(No Model.)

W. LEHMANN.

GRINDING DISK.

No. 261,099. Patented July 11, 1882.

Fig. 1.

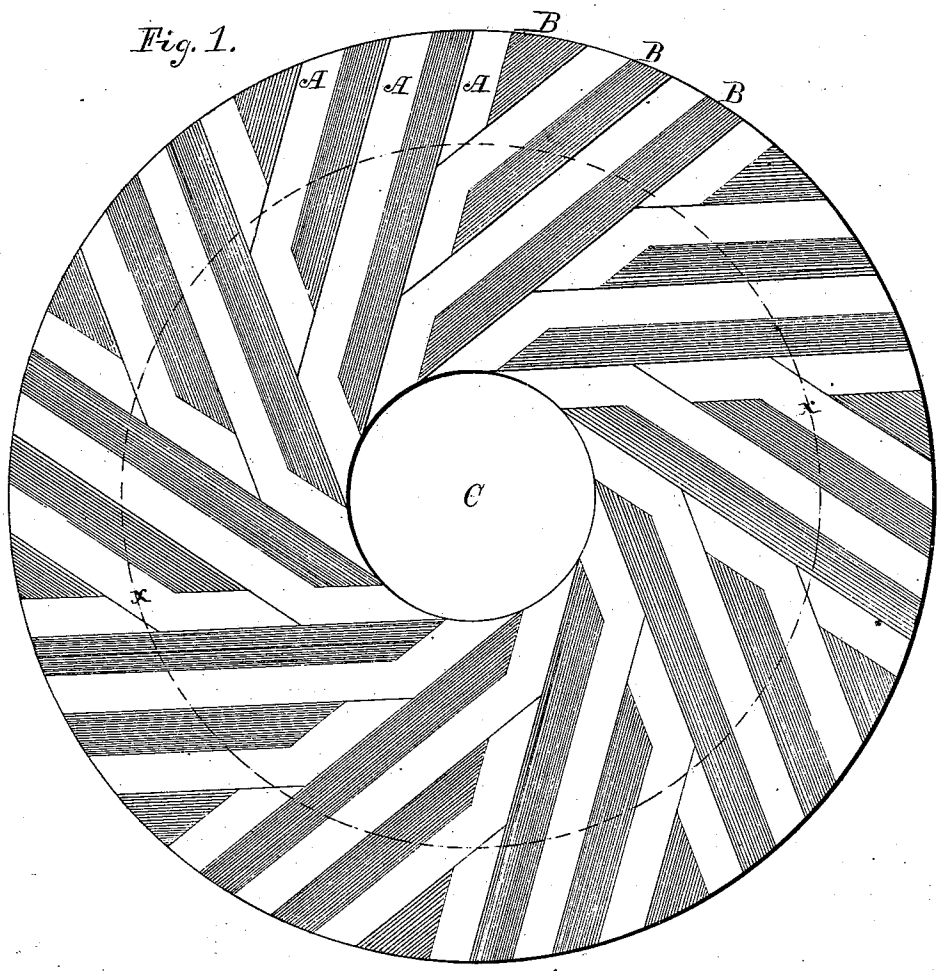


Fig. 2.

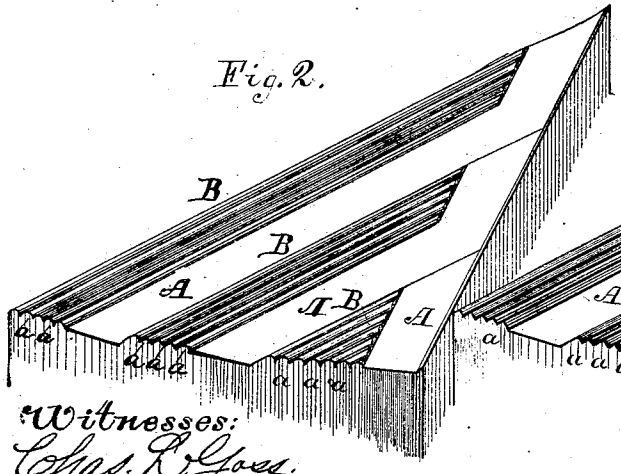
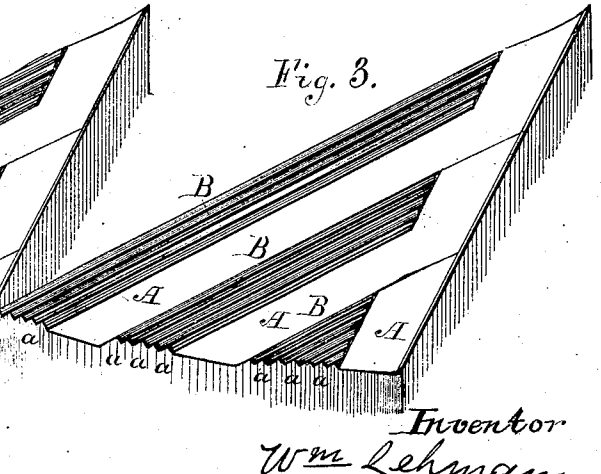


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM LEHMANN, OF MILWAUKEE, WISCONSIN.

GRINDING-DISK.

SPECIFICATION forming part of Letters Patent No. 261,099, dated July 11, 1882.

Application filed December 16, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM LEHMANN, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Grinding-Disks; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of my invention is to produce a machine to be used in milling for the thorough grinding of wheat, and particularly for cleaning the bran in that system of milling where several successive reductions or grindings are employed. I also design to use the same machine for other reductions of wheat than the last or bran-cleaning grinding.

In the accompanying drawings, like letters refer to similar parts, and in the same Figure 1 is a plan view of my device, and Figs. 2 and 3 are views in perspective of sections of the same in enlarged scale and in slightly variant forms.

I have experimented with millstones during many years, and have found that method of grinding to be, in my judgment, the only practicable one.

My previous inventions have had for their object the perfecting of the face of the ordinary burr-millstone. Certain defects in the burr-stones have led me to experiment further, with the result shown in my present invention.

In grinding wheat it is desirable to maintain the integrity of the bran as much as possible, and many devices for cleaning the bran or removing all the wheat-berry have been introduced; but all hitherto have been subject to objections. Rolls, while useful for many purposes, do not present enough surface for action upon the wheat or bran, whichever is being reduced. What is necessary for the purpose is the broad surface of the millstone made true and symmetrical and caused to revolve rapidly. It is found, however, that burr-stone is of such a sharp, gritty nature that it scratches and abrades the bran or tough integument covering the wheat, and thus breaks it up. The breaking up and comminution of the bran deteriorates the quality of the flour by causing the admixture therewith of fine particles of the bran, which are with great difficulty removable therefrom. A smoth, hard, compact surface is requisite, and I therefore make my improved device or millstone of chilled iron, steel, porcelain, or other hard, smooth, and homogeneous material. It is important that the material employed shall be such as will polish or retain a polish under action, and the materials named are those which I consider best adapted to the purpose. It is obvious, however, that any material possessing this property, together with the requisite strength or other necessary properties of a grinding-disk, may be used.

In the drawings, C represents the eye of my improved millstone. B B B are the lands, and A A A are the furrows. The dotted line *x* indicates the commencement of the bosom. I have delineated a method of division into lands and furrows known as the old "quarter-dress," and it is the method I prefer. It is not necessary, however, that that method should be rigidly followed.

The general principles governing the characteristics of the required dress in grinding with millstones apply also to the use of my improved device, and greater or less draft and width or depth of furrow are to be given accordingly as the wheat to be ground is hard or soft and the grinding high or low. I divide the lands B B B into fine corrugations *a a a*. These corrugations are in all cases to be formed with blunt or non-cutting front sides or edges, and should be parallel with the back edge of the furrows, so that a straight unbroken line shall be presented to the grain instead of the ends of a series of ribs or corrugations. The quarter-dress produces lands and furrows of equal width throughout nearly their entire length, and hence the corrugations do not run into the furrows either at the front or back on the main lands. I prefer to form about twelve corrugations to the inch in ordinary or average grinding; but in grinding very hard wheat I prefer to employ about twenty corrugations to the inch; but the number is entirely a matter of good judgment, dependent on circumstances. By my improved construction of grinding-disk and the use of the material specified I gain all the advantages derivable from the use of rolls, and I also employ all the working-surface obtainable in the use of the millstone, the

working-surface in the case of rolls being very slight indeed, since only a single point—the periphery of the rolls—can be brought into close contact.

I do not limit myself to any particular form or number of corrugations, provided they be blunt or non-cutting.

I am aware that the lands of a burr-stone have been provided with fine furrows, and this I do not claim. Burr-stones, being gritty in their nature and always wearing rough or gritty, even if polished before use, have a rasping, grating, or abrading action, which I seek to avoid, and which must be avoided in order to produce the best results. I am also aware that metallic burrs have had their lands provided with file-teeth to increase the grinding effect, and that both stones and metallic burrs have been formed with fine furrows or cracks for the same purpose. I make no claim to such constructions, all of which, instead of effecting the result aimed at by me, will, by reason of the large number of sharp edges produced in forming the small furrows or cracks, increase the trituration or comminuting action, whereas by providing the non-cutting corrugations or ribs, as shown, I secure a rubbing or scraping action without any tendency to cut, grind, or break the bran. The objects and the results sought and attained by me are the opposite of those mentioned.

The action of my improved device is that of a steady, uniform scraping pressure, in contradistinction to the crushing, wedging pressure of rolls and the peculiar action of the ordinary millstone, which is analogous to that of sand-paper upon the cuticle of the wheat-berry. I do not claim a millstone or grinding-disk of the materials specified, provided with grooves, broadly; but

I claim—

1. As a new article of manufacture, a metallic grinding-disk provided with lands and furrows, the lands being provided with non-cutting corrugations, substantially as described.

2. The herein-described metal grinding-disk provided with the quarter-dress, and having a series of non-cutting corrugations upon the lands parallel with the back edges of the furrows.

In testimony that I claim the foregoing as my own I affix my signature in the presence of two witnesses.

WM. LEHMANN.

Witnesses:
E. H. BOTTUM,
CHAS. L. GOSS.