M. W. FAHERTY.

MEAL COOKER.

APPLICATION FILED DEC. 31, 1919.

1,431,107. Patented Oct. 3, 1922.

Fig. 1.

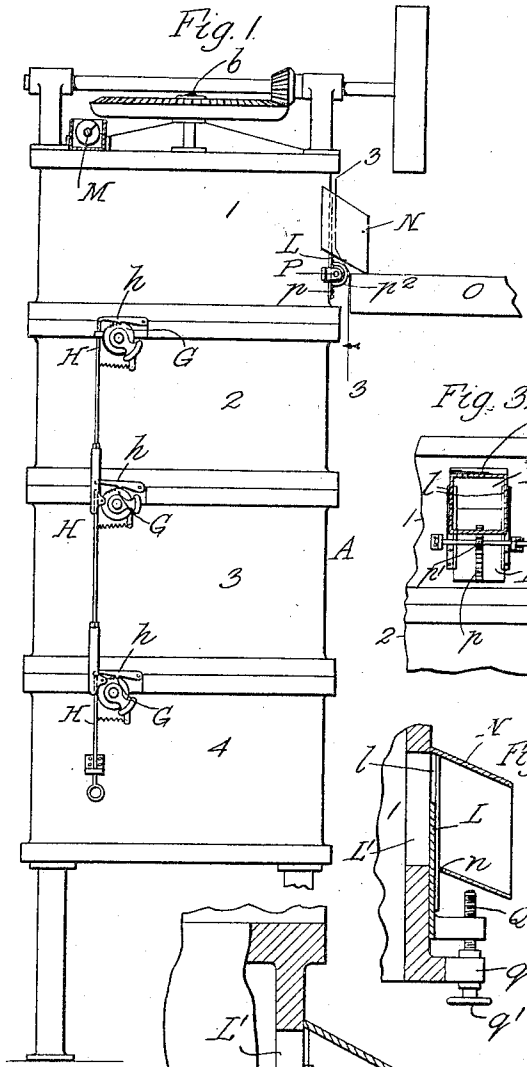


Fig. 2.

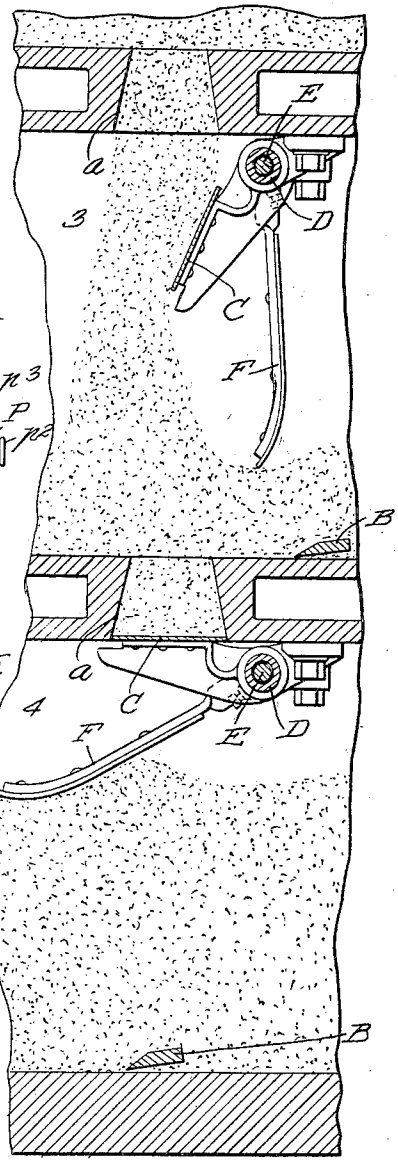
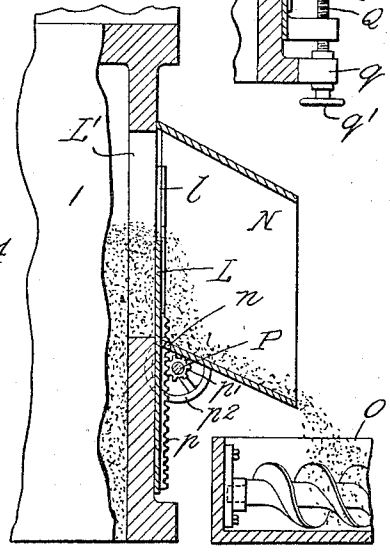


Fig. 3.

Fig. 5.

Fig. 4



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ATTORNEYS.

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UNITED STATES PATENT OFFICE.

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MEAL COOKER.

Application filed December 31, 1919. Serial No. 348,636.

To all whom it may concern:

Be it known that I, MICHAEL W. FAHERTY, a citizen of the United States, residing at Memphis, in the county of Shelby and State of Tennessee, have invented a new and useful Improvement in Meal Cookers, of which the following is a specification.

This invention relates to improvements in cookers of the kind used for cooking or heating oil bearing meal preparatory to expressing the oil therefrom. More particularly, the invention relates to means for regulating the level or quantity of the material in steam cookers of this kind, and analogous apparatus, which comprise a plurality of chambers or kettles arranged in a descending series and provided with discharge gates or devices adapted to be operated so that the material is delivered from one chamber to the next lower one in succession for the purpose of controlling the quantity of material in the several chambers, and the period of time required for the passage of the material through the apparatus.

It is essential to the correct operation of some cookers of this sort to regulate the level of the meal in the first or top chamber, or prevent more than a predetermined quantity from accumulating therein. This is particularly desirable in those cookers in which the kettles or chambers are emptied one into another in rotation. If the quantity of material in the top kettle should be more than enough, after it has passed through the cooker to the bottom kettle, to completely fill the line of presses, some meal will be left in the bottom kettle when the discharging mechanism is started again to drop the meal from each kettle into the next lower one. The meal is, therefore, apt to collect in the bottom kettle more and more after successive operations of the cooker, and there is no certainty in the cooking of the meal. To insure uniformity, the quantity of meal in the top kettle should be controlled so that substantially the same amount will be delivered from kettle to kettle whenever the discharge gates or devices are operated.

One object of the present invention is to provide practical and desirable means for regulating the level or quantity of the material in the top chamber of apparatus of the sort mentioned, which means is preferably adjustable for determining the amount as required, so that a definite, predetermined amount may be discharged therefrom each time that the discharge gate for the top chamber is opened.

Another object is to provide a level regulating means for the purpose stated, which is adapted to cooperate with the gate actuating mechanism of the cooker to regulate the amount of material in the top chamber, and to discharge therefrom to the outside any material in excess of the required amount. Also to improve apparatus of this sort in other respects hereinafter set forth.

In the accompanying drawings:

Fig. 1 is an elevation of an automatic meal cooker or apparatus, provided with regulating means embodying the invention, for controlling the level or amount of meal in the top chamber.

Fig. 2 is a fragmentary vertical section of the cooker, showing the gates and part of the actuating mechanism for controlling the discharge of material from one kettle or chamber to the next one below.

Fig. 3 is a vertical sectional elevation of the regulating means shown in Fig. 1, on line 3—3, thereof.

Fig. 4 is an enlarged fragmentary vertical section thereof at right angles to Fig. 3.

Fig. 5 is a fragmentary sectional elevation of a slightly modified form of the adjusting means.

A represents an oil meal cooker or analogous apparatus comprising a series of steam heated kettles or chambers 1, 2, 3 and 4, arranged in a descending series, preferably one upon the other, so that the material can discharge by gravity from one chamber to another through discharge openings *a* in the bottoms of the chambers. B indicates the usual arm or sweep, one or more of which rotates in the lower portion of each chamber for stirring the material. These arms, as usual, are connected to a rotary vertical shaft *b* extending centrally through the cooker. In addition to stirring or agitating the material, the rotating arms facilitate the discharge of the material through the discharge openings *a*, and also produce a sort of wave or ridge on the surface of the material which follows the motion of the stirrers, and is made use of, as hereinafter explained in closing the gates for the discharge openings *a*. The arm B in the top

kettle also cooperates with the regulating means, and assists in discharging the excess meal from the kettle.

The material is withdrawn from the bottom or lowest chamber 4 in the usual or any convenient way for forming cakes for introduction into the oil expressing presses, and each of the other chambers is provided with a gate C which controls the discharge opening *a* thereof, and is preferably hinged so as to open downwardly into the next chamber below. These gates are adapted to be opened and closed in succession, or one after the other beginning with the lowest one, so as to deliver the material from the third kettle into the last one, then from the second into the third, and so on. Various mechanisms are known for this purpose and one such mechanism, which is disclosed in Patent Number 1,112,127, granted to me Sept. 29, 1914, is briefly described and illustrated herein, but it should be understood that this invention is not restricted to this particular mechanism, but is also applicable to other mechan sms for operating the gates or effecting the successive discharge of the kettles.

In the construction shown in the drawings, each gate C is secured to a hollow shaft D, through which extends a shaft E having secured on one end thereof a float or device F adapted to ride or float on the material in the chamber into which the gate opens. The shafts D and E are operatively connected by ratchet mechanisms G at their outer ends. The float at the inner end of the shaft is actuated by the wave-l ke motion of the material above mentioned, and as the depth of the material increases, operates through the ratchet mechanism G to turn the shaft D and close the gate C. Each gate is held closed by a dog or latch *h* and each dog is tripped to open the gate by a release or trip device H. At the proper time the trip device H for the lowest gate is operated, either by hand or automatically, and this gate opens to discharge the material into the bottom kettle. When this gate closes, as above explained, its ratchet mechanism G actuates the trip device H for the next gate, which then opens and closes in a similar manner and likewise trips the latch for the next gate, all as fully shown and explained in my said patent.

The regulating means shown in the drawings for controlling the level of the meal or material in the top chamber, preferably includes a vertically arranged slide or gate L adapted to be adjusted in guides or ways *l* secured to the outside of the wall of the chamber, on opposite sides of an opening L′ therein. The slide L is intended to be adjusted up and down to cover more or less the lower portion of the opening L′, or so that its upper edge is raised or lowered relatively to the bottom of the chamber. The material that is being fed to the top chamber by the usual or any suitable feed or supply means M will accumulate therein until its surface is substantially at the level of the top edge of the slide or gate L. If the bottom discharge gate *a* is not then operated to deliver the material from the top chamber to the next lower one, any excess material fed to the top chamber can overflow or escape from the chamber through the opening L′ over the upper edge of the slide or gate L, such overflow of the material being caused by the rotary stirrer B in the chamber. The height of the top edge of the gate or slide L will, therefore, determine the depth of material in the chamber. The overflowing excess material can be delivered to a conveyor, meats box, or otherwise disposed of as may be most convenient or necessary, depending upon the location of the cooker or disposition of the apparatus in the mill. As shown in the drawings, the opening L is surrounded by an inclined discharge spout N for guiding the overflowing material into a feed conveyor or chute O which returns the material to a meats box (not shown). In some installations the excess material may be conveniently discharged directly into a meats box, and the conveyor O could then be dispensed with. The spout N shown is provided with a slot *n* in its bottom wall to permit the free movement of the slide L.

Any suitable or convenient means may be used to effect the adjustment of the overflow gate L. The means shown in Figs. 1, 3 and 4 comprise a rack bar *p* secured to the slide L, and a pinion *p′* meshing therewith. The pinion *p′* is secured on the shaft P journalled on the outside of the chamber 1. The shaft is provided with a hand wheel p^2 or the like for rotating the pinion. The gate can be secured when adjusted by a suitable dog or device p^3.

The means shown in Fig. 5 for actuating the slide L comprise a screw Q swivelled in a bearing lug *q* on the wall of the chamber 1 and engaging in a threaded lug or part on the slide L. A hand wheel *q′* or the like is used for rotating the screw Q to move the slide up and down in its guides. Any other suitable means may be employed for adjusting the overflow gate.

In the operation of the cooker the material will accumulate in the top kettle only to the required depth predetermined by the adjustment of the overflow gate L, and when the discharge gates C of the kettles are operated, no more than the predetermined quantity of material can be delivered from kettle to kettle if each kettle is completely emptied. If, therefore, the overflow gate L is set so that just enough meal accumulates in the top kettle to fill the line of presses

once, no meal will be left in the bottom kettle when the presses are filled, and the meal cannot collect in this kettle and prevent the intended uniform operation of the cooker.

I claim as my invention:

1. The combination of a series of heating chambers for oil bearing meal and the like arranged in a descending series and having openings to permit the passage of the material through the chambers in succession, mechanism for controlling the delivery of the material from one chamber to the next, and means for regulating the quantity of material in the first chamber comprising an overflow opening through which excess material discharges from the first chamber after the material has accumulated in said chamber substantially to the level of the lower edge of said overflow opening, and means for changing the elevation of the lower edge of said opening.

2. The combination of a series of heating chambers for oil bearing meal and the like arranged in a descending series and having openings to permit the passage of the material through the chambers in succession, mechanism for controlling the delivery of the material from one chamber to the next, means for regulating the quantity of material in the first chamber comprising an overflow opening above the bottom of said chamber through which excess material discharges from said chamber after the material has accumulated to a predetermined level in said chamber, means which agitates the material in said chamber and causes the discharge of the excess material through said overflow opening, and means for changing the elevation of the lower edge of said overflow opening.

3. The combination of a series of heating chambers for oil bearing meal and the like arranged in a descending series and having openings to permit the passage of the material through the chambers in succession, mechanism for causing the periodic delivery of the material from one chamber to the next in succession, means for controlling the quantity of material delivered from chamber to chamber comprising an overflow gate over which excess material discharges from the first chamber after the material has accumulated substantially to the level of the overflow edge of said gate, and means for adjusting said gate vertically.

4. The combination of a series of heating chambers for oil bearing meal and the like arranged in a descending series and having openings to permit the passage of the material through the chambers in succession, means for supplying material to the first of said chambers, stirrers for agitating and leveling the material in said first chamber, said stirrers operating to create a wave in said material, whereby said material is forced upwardly and horizontally, an overflow opening in said first chamber and through which said material moves horizontally and vertically, said overflow opening having adjustable means for regulating the elevation of said discharge opening and for severing portions of the horizontally moving material when the stirrers pass said opening.

5. The combination of a series of heating chambers for oil-bearing meal and the like arranged in a descending series and having openings to permit the passage of the material through the chambers in succession, mechanism for controlling the delivery of the material from one chamber to the next in succession, means for regulating the quantity of material in the first chamber, comprising an overflow opening above the bottom of said first chamber, a slide gate for opening and closing said opening, an actuating member for said gate, and interengaging parts on said gate and said actuating member, whereby when said actuating member is moved said gate is opened or closed more or less to control the quantity of material in said first chamber.

6. The combination of a series of heating chambers for oil-bearing meal and the like arranged in a descending series and having openings to permit the passage of the material through the chambers in succession, mechanism for controlling the delivery of the material from one chamber to the next in succession, means for regulating the quantity of material in the first chamber, comprising an overflow opening above the bottom of said first chamber, a slide gate for opening and closing said opening, a rotatable actuating member, and interengaging parts on said slide gate and said actuating member, whereby when said actuating member is rotated, said slide gate is adjusted more or less to open and close said opening to regulate the quantity of material in said first named chamber.

Witness my hand this 23 day of December, 1919.

MICHAEL W. FAHERTY.

Witnesses:
CHAS. GRAHAM,
STEVE S. BOLIN.