O. SHEPPARD, Jr.

HEATER OR COOKER FOR COTTON AND OTHER OIL SEED OR MATERIAL.

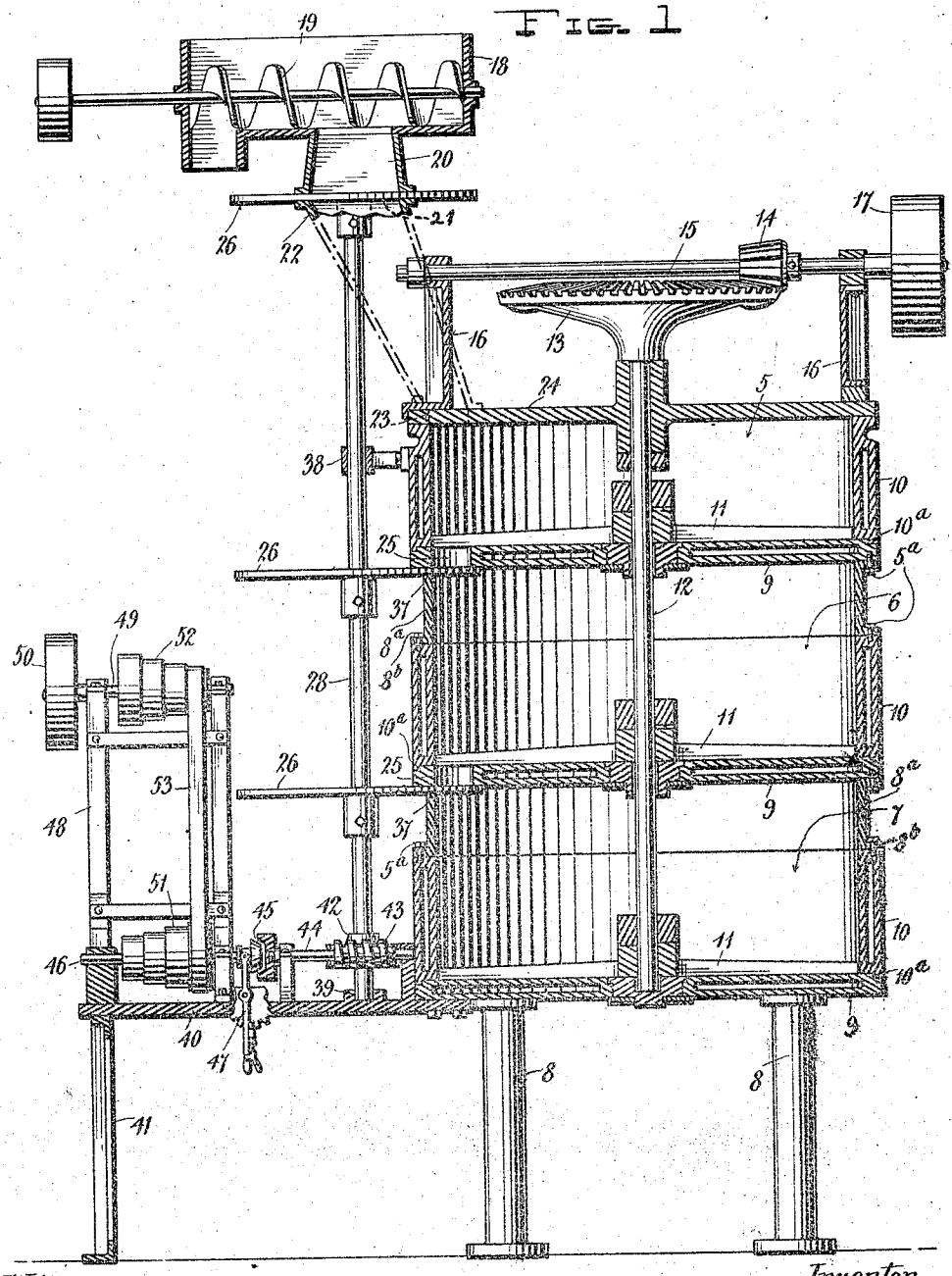
APPLICATION FILED MAR. 15, 1913.

1,196,597.

Patented Aug. 29, 1916.

2 SHEETS—SHEET 1.

Fig. 1



Witnesses

D. L. Parker

Chas. S. Hoyer.

Inventor

Orlando Sheppard, Jr.

by Junius K. Norris

Attorney.

O. SHEPPARD, JR.

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2 SHEETS—SHEET 2.

FIG. 2

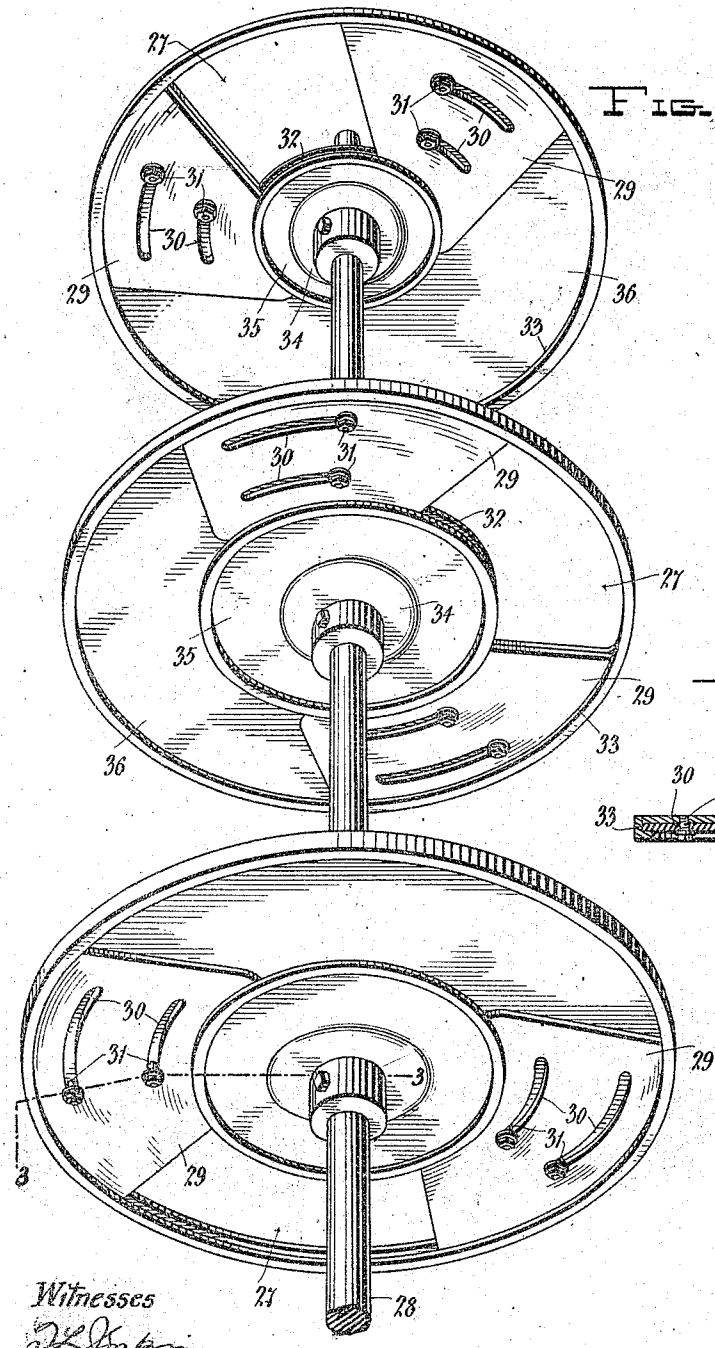
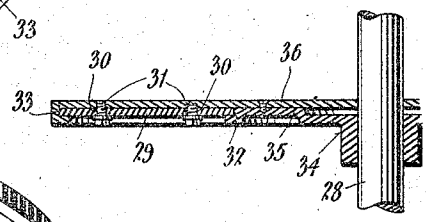


FIG. 3



Witnesses

Chas. S. Hoyer

Inventor

Orlando Sheppard, Jr.

by James L. Norris

Attorney.

UNITED STATES PATENT OFFICE.

ORLANDO SHEPPARD, JR., OF ATLANTA, GEORGIA, ASSIGNOR TO THE MURRAY COMPANY, OF DALLAS, TEXAS, AND ATLANTA, GEORGIA, A CORPORATION OF TEXAS.

HEATER OR COOKER FOR COTTON AND OTHER OIL SEED OR MATERIAL.

1,196,597. Specification of Letters Patent. Patented Aug. 29, 1916.

Application filed March 15, 1913. Serial No. 754,659.

To all whom it may concern:

Be it known that I, ORLANDO SHEPPARD, Jr., a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented new and useful Improvements in Heaters or Cookers for Cotton and other Oil Seed or Material, of which the following is a specification.

This invention relates to heaters or cookers, and more particularly to that class of such devices which are used for heating cotton and other seed and similar material preparatory to expressing the oil from the seed or material.

The primary object of the invention is to provide comparatively simple and effective means for automatically controlling the heating or cooking of the material within the several receptacles comprised in the heater organization.

A further object of the invention is to provide a heater of the class specified comprising a series of compartments or receptacles with means coöperating with each of the compartments or receptacles for automatically controlling the feeding of the material from one receptacle to another and thus enabling the feeding operations and the removal of the material to be properly timed.

The invention consists in the construction and arrangement of parts which will be more fully hereinafter described and claimed.

In the drawings: Figure 1 is a section taken transversely through one form of heater and showing the features of the invention applied thereto. Fig. 2 is a detail perspective view of the automatically operating controlling means for the compartments or receptacles and particularly embodying the features of the invention. Fig. 3 is a transverse vertical section on the line 3—3, Fig. 2.

In the drawings the invention is illustrated as applied to a heater which in its general features of construction is of a common type. This heater comprises three compartments or receptacles 5, 6 and 7 which are arranged in superposed relation, and it will be understood that the number of compartments or receptacles may be increased or decreased as desired. The lower receptacle 7 is mounted upon a suitable support, such as standards 8, and all of the receptacles are connected in any suitable manner, as for instance by means of cap screws 5^a passing through flanges of adjacent space devices which will be presently described and on which the receptacles are disposed. The bottoms 9 of the receptacles are tightly associated with the side walls 10 by machined joints 10^a consisting of male and female structures respectively formed in the said parts as shown. The receptacles are held separated or in spaced relation by rings 8^a having flanges 8^b engaged by the cap screws 5^a. The receptacles are also heated by suitable means, live steam being preferably used for this purpose, and the bottom and side walls 9 and 10 of each compartment or receptacle are formed hollow and suitably connected to a source of steam supply and have exhaust pipes, not shown, as in other devices of this type, and by means of which a circulation of steam is maintained within the walls of the various compartments or receptacles. It will be understood that the heat of the several compartments or receptacles may be readily regulated by the usual valves installed in the pipes. The heating feature of the several compartments or receptacles does not form a part of the present invention and therefore need not be further described in detail.

Arranged within each compartment or receptacle close to the bottom wall 9 thereof is a suitable stirrer 11 preferably comprising one or more arms each supported at the center of the compartment and having a rotary movement imparted thereto. A vertical shaft 12 extends through the center of each compartment or receptacle and has the stirrers secured thereon, the said shaft being rotated by a bevel gear 13 on the upper end thereof above the uppermost compartment or receptacle, this gear being rotated by a bevel pinion 14 on a shaft 15 held in suitable bearing uprights 16 and carrying a belt pulley or wheel 17 on its one end and to which power may be applied from a suitable source. The stirrers 11 operate to distribute the seed or other material evenly over the bottoms of the respective compartments and stir the seed or material to cause the whole mass to be evenly heated. Preferably the seed or material is first fed into the upper compartment or receptacle, then to the intermediate compartment or receptacle, and finally into the lower compartment or receptacle. The seed or material is heated in each

compartment or receptacle and is withdrawn from the lower compartment or receptacle.

A feeding device or apparatus is supported above the uppermost compartment or receptacle and comprises a hopper 18 which may be provided with a screw 19, and beneath this hopper and in open communication therewith is a box or compartment 20 of such size as to contain a single charge of material. The box 20 has an opening in its bottom by means of which it communicates with a chute 22 leading downwardly to an opening 23 in the top plate 24 of the uppermost compartment or receptacle. The opening 21 in the bottom of the box 20 is preferably of such dimensions as to permit the charge of seed or other material to pass from the said box into the chute 22 without retardation but the feed will be under control by means which will be presently explained. The bottom 9 of the uppermost compartment or receptacle has an opening 25 extending therethrough adjacent to the side wall thereof and located over the next compartment below, the second compartment in like manner having a similar opening 25 in the bottom wall thereof. All of the intermediate compartments or receptacles will be provided with outlets in the bottoms thereof and the lowermost intermediate compartment or receptacle will be arranged to discharge its contents into the top portion of the bottom compartment or receptacle of the group, the lowermost or bottom compartment being provided with a discharge opening controlled in a well known manner and need not be here shown or described as the same will be readily understood by those skilled in the art.

Means are provided for automatically controlling the discharge of the material from the box or compartment 20 to the uppermost compartment and from one compartment to another. The mechanism preferred and which has been particularly devised for this purpose comprises a plurality of rotary gates 26 which, as shown by Fig. 2, are in the form of disks each having an opening 27 therein adapted to register at intervals with the respective feed openings 21 and 25. The rotary gates or disks are mounted on and secured to a vertical shaft 28 disposed at one side of the heater and the uppermost gate or disk is disposed at one side of the feed hopper 18 and extends between the bottom of the box 20 and the upper end of the chute 22 to control the opening 21. It will be understood that the openings 27 in the several rotary gates or disks are in different positions relatively to each other so as to accomplish the proper timed charging of the uppermost compartment or receptacle 5 and the feeding of the intermediate and bottom compartments or receptacles 6 and 7. The uppermost rotary gate or disk 26 will have its opening 27 coincide at intervals with the opening 21 in the bottom of the box 20 and thereby permit a charge to fall into the chute 22 and through the opening 23 into the upper compartment or receptacle 25. The size of the opening 27 of the uppermost gate or disk and the speed at which the gate or disk rotates are so regulated that a fixed amount of material, preferably the entire contents of the hopper, will be discharged into the upper compartment. Inasmuch as the disk rotates at a fixed speed and the size of the opening therein and the opening 21 is never altered during the operation of the device, it will be obvious that a predetermined quantity of material will be introduced into the upper compartment at regular intervals. The openings 27 in the disks are regulated as to their size by means of sliding gates 29 arranged on opposite sides of the openings and having segmental slots therein engaged by clamping or set bolts, the slots being shown as at 30 and of proportions as to length commensurate with the distances thereof from the axes of the disks. The clamping bolts 31, as shown by Fig. 3, engage the webs of the disks, and the gates 29 have their inner and outer edges respectively seated in grooves 32 and bearing against overhanging flanges 33 at the peripheries of the disks. The grooves 32 are formed by means of center flanged hubs 34 and annuli 35 interposed between the hubs and the webs 36 of the disks, there being one hub and a single annulus in each disk organization. It will be understood that all of the rotary disks are of similar construction, the only variation being the differentiation of position of the openings 27 in the several disks so as to properly time the retention of the charges of material in the compartments or receptacles for heating purposes and to regulate the feed from the hopper to the uppermost compartment at regular intervals when the said uppermost compartment shall have been relieved of its successive charges. The rotary disks coöperating with the bottom openings 25 of the compartments extend inwardly into the top portions of the compartments which they engage through openings 37 provided for this purpose, the rotary disks closely engaging the lower portions of said openings 25 so as to insure against leakage of material in the several compartments and permit a discharge of the material from one compartment to another only when the openings 27 of the disks coincide or register with the openings 25.

The shaft 28 is mounted in suitable bearings 38 and 39, the bearing 39 being of the foot or step type and held by a suitable supporting bed 40 extending outwardly in line with the bottom of the lower compartment or receptacle and having a prop or leg

41. A worm gear 42 is fixed on the lower extremity of the shaft 28 and meshes with a worm 43 on a shaft 44 which is driven from some suitable source of power. Means are also provided for interrupting the movements of the rotary gates or disks should this operation be desired. This is accomplished through the medium of a friction or jaw clutch 45 associated in part with a shaft 44 and in part with a countershaft 46, the clutch being controlled through the medium of a hand-lever attachment 47, as clearly shown. The shaft 46 is mounted in the lower portion of an auxiliary frame 48, and in the upper part of said frame a power transmitting shaft 49 is disposed in suitable bearings and provided with a belt wheel or band pulley 50 to receive power from any suitable source. Variable speed mechanism is provided in connection with the shafts 46 and 49 and in the presenet instance consists of stepped pulleys 51 and 52 on the respective shafts 46 and 49, the said pulleys being engaged by a belt 53 which may be shifted as desired to modify the speed of the shafts 44 and 28 and thus regulate the speed of rotation of the rotary gates or disks 26 when the clutch 45 is operated to connect the two shafts 44 and 46.

The operation of the improved heater will be readily understood from the foregoing description, and it will be apparent that fixed quantities of material are fed into the upper compartment or receptacle 5 at regular intervals and in sequence similar quantities of material are fed from the compartment 5 into the compartment 6 and from the latter into the compartment 7. The material as fed into the several compartments is evenly distributed over the bottom walls 9 by the stirrers 11 and is heated to the degree desired or in accordance with the adjustment of the gates or slides 29 relatively to the openings 27 of the rotary disks and the speed of rotation imparted to the said disks. When the several charges of material shall have reached the lower compartment or receptacle they will be removed at fixed intervals and in any desired quantities. By means of the organization of devices hereinbefore described, all of the material fed into the upper compartment and passing onto the succeeding compartments must remain a fixed time in each compartment until it has been sufficiently or completely heated. There is, therefore, no possibility of any portion of the material passing too quickly through the heater and being removed in an improperly cooked condition. There is also a material advantage in delivering oil bearing seed or meats or analogous material in small quantities to the several compartments as the heat can be more gradually applied to the seed or meats and evenly distributed with respect to all portions of the seed or meats. Frequently where large quantities of the product to be treated are cooked it is found that portions of these large quantities of material when removed from the heater are not sufficiently cooked. Furthermore, by means of the improved heater, neglect or inattention on the part of careless employees does not result in injury to the material treated or heated, as the heater will automatically work or discharge the quantities of the material regularly from one compartment into another and the feed will be maintained at intervals in the uppermost or first compartment, and it is therefore practically impossible to overcook the material in the several compartments. A still further advantage in the present improved heater is the automatic charging of the upper compartment by the mechanism heretofore explained and independent of any manual operation or dependence.

It will be understood also that the cooker will be equipped with such devices as are usually employed in connection with the several compartments for observing the interior operation of the latter and readily understood in the art.

The invention is not limited to the exact details of construction shown and it is proposed to increase the number of rotary disks and compartments as may be desired and also to utilize such other reasonable equivalent operating mechanisms as may be contemplated by the scope of the invention.

What is claimed is:

1. In a heater of the class specified, the combination of a heating compartment, a charging hopper and compartment having communication with the said heating compartment, a single shaft extending upwardly exteriorly of the hopper and compartments, and rotary gates mounted on said single shaft and coöperating with the hopper and compartment and the heating compartment to automatically regulate feed of charges to the latter compartment at intervals.

2. In a heater of the class specified, the combination of a heating compartment having an inlet and outlet in different portions thereof, charging means connected to the inlet of the compartment, a single shaft extending upwardly exteriorly of the heating compartment and charging means, and rotary gates mounted on said single shaft and coöperating with the charging means and the outlet of the compartment to automatically regulate the feed and discharge of predetermined quantities of material to be treated to and from the said compartment.

3. In a heater of the class specified, the combination of a plurality of superposed heating compartments having bottom outlets in communication with the compartments, a single shaft extending upwardly

exteriorly of the compartments, and rotary gates all mounted on said shaft with the greater portion thereof exterior of the compartments and having openings therein in different positions and operating with the outlets of the compartments to automatically regulate the discharge of the material treated in one compartment at intervals relatively to another compartment.

4. In a heater of the class specified, the combination of a plurality of superposed heating compartments having outlets for the discharge of material in one compartment into another successively throughout the plurality of compartments, and rotary gates vertically alined and having the greater portions thereof exterior of the compartments and the remaining portions cooperating with the outlets of the compartments and having offset openings to automatically discharge the contents of the compartments relatively to each other at different times.

5. In a heater of the class specified, the combination of a plurality of superposed compartments having outlets for discharging material in the several compartments at timed intervals into adjacent compartments, a charging means for delivering predetermined quantities of material to be treated into the uppermost of the compartments, and vertically alined rotary gates having portions exterior of the compartments and charging means and remaining portions thereof extending into the compartments and charging means and coöperating with the outlets of the compartments and the charging means and having offset openings to automatically regulate the charging of the one compartment and the discharge of the compartments relatively to each other at timed intervals.

6. In a heater of the class specified, the combination of superposed heating compartments having discharge openings disposed to communicate with the successive compartments, and rotary gates having offset openings therein coöperating with the outlets of the compartments, the gates being vertically alined and in the main exteriorly located relatively to the compartments, the openings of the gates being provided with means for varying the size of the said openings.

7. In a heater of the class specified, the combination of a plurality of superposed heating compartments having outlet openings arranged to deliver the contents of the several compartments into succeeding compartments, a shaft arranged adjacent to the heater and exteriorly of the compartments, and a plurality of rotary gates fixed on the shaft and partially entering the side portions of the compartments and having offset openings to register with the outlet openings of the compartments to automatically regulate the discharge of the compartments at timed intervals.

8. In a heater of the class specified, the combination of a plurality of heating compartments having bottom outlet openings disposed over successive compartments, a charging means for one of the compartments, a single shaft arranged adjacent to the heater exteriorly of the compartments, and a plurality of rotary gates secured on the shaft and in the main disposed exteriorly of the heating compartments and charging means and having offset openings therein operating at timed intervals in conjunction with the outlet openings of the compartments and the charging means.

9. In a heater of the class specified, the combination of a plurality of superposed heating compartments, the upper compartment having a top inlet opening and also provided with a bottom outlet opening arranged to discharge into the intermediate compartment, the bottom compartment being devoid of the bottom outlet but having the bottom outlet of the intermediate compartment next above disposed thereover, charging means connected to the inlet opening of the upper compartment, and a plurality of rotary gates in the main located exteriorly of the superposed heating compartments and charging means and arranged in vertical alinement and having offset openings coöperating with the charging means and the outlet openings of the several compartments to regularly charge the upper compartment and discharge the successive compartments at timed intervals relatively to the bottom compartment.

10. In a heater of the class specified, the combination of a plurality of superposed compartments having outlets for discharging the material therefrom into the succeeding compartments, a shaft adjacent to the heater, a plurality of rotary gates all mounted upon the shaft and in the main located exteriorly of the compartments with portions extending into the sides of the compartments and provided with offset openings coöperating with the outlets of the compartments, and means for modifying the movement of the shaft and the rotary gates.

11. In a heater of the class specified, the combination of a plurality of heating compartments having bottom outlets disposed over the successive compartments, the one compartment having an inlet opening, charging means communicating with the inlet opening of the one compartment, a shaft adjacent to and wholly exterior of the heater, a plurality of rotary gates mounted on the said shaft and in the main also exterior of the compartments with portions extending into the sides of the compartments having offset openings coöperating with the

charging means and the outlets of the compartments, and mechanism for modifying the speed of rotation of the shaft and rotary gates.

12. In a heater of the class specified, the combination with a plurality of superposed heating compartments having discharge openings, of a shaft mounted adjacent to and exteriorly of the heater and having a plurality of rotary gates all mounted thereon in vertical alinement and having portions rotatably engaging the side portions of the compartments, the gates being provided with offset openings and adjustable slides to regulate the size of said openings, and mechanism for modifying the speed of rotation of the shaft and gates.

13. In a heater of the character described, a plurality of communicating compartments, means for heating said compartments, mechanism for causing material to be heated to be fed to one of said compartments in fixed quantities at predetermined intervals, and mechanical means for causing quantities of said material to be fed from the first-mentioned compartment to another of said compartments at predetermined intervals.

14. In an oil seed cooker, a plurality of superimposed kettles, gates in the lower portions of the said kettles, and automatic means connected with said gates adapted periodically to open the gate in one of the said kettles at predetermined intervals of time, to close the said gates and thereafter to open and close the gate in the kettle next above.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ORLANDO SHEPPARD, JR.

Witnesses:
W. H. CAMP,
H. R. EICHBERG.