S. E. WALKER.

CONTINUOUS COOKER FOR FOODS IN CONTAINERS.

APPLICATION FILED NOV. 15, 1919.

1,382,148. Patented June 21, 1921.

2 SHEETS—SHEET 1.

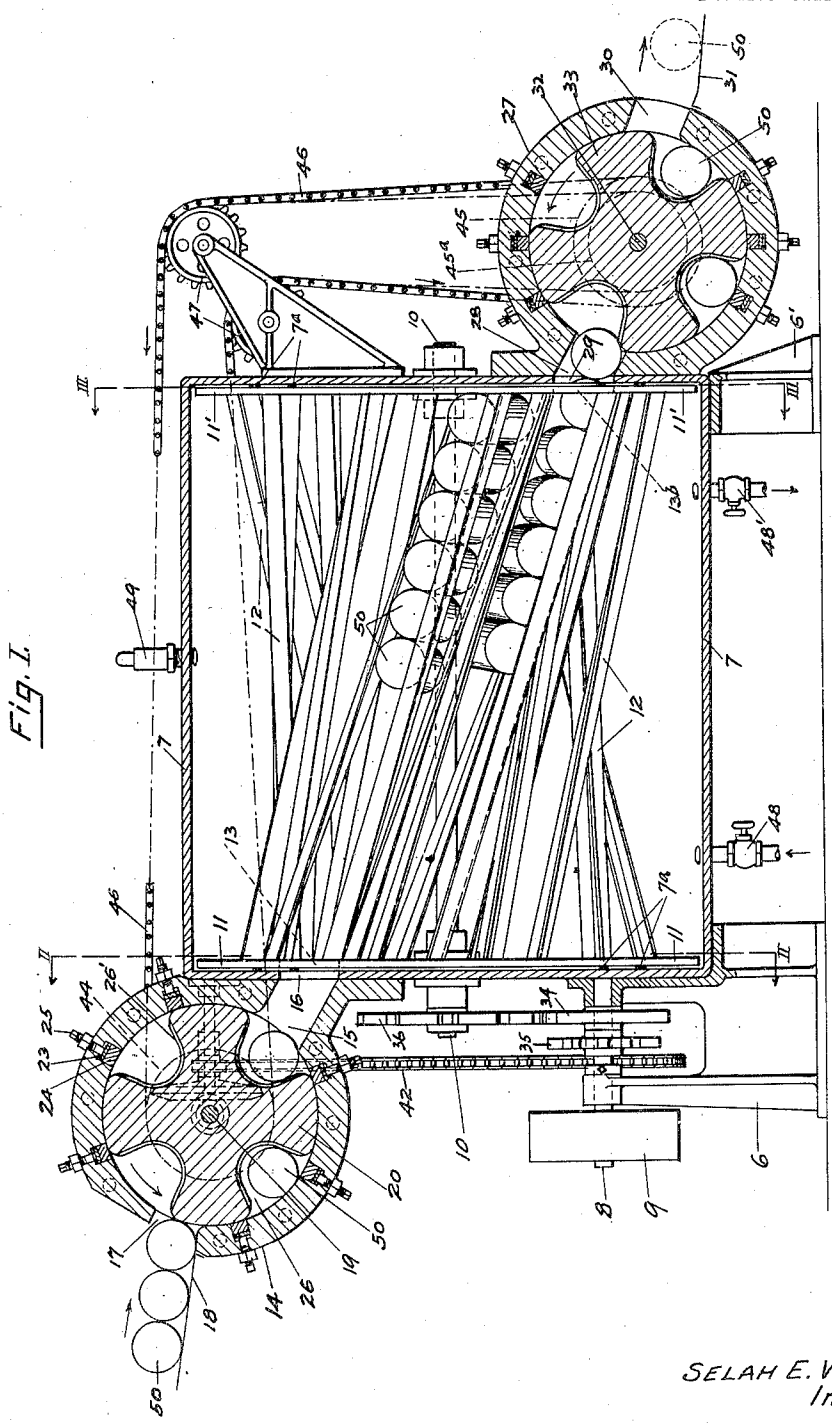


Fig. I.

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By R. E. Wright

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2 SHEETS—SHEET 2.

Fig. II.

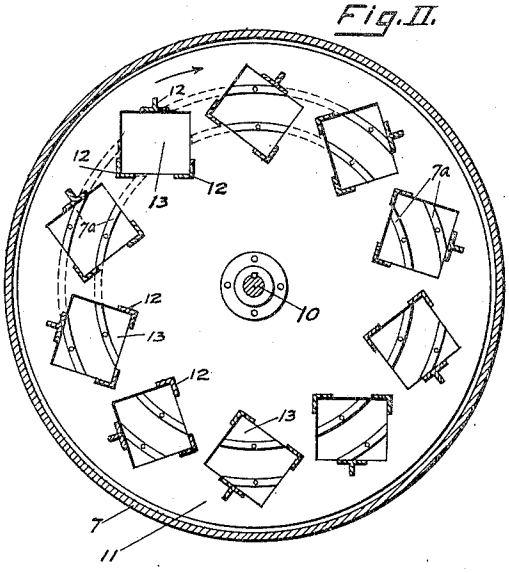


Fig. III.

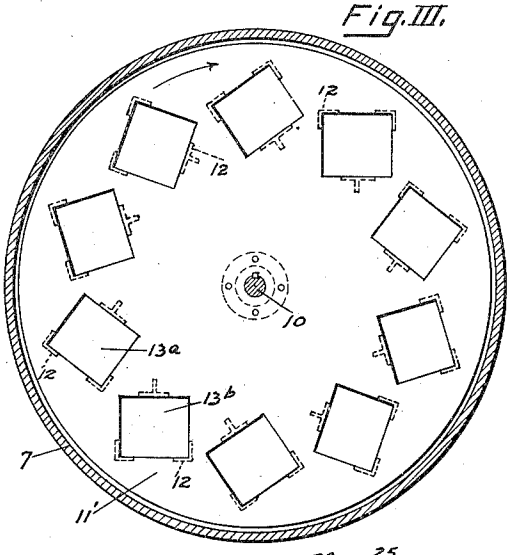
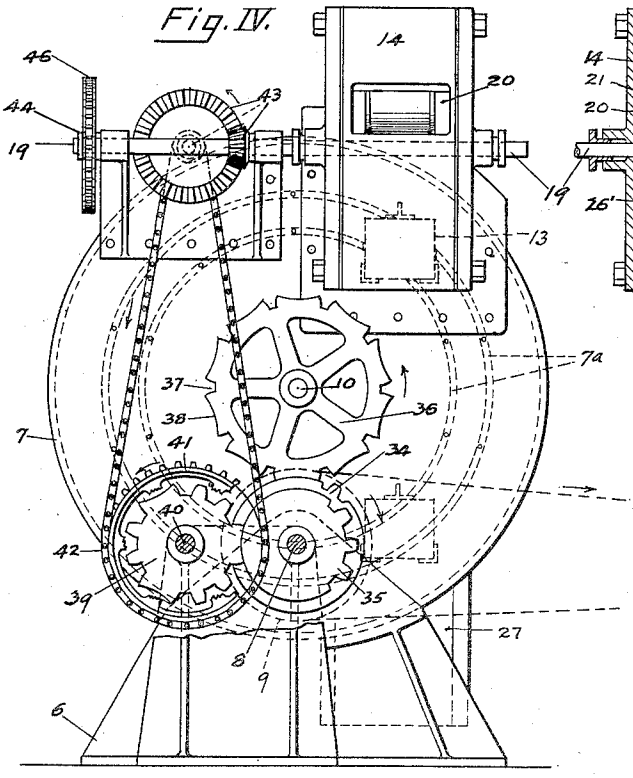


Fig. IV.



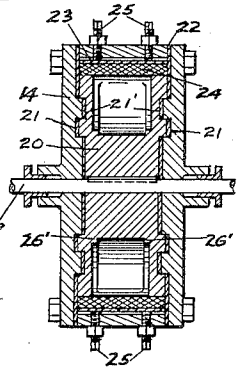


Fig. V.

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UNITED STATES PATENT OFFICE.

SELAH E. WALKER, OF PORTLAND, OREGON.

CONTINUOUS COOKER FOR FOODS IN CONTAINERS.

1,382,148. Specification of Letters Patent. Patented June 21, 1921.

Application filed November 15, 1919. Serial No. 338,193.

To all whom it may concern:

Be it known that I, SELAH E. WALKER, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented a new and useful Improvement in Continuous Cookers for Foods in Containers, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to canned goods cookers as a class.

The object of my invention is to provide a cooker for foods in containers, such as cans, wherein the cans are passed through a valve into helically arranged chutes of a drum within a boiler, and are discharged therefrom through a similar valve, the speeds of the valves and drum and times of rotation being related to each other in a predetermined manner. These objects, as well as other advantages, I attain by the construction, combination and arrangement illustrated in the accompanying drawings which form a part hereof.

Figure I is a sectional elevation of the device.

Fig. II is a sectional view on the line II—II of Fig. I.

Fig. III is a like view on the line III—III.

Fig. IV is a left end elevation with parts broken away.

Fig. V is a cross-section of the filling valve.

Like characters refer to like parts in the views.

Upon a frame 6—6′ a boiler 7 is secured. The boiler has friction rings 7^a upon the inner surface of each end. A horizontal drive shaft 8 is rotatably mounted in the frame adjacent to the lower part of one end of the boiler, with a pulley 9 on the outer shaft end, to which power may be transmitted from any suitable source. A shaft 10, rotatably mounted, extends longitudinally through the central part of the boiler. Within the boiler a drum is rigidly secured upon the shaft 10. The drum consists of vertical, circular end plates 11—11′, positioned in close proximity to the interior opposing end walls of the boiler, and a series of chutes 12 arranged helically about the shaft 10, their ends being rigidly secured to the respective opposing drum plates 11—11′. Opposite the secured ends of the chutes 12 the plates 11—11′ are provided with chute openings or ports of like dimension as the sectional area of the chutes. To facilitate the description hereafter, these openings are designated 13 and a series thereof 13—13^a—13^b. Upon and near the upper part of the boiler, a filling valve shell 14 is rigidly secured. It has an inclined discharge port 15 into a port 16 in the end wall of the boiler. The port 16 is positioned so that the chute openings 13 in the plate 11 will come opposite to the same in sequence, as the shaft 10 rotates the drum. The openings 13 and 16 and port 15 are of like dimensions. The valve shell 14 also has a receiving port 17 to which a chute 18 extends. A shaft 19 extends transversely through the shell 14 and is rotatably mounted therein. Upon the shaft 19 a valve 20 of cylindrical form is rigidly secured and is seated against the side and circumferential walls of the shell. The side walls of the shell and the opposing sides of the valve have circular grooves 21—21′. Packing 22 is placed between the side shell walls and the valve, also in the grooves 21—21′. A series of transverse packing grooves 23 are formed in the inner surface of the circumferential wall of the shell opposite the rim of the valve 20. Packing 24, placed in these grooves, is adjusted to desired engagement with the valve rim by the means 25. The valve 20 has a series of transverse semi-circular pockets 26 formed along its rim, arranged to open in sequence to the receiving and discharging ports 17 and 16. The pockets 26 are provided with integral shoulders 26′ near each end. A discharging valve shell 27 is rigidly secured upon and near the lower, opposite end of the boiler. It has an inclined receiving port 28, from an opening or port 29 in the boiler, which opening 29 is positioned so that the openings 13 in the plate 11′ will come opposite to the same in sequence, as the shaft 10 rotates the drum. The openings 13—29 and the port 28 are of like dimensions. The shell 27 also has a discharge port 30 from which a chute 31 extends. A shaft 32 extends transversely through the shell 27 and is rotatably mounted therein. Upon the shaft 32 a valve 33 is rigidly secured. It is of like construction and arrangement within the shell as the valve in the shell 14.

Upon the shaft 8 intermittent gears 34 and 35 are rigidly secured, the first being shown with one tooth, the second with three

Above the gear 34 a gear 36 is secured upon the end of the drum shaft 10. It has notches 37, equal in number to that of the chutes, in position to be engaged by the tooth of the gear 34 in a manner to allow the shaft 10 and its drum to be rotated in a predetermined time and speed. Between the notches 37 the gear 36 has concaved rim surfaces 38 positioned to engage the smooth rim surface of the gear 34 and lock the gear 36. At one side of the gear 34, a gear 39 is secured upon a rotatable shaft 40. The gear 39 is of like construction as the gear 36 and its notches are positioned to be engaged by the teeth of the gear 35 in a manner to allow the shaft 40 to be rotated in a predetermined time and speed. The shaft 40 has a sprocket 41 secured thereon and a chain 42 over the sprocket, through which chain, and the means 43, power may be transmitted to the valve shaft 19. Upon the outer end of the shaft 19 a sprocket 44 is rigidly secured and upon the lower valve shaft 32 another sprocket 45 is rigidly secured. A chain 46 extends over the sprockets 44 and 45, being guided and aided along its path of travel by the rotatably mounted idler sprockets 47. The sprocket 45 has been illustrated of the same size as the sprocket 44, but preferably in practice, the sprocket 45 will be of lesser diameter, as shown in the dotted lines 45^a. This latter construction provides an arrangement whereby the sprockets 44 and 45^a will rotate in a manner to allow the valve 33 to be driven at a predetermined speed and greater than that of the valve 20. Cocks 48—48′ are provided in the boiler to admit heated fluid and discharge the same respectively. A safety valve 49 may also be placed in the boiler. Cans 50, of the common type used for food containers, are shown upon the chute 18, in the valve shell 14, in the chutes 12, in the valve shell 27 and upon the chute 31.

It will be understood that the cans 50 are to contain food with the air exhausted from the cans and the same hermetically sealed. Fluid of desired temperature is admitted to the boiler, and cans 50, as described, placed upon the chute 18. Thereupon power is transmitted through the shaft 8 and through the intervening mechanisms, to rotate the drum and the valves 20 and 33. The valve 20 receives the cans into its pockets and discharges them into the opposing chute 12. The plate chute port 13 allows passage of the cans into the chute and at the same time the opposing port 13^a, in the plate 11′, is opposed to the boiler end wall, and the chute when filled retains the cans therein until the drum makes an entire revolution. When the opening 13 is brought to a position just in advance of its opposition to the valve port 16, the opposing opening 13^b in the plate is then opposite the receiving port of the valve 33 and the cans are discharged from this chute into the pockets of the valve 33 and thence outwardly through its discharge port 30 into the chute 31. At the same time the chute just preceding is receiving cans through the valve 20 in the same manner before described. The object of the arrangement of the mechanism is to provide a speed of the drum which allows the cans to remain in a chute, for the cooking of their contents, during one revolution of the drum, which may be regulated for a cooking period of one hour or any desired time. It is also intended that the filling valve 20 shall rotate at a speed sufficient to fill the chute in position to it, promptly and completely. It is also intended that the valve 33 shall receive the cans at a desired greater speed upon their downward course in order that a chute may be promptly and completely emptied before it advances to its next serial filling position. It is obvious that one chute must be completely emptied as soon as the filling of the next preceding one is finished and it advances. The speed of the valve 20 should be less than that of the valve 33 for this reason, and also in order to pick up sufficient cans to fill each chute within the time limit, in case a pocket of the valve 20 should pass the receiving port without taking a can. It will also be observed that the concaved surfaces of the gears 36 and 39 allow them to be locked in place immediately after the opposing gears have engaged the respective notches. The object of this is to arrange a relation between the gears so that the gear teeth of 35 will engage first and move the valves, through the intervening mechanism, before the tooth of the gear 34 engages a notch in the gear 36. The notches in 36 of course are of like number as the number of chutes and the rotating proportion is illustrated as one to ten. It will be apparent, with the arrangement shown of the gears, that when the valves are moved to receive and discharge a can respectively, the drum remains in a stationary position to retain the chutes in proper position. When the drum rotates the intake and outlet are closed, the receiving and discharging ceases and the valves remain stationary until again actuated by the gear mechanism. The sprocket mechanism provides the means for related movements between the valves. The form and arrangement of the valves provides a means whereby the cans may be introduced into and discharged from the boiler while the fluid therein is under pressure. The manner of packing the valves insures this pressure. The shoulders in the valve pockets support the cans near their ends and prevent injury to them. The chutes 12 are of angled material and sup-

port the cans in like manner. The friction rings upon the inner ends of the boiler are arranged in a manner whereby the end rim only of the tilted can will engage the rings and slide along them, thus preventing the flat surfaces of the cans from being injured. The helical chutes further provide a very efficient means to facilitate the reception of the cans, their passage within the cooking fluid for the predetermined time, and the discharge at the termination of the period. The apparatus supplies means for thoroughly cooking the food in the containers, as a stream of them continually passes through it in sequence. When properly adjusted, it requires only the watching of the temperature, the feeding of the filling chute and removal from the discharge chute, of cans in transit. With this service it will perform its functions indefinitely. It is intended that the cans shall be passed through the cooker at all times in practically horizontal position. The mechanism also provides for allowing the cans to be rotated in open chutes in the boiler, thus entering the cooking stage immediately upon being discharged from the steam tight valve into the boiler. This insures a uniform cooking temperature for all cans and immediate beginning of the cooking, which saves valuable time. The device clearly provides for handling of the cans in a minimum of space and a maximum capacity of cans for the boiler, with the least amount of cooling of the cans or of parts of the machine, which might require greater heating power and hence a loss in supplying the same. The construction and arrangement of the valves is such that the steam in the boiler is effectually controlled within it, and at the same time the cans are fed in and discharged in a sequence which secures a thorough cooking of the food in a fixed time and to the practical limit of the capacity area of the boiler.

I claim—

1. A device for cooking foods in containers, having in combination, a closable boiler, a valve mechanism upon the upper part of the boiler, comprising therein a shell, having an outward receiving port and a port of discharge into the boiler in a desired position, a rotatable valve in the shell, provided with a series of semi-circular, transverse pockets in its rim, adapted to receive objects through the receiving port and discharge them through the other port into the boiler in a desired place in sequence, and valve packing means consisting of circular shoulders interiorly upon the shell walls extending into opposing grooves in the valve ends, also like shoulders upon the valve ends extending into opposing grooves in the shell walls, all adapted to receive packing between the shell walls and valve ends within the spaces adjacent to the shoulders and in said grooves, also circumferential shell segments having interior grooves adapted to receive packing, and screws extending through said shell segments, arranged to enter into engagement with such packing and adjust it to a desired position upon the opposing surface of the valve.

2. A device of the character described, having in combination therein, a closable boiler, a valve shell upon the boiler, provided with a receiving port and a port of discharge into the boiler, a rotatable valve in the shell having a series of transverse pockets along its rim, into which pockets objects may be received from the first mentioned port and discharged therefrom through the other port into the boiler, said valve also being provided with shoulders at each end of the pockets arranged and adapted to support the ends of objects in the pockets and allow the same to remain clear of engagement with other parts of the pocket, means for packing the valve in the shell to prevent the discharge of fluid from the boiler through the valve, mechanism to rotate the valve for a predetermined time and at a predetermined speed.

3. A device of the character described, having in combination therein, a closable boiler provided with an upper receiving port and a lower discharge port, a rotatable drum within the boiler having circular end plates in close proximity to the end walls of the boiler, and a series of open chutes helically arranged between the drum plates with ports at each end of the chutes through the opposing drum plates, arranged to position themselves alternately to the upper and lower boiler ports respectively in a predetermined sequence, mechanism to rotate the drum for a predetermined time and at a predetermined speed, in a manner to retain objects received into the chutes during such period, and to discharge them therefrom at the termination of the period.

4. A device of the character described, having in combination therein, a closable boiler having a receiving and discharge port, a valve upon the boiler having means to prevent the discharge of fluid from the boiler through the valve and means in the valve to receive objects and pass them through the valve into the boiler receiving port, a valve upon the boiler having means to prevent the discharge of fluid from the boiler through the valve and means in the valve to receive objects through the boiler discharging port and to discharge the same from the valve, a rotatable drum within the boiler having end plates in close proximity to the end walls of the boiler, and a series of open chutes helically arranged between the drum plates with ports at each end of the chutes through the opposing plates, arranged to position themselves alternately to the boiler receiv-

ing and discharge ports respectively in a predetermined sequence, mechanism to rotate the said valves and drum for a predetermined time and at a predetermined speed with relation to each other, in a manner whereby objects may be discharged into the chutes, retained there for a predetermined period and, at the termination thereof, discharged from the chutes.

SELAH E. WALKER.

Witnesses:
W. L. SCUDDER,
M. S. CLIFTON.