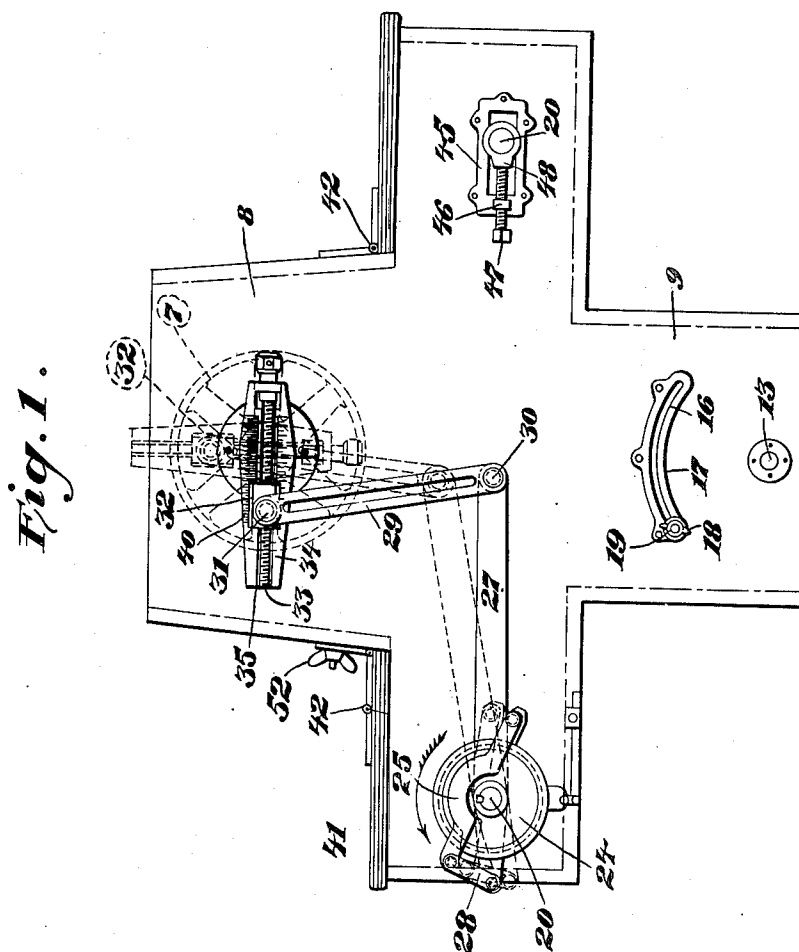


952,134.

4 SHEETS—SHEET 1.



Chas. F. Becker.
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 By Hugh K. Wagner
 His Attorney.

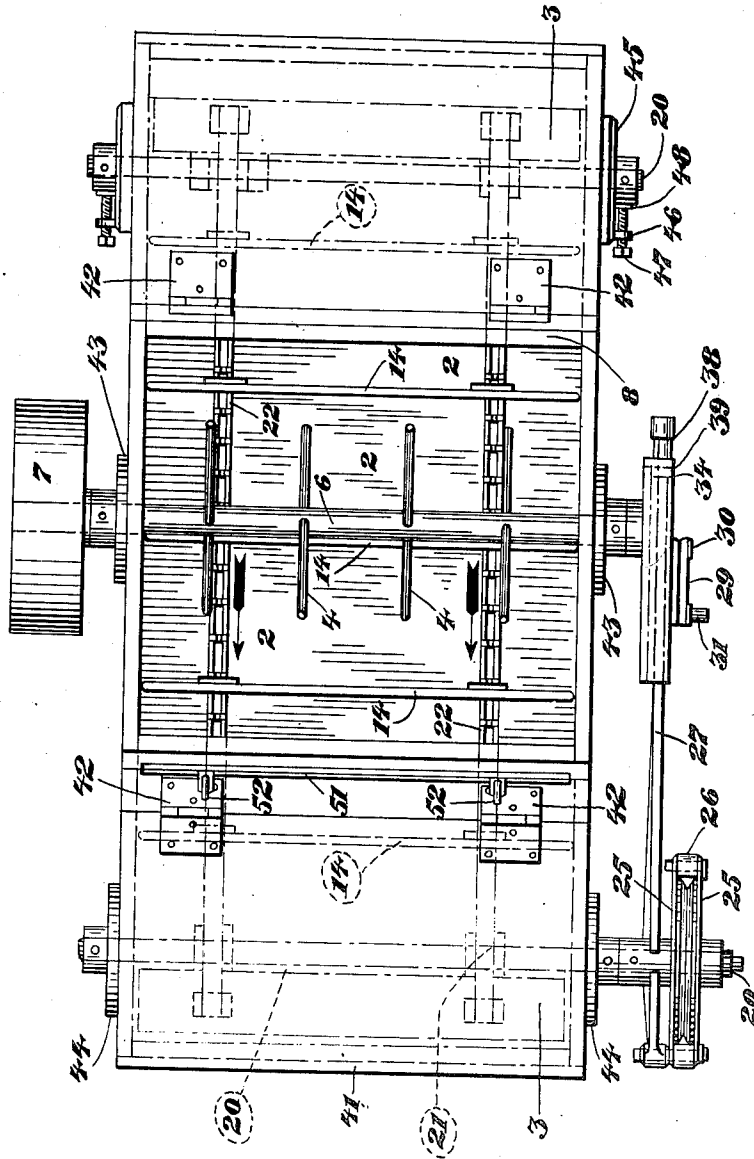
E. I. NOXON.
AUTOMATIC PROPORTIONAL FEEDING DEVICE.
APPLICATION FILED JUNE 12, 1907.

952,134.

Patented Mar. 15, 1910.

4 SHEETS—SHEET 2.

Fig. 2.



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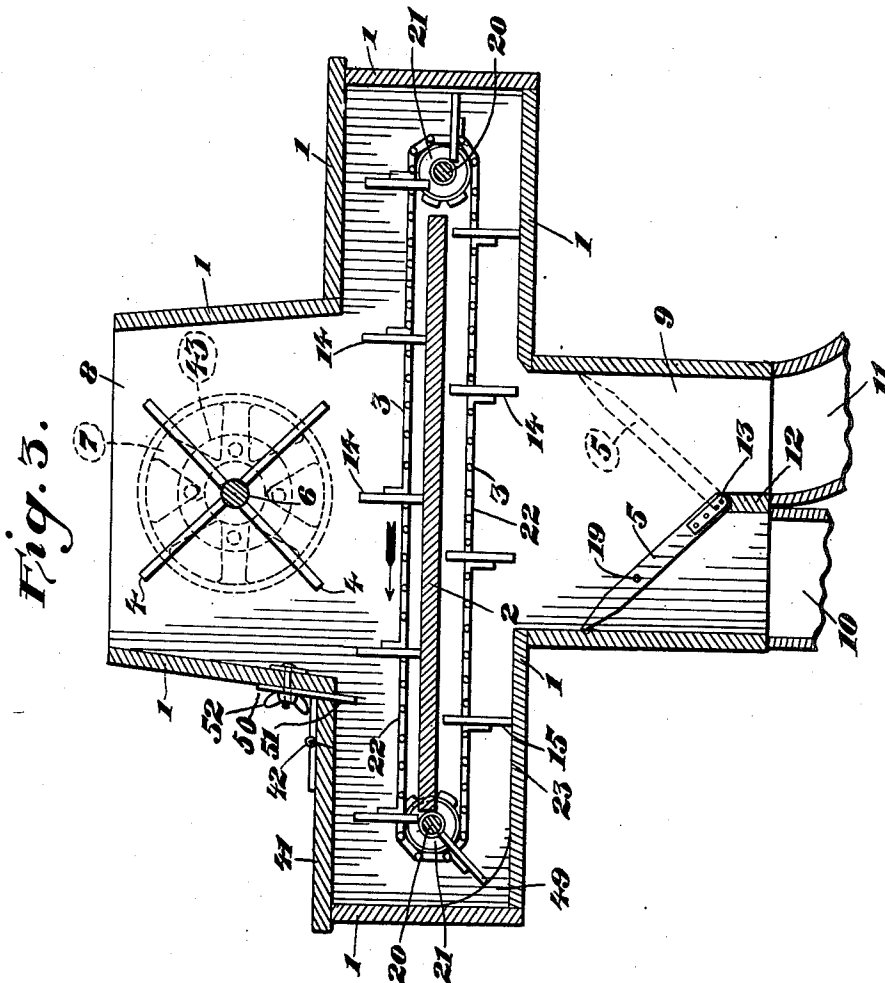
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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

Fig. 4.

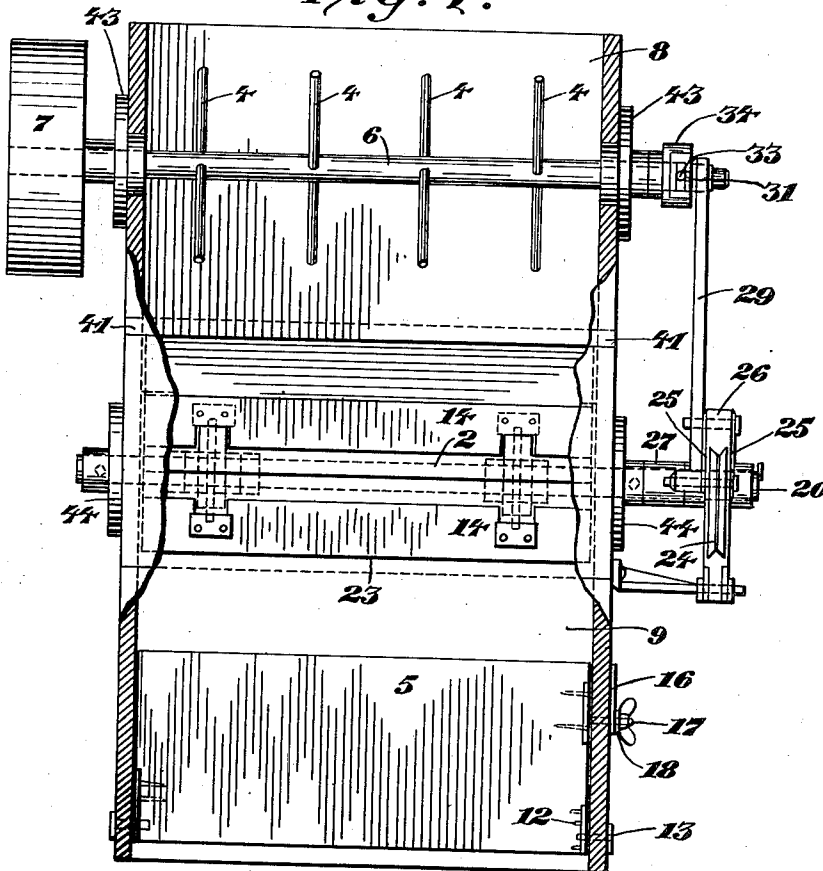


Fig. 6.

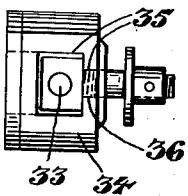
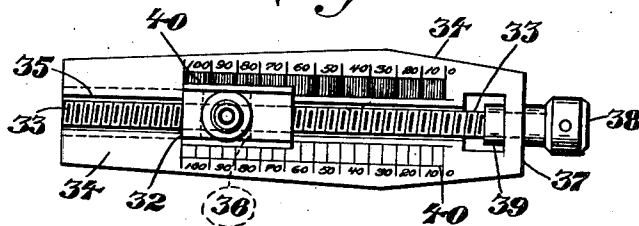


Fig. 5.



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UNITED STATES PATENT OFFICE.

ELWIN I. NOXON, OF ST. LOUIS, MISSOURI.

AUTOMATIC PROPORTIONAL FEEDING DEVICE.

952,134.

Specification of Letters Patent. Patented Mar. 15, 1910.

Continuation of application Serial No. 292,594, filed December 20, 1905. This application filed June 12, 1907. Serial No. 378,511.

To all whom it may concern:

Be it known that I, ELWIN I. NOXON, a citizen of the United States, residing in the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Automatic Proportional Feeding Devices, of which the following is a specification, reference being had therein to the accompanying drawings.

This application is a continuation of that filed by me December 20, 1905, Serial No. 292,594.

This invention relates to means for producing an automatic feed and means for positively regulating the supply so fed.

Other features of invention will be particularly pointed out in the claims.

In the drawings forming part of this specification in which like numbers of reference denote like parts wherever they occur, Figure 1 is a side elevation; Fig. 2 is a top plan view; Fig. 3 is a sectional view on the line 3—3, Fig. 2; Fig. 4 is an end elevation; and Figs. 5 and 6 are details in side and end elevation, respectively, of the scale-bearing member and block adjustable thereon, etc.

The casing 1 incloses the receiving table 2, conveyer 3, agitators 4, and deflector 5, and provides support and bearings for the shaft 6, which is driven by the band-wheel 7. Upon said shaft 6 are mounted the agitators 4, consisting of a plurality of radial spokes or arms. The upper part of the casing 1 forms a receiving chute 8, and the lower part a discharging chute 9, the former leading from a bin (not shown) or other storage chamber, and the latter to a conveyer 10, bin (not shown), or discharge outlet 11. Centrally located in the exit of said discharge chute 9 is support 12, fixed to the inside of the casing 1, to which the deflector 5 is pivoted by pins 13 or otherwise, thus allowing same to occupy either of the positions shown or indicated in Fig. 3. When said deflector 5 is in the position shown in full lines in said figure, the material caused by the scraper or forwarder occupying the position of the one marked 15 to fall into the chute 9 will be deflected thereby to pass through the outlet 11, but, on the other hand, when said deflector occupies the position indicated by the dotted lines, such material will be directed toward the conveyer 10. In order that the position of said deflector may be conveniently changed at will, a slot 16 is

provided in casing 1, same being faced with plate 17, and a thumb-nut 18 connected to deflector 5 by the threaded pin 19 serves as a means whereby said deflector can be moved at will, and clamped in any desired position, the pin 19 protruding through and being adapted to move in said slot, and the nut 18 being screwed on said pin till it contacts with plate 17 and holds the deflector firmly in place.

The table 2 is of sufficient width to cover the mouths of the chutes 8 and 9, in order to receive from the one the material to be fed and to prevent same from passing directly to the other. The edges of said table touch the side walls of casing 1 (as clearly appears in Fig. 2) and are attached thereto. Beyond the ends of said table are located the shafts 20 journaled in the side walls of the casing 1 and bearing sprocket wheels 21 whereby the pair of endless sprocket chains 22 is driven. Spaced apart on said chains and attached thereto is a plurality of scrapers or forwarders 14 (one of which is, for convenience of reference to its illustrative position, marked 15). Said forwarders move with said chains in the direction indicated by the arrow in Fig. 3, and together they constitute the conveyer 3. While traveling over the table 2, said forwarders 14 contact with and scrape its upper surface, but, when traveling thereunder do not touch same. When in the position of the one marked 15, however, and the one following it (see Fig. 3), they contact with and scrape the horizontal floor 23 of the casing 1. In this way the material which descends upon the receiving table 2 through chute 8 is forwarded by the scrapers 14 to the end of the table 2, whereupon it falls to floor 23, along which it is forced by the inverted scrapers 14, the part of each of said scrapers projecting outside said chains being shown relatively higher or greater than the part within same. When the material has been pushed adjacent the end of the floor 23, the scraper 15 forces same to fall into chute 9. There is no tendency of the material to fall beyond the right hand end of the table 2 (Fig. 3), because the movement of the conveyer 2 in the opposite direction guides it in the right way. With certain kinds of material (such as are of a pulpy nature, for instance, and some others), a tendency to become too tightly packed in chute 8 could be overcome by the provision and use of the

agitators 4, which would stir the material just before it reached the table 2. Motion which is usually intermittent in character, but which may (by adjustment, as hereinafter described) be made approximately continuous and uninterrupted if desired, is positively imparted to the conveyer 31 by the wheel 24 fixed to one of the shafts 20. Said wheel is mounted on said shaft exterior to the casing. A bent yoke 25 carrying a block 26 at its outer end forms a friction clutch by means of which the wheel 24 is rotated in the direction indicated by the arrow, one strap of said yoke passing on one side of wheel 24 and the other strap on the opposite side thereof, and the block 26 engaging the periphery of said wheel at certain times (as hereinafter described), whereby said wheel is caused to move forward a certain distance while so clutched. Said wheel 24 and one pair of sprocket wheels 21 being fixed to shaft 20, all move in unison and thus cause the forward movement of conveyer 3 and the material forwarded thereby.

The clutch is actuated by the raising of the long arm of lever 27 pivoted on shaft 20, the short arm of the lever being thus depressed, which pulls link 28 downwardly and yoke 25 to the left (Fig. 1), thus causing block 26 to clutch the periphery of wheel 24. Said block 26 is disengaged from wheel 24 by depressing the long arm of lever 27, which raises the short arm thereof and link 28, and pushes yoke 25 to the right (Fig. 1).

The long arm of lever 27 is alternately raised and depressed by the movement of the pitman 29 to which it is pivoted at 30. Said pitman is also, pivoted at 31 to the internally-threaded block 32, which is longitudinally adjustable by means of screw 33 with relation to box 34, through a groove 35 in said block and in which said screw 33 runs and a tongue 36 of block 32 moves. Said box 34 is fixed to one end of shaft 6 and rotates therewith, carrying with it block 32 and pitman 29—thereby alternately raising and depressing the long arm of lever 27, which is shown (Fig. 1) in dotted lines in its highest position and in full lines in its intermediate position. The screw 33 has a bearing in the opening through the yoke 37 at one end of said block and is retained in position by the head 38 and the shoulder 39.

Upon the box 34 is marked a scale 40, by which are indicated quantities from, for instance, one hundred pounds down to one pound. The threads of the screw 33 and the pitch thereof are to be accurately calculated and cut so as to coincide with the indications of said scale so that when, for instance, the turning of the screw 33 has caused the block 32 to move to a position where, for example, its right-hand end (Fig. 1) is opposite the mark for 60 pounds, the adjustment of the pitman 29 pivoted to said block, as

hereinbefore described, will be such as alternately to raise and depress the long arm of the lever 27 at such intervals (thereby maintaining the block 26 either in contact with or disengaged from the periphery of the wheel 24 for such period of time as is appropriate) that the movement of the conveyer 3 will be sufficient (and only sufficient) to feed the material through the chute 9 at the rate of 60 pounds per minute or other predetermined period. In like manner, if the block 32 were set at the ten-pound mark on the gage or scale 40, the conveyer 3 would move so that only ten pounds per minute (or other predetermined period) will be delivered to the chute 9. It will be understood that by using a wheel for the member 24 and a block 26 to clutch same, instead of, for instance, a ratchet and dog, I secure the immediate actuation of the wheel 24 and the shaft 20, on which it is fixed, consequently, of the sprockets 21 mounted on said shaft, and, thereby, of the endless chains 22. This enables nice and accurate adjustment of the several parts to each other and insures that the adjustment of the block 32 on the screw 33 relative to the scale 40 will be positively and accurately reflected in the movement of the conveyer 3, whereby the amount of material fed thereby will be increased or diminished as desired by the operator and as provided by him through his adjustment of the block 32 relative to said scale by his manual manipulation of the screw 33.

With the rotation of the shaft 6 the head 38 of the screw 33 describes a circle in the path of its travel, and so, likewise, does the pivotal point 31, whereby the pitman 29 will at one time occupy the position shown in full lines in Fig. 1, and at another time the position indicated by dotted lines, and at other times other positions neither shown nor indicated; but the continuous rotation of the shaft 6 in one direction (which one direction may be either backward or forward) is transferred into intermittent movement of the wheel 24 and connected parts in the direction indicated by the arrow, the interrupted character of the revolution of said wheel being obviously produced by the eccentric pivoting of the pitman 29 at 31 relative to the axis of the shaft 6.

Access to the interior of the casing 1 is provided by the trap door 41 hinged at 42. The plates 43 and 44 attached to the casing 1 strengthen the bearings for, respectively, shafts 6 and one of the shafts 20. The other shaft 20 has its bearings in box 45, from each of which protrudes a lug 46, which is internally screw-threaded, and through which passes the screw 47, which enters an internally threaded socket in the projection 48 on said shaft 20. By means of the arrangement just described, any slack in the sprocket chains 22 can be taken up by

simply turning the screws 47. The gate 50 adapted to move vertically through the slot 51 in the casing 1, and held in position by the thumb-nut 52, prevents more of the material being carried by the conveyer than is retained between the forwarders 14. On the other hand, if said gate be opened a greater flow of material may be allowed.

The operation of the machine is as follows: The material to be fed is allowed to enter the chute 8 and thereupon falls upon the table 2, forming a heap thereon and a body extending up into the chute 8. The rotation of the shaft 6 will cause said material to be stirred by the agitators 4 and at the same time will cause the forwarders 14 of the conveyer 3 to move intermittently step by step forward, thus pushing the material lying between same on the table 2 along and scraping same from the bottom of the heap of material above said table and in said chute. The material is thus forwarded to the end of the table 2 adjacent the molding 49 (said molding preventing it from sticking in the corner), and the material falls on the floor 23 where the inverted forwarders 15 scrape it along until it falls into the chute 9. The rapidity of feed, and, consequently, the quantity of the material fed, is regulated by the movement of the conveyer 3, which is controlled by the rotation and stoppage of the wheel 24 which drives the shaft 20, on which it is fixed, and the sprocket wheels thereto attached, and with same the endless chains 22. When the shaft 6 is driven either forward or backward it causes the box 34 fixed thereto to revolve, carrying with it the pivotal stud 31 eccentric to the axis of said shaft, whereby one end of the pitman 29 is caused to travel in a circle around said axis, while the other end alternately raises and

depresses the long arm of the lever 27, thereby alternately engaging the block 26 with and disengaging same from the periphery of wheel 24, the relation of the pivotal point 31 to the axis of the shaft 6 being regulated by the manipulation of the screw 33, and consequent movement thereon of the internally screw-threaded block 32.

Having thus described my said invention, what I claim and desire to secure by Letters-Patent is:

1. In a machine of the character described, the combination of a casing, a chute conveying material thereto, a shaft journaled in said chute, rotary agitators carried by said shaft, a material-receiving table within said casing forming a diaphragm to divide the casing into an upper and a lower portion, shafts journaled in said casing and bearing sprocket wheels, a pair of endless chains passing over said sprocket wheels and being intermittently actuated by one of said shafts, and forwarders secured to said chains and projecting both above and below said chains.

2. In a machine of the character described, the combination of a casing, a chute leading into the upper part thereof, a shaft journaled in said chute, rotary agitators carried by said shaft, a material-receiving and mixing table within said casing, an intermittently-moving conveyer to remove the material therefrom, a two-way exit chute, and a valve within said exit-chute to control the path of travel of the material.

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

ELWIN I. NOXON.

Witnesses:

GLADYS WALTON,
ELLIOTT R. GOLDSMITH.