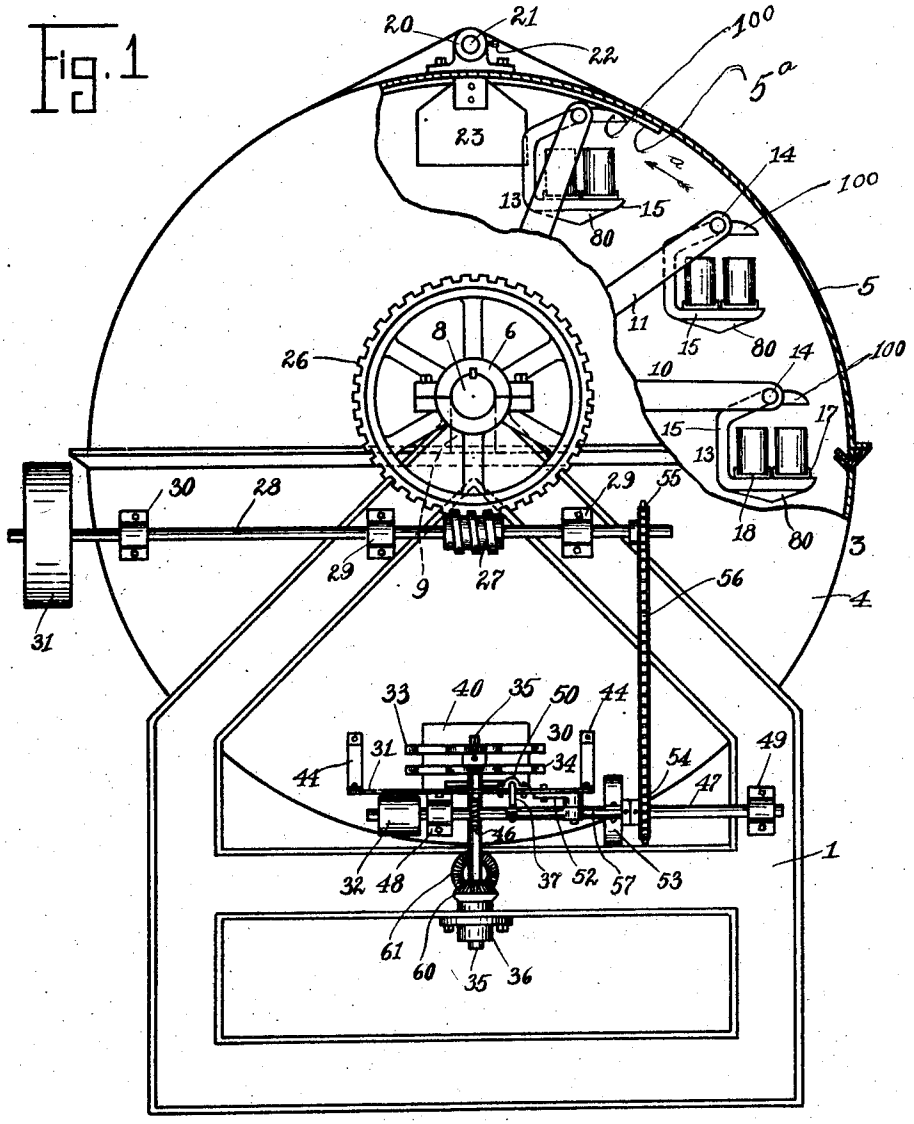
Sept. 6, 1927. 1,641,367

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CAN EXHAUSTER

Original Filed March 22, 1922 3 Sheets-Sheet 1

Fig. 1



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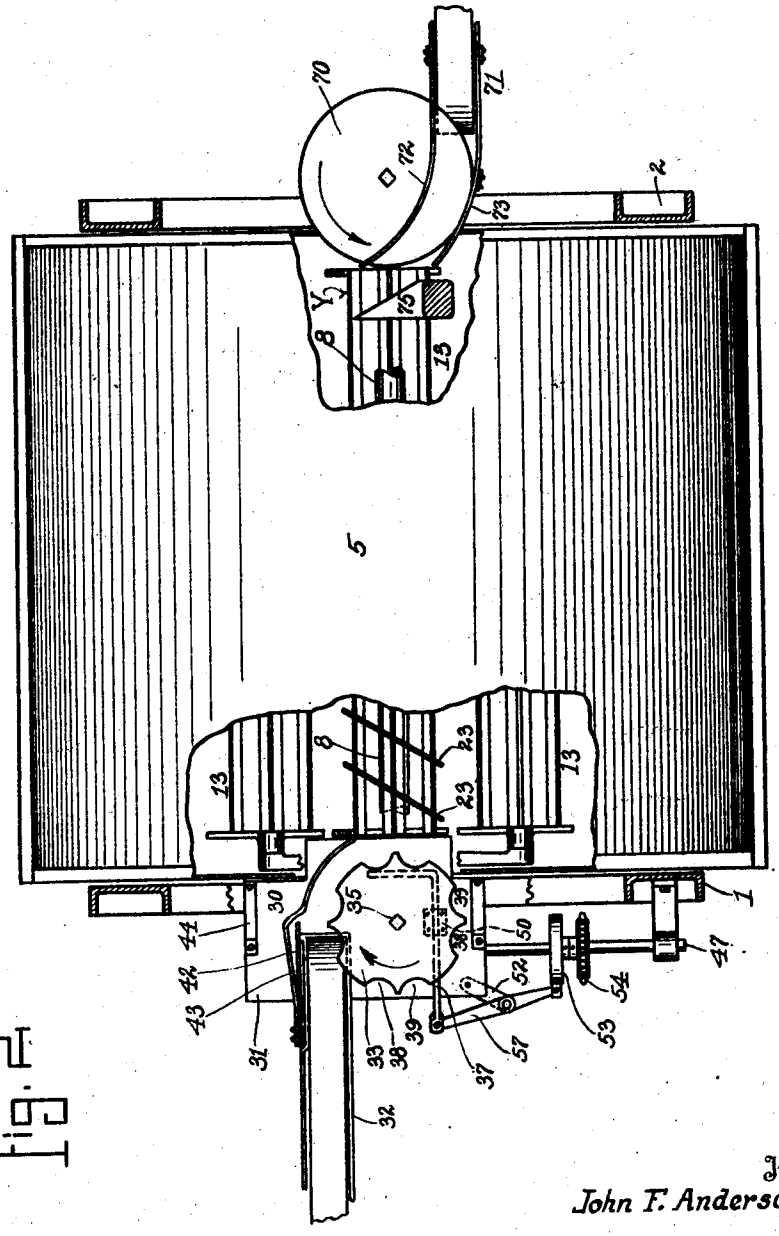


Fig. 2

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CAN EXHAUSTER

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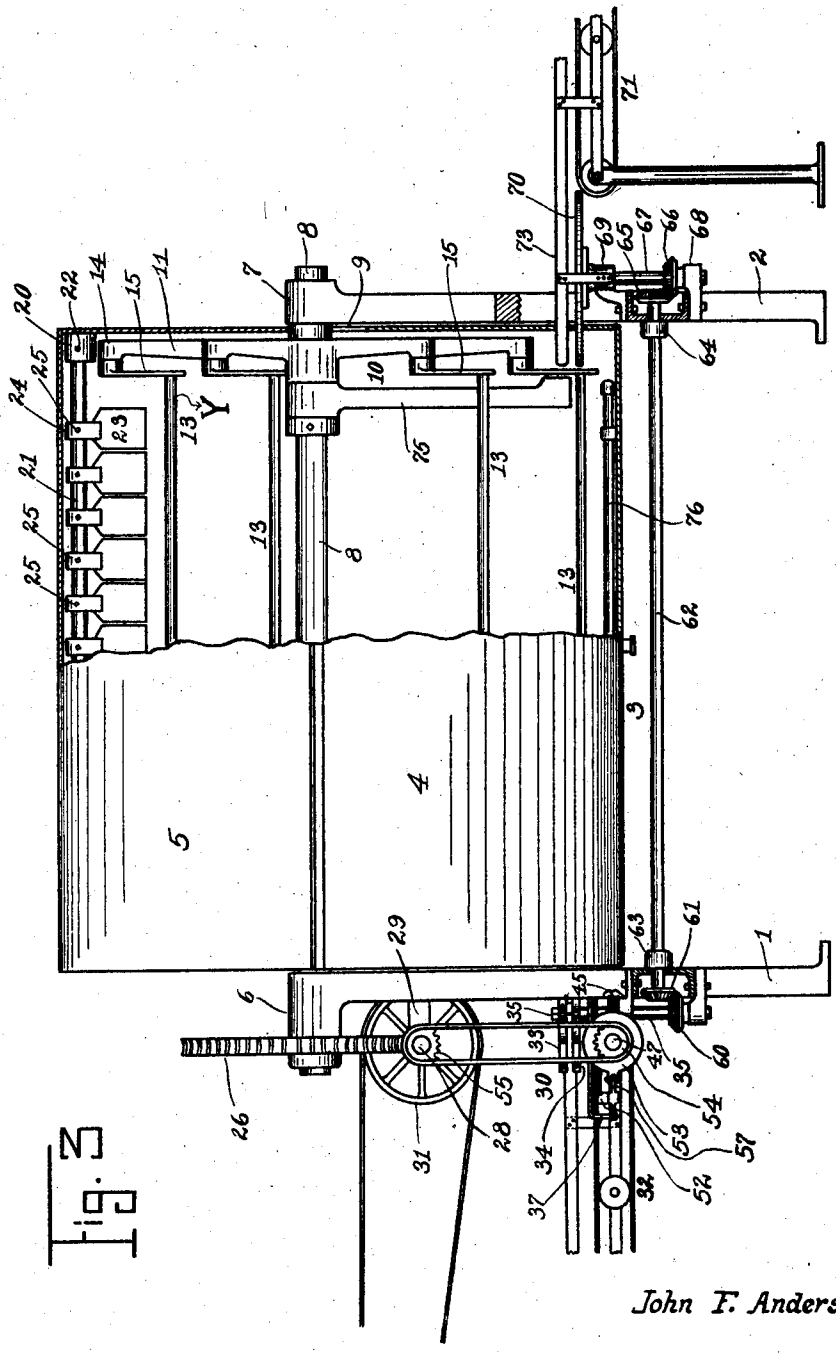


Fig. 3

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UNITED STATES PATENT OFFICE.

JOHN F. ANDERSON, OF OAKLAND, CALIFORNIA.

CAN EXHAUSTER.

Application filed March 22, 1922, Serial No. 545,773. Renewed April 8, 1927.

My invention is a can exhauster for exhausting the air from and preheating of filled cans of preserved fruits, and other products, prior to heading the cans, whereby the cans are effectively sealed, and the purpose of my invention is to provide a simplified and inexpensive exhauster which will be efficient in operation.

Referring to the annexed drawings in which my invention is illustrated and which form a part of this specification:

Figure 1 is an end elevation of my exhauster partly broken away to show certain features of construction.

Figure 2 is a plan view of my exhauster partly broken away to show certain features of construction.

Figure 3 is a side elevation of my exhauster partly broken away to show certain features of construction.

In the drawings 1 and 2 indicate standards between and upon which is mounted a drum 3, made in two semi-circular sections, a lower section 4 and an upper section 5, said lower section being secured to said standards and said upper section being free to be lifted off said lower section. On the upper ends of the standards 1 and 2 are bearings 6 and 7 in which is journaled a shaft 8 extending longitudinally through the lower part of the upper drum section 5, the lower edges of the end walls of said upper section being provided with notches 9 through which said shaft extends so that said section may be lifted from the shaft off the lower section. On the shaft 8 within the drum 3 is secured a reel 10 consisting of a pair of spiders 11 secured on said shaft adjacent the end walls respectively of the drum, and a plurality of longitudinal shelves 13 pivotally suspended from the arms of said spiders by pivots 14. Each of said shelves comprises a pair of U-shaped frames 15 and a pair of channel bars 17 and 18, said frames being suspended respectively by one arm from the arms of spiders 11 and by the pivots 14 so that the other arm thereof rests horizontally, and said channel bars resting side by side at their ends upon said horizontal frame arms and being secured at their ends to said horizontal frame arms. In the top of the drum and upper section 5 at the ends thereof respectively are secured brackets 20 in which are mounted the ends of a rod 21 which may be turned to any position and secured in such position by set screws 22 seated in said brackets. Vertical angular cam plates 23 extending transversely at an angle to the reel shaft 8 are adjustably suspended from rod 21, at suitable distances apart, by collars 24 secured to the upper part of said plates, in which collars are seated set screws 25 for securing said plates in adjusted position. On the outer end of the shaft 8 outside the sandard is secured a worm gear 26 which meshes with a worm 27 secured on a horizontal shaft 28 journaled in bearings 29 and 30 on the standard 1 and the adjacent end of the lower section 4 of drum 3. A pulley 31 is secured on one end of shaft 28 by means of which power is applied to drive the shaft 28 and the reel 10 continuously through the medium of worm 27 and worm gear 26.

On the forward end of my exhauster is mounted a can feeding mechanism 30. Said mechanism includes a table 31, a can conveyor 32 delivering upon said table, a pair of notched feed disks 33 and 34 secured one above the other above said table on a vertical shaft 35, journaled near its upper end in the table 31 and at its lower end in a bearing 36 secured on the standard 1 and a pusher rod 37. The disks 33 and 34 are each provided with four equi-distantly spaced pairs of notches 38 and 39 in their peripheries, the notches in the upper disk 33 coinciding with the notches in the lower disk 34. The edges of the disks 33 and 34 extend into one side of the delivery end of the conveyor 32 so that the cans moving through said conveyor enter the notches 38 and 39 and are rotated a quarter of a turn into position opposite an opening 40 in the lower section 4 of the drum 3, and rearwardly of the end push member 41 of the push rod 37. The side wall of the delivery end of the conveyor 32 opposite the feed disks 33 and 34 is cut away a short distance, and a spring side wall member 42 is secured at one end to the end of said side wall. A guide wall 43 is secured at one end to the connected ends of said side wall and spring side wall member, which guide wall inclines outwardly from its connected end to allow the spring wall member 42 to spring outwardly and then curves concentrically to the disks 33 and 34 to the adjacent end of the lower section 4 of drum 3 to guide the cans on the table 31 from the delivery end of the conveyor 32 to the opening 40. The table 31 is mounted on a level with the channel bars

17 and 18 of the lowermost shelf 13 on brackets 44 secured to the end wall of the lower section 4 of the drum 3. A worm gear 45 is secured on the shaft 35 below the table 31, which worm meshes with a spiral gear 46 on a horizontal shaft 47 journaled below said table in bearings 48 and 49 secured respectively to the end wall of the drum section 4 and to the standard 1. The lever 57 is fulcrumed on the link 52. One of its ends is connected to an eccentric 53 on the shaft 47. Its other end is adapted to actuate a pusher rod 37 which pusher rod is slidably mounted in a cap or guide 50 on the table 31. A sprocket 54 is secured on the shaft 47 and a sprocket 55 is secured on the shaft 28, over which sprockets extends a chain 56 whereby the feeding mechanism 30 is driven.

On the lower part of the vertical shaft 35 is secured a bevel pinion 60 which meshes with a bevel pinion 61 on one end of a shaft 62 extending longitudinally under the drum and journaled in bearings 63 and 64 in the standards 1 and 2. On the other end of the shaft 62 is secured a bevel pinion 65 which meshes with a bevel pinion 66 on a vertical shaft 67 journaled in bearings 68 and 69 on the outside of the standard 2. On the upper end of shaft 67 is secured a disk 70 on a level with the channel bars 17 and 18 of the lowermost shelf 13. From one side of the disk 70 extends a can conveyor 71, the side walls of which extend over one side of the disk to a point adjacent the rear ends of the channel irons 17 and 18 of the lowermost shelf 13. A cam 75 is secured to the rear portion of the reel shaft 8 and extends into the rear end of the lowermost shelf 13 just forwardly of the end of the walls of the conveyor 71. In the lower part of the drum 3 extends a steam pipe 76 through which steam is introduced into the drum. Gutters 80 are respectively secured at their ends to the horizontal arms of the frames 15 of the shelves 13 under the channel guideways 17 and 18 of said shelves, to catch the condensed steam from the cans and prevent said steam from condensing into the cans on the shelves below, said gutters being wider than the two guideways.

It will be observed, particularly in Figure 1, that the shelves 13 are provided with a projecting brace arm 100 which is positioned and designed to engage the inner wall of the upper drum section 5 or an abutment plate 5^a as the shelves approach the cams or angular guide members 23. The shelves move normally in the direction of the arrow A and previous to the cans engaging the cam plates 23, the arm 100 engages the wall 5^a and braces the shelves, until they have passed the cam plates 23, against a rearward or swinging motion which would be caused by the resistance offered by the cam plates as they engage the cans on the shelves, to advance them step by step along the length of the shelves, thereby avoiding any tilting or swinging of the shelves which may cause the cans to be displaced therefrom.

This bracing is effected by the brace arms contacting with the plate 5^a at a point rearwardly to the pivot 14, and with reference to the direction of the movement of the shelves. Of course, in some embodiments of my invention it may be desired to provide other means for engagement with the brace arms 100 instead of the inner wall of the drum section 5.

The cam plates 23 may be positioned at any suitable and desired point in the travel of the shelves, instead of the position shown in Figure 1, in which case it may be necessary to re-design and position the brace arms 100.

As the cans are conveyed by the conveyor 32 they enter the notches 38 and 39 of the feed disks 33 and 34 as said disks rotate and are carried over the table 31 by said disks guided by guide 43 to a point in front of the opening 40. If a can should be engaged by the periphery of the disks 33 and 34 instead of the notches 38 and 39 and forced to one side, it engages the spring side member 42 which yields until the next notches 38 of the disks come opposite the can, whereupon said spring side member springs the can into said notches and the can is fed to the opening 40, as described. When two cans are opposite said opening the eccentric 53 moves the pusher rod 37 inwardly, the end member 41 of said rod engages said cans and pushes them through the opening into the forward end of the channel bars 17 and 18, respectively, of a shelf 13, which at this time has been rotated to its lowermost position. As each shelf reaches its lowermost position the feeding mechanism 30 feeds two cans into the forward end of its channel bars 17 and 18 as described. On one rotation of each shelf each set or pair of cans thereon engage one of the cam surfaces or angular guide plates 23 and are thereby advanced rearwardly on said shelf one step or position equal the width of one can, clearing the forward end of the shelf for other cans to be fed therein as described. It is clear that in this manner the cans are progressively fed in step by step fashion along the length of the shelves until two cans have been advanced to the rear end y; and as the shelf approaches its lowermost position, the can or set of cans so advanced engage the cam surface of the ejector member 75 which guides them, as the shelf moves on, onto the disk 70 between the side walls 72 and 73 of the conveyor 71, whereupon said disks rotate said cans into said conveyor proper which conveys them away to be hermetically sealed.

Of course, several sets of cams or angular

guide plates may be positioned in the drum to cause the shelves to empty themselves upon one or more revolutions of the reel in the drum, but with the present device and under the conditions which it is now used, it is desired to have the contents of the cans subjected to the heating and exhausting operation for a greater length of time, consequently resulting in each set or charge of cans, which enters the drum, making a plurality of revolutions within the drum and advanced a step along the length of the shelves on each revolution of the latter. It is also to be understood that the distance which each can or set of cans are advanced by the cams or guide plates 23 can be varied by increasing the length of the plate, or by a suitable adjustment of the angular position or spacing of the plates.

It is to be understood that in this application cans are referred to but any suitable container or object which may be treated in the apparatus can be substituted for the cans; and by the terms of the claims which refer to cans it is meant any container, object or material which may be treated or handled by the apparatus of this invention. It is also to be understood that one or a plurality of cans may be fed in upon the shelves at the same time and the term "charge" as referred to in the claims shall be considered as meaning one or more cans introduced on the shelves at the same time.

The foregoing is a full, clear and accurate description of my invention and it is to be understood that in this specification and the annexed drawings, the invention is disclosed in the form in which it is considered to be the best, but the invention is not limited to such form because it is capable of being embodied in other forms; and it is to be understood that in and by the claims following this description herein it is intended to cover the invention in whatever form it may embody within the scope thereof.

Having described my invention, I claim:

1. In an exhauster of the kind described, a chamber having a plurality of shelves therein, means for moving said shelves in a circular path, said shelves being swingably mounted to maintain their horizontal position while moving in said circular path, relatively fixed guides positioned in the chamber to engage the articles on said shelves to advance them along the length of the shelves as the latter are revolved, and means for maintaining the shelves against free swinging movement in a direction away from said guides when the articles thereon contact with said guides, whereby the horizontal position of the shelves is maintained and accidental displacement of the articles from said shelves prevented.

2. In an exhauster of the kind described, a chamber having a plurality of shelves therein, means for moving said shelves in a circular path, said shelves being swingably mounted to maintain their horizontal position while moving in said circular path, relatively fixed guides positioned in the chamber to engage the articles on said shelves to advance them along the length of the shelves as the latter are revolved, and means cooperating with said guides for preventing a free swinging movement of said shelves when the articles thereon contact with said guides.

3. In an exhauster of the kind described, a chamber, swingable shelves mounted in said chamber to revolve in a vertical path, relatively fixed guide members arranged in said chamber to engage articles on said shelves to shift the same along the length of said shelves, and an arcuate abutment adjacent said guide members, arms on said shelves to engage with said abutment in advance of and during the engagement of the articles on said shelves with said guide members, whereby the swinging movement of said shelves in a direction away from said guide members is limited and said shelves maintained in a horizontal position.

4. In an exhauster of the kind described, a chamber, a rotatable reel in said chamber, horizontal shelves pivoted to said reel, guides arranged adjacent the shelves to contact with the articles thereon for shifting the same on said shelves as the reel moves said shelves past said guide members, an arcuate abutment adjacent said guides, an arm on each shelf projecting rearwardly to the direction of the movement of said shelves when approaching said guides, said arm being positioned to engage said abutment to limit the swinging movement of said shelves rearwardly relative to the direction of the movement of the reel, when the articles on the shelves engage said guides.

5. In a can exhauster a drum, a reel mounted in said drum, shelves pivotally mounted on said reel and adapted to move in a circular path about the axis of said reel, means for placing cans on said shelves, said means including a rotatable shaft, a feed disk on said shaft provided with notches adapted to receive a portion of the can sides, a fixed support, a resilient side wall member fixed to said support and adapted to press the cans into said notches and means whereby said cans are pushed onto said shelves when the end of one of the shelves is adjacent said disk.

6. In a can exhauster, a drum, a reel mounted in said drum, shelves pendulously suspended on said reel and adapted to move in a circular path about the axis of said reel, means for delivering cans to said shelves, said means including a rotatable shaft, a feed disk on said shaft provided with notches adapted to receive a portion of the can sides, a fixed support, a resilient

side wall member fixed to said support and adapted to press the cans into said notches, means whereby said cans are pushed onto said shelves when the end of one of the shelves is adjacent said disk, said last mentioned means including a lever, a pusher rod actuated by said lever and adapted to push said cans and means whereby said lever is so actuated.

7. An exhaust box comprising a heating shell, a carrier mounted in the shell for rotation about a horizontal axis, a can shelf pendulously suspended from said carrier, means operating thru the shell wall to feed a can to one end of the shelf, fixed angularly directed spaced plates within the shell adapted to move the can along the shelf towards its other end and means operating thru the shell wall to remove the can from said last named end, a rod on which said plates are carried, said rod being adapted to be turned to any position so as to adjust the position of said plates.

8. In a can exhauster, a heating shell having a shelf therein, said shelf being pivotally mounted to maintain its horizontal position while revolving in said shell, means for moving articles along said shelf, an abutment plate fixed to the inner periphery of said shell, and a brace arm formed integral with said shelf and adapted to engage said abutment plate to prevent swinging movement of said shelf.

9. In a can exhauster, a cylindrical heating shell, a reel mounted in said shell for rotation about a horizontal axis, a can shelf pendulously suspended from said reel, means for feeding cans to one end of said shelf, means for moving the cans along the shelf toward its other end, an abutment plate fixed to the inner curved surface of said cylindrical shell, a brace arm fixed to said shelf and adapted to engage said abutment plate to prevent swinging movement of said shelf, and means operating through the shell wall to remove the cans from the shell.

In testimony whereof I affix my signature.

JOHN F. ANDERSON.