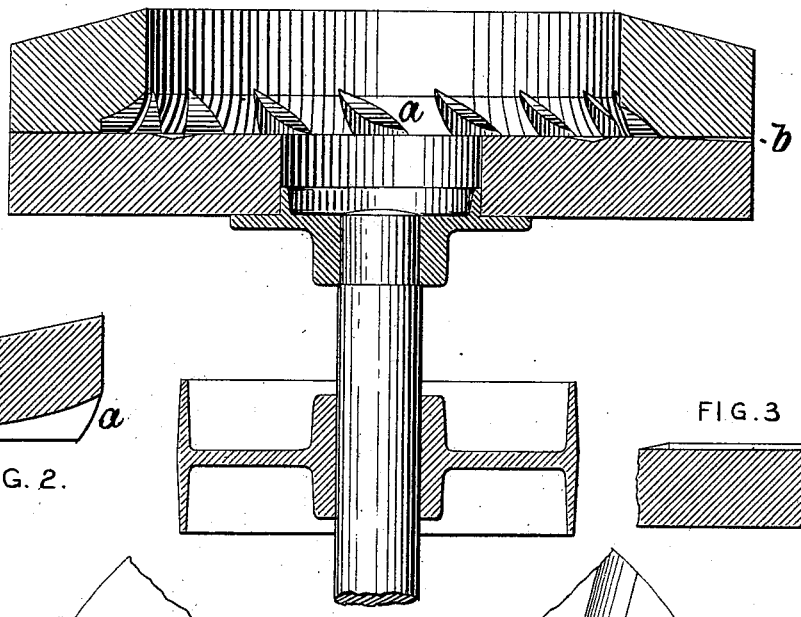
R. BYRNE.

Grinding Stones for Paint Mills.

No. 201,990. Patented April 2, 1878.

FIG. 1.



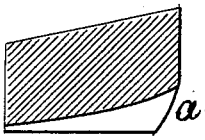
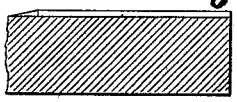


FIG. 2.

FIG. 3



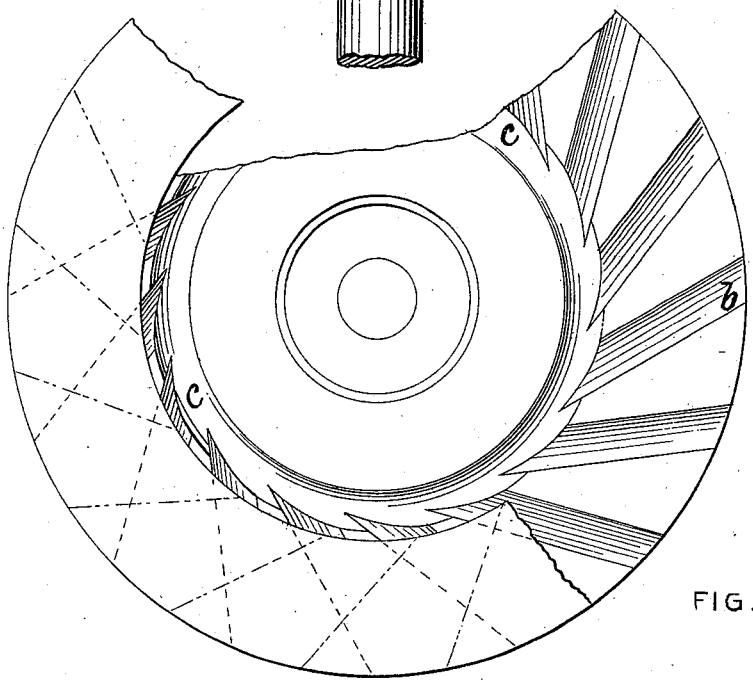


FIG. 4.

WITNESSES

Walter Pell

Wm Lemble Hall.

Richard Byrne

INVENTOR.

UNITED STATES PATENT OFFICE.

RICHARD BYRNE, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOSEPH J. MARRIN, OF NEW YORK CITY.

IMPROVEMENT IN GRINDING-STONES FOR PAINT-MILLS.

Specification forming part of Letters Patent No. **201,990,** dated April 2, 1878; application filed October 12, 1877.

To all whom it may concern:

Be it known that I, RICHARD BYRNE, of Brooklyn, in the county of Kings and State of New York, have invented a certain new and useful Improvement in Millstones, of which the following is a specification:

The said invention relates to the dressing or grooving of millstones, and particularly those used for grinding paint. In the ordinary method of preparing the grinding-surfaces, the lower stone is first carefully dressed to a perfectly plane surface, and the upper one is made slightly hollow for a short distance from the central opening, to facilitate the admission between the stones of the material to be ground. A series of nearly-radial grooves are then cut, which are rectangular on one side and slope or merge into the surface on the other, and which divide the surface into a number of equal sections, called "quarters," although they usually number from eight to twelve. Each section is further grooved with a number of similar furrows cut parallel to one of the radial borders; but those of no two adjacent sections are parallel to each other.

In this ordinary method of arranging the furrows, and the lands or plane surfaces between them, the furrows that are made at the proper angle or draft, or in the most efficient direction with relation to the center, are those which are the most effective in enabling the centrifugal force of the running stone to distribute and deliver the material over and from the entire grinding-surface. All the other furrows, in the degree that they depart from this most effective relation, are proportionately inefficient; and the working effect of the corresponding lands is correspondingly diminished.

In addition to the loss and injury arising from the unequal and partially imperfect action of the various parts of the stones, and the loss of power occasioned by running the surfaces that are not working at their best rate of efficiency, there is a further loss and waste in dressing down the inferior portions of the surfaces to restore them to their original relation to those that are the best.

The object of my invention is to make all parts of the grinding-surfaces of the two stones alike effective; and it consists in combining a chamber in the upper stone of about half its diameter, and a similar groove of the same size in the lower stone, with a series of straight and uniform furrows, the draft or obliquity of which is determined by the nature of the material to be ground. The grinding-surface is restricted to a comparatively narrow zone, the circular velocity of all parts of which is therefore approximately the same; and this is occupied by uniform series of similar furrows, the draft of each one of which is the best for the work to be done.

For heavy material, like white-lead, the direction of the furrows approximates nearer to the radial position, or is tangential to a smaller circle than that which is best with a lighter material, like zinc-white. In changing, for different purposes, the draft of the furrows, or the distance they would pass from the center of the stone if prolonged or extended, there is less waste of the stone with this uniform arrangement than there is when the surface is laid off in quarters or sections.

To enable others skilled in the arts to which it appertains to make and use my invention, I will proceed to describe its construction and operation with reference to the drawings.

Figure 1 is a vertical section of a pair of millstones, of which the upper has a large central opening that reduces the grinding-surface to a comparatively narrow ring at the periphery, in which there is but little variation from the average action of the most effective part. Fig. 2 is a section of one side of the upper stone on a line with one of its furrows, *a*, which is cut deeper toward the center than the periphery, to obviate any necessity for a departure from a plane surface on the face of the stone. Fig. 3 is a similar section of one side of the lower stone. Fig. 4 is a plan of the two stones, with a portion of the upper one broken away to show the furrows of the lower stone, of which the radial furrows *b* run into the circular groove *c*.

I claim as my invention—

The millstone-dress consisting of a series of straight furrows, *a* and *b*, in combination with the chamber in the upper stone and the circular groove *c* in the lower stone, substantially as described.

RICHARD BYRNE.

Witnesses:

WALTER PELL,

WM. KEMBLE HALL.