

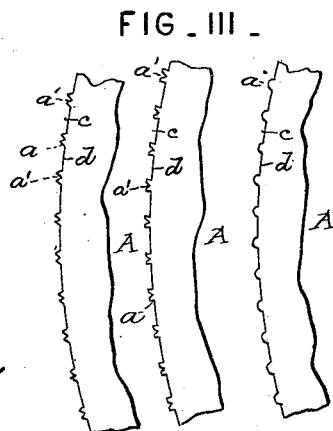
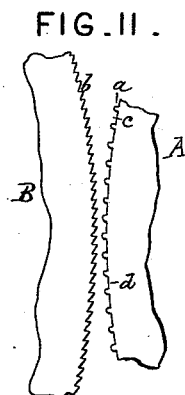
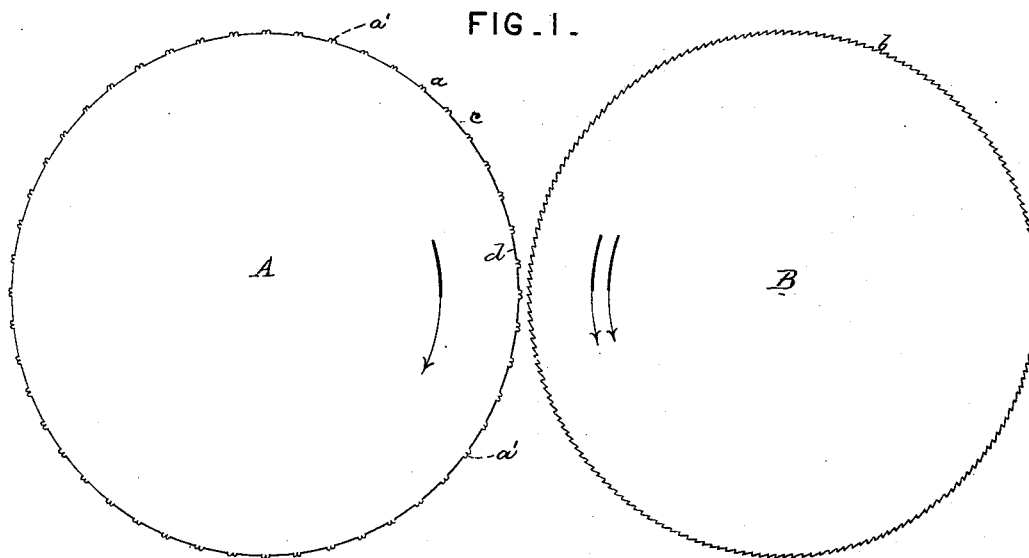
(No Model.)

2 Sheets—Sheet 1.

J. M. CASE.
CRUSHING ROLLS.

No. 419,498.

Patented Jan. 14, 1890.



Attest:
Geo. T. Smallwood,
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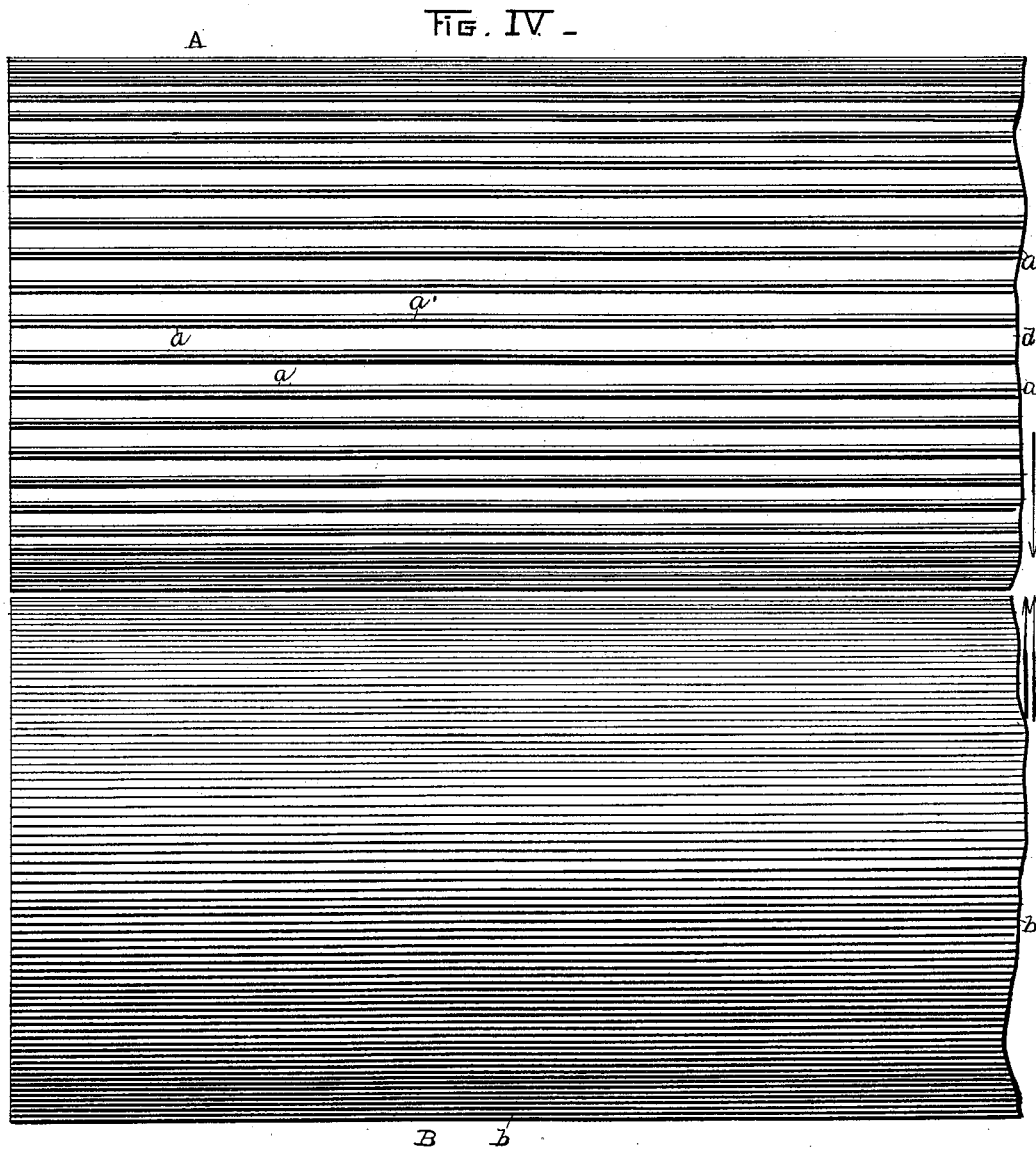
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2 Sheets—Sheet 2.

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CRUSHING ROLLS.

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Witnesses
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UNITED STATES PATENT OFFICE.

JOHN M. CASE, OF COLUMBUS, OHIO.

CRUSHING-ROLLS.

SPECIFICATION forming part of Letters Patent No. 419,498, dated January 14, 1890.

Application filed February 13, 1889. Serial No. 299,757. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. CASE, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Crushing-Rolls, of which the following is a specification.

My invention relates to rolls adapted for use as the first break-rolls in a roller-mill, and more especially to the particular construction of one roll—the slow roll—in a machine where the first break is accomplished by a fast and a slow roll moving in opposite directions—that is, having their contiguous faces moving in the same direction, but at different speeds.

In the reduction of wheat to flour on the roller system the aim is to produce as great a quantity of middlings as possible, after which the middlings are purified and are in condition for further reduction into a high grade of flour.

The objects of my invention, therefore, are to increase the quantity of middlings produced, to enable a greater amount of work to be done on the first break, and to produce a less proportion of fibrous material and less abrasion of the bran. To accomplish this, I construct a roll with a special dress adapted to hold the grain in position while the other roll performs the work. This roll provided with my new dress is made to run much more slowly than the opposite roll, so that it forms, as it were, a shoe for holding the grain, while the fast roll performs the work of reduction. It consists of an ordinary roll provided with peculiar ridges. These ridges are made at intervals—that is, with intermediate spaces—and the spaces in between the ridges correspond substantially to the plane circumference of the roll. The ridges form a lock or stopping-point, as it were, to hold the berry of wheat within the spaces while the fast roll performs the work.

In order that my invention may be more fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure I is a transverse sectional view of a pair of rolls, one of which is of the ordinary kind and the other of which is constructed according to my invention. Fig. II is a sec-

tional view of the contiguous faces of two rolls with modified dress. Fig. III shows further modifications of my improved dress. Fig. IV is a plan view of a pair of rolls.

A represents my improved roll, having a dress formed with longitudinal ridges or projections *a* and spaces *c*, conforming to the surface of the roll, and B represents the roll of ordinary construction, having ridges *b*, which is used in connection with my improved roll. The ridges *b* may be of any form—such as rounded, square, or curved, (saw-tooth;) but the form I prefer, as producing the best result, is that shown in the drawings—the curved ridges (saw-tooth)—inasmuch as I find that this is best adapted to treat the berry with the objective results hereinbefore enumerated.

I do not confine myself to any particular form or any special number of ridges. The ridges may be made square or rounded, or in any desired form, so long as the principle is adhered to of having intermediate berry-spaces in which the berry may lodge while the other roll operates upon it and produces the middlings. These ridges are preferably made to project radially from the surface of the roll, and are formed with longitudinal grooves *a'*. The surface *d* of the roll and the ridges *a* form the berry-spaces *c*.

I find in practice that the action of this roll, in combination with the fast-running roll, is to hold the berry in such a manner that the branny part is drawn backward within the blank spaces, while the starchy and glutinous part of the berry is turned outward by the action of the fast-running roll. This causes the action of the fast-running roll, which performs the entire work, to operate almost exclusively upon the inside of the berry, whereby a small percentage of branny fiber is rubbed off from the bran. By this means I get a whiter and purer flour from the breaks than heretofore. It will also be seen that the intermediate spaces between the ridges form cavities for holding middlings, so that they do not become crushed while being reduced, and thus, being left in a solid condition, they do not disintegrate or fall to pieces while being operated upon by the purifier; consequently a more perfect purification is obtained with a less

amount of waste in the dust-room. In this dress it is aimed that as much work should be done on the first main break as possible, since in practice it is found that on this first
5 break the fast roll operates almost exclusively against the inside of the berry, and the more work we can perform while the wheat is in that condition the better will be the general results. Consequently in the use of this dress
10 I ordinarily break down on the first main break as low as we ordinarily reach after passing three successive breaks where this roll is not used. Consequently I am enabled to very greatly reduce the expense and number of
15 breaks, and at the same time produce a very much better product.

Having thus described my invention and the manner in which the same is to be put into use, what I claim as new, and desire to secure by Letters Patent, is—

The combination, with a fast working-roll B, having ridges *b*, of the slow holding-roll A, having a dress provided with plain surface *d* and ridges *a* at intervals, forming berry-spaces *c* for the lodgment of the berry while the
20 ridges of the working-roll operate thereon,
25 substantially as described and shown.

JOHN M. CASE.

Witnesses:

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