

(No Model.)

2 Sheets—Sheet 1.

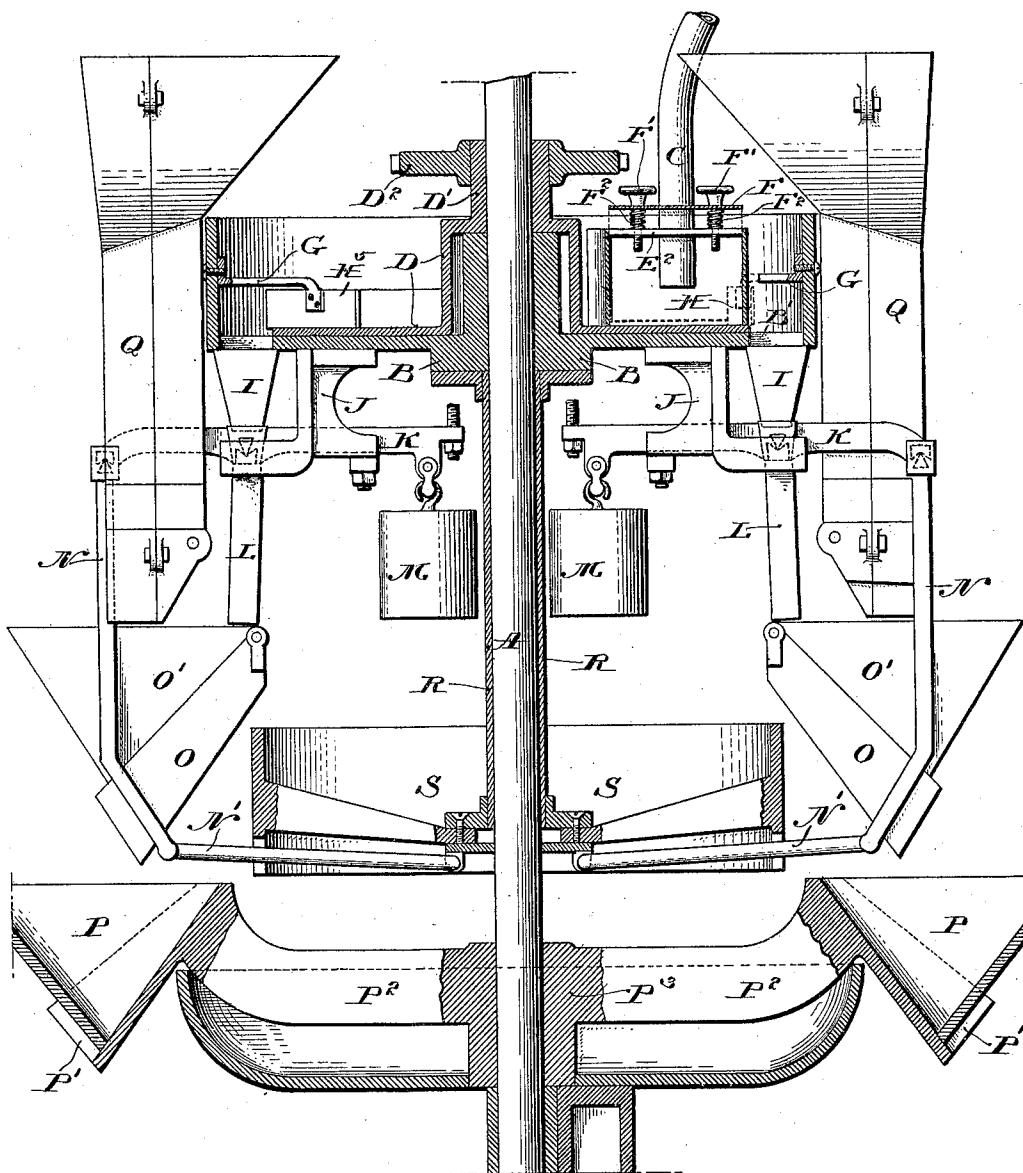
H. E. SMYSER.

MECHANISM FOR FEEDING GRANULATED SUBSTANCES.

No. 570,108.

Patented Oct. 27, 1896.

FIG. 1.



Attest:

David S. Williams,
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Inventor:

Henry E. Smyser
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Francis T. Chambers

(No Model.)

2 Sheets—Sheet 2.

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FIG. 2.

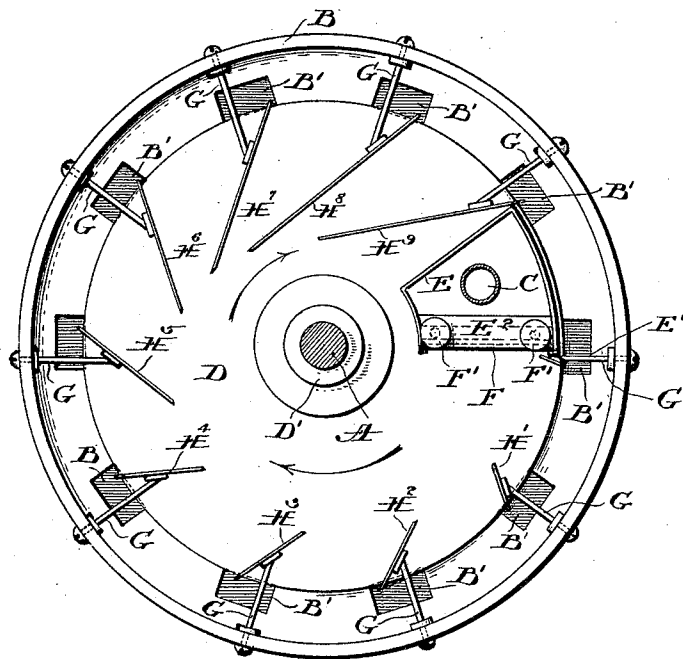
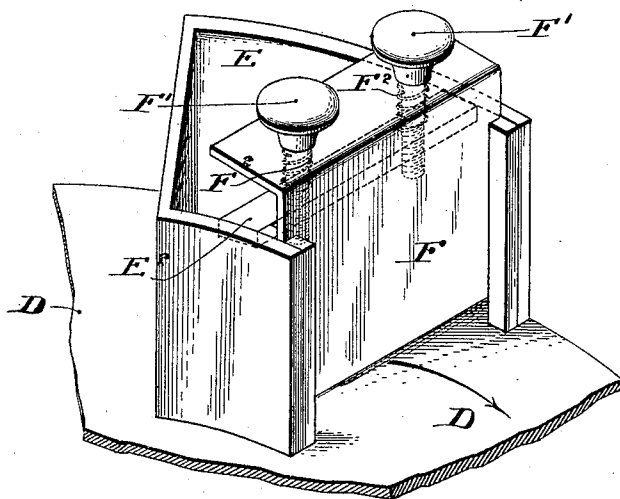


FIG. 3.



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UNITED STATES PATENT OFFICE.

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MECHANISM FOR FEEDING GRANULATED SUBSTANCES.

SPECIFICATION forming part of Letters Patent No. 570,108, dated October 27, 1896.

Application filed April 15, 1891. Renewed August 23, 1894. Serial No. 521,131. (No model.)

To all whom it may concern:

Be it known that I, HENRY E. SMYSER, of the city and county of Philadelphia, State of Pennsylvania, have invented a certain new and useful Improved Feeding Mechanism for Granulated or Powdered Substances, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to mechanism for feeding granulated or powdered substances in a more or less uniform stream or streams. While applicable to various other uses it is especially designed for feeding sugar and other substances to the scales of automatic weighing-machines.

In my Patent No. 449,276, dated March 31, 1891, and in certain subsequent patents which I have received, notably No. 493,795, dated March 21, 1893, I have illustrated automatic weighing-machines wherein the scales are fed with graduated streams or dribbles of the material to be weighed, these streams being fed by a feeding device consisting of a box or hopper having bottom openings communicating through chutes with the respective scales, and a moving feed-plate, disk, or slide having perforations through it into which the material falls and from which, when the perforations move over and coincide with said openings, the material falls into said openings and descends through the chutes to the scales. Such a feeding device has been found to operate very successfully in feeding coffee, and is equally applicable with other analogous materials, as peas, beans, rice, seeds, and coarsely-granulated substances in general; but in operating with sugar, salt, and other finely granulated or powdered substances, and especially such as are somewhat hygroscopic, difficulty is experienced by reason of the cohesiveness of the material, which may prevent it from falling into the perforations or cells in the feed-plate, or from filling them, or from falling out of them, or may otherwise render the feed insufficient or irregular. It is to overcome these difficulties and provide means for feeding such sub-

stances regularly and successfully that I have devised my present feeding apparatus.

Generally speaking my device consists of a movable table having in combination with it spreading mechanism which will spread the material to be fed upon the table in a sufficiently uniform layer, and one or more obliquely-set scrapers extending over the edge of the table and which will serve to scrape a portion of the layer upon its surface off over its edge. Where more than one scraper is used, each extends farther over the surface of the table than the one in front of it, so as to act upon a portion of the layer not scraped off by the preceding scraper.

In applying the invention to weighing mechanism I combine with it one or a series of scale-pans properly supported on scale-beams and place hoppers beneath the edge of the table and beneath each scraper to receive the material scraped off of the table and deliver it directly or indirectly to the scale-pans. My invention is especially applicable to that construction of weighing mechanism in which a chute controlled by the motion of the scale-beam is made to deliver material entering it into the scale-pan until the desired quantity is secured and then to deliver it elsewhere as the scale-beam moves downward.

Reference being now had to the drawings which illustrate my invention, Figure 1 is an elevation of a machine equipped with my device, taken partly in section; Fig. 2, a plan view of the feeding device, and Fig. 3 a perspective view of a portion of the movable table and the feed-box and mechanism for spreading out the material upon its surface.

In the device shown the movable table is circular in form and rotates about its own center, this being, I believe, the most convenient shape in which it can be applied in use.

A is a shaft which passes up freely through and is journaled in a stationary annular open-top box B, having a series of openings B' along the outer edge of its bottom. Within said box and turning freely upon the shaft A is the circular table D, resting upon or near the bottom of the box B and having its edges over and

close to the openings B'. To a sleeve D', extending up from the table D, is secured a gear-wheel D², by which the table is given a rotary motion through its engagement with other

gearing. (Not shown in the drawings.)

E is a box having an open bottom which rests upon the table D and having a movable slide or spreader F at its front. This spreader is made adjustable in the plan shown by means of screws F', screwing into a cross-bar E² of the box E and having springs F², which serve to hold the horizontal flange of the slide F against the heads of the screws.

C is a spout leading into the box E.

II', II², II³, &c., are scrapers extending over the edge of the circular table D, and each, counting in the direction of the movement of the table, extending a little farther over the surface of the table than the one in front of it. The scrapers are held stationary by bars G, attached to the outer rim of the box B. It will be seen that as the table D rotates in the direction of the arrows material fed into the box E will be constantly carried out beneath the scraper or eveners F, the height of which will regulate the thickness of the layer spread over the table, and by the proper adjustment of which a layer of any desired thickness will be deposited thereon. This layer is gradually scraped off of the table at different points by the scrapers II', II², II³, &c., which cause a fine and even stream of material to pass over the edge of the table at each of the points where the oblique scrapers cross it.

Referring to Fig. 3, I I indicate hoppers placed beneath each of the openings B'; J J, brackets secured to the bottom of box B and to which are pivoted scale-beams K. To these scale-beams are secured at one end a weight M and at the other end a scale-pan O O', and in the construction shown I attach fixedly to the scale-beam a chute or feed-spout L, which moves with the scale-beam and which registers at its top with the hopper I. The arrangement of the chute L and the scale-pan is such that the chute will deliver material to the pan as long as the scale-beam remains in the position it occupies while the weight M overbalances the scale-pan, and will move behind the scale-pan, so as to deliver material to another receptacle, as S, when the weight in the scale-pan counterbalances the weight M. In the device shown the scale-pan is made up of two parts O and O' and suspended from rods N, which are pivoted at top to the beam and at bottom to a guide-rod N'. Pockets P P', secured by arms P² to a sleeve I², which rotates with the shaft A, are situated below the scale-pans. The construction of the scale-pans, box, &c., and their particular mode of attachment and operation form no part of my present invention, and need not, therefore, be further illustrated or described. They will, however, form the subject-matter of other applications for Letters Patent which I am about to file.

Q Q are spouts situated above and leading into the scale-pans and through which a portion of the charge of each scale-pan is fed to it.

The operation of the feeder in connection with the scale-pans will be readily followed: The material scraped off from the rotating table D falls through hopper I into the chute L and thence is delivered to the scale-pan. When the material in the scale-pan is sufficient in quantity to counterbalance the weight M, the scale-beam moves down upon its pivots and the chute L is thus diverted out behind the scale, delivering its contents into the receptacle S, no further material being fed to the pan until its contents have been discharged, when it will again return to the position shown in the drawings and receive again the material scraped off into the chute L.

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

1. A feeding device consisting of a plate or table in combination with a device for spreading material upon it and a plurality of obliquely-set scrapers extending over the edge of the table, and reaching to different distances from the center of the table, the scrapers and table being movable the one relatively to the other, to scrape off a layer of material from the table and deliver it in a plurality of streams off the edge thereof.

2. A feeding device consisting of a plate or table in combination with a device for spreading material upon it and a series of obliquely-set scrapers extending over the edge of the table and each extending farther over its surface than the one in front of it, and the scrapers and table movable relatively to one another.

3. A feeding device consisting of a movable table D, in combination with a spreading device consisting of a stationary box E resting upon said table and having a gate or scraper F on one side, a feed-spout leading into said box, and a series of obliquely-set scrapers II' II², &c., extending over the edge of the table, all substantially as and for the purpose specified.

4. A feeding device consisting of a circular rotating table in combination with a scraper F arranged to spread material on its face in a uniform layer as the table revolves, and a series of obliquely-set stationary scrapers arranged around the periphery of the table and each extending farther toward the center of the table than the one preceding it.

5. The combination with a scale-pan and a spout leading into it, of a feeding device consisting of a movable table arranged with its edge over the mouth or hopper of the spout; a device for spreading material on its surface in a uniform layer; and a scraper extending obliquely over the edge of the table and over the mouth or hopper of the spout.

6. The combination with a scale-pan of a movable spout arranged to lead to the pan

when in one position and to a point beyond the pan when the scale-beam is moved down; a hopper opening into said spout; a movable table the edge of which extends over said hopper; a device for spreading material on said table in a uniform layer; and an obliquely-set scraper extending over the edge of said table and over the hopper, substantially as and for the purpose specified.

7. The combination with a series of scales, of pivoted spouts actuated by the movement of the beams to deliver into or exterior to the

scale-pans, hoppers communicating with the respective spouts; a movable table the edge of which extends over the series of hoppers; a device for spreading material in a uniform layer on said table; and a series of obliquely-set scrapers extending over the hoppers and over the edge of the table, substantially as and for the purpose specified.

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Witnesses:

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