H. H. KENDRICK.
Balancing Millstones.

No. 202,731. Patented April 23, 1878.

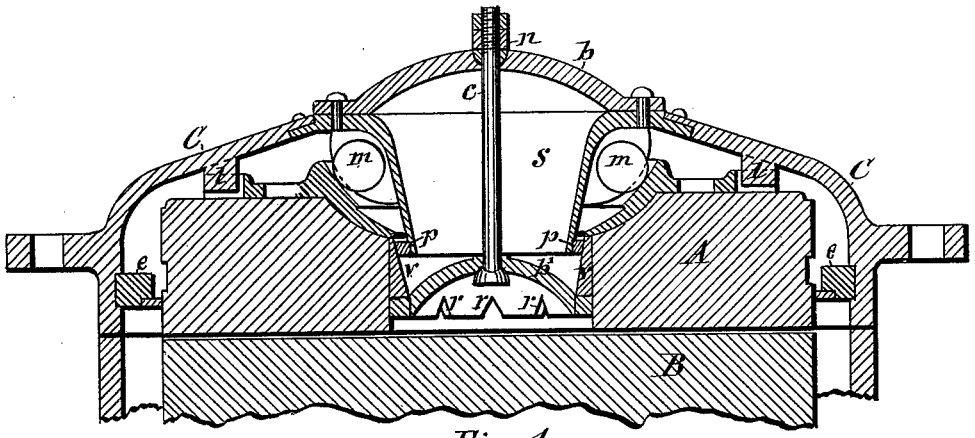

Fig. 1

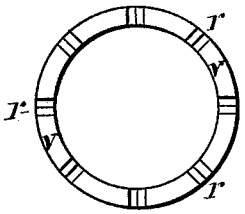

Fig. 2

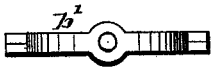

Fig. 3

WITNESSES:
E. Bendixen
H. Hill

INVENTOR:
H. H. Kendrick
by E. Saass his Atty.

UNITED STATES PATENT OFFICE.

HILAND H. KENDRICK, OF OSWEGO, ASSIGNOR TO MUNSON BROTHERS, OF UTICA, NEW YORK.

IMPROVEMENT IN BALANCING MILLSTONES.

Specification forming part of Letters Patent No. **202,731**, dated April 23, 1878; application filed February 9, 1878.

To all whom it may concern:

Be it known that I, HILAND H. KENDRICK, of Oswego, in the county of Oswego and State of New York, have invented new and useful Improvements in Mill-Trams, of which the following, taken in connection with the accompanying drawing, is a full, clear, and exact description.

This invention has reference to trams of that class of mills in which the upper stone is stationary, and the lower the revolving stone or runner; and it consists, essentially, in a novel construction and arrangement of devices for supporting the upper stone in its proper relative position above the runner, which devices allow the former to yield and adjust itself to the rocking or vibratory movement of the latter, and thus maintain a uniform bearing of the respective grinding-surfaces.

It also consists in a novel construction of the means of connecting the aforesaid devices to the top stone, which admits of changing the said stone in its relative circumferential position, and thus augmenting the durability of its points of support, and better equalizing the abrasion or wearing of the grinding-surfaces of the respective stones, all constructed and arranged as hereinafter more fully described.

In the accompanying drawing, Figure 1 is a transverse vertical section of a set of burrs provided with my improvements, and Figs. 2 and 3 are detail views.

Similar letters of reference indicate corresponding parts.

A represents the stationary top stone, and B the revolving bottom stone or runner, of a set of burrs. The latter, when rotated, is liable to traverse out of its proper plane and acquire a rocking or vibratory movement, which, when working against the surface of a rigid upper stone, is injurious both to the grinding-surfaces of the respective stones and to the substance ground by them. It is to obviate these injurious effects which this invention has for its object, and to that end and purpose the following devices are employed.

To the top of the stone A is permanently attached a plate having an inclined concave top surface around the eye of said stone, and provided around its outer margin with a series of notches or openings, arranged, respectively, diametrically opposite each other. C is the casing inclosing the upper stone, and having on its under side lugs *l l*, extending into the openings in the aforesaid plate, to prevent the rotation of the stone. S is the spout, firmly attached to the casing C, and extending some distance into the eye of the stone. To the rear of said spout are pivoted a series of anti-friction rollers, *m m*, bearing on the inclined annular concave surface of the plate on top of the stone. Diametrically across the spout S is placed a bridge or bail, *b*, secured at its ends to the top of either the casing C or a flange on the spout. Centrally over the eye of the stone the bail *b* is provided with an eye, in which is fitted loosely the vertical bolt *c*, extending downward into the eye of the stone. Above the bail *b* the said bolt or rod is provided with a nut, *n*, which either has its under side fitted into an annular hemispherical cavity around the eye of the bail, or is of ordinary form, and bearing on the flat surface of a hemispherical washer fitted into aforesaid cavity, so as to form a ball-and-socket joint therewith, and thus allow the pendent portion of the bolt to oscillate freely in all directions. The lower extremity of the bolt *c* is provided with a head having a convexed or rounded top surface, by which it supports a bail, *b'*, provided in its center with a corresponding cavity or recess, fitted to the head of the bolt.

The bail *b'* engages at its ends the sleeve *v*, which is rigidly secured in the eye of the stone A, and provided around its base with a series of notches, *r*, or other suitable bearing-points for the said bale. These bearings are arranged, respectively, diametrically opposite each other, so that as one pair of them become worn new points of support can be brought in use; and also the stone may be changed in its relative circumferential position when found necessary to equalize the wearing of its grinding-surface, or to provide new bearings for the friction-rollers *m m* or the lugs *l l*, which latter prevent rotation of the stone. The stone A is adjusted in its elevated position and

brought to bear on the rollers *m m* by means of the nut *n* on the upper end of the suspension-rod *c*, and is thus allowed to oscillate or vibrate freely in all directions, respondent to the like movement of the runner. For the purpose of obtaining a close joint between the stationary spout S and the eye of the vibrating stone A, and thus preventing the dust from passing between the stone A and its surrounding casing C, the spout is provided at or near its lower extremity with an elastic packing, *p*, around its exterior periphery.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the non-revolving stone A, provided with the notched plate, of the case C, having lugs *l*, the bails *b* and *b'* connected by rod *c*, having ball-and-socket connection therewith, whereby the stone is provided with a suspensory balance, substantially in the manner set forth, and for the purpose described.

2. The combination of a non-revolving upper stone of a mill, the rod *c*, connected to bails *b* and *b'* by ball-and-socket joint, substantially as described and shown, for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two attesting witnesses this 4th day of February, 1878.

HILAND H. KENDRICK.

Witnesses:
D. L. MARSHALL,
S. G. MERRIAM.