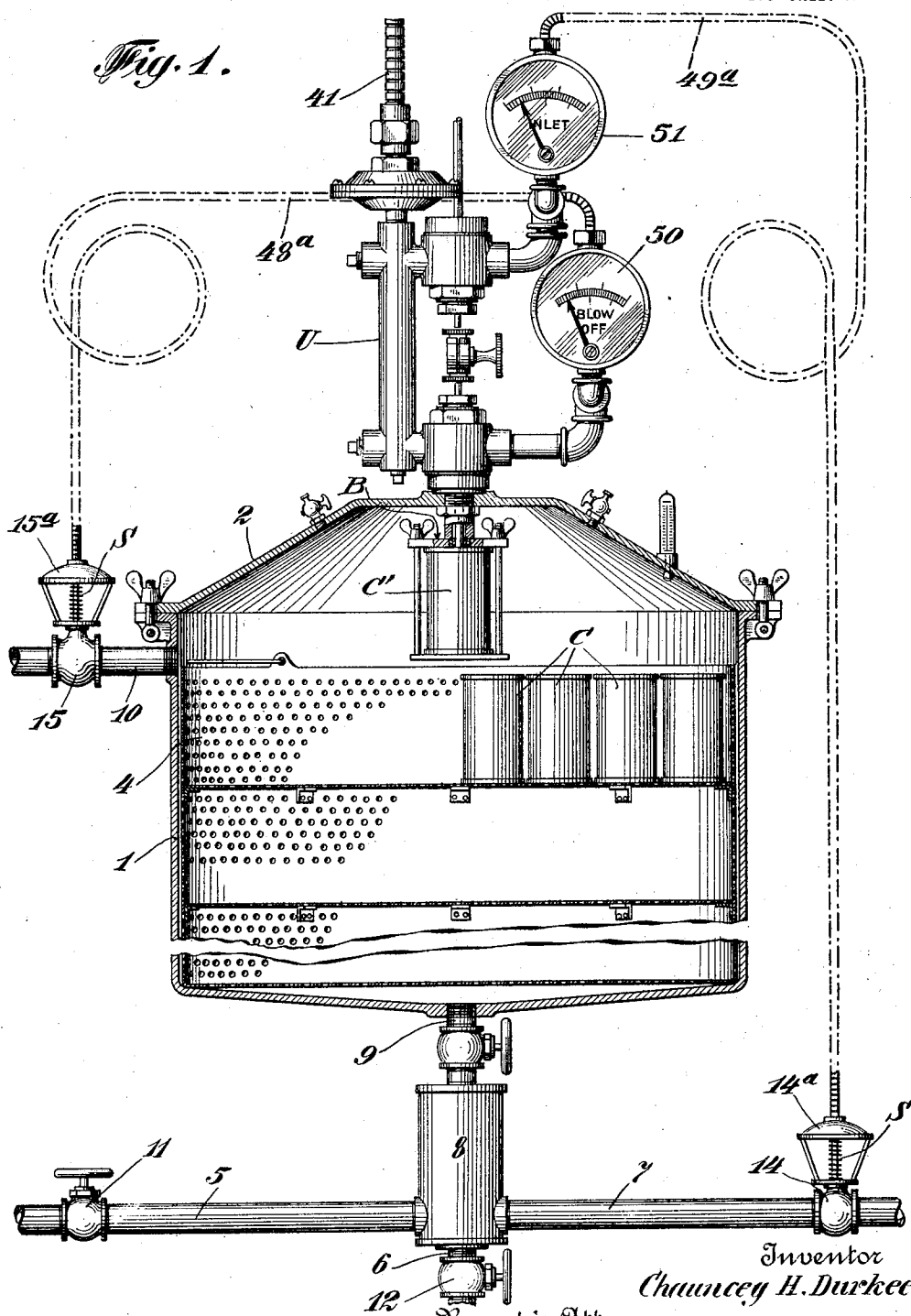


C. H. DURKEE.
 AUTOMATIC CONTROL FOR PROCESSING APPARATUS.
 APPLICATION FILED MAY 26, 1920.

1,385,609.

Patented July 26, 1921.

4 SHEETS—SHEET 1.

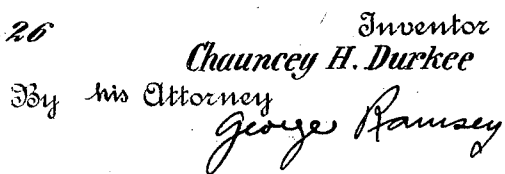


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4 SHEETS—SHEET 3.

Fig. 3.

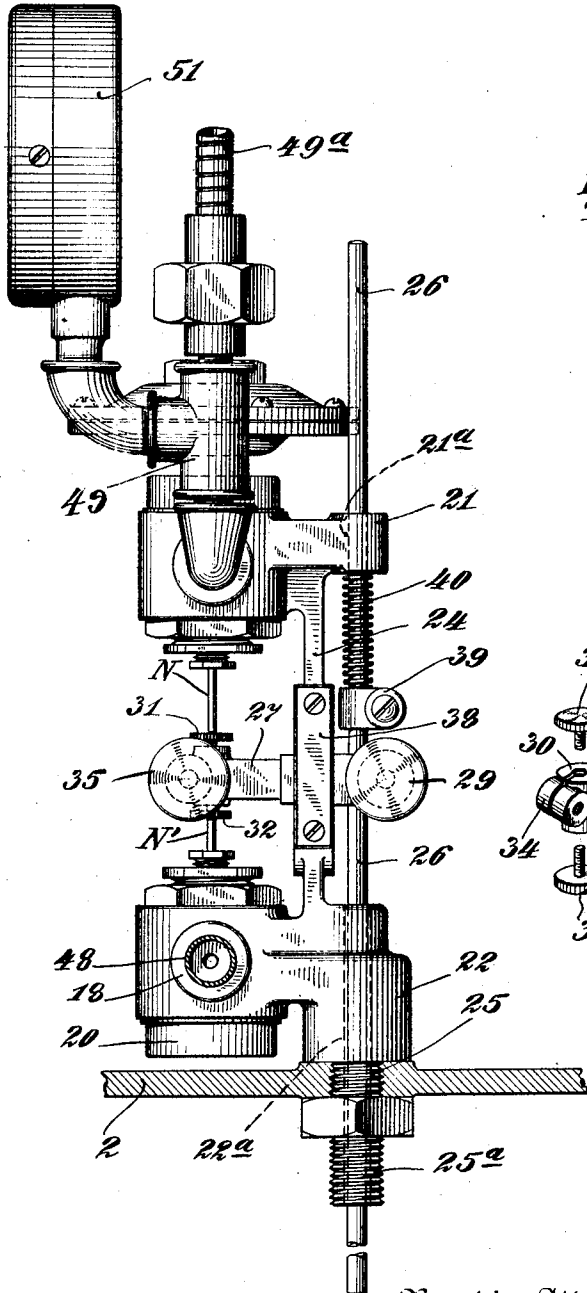


Fig. 4.

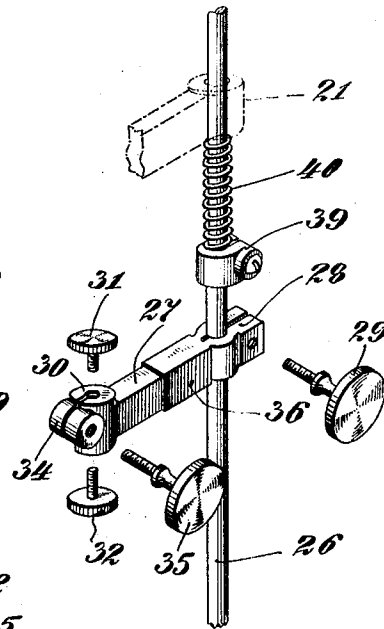
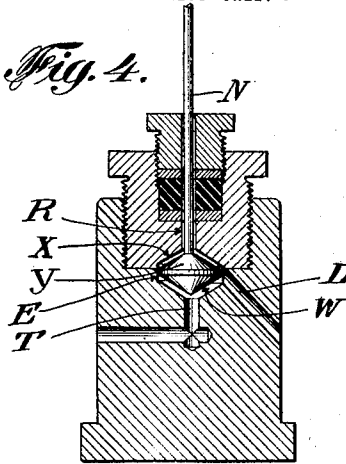
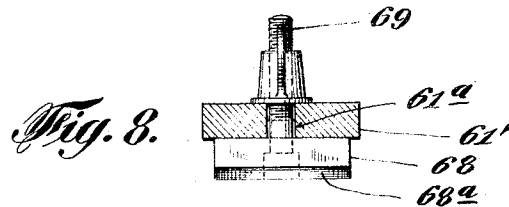
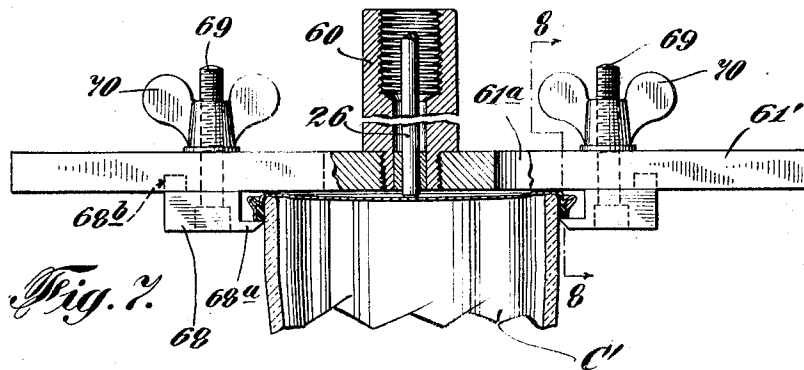
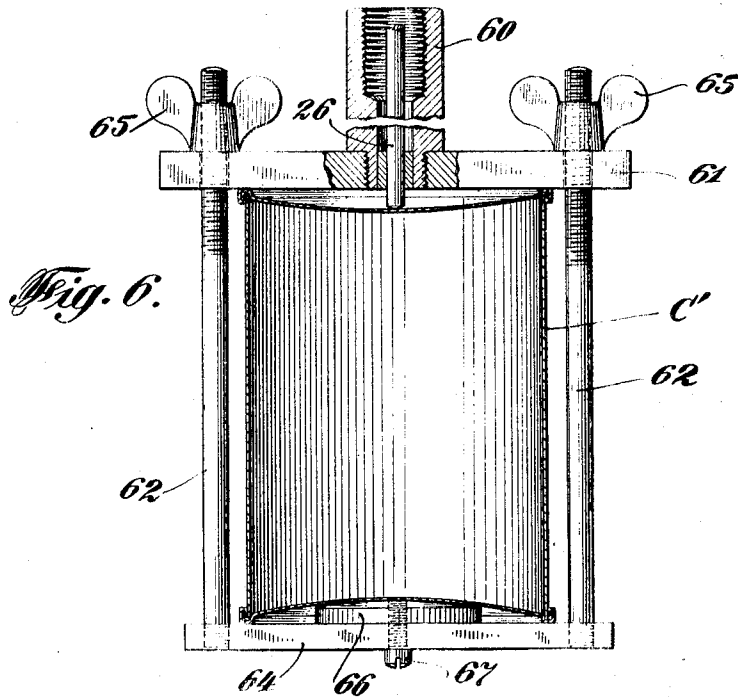


Fig. 5.

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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC CONTROL FOR PROCESSING APPARATUS.

1,385,609.

Specification of Letters Patent.

Patented July 26, 1921.

Application filed May 26, 1920. Serial No. 334,397.

To all whom it may concern:

Be it known that I, CHAUNCEY H. DURKEE, a citizen of the United States, residing at No. 601 St. Marks avenue, in the borough of Brooklyn, county of Kings, State of New York, have invented certain new and useful Improvements in Automatic Controls for Processing Apparatus, of which the following is a specification.

This invention relates generally to the art of packing perishable commodities, in which various substances, such as food products, are put up in sealed receptacles, such as cans, bottles or jars, hermetically sealed to provide a commercial package, and processed or sterilized in the package by the application of heat thereto of such degree as to partially or fully cook the product, and destroy or inhibit the development of ferments or other destructive organic agents which may be contained within the package.

The particular subject matter of the present invention resides in the provision of an improved mechanism which is effective automatically to regulate the conditions surrounding the packages during the progress of the heat treatment or processing, said automatic regulation being derived from structural alterations or variations in a commercial package which is a typical specimen of the lot being treated, and which is subjected to all of the influences of the process concomitantly with the other packages of the lot which it represents.

As is well known in the art, in the treatment of sealed packages with heat for the purposes above mentioned, it is necessary to apply to the exterior of the packages or sealed receptacles suitable pressure influences which will be effective to counterbalance or equalize pressures developed within the packages by the effect of heat upon the contents, in order to prevent the packages being distorted or their closures displaced by the internal pressures developed. Not only is it necessary to provide a regulation which will insure the maintenance of a sufficient degree of external pressure, but it is also necessary that the regulation operate automatically to establish a variable maximum limit to the external pressure so that it at no time will exceed the existing internal pressure to a degree sufficient to distort the containers or displace their closures by inward pressure which the internal pressure is unable to support.

In present practice it is customary to inclose a lot of packages to be processed in a retort, wherein they are subjected to the heat and to the counterbalancing pressure induced by steam and compressed air. Inasmuch as the internal pressure within the containers builds up gradually, it is necessary that the counterbalancing pressure be applied gradually, and be maintained continuously and at all times at the proper point to sustain the receptacles, for, if the internal pressure gains the necessary superiority for only a fraction of a second, the entire lot of packages would have their closures forced, their seals or seams rendered leaky, or their walls distorted. Likewise at the end of the period of heat treatment, it is necessary to subject the packages to cooling influences, usually accomplished by the introduction of cooling water into the retort, and during such process of cooling it is very necessary that the proper counterbalancing external pressure be maintained upon them. At the outset of the cooling operation, when the cooling fluid is first introduced into the retort, it produces a sudden drop of pressure within the retort because of its cooling and contracting influence upon the heat carrying fluid about the packages. As the introduction of the cooling fluid into the retort continues, however, it has the effect of building up the pressure externally of the packages, while at the same time reducing the internal pressure in them by its cooling effect. It is obvious, therefore, that unless carefully regulated, the external pressure would soon so greatly exceed the strength of the receptacles and the internal pressure, as to collapse the wall portions of the packages, forcing the seals and seams so as to render them leaky, or distorting the containers so as to prejudice the salability of the packages.

Certain forms of apparatus heretofore have been devised for automatically regulating the processing pressures by means of a package representative of the lot being treated, and the object of the present invention is to improve on such prior mechanisms by the provision of an apparatus which is more sensitive and responsive to the determining conditions, so that it will secure a more accurate regulation as to quantity and a more immediate regulation as to time.

Another object of my invention is the provision of improved means for retaining the regulating package, whereby to facilitate its

mounting in the apparatus, and to increase its effectiveness.

A further object of the invention is to provide an improved mechanism which is accurately effective for both maximum and minimum regulation.

A further object is the provision of a mechanism which is universally adaptable and applicable to various retorts now customarily in use.

A further object of the invention is the provision of such mechanism, which permits of extreme nicety of adjustment with ease.

A further object of the invention is the provision of such mechanism, which is substantially "fool proof."

A further object of the invention is the provision of such a mechanism, which is suitable for use in conjunction with any of the various forms of containers or receptacles now customarily employed in the packaging of products.

Other and further objects of the invention will be pointed out hereinafter, or indicated in the claims, or will be obvious from the illustrative disclosure herein.

In the accompanying drawings I have illustrated one embodiment of the invention and have shown one manner in which it may be employed. This is merely for the purpose of illustration, however, and not for the purpose of defining the scope of the invention, as it will be obvious that it may be embodied in a great variety of forms and employed in a number of uses differing in various particulars from the arrangements illustrated, without departing from the intended scope of the appended claims.

In the said drawings Figure 1 represents a diagrammatic illustration of the embodiment of the invention shown in front elevation and illustrating its application to a form of retort, which is shown in vertical section, the various portions of the representation being unproportional:

Fig. 2 is a sectional elevation of a portion of the regulating device;

Fig. 3 is a side elevation of the same, certain parts having been removed;

Fig. 4 is a detail illustrating diagrammatically a valve arrangement employed in the device;

Fig. 5 is a detail in the nature of a perspective showing features of the adjusting means;

Fig. 6 is a detail in the nature of an elevational view, partially in section, of a package-sustaining portion of the device;

Fig. 7 is a side elevation of another form of package-sustaining device showing a package therein in section; and

Fig. 8 is a detail in the nature of a section taken on line 8—8 of Fig. 7, the package portions being omitted.

Referring to these illustrations in detail

by means of the reference numerals applied, let it be understood that numeral 1 designates generally a retort, of any suitable form, arranged to sustain internal pressures when closed by a suitable closure 2. It is arranged for the reception of the intended packages, which are designated by the letter C, and which may be charged into the retort and supported therein by means of cage designated by the numeral 4. The retort is arranged to be supplied with heat from a suitable source, the supply means being diagrammatically illustrated in the present instance by the steam line 5. In its appurtenances is included also a means for subjecting it to cooling influences, here diagrammatically illustrated by the water line 6, and means for inducing pressure within the retort, illustrated by the pressure line 7. These are shown associated with a mixing device, designated by the numeral 8, having communication with the retort by means of an inlet pipe, designated by the numeral 9. The retort is also equipped with an exhaust conduit, designated by the numeral 10. The various appurtenances are controlled by suitable means here diagrammatically illustrated as the valves 11 and 12 for controlling the steam and water lines respectively, and the valves 14 and 15 for controlling the pressure and exhaust conduits respectively. As a feature of the illustrative embodiment herein disclosed, the valves 14 and 15 may be equipped as motor valves of a familiar type wherein the springs S are effective to open the valve under the control of a pressure responsive diaphragm. The foregoing are more or less familiar features of processing apparatus.

A mechanism embodying the invention includes a package-sustaining portion and a package-operated portion. The first mentioned may comprise any suitable means for maintaining a package in operative association with the latter, and may constitute a portion of the retort or its appurtenances, and is disposed within the retort where it is subjected to all of the influences therein. The package-operated mechanism is operatively associated with the package-sustaining means, and may be disposed within or exterior of the retort. Preferably it is disposed outside where it is not subjected to the heat and pressure conditions in the retort.

In Fig. 1 I have designated the package-sustaining means by the reference character B and the package-operated mechanism by the reference character U. The construction of the latter will be best understood by reference to Figs. 2 and 3. In this it will be seen that the apparatus includes a frame which is preferably cast of non-rusting metal and tapped to provide ports and passages as about to be described. In the embodiment disclosed the frame includes a longitudinally

extending support 16, with which are integrally formed the valve supports 17 and 18. These are substantially in alinement longitudinally of the device, and carry valve housings 19 and 20. Mounted on and extending rearwardly from the valve support 17 is a guide bracket 21, and in similar association with the valve support 18 is the supporting bracket 22. A longitudinally extending guide frame 24 extends between the brackets 21 and 22. The supporting bracket 22 is equipped with attaching means 25 whereby the device may be mounted on the wall of a retort so that the attaching means 25 penetrates to the interior of the same. The attaching means 25 and supporting bracket 22 are formed with a longitudinal bore 22^a in alinement with a similar bore 21^a in the guide bracket 21, in which bores is guided and slidable longitudinally a detecting member 26 in the nature of a stiff rod. As best seen by reference to Fig. 5, there is secured to this rod a forwardly extending transmission arm 27, the connection being by means of a clamp 28 controlled by a thumb screw 29, permitting the location of the arm selectively longitudinally of the rod. The forward extremity of this arm 27 carries a stop seat 30, in which are adjustably mounted oppositely effective stop members 31 and 32. These may be screw seated in the stop seat 30 their adjustability controlled by a clamp 34 operated by the thumb screw 35. The transmission arm 27 is provided with a guide bearing 36 disposed intermediate the clamp 28 and the stop seat 30, which guide bearing is disposed to operate in the guideway 37 of the guide frame 24, in which it is retained by demountable guide plate 38. A clamp 39 is adjustably mounted on the detecting member 26 so as to be susceptible of longitudinal adjustment thereon, and adapted to hold a spring 40, mounted on the detecting member 26, under compression against the guide bracket 21. The length of the detecting member 26 is such as may be necessary to permit its extending into proper association with the package sustaining means in the retort, and by virtue of its adjustability in clamps 39 and 28 it may be accurately accommodated to a great variety of different installations.

Referring now to Fig. 2, it will be observed that the support 16 is provided with a longitudinal inlet channel 43 into which pressure fluid may be conducted through a line 41 from any suitable source, suitable strainer 42 being interposed ahead of the device.

From the inlet channel 43 valve ducts 44 and 45 provide communication with the inlet ports T and T' of the respective valve housings 19 and 20. The valve housing supports are similarly provided with the outlet ducts 46 and 47 respectively, which afford com-

munication between the outlet ports L and L' of the respective valve housings, and conduits 48 and 49 associated therewith respectively. The conduit 49 leads to the spring and pressure operated valve 14 which controls the pressure inlet line 7, the connection preferably being made by means of flexible tubing 49^a which will permit movement of the apparatus. The conduit 48 leads in similar fashion, by means of the preferably flexible connection 48^a, to the spring and pressure operated valve 15, which controls the exhaust conduit 10. Suitable indicating devices 50 and 51 are connected in the conduits 48 and 49 in proper fashion to show the pressure therein.

The functioning of the controller valve housings 19 and 20 will be understood upon reference to the structure diagrammatically shown in Fig. 4, in which it will be observed that the housing contains a valve chamber E with which the inlet port T and outlet port L communicate. A vent channel R likewise communicates with the valve chamber and provides a passage for the valve rod N. The valve Y is operably associated with the inner extremity of the rod N, and is adapted to control the inlet port by its cooperation with the valve W, and the venting channel by its cooperation with the valve seat X. When the valve is seated on the seat X, communication is open between the inlet port I and the outlet port L so that pressure may be built up in the conduit associated with the outlet port L; while, when the valve is seated on the seat W, the inlet port T is closed and venting communication established between the venting channel R and the conduit associated with the outlet port L. Accordingly, in the case of the valve contained in housing 19, which I will call the inlet control valve, when the valve Y is permitted by its controlling rod N to seat against the seat X, pressure from the line 41 will be maintained on the pressure operated valve 14 and said valve will be held closed. Upon the application of inward pressure to the rod N, however, so that valve Y is moved into cooperation with valve seat W, the communication between the pressure source and the valve 14 will be cut off, and the pressure on the operating diaphragm of the valve will be vented through the channel R permitting the valve to open under the influence of its spring S. This, of course, will admit pressure fluid to the retort through the pressure line 7. The operation of the valve in housing 20, which I will call the exhaust control valve, corresponds. So long as the valve is seated on the seat X' pressure will be maintained on the valve 15 to keep it closed. When the valve rod N' is operated to move the valve into cooperation with the seat W', however, this pressure will be cut off and vented from the operating mechanism of

valve 15 through the vent channel R', permitting valve 15 to open under the influence of its spring S and permit the exhaust of pressure from within the retort through the exhaust conduit 10.

In the operation of the device the control of the rods N and N' and through them the valves Y and Y', is exercised through the instrumentality of the detecting member 26 and its appurtenances comprising the transmission arm 27 and adjustable stop members 31 and 32, the latter of which are adapted to engage the ends of the valve controller rods N and N' so as to move them and determine the positions of the valves Y and Y'. Longitudinal movement of the detecting member 26, therefore, will be effective to operate one or the other or both of the valves Y and Y' and bring about the opening or closing of the valves 14 and 15.

The adjustment of the members 31 and 32 determines at what point in the movement of the detecting member 26 in either direction it will become effective upon the valve stems N and N'. Obviously either of said stop members 31 and 32 may be so positioned as to allow for any desired clearance or amount of play between the starting position of the detecting member and the point where it becomes effective to operate either of the valves. The members 31 and 32 are locked in the proper adjustment by the screw 35 so that the device may be accommodated to various forms of retorts, etc., and when once set up and properly adjusted, should require no further adjustments. The same applies to the adjustment of the member 27 on the detecting member 26 by means of the clamp 28 and the adjustment of the clamp 29 on the detecting member 26, so that the proper degree of compression always may be maintained in the spring 40.

The controlling operation of the detecting member 26 is determined by the condition of the controlling package C' which is maintained in association with the package-operated mechanism by the package-sustaining means B. The essential features of the package-sustaining means are that it be effective to maintain the controlling package in such association with the package-operated mechanism that variations in the structural form of package, induced by the relative condition of internal and external pressures to which it is subjected, will be rendered effective to move the detecting member or to determine its position immediately and effectively. In the case of the familiar receptacles commonly called tin cans the development of an internal pressure in a package in excess of the summation of the external pressure on it and the factor of rigidity of the metal will become effective to flex outwardly the ends of the can. Food products are ordinarily sealed in the cans under

a reduced pressure, with the result that the ends of the cans are flexed inwardly somewhat and rendered concave externally by atmospheric pressure. The extent of concavity depends, of course, upon the rigidity of the metal, the diameter of the cover, and the degree of internal pressure, but it provides a certain zone in which the metal of closure may move or flex before subjecting the seams or seal to separating stresses. The same condition is true in the case of rigid vessels such as glass jars, when sealed with flexible closures such as caps. There exists this difference, however, that in the case of the rigid vessel the entire effect of the internal pressure is exerted against the single flexible cap, whereas in the metal cans the opposite ends or heads are ordinarily subjected to the same pressure and ordinarily will respond thereto by outward flexion in the same degree.

In order to utilize the entire effectiveness of movement in a metal can, therefore, I have devised the arrangement of package-retaining means illustrated in Fig. 6. It will be observed that this device includes a boss 60 which may be of any desired length, and which is adapted for connection at its upper extremity to the end or nipple of the attaching means 25^a extending on the interior of the retort. This boss is operated longitudinally for the accommodation of the detecting member 26, and supports at its lower extremity the upper clamp member 61. This preferably is adjustable on the boss, or the boss adjustable on the nipple 25^a, so as to permit the selective location of the clamping member 61 relative to the lower end of the detecting member 26, which extremity of the detecting member is adapted to operate through a suitable aperture in the clamping member 61. Adjustably mounted on the clamp member 61 by means of the rods 62 is a cooperating clamping member 64 which may be moved toward and from the member 61 by operation of manually operated means 65. Carried on the member 64, at about its middle is a compression member 66 protruding toward the clamp member 61. This compression member is preferably circular and formed with a convex upper surface and of proper diameter to fit within the upstanding peripheral bead of a tin can, the effective height of the member 66 being adjustable by virtue of a screw 67 so that its surface may engage the surface of the can cover or head when the marginal bead thereof rests upon the member 64.

A package typical of the lot which is to be processed in the retort having been mounted in the package-sustaining means, being clamped between the members 61 and 64 with the member 66 engaging its lower end or head at its middle portion, the clamp is properly adjusted on the boss 60, or the boss 60 upon the nipple 25^a, so that the surface

of the upper head or cover of the can is in contact with the lower end of the detecting member 26. This adjustment may be accurately obtained by screwing the clamp, with the can in place, onto the boss or nipple until the can end becomes effective upon the detecting member 26 so that pressure is shown on the gage 50, and then carefully backing off the clamp on the screw of the boss or nipple until the indicator 50 shows that the valve is closed. This places the can in position to operate the inlet control valve immediately any outward movement of the cover is initiated. In the use of a package retaining means having a compression member such as illustrated at 66, the entire effectiveness of movement of the two ends of the can is utilized in securing the operation of the regulating device, as the compression member retains the lower end against displacement outwardly, so that the entire effectiveness of the internal pressure is exerted against the upper end of the can.

In a number of forms of commercial packages which are extensively used, a frangible vessel is sealed by means of a ductile cap, the hermetic seal being formed by a gasket compressed and retained against the peripheral wall of the vessel in a bead of the cap. As a means for sustaining a package of this description, or any other form of package in which there is a peripheral ledge about the package adjacent its closure, I have devised the mechanism illustrated in Figs. 7 and 8. In this device there is a clamping member 61' which is longitudinally slotted in its end portions as at 61^a, and the member is apertured at its middle portion so that it may be screwed onto the proper sustaining support through which the detecting member 26 operates. Slidably mounted on the member 61' is a pair of adjustable clips 68 having the forwardly projecting ledges 68^a spaced apart from the lower surface of the clamp member 61' and with their inner margins of arcuate form. These clip members have the guide lugs 68^b which are slidably fitted in the slots 61^a, while each clip is supported by means of a bolt screw 69 passing through the slot 61^a and carrying the wing nut 70. This arrangement permits adjustment of the clip members toward and from the middle of the member 61' so as to accommodate vessels of different diameters, and also the adjustment of the ledges 68^a toward and from the member 61' so as to permit the insertion of the beaded portion of a package between them and the clamp member, and its clamping therein upon a tightening of the screw. This securely clips the package to the package-sustaining device and maintains the flexible portion in proper operative association with the detecting member.

The detail operation of the device has

been explained in the foregoing. I will now describe its general operation. The retort having been filled with packages of a certain type containing a certain product, a specimen package, which is typical of the lot, is mounted in the package retaining device and the latter properly positioned with reference to the package operated device. The retort then being closed, the heat is applied to it by the operation of the heat controlling means 11. At the inception of the operation both of the controlling valves Y are in open position under the influence of the fluid pressure which is maintained on them through the supply line 41, and this pressure being effective also on the devices 14^a and 15^a which operate the valves 14 and 15, said valves will be maintained closed against the influence of their springs S. When the heat within the retort rises to the point where it generates pressure in the packages to the extent that they commence to expand, such expansion in the controlling container will be effective upon the detecting device 26 to start the closing of the inlet control valve Y, which will permit the partial or complete venting of the device 14^a with the result that valve 14 will be opened to admit the counterbalancing fluid pressure to the retort. This admission of fluid pressure continues to the point where outwardly displaced portions of the packages are restored to their normal position, whereat the valve Y will be relieved of the pressure of the member 31, with the result that it will open and permit the operating fluid pressure to close valve 14. Thus it will be obvious that the operation of valve 14 follows immediately upon any expansion of the packages, and that said opening of the valve will be either complete or gradual, according as the outward displacement of the package wall is sudden or gradual. In this fashion exactly the proper minimum counterbalancing pressure will be maintained in the retort independently of the absolute amount of pressure within the containers. Automatic regulation for maximum pressure is also maintained. This function is most important during the cooling operation. After the packages have been subjected to the sterilizing heat for the proper period, it is necessary to cool them under pressure so that their internal pressures are reduced while still under the equalizing effect of the external pressure. The admission of the cooling medium to the retort causes a very sudden contraction of the steam or heated air within the retort, which would cause a sudden drop in pressure except for the immediate operation of the inlet controlling valve and the compensating admission of pressure fluid through the valve 14. As the admission of the cooling medium continues, however, the pressure within the retort will increase, due

to the compression of the air within the retort by the increasing volume of the cooling medium, which is ordinarily water. This pressure, if not regulated, would increase to the point where the strength of the material in the containers, and the rapidly decreasing internal pressure in them, would be unable to sustain it, with the result that the packages would be collapsed, or their seams or seals forced. Any inward movement of the vessel wall beyond the normal concavity, would be transmitted to the detecting member 26 with the result that the stop member 32 would become effective upon the stem N' of the blow-off controlling valve Y', causing said valve to seat and permit the venting of the operating pressure from the device 15^a which controls the exhaust conduit 10. This permits the partial or complete opening of the exhaust valve 15 with the result that pressure within the retort would be permitted to discharge. Upon the pressure in the retort being reduced to the proper degree to permit the package wall to resume its normal position, the detecting member would release the blow-off control valve Y' and effect a closing of the exhaust valve 15. The pressure indicators 50 and 51 are effective at all times to show the condition of the packages,—whether normal, expanded, or contracted. When said devices register pressure it indicates that the packages are normal, while when the indicator 51 moves toward zero it indicates that the packages are expanding, and when the device 50 moves toward zero it indicates that the packages are contracted below normal. In the foregoing manner it will be observed, a proper counterbalancing pressure is maintained at every instant, said counterbalancing pressure being controlled both as to maximum and minimum limits with extreme nicety, and the necessary change in pressure being effected exactly in accordance with the requirements of the packages, that is, either gradually or suddenly, continuously or intermittently. Moreover, the condition of the packages is indicated at all times. In the use of this controlling apparatus it is unnecessary to take cognizance of the absolute amount of pressure which is generated in the packages, or the strength of the packages or the firmness of their seals or seams, as in every instance the condition of the packages themselves brings about the desired result.

What I claim is:

1. In an apparatus for treating packages, the combination of a movable detecting member, supporting means for supporting a package with a wall portion in operative association with said member, pressure means for subjecting the package to external fluid pressure, a controlling device for controlling the pressure means by opera-

tion of the detecting member, and variable interconnections between the detecting member and the controlling device whereby the effectiveness of the former upon the latter may be varied selectively.

2. In an apparatus for treating packages, the combination of a movable detecting member, supporting means for supporting a package with a wall portion in operative association with said member, pressure means for subjecting the package to external fluid pressure, a controlling device for obtaining increase and decrease of such pressure upon the package, and variable interconnections between the detecting member and the controlling device whereby the effectiveness of the former upon the latter may be varied selectively.

3. In an apparatus for treating packages the combination of a movable detecting member, supporting means for supporting a package with a wall portion in operative association therewith, pressure means for subjecting the package to external fluid pressure, a controlling device for obtaining increase and decrease of such pressure upon the package, said controlling device including variably operable members effective to determine the degree of variation of the pressure, and means actuated by the detecting member for operating the controlling device.

4. In an apparatus for treating packages, the combination of a movable detecting member, supporting means for supporting a package with a wall portion in operative association with the detecting member, pressure means for subjecting the package to external fluid pressure, a controlling device operable by the detecting member for obtaining increase and decrease of fluid pressure upon the package, said controlling device including variably operable members effective to determine the degree of variation of the pressure, and adjustable interconnections between the detecting member and controlling device whereby the effectiveness of the former upon the latter may be varied selectively.

5. In an apparatus for treating packages, the combination of a movable detecting member, supporting means for supporting a package with a wall portion in operative association with said member, pressure means for subjecting the package to external fluid pressure, a controlling device including members operable respectively to effect increase and decrease of such pressure upon the package, and variable interconnections between the detecting member and said last mentioned members whereby the effectiveness of the former upon the respective members may be varied selectively.

6. In an apparatus for treating packages, the combination of a movable detecting

member, supporting means for supporting a package with a wall portion in operative association with said member, pressure means for subjecting the package to external fluid pressure, and a controlling device operable by the detecting member in different degrees for obtaining variation of the fluid pressure to different degrees.

7. In an apparatus for treating packages, the combination of a movable detecting member, supporting means for supporting a package with a wall portion in operative association with said member, pressure means for subjecting the package to external fluid pressure, and a controlling device operable by the detecting member in different degrees for obtaining variation of the fluid pressure to different degrees, and means for varying the extent of effectiveness of the detecting member upon said controlling device.

8. In an apparatus for treating package, the combination of a retort for containing packages under pressure, said retort being provided with inlet and outlet ports, a detecting member operable by a package within the retort, controlling means operable by said detecting member to control the inlet and outlet ports, and means for varying selectively the effectiveness of the detecting member upon the controlling means.

9. In a processing apparatus, the combination of a frame, a detecting member guided thereon, controlling members mounted on the frame and operable by the detecting member upon movement thereof in different directions, means for supporting the frame in association with a retort, means for supporting an article within such retort in operative association with the detecting member, and means for selectively varying the position of the detecting member on the frame and relative to the controlling members to accommodate it to the retort.

10. In a processing apparatus, a combination comprising a frame, a detecting member guided thereon, controlling valves mounted on the frame and operable by the detecting member upon the movement thereof in different directions, means for supplying operating fluid to the valves, means for supporting the frame in association with a retort, means for supporting an article within the retort in operative association with the detecting member, and means for adjusting the detecting member on the frame and relative to the controlling valves to accommodate it to the retort.

11. A controlling apparatus comprising the combination of a frame, a detecting member movably mounted thereon, valves on the frame operable by movement of the detecting member in different directions, means operable to vary the effectiveness of the de-

tecting member on different valves, means controlled by the valves for conducting fluid, motive devices operable by fluid under control of the valves, and means for sustaining the frame with the detecting member in association with an object responsive to pressure.

12. A controlling apparatus comprising the combination of a frame including a spacing support providing a conduit for pressure fluid, valve housings supported thereon and arranged for fluid supply therefrom, valves operating in said housings to control movement of fluid therethrough, means operable exteriorly of the housings for controlling the positioning of the valves, a detecting member mounted for movement on the frame and operably associated with the valve controlling means, means for sustaining the frame with the detecting member in cooperation with an object effective to determine its position, and motive devices operable by fluid under control of the valves.

13. In processing apparatus, the combination of a retort adapted to sustain internal pressure and provided with inlet and outlet ports, valves for controlling the said ports, controlling means differentially effective to control the operation of said valves to different degrees, and a detecting member operable by an article within the retort and differentially effective upon the controlling means.

14. In processing apparatus, the combination of a retort arranged to retain packages under fluid pressure, a detecting member operable by a wall portion of a package within the retort, and indicators operable by the detecting member to indicate displacement of the wall portion of the package inwardly and outwardly from the predetermined position.

15. In an apparatus for treating commercial packages, a package supporting device for sustaining a package in effective association with package controlled mechanism, said device including relatively adjustable clamping members adapted for cooperation with opposite extremities of a package to maintain the package between them, one of said members including a compression member effective to engage a wall portion of the supported package to retain it against outward displacement.

16. In an apparatus for treating commercial packages, a package supporting device for sustaining a package in effective association with package operated mechanism, said device including relatively adjustable members adapted for clamping engagement against opposite extremities of a sealed can, one of said members including a compression member arranged to engage one of the heads of the supported can to hold it against outward flexion.

17. In an apparatus for treating commercial packages, a package supporting device including relative adjustable end members adapted to engage opposite extremities of a can to sustain it between them, one of said members including a compression member adapted to engage one of the heads of the supported can to retain it against outward flexion, and a detecting member associated with the other of said members and guided thereby into operative association with the opposite head of the supported can.

18. In an apparatus for treating packages, a package supporting device comprising a supporting member adapted to engage one end of a commercial package, clips carried thereby and adjustable thereon toward and from each other for engagement with lateral portions of a supported package, and means for mounting the supporting member in association with a detecting rod, said supporting member being constructed to accommodate such rod to contact with the end portion of the supported package.

19. In an apparatus for treating commercial packages, a package supporting device comprising a rigid member, clips adjustably supported thereon for relative movement, said clips including oppositely directed portions arranged to cooperate with the rigid member to engage a peripherally protruding portion of a package, said rigid member being apertured to permit the movement of a detecting member by a portion of a commercial package supported on said rigid member and clips.

20. In an apparatus for treating commercial packages, the combination with a retort, of an externally disposed package operated mechanism, a detecting member effective upon the same and operable by a package within the retort, and a package supporting member operable to hold a package, and comprising means for mounting and demounting it into and out of association with the detecting member while holding a package.

21. A processing apparatus comprising in combination, a retort for inclosing packages for treatment, a valve operable by fluid pressure for controlling supply of fluid to the retort, a controlling device for governing operation of said valve, a detecting member operable by a package in the retort and effective to actuate the controlling device to vent the pressure operated valve, and means for maintaining a package in the retort in operative association with the detecting member.

22. A processing apparatus comprising in combination, a retort for inclosing packages for treatment, a valve operable by fluid pressure for controlling discharge of fluid from

the retort, a controlling device for governing operation of said valve, a detecting member operable by a package in the retort and effective to actuate the controlling device to vent the pressure operated valve, and means for maintaining a package in the retort in operative association with the detecting member.

23. A processing apparatus comprising in combination, a retort for inclosing packages for treatment, a valve operable by fluid pressure for controlling supply of fluid to the retort, a controlling device for governing operation of said valve, a detecting member operable by a wall portion of a package in the retort and effective to actuate the controlling device to cut off the operating pressure upon said valve and vent the pressure from said valve, and means for maintaining a package in the retort in operative association with a detecting member.

24. A processing apparatus comprising in combination, a retort for inclosing packages for treatment, a valve operable by fluid pressure for controlling discharge of fluid from the retort, a controlling device for governing operation of said valve, a detecting member operable by a wall portion of a package in the retort and effective to actuate the controlling device to vent the pressure operated valve and cut off the effective pressure thereon, and means for maintaining a package in the retort in operative association with the detecting member.

25. A processing apparatus comprising in combination, a retort for inclosing packages for treatment, a valve for controlling supply of fluid to the retort, a motor device operable by fluid pressure for operating the valve, and a detecting member operable by a package in the retort to vent pressure fluid from said motor device.

26. A processing apparatus comprising in combination, a retort for inclosing packages for treatment, a valve for controlling supply of fluid to the retort, a motor device operable by fluid pressure for operating the valve, a detecting member operable by a package in the retort to vent pressure fluid from said motor device, and means to adjust the effective range of operations of the detecting member.

27. A processing apparatus comprising in combination, a retort for inclosing packages for treatment, a valve for controlling supply of fluid to the retort, a motor device operable by fluid pressure for operating the valve, and a detecting member operable by expansive movement of a package in the retort to vent pressure fluid from said motor device and to cut off the pressure fluid to said device.

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