F. W. BURPEE.

CONTINUOUS CAN COOKING RETORT.

APPLICATION FILED JULY 25, 1914.

1,154,611.

Patented Sept. 28, 1915.

2 SHEETS—SHEET 1.

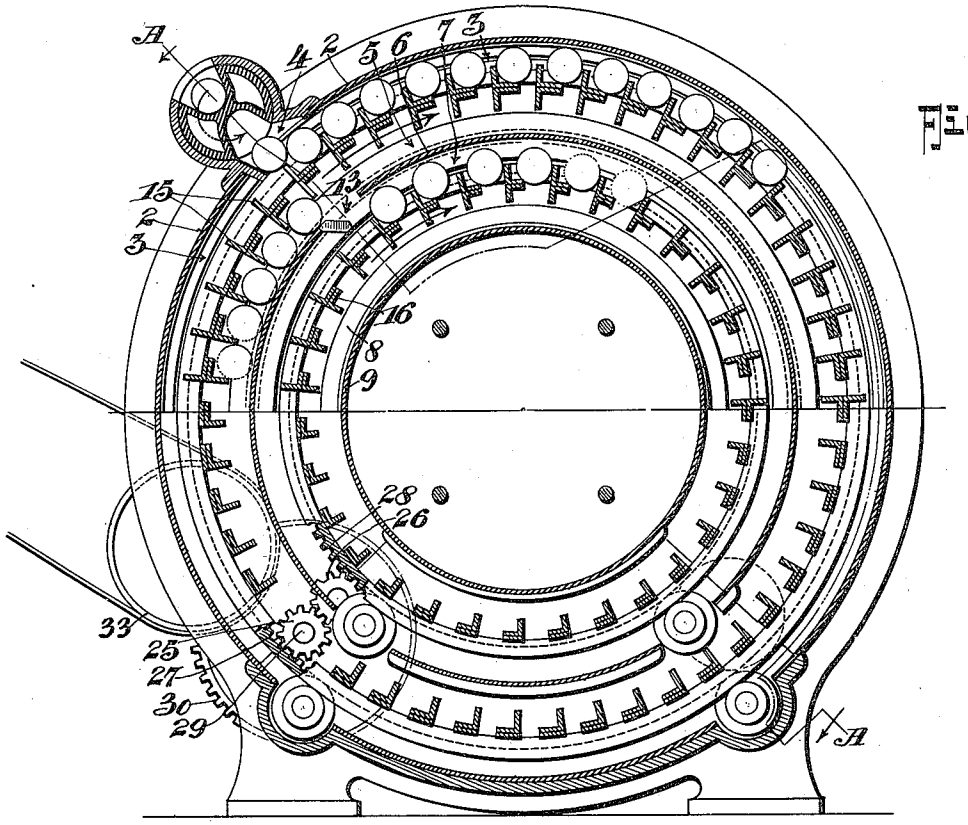

Fig. 1.

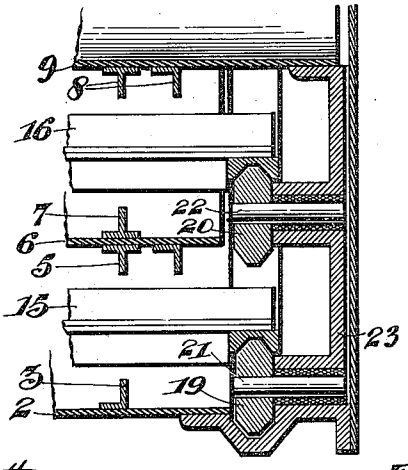

Fig. 2.

WITNESSES:

John S. Schrott.

Mae Immich

INVENTOR

Frank W. Burpee.

BY

Fred G. Dieterich & Co

ATTORNEYS.

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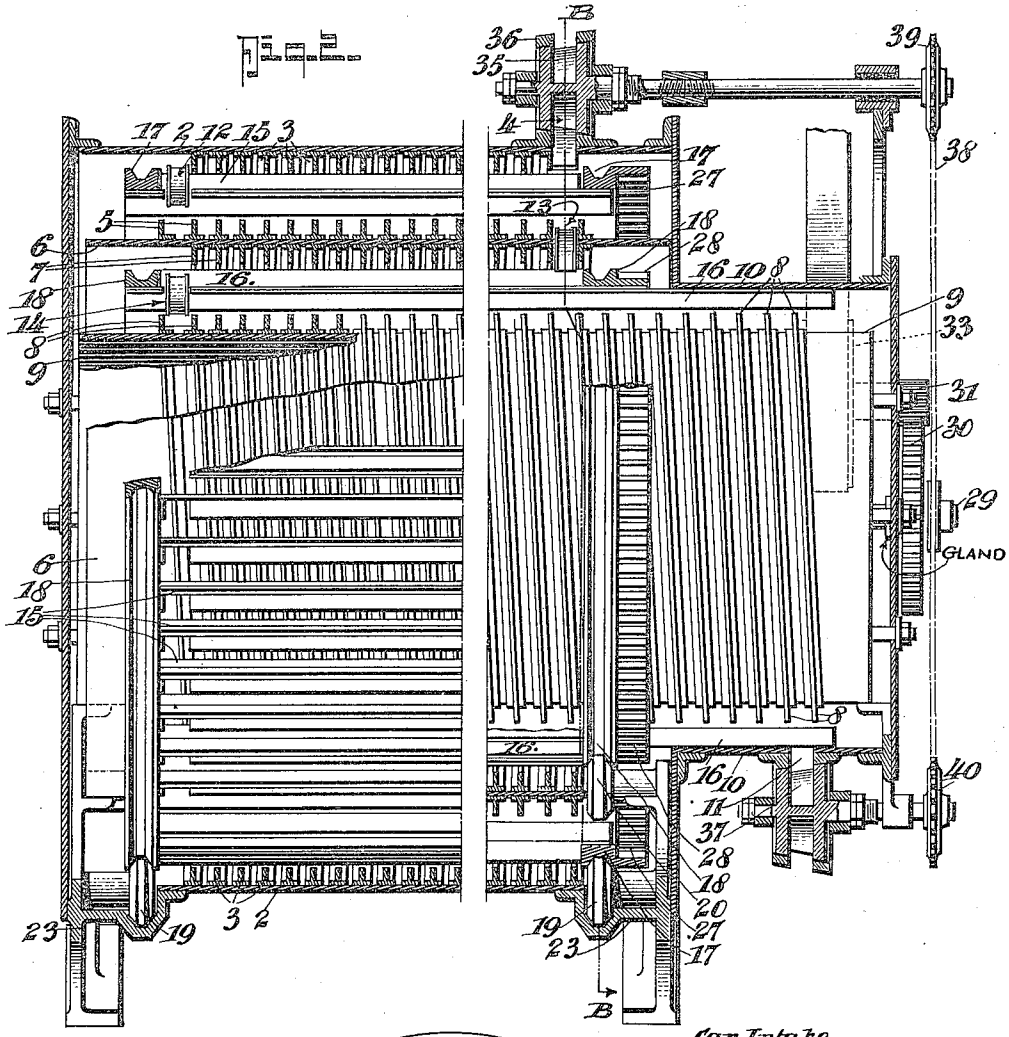

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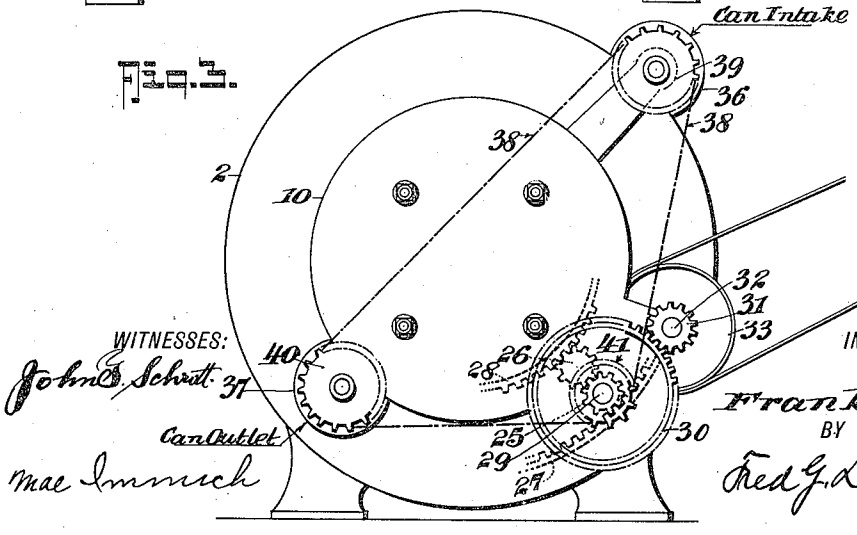

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UNITED STATES PATENT OFFICE.

FRANK W. BURPEE, OF SOUTH BELLINGHAM, WASHINGTON.

CONTINUOUS CAN-COOKING RETORT.

1,154,611. Specification of Letters Patent. Patented Sept. 28, 1915.

Application filed July 25, 1914. Serial No. 853,227.

To all whom it may concern:

Be it known that I, FRANK W. BURPEE, citizen of the Dominion of Canada, residing at South Bellingham, in the county of Whatcom and State of Washington, have invented certain new and useful Improvements in Continuous Can-Cooking Retorts, of which the following is a specification.

This invention relates to a cooking retort for canned goods, and belongs to that class where the cans, after having been filled and capped, are successively passed into a retort where they are exposed to the heat of live steam and are continuously moved back and forth within that retort for a sufficient time to effect the cooking of their contents and are thereafter successively delivered from the retort. The device, which is the subject of this application, has been designed to enable this process of continuous cooking to be conducted within a retort occupying a comparatively limited floor space. With this object in view the cans are rolled within a stationary retort along a series of coiled tracks which are disposed concentrically with one another about an axis which is substantially horizontal, each adjacent coil being oppositely angled so that the cans with the same movement of rotation, may be traversed along one coil and being delivered at the end on to the next coil are carried in the opposite direction, and so on back and forth along the several coils to the place of delivery.

The invention is particularly described in the following specification, reference being made to the drawings by which it is accompanied, in which:

Figure 1 is a vertical cross section on the line B B in Fig. 2. Fig. 2 is a vertical section being a development on the line A A in Fig. 1, and Fig. 3 is an end view to a reduced scale showing the driving mechanism of the can carriers and of the admission and delivery valves, and Fig. 4 is a detail showing the manner of supporting the small wheels on which the can moving frames are rotated.

In these drawings 2 represents the outer cylindrical shell of a stationary steam tight retort secured to the inside of which shell is a coil 3 of angle or T iron extending from an inlet aperture 4 to the other end of the cylinder, which coil forms a track along which the cans are rolled and at the farther end are transferred to a smaller concentric and oppositely angle coil 5 which is secured to a partition or open frame 6 supported in any convenient manner between the ends of the stationary cylinder 2. On the inner side of this concentric partition 6 is secured another track coil 7 which is angled the same as the first one 3 to return the cans to the other end of the retort where they are again transferred to an oppositely angled concentric track coil 8 of smaller diameter, secured to an inner cylinder 9.

The inner cylinder 9 of the retort is projected beyond one end of the outer cylinder 2 to enable delivery of the cans to be effected beyond the end of that cylinder. The outwardly projecting portion of the inner cylinder 9 has a concentric outer shell 10 to form a steam space inclosing the inner track to the delivery outlet 11.

Rotatable between the outer shell 2 of the retort and the cylindrical partition 6, and within that partition 6 between it and the inner cylinder 9 of the retort, are the frames by which the cans are moved along the coil tracks 3 and 5 and 7 and 8 respectively. These frames are each formed of lengthwise disposed bars 15 and 16 secured to the inner sides of and extending between rings 17 and 18 which are V grooved on their outer sides to rest on small angularly separated roller wheels 19 and 20 mounted at each end on studs 21 22 secured in segmental projections from the inner side of the flanged rings 23 by which the ends of the retort are connected to the outer shell 2. The lengthwise disposed bars 15 and 16 of these can moving frames are of such cross section that they will engage cans on each of the coil tracks between which the frames rotate, that is, the bars 15 of the outer rotatable frame will engage the cans on the track formed by the coil 3 and also those formed by the coil 5, and the bars 16 of the inner rotatable frame will engage the cans on the tracks formed by the coil 7 and by the coil 8. They will also separate the cans on these separate tracks and prevent them passing from one track to the other except at the place provided at the end of each track where the cans are required to be transferred.

Attention is drawn to the fact that the cans moving along the coil 3 and the coil 5 are carried by the bars 15 of the outer frame through the upper half of their movement, and during the lower part of their move-

ment they are rolled along the tracks by the bars and the reverse is the case with the cans in the tracks formed by the outwardly projecting coils 5 and 8, the cans therein being carried by the bars 15 and 16 during the lower part of their movement and are rolled along their tracks through the upper part of their movement.

At the opposite end of the coiled track 3 to the inlet aperture 4 a portion of one of the can moving bars 15 is removed, as at 12, to enable a can, when it reaches the delivery end of the track 3, to roll through the space provided on to the next inner track 5, the end of which is produced beneath the aperture. At the opposite end of the track 5 to that on to which the cans are delivered the horizontal elements of the tracks 5 and 7 are removed, as at 13, and an aperture is provided there through the cylindrical partition 6 to enable the cans to roll from the track 5 and on to the upper side of the bars 16 of the inner rotatable frame to be moved by them along the track formed by the coil 7 and similarly at the end of that track 7 opposite to that on which they were delivered, the horizontal elements of the bars 16 are removed, as at 14, to allow the cans to roll through on to the track 8 which track, as before, is produced under the space to receive them. At the other end of this track 8 the horizontal element of the produced bar 16 is removed opposite the delivery aperture 11 of the retort thus enabling the cans to roll out from the retort.

The can moving frames which include the bars 15 and 16 and the rings 17—18 are rotatable at the same peripheral speed by pinions 25 and 26, the teeth of which mesh with one another and with those of gear wheels 27 and 28 which are respectively integral with the rings 17 and 18 at one end of each frame. The driving pinion 25 is secured on a shaft 29 which passes gland-packed through the end of the retort and has, outside of the retort, a spur wheel 30 secured on it in the teeth of which mesh those of a pinion 31 secured on a counter shaft 32 which is driven by a belt over a belt pulley 33 secured on the shaft 32.

The cans are delivered into the retort at the inlet 4 by a slightly conical double pocketed valve 35 which is rotatable steam tight within a casing 36 secured to the shell over the inlet and this valve casing 36 is provided with an aperture through it corresponding with the inlet 4 through which the cans are delivered into one of the pockets of the valve and after a half rotation, into the retort. A similar valve 37 is secured over the outlet aperture 11. These valves 35 and 37 are rotated at a speed which is timed in relation to that of the can moving frames to respectively deliver and receive a can to and from the interspace between each pair of bars 15 and 16, by a sprocket chain 38 taking over sprocket wheels 39 and 40 secured on the stem of each valve 35 37 or on a shaft secured thereto, and around a sprocket wheel 41 secured on the shaft 29 through which the can moving frames are driven.

The place of delivery into and from the retort and of transfer from one coil to the other within the retort should be so situated in relation to the rotation of the can moving frames as will enable the cans to be quietly lowered into and from the retort, or from one coil to the other without shock.

In use, the cans are delivered by a chute or otherwise to the inlet valve 35 and may be spaced thereto or may be spaced by the valve itself, and by rotation of that valve are successively delivered within the retort and deposited between the outer bars 15 of the outer can moving frame. By these bars the cans are carried around the inner side of the retort and by the angle of the coil 3 are slowly moved from one end to the other. At the opposite end of that coil they are delivered at 12 through the bars 15 on to the track formed by the coil 5, along which being oppositely angled they are moved to the other end of the retort. They are here transferred at 13 on to the bars 16 of the inner rotatable frame and by them are moved along the track formed by the coil 7 to the other end where they are again transferred at 14 on to the inner coiled track 8 along which they are moved by the bars 16 to the outlet 11 into which they deliver, and are passed from the retort by the valve 37. The length of the coils and the speed of the can moving frames are so proportioned that the cans will be exposed to the heat of the retort for a sufficient time to effect the cooking or heat treatment of their contents.

Having now particularly described my invention, I hereby declare that what I claim as new and desire to be protected in by Letters Patent, is:

1. A continuous cooking retort for cans comprising an outer cylindrical casing, inner cylindrical shells concentrically disposed within said outer casing and spaced apart from each other, the innermost shell being of greater length than the remainder, said outer casing having a reduced extension over the projecting end of said inner shell, a plurality of can moving frames disposed between said shells, spiral trackways carried by said shells and said outer casing and pitched alternately in opposite directions, means for admitting cans into said outer casing adjacent to one end thereof, means for delivering cans from said outer casing at said reduced extension, and transferring elements carried by said can moving frames intermediate said shells for transferring the cans as they reach the ends of the retort

whereby the movements of the cans will be back and forth from end to end of the retort and toward the axis of the same, and means for imparting motion to the can moving frames.

2. A continuous cooking retort for cans, comprising the combination with a stationary cylindrical retort to which steam is admitted, said retort disposed on a substantially horizontal axis, of cylindrical partitions supported concentrically within the retort the innermost cylindrical partition being extended beyond the outer shell at one end and having an inclosing cylinder connecting it to the end of the main part of the retort, a coil secured to the inside of the shell of the retort forming a track for the cans, a similar track secured to the inside and to the outside of the intermediate partition and a coil secured to the outside of the inner partition the adjacent coils being angled in opposite directions, can supporting and moving frames rotatably mounted in the interspace between the shell and the outer partition and between the partitions, said frames comprising rings and lengthwise disposed bars, roller wheels supporting said frames, means for rotating said frames, a rotatable valve delivering cans through the outer shell of the retort at one end, provision for allowing the cans to transfer from the end of one coil track to the end of the next track within it, a rotatable valve for delivering the cans from the end of the inner track to without the retort, and means cooperative with the can moving frames for rotating the exit and the outlet valve.

3. A continuous cooking retort for cans comprising the combination with an outer shell or casing to which steam is admitted, of a series of can tracks arranged as concentric coils within the chamber about an axis which is substantially horizontal, means for supporting the track of a series concentrically within the other, said supporting means including inner shells, the innermost shell being of greater length than the others, said casing having a reduced extension into which said inner shell projects, the track of one coil of a series being angled in a direction opposite to the track of the next succeeding coil, means for successively delivering the cans into the chamber, means for moving the cans along the coil tracks, means for permitting the cans to pass from one end of one track to the end of the next track within it, and means at the extension end of said casing for delivering the cans from the chamber.

4. A continuous cooking retort for cans which comprises the combination with a cylindrical casing to which steam is admitted, the axis of said casing being horizontally disposed, of a series of cylindrical frames concentrically supported within the retort, coils secured to the outer shell of the retort and to the concentric frames, the adjacent coils being oppositely angled, means for delivering cans into the retort and onto the track formed by the outer coil, rotatable means for carrying the cans around the coils, means permitting the transference of the cans from the end of one coil onto the end of the next coil within it, the innermost cylindrical frame being of greater length than the others and said casing having a reduced extension into which said inner frame projects, and means at said extension for delivering the cans from the retort.

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

FRANK W. BURPEE.

Witnesses:
A. C. ADAMS,
W. H. WATROUS.