(No Model.)

J. A. McANULTY.

FEED REGULATOR.

No. 409,329. Patented Aug. 20, 1889.

Fig. 1.

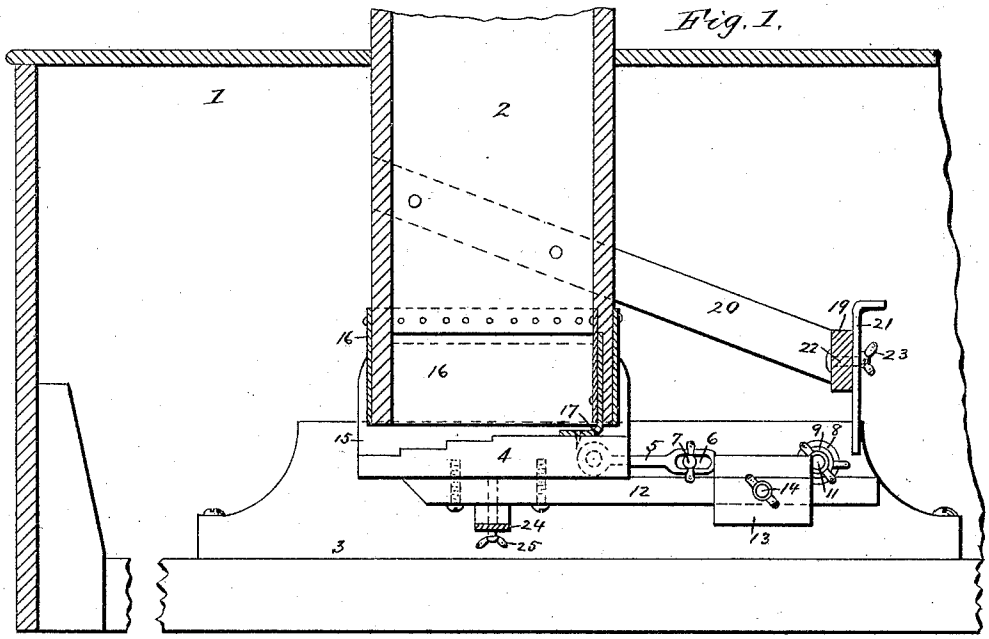
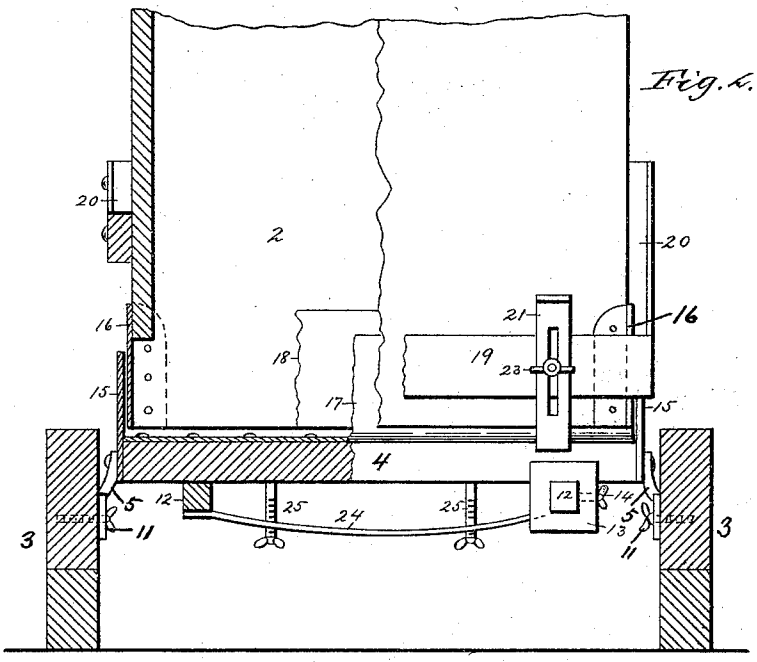
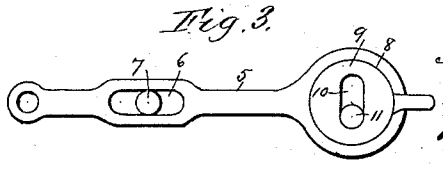


Fig. 2.



Witnesses:
T. R. Stuart
Parker H. Sweet Jr.

Fig. 3.



Inventor:
John A. McAnulty,
By
Marble & Mason,
Atty's.

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

UNITED STATES PATENT OFFICE.

JOHN A. McANULTY, OF MINNEAPOLIS, MINNESOTA.

FEED-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 409,329, dated August 20, 1889.

Application filed September 27, 1888. Serial No. 286,584. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. McANULTY, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Feed-Regulators; 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 feed-regulators for mill machinery; and it consists in the improved construction and arrangement or combination of parts, hereinafter fully disclosed in the description, drawings, and claims.

The objects of my invention are, first, to provide a hopper for mill-stock-treating machines with a pivoted and counterbalanced feed-shelf, which is supported beneath the lower open end of said hopper and provided with a brace-bar and adjusting devices for bringing the upper surface thereof into proper alignment and preventing the same from sagging along its central portion from the weight of the material passing thereover; second, to provide a hopper of a mill-stock-treating machine with a yielding adjustably-pivoted counterbalanced and shaking feed-shelf, which is arranged below the open lower end or bottom of said hopper and provided with a brace-bar having adjusting devices for supporting the middle or central portion thereof and preventing it from sagging under the weight of stock fed upon the same, and, third, to combine with these parts suitable mechanism for counterbalancing said feed-shelf and adjusting the same up and down and back and forth horizontally. These objects are accomplished by the mechanism illustrated in the accompanying drawings, forming part of this specification, in which the same reference-numerals indicate the same parts, and in which—

Figure 1 represents a vertical section of a portion of the casing of a middlings-purifier and its hopper which I have adopted as showing an instance of the capability of use of my invention, the feed-shelf and shaker-frame being shown in side elevation; Fig. 2, a front view of the hopper and feed-shelf, some of the parts thereof being broken away and others shown in section, the sides of the shaker-frame being also shown in cross-section; and Fig. 3 a detail side elevation of one of the adjustable arms and its adjuncts for supporting and adjusting the feed-shelf.

In the drawings, the numeral 1 indicates the casing of a middlings-purifier or other mill-stock-treating machine; 2, the hopper, and 3 the shaker-frame, which is suitably supported within said purifier-casing. A feed-shelf 4, made of wood or other suitable material, is pivoted below the lower open end of the hopper and between the inner ends of two arms 5, which are formed with longitudinal slots 6 at or near their middles, through which screws 7 pass into the sides of said shaker-frame. The outer ends of these arms 5 are formed with circular holes 8, within which fit correspondingly-shaped caps or disks 9, having diametrical slots 10, through which pass screws 11. By turning these slotted caps or disks 9 within the holes 8, and thus changing their positions relative to the screws 11, the slotted arms 5 can be moved upon the screws 7, raised or lowered, adjusted forward or backward, or given a combination of these movements, and thus, as said arms are secured to the feed-shelf 4, they can be adjusted to raise or lower said shelf toward or from the open lower end of the hopper, and also to project the front and rear edges of said shelf more or less forward of or to the rear of the front and rear walls of said hopper.

Two arms 12 are secured along their inner portions to the under side of the feed-shelf 4 at the sides of the same, and are provided with weights 13, which are adjustably secured upon their outer portions by set-screws 14. These weights serve to counterbalance the weight of stock which passes into the hopper and rests upon said feed-shelf, and also to regulate the quantity of stock which will pass out between the rear wall of said hopper and the rear edge of said shelf.

The sides of the feed-shelf are provided with metallic plates or flanges 15, which project outside of the end walls of the hopper, the lower portions of said walls being cut away and covered by plates or flanges 16, which are secured upon the outer sides of said end walls, and together with said plates or flanges 15 admit of the stock from the hop-

per being spread out for the entire length of said feed-shelf.

A strip of leather, rubber, or other suitable flexible material 17 is secured to the inner side of the lower portion of the front wall of the hopper, which is recessed or cut away by another flexible strip 18; also, said strip 17 is secured to the upper side of the feed-shelf near its front edge, and thus not only serves to prevent the stock from escaping between said shelf and the front wall of the hopper, but admits of said shelf being independently adjusted and also reciprocated with the shaker-frame below the lower end of the hopper.

A cross-bar 19 is supported in front of the hopper by arms 20, and is provided with longitudinally-slotted stop-plates 21, which are adjustably secured thereto by the screws 22 and thumb-nuts 23. These stop-plates serve to limit the upward play of the weighted arms 12, and consequently the downward play of the rear or discharge edge of the feed-shelf, thus limiting the flow of stock between said shelf and the rear wall of the hopper.

All of the hereinbefore-described parts are the same or substantially the same as the corresponding parts disclosed in my application for Letters Patent for improvements in feeding and distributing mechanism for flour-mills filed November 24, 1884, Serial No. 148,742, and therefore need no further detailed explanation herein.

A flat brace-bar 24 is secured to the inner ends of the weighted arms 12 beneath the feed-shelf and about on a line with the center thereof. A suitable number of set-screws 25 are passed upward through said brace-bar and bear with their ends against the under side of said shelf, supporting and adjusting the same and preventing it from sagging under the weight of the stock thereon. The screws are to be forced upward when the shelf becomes sagged or warped along its center, so as to bring the upper surface thereof into proper alignment for feeding a uniformly-even sheet of stock over its discharge edge; also, in case of too great bulge or elevation of said feed-shelf along its upper surface, it is only necessary to turn the screws downward or away from its lower surface. It will be obvious that by means of these last-described adjusting devices, when used in connection with the weighted arms 12 and the arms 5, formed with the circular holes 8 and provided with the slotted caps or disks 9, the feed-shelf 4 can be so adjusted that its upper surface will be true from side to side, and that it can be adjusted universally, or up and down, and also back and forth horizontally beneath the lower end of the hopper, whereby the delivery of the stock is effected in a wide thin sheet of uniform thickness.

While I have illustrated and described my improved feed-regulator as applied to a middlings-purifier, I do not limit myself in this particular, as it is obvious that the same can be applied to and used for feeding-roller, cylinder and concave, and compound-movement mills, as well as other forms of mill-stock-treating machines.

Having thus fully described the construction and arrangement or combination of the several parts of my improved feed-regulator, its advantages and operation, what I claim as new is—

1. In a feed-regulator for mill machinery, the combination, with a hopper, a shaker-frame, a feed-shelf pivoted in said frame, and two counterbalanced arms secured to the under side of said shelf near the sides of the same, of a brace-bar secured at its ends to the inner ends of said arms and provided with screws which project upwardly therefrom and bear against the under side of said shelf, substantially as described.

2. In a feed-regulator for mill machinery, the combination, with the hopper 1, the shaker-frame 3, the pivoted feed-shelf 4, the horizontally and vertically adjustable arms 5, and the arms 12, provided with the weights 13 and secured to the under side of said shelf, of the brace-bar 24, secured at its ends to the inner ends of said arms and provided with the set-screws 25, which bear adjustably with their ends against the under side of said shelf, substantially as described.

3. In a feed-regulator for mill machinery, the combination, with the hopper 1, the shaker-frame 3, the pivoted feed-shelf 4, the slotted arms 5, formed with the circular holes 8 and provided with the slotted caps or disks 9, the screws 11, and the arms 12, provided with the weights 13, of the brace-bar 24, secured at its ends to the inner ends of said arms and provided with the set-screws 25, which bear adjustably with their ends against the under side of said shelf, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN A. McANULTY.

Witnesses:
A. H. McANULTY,
J. S. McANULTY.