(No Model.)

N. W. HOLT.

FEED MECHANISM FOR ROLLER MILLS.

No. 293,464. Patented Feb. 12, 1884.

Fig. 1.

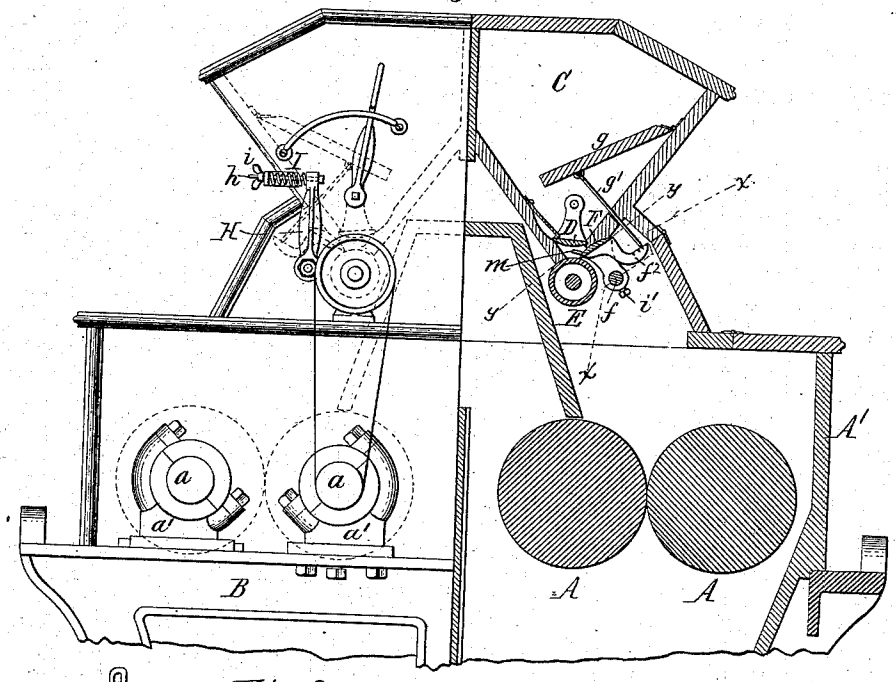


Fig. 2.

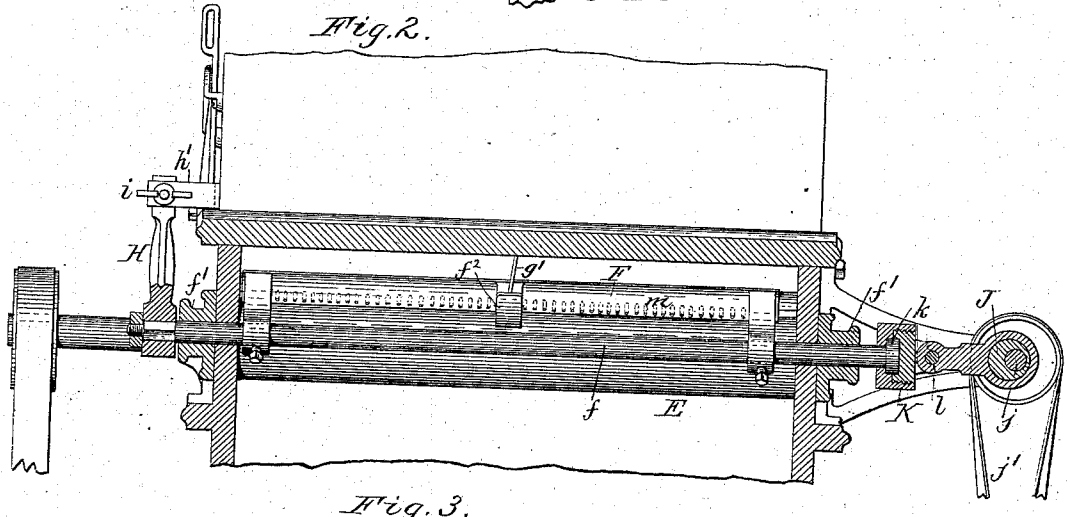
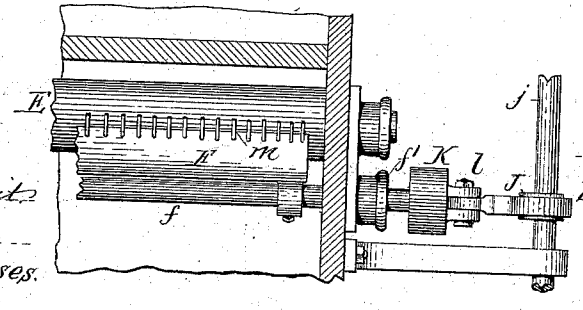


Fig. 3.



Witnesses.
Chas. J. Buchholz
Theo. L. Popp.

Inventor:
Noah W. Holt
By Wilhelm & Bonner.
Attorneys.

N. PETERS. Photo-Lithographer. Washington. D. C.

UNITED STATES PATENT OFFICE.

NOAH W. HOLT, OF BUFFALO, NEW YORK.

FEED MECHANISM FOR ROLLER-MILLS.

SPECIFICATION forming part of Letters Patent No. 293,464, dated February 12, 1884.

Application filed October 23, 1883. (No model.)

To all whom it may concern:

Be it known that I, NOAH W. HOLT, of the city of Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Feed Mechanism for Roller-Mills, of which the following is a specification.

This invention relates to an improvement in the construction of a feed mechanism whereby the material is fed from the feed-hopper to the grinding or crushing rollers; and the object of my invention is to insure a regular and uniform feed to all parts of the working-faces of the rollers, and to prevent the material from clogging in the throat of the feed-hopper, which frequently occurs in machines as now constructed when the material to be reduced is of a fuzzy or adhesive character.

My invention consists, to that end, of the improvements in the construction of the feed mechanism which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional elevation of a roller-mill provided with two pairs of rollers, one half of the mill being shown in elevation and the other half in vertical section. Fig. 2 is a cross-section in line *x x*, Fig. 1, on an enlarged scale. Fig. 3 is a fragmentary horizontal section in line *y y*, Fig. 1, on an enlarged scale.

Like letters of reference refer to like parts in the several figures.

A A represent a pair of crushing or grinding rollers arranged in a casing, A'.

a represents the journals of the rollers, which are supported in bearings *a'*, secured to the stationary frame B of the machine.

C represents the feed-hopper arranged above the rollers A A.

D represents the feed-gate pivoted in the feed-hopper, so as to open and close the throat thereof.

E represents the feed-roller arranged below the discharge-opening of the feed-hopper.

F represents the automatic feed-gate, arranged at the lower end of the feed-hopper, and closes against the feed-roller E, and regulates the amount of material which is delivered by the feed-roller to the rollers A below. The feed-gate F is secured to a horizontal rod or bar, *f*, which turns in bearings *f'*, secured to the side walls of the feed-hopper.

f^2 is an upwardly-extending arm formed centrally on the gate F, and *g* is a board or plated hinged in the feed-hopper, and connected with the arm f^2 by a rod, *g'*, so that a downward movement of the free end of the plate *g* will cause the gate F to swing away from the feed-roller, while the gate F can approach the feed-roller when the plate *g* moves upwardly.

H represents an arm secured to one end of the rod *f*, and *h* represents a screw-bolt attached to the free end of the arm H and passing through a lug, *h'*, which is secured to the side walls of the feed-hopper.

I represents a spring which surrounds the rod *h* between the arm H and lug *h'*, and *i* is a thumb-nut, which is applied to the threaded end of the rod *h* and bears against the lug *h'*. The spring I is compressed when the plate *g* moves downwardly, and therefore resists the downward movement of the plate *g*, and tends to return the plate *g* and the parts connected therewith to their normal position when they have been depressed by an accumulation of material on the plate *g*. The pressure of the material on the plate *g* opens the feed-gate F, and when this pressure becomes less the feed-gate is automatically moved toward the feed-roller by the spring I.

J represents an eccentric secured to a counter-shaft, *j*, which is rotated by an endless belt, *j'*, from one of the roller-journals *a*. The eccentric J is connected with the rod *f* of the gate F in such manner that it will produce a longitudinal reciprocating movement of the gate F, while at the same time permitting it to swing on the rod *f* as a pivot. As shown in the drawings, this is accomplished by a coupling, K, which incloses a head, *k*, formed at one end of the rod *f*, and which is attached to the eccentric J by a pivot-joint, *l*.

m represents pins or studs formed on the face of the gate F and projecting into the throat of the feed-hopper, so as to disintegrate or loosen the material in the same by the reciprocating movement of the feed-gate. The joints whereby the rod *g'* is connected with the plate *g* and the arm f^2 are made so loose as to permit of the reciprocating movement of the feed-gate, which is comparatively small, and the screw-bolt *h* is also fitted loosely in the lug *h'*, to permit of the requisite lateral

movement to enable the screw-bolt to follow the reciprocating movement of the arm H and the feed-gate.

By disconnecting the rod g' from the arm f^2 the feed-gate can be used like an ordinary adjustable feed-gate, and fixed with reference to the feed-roller in any desired position by the thumb-nut i', while retaining the longitudinal reciprocating movement imparted by the eccentric J. The reciprocating movement of the feed-gate, assisted by the pins m, distributes the material evenly over the entire length of the feed-roller, and prevents the material from adhering to the same and forming ridges thereon, and also avoids the choking in the throat of the feed-hopper by the accumulation of material, and in this manner insures an even and uniform feed to the rollers.

I claim as my invention—

1. The combination, with a feed-hopper, of a pivoted feed-gate capable of being adjusted on its pivot to regulate the flow of material, and mechanism whereby a reciprocating movement is imparted to said pivoted feed-gate to loosen the material, substantially as set forth.

2. The combination, with a feed-hopper, of a pivoted feed-gate having projecting pins, and mechanism whereby a longitudinal reciprocating movement is imparted to said feed-gate, substantially as set forth.

3. The combination, with a feed-hopper, of a pivoted feed-gate, mechanism whereby the feed-gate is automatically adjusted to regulate the flow of material from the feed-hopper, and mechanism whereby a longitudinal reciprocating movement is imparted to said feed-gate, substantially as set forth.

4. The combination, with a feed-hopper, of a feed-gate, a rod to which the feed-gate is secured, and which serves as a pivot for the feed-gate, and mechanism whereby a longitudinal reciprocating movement is imparted to said feed-gate, substantially as set forth.

NOAH W. HOLT.

Witnesses:
CARL F. GEYER,
JNO. J. BONNER.