

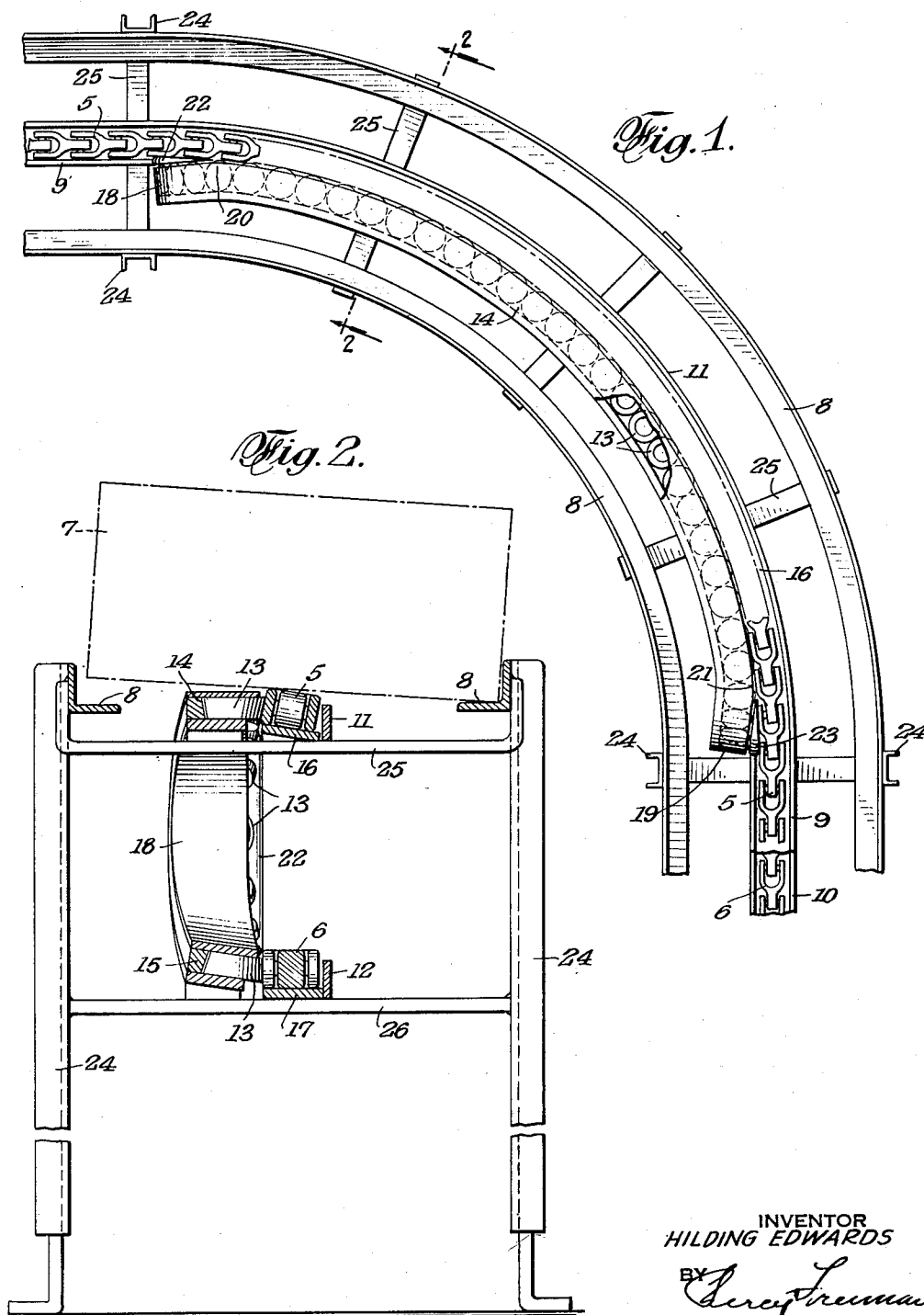
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GUIDING MEANS FOR CONVEYER CHAINS

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GUIDING MEANS FOR CONVEYER CHAINS

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This invention relates to chain conveyers and more particularly to means for smoothly and anti-frictionally guiding a conveyer chain around a bend or curve.

The handling of articles, such as bottle cases, cans, and the like, has been greatly facilitated by the employment of conveyers between filling stations and loading platforms, between washing apparatus and filling stations, and, in fact, between any two or more points where certain operations are performed. It is apparent, however, that these conveyers cannot follow a straight course but must necessarily change direction many times in their paths between two points of operation. Often these conveyers are of considerable length and are designed to transport many thousands of pounds.

It has been found that considerable reduction of efficiency occurs due to the great friction developed at the curves of these conveyers. For this reason many attempts have been made to obviate this fault. For instance, turntables have been placed at the turns of conveyers to assist articles therearound. The cumbersomeness of such arrangements can well be imagined.

The present invention, keeping the above faults in mind, seeks to provide light, simple, and efficient means for anti-frictionally guiding a conveyer chain around a curve.

The invention further contemplates the provision of rollers arranged to follow the chain in its path around a curve and then to move to a lower level where they serve, in a similar manner, to guide the return run of said chain.

As the present disclosure develops, it will be apparent that the inventive concept may be employed in various ways. The accompanying drawing, upon which the following description is based, illustrates an embodiment of the invention as at present preferred.

In the drawing:

Fig. 1 is a top plan view of the bend in a conveyer provided with chain guiding means as contemplated in this invention.

Fig. 2 is an enlarged cross-sectional view as taken along the line 2—2 of Figure 1 and as looking in the direction of the arrows.

Referring to the drawing in greater detail, the chain comprises an upper run 5 and a return run 6. In the usual manner, the chain is formed of links loosely connected so the chain may conveniently follow a curve. The upper run 5 of the chain serves to support an article such as the box 7 and to convey said box along the conveyer. Associated with the chain for guiding the edges

of the box or other article are the edge guides 8, in the present instance in the form of angle members.

In the usual manner, the upper and lower runs of the chain are each guided in the respective channels 9 and 10. This is true along the straight portions of the conveyer and was also true at the curves of a previous objectionable form of conveyer.

As at present conceived, the outer leg of each channel 9 and 10, is continued around the curve as at 11 and 12 respectively to meet the respective other channels at the other end of the curve.

The inner legs of these channels are terminated at the start and end of the curve and replaced by a series of rollers 13 in the respective upper and lower guides 14 and 15. Each of these guides is curved to follow the curve of the chain which in this manner has rolling contact with the mentioned anti-friction rollers 13.

In order to prevent the upper run of the chain from jumping its track which is formed by the rollers 13, leg 11, and rail 16, the rollers are preferably formed as truncated cones which, in the upper run, have their bases uppermost. Hence, the chain, in contact with the upper rollers, is disposed at an angle (as shown in Figure 2), with respect to the plane of the rollers and is thus prevented from riding up out of its track. The rail 16 is suitably angled to form a seat for the chain moving thereon.

At the lower run, the rollers are disposed with their bases lowermost and, therefore, the guide 15, in which these rollers are moved, is angled so that the return run 6 of the chain may lie flat on its rail 17. This construction may be followed at the lower run because the forces apparent in the upper run are absent.

So as to provide a continuous guide of the rollers, the ends of the guides 14 and 15 are connected as at 18 and 19 and thus there is formed a continuous guide for the rollers which has two parallel, though curved portions 14 and 15, and two transverse connecting portions 18 and 19.

It will be noted that the rollers in the upper run are urged by the chain in one direction, turning around their own axes meanwhile, and that the rollers in the lower run are urged by the return run of the chain in the other direction also turning on their axes. Thus all the rollers in the guide 14, 15, 18 and 19, during the movement of the chain, are also in movement in the direction of the respective contacting portions of the chain.

Since the rollers 13 are free to roll in their

guide, friction between the chain and the rollers is obviated by a rolling contact between said chain and rollers, and thus, the loss in efficiency heretofore encountered has been practically removed.

The conveyer chains often are moved at a relatively high rate of speed and in order to prevent damage to the surface of the rollers which might develop flat spots, the connecting portions 18 and 19 are bent away from the chain as at 20 and 21 and there are interposed guide members respectively 22 and 23. These members serve to smoothly guide the chain into and out of contact with the rollers. These guide members also serve to retain the rollers in the connecting guide portions 18 and 19.

From the foregoing, it will be obvious that the chain may be moved in either direction as is often desirable, and the efficacy of the construction will become more apparent when it is understood that no change or manipulation of parts is necessary in order to accomplish this.

In certain constructions it may not be necessary to provide anti-friction guide means for the lower return run of the chain. In that event, the roller guide may be provided with a return portion in the same horizontal plane with the active portion as can be well understood.

The supporting frames of the conveyer as illustrated, are quite of usual design, the legs 24 having respective upper and lower cross members 25 and 26 which in turn support the respective portions of the structure.

The rollers 13 are preferably formed as rings to reduce their weight and the guides therefor are formed to afford proper clearance so the rollers may move therethrough with a minimum of frictional loss. In the usual manner, lubricants may be used on the guide and on the rails 16 and 17.

It is obvious from the above that a wholly desirable structure for the purpose intended has been provided. In interpreting the scope of the invention as claimed, the prior art rather than the instant disclosure should be used.

I claim:

1. In a conveyer including a chain, chain guiding means for article conveyers following an irregular path, comprising a channeled guide shaped to direct said chain around a curve, and a plurality of anti-friction rollers loosely carried in said guide at the curve and in contact with said chain, and a member interposed between said chain and the rollers for guiding said chain from a straight path into smooth contact with the rollers as the chain starts on the irregular path.

2. In a conveyer including a chain, chain guiding means comprising a curved guide having an upper and a lower portion, and a plurality of anti-friction rollers in said guide and in contact with respective upper and lower runs of said chain.

3. In combination with the curved respective upper and lower runs of a conveyer chain adapted to follow an irregular path, anti-friction means

for guiding said runs comprising an endless guide, and rollers disposed in said guide and having contact with said chain runs.

4. In combination with the curved respective upper and lower runs of a conveyer chain adapted to follow an irregular path, anti-friction means for guiding said runs comprising an endless guide, said guide having parallel curved portions and connecting end portions, and loose rollers disposed in said guide and having contact with said chain runs, said rollers being adapted to be moved in said guide by the runs of said chain.

5. In combination with the curved respective upper and lower runs of a conveyer chain adapted to follow an irregular path, means for supporting said chain runs, the upper of said means being disposed at an angle transverse to the path of movement of the chain to support said upper run at an angle, and anti-friction means for guiding said runs comprising an endless guide, and rollers disposed in said guide and having contact with said chain runs, said rollers being tapered whereby the peripheral walls of the rollers are in rolling contact with the coacting lateral portion of the chain runs.

6. In combination with the curved respective upper and lower runs of a conveyer chain adapted to follow an irregular path, means for supporting said chain runs, the upper of said means being disposed at an angle transverse to the path of movement of the chain, to support said upper run at an angle, and anti-friction means for guiding said runs comprising an endless guide, said guide having parallel curved portions and connecting end portions, and loose rollers disposed in said guide and having contact with said chain runs, said rollers being tapered whereby the peripheral walls of the rollers are in rolling contact with the coacting lateral portions of the chain runs.

7. In a device of the character described, a chain having a portion to follow a straight path and a continuing portion following a curved path and anti-friction means for guiding said latter portion around the curved path, said anti-friction means comprising a plurality of loose tapered rollers and endless guide means for said rollers comprising a pair of curved parallel guide portions and connecting end portions transverse to said parallel portions, one of said parallel portions being angled with respect to the other in a plane transverse to their length.

8. In a device of the character described, a chain having a portion to follow a straight path and a continuing portion following a curved path, and anti-friction means for guiding said latter portion around the curved path, said anti-friction means comprising a guideway, a plurality of rollers in said guideway, said guideway being bent in relation to the straight portion of the chain and a member interposed between said chain and the rollers for guiding said first portion of the chain into smooth contact with the rollers.

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