

[54] **SEALING SYSTEM FOR CHAIN CONVEYORS**

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[58] **Field of Search**21/78, 80; 99/360, 361, 362, 99/363; 198/103, 209, 210, 1, 160

[56] **References Cited**

UNITED STATES PATENTS

3,418,918	12/1968	Beauvais	99/366
3,606,997	9/1971	Gerhart	21/56

Primary Examiner—Richard E. Aegerter

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[57] **ABSTRACT**

A sterilization apparatus in accordance with the invention comprises a pressurized chamber and means for conveying articles to be sterilized through the chamber.

6 Claims, 3 Drawing Figures

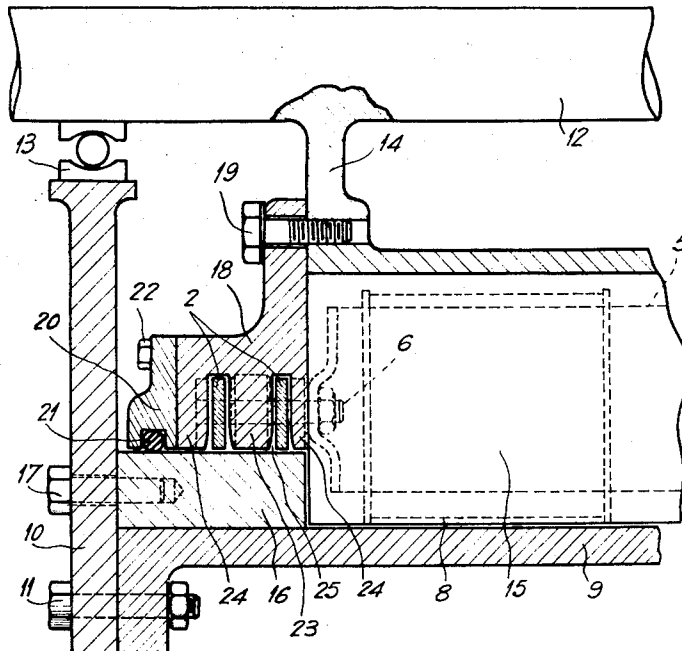


FIG. 1

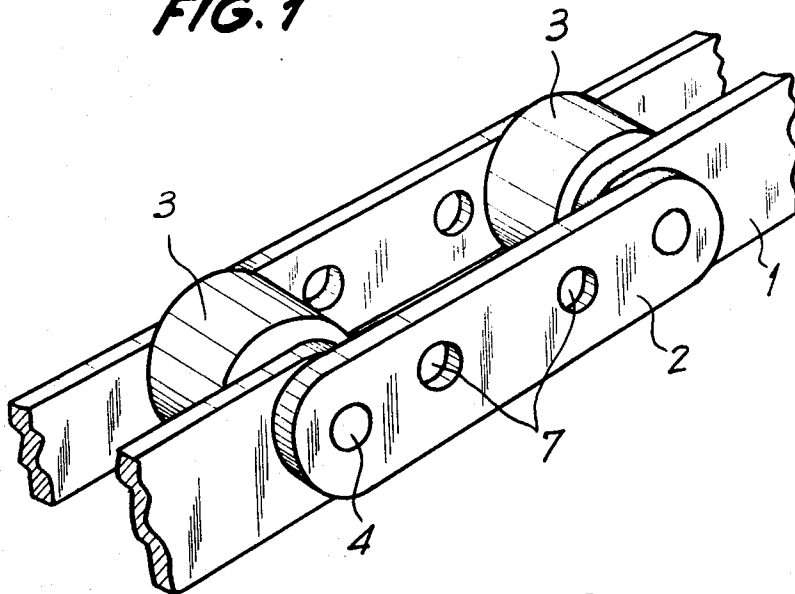
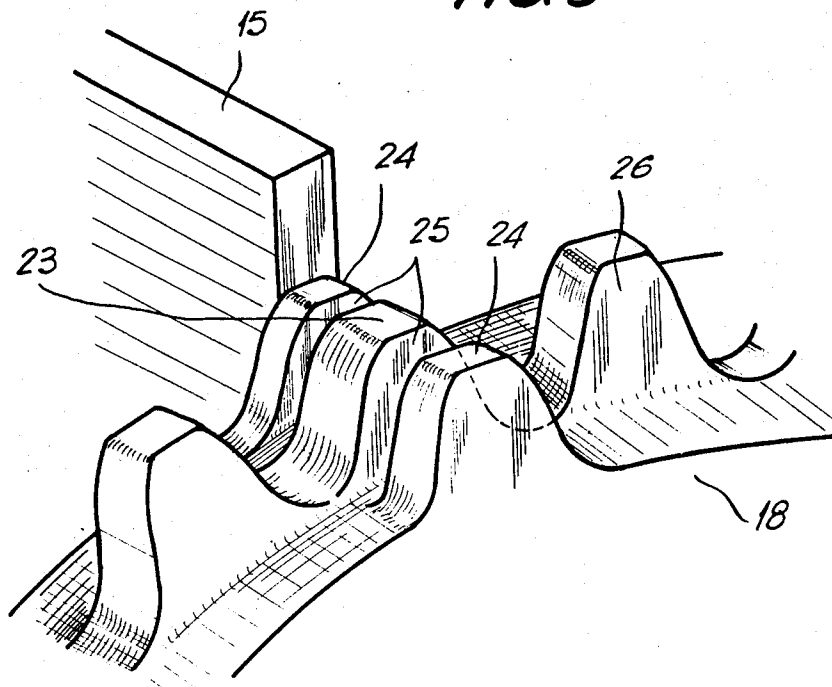


FIG. 3



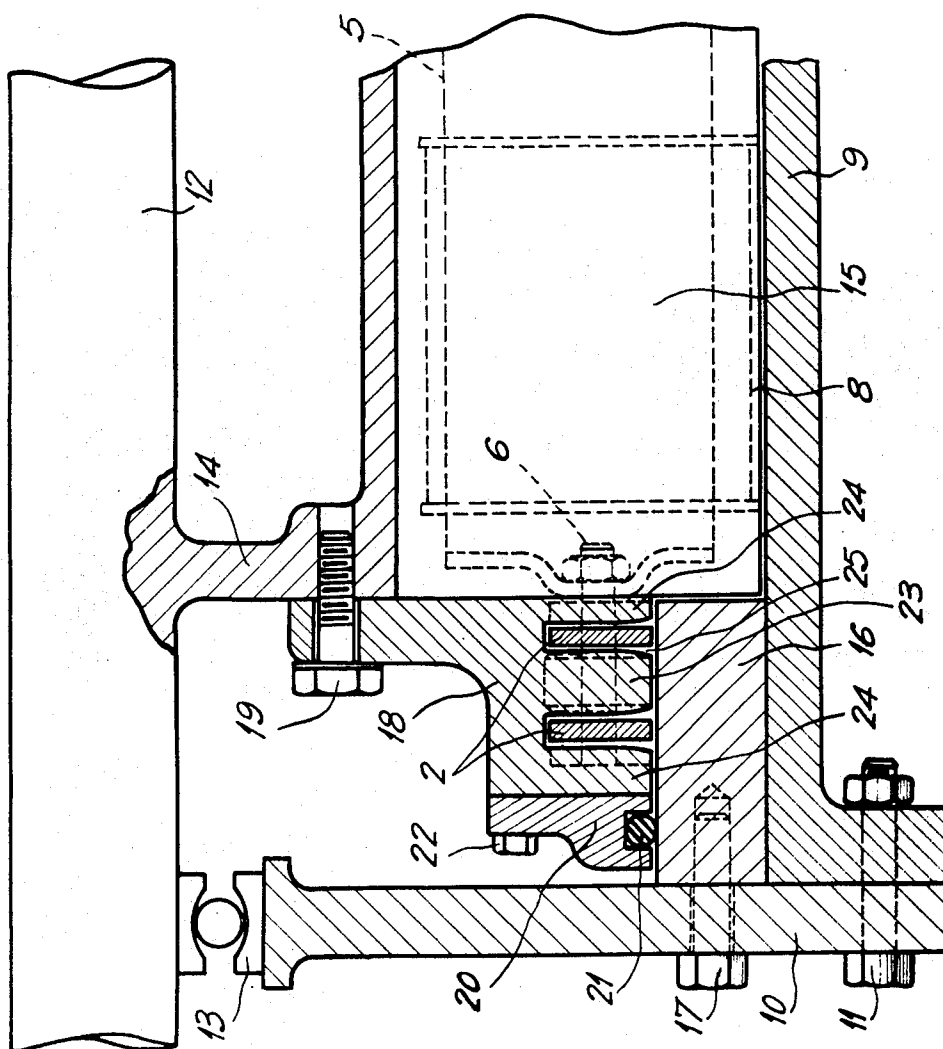


FIG. 2

SEALING SYSTEM FOR CHAIN CONVEYORS

This invention relates to appliances comprising a conveyor which is required to pass with maximum sealing between two media at different pressures.

A sterilization appliance in which this problem occurs has been described in U.S. Pat. No. 3,418,918 of Dec. 31, 1968. In this, the containers to be sterilized are conveyed by a chain conveyor which enters a pressurized chamber and leaves the same via a sealing system comprising a rotary drum having lateral gearwheels.

With regard to the chains and the central blades which define compartments for the containers to be sterilized, sealing is provided by lateral discs respectively secured to the rotating and fixed parts of the system.

The main object of this invention is to provide a sealing system which is simple, rugged and provide maximum sealing effect.

To this end, according to the invention, the chains comprise rollers mounted between pairs of lateral articulated links after the style of conventional roller link chains. In register with each blade the gearwheels have teeth adapted to engage between the respective links and rollers of the chains, the pitch of which is determined as a result. The said teeth are flanked by check members adapted to assume positions on either side of the links and in sealing-tight connection with the blade on the one hand and with a gasket associated with the gearwheel on the other hand.

With such a system, the chains can be made on conventional machines; the rollers support the load without overhang and a single gear rim per chain is sufficient to provide good sealing effect.

The invention will be more readily explained with reference to the following description of the accompanying drawings, which is given by way of example without limiting force.

FIG. 1 is a perspective view of one of the chains of a conveyor system according to the invention.

FIG. 2 is a partial section of a sealing drum.

FIG. 3 is a partial perspective view of one of the drum gear rims.

Referring to FIG. 1, a conveyor according to the invention uses chains of conventional type which comprise links 1 and 2 disposed on either side of rollers 3 mounted on pins 4 which are used for the articulation of the links.

Referring to FIG. 2, the chains are connected by cross-members 5 secured to studs 6 passing through apertures 7 (FIG. 1) in the links 2. The containers 8 to be sterilized are contained between each pair of cross-members and are pushed by the latter over various runways, in this case the housing 9, which is partly cylindrical, of the sealing system.

The housing which can be made from two substantially symmetrical shells as described in the aforesaid patent, is fixed laterally to side walls 10 by bolts 11.

The drum shaft 12 is mounted in these walls by means of bearings 13.

This shaft bears two radial plates 14 disposed between the walls 10 and some distance therefrom.

The plates 14 bear equidistant radial blades 15 connected at their base to form transverse compartments in which the cross-members 5 and containers 8 are housed.

Between each wall 10 and the adjacent end of the blades 15 is a bushing 16 which is held in place by screws 17, and on which the corresponding chain bears.

The blades are mounted with a minimum clearance in the cylindrical portions of the housing and bushings.

Each chain meshes with a gear rim 18 secured to the plate 14 by screws 19 and which on the side adjacent the wall 10 bears a sealing ring 20 provided with a gasket 21 and fixed by screws 22.

The gear rim 18 which will be clearer from FIG. 3 has a tooth 23 in extension of each blade, said tooth being adapted to engage with minimum clearance between the respective links and rollers of the chain. This tooth is flanked by check members 24 in sealing-tight contact with the blade and the ring 20 and just allowing the passage of the links on each side of the tooth.

In practice, this assembly of teeth and check members can be made by cutting the teeth from the entire thickness of the gear rim 18 and then machining in the teeth two grooves 25 of dimensions just sufficient for the passage of the links. The check members therefore have the section of one tooth but without providing any meshing effect.

Depending upon the dimensions of the chain links, one or more teeth 26 may be provided between the teeth 23 to act as chain drivers without any sealing properties.

These teeth can also be machined from the entire width of the gear rim and then grooves can be made at the required places for the links 1 and 2 as in the case of the teeth 23, but as shown in FIG. 3 it would appear to be simpler to machine away the unrequired teeth portions, this being essential on the blade side to give room for the cross-members 5 fixed to the links 2.

To ensure that the rollers 3 can bear freely on the teeth, it is advantageous to give the ends of the links 1 and 2 a smaller radius than the rollers. Similarly, the height of the links is preferably such that their edges are tangential with slight clearance to the base of the grooves 25 along the axis of the teeth. If the links have varying lengths, this precaution must be observed with regard to the links engaging with the teeth 23; in the case of the others all that is required is that the edge should not bear on the body of the gear rim.

The invention can be applied wherever a chain conveyor is required to pass from one medium to another in sealing-tight conditions. It is used to particular advantage in pressure sterilization equipment.

Of course modifications can be made to the embodiments described, more particularly by the substitution of equivalent technical means, without thereby departing from the scope of the invention.

I claim:

1. In a sealing system for a chain conveyor, comprising a rotary drum provided with side gearwheels for the chains and central blades to define compartments for the passage of the articles to be conveyed the improvement that the chains comprise rollers mounted between pairs of lateral articulated links, the gearwheels having teeth in register with each blade, said teeth being adapted to engage between the respective links and rollers and the said teeth being flanked by check members adapted to assume positions on either side of the links and in sealing-tight connection with the blade on the

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one hand and a gasket associated with the gearwheel on the other hand.

2. The improved system of claim 1, wherein the gasket is borne by a ring fitted on the gearwheel.

3. The improved system of claim 1, wherein the check members are separated from the teeth by grooves just sufficient to allow passage of the links.

4. The improved system of claim 3, wherein teeth are machined from the gearwheel over its entire width and grooves are machined in the said teeth, depending upon the position of the links of the chain which is to

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co-operate with the gearwheel.

5. The improved system of claim 1, wherein the gearwheel comprises teeth situated between the teeth disposed in register with the blades, said teeth being relieved at least on the side where the conveyor cross-members connected by the conveyor chains are situated.

6. The improved system of claim 1, wherein the chain bears on bushings interposed between the blades and the side walls of the drum housing.

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