

W. A. JOPLIN.
FEED ATTACHMENT FOR HOPPERS.
APPLICATION FILED DEC. 5, 1910.

1,029,998.

Patented June 18, 1912.

2 SHEETS-SHEET 1.

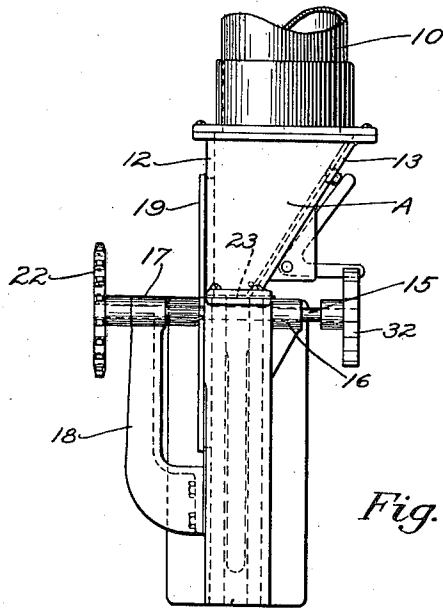


Fig. 1.

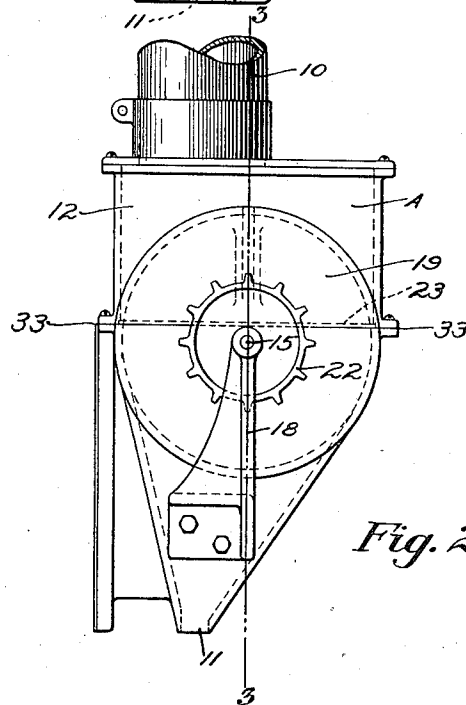


Fig. 2.

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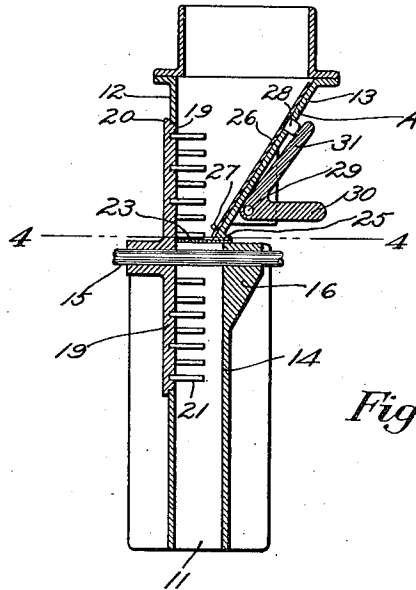


Fig. 3.

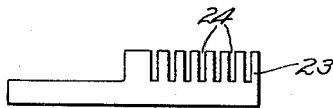


Fig. 6.

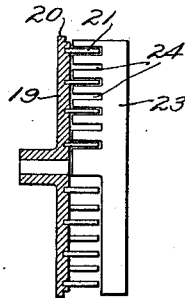


Fig. 4.

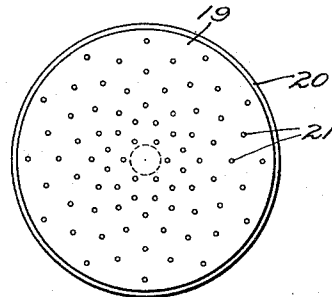


Fig. 5.

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UNITED STATES PATENT OFFICE.

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FEED ATTACHMENT FOR HOPPERS.

1,029,998.

Specification of Letters Patent.

Patented June 18, 1912.

Application filed December 5, 1910. Serial No. 595,575.

To all whom it may concern:

Be it known that I, WILLIAM A. JOPLIN, a citizen of the United States, residing at Lawrence, in the county of Essex and State of Massachusetts, have invented a certain new and useful Improvement in Feed Attachments for Hoppers, of which the following is a specification, reference being had therein to the accompanying drawings.

10 In the use of package filling machines for putting up various kinds of goods into packages in which the material is fed through a hopper there is a tendency of certain classes of goods which are of a stringy character to 15 mat together in passing through the hopper so that they either clog the passage or pass through in bunches so that the flow is not uniform. It is quite important in putting up package goods, especially when they are 20 weighed into the package, that the flow shall be of uniform character and size of stream. One class of goods which illustrates the type of goods referred to is shredded coconut.

25 The object of the present invention is to provide mechanism in connection with the hopper for producing a combing effect on the material as it passes through the hopper so as to comb out the mass of material and thereby prevent the matting of the shreds 30 together or to break up the masses if they have already become at all matted.

35 The invention will be fully understood from the following description taken in connection with the accompanying drawings, and the novel features are pointed out and clearly defined in the claims at the close of the specification.

40 In the drawings,—Figure 1 is a front elevation of a hopper provided with mechanism embodying the invention. Fig. 2 is a side elevation of the hopper shown in Fig. 1. Fig. 3 is a vertical section on line 3—3 of Fig. 2. Fig. 4 is a horizontal section on line 4—4 of Fig. 3. Fig. 5 is an elevation in detail showing the comb disk. Fig. 6 is a 45 detail plan of the slotted plate for cleaning the comb.

Referring to the drawings,—The hopper

A, through which the material passes to the package or other receptacle placed beneath 50 it, receives its supply of material in any suitable manner as through a funnel 10, shown broken away, leading from any suitable reservoir, (not shown). The material 55 passes out of the hopper A through the contracted outlet 11 at the open end of the hopper. One side of the hopper A has a vertical wall 12 and the opposite side of the hopper has its upper portion or side wall 13 60 inclined downward toward the side wall 12. Preferably the lower portion 14 is vertical and parallel with the wall 12. Passing transversely through the hopper is a shaft 15 journaled in suitable bearings at each 65 end, the bearing 16 at one side of the hopper being shown as a portion of the wall 14 and the bearing 17 on the other side of the hopper being at the upper end of a bracket 18. The side wall 12 of the hopper is formed 70 with a circular opening concentric with the shaft 15. Mounted fast on the shaft 15 is a circular disk 19 which fits into said circular opening loosely enough to rotate therein and extends outwardly through said opening, its outer portion being of greater diam- 75 eter than the diameter of said opening, thereby forming an annular flange 20 which laps over onto the plate 12 and forms a lap joint all around said opening. Said disk 19 80 is provided with pins 21 on its inner face arranged in concentric circular rows and projecting into the passage through the hopper. These pins are preferably so disposed that the pins in each circular row will be in 85 staggered relation with the pins in the adjacent circular rows. Means are provided for rotating the disk 19 which may be done by any suitable means.

In the construction shown there is mounted on the end of the shaft 15 a sprocket 22 90 which may be connected up with any suitable driving mechanism. The driving mechanism is so connected that the shaft 15 and disk 20 will revolve only during the time that the goods are intended to feed into a 95 package placed beneath the hopper. Par-

tially bridging the passage through the hopper at the bottom of the inclined wall 13 is a plate 23, which is shown in plan view in Figs. 4 and 6. One end of the plate 23 bridges substantially the entire width of that portion of the passage through which the pins travel on their upward movement and is provided with a series of slots 24 extending inwardly from the edge which is nearer the disk 19, said slots being of sufficient depth and width and spaced properly so that as the disk 19 rotates, the pins 21 on the up stroke will have unobstructed passage through the slots. The other end of the plate 23 is cut away to entirely clear the downward path of rotation of the pins 21. The material which is delivered into the hopper will be engaged by the pins 21 above the plate 23 and will be combed out and carried around down through the passage between the open part of the plate 23 and the side wall 12 when it will drop down through the outlet of the hopper, and on the upward movement of the pins through the slots 24 they will be cleaned of anything which may tend to cling to them.

The inclined wall 13 and the vertical wall 14 which together form one side of the hopper are preferably made separate. There is a thin slot or passage between the foot of the inclined wall 13 and the top of the wall 14 in which the plate 23 is inserted, the rear end of the plate resting upon the flattened top of the wall 14 and being held thereto by the flat foot 25 of the inclined wall 13. A thin steel plate 26 is secured at its lower end by suitable means to the inner face of the inclined wall 13 as by screws or rivets 27, the upper end of the said spring plates 26 being unattached and free to move toward and from the wall 13. Secured to the plate 26 is a stud or button 28 which projects outwardly through a hole in the wall 13. Pivoted at 29 to the frame of the hopper on the outside of the inclined wall 13 is a bell crank lever having the two arms 30 and 31, the arm 31 extending up along side of the wall 13 and engaging with the outer end of the button 28. Mounted on shaft 15 is a ratchet or toothed wheel 32 whose teeth engage with the arm 30 of the bell crank and give a vibratory action to the bell crank when the shaft 15 revolves, thereby through the arm 31 giving a vibratory movement to the spring plate 26. The purpose of this is to shake the material within the hopper which comes in contact with the plate 26 so that it may feed more regularly and prevent the goods from clinging to the sloping side of the hopper.

The plate 26 is smooth faced and covers substantially the entire inner face of the inclined wall 13 of the hopper from top to bottom so that it forms substantially a

spring wall. It extends substantially to the top of the inclined wall so that the material falling down from above may fall upon the spring plate. If the spring plate extends only part way to the top of the inclined wall then the material would in part fall upon the face of the stationary portion 13 of the wall and in that case would slide down between the spring plate and the stationary wall 13 which in a short time would clog it up and would render the spring plate inoperative. The spring plate is pivoted at its lower end instead of at its upper end because it is in the upper part of the inclined portion of the hopper that it is desired to have the greatest extent of vibration. Moreover, if the plate were pivoted at its upper end and the lower end was vibrated the inward movement of the lower end of the plate would at each movement contract still further the throat at its narrow portion which would seriously interfere with the flow of the material. It is important to have the throat unobstructed. It is also important to have the face of the spring plate smooth so not to obstruct the downward movement of the material on its face.

The entire hopper is preferably made in two general sections, a top and a bottom section, joined along the line 33, for convenience of construction and of assembling the part as well as to provide for the slot to receive the plate 23.

What I claim is:

1. In combination with a hopper having a circular opening in one wall, a rotary disk mounted in said circular opening and having a plurality of pins projecting from the face thereof in a transverse direction of the passage through the said hopper but of less length than the width of the narrowest part of the passage, a plate projecting from the wall opposite the pin disk and extending transversely of said passage, the portion of the plate which extends into the part of the passage traversed by the pins on the upward movement extending substantially the full width of that portion of the passage and formed with parallel sided slots in alignment with the path of the pins on the upstroke to permit passage of the pins, that portion of the plate which extends toward the part of the passage traversed by the pins on the downstroke being of a lesser width than the other portion whereby the portion traversed on the down stroke is entirely unobstructed by the plate.

2. In combination with a hopper having a circular opening in one wall, a rotary disk mounted in said circular opening and having a plurality of pins projecting from the face thereof in a transverse direction of the passage through the said hopper but of less length than the width of the narrowest part

of the passage, a plate projecting from the wall opposite the pin disk and extending transversely of said passage, the portion of the plate which extends into the part of the passage traversed by the pins on the upward movement extending substantially the full width of the passage and formed with parallel sided slots in alinement with the path

of the pins on the upstroke to permit passage of the pins.

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

WILLIAM A. JOPLIN.

Witnesses:

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ALICE H. MORRISON.

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