(No Model.)

C. J. PILLIOD.

AUTOMATICALLY ADJUSTABLE FEED DEVICE.

No. 383,145. Patented May 22, 1888.

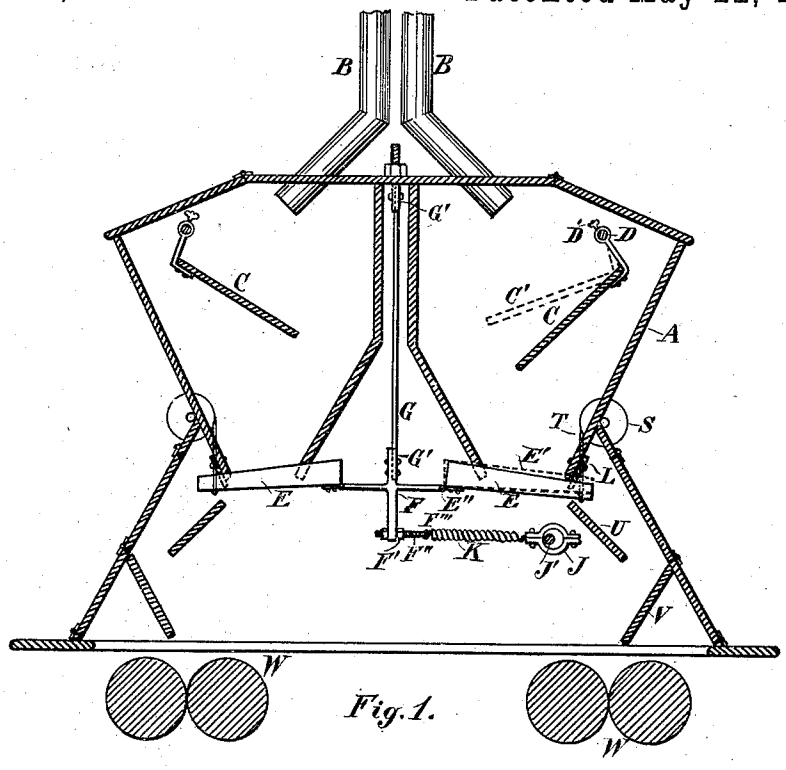


Fig. 1.

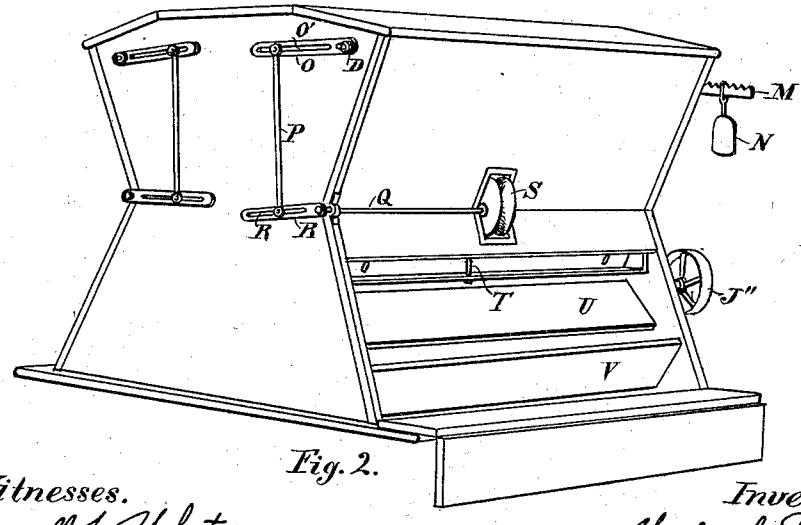


Fig. 2.

Witnesses.
Carroll J. Webster,
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Charles J. Pilliod.
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Atty

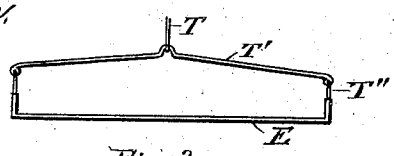


Fig. 3.

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

UNITED STATES PATENT OFFICE.

CHARLES JOSEPH PILLIOD, OF SWANTON, OHIO, ASSIGNOR OF ONE-HALF TO HOLLIS S. BASSETT, OF SAME PLACE.

AUTOMATICALLY-ADJUSTABLE FEED DEVICE.

SPECIFICATION forming part of Letters Patent No. 383,145, dated May 22, 1888.

Application filed August 29, 1887. Serial No. 248,175. (No model.)

To all whom it may concern:

Be it known that I, CHARLES JOSEPH PILLIOD, a citizen of the United States, residing at Swanton, in the county of Fulton and State of Ohio, have invented certain new and useful Improvements in an Automatically-Adjustable Feeding Device for Roller-Mills; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to an automatically-adjustable feeding device for roller-mills, and has for its object to provide means whereby the tendency of the material to clog in the hopper shall be obviated by an automatically-varying feed-throat that shall at all times adjust itself to the requirements of the feed. In the ordinary construction of hopper, in which a vibrating feed is employed, there has been a tendency of the grain to clog and be fed to the rollers in a mass. To obviate this it has required the constant attention of the operator and a manual adjustment of the feed-throat to regulate the proper amount of material being ground in passing to the rollers.

In the use of the automatically-adjustable feed herein shown and described this tendency is entirely overcome and the delivery of the grain to the rollers rendered more uniform.

With this end in view my invention consists in certain features of construction and combination of parts, as will be hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 represents a vertical section of a portion of the roller-mill embodying my invention, showing in dotted lines the position of the feed-regulating mechanism when the throat has a medium opening, and in full lines the position of parts when the throat has a greater opening. Fig. 2 is a perspective view of the hopper, showing the exterior parts of the adjusting device, a portion of the interior of the hopper being exposed to show the attachment of the suspending-cord with the vibrating feed-shoe. Fig. 3 shows a modified form of attachment for suspending the feed-shoe.

Like letters indicate like parts throughout the views.

A represents the hopper, which is divided into two similar compartments by which the grain is fed to two sets of rollers, W. B are the feed-spouts through which the material is fed to the hoppers.

Since the operation of the automatic feed is the same in both hoppers, I will confine my description to one.

In the upper portion of the hopper is journaled a shaft, D, having attached upon one of its outer ends an outwardly-projecting arm, M, from which is suspended a counterbalance-weight, N. The arm M is provided with a series of notches into which the hanger of the weight fits to be held to any desired adjustment. Upon the opposite end of the shaft and outside of the casing is attached an inwardly-projecting arm, O, having an elongated slot, O′, extending nearly its entire length.

Q is a rock-shaft journaled in bearings on the hopper about midway its height and extending to the center thereof. Upon the outer end of shaft Q is attached an inwardly-extending arm, R, having an elongated slot, R′, of a length corresponding to slot O′ in arm O. The arms O and R are connected by the rod P, attached to the same by means of bolts, which are passed through eyes formed upon each end of rod P, and passing through slots O′ and R′, respectively, are held in adjustment by nuts screwed against the inner side of each arm. Upon the inner end of shaft Q is attached a grooved pulley, S, to which is attached a flexible hanger, T, attached at its lower end to the vibrating feed-shoe E. Upon shaft D is attached by means of metal hangers a rearwardly and downwardly extending regulating-board, C. This board can be adjusted to any desired inclination by means of set-screws D′, which hold the hangers to the adjustment upon shaft D.

E is a vibrating feed-shoe adapted to receive the grain or mill-stuff from regulating-board C and feed the same to the rollers. This shoe, and preferably a similar one upon the opposite side, is suspended from an angle-iron, F,

which is attached to a flexible hanger, G, having an upper threaded portion, G′, which passes through the hopper and is adjustably held in place by a nut upon the top of the hopper. The lower arm of the angle-iron F has attached thereto a coil-spring, K, by means of stud F″, which passes through a perforation in the hanger, and is adjustably held in place by nuts F′. The stud F″ has a perforation, F‴, at its end, through which spring K is fastened; or it may be secured in any other preferred manner. By this construction, when it is desired to increase or diminish the tension, it can be done by moving the nuts F″ the proper direction. The opposite end of spring K is attached to a collar, J, that embraces an eccentric upon a shaft, J′, extending the entire width of the hopper and receiving motion by power conveyed through pulley J″.

The horizontal arms of angle-iron F are attached to the shoes E by hinges E″. U and V represent deflecting-boards adapted to receive the material from vibrating shoes E and convey the same to rollers W. L is an iron plate attached to a portion of the hopper by bolts passing through elongated slots, (not shown,) by which means the plate can be adjusted to any desired height. This plate is of a length to fit within shoe E, and with the feed-shoe forms the feed-throat.

In operation, power being applied to the mill and shaft J, shoe E is vibrated by means of spring K, actuated by eccentric J′. The material to be ground is admitted to the hopper through spout B, falls upon board C, which is adjusted by means of weight N upon arm M to receive and deliver the desired quantity to the rollers. Should there be an uneven feed, however, through the spout B, and a greater amount of material than could pass through the feed-opening formed between shoe E and plate L delivered thereby, tending to clog the feed at this point, board C will be depressed by the weight of grain fed thereon, causing weight N to rise, and a corresponding depression of arm O, which movement is communicated to arm R by means of rod P. Pulley S is rotated, unwinding the flexible hanger T and allowing shoe to fall, (see dotted and full lines, Fig. 1,) thereby enlarging the feed-throat and permitting the material to pass to the rollers. By means of weight N the board C and feed-spout E can be so delicately adjusted that the slightest tendency to an increase of material actuates the parts and regulates the feed-throat before an accumulation can form.

By means of the elongated slots in arms O and R the rise and fall of the feed-spout can be regulated by moving rod P toward or from shaft D, provision also being made for varying the inclination of the shoes by means of the thread and nut upon portion G′ of hanger G.

In Fig. 3 I have shown a modified form of suspending-shoe E, the object of which is to dispense with the central hanger, T, should it have a tendency to impede the progress of the material to the rollers. It consists of a bail, T′, to which hanger T is fastened at its center. The bail extending the width of the shoe is attached at each side, preferably by ropes or strings T″. This arrangement leaves an unobstructed feed-delivery. The hanger G is preferably formed of spring-steel or other elastic metal adapted to assist in reciprocating or vibrating the shoes.

It will be seen that my attachment is inexpensive, readily adjusted to meet the various necessities of this class of mill, and not only precludes the possibility of clogging but insures a more even feed.

While I have shown and described my invention as particularly adapted to a roller-mill, it is equally well adapted to any hopper where a vibrating feed is necessary.

What I claim, and desire to secure by Letters Patent, is—

1. In a grinding-mill, a hopper, in combination with a vibrating feed-shoe hinged beneath the hopper, a rock-shaft connected with the free edge of the vibrating feed-shoe, a second shaft connected with the former by arms and a connecting-rod, a board rigidly connected with the latter shaft and adapted to actuate the same when material to be ground accumulates within the hopper, and a counter-balance adapted to automatically return the parts to their normal positions, substantially as set forth.

2. In a mill, a hopper, in combination with a vibrating feed shoe, a rock-shaft connected with the feed-shoe, and a shaft carrying the regulating-board, a counter-weight connected therewith, slotted arms adjustably secured to the shafts, and a connecting-rod adjustably secured to the slotted arms, substantially as set forth.

3. In a mill, the combination, with a hopper, the vibrating feed-shoe, the rock shaft actuated by a board within the hopper, of a pulley secured on the rock-shaft, and a cord connecting the face of the wheel or disk with the free edge of the feed-shoe, substantially as set forth.

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

CHARLES JOSEPH PILLIOD.

Witnesses:
WILLIAM WEBSTER,
JAS. E. RAYMER.