Dec. 18, 1923. 1,478,222

O. H. HANSEN

COOKER

Filed Sept. 22, 1922

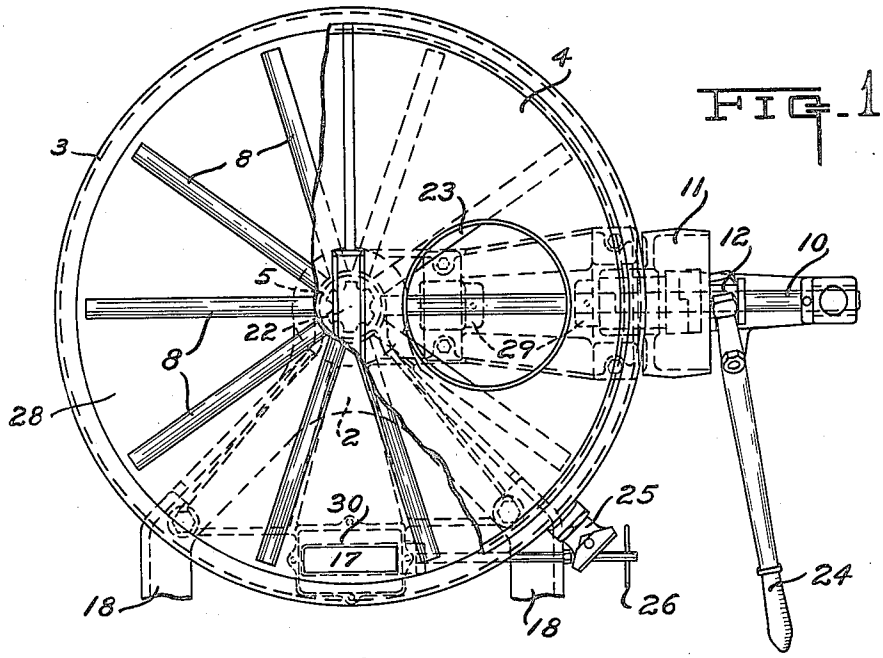

FIG. 1.

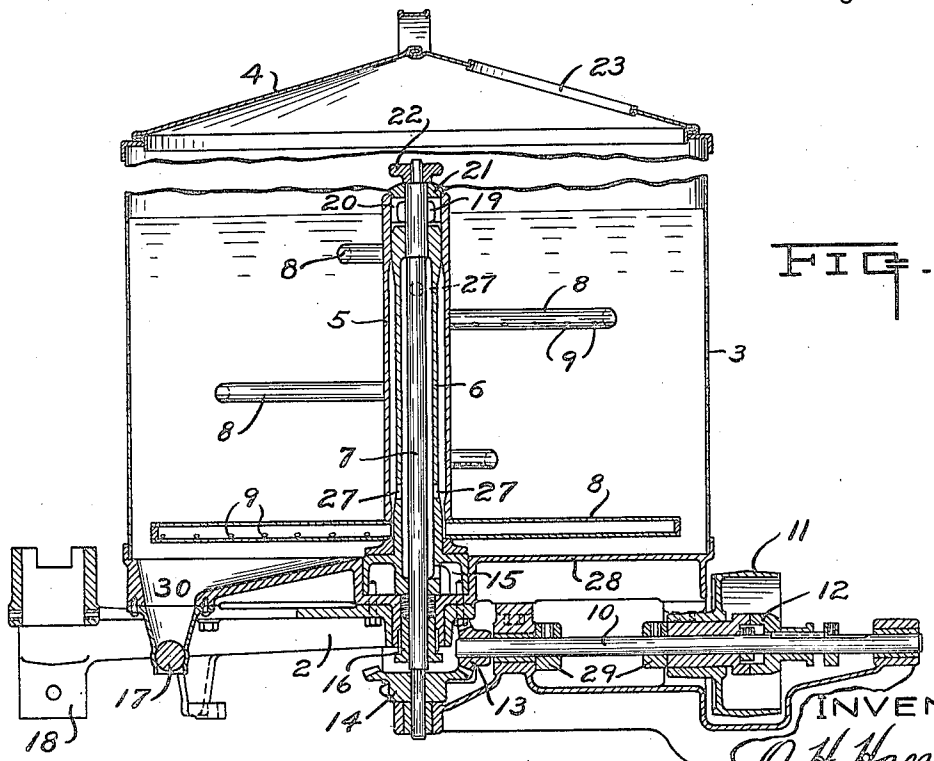

FIG. 2.

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UNITED STATES PATENT OFFICE.

OSWALD H. HANSEN, OF PORT WASHINGTON, WISCONSIN, ASSIGNOR TO HANSEN CANNING MACHINERY CORPORATION, OF PORT WASHINGTON, WISCONSIN.

COOKER.

Application filed September 22, 1922. Serial No. 589,885.

To all whom it may concern:

Be it known that OSWALD H. HANSEN, a citizen of the United States, residing at Port Washington, in the county of Ozaukee and State of Wisconsin, has invented a certain new and useful Cooker, of which the following is a specification.

This invention relates in general to improvements in the art of treating food stuffs before the same are packed in containers, and relates more specifically to improvements in the construction and operation of automatic cooking and sterilizing apparatus for treating corn and the like before the substance is confined in receptacles such as tin cans.

An object of the invention is to provide an automatic cooker which is simple in construction and efficient in operation.

Some of the more specific objects of the invention are as follows:

To provide apparatus which will thoroughly and efficiently heat treat materials with the aid of fluent heating agency.

To provide a cooking device which is automatic and continuous in its operation.

To provide simple, compact and strong cooking mechanism having enormous capacity for relatively small space occupied.

To provide a cooker which may be manufactured and sold at relatively low cost, and which is mechanical and neat in appearance.

To provide cooking apparatus all parts of which are conveniently accessible and removable.

To provide a highly sanitary cooker the parts of which may be readily cleaned, and which is devoid of joints which are subject to leakage.

To provide a mechanically actuated cooker which may be operated and maintained at relatively low cost and with minimum attention.

To provide cooking mechanism adapted for direct cooperation with standard filling machines without interfering with the accessibility and operation of the can filler parts.

To provide cooking apparatus which is adapted to deliver treated materials directly to a can filling machine by gravity, thus eliminating handling of the treated material before packing the same.

To provide an improved fluid distributing rotor structure for canning apparatus.

To provide other improvements in the construction and operation of this class of apparatus, whereby the efficiency of operation thereof is enhanced to a maximum.

A clear conception of an embodiment of the present invention and of the operation of devices constructed in accordance therewith, may be had by referring to the drawing accompanying and forming a part of this specification, in which like reference characters designate the same or similar parts in the several views.

Fig. 1 is a top view of an improved automatic cooker, a portion of the cover having been broken away in order to more clearly disclose internal structure of the device.

Fig. 2 is a fragmentary compound radial section through the improved cooker, part of the section being taken in the radial plane of the discharge mechanism, and another part of the section being taken in the radial plane of the drive mechanism.

The improved cooker illustrated in the drawing comprises generally a stationary frame 2 adapted for direct attachment to the upper portion of a standard can filling machine, a sheet metal cylindrical tank 3 supported by the frame 2, a removable sheet metal cover 4 for the tank 3, a rotary steam distributing element or rotor 5 mounted centrally within the tank 3, and mechanism for continuously revolving the rotor 5 within the tank 3 during normal operation of the machine.

The stationary frame 2 is provided with projections 18 which serve as a means for attaching the cooker to a can filler frame in an obvious manner, and provides a direct support for the bottom 28 of the tank 3. Mounted centrally within the tank 3 and rigidly secured within a recess in the tank bottom 28, is a stationary hollow cylindrical standard 6, the lower portion of which is enlarged to form a steam supply chamber 15, and the upper portion of which is penetrated by a plurality of transverse steam passages 27. Steam may be supplied directly to the chamber 15 by means of a pipe, not shown. Within the stationary standard 6, and spaced from the inner surface thereof, is a vertical rotary drive shaft 7 the upper portion of which coacts with a bearing at the upper extremity of the

standard 6, and the lower portion of which coacts with a bearing in the stationary frame 2. Surrounding the stationary standard 6, and spaced from the outer surface thereof, is a vertical rotary sleeve forming one element of the rotor 5, the upper extremity of the sleeve coacting with an external bearing surface of the standard 6, and the lower extremity of the sleeve coacting with vertical and horizontal bearing surfaces at the lower portion of the standard 6. The upper end of the rotor sleeve is provided with a transverse slot 20 adapted to receive a transverse driving key 19 which passes through an opening in the vertical drive shaft 7. A collar 21 and hand nut 22 serve to prevent displacement of the rotor 5 relatively to the drive shaft 7. The sleeve of the rotor 5 is provided with a series of radially extending tubular fluid distributing arms, the arms being provided with downwardly directed fluid discharge orifices 9, and the interiors of the arms 8 communicating directly with the annular space between the rotor sleeve and the stationary standard 6.

The lower portion of the vertical drive shaft 7 penetrates the tank bottom 28 and the stationary frame 2, a stuffing box 16 serving to prevent leakage of fluid at the point of penetration. A bevel gear 14 secured to the lower part of the vertical shaft 7 meshes with a bevel gear 13 secured to an end of the horizontal main drive shaft 10 which is supported in bearings in the stationary frame 2. Thrust collars 29 serve to prevent longitudinal displacement of the drive shaft 10 relatively to the frame. A drive pulley 11 receiving power from any suitable source, is adapted to be drivingly connected with the horizontal drive shaft 10 by means of a jaw clutch 12, operable by means of a clutch control lever 24. The jaw clutch 12 is of ordinary construction and comprises a clutch member splined upon the shaft 10 and cooperable with a second clutch member secured to the pulley 11 and freely rotatable with reference to the shaft 10.

The cylindrical sheet metal tank 3 has a bottom 28 provided with a discharge portion 30 at one side thereof. Delivery of material from the tank 3 through the discharge portion 30 is controllable by means of a valve 17 which is operable by means of a handle 26. The tank 3 may be provided with suitable temperature indicating means such as a thermometer 25, and may also be provided with other accessories ordinarily furnished with this class of apparatus. The cover 4 of the tank 3 is preferably provided with a relatively large opening 23 for admitting the substance to be treated to the interior of the tank 3.

During normal operation of the cooker, the clutch 12 is thrown in and rotary motion is being imparted from the pulley 11 to the horizontal shaft 10 and from the horizontal shaft 10 through the bevel gears 13, 14 to the vertical drive shaft 7. Rotation of the vertical drive shaft 7 is transmitted through the drive key 19 to the rotor 5 causing the tubular arms 8 of the rotor to revolve in horizontal planes within the tank 3. The material to be cooked or sterilized is admitted to the tank 3 through the opening 23 in the cover and after sufficient material has thus been admitted, steam under pressure is admitted to the supply chamber 15. From the supply chamber 15 the steam passes upwardly through the interior of the stationary standard 6 and laterally from the interior of the standard 6 through the openings 27 into the interior of the sleeve of the rotor 5. The steam thus admitted passes into the hollow rotating arms 8 from which it is delivered directly into the mass of the material being treated, through the discharge orifices 9. The revolving arms 8 thoroughly agitate the material under treatment and deliver jets of steam into all portions thereof, thereby thoroughly cooking and sterilizing the substance. When the proper degree of treatment has been attained, the discharge valve 17 may be opened to deliver the treated material by gravity directly to the can filling machine located below the cooker.

It will be obvious that after the cooker has been placed in operation, the treatment of material may be made continuous by controlling the delivery of material through the valve 17 and by supplying sufficient material to replace that which is being continuously withdrawn. The rate of cooking may also be varied by controlling the steam supply and the speed of rotation of the rotor 5. The cooker may thus be operated entirely automatically and continuously to produce an enormous output.

The simplicity of the structure from a manufacturer's standpoint, is readily apparent and it will be noted that the entire interior of the machine is accessible by merely removing the cover 4. The rotor 5 may be quickly removed by removing the hand nut 22 thereby permitting convenient washing of the elements to maintain the apparatus in sanitary condition. The stuffing box 16 effectively packs the only joint in the apparatus where leakage might occur thus eliminating all possibility of wasting materials. After being placed in operation, the cooker requires no further attention with the possible exception of manipulation of the steam and discharge control valves in order to produce proper treatment of the material.

It will also be noted that by locating the cooker above and supporting it directly

from the can filling machine, accessibility and operation of the filler is not interfered with, and the material may be delivered by gravity directly to the filling machine thereby eliminating handling of the treated material. It will also be noted that the improved fluid distributing rotor 5 is capable of application to other canning machinery wherein a uniform distribution of steam or other heating agency is desired.

It should be understood that it is not desired to limit the present invention to the exact details of construction and of operation herein shown and described, for various modifications within the scope of the claims may occur to persons skilled in the art.

It is claimed and desired to secure by Letters Patent:—

1. In combination, means forming a chamber, a stationary member supported from one end only and projecting into said chamber, a sleeve journalled on said member, a plurality of fluid conductors carried by and projecting laterally from said sleeve, means for delivering fluid through said member to said conductors, and means for discharging said fluid from said conductors into said chamber.

2. In combination, means forming a chamber, a stationary member supported from one end only and projecting into said chamber, a sleeve journalled on said member, a plurality of fluid conductors carried by and projecting laterally from said sleeve, means for delivering fluid through said member to said conductors, and means for discharging jets of said fluid laterally from said conductors into said chamber.

3. In combination, means forming a chamber, a stationary member supported from one end only and projecting into said chamber, a sleeve journalled on said member, a plurality of fluid conductors carried by and projecting laterally from said sleeve, means for delivering fluid through said member to said conductors, means for discharging jets of said fluid laterally from said conductors into said chamber, and means for rotating said sleeve and said conductors.

4. In combination, means forming a chamber, a stationary tubular member supported from one end only and projecting into said chamber, a sleeve journalled on said member, a plurality of fluid conductors carried by and radiating from said sleeve, means for delivering steam through said member to said conductors, means for discharging jets of said steam laterally from said conductors into said chamber, and mechanism for rotating said sleeve and said conductors about said member.

5. In combination, means forming a chamber, a vertical stationary tubular member supported from one end only and projecting into said chamber, a sleeve journalled on said member, a plurality of horizontal fluid conductors carried by said sleeve, means for delivering fluid into said chamber upwardly through said member and laterally through said conductors, and mechanism for rotating said sleeve and said conductors about said member.

6. In combination, a tank, a stationary member supported from one end only and located centrally within said tank, a sleeve journalled on said member, a plurality of fluid conductors carried by and projecting laterally from said sleeve, means for delivering fluid through said member to said conductors, and means for discharging said fluid from said conductors into said tank.

7. In combination, a tank, a stationary tubular member supported from one end only and located centrally within said tank, a sleeve journalled on said member, a plurality of fluid conductors carried by and projecting laterally from said sleeve, means for delivering steam through said member to said conductors, means for discharging said steam laterally from said conductors into said tank, and means for rotating said sleeve about said member.

8. In combination, means forming a chamber, a stationary tubular member projecting into said chamber, a sleeve journalled on said member, a plurality of fluid conductors carried by and projecting laterally from said sleeve, means for delivering fluid into said chamber through said member and said conductors, and driving means for said sleeve extending through said member.

9. In combination, a tank, a stationary tubular member located centrally within said tank, a sleeve journalled on said member, a plurality of fluid conductors carried by and projecting laterally from said sleeve, means for delivering steam through said member to said conductors, means for discharging said steam from said conductors into said tank, and mechanism for rotating said sleeve and said conductors about said member, said mechanism comprising a shaft extending through said member and means for rotating said shaft.

10. In combination, a tank, a vertical stationary tubular member located within said tank, a sleeve journalled on said member, a plurality of horizontal fluid conductors carried by said sleeve, means for delivering fluid upwardly through said member and into said conductors, and a rotary shaft for driving said sleeve extending upwardly through said tubular member.

11. In combination, a cylindrical tank, a vertical stationary tubular member supported from one end only and projecting into said tank, a sleeve surrounding said member to form an annular space, a plurality of hollow conductors communicating with said space, and means for delivering

fluid through the interior of said member to said space and from said space to said conductors.

12. In combination, a cylindrical tank having a vertical axis, a vertical stationary tubular member supported from one end only and projecting centrally within said tank, a sleeve journalled on said member, a plurality of conductors projecting laterally from said sleeve, driving means for said sleeve extending vertically through said member, and means for effecting upward removal of said sleeve and said conductors from said tank.

13. In combination, means forming a chamber, a stationary member projecting into said chamber, a sleeve journalled on said member, a plurality of fluid conductors carried by and projecting laterally from said sleeve, and driving means for said sleeve extending longitudinally through said member, said member being detachable from said driving means and removable from said member by displacement of said sleeve longitudinally of said member.

14. In combination, means forming a chamber, a stationary tubular member projecting into said chamber, a sleeve journalled on said member, a plurality of fluid conductors carried by and projecting laterally from said sleeve, a rotary shaft extending through and journalled within said member, and a driving connection between said shaft and said sleeve located at one end of said member.

15. In combination, a tank having a vertical axis, a stationary tubular member located concentric with said axis and having a steam supply chamber formed at one end thereof, a sleeve surrounding and spaced from said member to form an annular chamber, a plurality of fluid conductors carried by said sleeve, ports connecting said supply chamber with said conductors, a drive shaft extending through said chamber and through said member, and a driving connection between said shaft and said sleeve.

16. In combination, a tank, a stationary tubular member located within said tank and having a steam supply chamber communicating with one end thereof, a sleeve journalled on said member, a plurality of conductors carried by said sleeve and extending into said tank, ports connecting said chamber with said conductors through the interior of said member, a drive shaft extending through said chamber and through said member, and a driving connection between said shaft and said sleeve located at the opposite end of said member.

17. In combination, means forming a chamber, a stationary tubular member fixed at one end only and projecting into said chamber, a sleeve journalled on said member and having means for delivering fluid laterally thereof, a rotary shaft extending longitudinally through and journalled within said member, and a driving connection between said shaft and said sleeve located at the free end of said member.

18. In combination, means forming a chamber, a vertical tubular member fixed at its lower end only and projecting into said chamber, a sleeve embracing said member and having laterally projecting fluid conductors extending into said chamber, a rotary shaft extending upwardly through said member, and a driving connection between said shaft and said sleeve located above the upper end of said member.

19. In combination, means forming a chamber, a stationary vertical hollow member fixed at its lower end only and projecting upwardly from the bottom of said chamber, a rotary sleeve embracing said stationary member and having laterally projecting perforated fluid conductors extending into said chamber, a rotary shaft extending upwardly through the interior of said stationary member, a driving connection between said shaft and said sleeve located above the upper extremity of said member, and means associated with the lower extremity of said shaft for rotating the same.

In testimony whereof, the signature of the inventor is affixed hereto.

OSWALD H. HANSEN.