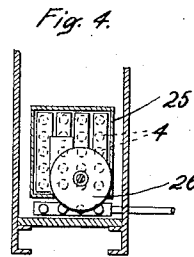
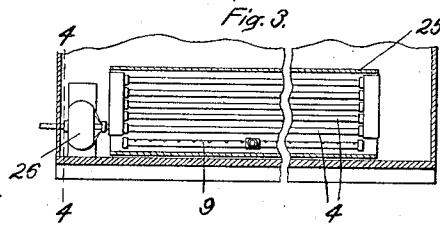
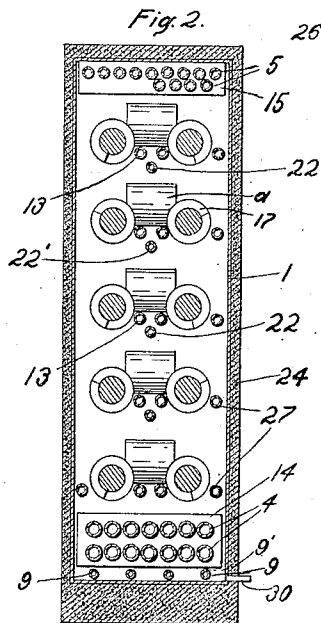
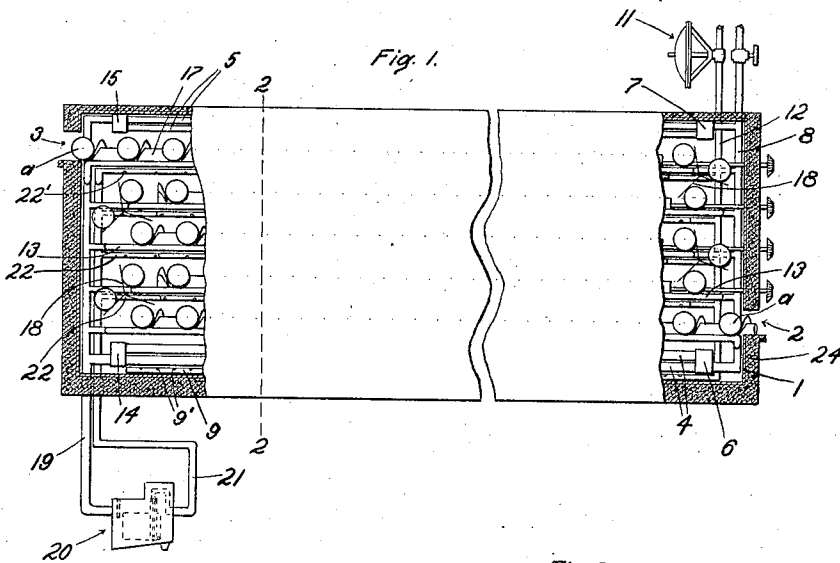


W. J. SCHAEFER.
COOKER.

APPLICATION FILED AUG. 10, 1916. RENEWED MAY 29, 1918.

1,328,239.

Patented Jan. 13, 1920.



Inventor:
William J. Schaefer
by Arthur P. Knight
his Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM J. SCHAEFER, OF ONTARIO, CALIFORNIA.

COOKER.

1,328,239.

Specification of Letters Patent.

Patented Jan. 13, 1920.

Application filed August 10, 1916, Serial No. 114,168. Renewed May 29, 1918. Serial No. 237,372.

To all whom it may concern:

Be it known that I, WILLIAM J. SCHAEFER, a citizen of the United States, residing at Ontario, in the county of San Bernardino and State of California, have invented a new and useful Cooker, of which the following is a specification.

This invention relates to apparatus for cooking fruit or other materials, and particularly to means for heating a series of cans passed through the apparatus in continuous operation. The main object of the invention is to provide for heating the cans or other objects fed through the apparatus, in most effective manner, so as to bring the contents thereof to the required temperature in minimum time and with minimum expense. By this means I am enabled to either increase the output of a machine of given size, or to raise the fruit to a higher temperature, or to reduce the size of the apparatus, compared with the usual apparatus for this purpose.

The accompanying drawings illustrate embodiments of my invention, and referring thereto:

Figure 1 is a longitudinal section, partly in elevation of the cooker.

Fig. 2 is a section on line 2—2 in Fig. 1.

Fig. 3 is a longitudinal section of another form of the invention.

Fig. 4 is a section on line 4—4 in Fig. 3.

Referring to Figs. 1 and 2, the cooker comprises a casing 1, provided with an inlet 2 and an outlet 3, for the cans, indicated at *a*, which are moved through the cooker in a single continuous line from the inlet to the outlet, preferably in such manner as to move successively forward and backward in a plurality of horizontal rows. The means for moving the can in this manner is shown only diagrammatically herein, as any suitable means may be used for this purpose, said means being herein shown as screw conveyers 17 for engaging the cans and for moving the cans along track means, here shown as pipes 13. Elevating star wheels 18 may be provided at the end of the rows, for transferring the cans from each row to the next. Said conveyers and star wheels are driven by any suitable means not shown.

The means for heating the cans comprises steam heating coils or pipes 5 and 4, extending preferably at the top and bottom of the casing and connected by headers 7 and 6

to a live steam pipe 8; and perforated pipes 9 extending below the coils 4 and connected to a live steam supply pipe through a pipe 12, and an automatic regulating valve 11, which maintains a constant pressure and temperature in pipes 9, for example about atmospheric pressure, with a temperature of about 212 degrees F. The pipes or coils 4 and 5 are maintained preferably at a temperature considerably higher than 212 degrees F. for example at about 250 to 325 degrees F., so that live steam issuing from the perforations 9' in pipes 9 will be superheated by the coils or pipes 4 and 5.

I also prefer to provide heating pipes 13 which are adjacent to or form part of the tracks or means on which the cans are guided and moved through the machine. For simplicity, I have shown the cans as running directly on these pipes 13, so as to heat the same by conduction, but any other suitable construction for bringing the cans into heat conductive relation with pipes 13 may be used, for example that shown in my United States Patent No. 1,197,154, dated Sept. 5, 1916. These pipes 13 are preferably connected to the pipe 8 leading to the closed heating coils 4 and 5, so as to be supplied with high temperature steam. At the ends of the coils 4 and 5 opposite the headers 6 and 7, they are connected to headers 14 and 15, connected by pipe 19 to a steam trap 20, the discharge pipe 21 of which leads to pipes 22, extending below the respective pipes 13, these pipes 22 having perforations 22' to discharge live steam together with hot water on top of the rows of cans below said pipes, whenever the steam trap operates by reason of accumulation of water therein. The steam trap 20 may be of any usual construction. Pipes 22 are also preferably connected to pipe 12 leading to the pressure reducer or regulator 11, so as to be continuously supplied with live steam. Suitable heat insulation, indicated at 24, may be provided for the casing 1, consisting of paper, asbestos, wood or other material. Supplementary heating pipes 27 may be connected to pipe 8.

In the operation of the apparatus the cans are moved continuously through the apparatus from the inlet 2 to the outlet 3, and are subjected to heat by radiation from closed coils 4 and 5, by conduction from pipes 13, and by convection of live steam from pipes 9 and 22, said live steam being

superheated by coils 4 and 5; the cans being also heated by contact with the hot water discharged from pipes 22 intermittently, and splashed over the cans. The hot water applied in this manner is very effective in heating the cans, especially in the first part of the heating operation.

As shown in Figs. 3 and 4, the lower steam coils 4 may be inclosed in a casing 25, open at each end, and a blower 26 may be provided for drawing the air and live steam from this casing and circulating it through the cooker casing, to provide more effective circulation of the heat.

The hot water discharged on to the cans in the form of my invention first described acts not only to apply heat to the cans directly, but also as a means for conducting heat from the pipes to the cans, it being a better conductor than steam or air. The water, in falling through the casing, is supplied with additional heat both by contact with the surrounding superheated live steam, and by contact with the steam pipes containing the high temperature steam, and as it falls on to and runs over the cans, it applies to the cans the heat which it has thus received, as well as heat present in the water as it enters the casing. It also acts as a temperature equalizer, tending to maintain the temperature within the cooker constant. Such water as is not evaporated may pass off through a drain, indicated at 30.

What I claim is:

1. In a cooker, a casing, means for feeding articles therethrough, pipe means extending within said casing and provided with steam supply connections, a steam trap connected to receive water condensed in said pipe means, and perforated pipe means connected to receive the discharge from said trap and adapted to discharge same over the articles within the casing.

2. In a cooker, a casing, means for feeding articles therethrough, perforated pipe means extending over said articles in the casing, and provided with low pressure steam connections, pipe means extending within the casing and provided with relatively high pressure steam connections, a steam trap connected to receive the discharge from the last named pipe means, and connected to discharge water through the said perforated pipe means over the articles in the casing.

3. In a cooker, a casing, means for feeding articles therethrough, steam pipe means extending in heat conducting relation to the articles as they are moved through the casing, perforated pipe means extending within the casing and connected to receive relatively low pressure steam, pipe means extending within the casing and connected to receive relatively high pressure steam to superheat the steam admitted through said perforated pipe means, a steam trap connected to receive the discharge from the last named pipe means, and perforated pipe means extending over the articles to be heated and connected to receive the discharge from said steam trap, to discharge hot water from said trap over the articles in the casing.

4. In a cooker, a casing, means for moving articles therethrough, steam pipes for heating said articles by conduction as they pass through the casing, steam pipes for passing live steam in contact with said articles, steam pipes for superheating such live steam and for radiating heat to said articles, and means for discharging hot water into the casing above said articles and above the first named steam pipes, so that such water will receive heat from the first named pipes and from the superheated steam in the casing and will apply such heat to the articles in the casing.

5. In a cooker, a casing, means for moving articles therethrough, steam pipes extending in said casing, and means for supplying hot water to said casing above said articles and above said steam pipes, in such manner that the water will receive heat from said steam pipes and will apply such heat to said articles.

6. In a cooker, a casing, means for moving articles therethrough in a plurality of superposed rows, steam pipes extending in said casing at a plurality of levels and between said rows, and means for supplying hot water to said casing at a plurality of levels and between said rows, so that such water will receive heat from said steam pipes and will apply such heat to the articles.

In testimony whereof I have hereunto set my hand, at Los Angeles, California, this 1st day of August, 1916.

WILLIAM J. SCHAEFER.