

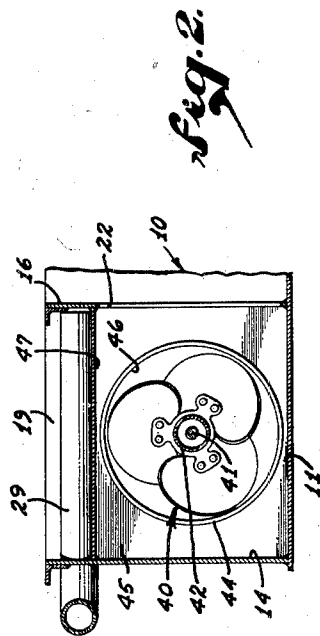
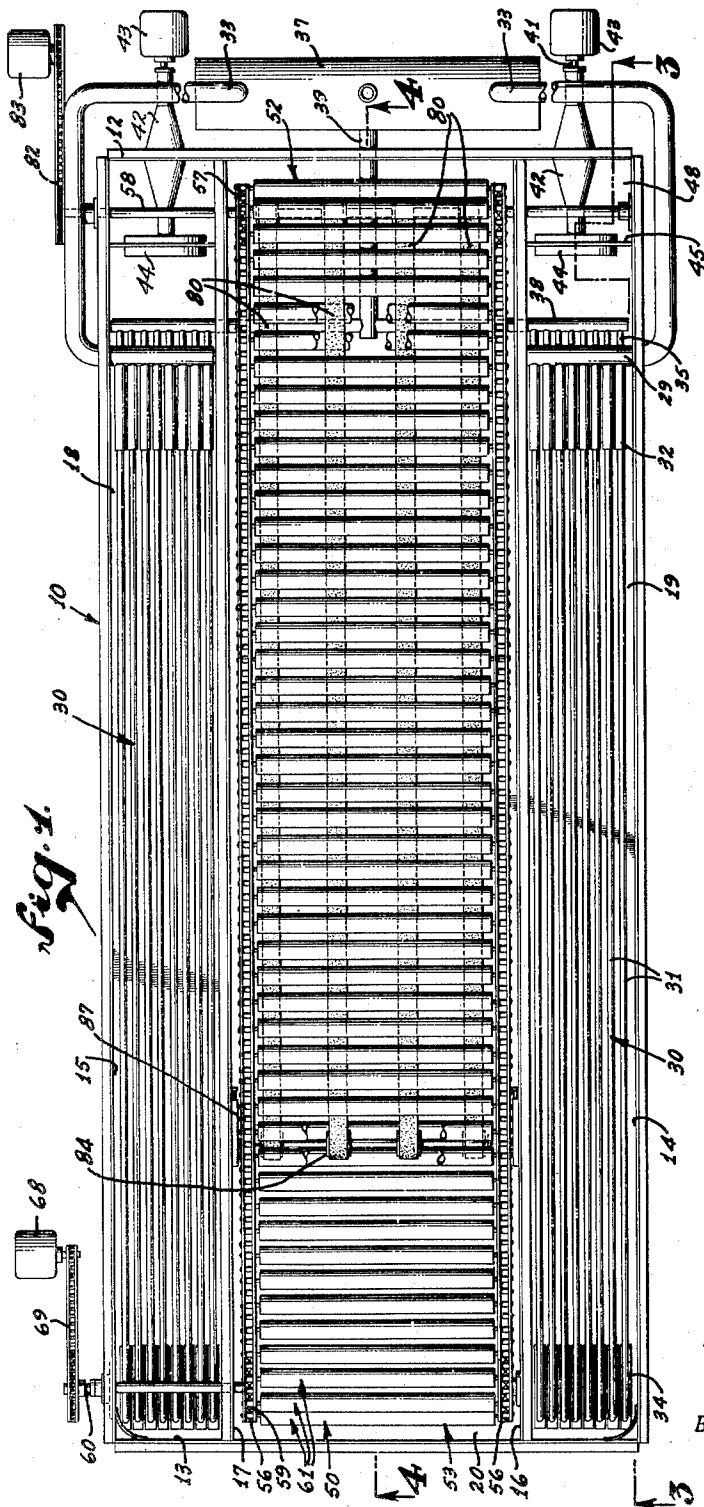
Jan. 17, 1950

H. E. ERICKSON
CAN-COOLING MACHINE

2,494,864

Filed Nov. 18, 1946

3 Sheets-Sheet 1



HARRY E. ERICKSON,
INVENTOR.

BY *Heubner, Maltby
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ATTORNEYS.

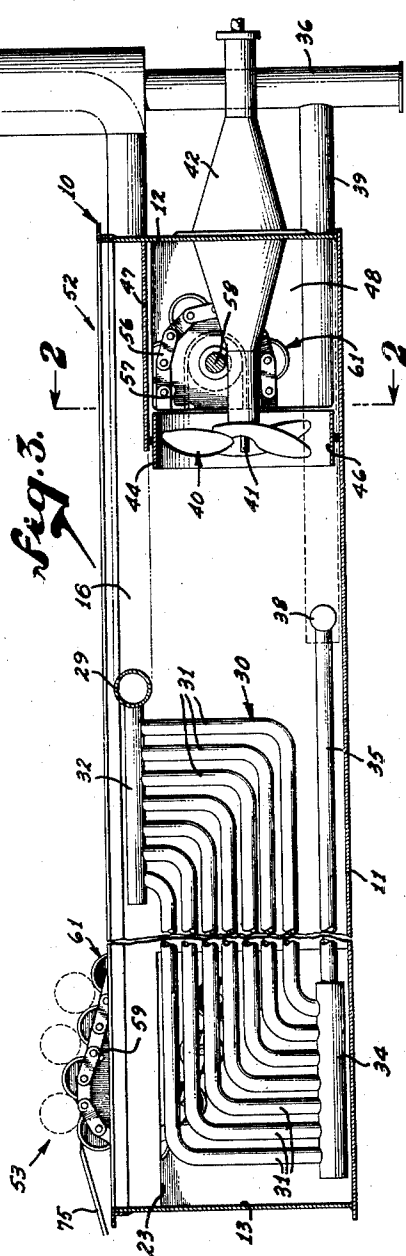
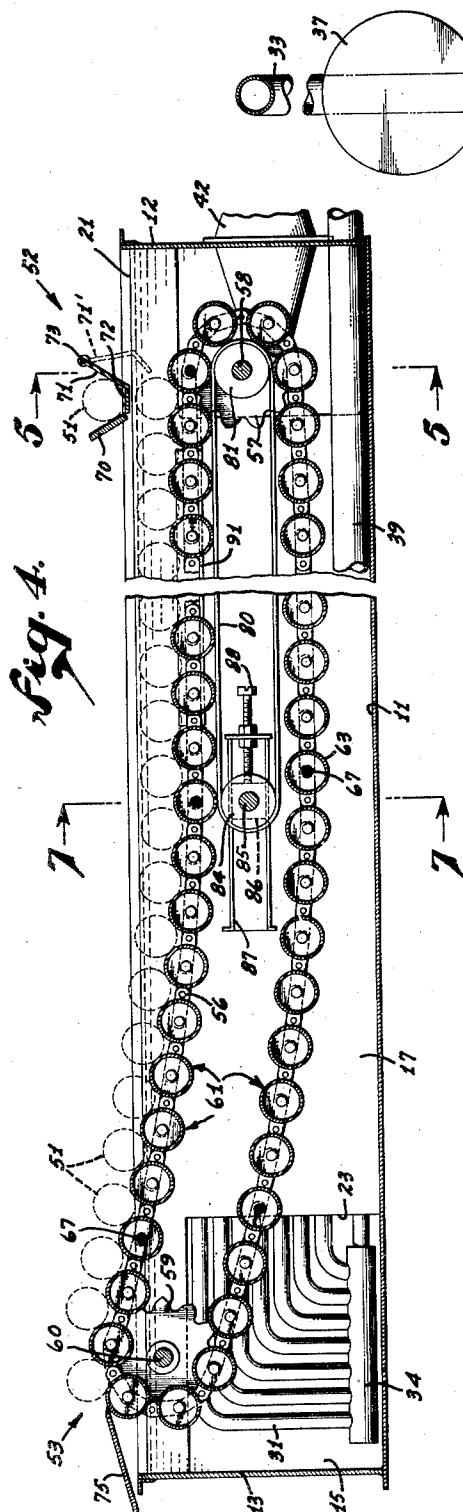
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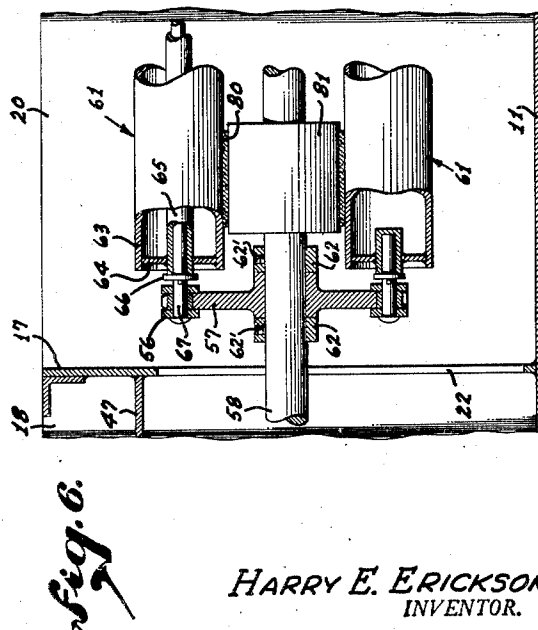
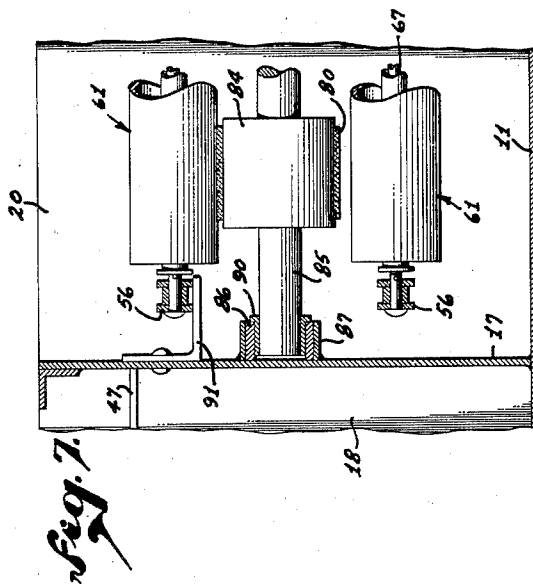
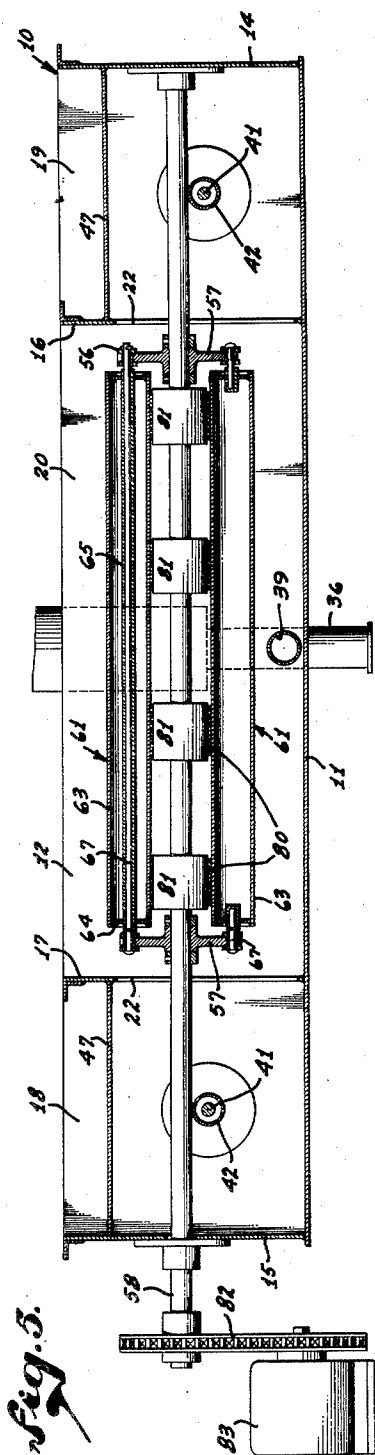
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,494,864

CAN COOLING MACHINE

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Application November 18, 1946, Serial No. 710,637

15 Claims. (Cl. 62—104)

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The invention relates to heat exchangers and particularly to a means of either cooling or heating canned goods. In the particular embodiment shown, the invention emphasizes the cooling of canned goods by means of agitating cans while they are being conveyed through a bath of brine or similar cooling liquid.

A great many and variety of means have been provided for processing canned food; that is to say, of handling the cans of food after the cans have been closed and sealed. Cooking apparatus of various kinds have been devised as well as cooling, freezing and refrigerating apparatus.

Among the devices which have been utilized for the purpose of cooling, refrigerating or freezing the sealed contents of cans, have been those utilizing a blast of cold or refrigerated air. Although the cold air process has found considerable favor under some circumstances, it is accompanied by the disadvantage of handling air which must be maintained at temperatures varying over a great range from normal atmospheric temperatures. In many cases the process cannot be operated with sufficient rapidity to satisfy the requirements of the processor. The expense of such an installation may also be an objectionable feature.

Although a few devices have been provided for utilizing a brine bath as the cooling medium, the devices which have reached a practical stage to date have been somewhat complicated, considerably high priced, and have necessitated the use of moving and propelling means of a sort which have demanded frequent and continuous servicing in order to keep them in operation during the peak of the season. When the devices of this kind are to be used, they must frequently be operated continuously day and night when the crop of the particular food or fruit which is being handled is at its height so that all of the crop can be satisfactorily processed during the most favorable conditions.

It is, therefore, among the objects of the invention to provide a new and improved heat exchange apparatus which is capable of treating cans in which food products have been sealed so that the process is continuous and efficient.

Another object of the invention is to provide new and improved heat exchange apparatus for processing canned foods which is capable of handling the cans so that they are properly agitated during progress of the operation as well as being subjected to a steady progressive movement from a loading end to a discharge end.

Still another object of the invention is to pro-

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vide a new and improved heat exchange apparatus which includes a conveyor upon which cans may be deposited, the conveyor being so constructed that each can is agitated or rotated independently to the extent that the contents of the can are continuously being moved about and receive the maximum effect of the heat exchange process while the conveyor operates to carry the cans from one end to the other.

Still another object of the invention is to provide, in a heat exchange apparatus for processing canned foods, a conveyor of a type capable of being given two distinct phases of movement; one for agitating the articles carried by the conveyor and another for advancing the articles by means of the conveyor through a heat exchange apparatus.

A further object of the invention is to provide, in a heat exchange apparatus, a bath of liquid within which a conveyor may be immersed, which is adapted to be maintained in continuous agitation, but wherein the flow of the liquid comprising the bath is substantially in a horizontal plane, thereby maintaining a substantially uniform temperature throughout the bath at all times.

In order to further assure uniformity in temperature conditions throughout the bath, it is an object of the invention to provide a means of dividing the horizontal flow of liquid so that the body of liquid is continuously being separated and brought together again in order to equalize temperatures in all portions of the bath.

Still further among the objects of the invention is to provide a heat exchange apparatus which is particularly successful as a cooling, freezing or refrigerating apparatus utilizing a brine bath and cooling coils therein, wherein the initial effect of the cooling coils is spread over a considerable portion of the bath so as to produce a maximum well regulated cooling effect, and to provide a bath of considerable capacity so that virtually any degree of cooling can be sustained while the apparatus is operated to full capacity.

With these and other objects in view the invention consists of the construction, arrangement and combination of the various parts of the device whereby the objects contemplated are obtained as hereinafter more fully set forth, pointed out in the appended claims and illustrated in the accompanying drawings; wherein:

Figure 1 is a top plan view of an apparatus incorporating the invention.

Figure 2 is a fragmentary cross-sectional view taken along the line 2—2 of Figure 3.

Figure 3 is a foreshortened longitudinal sec-

tional view taken along the line 3—3 of Figure 1.

Figure 4 is a foreshortened longitudinal view taken along the line 4—4 of Figure 1.

Figure 5 is a cross-sectional view taken along the line 5—5 of Figure 4.

Figure 6 is a fragmentary cross-sectional view showing a portion of the conveyor enlarged to more clearly illustrate details of construction.

Figure 7 is a cross-sectional view drawn to a larger scale taken along the line 7—7 of Figure 4.

In order to properly process food in cans, and particularly where the processing step is one of cooling, refrigerating or freezing, it is necessary to provide a device of such capacity that proper temperature may be maintained at all times and also so that the refrigerating or cooling medium may be maintained at a uniform temperature for a period long enough to provide the necessary steady cooling effect, the aim being to produce a product cooled or frozen in the best possible condition for continued preservation and for ultimate consumption.

Since apparatus of the kind necessary for handling canned foods must be rugged and substantial, taking into consideration the weight of canned foods when handled in quantity, it is highly advisable that the apparatus be of relatively simple construction. When the canning and food processing season is at its height the apparatus must run for long periods of time and should be constructed in such a way that it will not break down during critical periods. It is equally essential to have the construction such that it can be easily and quickly serviced and repaired. Further, due to the fact that the apparatus is operated under extremes of temperatures, a positive and efficient means must be incorporated into the device to utilize the temperatures to the best possible advantage. Uniformity of operation and the rapidity with which the canned food can be processed are among the essential requisites.

In an embodiment chosen to illustrate the device, there is shown a heat exchanger unit set up as a refrigerating or freezing apparatus by means of which rows of cans containing one type of food or another may be advanced from one end, constituting the loading end of the apparatus, through a bath of brine, to the other end, from which the cans are progressively discharged.

The apparatus is, for the most part, contained within a tank 10 having a bottom 11, end walls 12 and 13 respectively, and side walls 14 and 15. The tank is divided longitudinally by the use of two partitions or baffles 16 and 17, the partitions providing lateral spaces 18 and 19 which extend substantially from one end wall to the other of the tank. Between the partitions 16 and 17 there is also provided an open central space 20 of similar length but having a width approximately equal to twice the width of one of the lateral spaces.

The tank is designed to receive a bath of liquid such, for example, as a heavy brine, which is adapted to fill the tank to a depth of approximately that illustrated by the line 21 in Figure 4.

Inasmuch as it is one of the essentials of the invention that the bath of brine be kept moving in order to maintain an equalized temperature throughout, the partitions 16 and 17, which are virtually identical in shape and size, are each provided with a transverse passage 22 at one end and a corresponding transverse passage 23 at the other end. The flow of the liquid brine

in the embodiment illustrated herein is normally from the central space 20 laterally through the passages 22 into the lateral spaces 18 and 19 respectively and thence through the lateral spaces to the opposite end of the tank where the flow is through the passages 23 into the central passage 20.

In order to maintain the brine at a proper temperature, in this case somewhere in the neighborhood of twenty to forty degrees Fahrenheit below zero, there is incorporated in each of the spaces 18 and 19 a bank of coils 30 consisting of individual tubes 31 which are fed from a common manifold 32 communicating with a transverse pipe 29 supplied by a refrigerant line 33 from some suitable type of refrigerating machinery not shown. Refrigerant passing through the tubes 31 is eventually collected in a discharge manifold 34 from which it is conducted through a refrigerant line 35 through a transverse passage 36, to a pipe line 39 and thence through a pipe 36 to a header 37. The header 37, as well as the refrigerant line 33, serves both banks of coils.

It will be appreciated, of course, that, although the device herein described is particularly adapted to the use of a refrigerant medium in the coils 31, such, for example, as ammonia, the general arrangement of the heat exchanger is equally well adapted to the use of steam in the tubes 31 in order to perform a cooking operation rather than a freezing operation, in which case the line 33 would communicate with a suitable steam boiler and the header 37 would be adapted to use as a steam header.

In order to assure a steady free circulation of the brine throughout the spaces in the tank, circulation is forced by operation of an impeller 40 having, in the embodiment shown, three blades, as illustrated with particular clarity in Figure 2. An impeller is used in each of the lateral spaces 18 and 19, the impellers and attendant mountings being substantially identical, so that a description of one suffices for both.

Each impeller is mounted upon a shaft 41 which extends through a casing 42 sealing the shaft in the end wall 12 so that the shaft can be attached to a motor 43. A housing 44 surrounds the blades of the impeller and has incorporated therein a baffle 45 which is provided with a central opening 46 through which the liquid brine is forced by operation of the impeller. The path of brine, as previously described, is from the central space 20 through the passages 22 into the ends of the lateral spaces 18 and 19 respectively, adjacent and at the rear side of the impellers 40.

A shield or plate 47 is horizontally disposed above what may be designated as a space 48, which is the space immediately at the rear of the impeller. By providing the shield 47, the brine in the space 48 is properly imprisoned and all of it directed smoothly and efficiently by the impeller through the central openings 46 into the remaining elongated portions of lateral spaces 18 and 19. The liquid brine is, by means of the impeller, driven through and around the tubes 31 comprising the banks of coils, and the brine thus forced directly into contact with the tubes which provide the necessary cooling effect and maintain the brine at proper temperature. It will be apparent, further, that the tubes 31 virtually fill the portions of the lateral spaces between the respective impellers and the transverse passages 23 so that practically all of the brine in the lateral passages

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is in constant and continuous contact with the coils.

Furthermore, by reason of the fact that the tank is relatively shallow, the flow of brine is in a substantially horizontal direction, there being required no necessary movement for the brine up or down in order to maintain it in contact with the coils and with the material which is to be processed. By locating the impeller approximately midway between the top and bottom of the brine bath, or slightly below, the impetus given to the liquid brine is in a horizontal direction at approximately the center of the path of flow, thereby maintaining the flow as nearly as possible in a steady horizontal path.

A conveyor, designated generally by the reference character 50, is used to convey individual cans 51 in which food has been sealed through the bath of brine from a loading end 52 to a discharge end 53. While the cans are being conveyed from one end to the other they are continuously being agitated and their contents churned by rotation of the cans.

The conveyor comprises essentially a pair of endless chains 56, and on each side, which are supported at the loading end by sprockets 57 carried by a shaft 58 and by sprockets 59 at the discharge end carried by a shaft 60. A series of rollers 61 extend from one chain to the other at equally spaced intervals. The rollers are mounted at a sufficient distance apart so that the cans 51 fit between them and are adequately supported by the rollers, the cans being spaced a sufficient distance from each other so that there is no likelihood of them touching during their passage through the tank.

As will be apparent in Figure 6, the sprockets 57 are shown rotatably mounted upon the shaft 58 but are maintained in a properly located position by means of collars 62 fixed to the shaft by set screws 62'. In the same figure the mounting of the rollers 61 is illustrated in some detail. The rollers comprise a shell or casing 63 having ends closed by end pieces 64. At the center of each roller is a sleeve 65 which extends outwardly through the end pieces 64 and upon which are mounted washers 66. Extending through the sleeve is a shaft or pin 67 which extends through the links of the chain and which may provide a pivot mounting at one end of each roller. Although the interiors of the rollers are hollow and sealed, it is preferable to have the rollers of sufficient weight so that they are not buoyant and will sink in the bath of brine.

The conveyor is driven by a motor 68 operating through conventional sprockets driving a chain 69 which in turn causes the shaft 60 to rotate in the proper direction to move the upper portion of the chain in a direction from right to left, as viewed particularly in Figure 4, either constantly or intermittently.

As indicated by the length of the rollers in Figure 1, a number of cans of conventional shape may be carried between each pair of rollers. It has been found in practice that good designs will permit the rollers to carry approximately eight one-gallon cans between each pair.

Some means of feeding the cans to a position where they can be deposited between the rollers on the conveyor must be provided. A satisfactory device is that illustrated diagrammatically at the right hand end of Figure 4, which features a trough embodying a stationary side wall 70 and a movable side wall 71 which incorporates a

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bottom element 72 made integral with the side wall. The side wall may be pivoted upon a rod 73 and by some conventional means held normally in the solid line position shown in Figure 4. From the solid line position the trough can be moved to a dotted position 71' to permit cans deposited in the trough to the number of eight at one time, to be released and dropped into place between rollers 61 having a position immediately beneath the trough. While the rollers are moving one row of cans forward, the trough can be again loaded with eight cans and subsequently opened in order to deposit the next row of cans into position between the next successive two rollers meanwhile advanced to a position beneath the trough.

At the discharge end 53 some convenient means may be provided for conducting the cans away from the carrier, as exemplified by a chute 75 mounted at the top of the end wall 13. As the conveyor moves a row of cans to the discharge end, they may be rolled upon the chute and then passed by gravity down the chute to an appropriate hopper, not shown. The conveyor alone is devoted to the purpose only of receiving the cans at a location beneath the surface of the brine and then passing the cans through the brine for a substantial portion of the length of the tank and finally lifting the cans from the brine allowing brine to drain off into the tank and depositing them on a chute at the discharge end.

In order, however, to efficiently process the contents of the cans during passage through the brine they are agitated and the contents churned, thereby bringing all portions of the contents of the can into contact with the walls of the cans. The device herein contemplates a means for rotating the rollers 61 so that they, in turn, continuously rotate the cans supported between them while the cans are being transported through the brine. To this end each of the roller casings is adapted to rotate about its respective shaft 67.

The rollers are caused to rotate by reason of being in contact with a series of endless belts 80, four being shown in Figure 1. Each of the belts is reeved about a pulley 81 which is attached non-rotatably to the shaft 58 at the loading end of the tank. The shaft 58 may be journaled at the sides of the tank and driven through a chain 82 by action of a motor 83.

For the device to operate properly, the shaft 58 drives only the pulleys 81 and rotates freely with respect to the sprockets 57, since it is not desirable to advance the chains and the conveyor by means other than the sprockets 60 which are driven by the motor 68. The ends of the belts 80 remote from the pulleys 81 are supported by idler pulleys 84 mounted upon an idler shaft 85 which in turn is supported by blocks 86. In order to adjust the belts 80, the blocks are slidably positioned in slideways by adjustment of a screw 88, one being located on each side, to increase the tension on the belts whenever desired. Obviously, the tension may be decreased by releasing the pressure of the screws 88 upon one or the other, or both, of the blocks 86. Bearings 90 may be utilized to mount the ends of the shaft 85 in the blocks 86. If desired, some of the weight of the rollers loaded with cans may be supported by angle strips 91 without, however, separating the rollers 61 from contact with the belts 80 to any measurable extent.

In operation the cans are to be processed by freezing, or perhaps by heating. If the device 75 should be arranged for freezing the temperature

of the brine is lowered the necessary amount somewhat in the neighborhood of twenty to forty degrees Fahrenheit below zero. This is done by applying refrigerant to the coils and by starting the impellers so that they circulate the brine around the cold coils.

After the brine has reached a proper temperature, rows of cans are deposited successively in the troughs at the loading end 52 in sufficient number to entirely fill each recess between adjacent rollers 61. The number of cans will, of course, depend upon the length of each can. The diameter of the cans may necessitate some change in the diameter of the rollers 61 as cans of different diameter are encountered. In the apparatus illustrated, the rollers are of such a diameter that when the cans are located and supported by adjacent rollers, the tops of the cans will be below the surface 21 of the bath of brine.

When the trough has been filled with a suitable number of cans, the side 71 of the trough is rotated out of position and the entire row of cans drops into the bath of brine to a position adjacent the pair of rollers 61 located beneath the trough. The motor 60 is preferably equipped with a time delay relay so that the motor operates intermittently and is timed to advance the rollers during each interval a distance sufficient to move one row of cans out from under the trough and to move the next pair of rollers to a position where they are adapted to receive the next row of cans directly between them. Ordinarily, a time interval of operation is from five to six seconds, which is sufficient, usually, to move one row of cans far enough forward so that the conveyor is ready to receive the next row of cans. Meanwhile, the cans already in the bath of brine would remain still if dependent entirely upon movement of the conveyor for agitation.

For proper results, however, it is advisable and necessary to continuously rotate or otherwise move the cans while they are in the bath in order that the contents may be churned and a turbulence maintained in the contents assuring all portions of the contents being continuously brought into contact with the can walls cooled by contact with the brine. The cans in the embodiment herein illustrated are rotated by constant rotation of the rollers 61 which in turn are rotated by movement of the endless belts 80. The rollers rest upon the belts and a sufficient traction is maintained between the walls of the rollers and the belts so that rotation is continuous. The speed of rotation will depend upon the speed of the movement of the belts, and this speed can be controlled by the rate of operation of the motor 83.

For refrigerating or freezing nine inch cans of fruit juices, satisfactory performance has been found to exist when the cans rotate at the rate of from thirty-five to forty-eight R. P. M. Cans of other sizes need correspondingly greater or lesser rates of rotation. When the cans contain fruit, such as grapefruit segments or other solid particles, the rate of rotation need not be as fast as the rate of rotation when the contents comprise juices only.

It will be clear that the rate of movement of cans through the tank of brine can be controlled entirely separately and independently of the rate of rotation of the cans while in the brine. Moreover, the cans are being continuously rotated even though the conveyor may remain stationary for periods of time sufficient to permit loading. All portions of the apparatus within the

bath of brine are maintained at approximately the same degree of temperature and the rollers which comprise a considerable mass of metal are permitted to remain above the level 21 only long enough to lift the cans from the bath and deposit them upon the chute 15. This period is short enough so that the rollers are not permitted to warm up to any appreciable extent.

It is also noteworthy that the cans are introduced at the warmest end of the bath of brine and progress toward coldest end, although in the apparatus shown there is maintained a relatively small difference, if any, between the ends of the bath during most conditions of operation.

The apparatus herein described is one of simple construction in which there are needed relatively few close fitting parts. The conveyor for reception of the cans is an open conveyor upon which the cans rest by gravity only. Rotation of the rollers and the resultant rotation and consequent agitation of the cans is maintained by friction contact only; first, between the belts and the rollers and, secondly, between the rollers and the cans. Belt tension can be adjusted to any necessary degree in order that a sufficient traction may be maintained between the belts and the rollers. By maintaining a steady horizontal flow of brine throughout the entire bath and by maintaining a well controlled rate of agitation of the cans as well as an independently and properly controlled rate of movement of the cans through the bath, virtually any type of canned food may be processed by the apparatus and the quality of the product maintained to a satisfactory degree.

Although I have herein shown and described my invention in what I have conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of my invention, which is not to be limited to the details disclosed herein, but is to be accorded the full scope of the claims so as to embrace any and all equivalent devices and systems.

The invention having been herein described, what is claimed and sought to be secured by Letters Patent is:

1. A canned goods cooling machine comprising a brine tank, refrigerant cooling coils in the tank, means for circulating brine around the coils and a combined can agitator and can drive in said tank comprising horizontally disposed endless belt means having pulleys therefor at opposite ends, an idler shaft for the pulley at one end of the belt means and a drive shaft for the pulley at the other end of the belt means, an endless chain means and sprocket supports for one end thereof rotatably mounted on the pulley drive shaft, the other end of the chain means being located at an end of the tank remote from the drive shaft, sprocket supports for the last mentioned end of the respective chain means and a horizontal drive shaft for the last sprocket support, horizontal, parallel rollers connecting the chain means, a part at least of the rollers in the upper lay of the chain means being in frictional engagement with the belts and rotated by movement of the belts while the chain means and rollers are advanced through the tank.

2. A canned goods cooling machine comprising a brine tank, refrigerant cooling coils in the tank, means for circulating brine around the

coils and a conveyor incorporating a combined can agitator and can drive in said tank and comprising horizontally disposed endless belt means having pulleys therefor at opposite ends, an idler shaft for one end of the belt means and a drive shaft for the other end of the belt means, said drive shaft extending laterally from said tank, a pair of endless chains and a sprocket for one end of each rotatably mounted on the pulley drive shaft, the other ends of the chains being located at an end of the tank remote from the drive shaft and above the level of brine therein, a pair of sprockets for the last ends of the respective chains and a horizontal conveyor drive shaft for said last sprockets extending from the tank, horizontal parallel rollers extending between the chains, a part at least of the rollers in the upper lay of the chains being in frictional engagement with the belts and rotated by movement of the belts while the chains and rollers are being advanced.

3. A canned goods cooling machine comprising a brine tank, refrigerant cooling coils in the tank, means for circulating brine around the coils and a conveyor incorporating a combined can agitator and can drive in said tank and comprising a set of parallel horizontally disposed endless belts having pulleys therefor at opposite ends of each, an idler shaft for pulleys at one end of the set of belts and a drive shaft for pulleys at the other end of the set of belts extending laterally from said tank, said conveyor including a pair of endless chains and a sprocket for one end of each rotatably mounted on the drive shaft for the pulleys, the other ends of the chains being located at an end of the tank remote from the drive shaft and above the level of brine therein, a pair of sprockets for the last ends of the respective chains and a horizontal conveyor drive shaft for the last pair of sprockets extending from the tank, horizontal parallel rollers extending between the chains, a part at least of said rollers in the upper lay of the chains being in frictional engagement with the belts and rotated by movement of the belts at a rate distinct from the rate of movement of the chains while the chains and rollers are advanced.

4. A canned goods cooling machine comprising a brine tank, partition means extending between opposite ends of the tank defining conveyor and coil spaces, a can conveyor in the conveyor space having loading and discharge ends, refrigerant cooling coils extending throughout the coil space, transverse passages at opposite ends of the partition means and a circulator for the brine comprising an impeller in the coil space directed toward one end thereof, a horizontal shaft for the impeller extending longitudinally relative to the coil space to the exterior of the tank, and a transversely disposed baffle having an aperture surrounding the circumference of the impeller.

5. A canned goods cooling machine comprising a brine tank, spaced parallel partitions extending between opposite ends of the tank defining an open central space and lateral coil spaces, a can conveyor in the central space having loading and discharge ends, a maze of refrigerant cooling coils extending throughout the coil spaces and a common source or refrigerant supply, transverse passages at opposite ends of the partitions, and a circulator for the brine comprising an impeller in each coil space directed toward one end thereof, a horizontal shaft for each impeller extending longitudinally relative to the coil space to the exterior of the tank, and a baffle at the impeller

parallel to the plane of rotation thereof having an aperture surrounding the circumference of the impeller.

6. A canned goods cooling machine comprising a brine tank, spaced parallel partitions extending between opposite ends of the tank defining an open central space and lateral coil spaces, a can conveyor in the central space having loading and discharge ends and incorporating a can agitator thereon, a maze of refrigerant cooling coils extending throughout the coil spaces and manifolds for opposite ends of the coils, transverse passages at opposite ends of the partitions and a circulator for the brine comprising an impeller adjacent each coil space directed toward the end of said space adjacent the discharge end of the conveyor, a horizontal shaft for each impeller extending longitudinally relative to the coil space to the exterior of the tank, a casing for the horizontal shaft and a closed chamber adjacent the impeller including an upper plate and a vertical plate having an aperture surrounding the circumference of the impeller.

7. A packaged goods processing machine comprising a tank for a fluid bath adapted to be held at a processing temperature, means for circulating the fluid, means in the tank for receiving and moving packaged goods from one end of the tank to the other comprising a plurality of shifting supports for the packaged goods mounted for progressive movement through the fluid in the tank, and an independently actuated agitator in the tank having an operative engagement with said supports adapted to continuously agitate the packaged goods by agitation of the supports while the means for receiving the goods is progressively moved by repeated stages through the fluid bath.

8. A machine for processing goods in containers, comprising: a tank for a fluid bath; longitudinally extending partitions in said tank, said partitions dividing said tank into horizontally adjacent, longitudinally extending outer and central sections; passageways in the end portions of the partitions communicating adjacent sections; refrigerating coils in each of the outer sections; a continuous conveyor in the central section, the major portion of the conveyor being below the level of fluid in the tank, one end of the conveyor extending above the fluid level adjacent an end of the tank; and means, within an end portion of the tank, for circulating a common fluid past the refrigerating coils into the central section and along the central section in a direction opposed to the travel of containers carried by the conveyor through said central section.

9. A machine for processing goods in containers, comprising: a tank for a fluid bath; longitudinally extending partitions in said tank, said partitions dividing said tank into horizontally adjacent, longitudinally extending outer and central sections; passageways in the end portions of the partitions communicating adjacent sections; refrigerating coils in each of the outer sections; a continuous conveyor provided with rollers arranged to support and carry containers along the central section; and means within an end portion of the tank for circulating a common fluid past the refrigerating coils into the central section and along the central section in a direction opposed to the travel of containers carried by the conveyor through said central section.

10. A machine for processing goods in containers, comprising: a tank for a fluid bath; longitudinally extending partitions in said tank, said partitions dividing said tank into horizontally

adjacent, longitudinally extending outer and central sections; passageways in the end portions of the partitions communicating adjacent sections; refrigerating coils in each of the outer sections; a continuous conveyor provided with rollers arranged to support and carry containers along the central section, the major portion of the container being below the level of fluid in the tank, one end of the conveyor extending above the fluid level adjacent an end of the tank; means within the tank for rotating the rollers of the conveyor to agitate the contents of containers carried thereby, while said containers are submerged in said fluid; and means, within an end portion of the tank, for circulating a common fluid past the refrigerating coils into the central section and along the central section in a direction opposed to the travel of containers carried by the conveyor through said central section.

11. A machine for processing goods in containers, comprising: a tank for a fluid bath; longitudinally extending partitions in said tank, said partitions dividing said tank into horizontally adjacent longitudinally extending sections; passageways in the end portions of the partitions communicating adjacent sections; means for circulating a common fluid from one section to the other through said passageways; conveying means and heat exchange means disposed in their respective adjacent longitudinally extending sections, said conveying means being submerged at one end of the tank and extending above the surface of the fluid at the other end; and means for driving the conveying means.

12. A machine for processing goods in containers, comprising: a tank for a fluid bath; longitudinally extending partitions in said tank, said partitions dividing said tank into horizontally adjacent longitudinally extending sections; passageways in the end portions of the partitions communicating adjacent sections; conveyor means and heat exchange means disposed in said adjacent sections, said conveyor means being submerged at one end of the tank and extending above the surface of the fluid at the other end; means for driving the conveyor; and means for circulating a common fluid from one section to the other in the tank and in a direction opposed to the movement of containers carried by the conveyor in the section occupied by the conveyor.

13. In a canned goods cooling machine: a tank for a body of refrigerated brine; a continuous conveyor provided with rollers arranged to support and carry cans, the major portion of the conveyor being below the level of brine in the tank, one end of the conveyor extending above the surface of the brine adjacent one end of the tank; and means, in operative engagement with at least some of the rollers of the upper lay of said conveyor, for rotating said rollers and cans supported thereby, while said cans are submerged in the brine.

14. In a machine of the character stated in claim 13, wherein the means in engagement with the rollers comprise a plurality of parallel belts and means for driving said belts, said driving means being independent of means for driving the conveyor.

15. In a canned goods cooling machine: a tank for a body of refrigerated brine; a continuous conveyor provided with rollers arranged to support and carry cans, said conveyor including a pulley shaft and pulleys mounted thereon adjacent one end of the tank and below the level of brine in the tank; a sprocket shaft and spaced sprockets mounted thereon adjacent the other end of the tank and above the level of brine in the tank; controllable means for driving the pulley shaft; a separate controllable means for driving the sprocket shaft; a pair of spaced sprockets journaled on the pulley shaft, said sprockets being arranged to engage and support the conveyor; an idler shaft beneath the upper lay of the conveyor, said idler shaft carrying pulleys; and means carried by and connecting the pulleys on the idler shaft with the pulleys on the pulley shaft for imparting rotation to a part at least of the rollers of said conveyor.

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