June 28, 1927. 1,633,568

C. A. BREWER

MEANS FOR GENERATING AND IMPREGNATING STEAM WITH A CHEMICAL CONSTITUENT

Filed Nov. 28, 1924 3 Sheets-Sheet 1

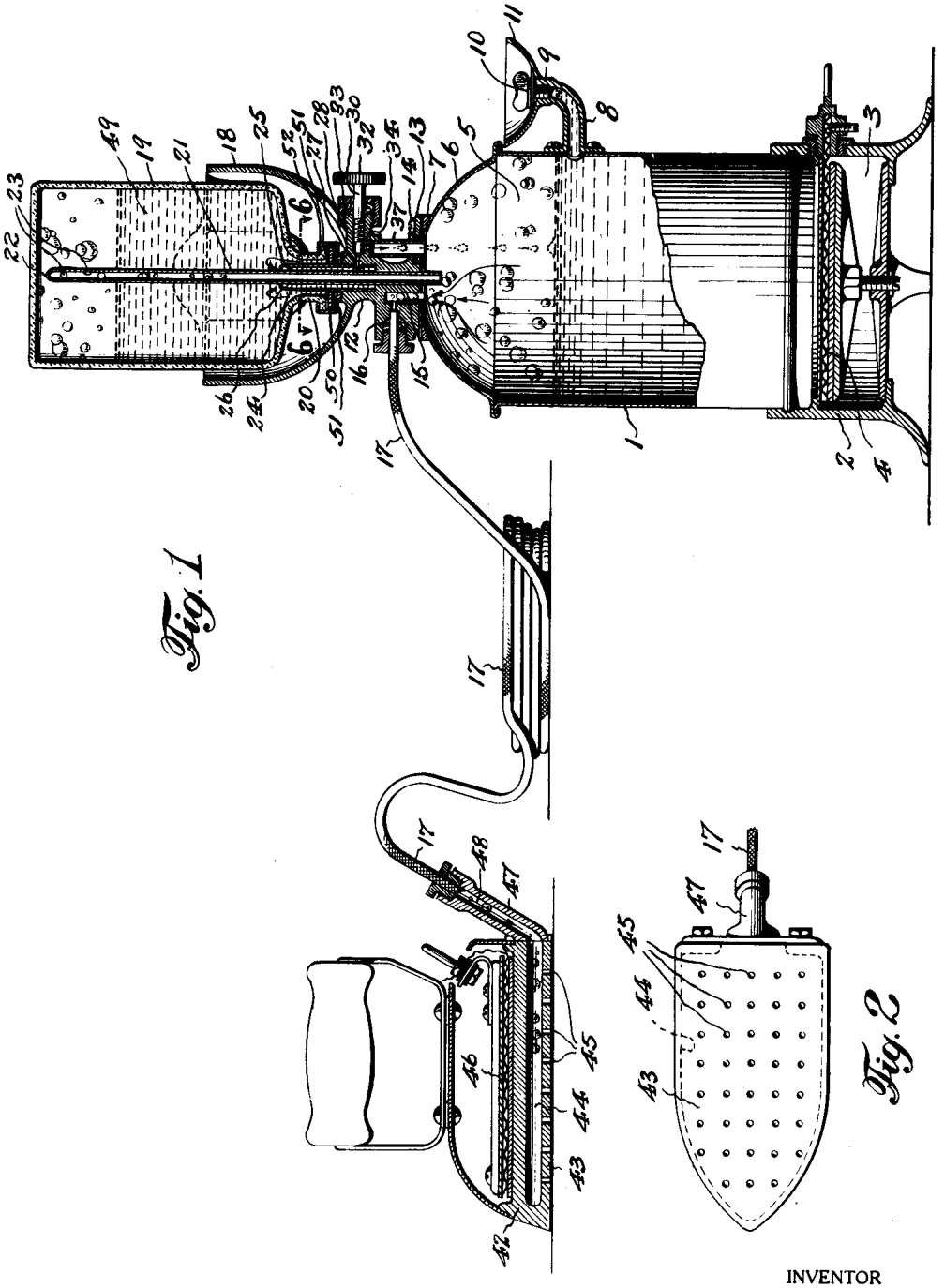


Fig. 1

Fig. 2

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Filed Nov. 22, 1924 3 Sheets-Sheet 2

Fig. 3

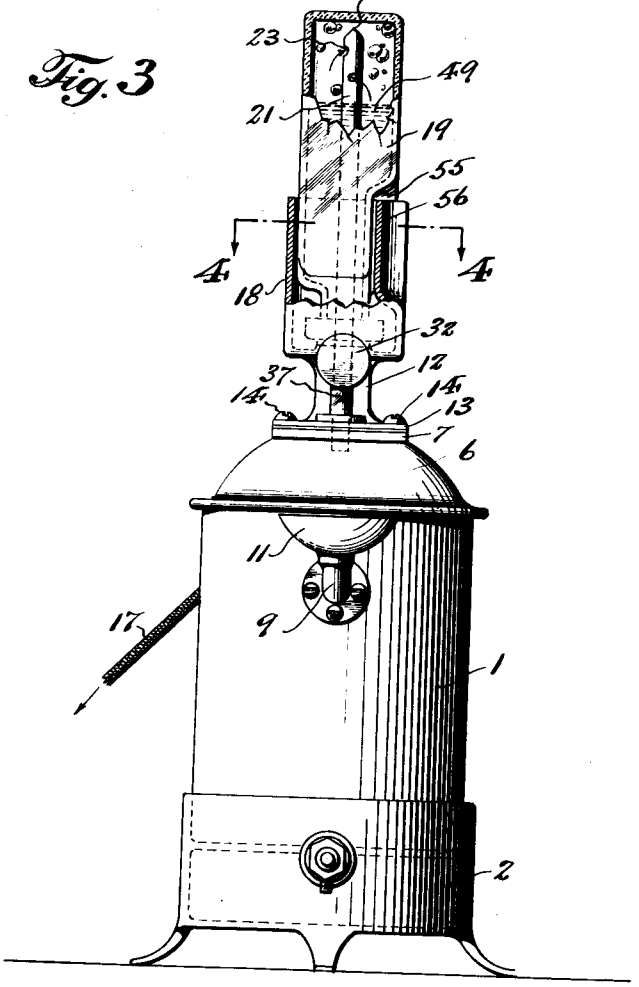
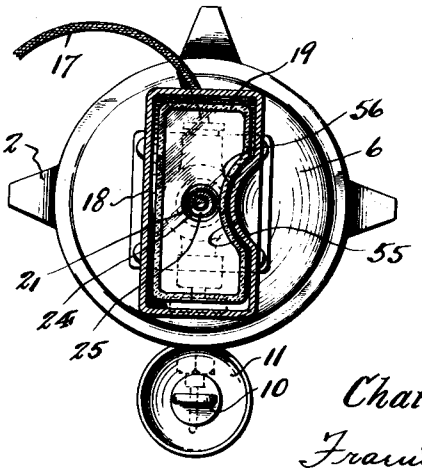


Fig. 4



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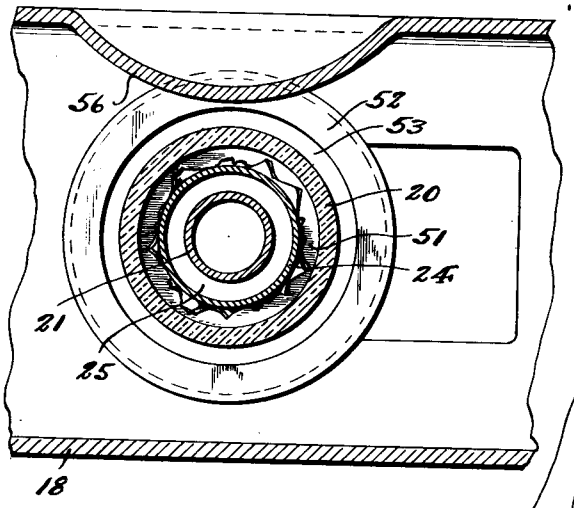
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Filed Nov. 28, 1924 3 Sheets-Sheet 3

Fig. 6



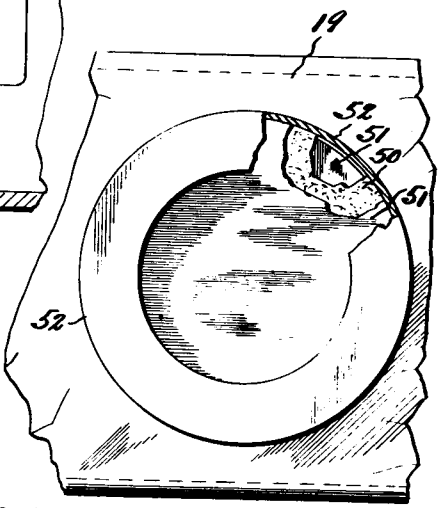
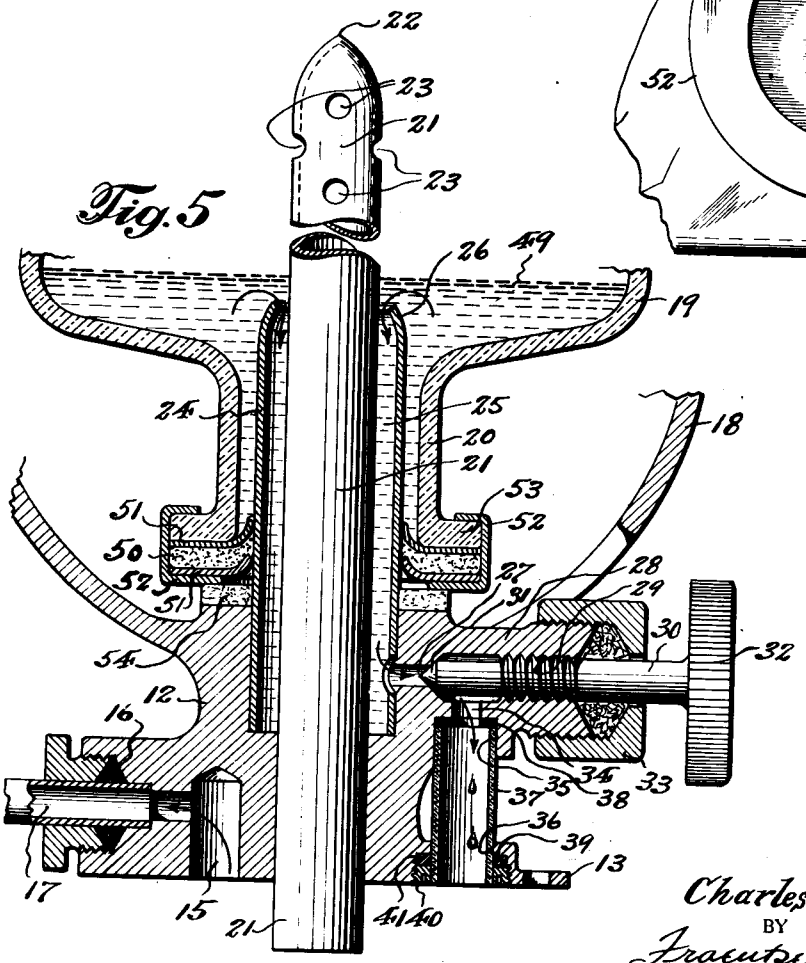


Fig. 7

Fig. 5



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UNITED STATES PATENT OFFICE.

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MEANS FOR GENERATING AND IMPREGNATING STEAM WITH A CHEMICAL CONSTITUENT.

Application filed November 28, 1924. Serial No. 752,573.

This invention relates, generally, to improvements in steam pressing appliances; and particularly to that class of steam pressing appliances comprising a pressing iron constructed to extravasate steam from its pressing face together with a generator for supplying steam to the pressing iron.

This invention has for its principal object to provide, in connection with steam pressing appliances of the kind mentioned, a means for introducing into the steam generator, for admixture with the steam delivered therefrom to the pressing iron, any desired chemical substances, such as mothproofing substances, insecticides, disinfectant, germicides, coloring matter, or any other substance with which it is desired to treat or impregnate the goods undergoing the pressing operations; thus utilizing the steam, in addition to its principal function as a dampening agent, as a vehicle for transferring the desired chemical substance to and into the material undergoing the pressing operation.

This invention has for a further object to provide a novel means for controlling the delivery of the desired chemical substance into the steam generator; and, furthermore, to provide a novel means for operatively coupling a separable initially sealed chemical container with the delivery means.

Another object of this invention is to provide for co-operation with a predetermined shape or type of separable chemical container, a means in combination with the coupling means of the generator corresponding solely to said predetermined shape or type so that unauthorized containers having spurious, adulterated or inefficient content cannot be utilized with the generator.

Other objects of this invention, not at this time more particularly enumerated, will be clearly understood from the following detailed description of the same.

With the various objects of this invention in view, the same consists, primarily, in the novel combination of chemical impregnation means with steam pressing appliances hereinafter set forth, and the invention consists, furthermore, in the novel arrangements and combinations of the various devices and parts, as well as in the details of the construction of the same, all of which will be more fully described in the following specification, and then embodied in the appended claims.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a part elevation and part vertical section of a steam pressing apparatus equipped with the novel chemical impregnation means made according to and embodying the principles of this invention; Figure 2 is a bottom view of the steam pressing iron; Figure 3 is a side elevation of the steam generator element and chemical impregnation means, portions of the latter means being in vertical section; Figure 4 is a fragmentary horizontal section, taken on line 4—4 in said Figure 3; Figure 5 is an enlarged vertical section of the means for coupling a separable chemical container operatively with the steam generator, together with the means for controlling the flow of chemical from the container; Figure 6 is a detail horizontal section, taken on line 6—6 in Figure 1, and drawn on an enlarged scale; and Figure 7 is a top view of the initially sealed neck or mouth of the chemical container, also drawn on an enlarged scale.

Similar characters of reference are employed in all of the hereinabove described views, to indicate corresponding parts.

Referring now to said drawings, the reference character 1 indicates a suitable generator or boiler shell, the lower or closed bottom end of which is suitably supported upon a base or stand 2 of any desired design. Said base or stand 2 is provided, beneath the generator or boiler shell, with a chamber 3, in which is secured, for cooperation with the bottom of the generator or boiler shell 1, an electrical heating unit 4 of any well known type, or any other desired form of heating means. Said electrical heating unit 4, when used, is to be served in the usual manner with electrical energy from a suitable source of supply, and the heat generated thereby will be operative to boil the water introduced into the interior boiler chamber 5 of the generator or boiler shell, to thereby generate steam for delivery to the pressing element or device served by the generator or boiler. The upper end of the generator or boiler shell 1 is provided with a top member or dome 6, having a central opening defined by the annular shoulder 7. Connected with the side wall of said generator or boiler

shell 1, in any desired location intermediate the bottom and top of the latter, is a tubular filling pipe 8 which communicates with the interior boiler chamber 5. The outer free end of said filling pipe 8 is provided with an upturned extension 9, which is internally threaded to receive a closing plug or stopper 10; and surrounding the free end of said extension 9 is a funnel shaped flange 11. By removing the closing plug or stopper 10, water may be introduced into the interior boiler chamber 5, from time to time as occasion may require.

The reference character 12 indicates a chemical container support, which preferably comprises a casting having at its lower end a base-flange 13, adapted to be registered with said annular shoulder 7, and secured to the latter by screws 14, or any other suitable form of fastening means, so that said casting closes over the central opening of the generator or boiler dome or top member 6. Said casting 12 possesses a steam outlet passage 15, the inner end of which communicates with the interior boiler chamber 5. Connected, through a stuffing-box 16, in communication with the outer end of said steam outlet passage 15, is a flexible steam delivery conduit 17.

Formed in connection with the upper free end of said casting 12 is a cup-shaped member 18, having an internal horizontal cross-sectional shape adapted to conform to the shape of a separable chemical container 19. Said separable chemical container 19 is preferably in the form of a bottle having a restricted neck 20. The container or bottle is adapted to be inverted, and then inserted in said cup-shaped member 18 so as to be supported in upright position above the steam generator or boiler. Extending vertically upward through said casting 12, with its lower end communicating with the upper portion of the interior boiler chamber 5, and with its upper free end projecting vertically through said cup-shaped member 18, is a vent-pipe 21. The upper free end of said vent-pipe 21 is wrought or shaped to a point, thus providing a piercing-point 22, the purpose of which will be subsequently disclosed. The upper free end portion of said vent-pipe 21 is provided in its side walls with one or more perforations or vents 23. Fixed in the body of said casting 12 is the lower end of a discharge sleeve 24, which projects upwardly into the lower interior of said cup-shaped member 18. Said discharge sleeve 24 is preferably disposed in concentric relation to said vent-pipe 21, but is spaced therefrom so as to provide an intermediate discharge passage 25, open at its upper free end. The upper free end portion of said discharge sleeve 24 is inwardly tapered toward the exterior sides of said vent-pipe 21, as at 26, without, however, touching said vent-pipe so as to shut off communication with said discharge passage 25. Provided in said casting 12, so as to communicate with the lower end of said discharge passage 25 formed by said sleeve 24, is a laterally extending valve-port 27. Extending outwardly from the side of said casting 12, in alinement with said valve-port 27, is a valve housing 28, having at its outer end an internally threaded opening 29. The reference character 30 indicates an externally threaded valve stem, which enters or is screwed through said opening 29, said stem having at its inner end a conical valve member 31 which cooperates with said valve-port 27. The exteriorly projecting end of said stem 30 is provided with a finger-piece or knob 32 for manipulating the same. The outer free end of said valve housing 28 is externally threaded to receive a stuffing-box cap 33, which confines a suitable packing around the outer end portion of the valve-stem 30. The valve-housing 28 is provided in its underside with a discharge valve port 34. Alined with the outer end of said discharge valve port is a diametrically enlarged annular seat or socket 35. Provided in said base-flange 13 is an opening 36 which is alined beneath said discharge valve port 34 and said seat or socket 35. Inserted through said opening 36 to extend upwardly therefrom, with its upper end seated in said seat or socket 35 is a transparent tubular duct or gauge glass 37. Interposed between the upper end of said duct or gauge glass 37 and the seat or socket 35 is a packing washer 38 of any suitable material. Alined with the lower end of said base flange opening 36 is a diametrically enlarged seat or socket 39 which is internally threaded to receive a keeper nut 40. Interposed between said keeper nut 40 and the inner end of said seat or socket 39 is a packing washer 41. As will be evident from an inspection of the drawings, the gauge glass affords communication between the interior of the valve housing 28 and the interior boiler chamber 5, and by reason of its transparency permits the flow of substances therethrough to be observed so that proper regulation of such flow by manipulation of the valve may be attained as desired.

The reference character 42 indicates the main body of a pressing iron, the same being provided on its underside with a smooth pressing face 43. The body of the iron is cored to provide an internal steam chamber 44 entering its heel and extending longitudinally forward toward the toe thereof. The body of the iron, intermediate its pressing face 43 and the steam chamber 44, is provided with a plurality of suitably spaced and disposed steam vents or openings 45 leading from said steam chamber to the pressing face of the iron. Connected with said iron body 42 is an electrical heating

element 46, or other suitable form of heating means. Secured to the heel of the iron body 42 is a fitting 47 which closes the rear end of the steam chamber 44, said fitting being provided with a steam delivery duct 48, and coupled in any suitable manner and by any suitable means with said fitting 47, so as to communicate with said steam delivery duct 48, is the outer or free end of said flexible steam delivery conduit 17.

The chemical container 19 is provided with a content consisting of a chemical fluid or solution suitable for the particular purpose for which it is desired to treat the goods undergoing the pressing operation. For example, the fluid or solution may be a disinfectant or germicide, or it may be a moth-proofing solution, or an insecticide, or it may be coloring matter, or, in fact, any particular kind of fluid or solution suitable to a given purpose in connection with the goods to be pressed.

The chemical container 19, as stated, is preferably in the form of a bottle having a restricted neck 20, and which is separable so as to be portable and also easily attached in and detached from operative relation to the pressing appliances or apparatus. When filled with a suitable fluid or solution 49, the restricted neck or mouth 20 may be sealed with a perforable sealing or stopper means. To this end I prefer to employ a laminate seal comprising a resilient center portion 50, of cork, felt, soft rubber, etc., with inner and outer layers 51 of thin metal, paraffine or wax paperboard or other suitable material. Of course, I do not limit myself to the use of the particular materials above mentioned for either the outer layers or inner layer of the seal, said materials being named merely by way of illustration; neither do I intend to confine myself necessarily to the use for a laminate seal, if a seal of an integral single material is satisfactory; it being my intention, however, that the seal should preferably be perforable, since a perforable seal most easily permits the placing of the container in operative attached relation to the apparatus without loss of content. The seal is placed in closed relation to the open end of the neck 20 of the container, and is preferably clamped in place by an annulus of metal providing a clamp-ring 52, which may be engaged around the flange 53 of the container neck 20 and the registered marginal portions of the seal. Fastening means of any other form may be substituted for the clamp-ring 52, as may be desirable or convenient.

To attach the sealed chemical container in operative relation to the apparatus, said container is first inverted, and its seal is pressed downwardly against the piercing point 22 of the upwardly projecting vent-pipe 21, to thus cause said piercing-point 22 to perforate and penetrate through the seal. The container is then pressed downward until the tapered end 26 of the discharge sleeve 24 is forced through the seal, as shown in Figures 5 and 6 more particularly, thus causing the discharge sleeve 24 and vent-pipe 21 to penetrate the interior of the container, with the perforate end of the vent-pipe projecting above the surface of the container content. The seal will hug the sides of the discharge sleeve 24, and consequently will establish a leak tight connection or joint therewith. If desired, a resilient washer 54, of rubber or any other suitable material, may be disposed in the bottom of the cup-shaped member 18 and around the discharge sleeve 24, against which the neck 20 of the container is stopped.

When the container 19 is thus coupled with the generator, its fluid content 49 will flow downwardly through the discharge passage 25, and thence through the valve port 27. A proper adjustment of the valve member 31 relative to the valve port 27 will control or regulate the flow of the fluid as may be desired, and the fluid passing the valve mechanism will drop through the discharge valve port 34, and thence through the gauge glass 37 into the interior of the generator or boiler. The free discharge or flow of the fluid 49 from the container is assured, since the pressure within the interior boiler chamber 5 and the interior of the container 19 is equalized by the intercommunicating vent-pipe 21.

As the fluid 49 is thus introduced into the interior boiler chamber 5 it comes in contact with the boiling water and steam therein, and is itself volatilized so that it is taken up and intermixed with the generated steam, to pass therewith outwardly from the generator through the delivery conduit 17 into the steam chamber 44 of the pressing iron, to be extravasated therefrom through the vents 45 in the pressing face of the iron, and thus into contact with the goods or material undergoing the pressing operations of the manipulated iron. In this manner, the desired chemical substance may be distributed to and upon the goods so as to impregnate the same, the steam serving as a vehicle for carrying the desired chemical substance to the goods.

It is desirable that only authorized containers 19, having a guaranteed chemical content, be used with the apparatus, and consequently provision may be made, both for a special shape of container and a correspondingly shaped supporting or coupling means therefor, so that difficulty and obstruction is met with in any attempt to employ unauthorized containers. To this end the container 19 may be provided with a longitudinal depression 55, and the cup-shaped member 18 may be provided with a vertical rib 56 of corresponding shape to fit said de-

pression 55. It will thus be apparent that the rib 56 and special cross-sectional shape of the cup-shaped member 18, would obstruct the insertion of ordinary shaped bottles or containers, and substantially all containers except the properly shaped authorized container.

From the above description of my present invention, it will be apparent that I have provided a novel and efficient means for use with steam pressing appliances, whereby, in addition to the ordinary pressing functions, said appliances may simultaneously serve to carry out a desired chemical treatment or impregnation of goods or materials undergoing the pressing operations.

I am aware that some changes may be made in the general arrangements and combinations of the various devices and parts, as well as in the details of the construction of the same, without departing from the scope of this invention as described in the foregoing specification, and as defined in the appended claims. Hence, I do not limit my invention to the exact arrangements and combinations of the devices and parts as set forth in the foregoing specification, nor do I confine myself to the exact details of the construction of said parts as illustrated in the accompanying drawings.

I claim:—

1. The combination with a steam generator, of a separable chemical container having a perforable closure, means for supporting said container in operative relation to said generator, a vent-pipe connected with said supporting means so as to project exteriorly above said supporting means, said vent-pipe having a piercing point at its upper free end adapted to pierce the perforable closure of said container to permit said vent-pipe to project upwardly within the latter to a point above the level of the content thereof, said vent-pipe having a perforate upper end portion, said vent-pipe affording a mutually intercommunicating means between said generator and container to equalize the internal pressures therein, a discharge sleeve connected with said supporting means in concentric spaced relation to the lower exterior portion of said vent-pipe, said discharge sleeve being adapted to penetrate the container closure to provide a discharge passage for the content of the latter, and means communicating with said discharge passage for delivering the content of said container into said generator for the purposes described.

2. The combination with a steam generator, of a separable chemical container having a perforable closure, means for supporting said container in operative relation to said generator, a vent-pipe connected with said supporting means so as to project exteriorly above said supporting means, said vent-pipe having a piercing point at its upper free end adapted to pierce the perforable closure of said container to permit said vent-pipe to project upwardly within the latter to a point above the level of the content thereof, said vent-pipe having a perforate upper end portion, said vent-pipe affording a mutually intercommunicating means between said generator and container to equalize the internal pressures therein, a discharge sleeve connected with said supporting means in concentric spaced relation to the lower exterior portion of said vent-pipe, said discharge sleeve being adapted to penetrate the container closure to provide a discharge passage for the content of the latter, a regulating valve means connected with said supporting means, said valve means having an inlet port intermediate the same and said discharge passage, said valve means having a discharge port, and chemical delivery means between said discharge port and the interior of said generator.

3. The combination with a steam generator, of a separable chemical container having a perforable closure, means for supporting said container in operative relation to said generator, a vent-pipe connected with said supporting means so as to project exteriorly above said supporting means, said vent-pipe having a piercing point at its upper free end adapted to pierce the perforable closure of said container to permit said vent-pipe to project upwardly within the latter to a point above the level of the content thereof, said vent-pipe having a perforate upper end portion, said vent-pipe affording a mutually intercommunicating means between said generator and container to equalize the internal pressures therein, a discharge sleeve connected with said supporting means in concentric spaced relation to the lower exterior portion of said vent-pipe, said discharge sleeve being adapted to penetrate the container closure to provide a discharge passage for the content of the latter, a regulating valve means connected with said supporting means, said valve means having an inlet port intermediate the same and said discharge passage, said valve means having a discharge port, and a transparent tubular gauge glass in intercommunicating connection between said discharge port and the interior of said generator.

In testimony, that I claim the invention set forth above I have hereunto set my hand.

CHARLES A. BREWER.