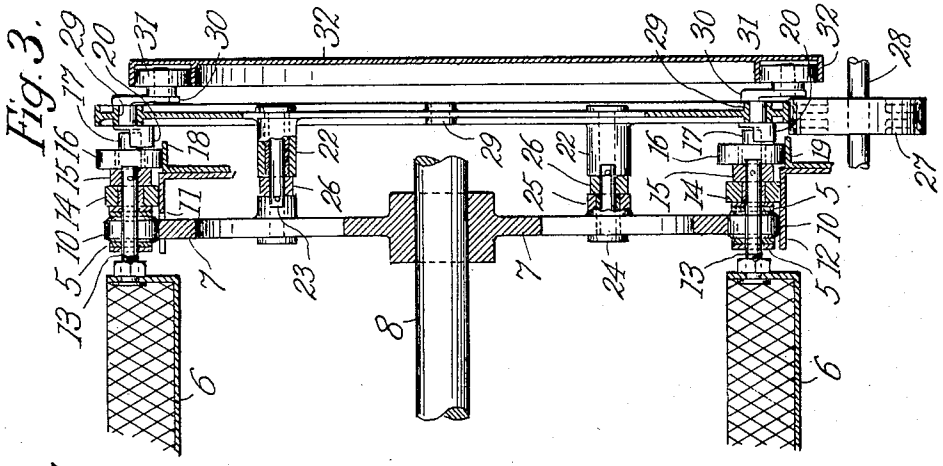
Dec. 1, 1942. W. P. SCHONWALD 2,304,026

OVEN-TRAY STABILIZER

Filed Dec. 9, 1939

Fig. 3.



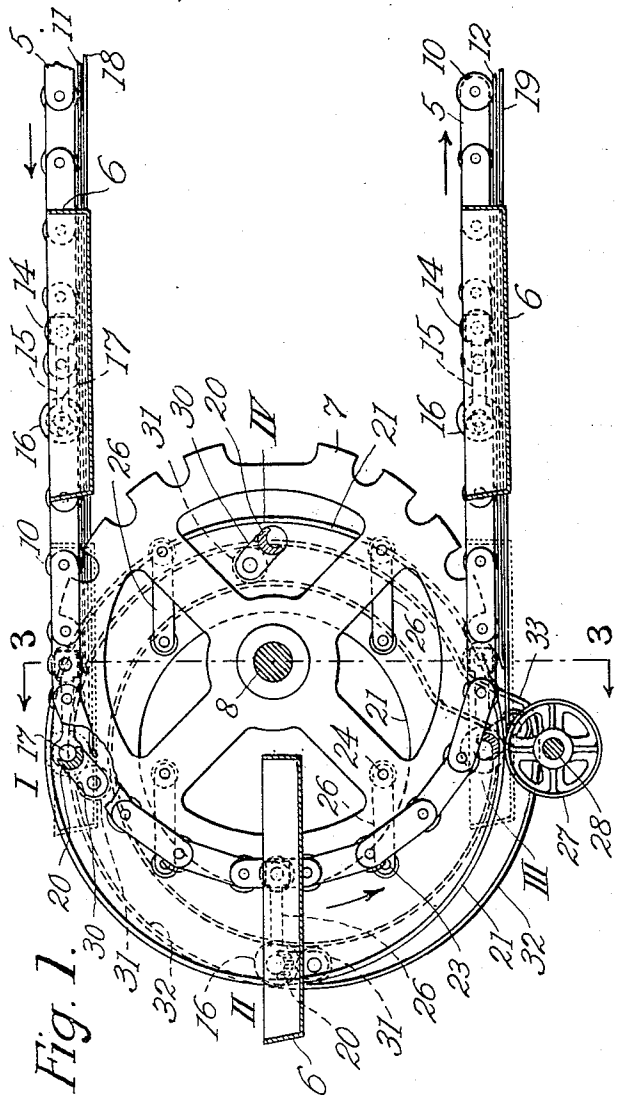
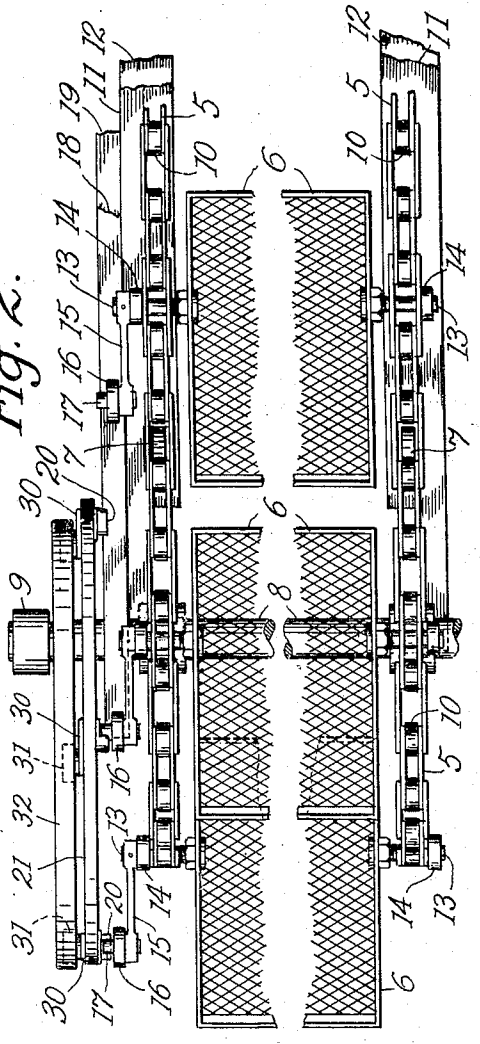


Fig. 1.

Fig. 2.



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OVEN-TRAY STABILIZER

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7 Claims. (Cl. 198—158)

This invention relates to ovens and more particularly to improvements in stabilizers for the trays carried by the conveyors thereof. Such conveyors are usually equipped with trays trunnioned on endless conveyor chains which run over sprockets. To maintain the trays in a horizontal position they are customarily equipped with cam followers guided by straight runs or tracks between the sprockets and curved tracks engaging the followers as the trays pass around the sprockets. Thus the cam follower is engaged by a track on one side and a cam or track on the other side whereby back-lash and shaking of the tray results to the detriment of the goods being baked on the tray. An object of the invention, therefore, is to prevent shaking of the trays while maintaining them in a horizontal position.

To achieve this object in the present invention, the trays may be hung from the conveyor chains eccentrically, and each tray is provided with a follower resting on horizontal tracks, one for the upper and one for the lower run as the tray passes from sprocket to sprocket. In passing around the sprockets, the followers as they leave the horizontal track of the incoming run, are engaged and supported by elements carried in a circular path by a ring eccentric to and turning with the sprocket, the angular position of the said supporting elements being controlled by a cam as they travel from track to track, so as to remain in supporting engagement with the followers and thus keep the trays horizontal while being transferred.

A further object of the invention is, by proper contouring of the cam controlling the supporting elements, to cause the trays to swing or dip for unloading. With these and other objects not specifically mentioned in view, the invention consists in certain constructions and combinations hereinafter fully described and then specifically set forth in the claims hereunto appended.

As the trays are mounted in such a manner that their followers normally tend to move downward, the supporting elements thus prevent this downward movement during transfer and hold the trays in their stabilized, horizontal position. Since the stabilizing arms are gravity-biased in one direction, there is no back-lash as results when the tray stabilizing element is first engaged by a track on one side and then by a cam or track on the other side, thus preventing shaking of the trays and consequent possible injury to their contents.

In the accompanying drawing which forms a part of this specification and in which like characters of reference indicate the same or like parts:

Fig. 1 is a side elevation of one end of an oven-tray conveyor equipped with my improved stabilizing mechanism;

Fig. 2 is a plan view of the same; and

Fig. 3 is a sectional side elevation on line 3—3 of Fig. 1, in enlarged scale.

Referring to the drawing, the endless roller chain conveyors 5 which carry the oven-trays 6 pass around sprockets 7 on shafts 8 supported in bearings 9, the rollers 10 on the pins connecting the links of the chains being supported at their straight runs by upper and lower rails 11 and 12. The trays are equipped with trunnions 13 located at one side of the center of the trays which are thus suspended at spaced intervals from the chains 5, and the trunnions carry rollers 14 resting on the rails 11 and 12, on one trunnion of each tray is mounted a horizontal arm or follower 15 carrying a roller 16 turning on a stud 17 in the free end of the arm. The rollers 16 rest on upper and lower rails 18 and 19 and thereby hold the trays 6, which would otherwise swing downwardly, in their horizontal position along the straight runs of the chains 5. As each roller 16 runs off the upper rail 18, it is engaged and supported by one of a number of spaced cup-shaped elements 20 pivotally mounted in a ring 21 rotating in unison with the sprocket 7 about an axis eccentric thereto. The ring 21 has a series of equally spaced sockets 22 which carry pins 23 connected to pins 24 in sockets 25 of sprockets 7 by spacing links 26. The ring 21 rests on a roller 27 on a shaft 28 so mounted as to cause the links 26, which are made of the same length as the tray arms 15, to assume a horizontal position, so that the arms 15 remain horizontal as they are carried by the cups 20 and sprockets 7 from rail 18 to rail 19. The cups 20 are turnable in sockets 29 of stabilizing ring 21 by means of cranks 30 which carry rollers 31 running in the track of a stationary cam 32. The shape of said cam track is such that at position I, adjacent the end of track 18, the cup 20 will have been turned from an inverted position to a position wherein it is 45° out of the horizontal position to receive and uphold the roller 16 on the arm 15 of the incoming tray, and the cup will then be gradually turned to a horizontal position at II, and then forwardly 45° from horizontal position to the position at III, adjacent to rail 19. After the roller 16 moves onto the outgoing rail 19, a lobe

33 of the cam track 32 clears the way for tray 6 by turning the cup 20 around behind the trailing side of roller 16, the arm 36 then pointing up from the cup, as at IV, ready to assume the proper position for receiving the next tray when arriving in position I.

Since various possible embodiments might be made of the above inventions, and since various changes might be made in the embodiment above set forth, it is to be understood that the description and showing of this embodiment is to be interpreted as illustrative of and not as limiting the invention set forth in the claims.

What is claimed is:

1. In an oven, the combination with traveling endless chain conveyors, of trays pivotally mounted on said chains, a sprocket over which said chains run, a plurality of members moving in an endless path adjacent said sprocket, a support on which said members are pivotally mounted for carrying the members in said endless path, a cam engaging said members for moving said members successively on their pivots on said support to maintain successive trays in a horizontal position as they travel around said sprocket.

2. In an oven, the combination with traveling endless chain conveyors, of trays pivotally mounted on said chains, sprockets over which said chains run, members connected to said sprockets and arranged to maintain said trays in a horizontal position as they travel around the sprockets, means for actuating said members to maintain said trays in a horizontal position as they travel around the sprockets, said means including a ring disposed in eccentric relation to said sprocket and connected thereto, said members being carried by said ring, and a cam for turning said members to cause them to engage the trays and maintain them in a horizontal position.

3. In an oven, the combination with traveling endless chain conveyors, of trays pivotally mounted on said chains, sprockets over which said chains run, members connected to said sprockets and arranged to maintain said trays in a horizontal position as they travel around the sprockets, a cam for actuating said members to maintain said trays in a horizontal position as they travel around the sprockets, and stationary rails for maintaining said trays in a horizontal position as they approach and move away from said sprocket.

4. In an oven, the combination with traveling endless chain conveyors, of trays pivoted on said chains, said pivots being so disposed that the trays are gravity biased toward a non-level position, sprockets over which said chains run, devices moving with said sprockets for maintaining said trays in a horizontal position against movement by gravity as they travel around the sprockets, said devices including followers mounted on the pivots of said trays, a rotary eccentrically mounted member, supporting elements pivotally mounted on said member, and a cam for turning successive supporting elements into position to engage and support the followers of successive trays and thereby maintain them in horizontal position as they travel around the sprockets, and a horizontal guide arranged to engage said followers as their corresponding trays move away from the sprockets and maintain the trays in a horizontal position, said cam acting to maintain said elements in engagement with the followers to support their trays in horizontal position until the followers engage said guide.

5. In an oven, the combination with traveling endless chain conveyors, of trays having trunnions pivotally mounted on said chains, sprockets over which said chains run, supports adjacent said sprockets, links connecting said supports to said sprockets, followers fastened on the trunnions of said trays, cranks carried by said supports, cup-shaped elements on one end of said cranks adapted to engage said rollers, and a stationary cam engaging said cranks to cause said cup-shaped elements to move into and out of the path of said followers, thereby acting to engage the followers of successive trays and maintain said trays in a horizontal position as they travel around the sprockets and also acting to disengage the cups from the followers by said movement out of the path thereof.

6. In an oven, the combination with traveling endless chain conveyors, of trays having trunnions pivotally mounted on said chains, sprockets over which said chains run, supports adjacent said sprockets, links connecting said supports to said sprockets, followers fastened on the trunnions of said trays, cranks carried by said supports, cup-shaped elements on one end of said cranks adapted to engage said rollers, a stationary cam engaging said cranks to cause said cup-shaped elements to engage the followers of successive trays and maintain said trays in a horizontal position as they travel around the sprockets, and upper and lower guide rails whereon said rollers rest as they approach and move away from the sprockets, said cranks being provided with cam rollers engaging said cam and said cam being adapted to turn said cup-shaped elements into position to receive and support said rollers as they leave the upper rail and move behind said rollers as they move on to the lower rail.

7. In an oven, the combination with a pair of spaced traveling endless conveyor chains, of sprockets over which said chains run, said chains having straight runs leading to said sprockets, horizontal trays disposed between said chains and having a trunnion on each side thereof, each of said trunnions being offset rearwardly relative to the direction of travel of the trays with respect to the central transverse axis of its tray and pivotally mounted on the adjacent chain, each of the trays being provided with a horizontal arm fastened to one of its trunnions and projecting forwardly in the direction of travel of the trays beyond the central transverse axis of the tray and terminating at a point short of the forward end of the tray, horizontal guides underlying said horizontal chain runs and said stabilizer arms as they approach said sprockets for supporting said chain runs and maintaining said arms in a horizontal position and thereby keeping said trays in a horizontal position, and continuously traveling means for supporting said arms in a horizontal position as their trays approach the sprockets along said straight chain runs and while the trays travel around the sprockets, to maintain said trays in a horizontal position, and a stationary member for guiding said means in a predetermined path whereby said means will maintain said trays in a horizontal position as the latter travel around the sprockets.

WM. F. SCHONWALD.