(No Model.)

J. W. WILSON.

FEED REGULATOR FOR ROLLER MILLS.

No. 408,156. Patented July 30, 1889.

Fig. 1.

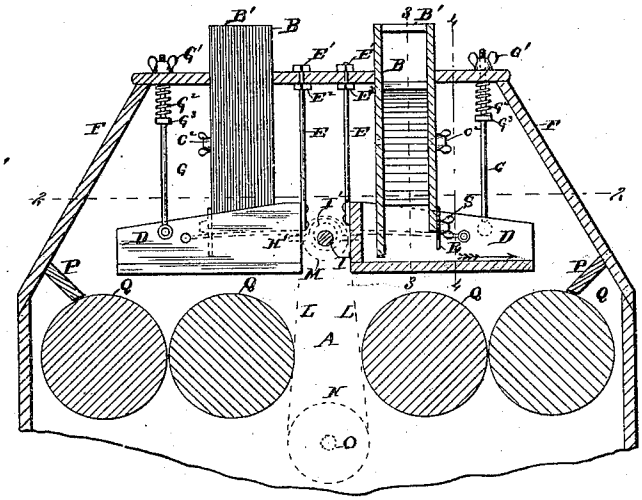


Fig. 2.

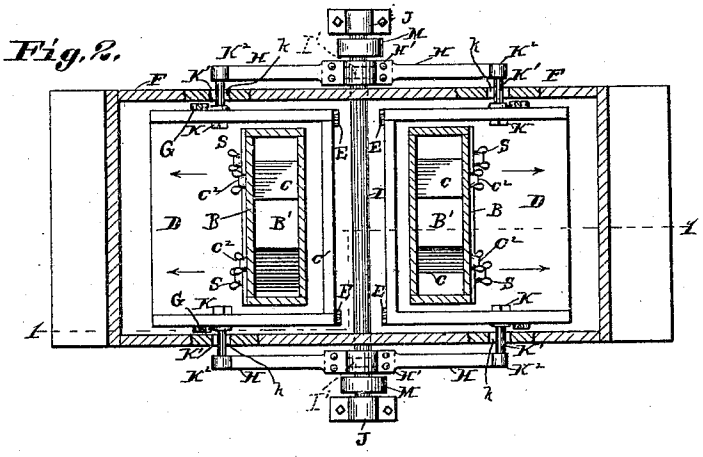


Fig. 3.

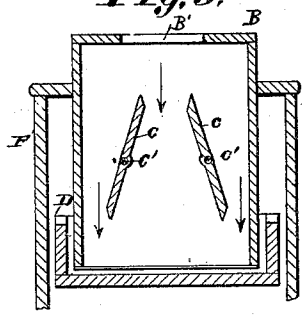
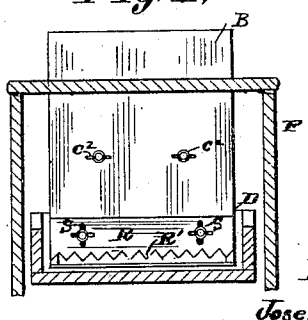


Fig. 4.



Attest;

C. Pickles.

G. W. Hinchman Jr.

Inventor;

Joseph W. Wilson.

By Knight Bros.

Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH W. WILSON, OF BROOKVILLE, KANSAS.

FEED-REGULATOR FOR ROLLER-MILLS.

SPECIFICATION forming part of Letters Patent No. 408,156, dated July 30, 1889.

Application filed October 22, 1886. Serial No. 216,961. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH W. WILSON, of Brookville, in the county of Saline and State of Kansas, have invented certain new and useful Improvements in Feed-Regulators for Roller-Mills, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a vertical section (on the line 1 1, Fig. 2) of a four-roller mill with my invention applied thereto, the feed-regulator for one pair of rolls being shown in vertical section and the other in side elevation. Fig. 2 is a horizontal section on the line 2 2, Fig. 1, of a roller-mill with my invention applied. Figs. 3 and 4 are vertical sections of the feed-regulator, on the lines 3 3 and 4 4, Fig. 1, respectively.

This invention relates to devices for regulating the supply of material to the crushing-rolls of mills; and it consists in certain features of novelty, hereinafter particularly pointed out in the claims, being first fully described with reference to the accompanying drawings, in which similar letters represent like parts in the several figures.

A represents the frame of the roller-mill, and B the supply boxes or spouts (that may be secured to the frame by any suitable means) for the reception of the material which enters at the opening B′ at the top, and as it descends is spread by adjustable deflectors C. The said deflectors have pivots C′, supported by the front and rear walls of the supply-spout, on which they turn, and may be adjusted and set to any required inclination by thumb-screws C^2. The pivots C′ are situated at a point between the upper and lower edges of the valves and at such distances from the side walls of the box and from each other that when turned to such positions that their upper (or lower) edges will have contact with each other their lower (or upper) edges will have contact with the side walls of the spout B. In the drawings the pivots are shown situated equidistant from the upper and lower edges of the deflectors and at equal distances from the end walls of the spout, the distance between the pivots themselves being exactly double the distance between one of them and the side wall nearest thereto. It is manifest, however, that the relative distances between these parts may be varied without departing from the principle involved.

D D represent the vibrating shoes, one of which is preferably provided for each pair of rolls, each being suspended in such a manner as to be adjustable vertically and capable of free vibration. In the drawings each is shown suspended by four spring rods or hangers—one at each corner of the shoe—the rods E at back being vertically adjustable by means of nuts E′, resting upon the top side of the top of the casing, other nuts E^2 being provided for bearing against the under side of the top of the casing to prevent the rods or hangers from being moved vertically by the vibration of the shoe.

The rods or hangers for supporting the front edges of the shoes are shown at G, thumb-nuts G′ being provided for adjusting them vertically. Within the casing of the mill these rods G are provided with collars or nuts G^3, between which and the under side of the top of the casing are interposed coiled springs G^2, which allow a slight vertical movement of said rods as the shoe vibrates, but cause them to quickly return to their normal positions.

The lower end of each of the boxes B terminates in close proximity to the floor or the bottom board of the shoe which it supplies, the proximity of the rear side of each of said boxes with the floor of the shoe being closer than that of the front side, to which latter is secured an adjustable valve R, which is held to place by thumb-nuts S, fitted upon screws which extend through vertical slots in the valves. The means employed for adjusting these valves is immaterial so far as my present invention is concerned. The lower edges of the valves are provided with teeth R′, for breaking up lumps or cakes of grain or other material.

I am aware that it has been proposed to secure an adjustable valve to the lower edge of the front wall of a box or spout, which terminates in close proximity to the floor of a vibrating shoe; but I am not aware that a spout having such adjustable valve has ever been employed in combination with a shoe

which is itself vertically adjustable. The shoe shown in my patent, No. 314,552, is not vertically adjustable.

It is evident that the rapidity with which the material is fed to the rolls will depend to a certain extent upon the positions of these valves; but this is not the function which they are especially designed to fulfill. They are intended more particularly as eveners or distributers for breaking up lumps, which result from dampness and distributing the material evenly and uniformly over the bottom of the shoe. For this purpose they should be within a certain distance from the floors of the shoes, whatever may be the inclination of the said floors. For causing a faster feed the hangers are adjusted so as to increase the slope of the floors of the shoes, the valves R being lowered to a corresponding extent. The evenness of the feed also depends to quite a considerable extent upon the extent of the surface of the floor of the shoe over which it travels after it passes the serrated or comb-toothed valve. In my patent, No. 314,552, the front side of the spout to which the serrated valve is secured is very close to the edge of the shoe. I now prefer to construct the spout of much less width, so that a considerable portion of the floor of the shoe will extend beyond it, the slight unevenness in the grain or other material resting upon the floor, caused by the teeth of the valve, being entirely shaken down as the grain slowly travels toward the outer edge of the shoe. In order to further increase this surface the shoe is made to extend as far over the rolls as possible.

In the drawings the shoes are shown of such width that the grain falling therefrom will fall upon the tops of the outside rolls, and to prevent its passing said rolls on the outside I secure to the inside of the casing deflectors P, which catch the grain and return it to such point that it will be carried by the moving surface of the outer roll into the spaces between them.

I represents a shaft which extends through the machine from end to end parallel with the rolls, and I′ I′ eccentrics secured thereto near its respective ends. Each of these eccentrics is embraced by a yoke or strap H′, situated about midway between the extremities of a flexible rod H, whose extremities are connected with the respective shoes D by means of studs, pins, or bolts K′, working through slots K in the casing. These rods H consist of strips of spring-steel, and, as shown in the drawings, each is formed at its mid-length with a semicircular depression or bend, which forms one half of the yoke for embracing the eccentric, the other half of said yoke being formed separately and attached thereto by screws, bolts, or other suitable means. It is necessary that these rods should be flexible, otherwise (being fixed at both ends) the eccentric could not rotate nor could the shoes be adjusted vertically. In order to permit the former operation, the yoke must be moved vertically, and in order to permit the latter operation the extremities of said rods must move vertically. The studs or pins K′ are fixed to the shoes and fit loosely at their outer extremities in eyes formed at the extremities of the rods H.

The shaft I turns in bearings J, supported by bracket-arms, (not shown,) and may be rotated by belts, whose position is indicated by dotted lines at L, and which work on pulleys M, and on adjustable pulleys or tighteners, whose position is indicated by dotted circle at N, and upon a shaft, whose position is indicated by dotted circle at O.

I have described my invention in connection with a double roller-mill; but I do not confine myself to its use on such mill alone, at it is evident that it can be advantageously used in connection with single mills without changing the essential features of my invention.

I do not herein claim the subject-matter covered by my application for Letters Patent Serial No. 267,390, filed March 16, 1888.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The combination, with a pair of vibratory shoes D D, of a shaft I, and eccentric I′, near each extremity of said shaft, and a pair of flexible rods, each having at an intermediate point a yoke embracing one of said eccentrics and each rod connected at its ends to the respective shoes.

2. A feeding device for roller-mills, consisting of the supply-box B, having feed-opening B′, the deflectors C, having pivots C′, by which they are journaled within the supply-box, the thumb-nuts C^2, by which the deflectors are adjusted to the desired inclination, the valve R, having serrations or teeth R′ and mounted on the front side of the supply-box and forming the lower edge of the side, thumb-nuts S, by which the valve is adjusted in keeping with the position of the deflectors, the shoe D, the spring-rod E, and nuts E′, supporting one end of the shoe, and the rods G, having collars G^3, the springs G^2, and thumb-nuts G′, supporting the other end of the shoe, substantially as described.

JOSEPH W. WILSON.

In presence of—
WALTER B. WILSON,
F. CABLE.