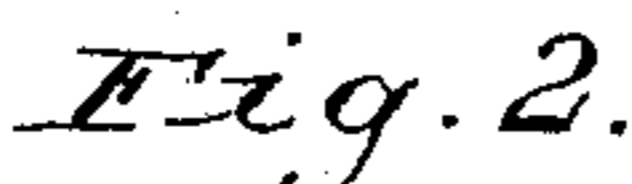


(No Model.)  
W. W. WESTRUP & G. T. LANTAFF.

## ROLLER MILL.

Patented June 12, 1888.



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Geo. T. Lantaff } Inventors.  
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# UNITED STATES PATENT OFFICE.

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## ROLLER-MILL.

SPECIFICATION forming part of Letters Patent No. 334,408, dated June 12, 1888.

Application filed July 12, 1887. Serial No. 241,063. (No model.)

*To all whom it may concern:*

Be it known that we, WALTER W. WESTRUP and GEORGE T. LANTAFF, both of Lockport, in the county of Niagara and State of New York, have invented a new and useful Improvement in Roller-Mills, of which the following is a specification.

The object of this invention is to provide the casing or hopper which receives the reduced material from the grinding or crushing rollers with an automatic relief-valve, which will permit the material to escape from the receiving-hopper in case the discharge-opening of the hopper becomes clogged or choked. This sometimes occurs, for instance, when the conveyer or elevator whereby the material is removed from the hopper becomes inoperative, thereby obstructing the discharge-opening of the hopper and causing the material to rise in the hopper and interfere with the free working of the grinding-rollers.

The object of our invention is to avoid this difficulty; and it consists to that end of the improvements which will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional elevation of a roller-mill provided with our improvement. Fig. 2 is a sectional elevation of the relief-valve and its operating mechanism on an enlarged scale. Fig. 3 is a horizontal section thereof in line *xx*, Fig. 2. Fig. 4 is an end view of the mechanism whereby the relief-valve is actuated.

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

A represents the supporting-frame of the roller-mill; B, the grinding or crushing rollers; C, the inclosing-casing provided above the rollers with a feed-hopper, D, and below the rollers with a receiving hopper, E, having at its lower end a discharge-opening, *e*, which is connected with a conveyer-trough, elevator, or other discharge device in any well-known or suitable manner.

*f* represents an opening formed in one side of the receiving-hopper E below the rollers, and G is the relief-valve which closes said opening. The latter is provided on the outer side of the hopper with a discharge-spout, *g*. The relief-valve G is pivoted with its upper end to the outside of the receiving-hopper E,

and rests with its lower end against the inclined bottom of the spout *g* when in a closed position, as represented in Figs. 1 and 2.

H represents a catch attached to the valve G, near the lower end thereof, and provided with a hook or nose, *h*, at its inner end, which projects into the hopper E through the opening *f*.

I represents a horizontal locking-lever arranged within the receiving-hopper E below the grinding-rollers B, and pivoted at or near its center to the upper end of a standard, *j*, which is secured to a bracket or support, J, in the hopper E. The locking-lever I is provided at its outer end with a hook or nose, *i*, which engages over the hook *h* of the catch H, and whereby the relief-valve G is held in a closed position, as represented in Figs. 1 and 2.

As shown in the drawings, the catch H is pivoted to the valve G and provided at its outer end with a weight, *h'*, which tends to raise the inner end of the catch and hold it in a horizontal position against the upper edge of the opening in the valve G, in which the catch plays. Upon releasing the catch H the valve G can be readily opened, when desired, to inspect the material in the receiving-hopper.

*k* represents a laterally-extending plate secured to the inner arm of the lever I and arranged below the adjacent grinding-faces of the rollers B. The plate *k* is inclined or curved downwardly on opposite sides of the lever I, as represented in Fig. 4, so as to prevent material from lodging on the plate as it comes from the grinding-rollers.

The outer end of the lever I, which carries the hook *i*, is made of such a weight as to slightly overbalance the inner end of the lever to which the plate *k* is secured, thereby causing its hook *i* to remain in engagement with the catch H in the normal operation of the machine. The weight *h*, at the outer end of the catch H, assists in holding the latter in engagement with the locking-lever.

*l l'* represent vertical posts or stops arranged below the lever I on opposite sides of the standard J, and whereby the movement of the lever I is limited. The lower ends of the posts *l l'* are screw-threaded and arranged in threaded openings in the bracket or support J, so

that these stops can be raised or lowered, if desired, for regulating the movement of the lever.

*m* represents a guard-plate secured to the inner side of the relief-valve *G*, and having its lower edge arranged contiguous with the lower edge of the opening *f*, so as to shed the material which falls on this plate and prevent it from lodging against the inner side of the valve.

When the discharge-opening *e* of the receiving-hopper *E* becomes clogged or choked from any cause—for instance, by an accident to the discharge conveyer or elevator—the material accumulates in the hopper. As the level of the accumulating material rises in the hopper, it reaches the lower edges of the plate *k*. The latter now prevents the material from passing directly underneath the plate, as the flow of the material is controlled by the angle of gravity, whereby a completely empty space is left underneath the plate, while the material continues to accumulate on the sides and top of the plate as its level rises above the latter.

When the weight of the material resting on the plate *k* overcomes the weight of the outer end of the lever *I* and the resistance of the material underneath the edges of the plate, it depresses the inner end of the lever, thereby raising the outer end of the lever, disengaging the hook *i* from the hook *h* of the catch *H*, and permitting the relief-valve *G* to swing outwardly away from the opening *f*, as represented in dotted lines in Fig. 2. The material in the hopper is now discharged through the opening *f*, whereby the material is prevented from rising any higher in the hopper and interfering with the free operation of the rollers. After the obstruction has been removed from the discharge-opening of the receiving-hopper, the valve *G* is again closed by moving the same inwardly against the opening *f* and engaging the catch *H* with the locking-lever *I*.

We claim as our invention—

1. The combination, with the rollers and the receiving-hopper arranged below the same and provided with a relief-opening in its side above its discharge-opening, of a valve applied to said opening, a locking-lever arranged in the hopper, whereby the valve is held normally closed, and a releasing-plate arranged below the rollers, whereby the lever is automatically unlocked when the material accumulates in the hopper, substantially as set forth.
2. The combination, with the receiving-hopper provided at its lower end with a discharge-opening, *e*, and at its side with an opening, *f*, of a valve, *G*, applied to said opening and provided with a pivoted catch, *H*, and a locking-lever, *I*, arranged within the receiving-hopper, and provided at one end with a hook adapted to engage with said catch and at its opposite end with a plate, *k*, substantially as set forth.
3. The combination, with the receiving-hopper provided at its lower end with a discharge-opening, *e*, and at its side with an opening, *f*, of a valve, *G*, applied to said opening and provided with a pivoted catch, *H*, and a locking-lever, *I*, arranged within the receiving-hopper and provided at one end with a hook adapted to engage with said catch and at its opposite end with a plate, *k*, and adjustable stops *l*, whereby the movement of the locking-lever is limited, substantially as set forth.

Witness our hand this 27th day of June, 1887.

WALTER W. WESTRUP.  
GEO. T. LANTAFF.

Witnesses:

CARL F. GEYER,  
FRED C. GEYER.