

June 3, 1941.

G. L. N. MEYER

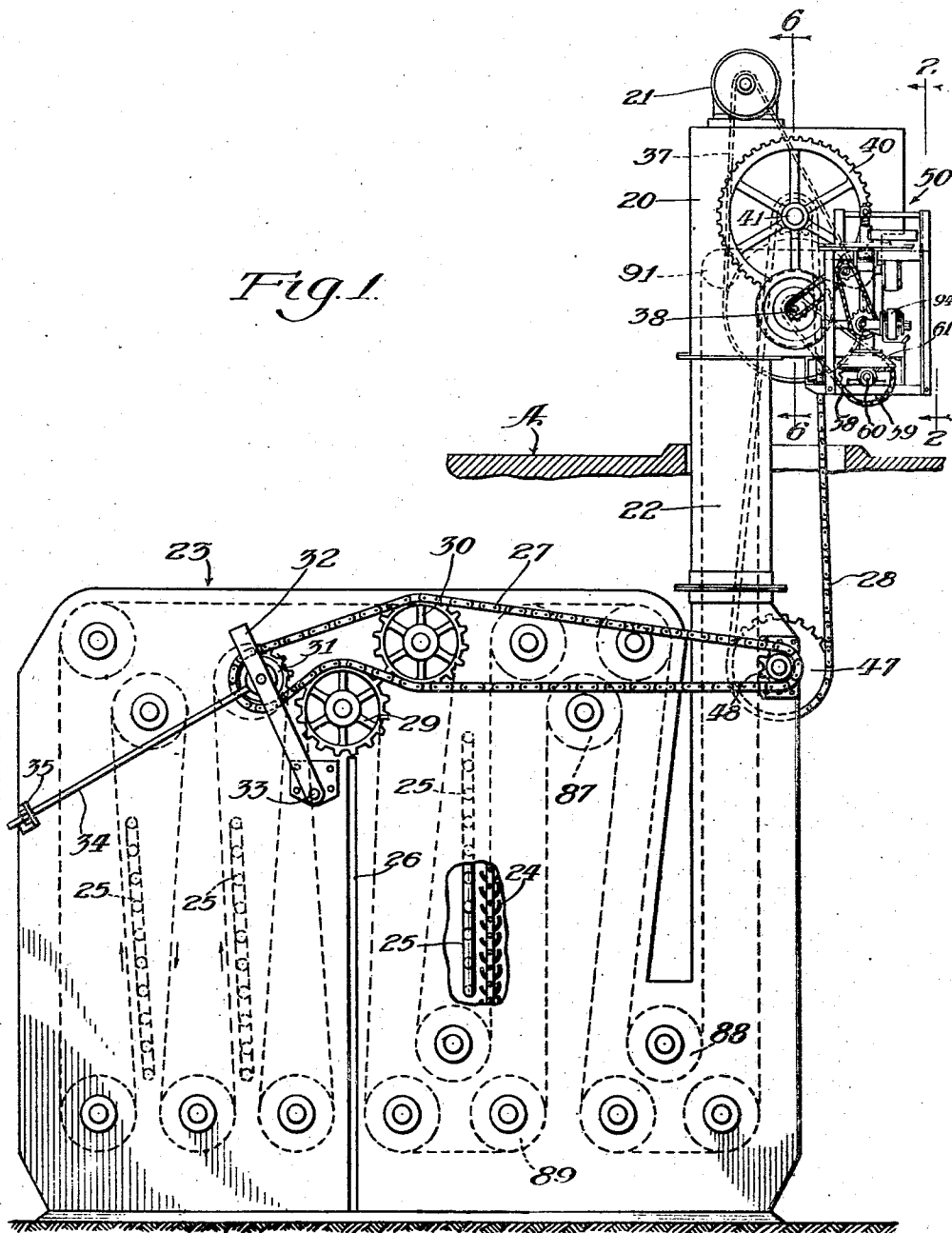
2,243,879

CONVEYER FOR PASTEURIZERS

Filed June 24, 1937

7 Sheets-Sheet 1

Fig. 1.



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7 Sheets-Sheet 2

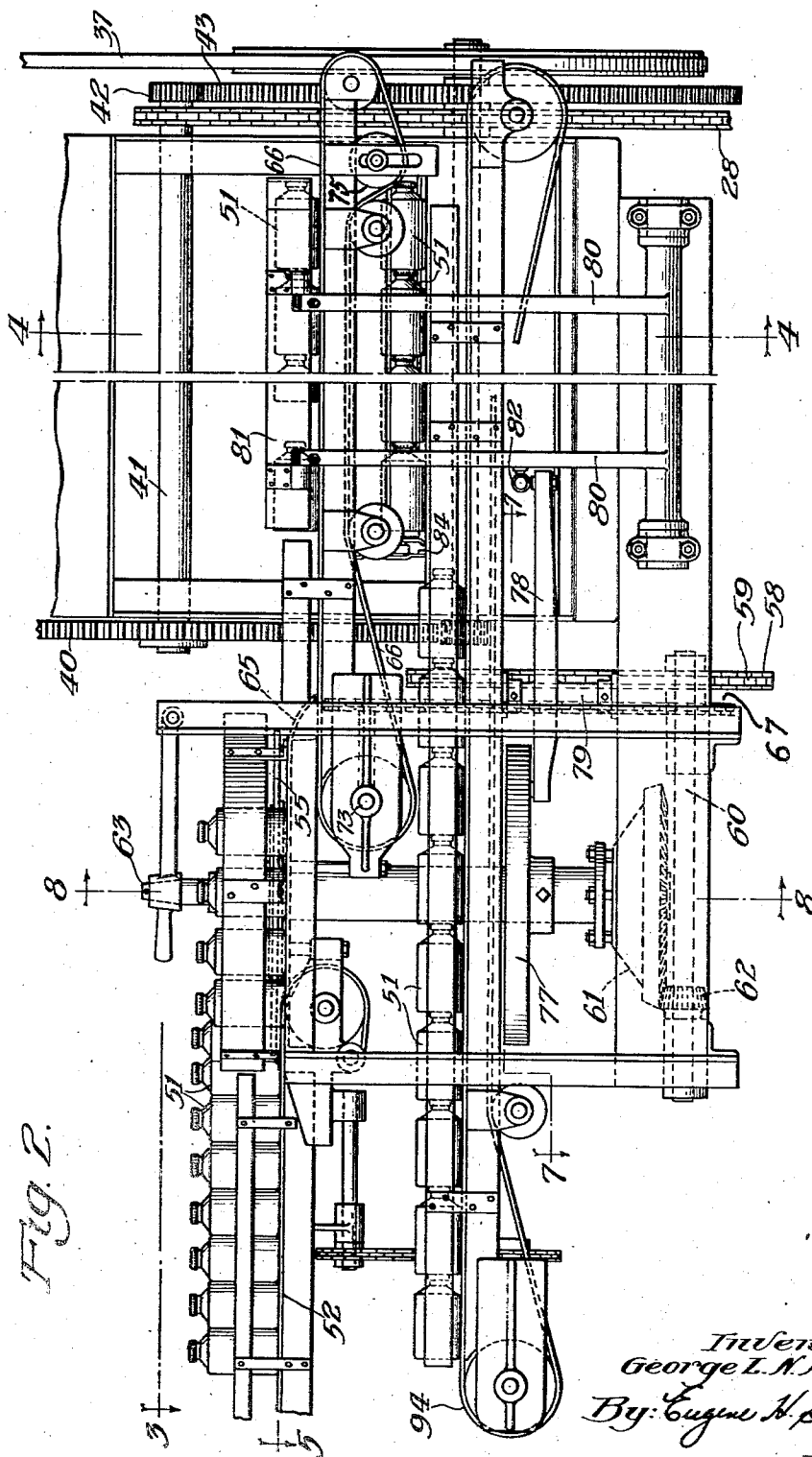


Fig. 2.

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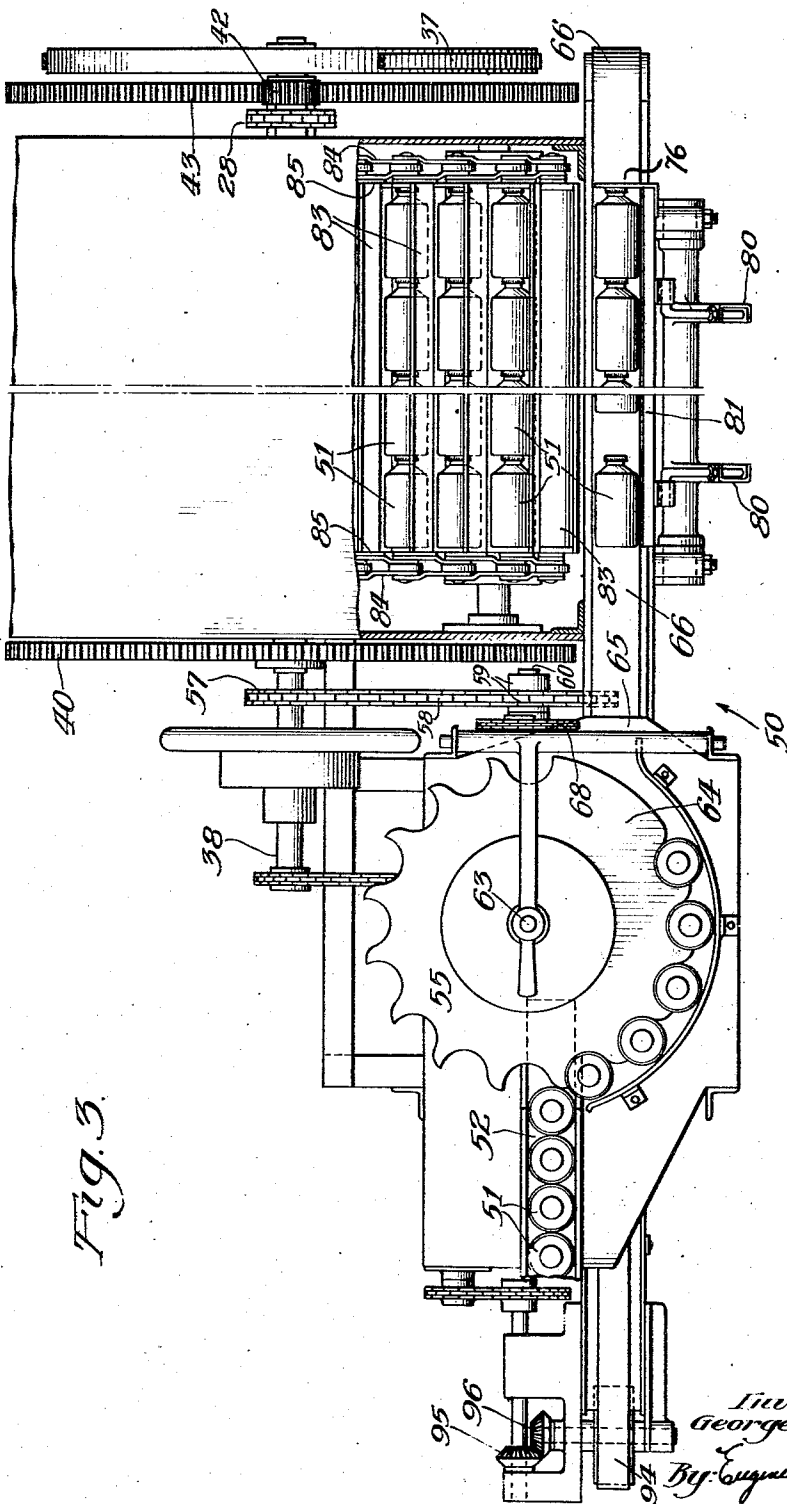
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7 Sheets-Sheet 3



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7 Sheets-Sheet 4

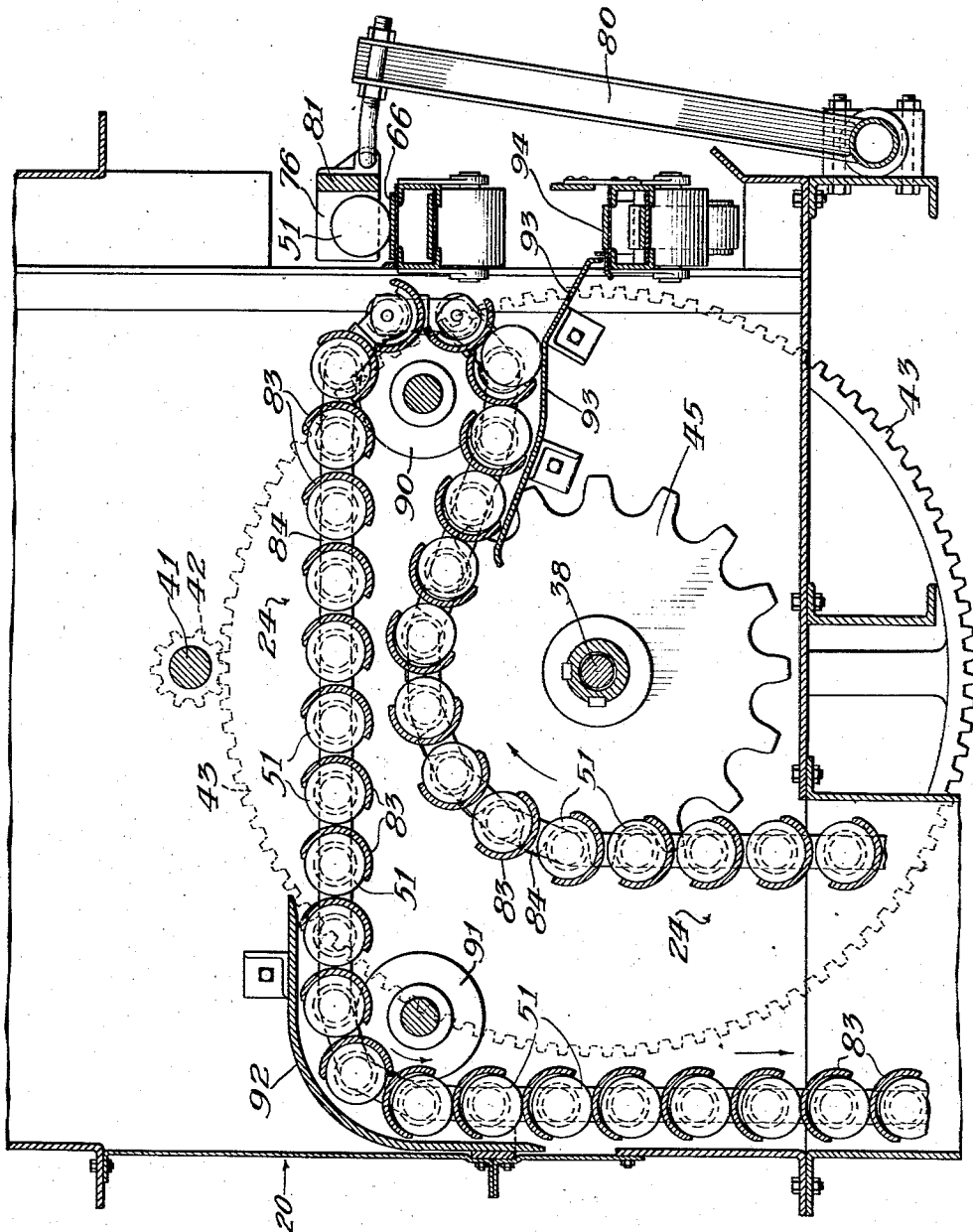


Fig. 4.

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7 Sheets-Sheet 5

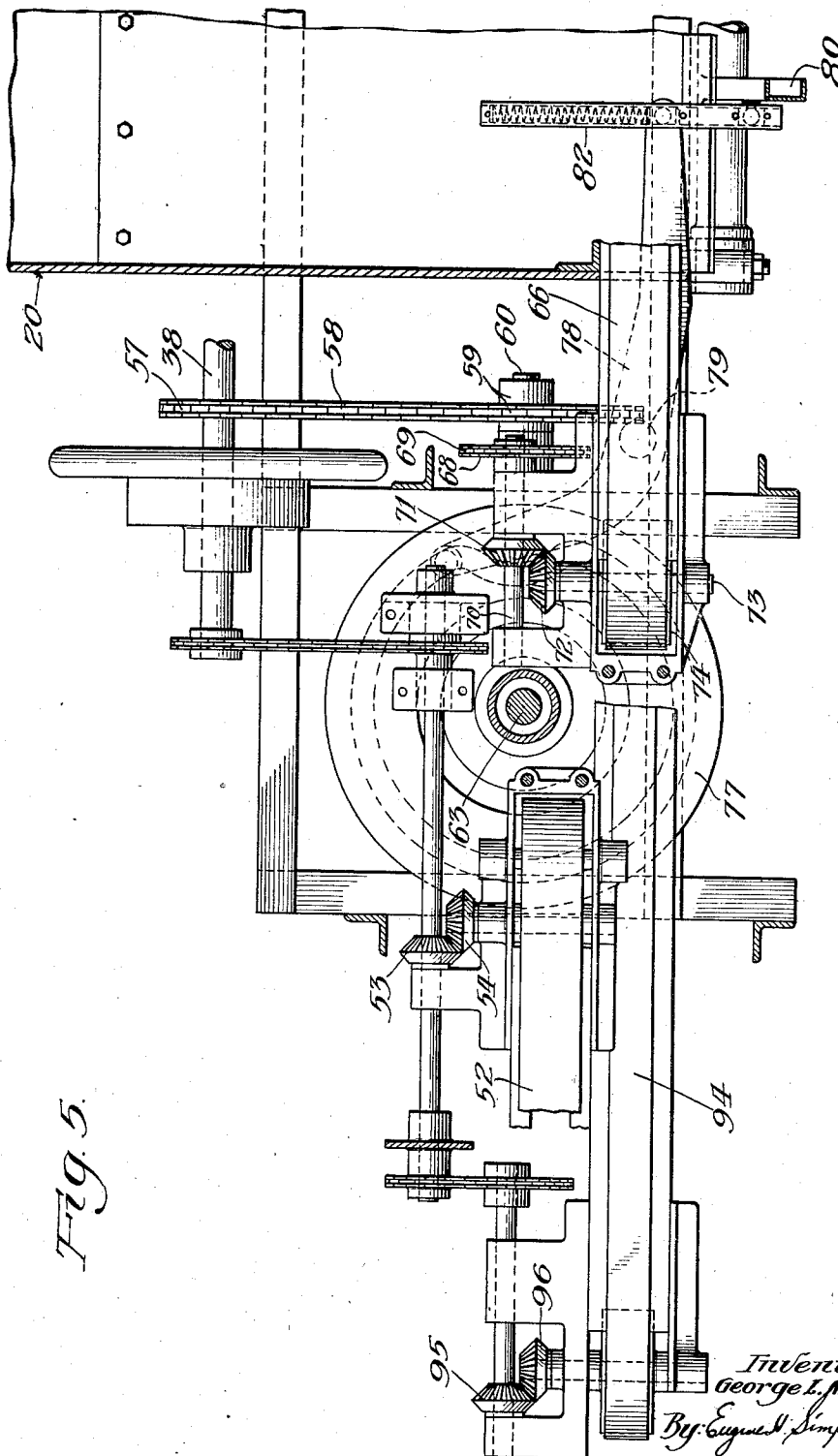


Fig. 5.

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2,243,879

CONVEYER FOR PASTEURIZERS

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7 Sheets-Sheet 6

Fig. 6.

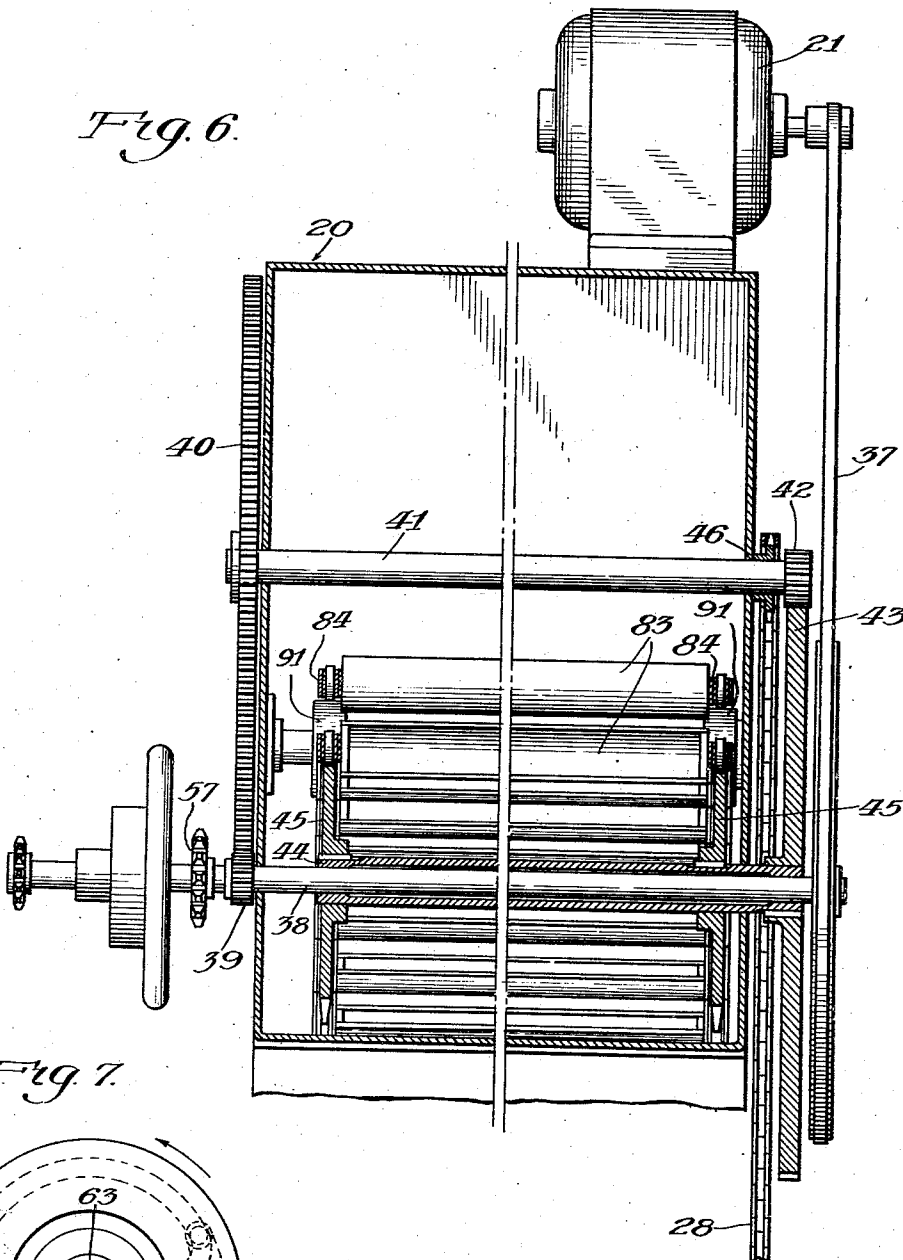
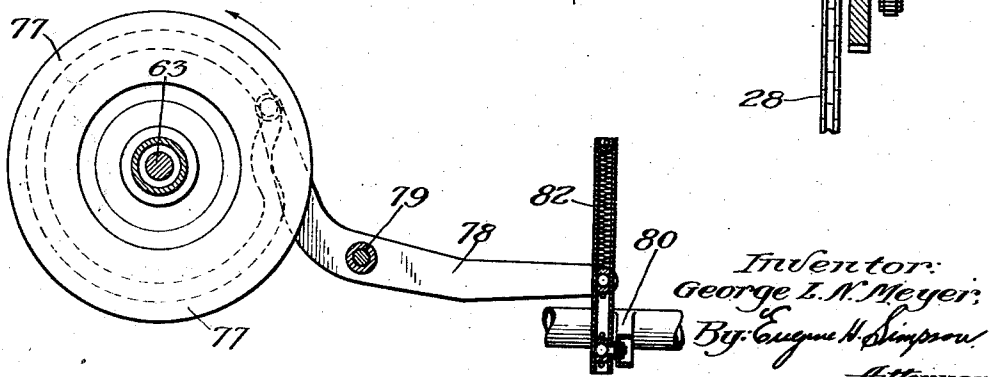


Fig. 7.



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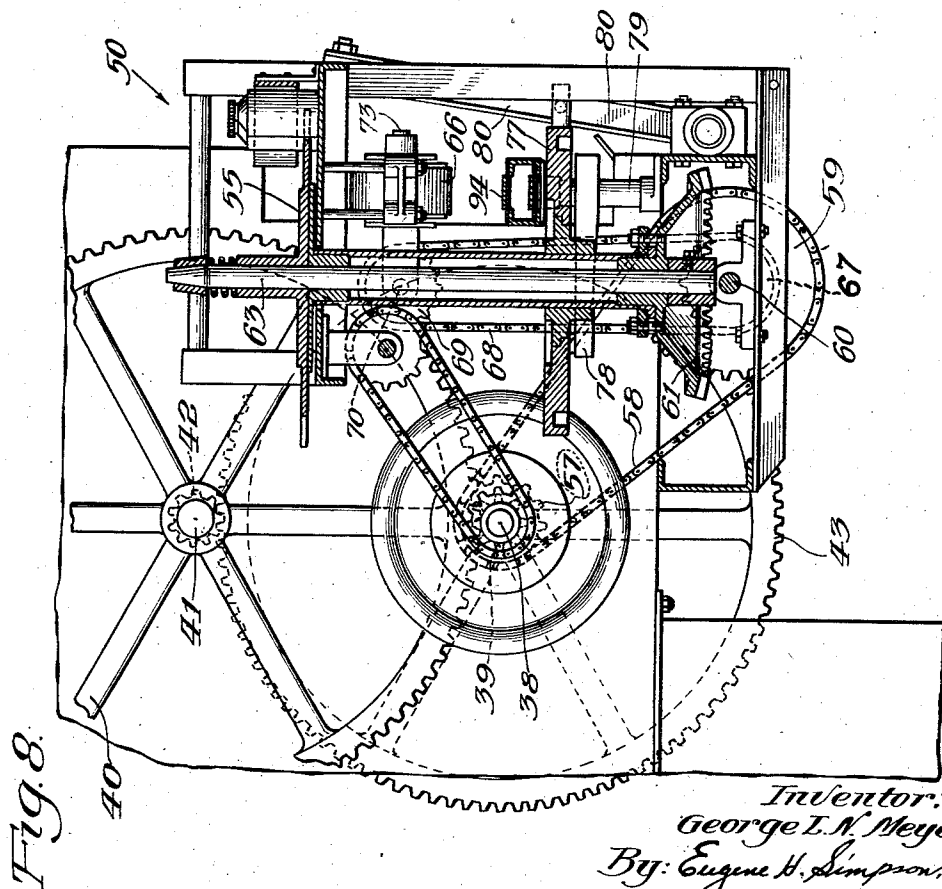
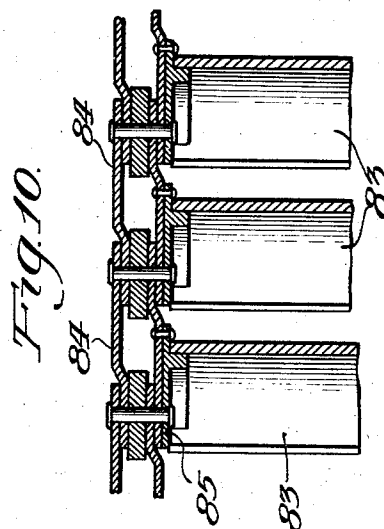
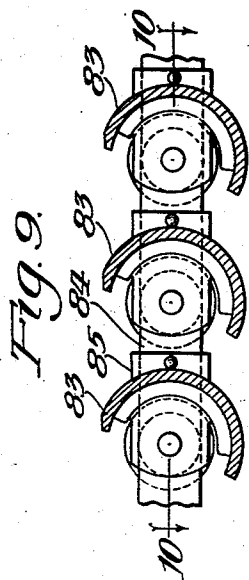
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CONVEYER FOR PASTEURIZERS

Filed June 24, 1937

7 Sheets-Sheet 7



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## UNITED STATES PATENT OFFICE

2,243,879

## CONVEYER FOR PASTEURIZERS

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Application June 24, 1937, Serial No. 150,061

8 Claims. (Cl. 198—131)

This invention relates to pasteurizers or food cookers, and more particularly to a pasteurizer or food cooker adapted to automatically load and unload.

One object of the invention is to produce a machine which will automatically load or unload a plurality of containers simultaneously.

Another object is to provide a trough conveyer which will positively retain the containers in the conveyer except at the intake and discharge positions.

A further object of the invention is to provide a pasteurizer having trough conveyer units, which will require less labor for supervision than pasteurizers now in use.

A further object is to produce a pasteurizer or cooker which will be more efficient than those now in use.

Another object of the invention is to produce an improved conveyer which will permit the removal or insertion of containers only at predetermined points.

A further object is to produce a pasteurizer or cooker having improved means for aligning the containers in spaced series and delivering them to the machine.

These and other objects are accomplished by means of the pasteurizer shown in the accompanying drawings.

In the drawings:

Fig. 1 is a side elevational view of the entire machine, with a part of the side broken away to more clearly show the conveyer;

Fig. 2 is a view on the line 2—2 of Fig. 1 looking in the direction of the arrows and shows the loading and unloading of the containers;

Fig. 3 is a section on the line 3—3 of Fig. 2 looking in the direction of the arrows, showing the star wheel in plan;

Fig. 4 is a cross-section on the line 4—4 of Fig. 2, looking in the direction of the arrows, and shows the conveyer troughs receiving and discharging containers;

Fig. 5 is a cross-section on the line 5—5 of Fig. 2 showing the operating mechanism for the star wheel, the belt conveyers and kick-in mechanism;

Fig. 6 is a cross-section on the line 6—6 of Fig. 1 showing the operating mechanism for the pasteurizer conveyer;

Fig. 7 is a detail of the can kick-in mechanism;

Fig. 8 is a cross-section on the line 8—8 of Fig. 2, looking in the direction of the arrows, and shows the operation of the star wheel;

Fig. 9 is a detail transverse cross-section of the conveyer troughs; and

Fig. 10 is a cross-section on the line 10—10 of Fig. 9 showing the connection of the conveyer troughs to the conveyer chain.

In the drawings, in which like numerals indicate like parts throughout the several views and referring particularly to Fig. 1, the machine comprises, a head 20 which may support a motor 21 to drive the conveyers (to be described below), and a neck 22 which may pass through the floor A of the building and connect the head 20 with the body 23 of the pasteurizer or cooker. The body 23 of the pasteurizer carries a conveyer generally designated 24, to be described in detail below, which is adapted to receive a single row of cylindrical containers reclining on their sides with their axes aligned. The conveyer 24 is so designed as to positively retain the container within the conveyer except at the points of loading and discharging. The interior of the body 23 of the pasteurizer is maintained at a constant temperature by steam or hot water pipes 25 which may be thermostatically controlled to maintain an even temperature.

To cook foods in this machine, a partition 26 may be inserted across the body 23, dividing the body 23 into two sections. As seen in Fig. 1, the right hand section would then contain a water seal, while the left hand section would contain live steam.

The conveyer 24 is driven from the motor 21 through chains 27 and 28 which receive their power from the motor 21, as described below, and transmit it to the conveyer through sprocket wheels 29 and 30. The chain 27 is maintained at the proper tension by a take-up mechanism which includes an idling sprocket 31 mounted on a lever 32. The lever 32 is pivoted to the outside of the body 23, as shown at 33, and is actuated by a tension rod and nut 34 acting against a bracket 35 fixed on the body 23.

Referring to Figs. 1, 2, 3 and 6, it will be seen that the motor 21 drives a belt 37 which drives a shaft 38. The shaft 38 has a gear 39 which engages a gear 40 to drive a counter-shaft 41. The counter-shaft 41 has a gear 42 fixed thereon which drives a gear 43 fixed on a hollow shaft 44. The shaft 44 is mounted to rotate on the drive shaft 38 and drives a pair of sprocket wheels 45, 46, which carry the supporting chains of the pasteurizer conveyer 24.

A sprocket wheel 46 is keyed on the counter-shaft 41. The sprocket wheel 46 drives the chain 28. The chain 28 drives a sprocket wheel

47 which drives the chain 27 through a sprocket 48.

The containers are loaded onto the conveyer 24 by a load and unload mechanism, generally designated 50, in Fig. 1, and shown more fully in Figs. 2, 3, 5 and 8.

As best shown in Figs. 2, 3 and 5, the containers 51, which are shown as cans, but which may also be bottles or packages, are loaded onto a belt or plate conveyer 52 which is driven by a pair of bevel gears 53—54, (Fig. 5). The conveyer 52 transmits the cans to a star wheel 55. The star wheel 55 is driven by the motor 21, through the shaft 38, the sprocket 57, the chain 58, the sprocket 59, the shaft 60 and the bevel gears 61, 62, all of which form a transmission chain which turns a shaft 63 on which the star wheel 55 is mounted.

The star wheel 55 which has a blank portion 64, delivers the cans in spaced series to a sloping apron 65 (Fig. 2), the apron causing the cans to tip and fall onto their sides. The tendency to tip is augmented by the push of the star wheel 55.

The cans are tipped on passing over the apron 65 and fall onto a belt conveyer 66, which is driven by the motor through a transmission chain comprising, the shaft 39, the sprocket 57, the chain 58, the sprocket 59, the shaft 60, and, as seen in Fig. 5, through a sprocket 67 to a chain 68, to a sprocket 69, to a shaft 70, through a pair of bevel gears 71, 72 to a shaft 73. The shaft 73 carries a roller 74 which drives the endless belt 66 which forms the conveyer above mentioned.

Proper tension may be maintained on the conveyer belt by a floating roller weight 75, as shown in Fig. 2.

When the predetermined number of cans required to fill one of the conveyer troughs 24 have passed through the star wheel (as determined by the number of pockets in the circumference of the wheel) there is a spacing of the series due to the blank portion 64 of the wheel 55 during which time the leading can of the series abuts a stop 76 (Fig. 3) and the remainder of the cans continue moving forward until the cans abut end to end.

When the cans are in close contact a cam 77 moves its cam follower inwardly toward the center of the cam, as most clearly shown in Fig. 7. The cam follower is mounted on a bell crank lever 78 so that movement inward of the inner end of the lever causes a corresponding movement of the opposite or operated end of the lever at right angles to the movement of the inner end, since the central portion of the lever 78 is pivoted on a standard 79.

The operated end of the lever 78 is connected to a frame 80, with a yieldable connection 82 between the two to prevent undue strain in the event of stoppage of the frame 80. The frame 80 is pivoted to the pasteurizer head 20, and carries a kick-in bar 81 which rolls the cans on their sides off the conveyer 66, and onto the pasteurizer conveyer 24.

The details of the pasteurizer conveyer 24 are best shown in Figs. 4, 9 and 10. Referring particularly to Figs. 9 and 10, the conveyer 24 comprises a plurality of bucket shaped carriers or troughs 83 fixed to a carrier chain 84. The troughs are substantially semi-cylindrical and have a slightly larger diameter than the cans which they are intended to carry. The troughs

have end pieces 85 fitting in and fixed to the ends of the troughs. The end pieces 85 fasten onto the chain 84 in such a manner that the open side of the trough faces the closed side of the trough ahead. Thus as long as the chain is substantially straight the can cannot move out of the trough due to the trough ahead. This is also true when the conveyer goes around a long radius curve, such as the wheels 45, 87, 88, 89, etc.

When the conveyer goes around a short radius curve, such as the wheel 80, the links of the chain 84 bend and tip the open side of the trough out, at which time containers may be inserted or removed from the trough.

As shown in Fig. 9 the troughs are slightly inclined from the normal. The variation of the inclination from the normal determines the maximum radius of the curve which will permit the containers to be inserted or removed.

The load and unload positions of the pasteurizer conveyer are shown in Fig. 4. In that figure, as the kick-in bar 81 moves to the left, it rolls the container off the conveyer 66 and into an open trough 83.

After loading, the container moves with the pasteurizer conveyer 24 horizontally to the left, as seen in Figs. 1 and 4 and around a wheel 91. The wheel 91 may either have a guard 92 around the outside, as shown, or may itself be of such a radius as to prevent the containers from falling out. The containers then pass down and through the body of the machine, where the contents are either pasteurized or cooked and return vertically and over the sprocket wheels 45, 46, and between the wheel 90 and a discharge chute 93.

As the troughs pass under the wheel 90 they open and permit the containers to roll out, due to the small radius of the wheel 90, down the discharge chute 93 and onto a discharge conveyer 94. As best shown in Fig. 5, the discharge conveyer 94 is driven by the motor 21 through a pair of bevel gears 95, 96.

Having thus described the invention, it will be seen that it is susceptible to various changes and modifications, and it is not therefore desired to limit the invention to the precise form herein shown and described, but only by the scope of the appended claims.

What is claimed as new and desired to secure by Letters Patent is:

1. In a conveyer of the character described, a carrier chain, a first carrier adapted to receive a plurality of containers to be carried, said carrier having a convex back, means to fasten said carrier to a link of the carrier chain, with the carrier fixed relative to said link, a second carrier adapted to receive a plurality of containers to be carried, said second carrier having a convex back, means to fasten said second carrier to a link of the carrier chain ahead of said first carrier, the convex back of said second carrier serving to retain the container within the first carrier, and a sprocket wheel of predetermined radius to change the direction of movement of said carrier and to rotate the links relative to each other to permit a container to be inserted in or removed from said first carrier.

2. In a conveyer of the character described, a carrier chain, a first substantially semi-cylindrical carrier, means to fasten said carrier to a link of the carrier chain, with the carrier fixed relative to said link, a second substantially semi-cylindrical

drical carrier, means to fasten said second carrier to a link of the carrier chain ahead of said first carrier, the convex back of said second carrier serving to retain the container within the first carrier, and a sprocket wheel of predetermined radius to change the direction of movement of said carrier and to rotate the links relative to each other to permit a container to be inserted in or removed from said first carrier.

3. In a conveyer of the character described, a carrier chain, a first carrier adapted to receive a plurality of aligned containers to be carried, said carrier having a convex back, means to fasten said carrier to a link of the carrier chain, a second carrier adapted to receive a plurality of aligned containers to be carried, said second carrier having a convex back, means to fasten said second carrier to a link of the carrier chain ahead of said first carrier, the convex back of said second carrier serving to retain the container within the first carrier, and a sprocket wheel of predetermined radius to change the direction of movement of said carrier and to rotate the links relative to each other to permit a container to be inserted in or removed from said first carrier.

4. In a conveyer of the character described, a carrier chain, a first substantially semi-cylindrical carrier, means to fasten said carrier to a link of the carrier chain, a second substantially semi-cylindrical carrier, means to fasten said second carrier to a link of the carrier chain ahead of said first carrier, the convex back of said second carrier serving to retain the container within the first carrier, and a sprocket wheel of predetermined radius to change the direction of movement of said carrier and to rotate the links relative to each other to permit a container to be inserted in or removed from said first carrier.

5. In a device of the character described, a conveyer comprising a plurality of semi-circular troughs each trough being adapted to receive a plurality of aligned containers, and a pair of link carrier chains attached to said troughs, the rear side of each of said troughs being convex and adapted to retain containers in the succeeding trough until the links of the carrier chain are rotated through a predetermined angle.

6. In a conveyer of the character described, a pair of parallel carrier chains, a first bucket shaped carrier adapted to receive a plurality of containers therein across the width thereof, means to fasten said carrier between a link of one of said chains and the corresponding link of

the other chain, a second bucket shaped carrier adapted to receive a plurality of containers therein across the width thereof, means to secure said second carrier between a link of one of said chains ahead of said first carrier and the corresponding link of the other chain, the back of said second carrier serving to retain the containers within said first carrier when the links supporting said carriers are aligned, and a sprocket wheel of predetermined radius to change the direction of movement of said carriers and to rotate the links relative to each other, to permit containers to be inserted in and removed from said first carrier.

7. In a conveyer of the character described, a pair of parallel carrier chains, a first bucket shaped carrier adapted to receive a plurality of longitudinally aligned containers therein, means to secure said carrier between a link of one of said chains and the corresponding link of the other chain, a second bucket shaped carrier adapted to receive a plurality of longitudinally aligned containers therein, means to secure said second carrier between a link of one of said chains ahead of said first carrier and the corresponding link of the other chain, the back of said second carrier being so positioned and shaped as to retain the containers within said first carrier when the links supporting the carriers are substantially aligned, and a sprocket wheel of predetermined radius to change the direction of movement of said carriers and to rotate the links and the carriers supported thereby, relative to each other to enable containers to be inserted in and removed from the first carrier.

8. In a conveyer of the character described, a pair of parallel carrier chains, each chain comprising links pivotally connected to the next adjacent link, a plurality of bucket shaped carriers, each carrier adapted to receive a plurality of containers axially aligned therein, means to fix each carrier to and between a link of one chain and a corresponding link of the other chain, each carrier being so shaped and positioned as to retain the containers in an adjacent carrier when the links supporting said carriers are substantially aligned, and a sprocket wheel of predetermined radius to change the direction of movement of said carriers and to rotate the links and carriers relative to each other to permit containers to be inserted in and removed from said carriers.

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