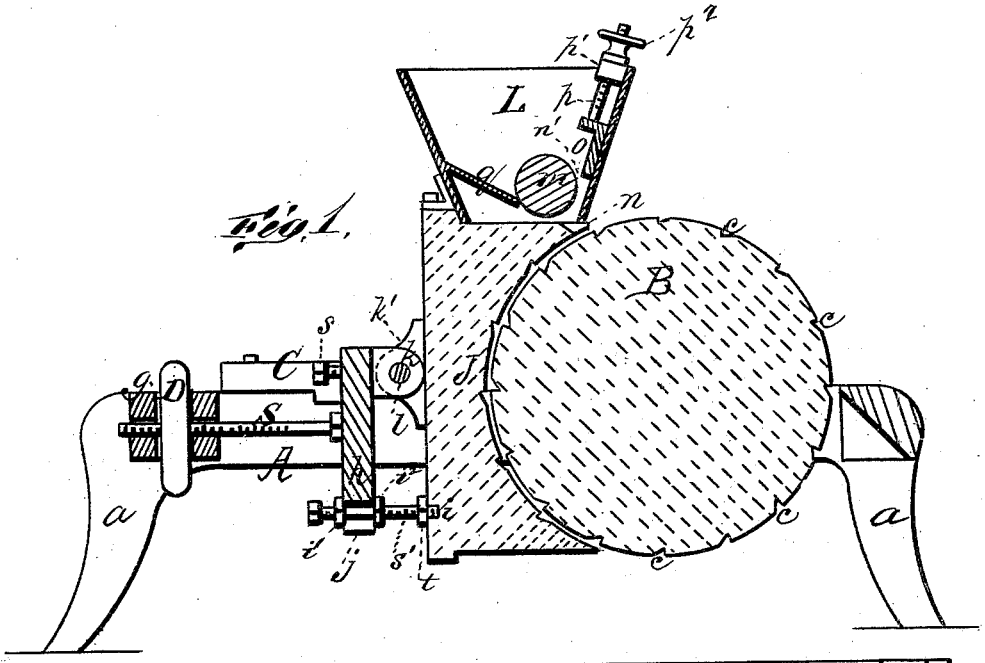
W. N. COSGROVE.
Grinding-Mill.

No. 204,541. Patented June 4, 1878.

Fig. 1.



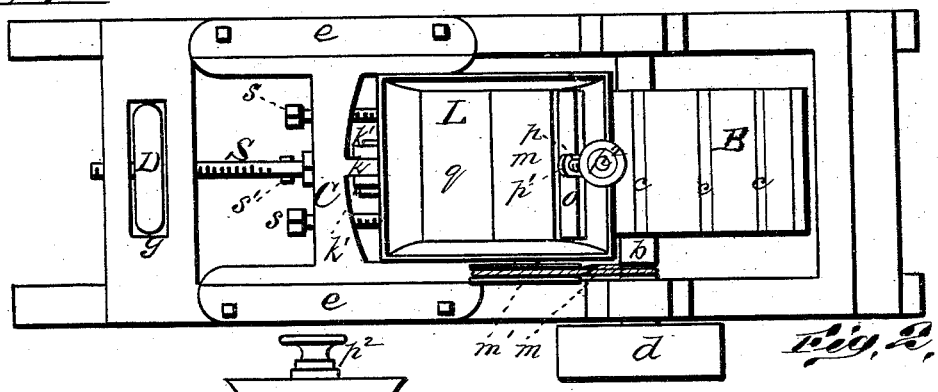
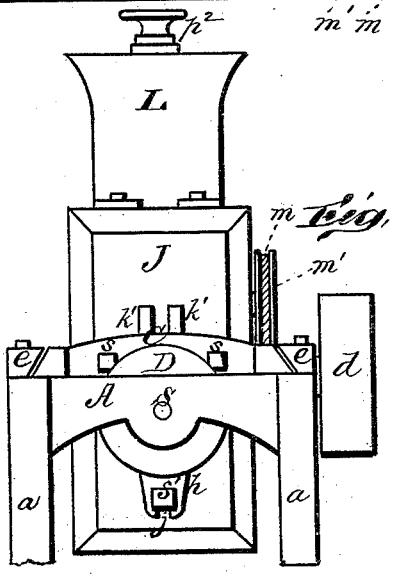


Fig. 2.

Fig. 3.



WITNESSES
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INVENTOR
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by E. W. Anderson,
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UNITED STATES PATENT OFFICE.

WILLIAM N. COSGROVE, OF FARIBAULT, MINNESOTA, ASSIGNOR OF ONE-HALF HIS RIGHT TO HENRY W. BINGHAM AND ISAAC M. FULLER, OF SAME PLACE.

IMPROVEMENT IN GRINDING-MILLS.

Specification forming part of Letters Patent No. **204,541**, dated June 4, 1878; application filed April 27, 1878.

To all whom it may concern:

Be it known that I, W. N. COSGROVE, of Faribault, in the county of Rice and State of Minnesota, have invented a new and valuable Improvement in Vertical Grinding-Mills; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, 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 longitudinal central section of my improved mill. Fig. 2 is a top view thereof, and Fig. 3 is an end view of the same, looking toward the back of the concave.

This invention has relation to improvements in that class of grinding-mills in which the grain is fed to a vertical rotating stone between it and a stationary concave, that is adjustable with reference to the stone, for the purpose of grinding coarse or fine meal.

The nature of the invention consists in combining with a rotating vertical stone a slide upon the frame supporting said stone, a concave centrally pivoted to said slide, and an adjusting-screw on the frame, subsidiary adjusting-screws, one at each side of the center of the concave, and working through the slide or cross-head against the concave, and one below the center or pivot of the said concave, working in a slot in said slide, and also bearing against the concave, whereby means are provided for fitting the concave accurately to the face of the wheel by a lateral adjustment, and for holding the concave closer to the stone at its bottom than at its top, or the reverse, as will be hereinafter more fully set forth.

In the annexed drawings, the letter A designates a strong wooden or metallic frame supported upon legs *a*, and affording bearings near one end to a shaft, *b*, upon which is keyed or otherwise secured the stone or burr B. This stone has upon its face spaced serrations *c*, and it is actuated by means of a pulley-wheel, *d*, and an endless belt, in the usual manner. C represents a slide or cross-head, guided by ways *e* upon the side bars of the frame, and provided with a screw, S, rigidly secured thereto, and projecting through a slotted portion, *g*, of the end of the frame, at which point it is provided with a hand-wheel, D. The slide has upon its under side a downwardly-projecting offset, *h*, having in its lower end an open-ended vertical slot, *j*. Upon the face of the slide, contiguous to the stone, is a perforated lug, *k*, fitting loosely between corresponding lugs *k'* upon the back of the concave J, and hinged thereto by means of a pivot-pin, *l*. The concave has free vertical vibration, and conforms strictly to the convexity of the stone. It has also transverse serrations, and is composed of stone inclosed within a metallic casing. Upon the top of this concave is a hopper, L, of the usual form, having at its bottom an educt-slot, *n*, discharging the grain accurately into the space between the concave and stone, the supply being governed by means of a gate, *o*, that is raised or lowered, thereby widening or narrowing the space *n* between it and a roller, *m*, by means of a screw, *p*, extending through a lug, p^1, upon the inside of the hopper, and a thumb-nut or wheel, p^2, bearing upon said lug and applied upon the said screw. At the bottom of the hopper, and partly below one of its inclined walls, *q*, is the roller *m*, having its bearings in said hopper, and provided upon one of its journals, projecting through the same, with a pulley, m^1. This roller is actuated from the shaft *b* by means of a crossed endless belt, m^2, and feeds the grain accurately and evenly to the educt of the hopper. This latter, being upon the concave, is not affected by any of the adjustments of the same, and requires no adjustment to deliver the grain accurately and unfailingly between the stone and concave. This latter has slight lateral vibration relative to the cross-head, being loosely pivoted thereto, and is accurately adjusted to the face of the stone, so as to grind meal of the same degree of fineness at all parts of the stone by means of the screws *s* extending through the cross-head, and bearing against the back of the concave at each side of and equidistant from the hinge *k k'*. This is accomplished by running up the concave by means of the lighter-screw S and hand-wheel D until it accurately conforms to the perimeter of the stone, and

then setting up the subsidiary adjusting-screws *s* until they bear forcibly against the back of the concave. The lower subsidiary screw *s'*, working in a screw-threaded perforation, *i*, at the lower portion of the concave, and extending through the lower slotted end of the offset *h* of the slide C, is then set up by means of the nuts i^1 i^2 at each side of the offset, and a third nut, *t*, next the casing of the concave, is then set up, to take the strain off the threads of the screw and perforation *i* in said casing. The concave may then be adjusted for fineness by means of the lighter-screw without danger of shifting its position of conformity to the stone. By loosening the screws *s* and setting up the screw *s'*, the concave may be adjusted nearer to the stone at bottom than at top, or the reverse may be had by reversing the movements of the screws aforesaid.

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

1. In a grinding-mill, the combination, with the stone B, the cross-head C upon its frame, the concave J, centrally pivoted to said cross-head, and the lighter-screw S, of the subsidiary adjusting-screws *s* at each side of the center of the concave, and working through the cross-head against the same, and the lower subsidiary screw *s'*, working through a slot in the said head, and bearing against the concave and the adjusting-nuts i^1 i^2, substantially as specified.

2. In a grinding-mill, the combination, with a stone, B, cross-head C, concave J, centrally hinged thereto, and the lighter-screw S, of the subsidiary adjusting-screws *s* at each side of the center of the slide, and the adjusting-screw *s'* below the center thereof, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM N. COSGROVE.

Witnesses:

WILLIAM DICKINSON,

ROBERT MCEACHRAN.