W. H. SMITH.

FEED MECHANISM OF ROLLER MILLS.

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900,790.

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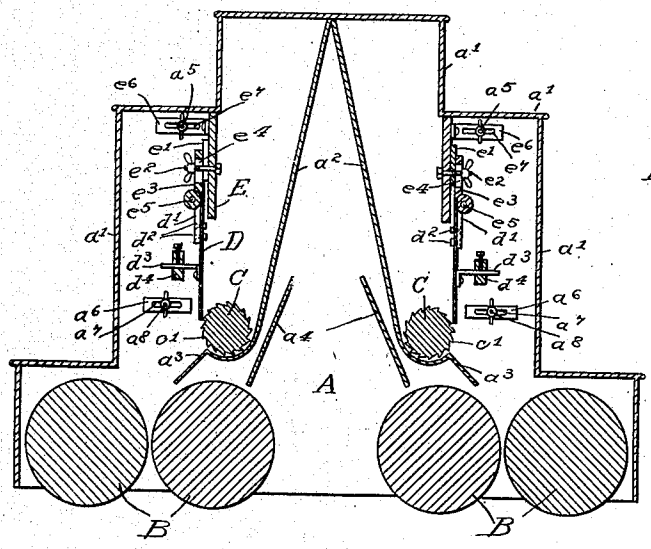


Fig. 1.

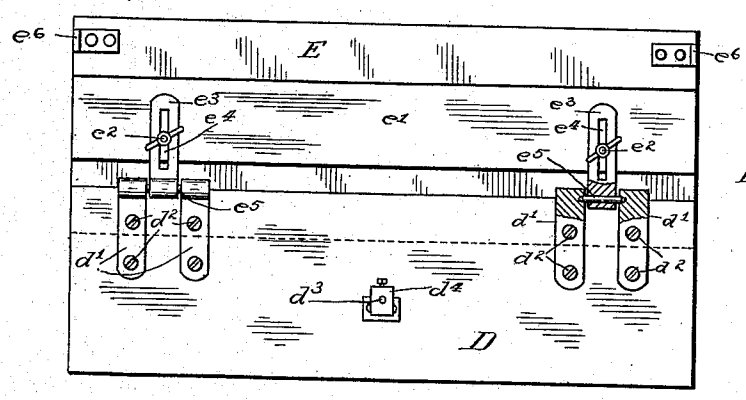


Fig. 2.

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UNITED STATES PATENT OFFICE.

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FEED MECHANISM OF ROLLER-MILLS.

No. 900,790. Specification of Letters Patent. Patented Oct. 13, 1908.

Application filed March 21, 1906. Serial No. 307,160.

To all whom it may concern:

Be it known that I, WILLIAM H. SMITH, citizen of the United States, residing at Aberdeen, in the county of Brown and State of South Dakota, have invented certain new and useful Improvements in Feed Mechanism of Roller-Mills, of which the following is a specification.

This invention relates to improvements in the feed mechanism of roller mills, and the especial object of the improvements which form the subject matter of this application is to provide means whereby the flow of material to the rollers can be controlled with great accuracy by easily adjustable devices.

A further object is to provide a feed-gate that will be effective throughout the entire length of the feed rolls, and a still further object is to provide against the material backing up over the grinding rolls from the suction behind the back hopper boards.

Having the aforegoing and other objects of general utility in view I have invented the mechanism shown in the accompanying drawing in which:—

Figure 1 is a vertical longitudinal section through the feed hopper portion of a roller mill, and the controlling mechanism arranged therein; Fig. 2 is an elevational view showing on an enlarged scale the feed gate which forms an important element of my invention.

Referring to the drawing in detail, A represents the side walls and a^1 the ends and top boards of the casing of the feed-hopper of my improved mill, B the grinding rollers which are suitably mounted in the lower part of the case and a^2 are the back hopper boards.

C, C, are the feed rolls, and same are cut with longitudinal corrugations c^1, the walls of which incline forward in the direction of rotation of said rolls.

The feed-gates are composed of two parts D and E which are hinged together by parts to be described. The gate section E is made of a board arranged vertically, extending the full width of the case, and supported on the side walls of the latter by angle-brackets e^6 which have one arm rigidly bolted to the section E and the other arm provided with a slot e^7 through which extends a bolt a^5 which enters the casing and carries a wing nut which impinges on the arm of the bracket and thus holds the latter in its adjusted position. The gate section D is made of metal and is connected with the section E by hinges each consisting of two members d^1 secured to the section D by bolts d^2, and a member e^3 in which a vertical slot e^4 is formed and which is adjustably secured to a face-board e^1 secured to the front side of the section E. The hinge pintle e^5 passes through the lower part of the member e^3 and has its pointed ends journaled in holes formed in the inner edges of the members d^1. As the two hinges are independently adjustable the relative adjustability of the sections may be accurately controlled thereby.

To the outer face of the section D and midway its ends, I secure an arm d^3 upon which is adjustably arranged a weight d^4, the function of which is to hold the central portion of the section in true alinement with the feed roll and thereby cause the material to feed uniformly along said roll.

On the sides of the casing and in front of the lower portion of the gate section D, I secure a stop-plate a^6, which is longitudinally adjustable through a bolt a^8 which passes through the slot a^7 in said plate, and is equipped with a wing nut. This plate prevents the gate section D from swinging outwardly too far and may be adjusted to suit the material being milled.

To the lower end of the back hopper board a^2, I secure a metal guard-plate a^3 which is bent to conform to the curvature of the feed rolls, the surface of which it hugs closely, and is then bent downwardly and outwardly forming a deflector by which material is directed to the space between the grinding rolls.

To prevent any of the material from being drawn backward over the inner grinding rollers, I set boards a^4 with their lower edges in close proximity to the rollers, and secure their ends in the walls of the casing, the angle at which said boards are placed being such as to throw back upon the grinding rolls any material that might be drawn backward.

From the construction described, it will be seen that I have provided an effective lateral adjustment for the gate sections E, and also vertical adjustment for the sections D, thus providing for all required adjustments of this element of the hopper. The sections D being preferably made of sheet metal have a tendency to buckle midway their ends from the pressure of the material drawn down by the feed rolls, and this tendency is offset by gravity acting on the weighted

arms d^3 which are respectively secured to said sections.

The construction described is duplicated on both sides of the hopper as shown in the drawing.

Having thus described my invention, what I claim as new, is:—

1. In feed mechanism for roller mills, comprising feed roll, a feed gate consisting of two sections connected together, the upper section laterally adjustable and rigid, and a lower section vertically adjustable and freely swinging on the upper section and adjustable means for limiting the movements of the lower section relative to the feed rolls.

2. In feed mechanism for roller mills having grinding rolls, the combination of back hopper boards, feed rollers, deflector boards arranged at the rear of the back hopper boards in planes substantially parallel therewith and above the grinding rolls, feed gates each consisting of two sections connected together, an upper section rigid and laterally adjustable, and a lower section vertically adjustable on said upper section, and swinging thereon, means for limiting the movements of the lower section relative to the feed rolls.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM H. SMITH.

Witnesses:
C. S. ACKER,
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