Oct. 2, 1951 P. J. IMSE 2,569,636

CONVEYER CHAIN

Filed April 18, 1947

Fig. 1.

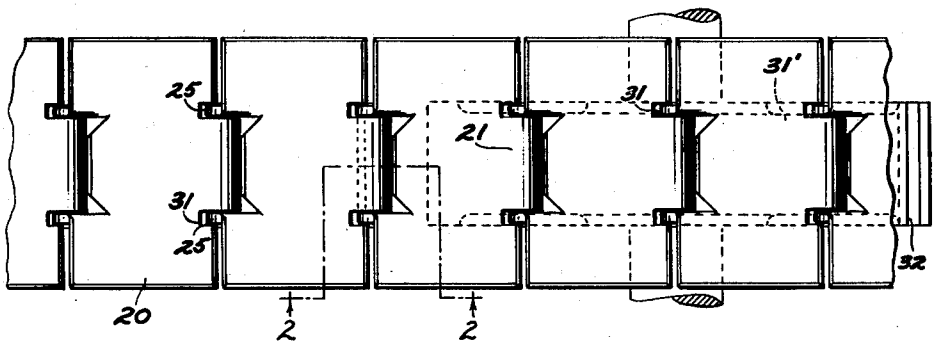


Fig. 2.

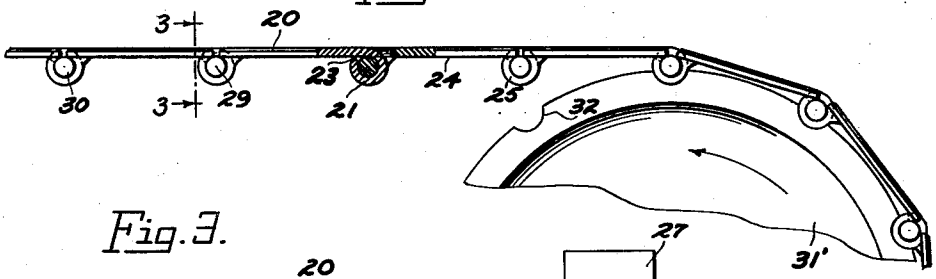
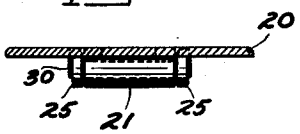


Fig. 3.



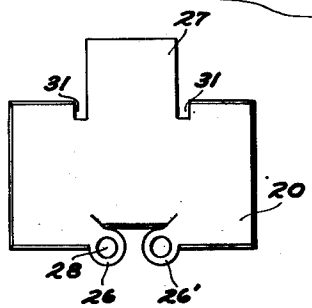


Fig. 5.

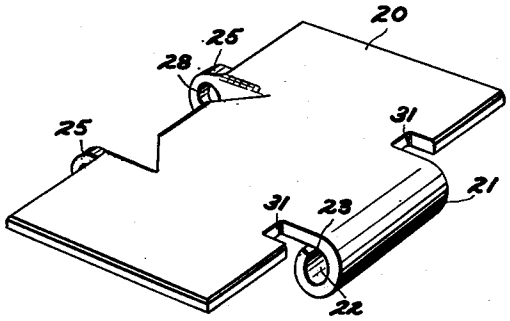


Fig. 4.

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CONVEYER CHAIN

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1 Claim. (Cl. 198—195)

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This invention relates to conveyers of the type adapted to carry containers, such as cans, bottles, etc., in an upright position. These conveyers have been generally designated as "flat top" conveyers and have wide usage in such industries as packaging, bottling, canning, and dairying, etc. For it is necessary to carry the containers in an upright position between divers stations, viz., filling to capping to sealing, through sterilizing and to labeling. This has facilitated the adapting of "straight line" methods to the aforesaid industries with the consequent reduction of cost of the items produced.

It follows that with the great demand for such a type conveyer chain that many types have been manufactured and are available. The most feasible type of chain has been such as is shown in Letters Patent issued to R. J. Wynne et al., No. 1,966,659, entitled "Conveyer Chain." This type chain is exceedingly simple in that a strand of chain is composed of two parts, viz., a pintle and a link. Also, the links have interfitting knuckles which permit contiguous links to be brought close together. Further, there is an overlap of the surface of contiguous links; this feature makes for can stability at transfer stations and during the interstation runs. These salutary features make for less breakage and spilling in the production of the aforesaid products.

However, it has been found desirable to increase the strength of such chain for application where extended centers have been used. It has been found that by increasing the width of the medial tongue portion of the hinge, the tendency of this curled portion to straighten out under excessive loads can be obviated, and a much stronger chain produced without increasing its weight or complicating its manufacture.

It is the object of this invention to produce a chain having all of the salutary qualities of the past chain and also one which will more successfully resist increased forces and strains.

This is the primary object of this invention; however, more objects will become apparent in the reading of the following description and claim.

In the drawings:

Fig. 1 represents a plan view of the improved conveyer chain.

Fig. 2 is a front view of an assembled chain showing a portion of it in section, and showing one end articulating as it passes over a sprocket.

Fig. 3 is a sectional view of the chain taken along the lines 3—3 of Fig. 2.

Fig. 4 represents a blanked out link before the tongue portion has been curled and before the pierced ear portions have been worked downward.

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Fig. 5 is a perspective view of a completed chain link.

Referring more particularly to the drawings, Fig. 1 shows portions of an assembled chain strand formed of interfitted links 20 so as to form a continuous planar supporting surface. This feature is evident by reference to Fig. 2. The links 20 are generally rectangular in shape and are shown to be formed from a flat strip or sheet of metal. The curled end portion 21 has a centrally disposed aperture 22 arranged so that the top portion 23 of the aperture is substantially tangent to the underside 24 of the link 20. The opposite edge of the link 20 has depending ear portions 25 positioned on said link to straddle the curled portion 21 of an adjacent link. The ear portions 25 are formed of the metal of the link as shown in Fig. 4 where the link blank is shown prior to the forming operation which will move the ears 26 and 26' so that they are transverse to the plane of the link. The metal of the link 20 is shown as being pierced at 28 to accommodate the connecting means; in subsequent steps these portions will be worked as aforesaid to form the ear portions 25. Also, the tongue portion 27 is shown blanked out in Fig. 4; in subsequent forming operations this tongue portion will be worked so as to form the curled extension 21. The apertures 28 are disposed in the blank so that when the ears 26 and 26' are worked downwardly, the top of these apertures are tangent to the underside of the links the same as the top of the aperture in the curled portion 21. It has been found that such an arrangement tends to preclude upward movement of the ear and curled portions when the chain strand is loaded. This is by virtue of the fact that the moment arm is reduced, i. e., the centers 29 of the connecting medium are more nearly in line with the plane of the links 20. It has been further found that the foregoing arrangement materially increases the strength and life of the chain strand. Further, by tending to preclude the upward movement of said ears and curled portions the continuous planar surface of the chain strand is preserved, thus preventing tipping and spilling of containers being processed.

The interfitted links are connected by means of a pintle 30 which is press fitted into ear portions 25. However, the pintle has a free fit within the aperture of the curled portion 21. The

holes 28 are accordingly slightly smaller than the apertures 22. The pin is finally secured to the ear portion by peening over its ends.

On each side of the curled extension 21 the recesses 31 are provided to accommodate the ear portions 25. The recesses are deeper than would be necessary for straight runs since it has been found that the additional clearance is required when the chain strand articulates over the driving sprockets.

The entire underside portion of the chain joint, i. e., the curled portion and the embracing ear portions, forms that part of the chain coming in contact with the sprockets which impart movement to the conveyer. This feature assures less unit bearing pressure on the sprocket teeth and the entire length of the joint absorbs the load of force. There is substantially no load on the pintle 30 as the chain belt articulates over the sprocket; this feature further makes for longer life of the chain. Sprocket 31', illustrated in Figs. 1 and 2, has transverse grooves 32 arranged to confine both the ears and the curled portion making up the pintle, and the ears 25 are shaped to extend into the sprocket grooves without interference on either their forward or trailing edges.

The invention is of simple structure and is capable of economical production by punching and forming means; also, the scrap loss in these operations is at a minimum, for it is evident that very little metal is wasted.

It has been found that the improved structure of this link increases the yield strength of "flat top" links by as much as thirty per cent over links having conventional curled, interfitting knuckles. Further the useful life of this type of chain is materially increased over present known types by reason of its novel features of structure.

The invention having been described, what is claimed is:

In a conveyer chain, a series of aligned plate-like sheet metal links forming a substantially continuous planar supporting surface, the adjacent edges of adjoining links having integral, interfitting portions constituting parts of articulate joints between the links, the first of said interfitting portions comprising a pair of ears bent down from one of the adjoining links and spaced apart to receive the second inter-fitting portion, each of said ears having flat side faces lying in planes perpendicular to the axis of the articulate joint and an aperture of continuous perimeter located centrally of the ear; the second interfitting portion comprising a curl of the metal of the other adjoining link having a cylindrical opening of substantially the same diameter as the apertures in the ears and coaxial therewith; a pin extending through and joining said interfitting portions; the combined axial length of said ears along said pin being substantially less than the axial length of said curl along the pin.

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The following references are of record in the file of this patent:

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