Nov. 2, 1954 R. B. BENTLEY 2,693,269

CONVEYER AND IDLER ROLL BEARING ASSEMBLY THEREFOR

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Fig. 1.

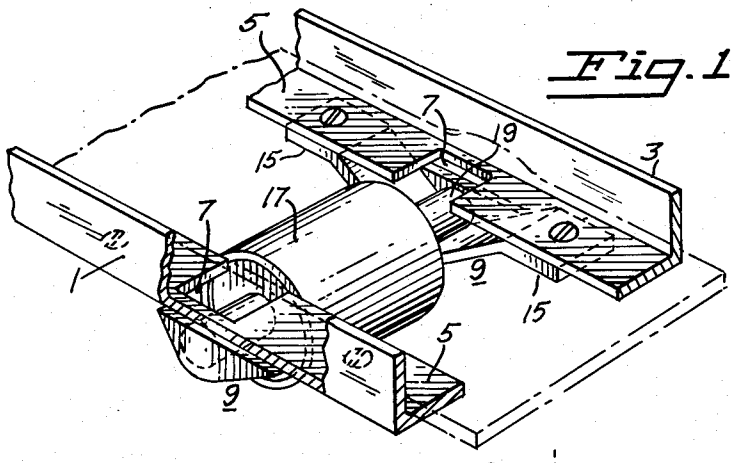


Fig. 2.

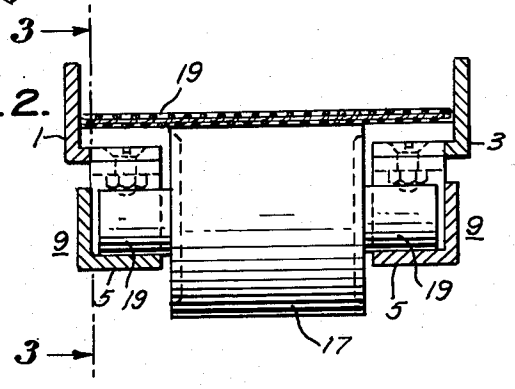


Fig. 3.

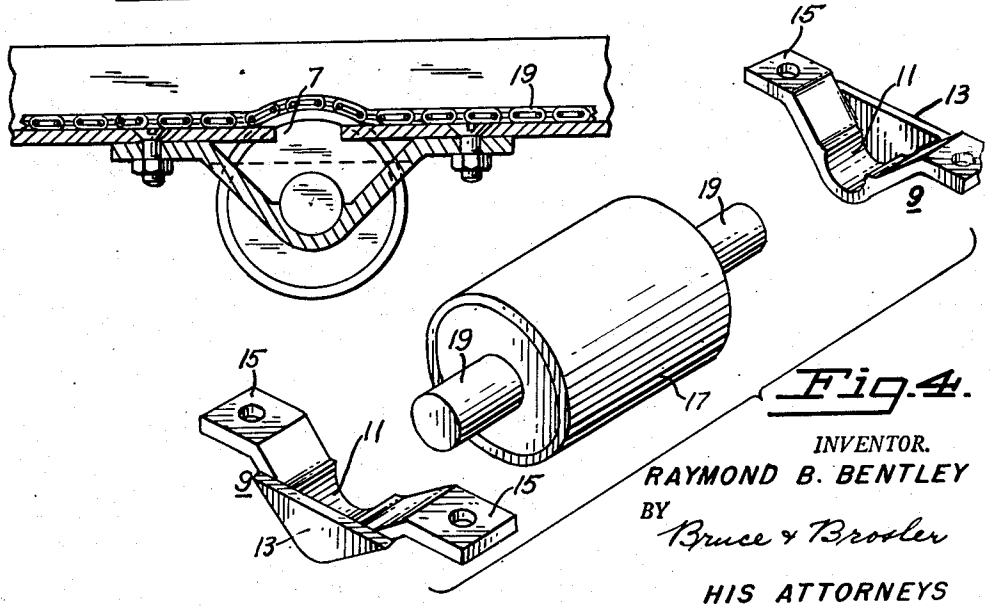


Fig. 4.

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CONVEYER AND IDLER ROLL BEARING ASSEMBLY THEREFOR

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5 Claims. (Cl. 198—184)

My invention relates to conveyors, and more particularly to a conveyor of the type where a driven conveyor belt rides on idler rolls.

In such type of conveyor, idler rolls are disposed at frequent intervals of the order of 10 to 15 inches to support the conveyor belt, and the problem exists of keeping such rolls properly lubricated to prevent them from "freezing" or binding. The problem is particularly acute in situations where the conveyor is used in conjunction with apparatus for the processing of food, such as in the pre-cooking of food in a cook box, since the use of grease or oil in the lubrication of such rolls, exposes such food to a possibility of contamination.

Among the objects of my invention are:

(1) To provide a novel and improved conveyor utilizing idler rolls, wherein the rolls require no attention;

(2) To provide a novel and improved conveyor utilizing idler rolls, wherein the problem of lubrication of such rolls is entirely eliminated;

(3) To provide a novel and improved conveyor in which idler rolls may be readily installed;

(4) To provide a novel and improved conveyor utilizing idler rolls, wherein probability of binding or "freezing" of such rolls is eliminated;

(5) To provide a novel and improved bearing assembly for idler rolls of a conveyor of the type utilizing idler rolls for supporting a conveyor belt.

Additional objects of my invention will be brought out in the following description of a preferred embodiment of the same, taken in conjunction with the accompanying drawings wherein—

Figure 1 is a three-dimensional view of a section of my novel and improved conveyor, depicting an idler roll and its associated bearing structure;

Figure 2 is a view in section, taken longitudinally of the idler roll and bearing assembly of Figure 1;

Figure 3 is a view in section, taken in the plane 3—3 of Figure 2; and

Figure 4 is an exploded view of the idler roll and bearing assembly of Figure 1.

Referring to the drawings for details of a preferred embodiment of my invention as illustrated therein, the conveyor comprises a pair of spaced rails **1** and **3** constructed preferably of angle iron so disposed that each rail includes an inwardly directed flange **5**. At uniformly spaced intervals along such flanges, the flanges are provided with notches **7**, and affixed to the underside of said flanges below each of said notches is a "cradle" bearing **9**.

Such cradle bearing in the preferred embodiment illustrated, involves a V-shaped casting formed in the trough portion thereof, with a semi-cylindrical bearing surface **11**, with one end of the trough portion preferably closed by an end wall **13**. The upper ends of the casting preferably terminate in flanges **15** which are perforated to match corresponding perforations in the rail flanges for attaching the cradle bearings to the underside of the flanges at the designated points.

The idler rolls **17** are designed for disposal in these cradle bearings, and accordingly each is of a length comparable to the distance between said cradle bearings and has trunnions **19** extending axially therefrom for freely journaling said rolls in said cradle bearings. The radius of each roll is sufficient to bring its surface above that of the flanges, and in installing these idler rolls they are merely cradled in the bearings by lowering

them into position, the trunnions passing through the notches until they come to rest upon the bearings.

The carrier belt **19** is disposed on the flanges and is carried by the idler rolls wherever such belt contacts such rolls.

The conveyor belt is preferably of wire mesh, particularly when employed in the processing of food products, as it facilitates the draining of condensation and other liquids settling on the conveyor.

In an installation, such as I have just described, the idler rolls are maintained on their bearings solely by reason of their own weight and the weight transmitted to the rolls by the conveyor belt and such load as may be carried thereon.

I have found that under these conditions, "freezing" or binding of the rolls in their bearings is entirely avoided, and that the condensation of steam encountered in the processing of the food products is sufficient to provide all the lubrication which these idler rolls might otherwise require, thereby eliminating all necessity for oiling or greasing such bearings. In this connection, condensed steam accumulating on the sloping surfaces of the cradle bearings will flow to the bearings and thereby enhance the self-lubricating character of the present invention.

From the above description of my invention, it will be apparent that the same fulfills all the objects of my invention as previously stated, and while I have described the same in its preferred form and in considerable detail, the same is subject to alteration and modification, without departing from the underlying principles involved, and I accordingly do not desire to be limited in my protection to such specific details as I have illustrated and described, except as may be necessitated by the appended claims.

I claim:

1. A conveyor comprising a pair of spaced rails, each including an inwardly directed flange, said flanges having oppositely located notches at spaced intervals therealong, opopsitely disposed cradle bearings suspended from said flanges at spaced intervals therealong, a plurality of idler rolls, each of a length comparable to the distance between opposite cradle bearings and having trunnions of a diameter less than the spacing between the edges of said notches and extending axially thereof for freely journaling said rolls on said cradle bearings, said rolls being of sufficient radius to bring the cylindrical surfaces thereof above said flanges, and a belt disposed on said flanges and rolls for movement thereover.

2. A conveyor comprising a pair of spaced rails, each including an inwardly directed flange, said flanges having oppositely located notches at spaced intervals therealong, a cradle bearing disposed beneath each of said notches, a plurality of idler rolls, each of a length comparable to the distance between opposite cradle bearings and having trunnions of a diameter less than the spacing between the edges of said notches and extending axially thereof for freely journaling said rolls on said cradle bearings, said rolls being of sufficient radius to bring the cylindrical surfaces thereof above said flanges, and a belt of mesh material disposed on said flanges and rolls for movement thereover.

3. A conveyor comprising a pair of spaced rails, each including an inwardly directed flange, said flanges having oppositely located notches at spaced intervals therealong, a cradle bearing suspended from such flanges beneath each of said notches, said cradle bearing involving a V-shaped casting having a semi-cylindrical bearing surface in the trough portion thereof, a plurality of idler rolls, each of a length comparable to the distance between opposite cradle bearings and having trunnions of a diameter less than the spacing between the edges of said notches and extending axially thereof for freely journaling said rolls on said bearing surfaces, said rolls being of sufficient radius to bring the cylindrical surface thereof above said flanges, and a mesh belt disposed on said flanges and rolls for movement thereover.

4. A bearing assembly comprising a rail having an inwardly directed flange, said flange having a notch in the edge thereof; a cradle bearing, said cradle bearing comprising a trough-shaped element formed with flanges at its upper end for attachment to said inwardly directed

flange, a substantially semi-cylindrical bearing surface in the trough portion thereof with its center of curvature below the plane of the upper surfaces of said flanges a distance greater than the radius of curvature of said bearing surface, and a wall closing the trough portion at one end, said trough-shaped element being of greater spread between the flanges than the space between the edges of said notch; and means suspending said cradle bearing from said inwardly directed flange with said bearing surface below said notch.

5. A bearing assembly comprising a rail having an inwardly directed flange, said flange having a notch in the edge thereof; a cradle bearing, said cradle bearing comprising a substantially V-shaped casting formed with flanges at its upper ends for attachment to said inwardly directed flange, a substantially semi-cylindrical bearing surface in the trough portion thereof with its center of curvature below the plane of the upper surfaces of said

flanges a distance greater than the radius of curvature of said bearing surface, and a wall closing the trough portion at one end, said casting being of greater spread between the flanges than the space between the edges of said notch; and means suspending said cradle bearing from said inwardly directed flange with said bearing surface below said notch.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
605,996	Carter	June 21, 1898
1,291,021	Kiefer	Jan. 14, 1919
1,550,614	Hunt	Aug. 18, 1925
2,250,626	De La Mater	July 29, 1941
2,529,684	Gass	Nov. 14, 1950