

(No Model.)

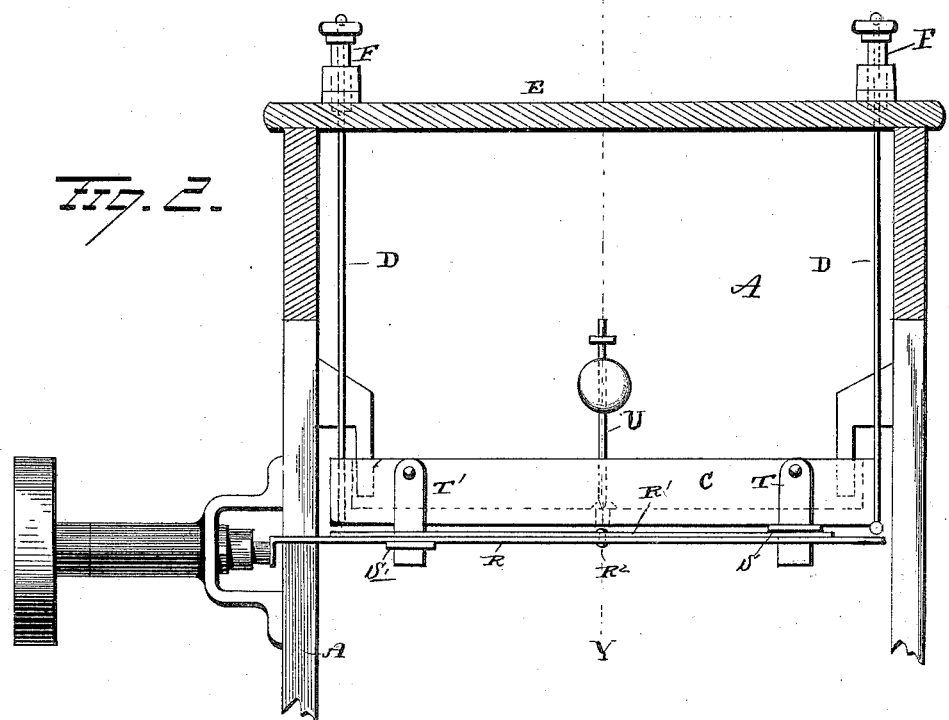
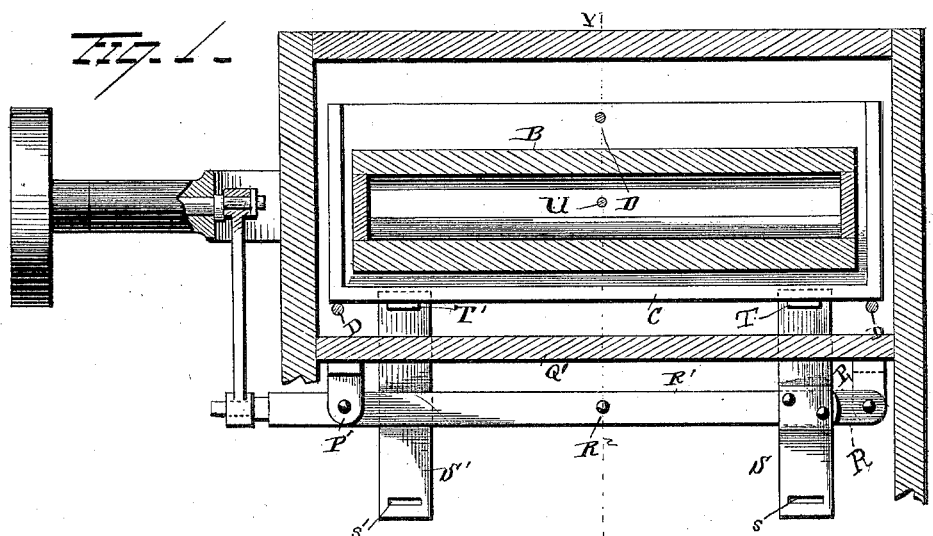
2 Sheets—Sheet 1.

W. R. FOX.

FEED REGULATOR FOR MILLS.

No. 301,107.

Patented July 1, 1884.



WITNESSES

Wm. Nottingham
William H. Ruff

INVENTOR

Wm R. Fox
B. H. Simpson
Attorney

UNITED STATES PATENT OFFICE.

WILLIAM R. FOX, OF GRAND RAPIDS, MICHIGAN.

FEED-REGULATOR FOR MILLS.

SPECIFICATION forming part of Letters Patent No. 301,107, dated July 1, 1884.

Application filed March 4, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. FOX, of Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Feed-Regulators for Mills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in feed-regulators for grinding-mills, the object being to so suspend the tray that it may be easily adjusted to any incline, and thereby regulate the feed of the grain to the rollers. Another object is to provide new and improved means for communicating to the tray a horizontal reciprocating motion, and, further, to provide a device of this character which shall be simple and economical in construction and at the same time durable and efficient in use; and with these ends in view my invention consists in certain novel features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a horizontal sectional view of my improved feed-regulator, taken on line Z Z of Fig. 3. Fig. 2 is a vertical sectional view taken on the line X X of Fig. 3, a portion of the hopper and partition Q' being removed. Fig. 3 is a vertical cross-section, and Fig. 4 is a detached view showing my improved devices through which motion is transmitted to the tray.

A represents the sides of the regulator, to which are secured the sides of the hopper B, through the lower portion of which the grain is fed onto the tray or spout C. The said tray is supported by three or more rods, D, or their equivalent, situated as shown, the upper ends of two of which pass through the top E, secured to the sides A, the upper ends of said rods being provided with nuts or thumb-screws F, adapted to bear on the top, and by means of which the rear end of the tray may be vertically adjusted. The rod or wire D, supporting the front end of the spout, is passed over a roller or pulley, G, secured to a spindle, h, mounted in frame-brackets secured to the inclined face H of the regulator, the said rod or wire passing through the face and lug I, and having the enlarged end K,

provided with a screw-thread, L. A nut, x, fits on the enlarged end K and against the lug I, which nut, when turned, is adapted to raise or lower the front end of the tray. The lug I is also provided with a perforation in which fits a pin, M, against the lower end of which fits the inner shoulder, m, of the enlarged end of the said rod or wire D, and holds the front end of the tray in an elevated adjustment and checks the feed of the grain. The nut x is only used to secure the desired adjustment of the tray. When it is desired to entirely shut off the feed, it is only necessary to draw up the wire at the front of the tray until the enlarged end of K passes the pin m, when the latter will drop back of the end K, and thus hold the tray closely against the bottom of the hopper. When it is desired to start the feed again, it is only necessary to withdraw the pin m, and the tray will return to its former position or adjustment without any manipulation of the nut x. Below the tray, and to the sides of the regulator, are secured the inclines N, upon which falls the grain from the tray, said inclines being situated one below the other, and at angles with each other. Immediately below the said inclines are situated the rollers O, between which the grain falls after leaving the lowest incline.

P P' represent two supports or bearings secured to one of the vertical partitions, Q Q', separating two adjacent regulators, to which bearing P is loosely secured the end of a rod, R, the other end of which is left free and projects through the side A. To the bearing P' is secured the end of the rod R', which is also pivotally secured to the rod R at the point R², the other end of said rod R' being secured to a plate, S, provided near both ends with openings s, through which pass the springs T, the upper ends of which are secured to the tray C. To the rod R at a point equally distant from the pivot R² is secured the plate S', which is also provided at both ends with openings s', through which pass the lower ends of the springs T, similar to the springs T, and which are also secured to the rear ends of the tray. These springs serve as connections, and also as hinges, when the front ends of the tray or trays are raised or lowered. By means of these openings in the plates S S' the tray can be verti-

cally adjusted without affecting the connection between the springs T and plates S S'.

By thus pivoting the two rods together at a certain point, R², and connecting them to the tray at points equally distant from said point R², the ends of the tray, when motion is imparted thereto through the rod R, will have the same velocity and move with a corresponding motion. To the tray is secured the weighted vertical rod U, adapted to hold the tray steady when not filled with stock. This rod can be rigidly secured at its lower end to the tray, or it can loosely rest on a bearing secured in the upper surface of the tray, and be guided in its movement by a horizontal rod passing from side to side of the hopper. The horizontal motion imparted to the tray throws the grain off the latter in nearly a regular stream, the feed of the grain to the rollers being made regular by falling upon and passing over the inclines, and is regulated by raising or lowering the front end of the tray.

The improvement herein shown and described is primarily designed to be used in connection with a double-roller mill; but it may be used for feeding a single pair of rolls.

My invention is exceedingly simple in construction, is efficient in use, and can be manufactured at a small initial cost.

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

1. The combination, with a hopper, of a tray situated below the hopper, rods or wires connected to the front and rear ends of the

tray, the outer end of the wire connected to the front end of the tray being enlarged, and a gravity-pin for holding the front end of the tray elevated.

2. The combination, with a hopper, of a tray situated below the hopper, depending rods or wires for supporting the rear end of the tray, a rod or wire supporting the front end of the tray, and provided with an enlarged screw-threaded end, a nut for adjusting this wire and the front end of the tray, and a gravity-pin, operating in conjunction with said enlarged end, for holding the front end of the tray elevated.

3. The combination, with a hopper, of a tray situated below the same, rods secured to each other and to the tray, and bearings for said rods, all of the above parts combined and operating substantially as set forth.

4. The combination, with a hopper, of a movable tray situated below the same, and a vertical rod resting upon the tray and provided with a weight, substantially as set forth.

5. The combination, with the hopper B, of the tray C, the supporting-wires provided on their ends with nuts, and the rods R R', secured to the tray and regulator in the manner and for the purpose described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WILLIAM R. FOX.

Witnesses:

AMOS D. GREENE,
J. B. FULLER.