2 Sheets—Sheet 1.

E. S. COX.

Millstone-Dress.

No. 208,716. Patented Oct. 8, 1878.

Fig 1.

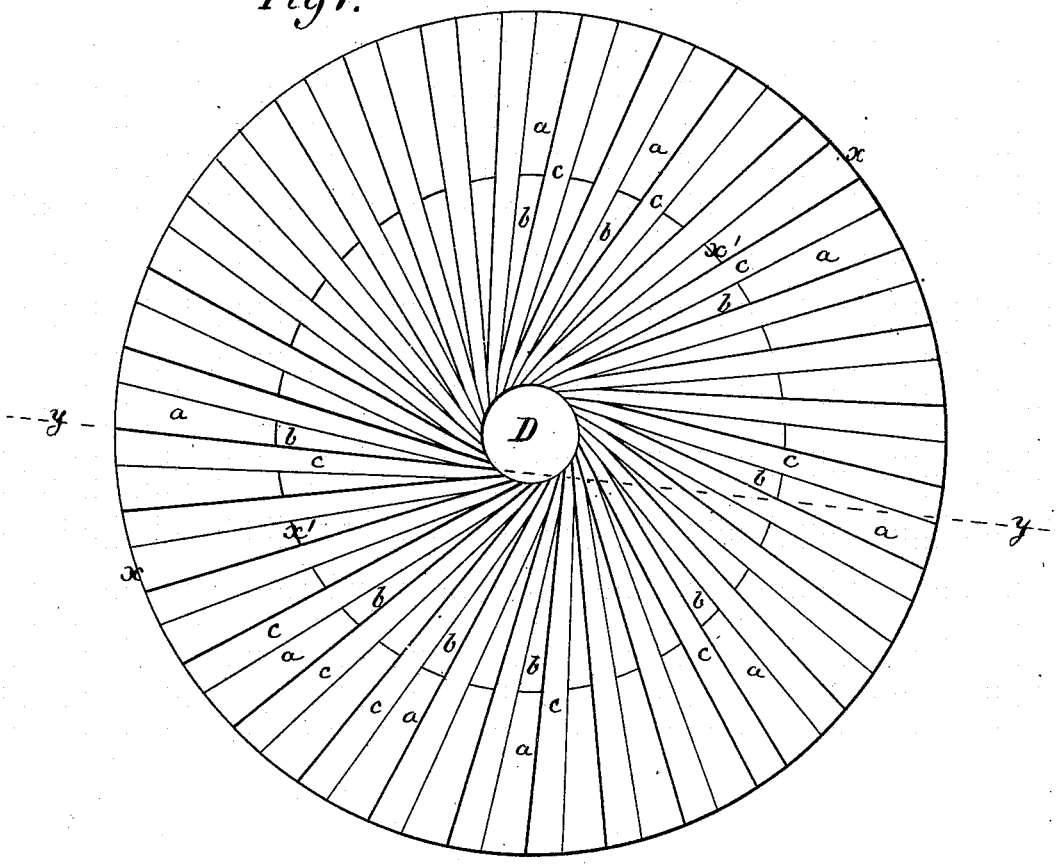
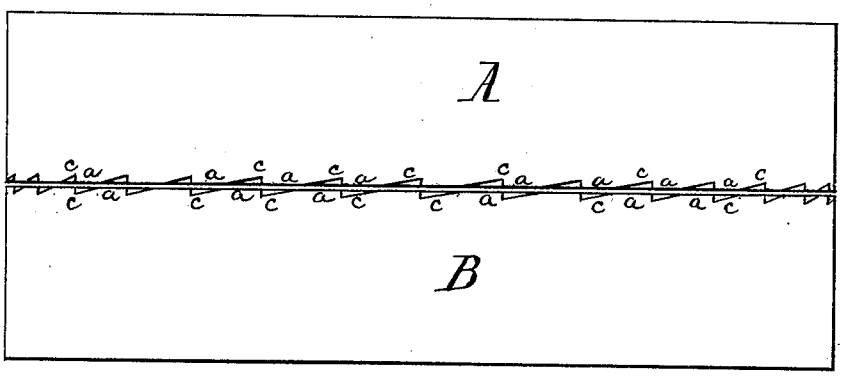


Fig 2.



Witnesses:
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Fig 3. $\frac{a}{a}\,\frac{b}{b}$

Fig 4. $\frac{c}{c}$

Inventor:
Elbert S. Cox
by Munn, Davis & Lawrence

2 Sheets—Sheet 2.

E. S. COX.
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Fig 5.

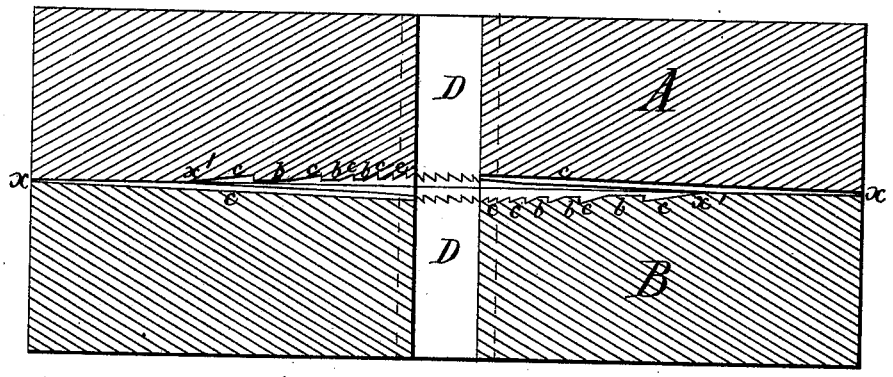


Fig 6.

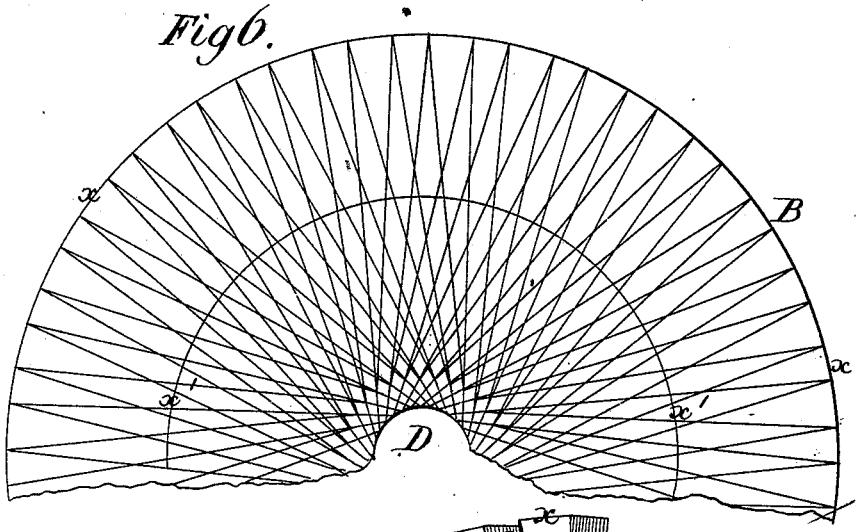
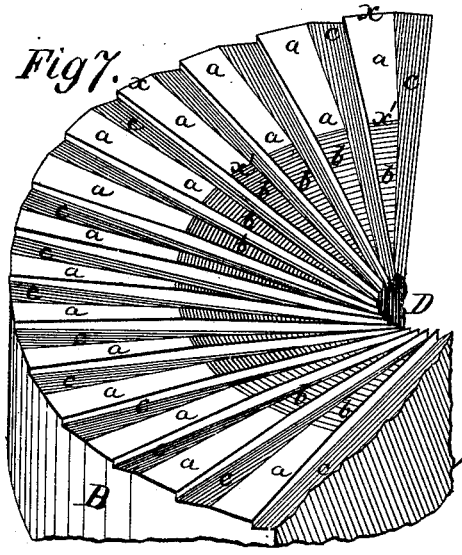


Fig 7.



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UNITED STATES PATENT OFFICE.

ELBERT S. COX, OF JONESBOROUGH, TENNESSEE.

IMPROVEMENT IN MILLSTONE-DRESSES.

Specification forming part of Letters Patent No. **208,716**, dated October 8, 1878; application filed September 10, 1878.

To all whom it may concern:

Be it known that I, ELBERT S. COX, of Jonesborough, Washington county, and State of Tennessee, have invented a new and Improved Dress for the Grinding-Stones of Flouring-Mills; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a top view of the lower millstone. Fig. 2 is a view of the peripheries of both the upper and lower stones, as when placed together. Fig. 3 is a diagram, giving a longitudinal profile of the upper and lower land-surfaces of the stones. Fig. 4 is a diagram, giving a longitudinal profile of the furrow-surfaces of the stones. Fig. 5 is a vertical cross-section of the stones in the line *y y* of Fig. 1. Fig. 6 is a diagram illustrating the manner in which the grinding-surfaces of the respective stones cross one another when grinding; and Fig. 7 is a perspective view of a portion of the lower or bed stone.

The object of my invention is to provide a dress for flouring-millstones by which the grain in the act of being ground will first be divested of its outer cuticle or bran; second, be gradually more and more granulated as it passes outwardly from the eye of the stones; and, next, be delivered upon a plane finishing-surface extending inwardly a proper distance from the periphery of the stones, where it is finally reduced to the condition of perfectly-ground flour.

My invention also has for its object the ventilation of the crushed grain during the process of grinding with surfaces such as hereinafter described; and as the actual flouring of the grain takes place at or near the periphery of the stones, the injurious over grinding and heating of the flour is obviated, which is so great an objection under the old mode of dressing millstones. Under the ordinary mode of dressing, the reduction of the grain to the actual condition of flour commences near the eye of the stones, and thence outwardly the flour is, so to speak, ground over and over before it is finally delivered from the stones. Such grinding not only destroys the life of the flour, but, it is supposed, generates an explosive dust which is liable to destroy the mill itself.

Again, under my mode of dressing, the surface of the stones, where the flouring proper of the grain takes place, is made as smooth as possible by allowing the stones to run in contact while water is passed between over such surface. A flouring-surface proper thus produced I find to be far superior to the usual mode of delicately "cracking" such surface with a "pick," since by my dress "grit" in the flour is avoided, which is so common to the old style of dress.

In the accompanying drawings, *a* indicates the flouring-surface proper of the burr-millstones, the upper stone, A, and the lower or bed stone, B, being both alike provided with my improved dress. This flouring-surface is the surface upon the stones between which the finest crushing of the grain takes place, and which reduces the previously-cracked grain into merchantable flour after the same has been bolted. These surfaces *a* are horizontal, and made as smooth as possible by water-grinding, and extend from the periphery of the stones a proper distance inwardly toward the eye of the stones—say from *x* to *x'*, as indicated in the figures of the drawings. From the inward termination of the plane surface *a* the stones are cut away so as to form downwardly-inclined scouring and cracking surfaces *b* on the bed-stone, which extend to near the eye D of the stone, as shown. The upper stone has its surfaces *b* inclined upwardly. The stones are also cut away to form furrows *c*, which occupy positions on either side of the plane surfaces *a* throughout the faces of the stones, as indicated in the figures of the drawings. These furrows are cut from the periphery of the stones, and gradually incline from said periphery in a straight line to the eye D, as indicated in Figs. 4 and 7, and they are also, throughout their length, beveled transversely, so that the grain, when it passes into the furrows from the eye of the stones, will, by the movement of the runner or the upper stone, be gradually carried forward to the cracking and flouring surfaces.

It will be seen by reference to Fig. 5 that when the runner and bed-stone are in position

for grinding, as shown in said figure, a concavity exists between the upper and lower stone, which extends from the inner terminus, x', of the plane surface a, and gradually increases in volume to the eye D of the stones, the concavity being in form of a hollow spheroid, so that the grain passing outwardly from the eye D will first be rubbed or scoured, and thus divested of its bran; then, passing on, will be gradually cracked and granulated by the surfaces b until sufficiently reduced to pass in contact with and be ground to flour between the plane surfaces a, the furrows c serving the purpose of ventilation during such process directly from the eye D.

It will also be seen that the heaviest pressure of the stones upon the crushed grain, and that which finally reduces it to flour, takes place at or near the periphery of the stones, where it is discharged, and hence, when the proper fineness has been attained, there will be an immediate escape or discharge of the flour, and regrinding and injurious overheating of the floury product cannot take place.

It will be seen that the surfaces a and b and the furrows c are all on straight lines tangential to the eye of the stones, and hence there will be no abrupt arrest or under-retardation of the cracked and ground product in its passage from the eye to the point of discharge of the stones; and that the inclination of the furrows from the eye to the periphery of the stones will not only prevent a too rapid outward delivery, but also that the furrow-surfaces, by reason of their formation, afford a gradually contracted and conducting space, in which said surfaces not only constantly keep hold of and comminute said product, but also conduct it to the flouring-surfaces a a.

What I claim as new and of my invention is—

The millstone-dress which consists of the peripheral finishing or flouring plane surfaces a a and inclined scouring and cracking bosom-surfaces b b, in combination with the tangential straight furrows c c, shallow and broad at the skirt, running straight to the eye, with constantly-increasing depth and decreasing width, substantially in the manner described, and for the purpose set forth.

ELBERT S. COX.

Witnesses:

ROBERT MCCULLY,

D. C. LAWRENCE.