F. PRINZ.

FEED REGULATOR.

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1,027,432. **Patented May 28, 1912.**

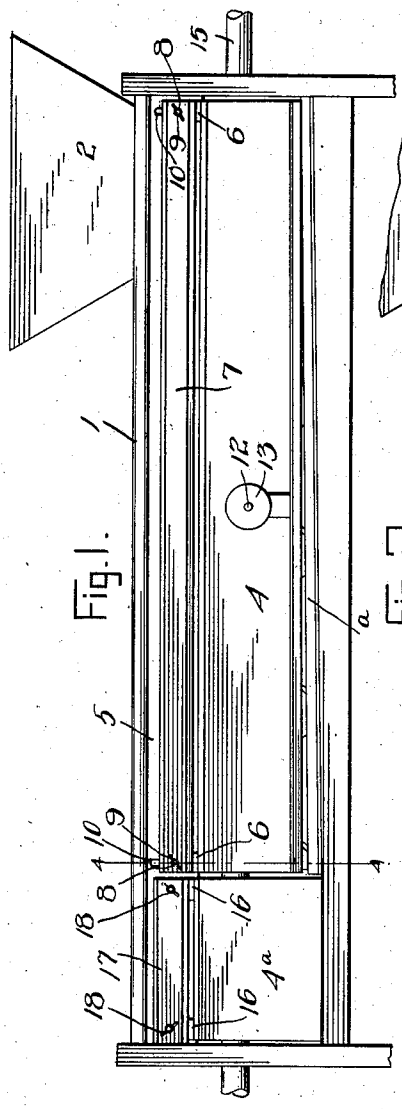

Fig. 1.

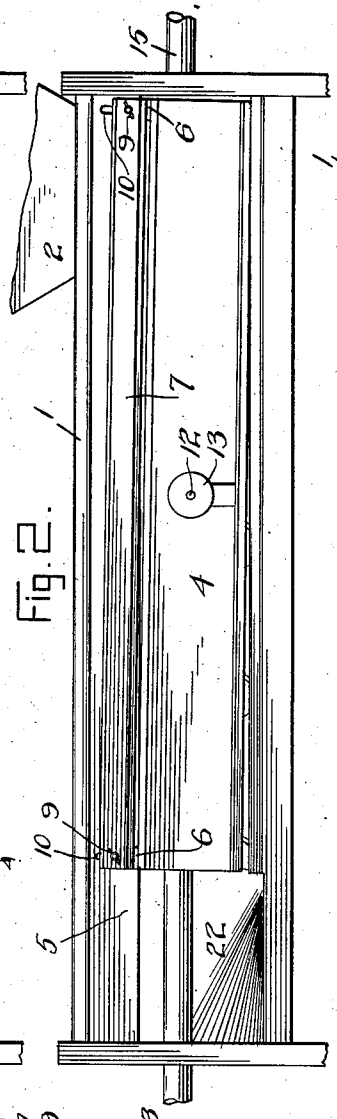

Fig. 2.

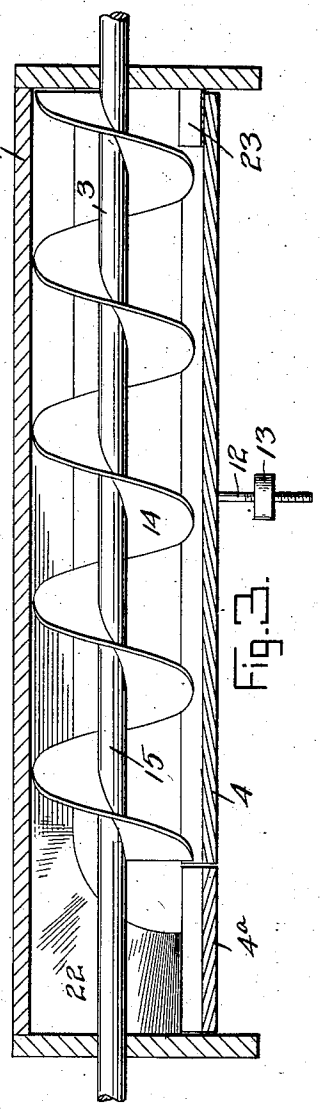

Fig. 3.

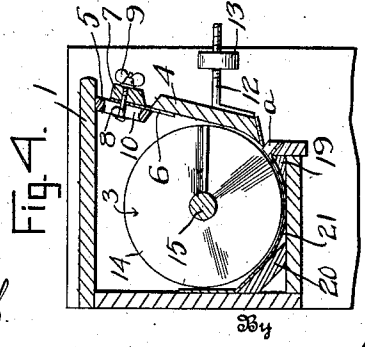

Fig. 4.

Witnesses

C. K. Reichenbach.

Fred G. Klinge

Inventor

Faustin Prinz,

By

Attorney

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

FAUSTIN PRINZ, OF MILWAUKEE, WISCONSIN.

FEED-REGULATOR.

1,027,432. Specification of Letters Patent. Patented May 28, 1912.

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To all whom it may concern:

Be it known that I, FAUSTIN PRINZ, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Feed-Regulators; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to feed boxes having a relatively greater length than width and from which the material is fed in a thin extended stream through the discharge opening of the box which is controlled by an automatically operating valve. Where such boxes are used in grain separators wherein the grain is fed from the box throughout its length onto a shaking screen it is important in order to obtain a satisfactory distribution of the grain from the box to the shaking screens that the grain should be fed to the screen in an even regulated stream throughout the width of the screen so that the flow of the grain over the screen will be even and uniform and thus obtaining the most efficient separation or grading by the screens. It frequently happens that the grain to be graded has mixed with it small sticks and lumps or particles of foreign material and these particles having no other escape than the valve controlled discharge opening through which the grain passes to the screen, pass through the opening onto the screen, and when they accumulate to any considerable extent tend to press the automatic valve open to a greater extent than is desirable for a uniform feed of the grain. To overcome this objection I have designed a feed box in which is provided an escape for these lumps and foreign particles other than the opening through which the grain is fed from the box, and thus I am enabled to get a more uniform feed of the grain to the screens, and to feed the grain thereto freed to a large extent, if not entirely, from these foreign substances.

To the accomplishment of the foregoing and such other objects as may hereinafter appear, the invention consists in a feed box having the features of construction hereinafter particularly described and then sought to be clearly defined by the claims, reference being had to the accompanying drawing forming a part hereof, and in which—

Figure 1 is a side elevation of the feed-box in the form having an inclined lower edge to the discharge opening; Fig. 2 is a side elevation of the preferred form with a straight lower edge to the discharge opening, but with the auxiliary valve omitted; Fig. 3 is a horizontal section through the box, with the conveyer in full lines; and Fig. 4 is a cross section on the line 4—4 of Fig. 1.

In the drawing, the numeral 1 designates a feed box having at its head a filling hopper 2, a flight conveyer 3, and a weighted automatically acting discharge valve 4. The valve 4 is hinged to the depending flange 5 by straps 6 secured to the flange by a strip 7, bolts 8 and thumb nuts 9. The bolts 8 pass through elongated slots 10 in the flange 5 so that the valve can be adjusted vertically thus making it possible to have the discharge opening or slot beneath the valve deeper or larger toward the tail end of the box than toward the head of the box so as to get a more even feed of the material. By adjusting the bolts in the slots the discharge opening beneath the valve may be made to gradually increase in depth or size from the head to the tail end of the box as illustrated and then by tightening the nuts the valve may be held to the adjustment found to give the best results. The valve will be provided with the arm 12 having the adjustable weight 13 which will press the valve inwardly so that normally when there is no grain in the box the valve will stand in proximity to the edge of the conveyer flights, the carrying faces of the flights being next to the automatic valve, being in relatively close proximity thereto. It will be observed that the working face of the conveyer next to the automatic valve lies close to and extends over the inner edge of the discharge opening so that if material too large to pass through enters the discharge opening it will be shoved or moved along by the conveyer until it reaches the end of the box or short valve where it will pass out without clogging the opening or impairing the efficiency of the main valve in maintaining an even feed through the discharge opening.

The conveyer flights are indicated by the numeral 14 mounted on the rotating shaft 15 which will be journaled in suitable bearings at the ends of the box. The flights 14

terminate back from the tail end of the box, so as to leave at the tail end a portion of the box not occupied by the conveyer flights for the reception or accumulation of tailings consisting of some sticks and small lumps, which will be fed to that end by the conveyer and which if such unoccupied space were not provided would be discharged by the flights along with the grain and tend to choke or abnormally press open the automatic controlling valve and thus seriously interfere with a well regulated discharge of the grain from the box onto the separating sieve or screen. This feature therefore forms an important factor in the invention. Between the end of the automatic valve and the tail end of the box, and opposite to the portion of the conveyer shaft which has no flights, is placed an auxiliary valve 4^a, the same being hinged to the depending flange 5 by straps 16 secured thereto by the strip 17 and thumb nuts 18, which may be vertically adjustable in the same manner as described for the main valve 4. While the best results are attained by using the auxiliary valve 4^a, yet the same is not absolutely essential and may be omitted and good results obtained by the other features without it.

To facilitate the satisfactory supply or feed of the grain from the bottom of the box to the valve controlled discharge opening, the forward part of the bottom along the discharge valve is raised so as to terminate on a line with the lower edge of the valve controlled discharge opening, and the portion next to the rear wall of the box may likewise be raised. This may best be done by placing a concave block 19 at the front of the box and a concave or inclined block 20 at the back of the box, and a sheet metal facing plate 21 may be extended from the top of the rear to the top of the front block, thus forming a concave bottom to the box with its forward portion terminating on a line with the lower edge of the valve controlled discharge opening for the grain, so that the conveyer flights will more satisfactorily feed the grain to the discharge opening. And also for the better discharge of the tailings at the end of the box where there are no flights, or in other words at the tail end of the box, will be formed an inclined wall 22 so that the sticks and lumps or foreign substances, otherwise designated as tailings, carried to that end by the conveyer will slide toward the front side of the box so as to press against the valve and find their discharge through the open side controlled by the valve.

While it is not necessary in all cases to have it so, yet under some conditions it may be desirable to have the lower edge of the discharge opening from the box inclined to a greater or less extent from the head toward the tail end of the box, and when desirable it may so incline as indicated at "*a*" in Fig. 1 of the drawing.

On the automatic valve side of the box at the end where the filling hopper is located, there is placed a strip or wall 23 to prevent the material discharged into the box from passing out of the box at that end before it can be moved forward by the conveyer, and thus also relieving the valve from the impact of the grain or material as it is delivered into the box.

Under the construction described as the grain is moved along by the conveyer it is also directed upward toward the open side of the box controlled by the automatic weighted valve and passes out therefrom in a thin and uniform stream over the outwardly and downwardly inclined edge of the discharge opening onto the sieve (not shown) or other receiving member.

The sticks and lumps or tailings undesirable to pass out with the grain are carried along by the conveyer to the tail end of the feed box and as they accumulate at the point where there is no conveyer flight they will back up against the auxiliary valve at that point and press it outward so that the tailings may escape at that point from the box. This insures a more regular feed of the grain from the box and at the same time feeds it to the screen free from most if not all the particles of sticks and lumps or tailings which interfere with the proper feed and grading of the grain.

I have described the preferred details of construction of the several parts and while the same constitutes the best illustration of the invention yet changes can be made without departing from the essential features.

Having described my invention and set forth its merits, what I claim is:—

1. A feed regulator comprising a box having a discharge opening in its side, a conveyer for moving material longitudinally through the box, said conveyer terminating at a point back from the tail end of the box to form a receiving chamber between the end of the conveyer and the end of the box for tailings, and an automatically operating valve for controlling the passage of material through the side of the box from its head toward its tail end.

2. A feed regulator comprising a box having a discharge opening in its side, a conveyer for moving material longitudinally through the box, and an automatic operating valve for controlling the passage of material through the opening in the side of the box from its head toward its tail end, the working face of the conveyer along the side of the box next to said valve extending over the inner edge of the opening through which the material is discharged.

3. A feed regulator comprising a box hav-

ing a discharge opening in its side, a conveyer for moving material longitudinally through the box, and an automatically operating valve for controlling the passage of material from the side of the box, the front wall of the box extending upwardly on the side next to the automatic valve and constituting the lower wall of the discharge opening.

4. A feed regulator comprising a box having a discharge opening in its side, a conveyer for moving material longitudinally through the box, and an automatically operating valve for controlling the passage of material from the side of the box, the front wall of the box extending upwardly on the side next to the automatic valve to constitute the lower wall of the discharge opening and having the upper portion thereof inclined outwardly and downwardly.

5. A feed regulator comprising a box having a discharge opening in its side, a conveyer for moving material through the box, and an automatically operating valve for controlling the passage of material from the side of the box, the discharge opening for the material increasing in depth from the head toward the tail end of the box, and the working face of the conveyer next to the valve lying over the inner edge of the discharge opening and normally in close proximity to the operating valve.

6. A feed regulator comprising a box having a discharge opening in the side, a conveyer located in the box for moving material longitudinally through the same, an automatically operating valve for controlling the passage of material from the side of the box, and an auxiliary valve at the tail end of the box for the discharge of tailings.

7. A feed regulator comprising a box having a discharge opening in its side, a conveyer for moving material through the same, said conveyer terminating at a point back from the tail end of the box, an automatically operating valve for controlling the passage of material from the side of the box along the conveyer, and an auxiliary valve at the tail end of the box between the terminal of the conveyer and end of the box for the discharge of tailings.

8. A feed regulator comprising a box having a discharge opening in its side, a conveyer for moving material through the same, said conveyer terminating at a point back from the tail end of the box, an automatically operating valve for controlling the passage of material from the side of the box along the conveyer, and an auxiliary valve at the tail end of the box for the discharge of tailings, the box at the tail end having an inclined wall for directing material toward the auxiliary valve.

9. A feed regulator comprising a box having a discharge opening in its side, a conveyer for moving material longitudinally through the box, and an automatically operating valve for controlling the passage of material through the opening in the side of the box, the bottom of the box inclining upwardly on the valve controlled side and terminating substantially on the line of the lower edge of the discharge opening in the side of the box, and the working face of the conveyer lying in close proximity to the inner edge of said discharge opening.

10. A feed regulator comprising a box having a discharge opening in its side, a conveyer for moving material through the box, and an automatically operating valve for controlling the passage of material from the side of the box, the lower edge of the discharge opening in the box inclining downwardly from the head toward the tail end of the box, and the lower edge of said valve standing in relation to the lower edge of the discharge opening so as to form an opening increasing in depth from the head toward the tail-end of the box.

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

FAUSTIN PRINZ.

Witnesses:
W. L. RITTEL,
W. A. MANEGOLD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."