

(No Model.)

G. G. SCHREURS.  
GRINDING ROLLS.

No. 583,551.

Patented June 1, 1897.

FIG. 1.

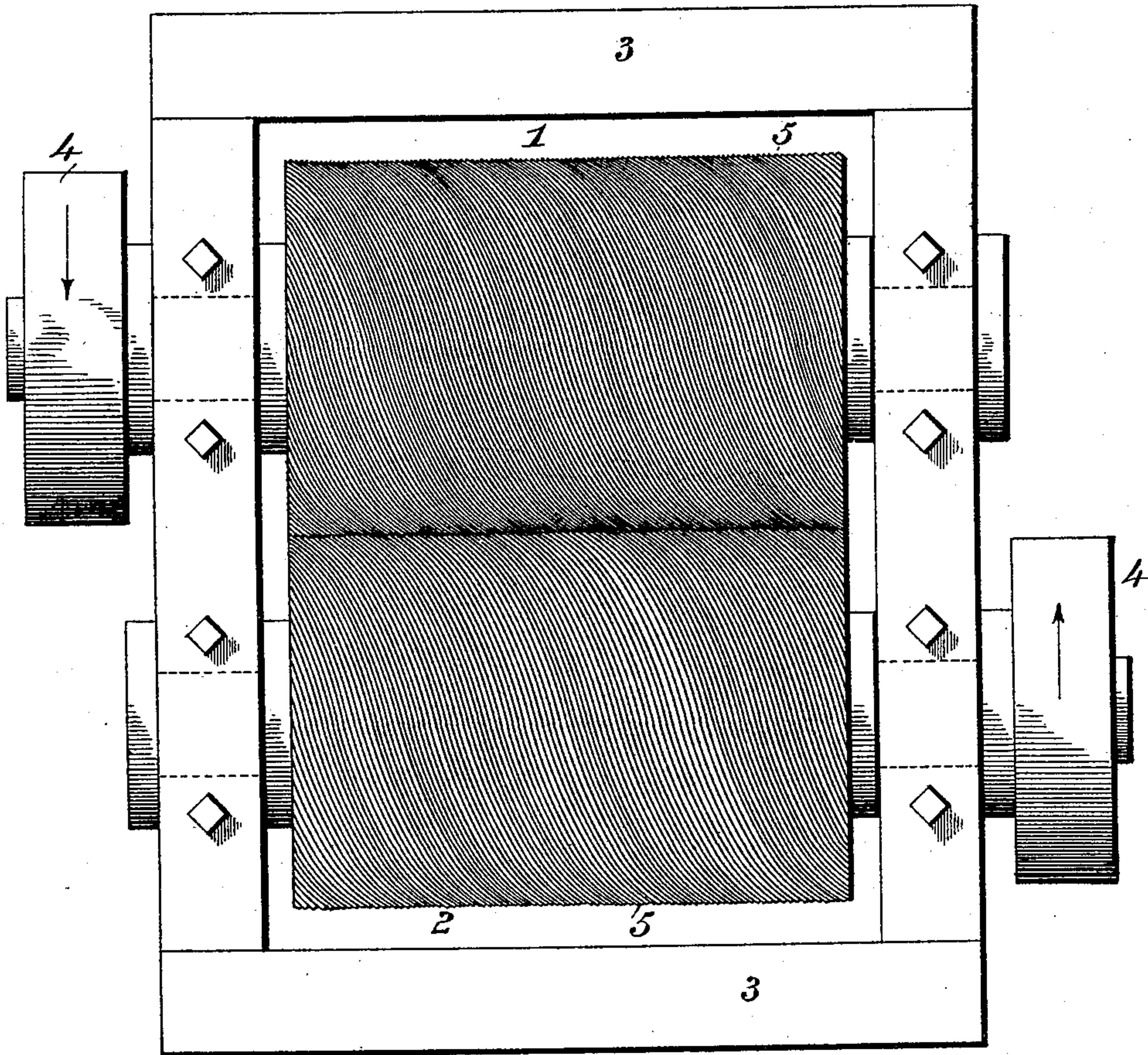


FIG. 2.

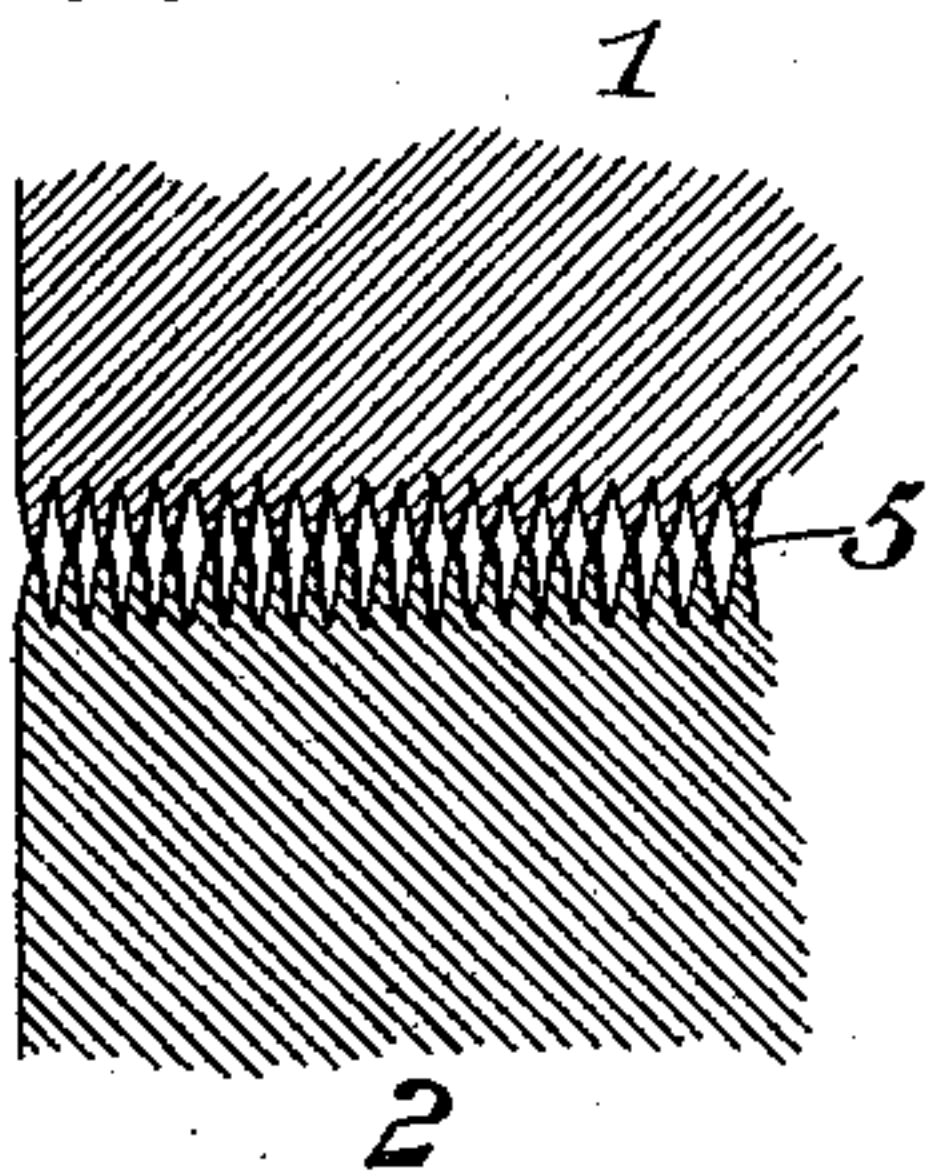


FIG. 3.



FIG. 4.

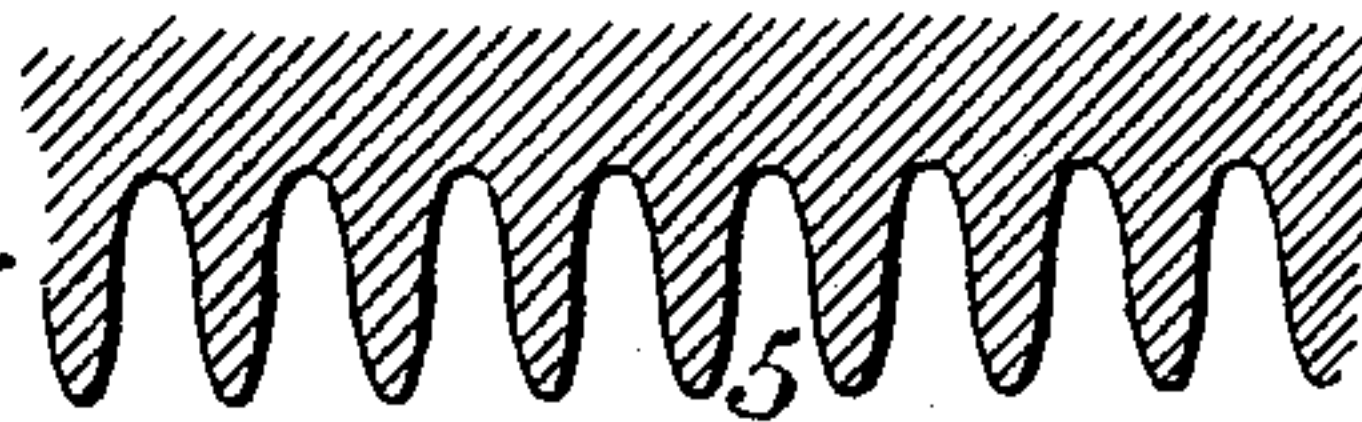


FIG. 5.



Witnesses

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# UNITED STATES PATENT OFFICE.

GARRETT W. SCHREURS, OF MUSCATINE, IOWA.

## GRINDING-ROLLS.

SPECIFICATION forming part of Letters Patent No. 583,551, dated June 1, 1897.

Application filed July 31, 1895. Serial No. 557,764. (No model.)

*To all whom it may concern:*

Be it known that I, GARRETT W. SCHREURS, a citizen of the United States, residing at Muscatine, in the county of Muscatine and State of Iowa, have invented a new and useful Improvement in Grinding-Rolls, of which the following is a specification.

This invention relates to roller grinding-mills; and it has for its object to effect certain improvements in mills of this character for hulling and reducing all kinds of grain cereals and seed to flour, meal, or feed.

To this end the main and primary object of the invention is to provide a new and useful dress for the grinding-rolls and to operate the same in such a relation as to increase the capacity of the mill over similar mills in which the rolls are operated with differential peripheral rates of speed.

The improvement contemplated by the present invention also obviates the heating of the rolls, requires less power to do a given amount of work, diminishes the abrasion of the stock, and secures a finer and more even granulation of the product.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the drawings, Figure 1 is a top plan view of a pair of grinding-rolls constructed and arranged in accordance with this invention. Fig. 2 is an enlarged detail sectional view illustrating the appearance of the dress at the point of contact or bite. Figs. 3, 4, and 5 are enlarged detail sectional views showing different modified forms of the corrugations or dress of the rolls.

Referring to the accompanying drawings, the numerals 1 2 designate a pair of grinding-rolls arranged side by side in the same horizontal plane and journaled in a suitable supporting-frame 3. One of the shaft extremities of each grinding-roll carries a band-pulley 4 to receive a belt to provide means for rotating the two grinding-rolls in opposite directions and at the same peripheral rate of speed.

Each grinding-roll is of a uniform diameter from end to end and is provided on its pe-

riphery throughout its entire length with a regular series of light and fine corrugations 5, which circumsolve the roll on true helical or spiral lines, said corrugations therefore encircling the roll in gentle compound curves. The helical corrugations of the two grinding-rolls are not only very fine, but are arranged as closely together as possible, so as to have a gentle grinding action on the grain introduced between the rolls in the usual manner, and in the present invention the corrugations or dress 5 of both rolls extend in the same direction, so that at the meeting faces of the two rolls the corrugations of the opposite rolls do not intermesh, but cross each other at an angle.

The corrugations 5 of the grinding-rolls form cutting edges, and the sides of the ribs forming the cutting edges may be beveled on either straight or curved lines, or the bevel on one side may be steeper than the other, according to the nature of the grain being operated on and as clearly illustrated in Figs. 3, 4, and 5 of the drawings. These cutting edges make a sufficient incision in the grain to loosen up the hulls and partly break up the berry, so that it can be readily reduced or granulated as it is subjected to the grinding action of the two rolls in passing between such rolls.

It has been stated that the sides of the ribs forming the corrugations 5 are beveled, and Figs. 3, 4, and 5 illustrate bevels of different pitch, according to the nature of the grain being operated on; but irrespective of the pitch of the bevel an important feature of the invention is to have the ribs forming the corrugations 5 beveled on the advancing side, the effect of which beveling of the corrugations is to move the product laterally, so as to release the same from the pressure of the bed of the corrugations and discharge it below the rolls, this action being independent of the grinding action occasioned by the crossing of the corrugations at the point of bite.

The pitch of the corrugations or dress 5 of the grinding-rolls is very slight and is only of a sufficient degree to insure the crossing of the corrugations at the bite or point of contact of the two rolls, and this relation of the dress of the two rolls is maintained fixed by reason of the fact that such rolls rotate at the same peripheral rate of speed and in reverse



directions, so that the adjacent contacting faces will move in the same direction. The two grinding-rolls directly contact with each other, as already referred to, and by reason of the relation and disposition of the corrugations it will be obvious that when the grain is introduced between the two rolls each roll will tend to move the grain in a different longitudinal direction. While each roll tends to move the grain in a different longitudinal direction from the tendency of the other roll, it will be understood that since the corrugations of the two rolls are of the same pitch and the rolls rotate at the same peripheral speed these two counter tendencies of the rolls will combine to necessarily pulverize or granulate the grain as it is drawn downward between the contacting faces of the two rolls, as will be readily apparent to those skilled in the art.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

In a grinding-mill, a pair of grinding-rolls arranged side by side in the same horizontal

plane with their adjacent faces or surfaces in direct contact, said rolls being of a uniform diameter from end to end and dressed on their peripheral surfaces by a regular series of closely-arranged light and fine corrugations, circumvolving the rolls on true helical or spiral lines, the corrugations of the opposing rolls being disposed in the same direction and of the same pitch so as to cross each other at the bite of the rolls, and the ribs producing said corrugations being beveled on their advancing sides to move the product in a lateral direction, said rolls rotating at the same peripheral rate of speed to maintain the fixed relation of the corrugations, substantially as set forth.

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

GARRETT W. SCHREURS.

Witnesses:

ALFRED SCHREURS,  
GRANT BITTERMAN.