(No Model.)

# D. BRENNAN, Jr.

## FEED REGULATOR FOR ROLLER MILLS.

No. 442,766. Patented Dec. 16. 1890.

Fig. 1.

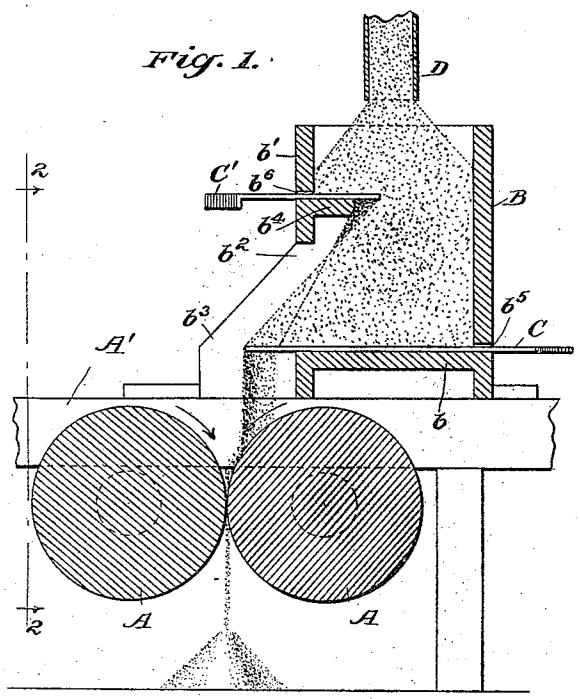



Fig. 2.

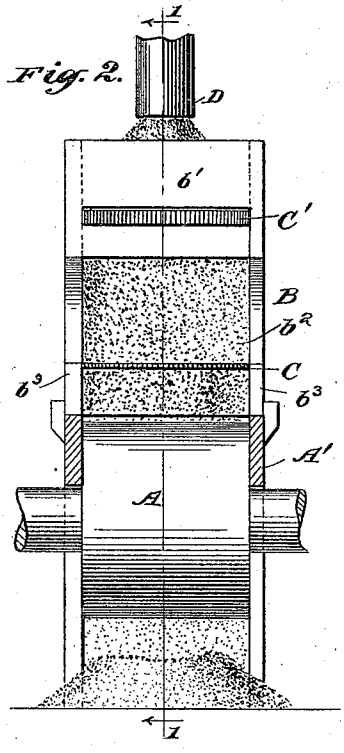



Fig. 3.

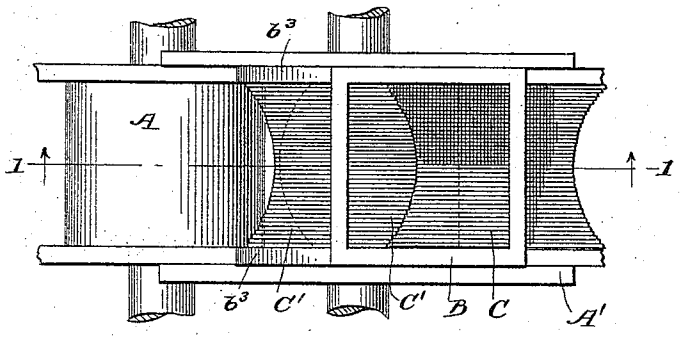



Fig. 4.

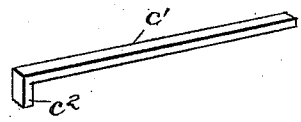
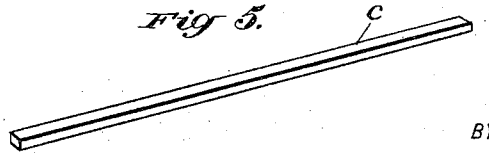



Fig 5.




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# UNITED STATES PATENT OFFICE.

DANIEL BRENNAN, JR., OF BAYONNE, NEW JERSEY.

## FEED-REGULATOR FOR ROLLER-MILLS.

SPECIFICATION forming part of Letters Patent No. 442,766, dated December 16, 1890.

Application filed May 21, 1890. Serial No. 352,629. (No model.)

*To all whom it may concern:*

Be it known that I, DANIEL BRENNAN, JR., of Bayonne, in the county of Hudson and State of New Jersey, have invented a new and Improved Feed-Regulator for Crushing-Rolls, of which the following is a full, clear, and exact description.

In the operation of crushing or reducing ores it is obviously very desirable that the wear on the rolls should be even at all points, and, as is well known, uneven wear is liable to result from uneven feeding, uneven grades or sizes of material fed simultaneously to the rolls, and also from uneven tempering of the metal of the rolls.

My present invention has specially in view the production of a feed-regulator of simple and stable construction, especially designed for use in connection with ore-reducing rolls, though capable of use with materials other than ores, and by means of which regulator the ores, either coarse or fine, may be fully under the control of the operator or attendant, enabling the feed to be varied to supply more or less material at any point along the rolls, or to entirely cut off the supply at any point, whereby any tendency of the rolls to wear unevenly may be checked and counteracted, and the rolls thus maintained straight and in perfect order.

The invention consists in two superposed slides arranged as hereinafter described, and in the sectional slides made up of relatively movable strips or individual slides, as hereinafter particularly described, and defined in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical section of a pair of ore crushing or reducing rolls and the hopper thereof having my invention applied thereto, the view being taken on the line 1 1 in Figs. 2 and 3. Fig. 2 is a front elevation thereof, the frame being shown in section on the line 2 2 in Fig. 1. Fig. 3 is a plan view, and Figs. 4 and 5 are views of the strips or individual slides of which the sectional slides are formed.

The crushing or reducing rolls A may be of any preferred or approved form suitably supported, A′ representing a portion of the framework of the apparatus, which frame and rolls form no part of the present invention. The hopper B, from which the material is received by the rolls, may also in practice vary in form, that shown, however, possessing desirable features. It is cast in one piece with an open or essentially-open top and a closed bottom $b$, the said bottom thus forming a substantial support and brace for the regulator-slide C, to be hereinafter described. At the front side $b'$ the hopper is formed with an opening or mouth $b^2$, through which the material escapes to the rolls, cheeks $b^3$ being formed at each side of said mouth $b^2$ beyond or outside of the side $b'$. On the inside of the hopper on the side $b'$ thereof a distance from its upper edge there is formed a ledge or flange $b^4$, which forms a seat for the superposed regulator-slide C′.

Material is received in the hopper B from a chute or pipe D or other source of supply, and in practice the hopper is maintained practically filled.

The slides C and C′ are oppositely disposed in the hopper, the lower slide C being entered through an elongated slot $b^5$ in the back thereof, and the superposed slide C′ being entered through a similar slot $b^6$ in the front side $b'$ above the ledge $b^4$, the said slide C′ terminating at its inner end a suitable distance from the back of the hopper. The slides are made up of independent sections or members, consisting of individual strips or slides $c$ $c'$, (represented most clearly in Figs. 4 and 5,) the strips $c'$ of the upper slide C′ having, preferably, projections $c^2$. In practice the strips or slides are arranged to present a curved or approximately curved edge for delivering an increased amount of material at the side portions of the rolls.

With a feed-regulator constructed as above described, the material, which is fed by gravity, is regulated to deliver more or less material to any given point or subdivisions of the rolls by projecting or withdrawing the proper strip or member of the slide C, more or less, as occasion may demand.

In practice I effect the shifting or movement of the slides by tapping the same with a hammer or like tool. Any other suitable means may be employed for the purpose.

The strips forming the slide are of such a length and the hopper is so proportioned that when the strips or any of them are projected forward to the fullest extent, the angle of repose of the material being fed will be reached or exceeded, and the feeding be stopped at the point or points controlled by the strip or strips so moved. On the contrary the material will be fed with increased rapidity as the strips are moved in the reverse direction, the greatest rapidity of feed being attained when the strips are withdrawn to the edge of their seat. Thus the lower slide will be fairly effective of itself; but I prefer to employ the upper slide also, and find it very desirable not only in spreading the material in the hopper as the same is received from the chute or supply-pipe, which it does very effectively, regardless of the direction of ingress of the material; but it may be made to affect the feed at any particular point on the rolls. Thus the two slides, constructed as described, furnish a complete feed-regulator and bring the material completely under control, as a proper adjustment may be obtained that will distribute the desired quantity at all points of the rolls and, the strips forming the slides being small, the smallest section or subdivision of the rolls can be separately controlled and the supply thereto increased or diminished as occasion may demand without affecting the supply fed to the remaining portions.

The strips or slides *c c'* may have a square, oblong, or like cross-section, as desired, and when made oblong may be laid flat or on edge, as desired, or as may be dictated by the nature of the material being treated.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a feed-regulator, the combination, with a hopper or like receptacle, of two oppositely-disposed superposed slides having their inner edges approximating a curve, substantially as described.

2. In a feed-regulator, the combination, with the hopper, of a horizontal slide arranged at the mouth thereof and formed of individual slides arranged side by side, and an oppositely-disposed horizontally-arranged spreader-slide projecting into the hopper above the said mouth, substantially as described.

3. The combination, with a hopper having its mouth or discharge in one of the side walls thereof and having cheeks at the sides of the mouth beyond or outside of said side wall, of a horizontal slide movable beyond said wall and between said cheeks, substantially as described.

4. The combination, with a hopper having its mouth or discharge in one of the side walls thereof, of a horizontal slide movable across or beyond the lower wall or edge of the said mouth, substantially as described.

5. The combination, with a hopper having its mouth or discharge in one of the side walls thereof, of a horizontal slide movable across or beyond the lower wall or edge of the said mouth, and consisting of a series of individual slides movable longitudinally independently of each other, substantially as described.

6. The combination, with a hopper having its mouth or discharge at the bottom at one side, of a horizontal slide arranged at said mouth and movable toward and from the same and beyond the bottom of the hopper and forming in the projected position an extension of said bottom, substantially as described.

7. The combination, with a hopper having its mouth or discharge at the bottom at one side, of a horizontally-arranged slide at said mouth, the said slide consisting of a series of individual members arranged side by side and movable independently of each other beyond the bottom of the hopper, substantially as described.

8. The combination, with a hopper having a bottom for forming a support for the material and having its mouth or discharge at one side thereof, of a horizontal shelf-like spreader projecting into the hopper above said mouth, and a horizontal slide oppositely disposed with respect to the spreader, the said slide being arranged at the mouth of the hopper and movable toward said mouth to form an extension of the bottom, substantially as described.

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