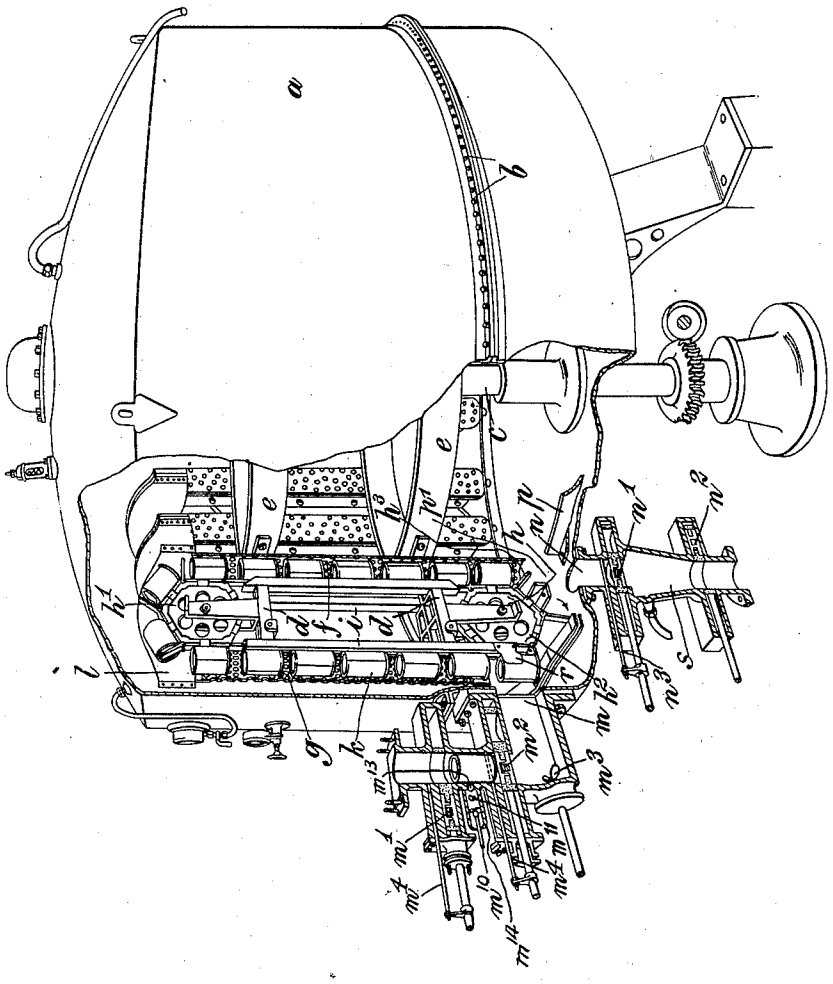
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COOKING, HEATING, OR LIKE APPARATUS FOR TREATING TINS OF FOOD OR OTHER ARTICLES

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COOKING, HEATING, OR LIKE APPARATUS FOR TREATING TINS OF FOOD OR OTHER ARTICLES

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9 Claims. (Cl. 126—272)

This application is a division of my application Serial No. 570,722 filed the 23rd day of October, 1931.

This invention relates to apparatus primarily intended for the cooking of tinned foods although it will be clear that it may be applied with equal effect and like advantage to other cooking, heating, cooling or like apparatus where a large output is required while at the same time the tins or other articles treated in the apparatus are required to remain therein for some length of time.

The invention has for its object to control the feed-in and outlet ports or passages of the cooking chamber in such a manner that little if any pressure is lost while a tin or other article is actually passing through such ports or openings.

The invention also consists in novel means for reducing the pressure in the tins or containers to normal when they are ejected from the tank and other details and arrangements hereinafter described or indicated and illustrated in the drawing in which the figure is a perspective elevation partly in section of a pressure cooking apparatus provided with the improved valve transfer device.

In the drawing the pressure chamber a is fitted with a valve for feeding the tins thereto which valve comprises a feed-in port m controlled by two sets of valves or dampers m' m^2 so that the tins may pass through the first valve while the second valve controlling the inlet port is shut and thereupon the first valve is closed while the second valve is opened and the tin may be fed therethrough by gravity or by means of a mechanical pusher m^3 or other device, it being evident that cams or other suitable means may be adopted for appropriately timing the operation of the valves so that little if any pressure will be lost during the time that a tin is being inserted into the apparatus. When the tins are being fed at the rate of, say, 60 per minute it is clear that the operation of the valves must be rapid and must be accurately timed and owing to the length of the tin, and fact that it falls by gravity, it is preferred to obtain a flying start for the tin so that no loss of time should occur. For this purpose I interpose above the slide a trip rod m^4, on which the tin rests, which trip rod is opened and releases the tin before the slide is actually fully open. The trip also serves the purpose of preventing tins damaging the seats of the slides. It can further be seen that no obstruction must be caused to the tin in its path of travel by steam, and I therefore connect to the compartment which is interposed between the two slides m' and m^2 a rotary valve m^{10} for the purpose of controlling the exhausting of the compartment and the charging of the same with steam, it having been found that with a pressure of steam in the conveyor the section between the two slides is filled with steam under pressure when the bottom slide is opened and closed. The rotary valve m^{10}, which is provided within a second conduit m^{14}, has a port m^{11} which by rotation of the valve can occupy alternate positions in which the pressure fluid can be admitted to the compartment between the two slides or exhausted therefrom, communication with this compartment being by way of the port m^{13}. If now the top slide be opened the steam under pressure would prevent the article being inserted from falling until such steam pressure died away to zero, which would take too long and prevent the tin from passing the slide. This steam is therefore exhausted before the top slide is open, and the tin will then fall without obstruction on to the lower trip rod. It will be seen that the same difficulty will occur when I open the lower valve and trip rod upon which the tin is resting, as the steam pressure behind the valve would prevent the tin from falling, momentarily, whilst the pressure is becoming equal. I, therefore, with the same rotary valve charge the compartment with steam at the same pressure as that in the container, and therefore equalize the pressure in which the tin is resting, and upon opening the slide the tin will fall without any possible obstruction. Having passed the tin right through to the lower chamber, it is now ready to pass into the container, and this is done by the push rod m^3 as above indicated. A similar set of valves n' n^2 also appropriately timed may be provided to control the outlet port n through which the tins are discharged in succession as the successive conveyors pass the outlet port at which time the tin which has reached the end of the conveyor path will be automatically discharged through the outlet port. The upper slide n' is again fitted with a trip rod n^3.

When the treatment of, say, tins of food is carried out with steam under pressure it will be obvious that at the end of an operation the pressure within the tin is increased above the normal and if such tin were allowed to emerge from the apparatus into the atmosphere it would be in danger of bursting. When treating such articles, therefore, I prefer that they shall be ejected through the outlet port into a small chamber which is intermittently flooded with water by a pump and timed valves (not shown) or by other suitable means just prior to a tin being ejected from the outlet port so that such tin will drop into the flooded compartment whereby it will be cooled and its pressure reduced and thereafter the tin and flooding water are both ejected from the compartment which is subsequently again flooded for the reception of the next successive tin. For example, before the tins or other arti-

cles are allowed to pass out of the machine, the section s between the two outlet control slides n' n^2 is flooded, the slide preventing the steam from entering is then opened and the water is brought to the same pressure to the square inch as the steam in the machine. The tin or other article falls into this section and the valve is then shut. The steam in the tin is almost immediately condensed. The tin is then dropped by opening the other slide, and the water and tin then fall into a tank of water at atmospheric pressure through which tank the tin passes on a conveyor until finally cooled. Alternatively a number of tins may be collected in the flooded compartment before the water is allowed to escape therefrom.

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

1. A can transfer valve device comprising a housing having a vertical conduit therein for the passage of the cans by gravity action, there being an inlet opening for the cans at the top end of this conduit, a pair of vertically spaced valve plates slidable within the housing and across the conduit to define an isolatable portion of the conduit between them, a second conduit formed as a lateral extension of the said isolatable conduit portion, the said isolatable conduit portion having a port in its side wall providing communication between the two conduits and a valve element in the said second conduit for controlling the supply of pressure fluid to the isolatable conduit portion and the exhausting of the fluid therefrom.

2. A can transfer valve device comprising a housing having a conduit therein through which the cans pass, there being an inlet at one end of the conduit for the introduction of the cans and an outlet at the other end for the discharge of the cans from the conduit, a pair of valve members spaced apart along the length of the conduit between the said inlet and outlet and movable across the conduit to define an isolatable portion thereof, a second conduit formed as a lateral extension of this isolatable conduit portion, and a valve element in said second conduit for controlling the supply of pressure fluid to the isolatable conduit portion and the exhausting of the fluid therefrom.

3. A can transfer valve device comprising a main housing having a conduit therein through which the cans pass seriatim, a pair of longitudinally spaced valves mounted within said housing for movement across the conduit to define an isolatable portion thereof and valve means associated with the said isolatable conduit portion to control the supply of pressure fluid thereto and the withdrawal of pressure fluid therefrom.

4. A can transfer valve device comprising a housing having a vertical conduit therein through which the cans fall seriatim by gravity action, a pair of vertically spaced valves horizontally slidable within said housing across the conduit to isolate a portion of the conduit from the remainder thereof and means above each said valve and spaced therefrom with which means the cans contact in their passage through the conduit to prevent damage to the valves.

5. A can transfer valve device comprising a housing having a vertical conduit therein through which the cans fall seriatim by gravity action, a pair of vertically spaced valves horizontally slidable within said housing across the conduit to isolate a portion of the conduit from the remainder thereof, means above each said valve and spaced therefrom with which means the cans contact in their passage through the conduit to prevent damage to the valves and the valve means associated with the said isolatable conduit portion to control the supply of pressure fluid thereto and the withdrawal of pressure fluid therefrom.

6. A can transfer valve device comprising a housing having a vertical conduit therein through which the cans fall seriatim by gravity action, a pair of vertically spaced valve plates guided for horizontal sliding movement within said housing across the conduit so as to isolate a portion of the latter from the remainder thereof and a horizontal rod above each valve and spaced therefrom, said rods being separately guided for movement with their associated valve plates into the path of the falling cans so that the cans make contact with the rods and prevent damage to the valve plates.

7. A can transfer valve device comprising a housing having a vertical conduit therein through which the cans fall by gravity action, a pair of vertically spaced valve plates guided for horizontal sliding movement within said housing across the conduit so as to isolate a portion of the latter from the remainder thereof, a horizontal rod above each valve plate spaced therefrom, said rods being separately guided for movement with their associated valves into the path of the falling cans so that the cans make contact with the rods and prevent damage to the valves and valve means connected with the said isolatable conduit portion for controlling the supply of pressure fluid to said conduit portion and exhausting such fluid therefrom.

8. A can transfer valve device comprising a main housing having a vertical conduit therein through which the cans fall seriatim through gravity action, a pair of vertically spaced valve plates horizontally slidable within said housing across the conduit to isolate a portion of the said conduit from the remainder thereof, means above each said valve and spaced therefrom, with which means the cans contact in their passage through the conduit to prevent damage to the valve plates, a second conduit formed as a lateral extension of the isolatable portion of the said first conduit and having communication therewith and valve means within said second conduit for controlling the supply of pressure fluid to the said isolatable conduit portion and the exhausting of the pressure fluid therefrom.

9. A can transfer valve device comprising a housing having a conduit therein for the passage of the cans, the conduit having a can inlet at one end and a can outlet at the other end, a pair of valve elements movable within the housing across the conduit portion between the said inlet and outlet to define an isolatable portion of the conduit, and valve means associated with said isolatable conduit portion for controlling the supply of pressure fluid thereto and the exhausting of pressure fluid therefrom.

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