

J. STEVENS.

MILL FOR GRINDING AND REDUCING GRAIN, &c.

No. 252,705.

Patented Jan. 24, 1882.

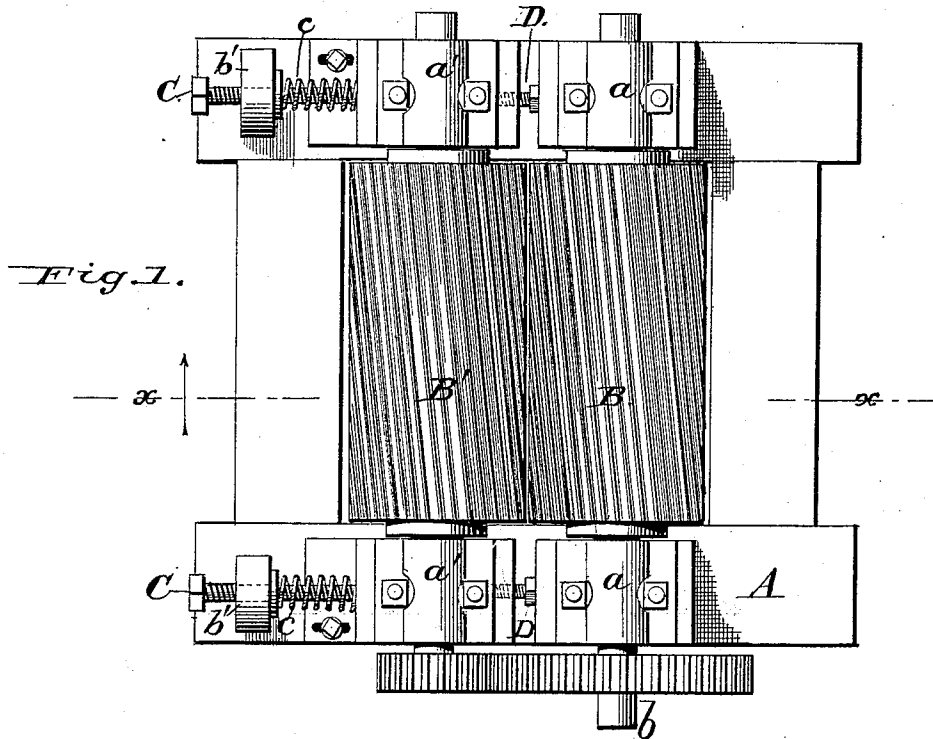


Fig. 1.

Fig. 2.

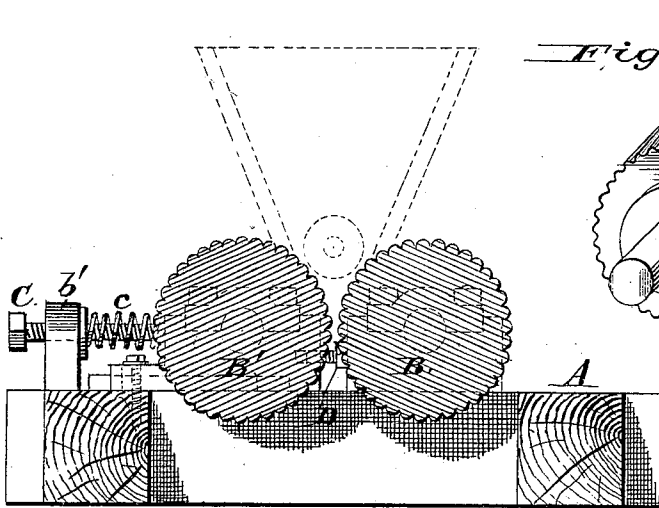


Fig. 3.

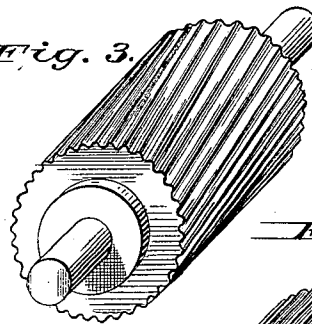
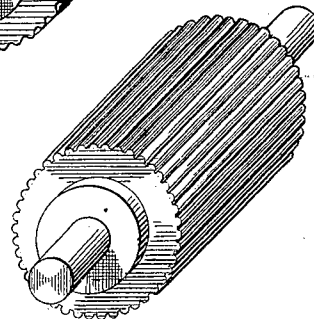


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN STEVENS, OF NEENAH, WISCONSIN.

MILL FOR GRINDING AND REDUCING GRAIN, &c.

SPECIFICATION forming part of Letters Patent No. 252,705, dated January 24, 1882.

Application filed December 16, 1879.

To all whom it may concern:

Be it known that I, JOHN STEVENS, of Neenah, in the county of Winnebago and State of Wisconsin, have invented certain new and useful Improvements in Mills for Grinding and Reducing Grain and other Materials, of which the following is a specification.

My invention relates particularly to that class of grinding-mills known as "roller-mills," in which two or more rolls work against each other and crush or grind the material between them; and it consists in an improved dress to be given to the rolls.

In the drawings, Figure 1 is a plan view of a machine embodying my invention, the dress being shown as applied spirally. Fig. 2 is a section on the line *xx* of Fig. 1. Figs. 3 and 4 represent modified forms of the dress.

A is a frame for the support of the operative parts of the machine. In bearing-blocks *a a'* upon this frame are journaled the rolls B B'. The roll B is driven by means of a sheave or pinion upon its shaft *b*, connected with any suitable prime motor, and is geared with and drives the roll B' in such manner that the two revolve in opposite directions or toward each other.

The blocks *a'*, in which the roll B' is mounted, are secured to the frame by means of bolts or screws which pass through elongated slots in said blocks to permit their horizontal adjustment. These blocks might, however, be connected to the frame by means of a tongue and groove to accomplish the same object.

In lugs *b'* upon the frame-work are set adjusting-screws C, which determine the maximum retreat of one roll from the other. Springs *c*, acting in conjunction with these screws, enable such an adjustment that the movable roll may yield elastically from the other to a greater or less distance, and then be positively stopped from further retreating by the screws C. Other screws, D, take into the blocks *a'* upon the opposite side from the first and bear against the blocks *a*, thereby by their adjustment determining the minimum of distance between the two rolls.

The usual hopper and feed-roll are intended to be placed above the grinding-rolls, and it will be understood that a suitable meal-chest, conveyer, or other instrumentality will receive

the ground or pulverized material beneath and retain it or conduct it onward to a farther operation. Upon these rolls, the surface of which may be of metal, porcelain, or other suitable material, I form a dress consisting of parallel rounded ribs trending lengthwise of the roll and running either straight, parallel with the axis, or spirally thereupon. The spaces between these ribs may be angular, blunt, or rounded.

In Figs. 1 and 2 I have shown the bases or flanks of the contiguous ribs as meeting in an angle, giving a surface of invected outline. In Fig. 3 the grooves between the ribs are rounded, a cross-section thus presenting the appearance of a continuing series of ogee curves. In Fig. 4 there is a distinct and well-defined space between the flanks or bases of contiguous ribs, each rib thus standing by itself, but not so far removed from the rest as to fail of co-operation.

Various other modifications in the shape of the grooves will suggest themselves, the salient feature of my invention being that the ribs shall be rounded—that is to say, made with an outline that presents to the dress of the opposing roll only a series of blunt non-cutting crests.

The dress in Figs. 1 and 3 is shown as spiral, being given about a quarter turn (more or less) in the length of the cylinder. In Fig. 4 it is straight, the ribs running longitudinally of the cylinder. When applied spirally it will run in the same direction upon both rolls, in order that, as they revolve, the ribs upon one opposing surface may cross the ribs upon the other. It is not intended, in illustrating the lay of the dress in these figures in connection with special forms which it assumes, to indicate that the particular lay or trend is the best adapted for the special form shown therewith, but only that the dress in all of its modifications may, when laid, assume or range between any of the lines indicated.

The character of the work to be done and the nature of the material operated upon will influence the degree of fineness to be given the dress. Rough work will necessitate a coarser dress than fine work. In some cases, therefore, the dress may be extremely fine, in others measurably coarse.

The rolls are to be geared together so that the periphery of one will move faster than the periphery of the other, and the material passing through will be pinched and rubbed between the rounded ribs and pulverized by this
5 pinching and rubbing action, not by a cutting and tearing or rasping action, as would be the case were sharp or angular ribs employed. By means of a cam upon the shaft of one of
10 the rolls it may be given an intermittent end-wise movement in its revolution, and this will occasionally prove a beneficial construction.

It may sometimes be found desirable to have the rolls move at the same peripheral speed,
15 and this, though not so generally advantageous, I consider within the principle of my invention.

I do not herein claim specifically anything made the subject of claims in the application
20 filed by me on the 13th day of February, 1878,

of which this present application is a division, and upon which Letters Patent No. 228,001 have been granted to me subsequent to the filing hereof—to wit, upon the 25th day of May, 1880; but

What I do claim, and desire to secure by Letters Patent, is—

1. A dress for the rolls of roller-mills, composed of a series of parallel ribs having blunt non-cutting crests and trending lengthwise of
30 the roll.

2. In a grinding-mill, the combination of two rolls driven at different peripheral speeds, and having a dress composed of a series of parallel ribs trending lengthwise of the roll and formed
35 with blunt non-cutting crests.

JOHN STEVENS.

Witnesses:

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S. P. HOLLINGSWORTH.