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PATENTED FEB. 12, 1907.

M. J. HAWKINS.

APPARATUS EMPLOYED IN CANNING OPERATIONS.

APPLICATION FILED MAY 25, 1905.

2 SHEETS—SHEET 1.

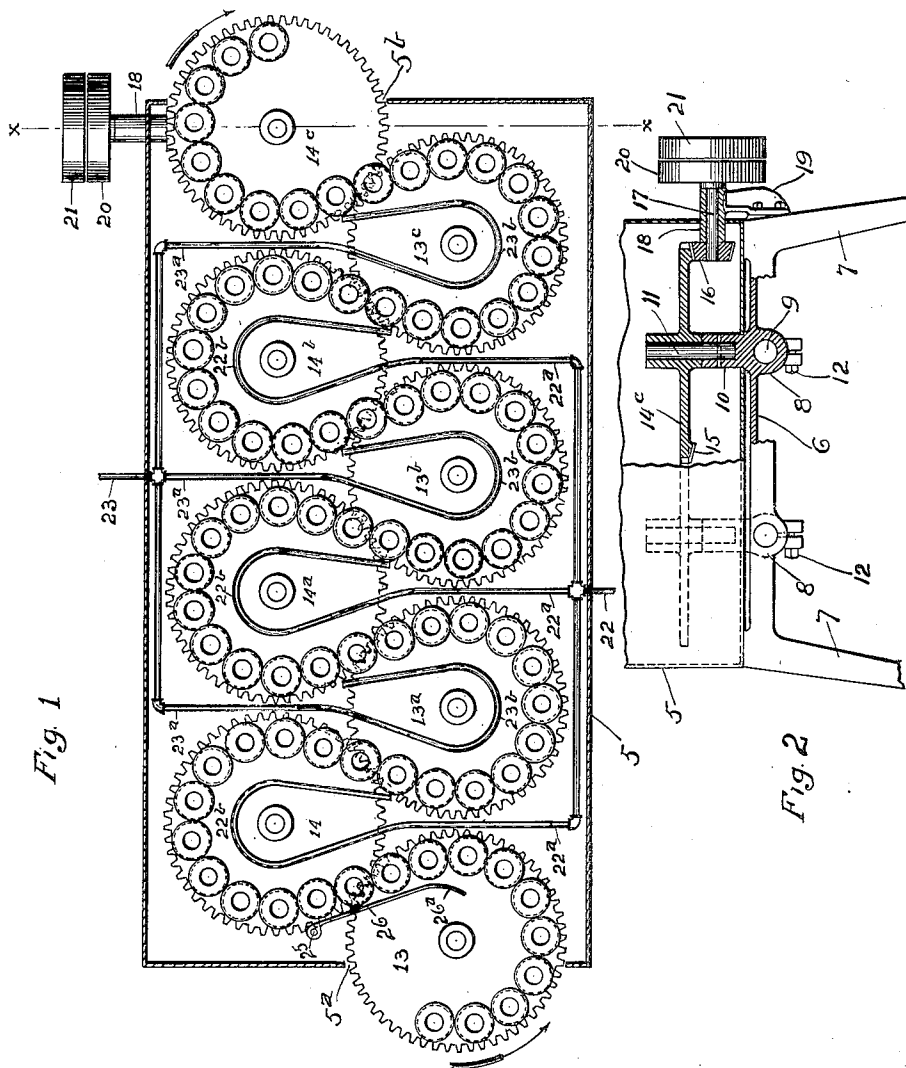


Fig. 1

Fig. 2

WITNESSES:

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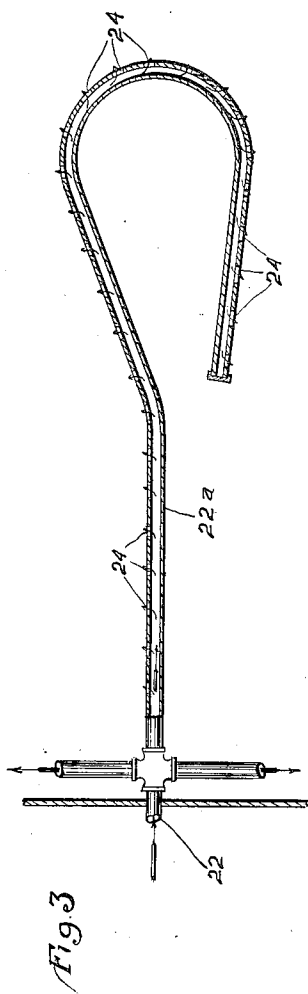
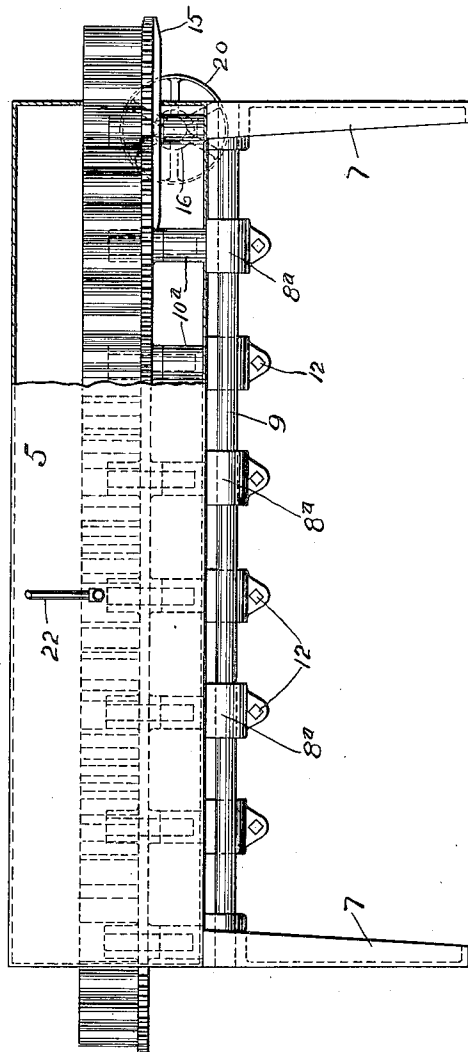
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UNITED STATES PATENT OFFICE.

MILLARD J. HAWKINS, OF HOOPESTON, ILLINOIS.

APPARATUS EMPLOYED IN CANNING OPERATIONS.

No. 843,893.

Specification of Letters Patent.

Patented Feb. 12, 1907.

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To all whom it may concern:

Be it known that I, MILLARD J. HAWKINS, a citizen of the United States, residing at Hoopeston, in the county of Vermilion and State of Illinois, have invented certain new and useful Improvements in Apparatus Employed in Canning Operations, of which the following is a specification.

My invention relates to the general art of canning-machinery, and pertains more especially to an apparatus employed in those canning operations wherein an application of heat to the cans is required, such as exhausting, sterilizing, cooking, drying, &c. These operations are generally carried out by passing the filled or empty cans through a closed chamber, the requisite heat being supplied through steam-pipes entering said chamber.

Heretofore such steaming-chambers have generally been provided with longitudinally-traveling endless conveyers, the cans being caused to travel back and forth several times through the chamber on such conveyers during the operation.

In such an apparatus it is desirable to be able to combine a maximum extent of travel of the cans in the chamber with minimum dimensions of the chamber itself, it being practically essential to keep the cans continuously on the move while subjected to the influence of the chamber to avoid delays in the entire canning process and allow the apparatus coöperating therewith to be kept continuously at work.

The leading object of my invention, therefore, is to provide a mechanism for treating cans to an application of heat wherein the cans shall have a maximum extent of travel in and through a chamber in order that they may be subjected to the heat thereof for a sufficient period of time to effect the desired result.

Another object of the invention is to provide a distribution of steam in the chamber of maximum effectiveness in heating the cans.

To these ends my invention consists in a novel and improved apparatus for the purpose specified, having the peculiarities of construction, relative arrangement of parts, and mode of operation substantially as hereinafter described, and more particularly pointed out in the claims.

An improved mechanical embodiment of

my invention is represented in the accompanying drawings, wherein—

Figure 1 is a top plan view in horizontal section through the steam box or casing of my improved apparatus. Fig. 2 is an end view, partly in section, on the line *xx* of Fig. 1. Fig. 3 is a detail view, partly in plan and partly in horizontal section, of the steam-distributing apparatus; and Fig. 4 is a side elevational view, broken away and in section at one end, of the apparatus.

Referring to the drawings, 5 designates a box or casing (herein shown as of rectangular form) resting upon suitable end frames or supports, each comprising a horizontal transversely-extending angle-bar 6 and integral supporting-legs 7. In and integral with each of the end frame-bars is formed a pair of depending sleeves 8, constituting bearings for a pair of longitudinally-extending bars 9, from which sleeves rise bosses 10, vertically socketed to constitute bearings for short vertical spindles 11, projecting through openings in the bottom of the casing 5. The bars 9 serve as supports for a series of split sleeves 8^a, securely clamped thereon by means of threaded bolts 12, said sleeves also having integral upstanding bosses 10^a, recessed or socketed to also receive intermediate vertical spindles 11.

It will be observed by reference to Fig. 1 that the spindles 11, mounted on one of the bars 9, are disposed in centrally offset relation to the spindles 11, supported by the other bar 9, so that the spindles of each row are transversely opposite the central points between adjacent spindles of the other row. On one row of spindles are rotatably mounted in a common horizontal plane a series of toothed disks 13, 13^a, 13^b, and 13^c, disposed in the order named between the receiving and discharging ends of the apparatus, and on the other row of spindles is mounted a similar longitudinal series of toothed disks occupying the same horizontal plane and designated by 14, 14^a, 14^b, and 14^c in the same order.

It will be observed that the disks 13 and 14^c extend peripherally through openings 5^a and 5^b, respectively, in the end walls of the casing. The disks 14^c, 13^c, 14^b, 13^b, 14^a, 13^a, 14, and 13 mesh with and drive each other in the order named, the disk 14^c having on its under side a bevel-gear 15, engaged by a

bevel-pinion 16, fast on the inner end of the driving-shaft 17, mounted in a horizontal bearing-sleeve 18, suitably supported on the bracket 19, said shaft carrying fast and loose
5 pulleys 20 and 21, respectively, whereby power is imparted to the train of toothed disks.

Steam for heating purposes is introduced to the interior of the casing through pipes 22
10 and 23, entering the opposite sides of the casing, respectively, the pipe 22 having a series of branches 22^a, that extend between adjacent disks on that side of the casing through which the steam-pipe enters and
15 terminating at their end portions in loops 22^b, that overlie substantially centrally the disks of the other row. Similarly the steam pipe 23 has a series of branches 23^a lying between adjacent gears on the same side of
20 the casing and terminating in loops 23^b, overlying the toothed disks on the opposite side. Each of the branch pipes has a row of perforations formed on its outer side, as most clearly shown in Fig. 3, wherein the perfora-
25 tions are indicated by 24. Rigidly supported upon a vertical rod or post 25, mounted in the floor of the casing at the receiving end, is a horizontal guide 26, which extends from a point opposite the periphery of disk 14, at
30 which the cans are received on said disk over the companion disk 13, driven thereby opposite the point at which the cans are delivered or discharged from said last-named disk, said guide terminating in a round or con-
35 vexed end 26^a and constituting a deflector to direct the travel of the cans from disk 13 to disk 14. For the purpose of guiding the cans onto the remaining disks of the series the ends of the loops of the steam-pipes may be
40 suitably bent or disposed to act as deflectors, as shown.

The operation of the apparatus will be readily understood from the foregoing description of its construction and mechanism,
45 but may be briefly described as follows: The filled cans are delivered in close succession onto the peripheral portion of the receiving-disk 13, by which they are carried into the casing and around to a point at which they
50 engage the guide 26, by which they are deflected onto and picked up by the disk 14, being carried around by the latter at a point at which they are deflected by the loop of the steam-pipe and carried onto and picked up
55 by the disk 13^a. In the same way the cans in a continuous row are passed on from disk 13^a to disk 14^a, from the latter to disk 13^b, from the latter to disk 14^b, from the latter to disk 13^c, and from the latter to disk 14^c, by
60 which they are carried out of the casing. During the travel of the cans in a continuous chain or row, as last described, through the casing they are subjected to the heating effect of steam injected directly thereagainst
65 through the branch pipes 22^a and 23^a and

through loops 22^b and 23^b, said pipes and their looped ends being so apertured, as described, as to direct the steam in fine jets most advantageously and effectively upon
70 and against the sides of the cans during their serpentine travel through the chamber. It will be observed that the cans as they travel around the first steam-pipe and loop receive the direct action of the steam-jets on one
75 side, while as soon as they enter the sphere of influence of the next steam-pipe from the opposite side of the casing they are subjected on their opposite sides to the influence of the latter, and so on to the discharge end of the
80 chamber. In this way the heat of the steam is applied most effectively and efficiently to the cans and is uniformly distributed on all sides of the latter. It will be observed that the conveyer mechanism shown and described
85 imparts to the continuous row of cans a serpentine travel through the casing of the machine, which affords for a given rate of continuous travel a maximum period of exposure to the heating effect of the apparatus.

It will of course be understood that the di-
90 mensions of the apparatus and the number of cooperating conveyer-disks and steam pipes may be varied as desired, according to the needs or exigencies of each situation in which the apparatus is used within the spirit and
95 purview of the invention. It will also be evident that any other and mechanically equivalent means of imparting rotation to the disks in such a manner as to secure the serpentine travel of the cans thereover may be
100 employed without affecting the substance of the invention.

In other respects, also, the invention is not to be understood as limited to the particular construction of the apparatus or the particular
105 relative disposition of its several operating parts as herein disclosed, but may be modified and varied by those skilled in the art in respect to details without departing from the spirit and intended effect of the in-
110 vention as defined in the following claims.

I claim—

1. In an apparatus of the character described, the combination with a heating-chamber, of a conveyer therein comprising a
115 plurality of rows of revoluble carrier-disks, the disks of one row being geared with the disks of an adjacent row, and guides for deflecting the cans back and forth between the disks of adjacent rows, substantially as de-
120 scribed.

2. In an apparatus of the character described, the combination with a casing constituting a heating-chamber, of a conveyer therein comprising a pair of rows of periph-
125 erally-toothed carrier-disks disposed longitudinally of said casing, the disks of each row being geared with the disks of the other row, guides for deflecting the cans back and forth between the disks of the two rows, and driv-
130

ing means applied to one of said disks, substantially as described.

3. In an apparatus of the character described, the combination with a casing constituting a heating-chamber, of a conveyer therein comprising a pair of rows of revoluble carrier-disks disposed longitudinally of said casing, the disks of each row being geared with the disks of the other row, guides for deflecting the cans back and forth between the disks of the two rows, and a driving-shaft suitably geared to an end disk of one of said rows, substantially as described.

4. In an apparatus of the character described, the combination with a casing constituting a heating-chamber, of a conveyer therein comprising a pair of rows of revoluble carrier-disks disposed longitudinally of said casing, the disks of each row being geared with the disks of the other row, the end disk of one of said rows projecting through one end wall of the casing and constituting the receiving end of the conveyer, and the opposite end disk of the other row projecting through the opposite end wall of the casing and constituting the discharging end of the conveyer, guides for deflecting the cans back and forth between the disks of the two rows, and a driving-shaft suitably geared to one of said end disks, substantially as described.

5. In an apparatus of the character described, the combination with a heating-chamber, of a conveyer therein comprising a plurality of rows of revoluble carrier-disks so arranged that adjacent coöperating disks rotate in opposite directions, guides for deflecting the cans back and forth between the disks of adjacent rows, and means for injecting a heating agent into said chamber, substantially as described.

6. In an apparatus of the character described, the combination with a heating-chamber, of a conveyer therein comprising a pair of rows of revoluble carrier-disks, the disks of each row being geared with the disks of the other row, guides for deflecting the

cans back and forth between the disks of the two rows, and a steam-inlet pipe tapping said chamber, substantially as described.

7. In an apparatus of the character described, the combination with a casing constituting a heating-chamber, of a conveyer therein comprising a pair of rows of revolubly-connected carrier-disks, and a steam-inlet pipe tapping said casing and provided with a plurality of perforated branches so formed and disposed as to direct jets of steam against the cans during their travel through said casing and deflect said cans from disk to disk, substantially as described.

8. In an apparatus of the character described, the combination with a casing constituting a heating-chamber, of a conveyer therein comprising a pair of rows of revoluble carrier-disks disposed longitudinally of said casing, the disks of each row being geared with the disks of the other row, and a pair of steam-inlet pipes tapping the sides of the casing, respectively, each pipe having a plurality of perforated branches extending between adjacent disks of one row and overlying the disks of the other row, substantially as described.

9. In an apparatus of the character described, the combination with a casing constituting a heating-chamber, of a conveyer therein comprising a pair of rows of revoluble carrier-disks disposed longitudinally of said casing, the disks of each row being geared with the disks of the other row, and a pair of steam-inlet pipes tapping the sides of the casing, respectively, each pipe having a plurality of perforated branches extending between adjacent disks of one row and terminating in looped ends overlying the disks of the other row, and serving to guide the cans from one disk onto the next, substantially as described.

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Witnesses:

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W. A. FLINT.