

United States Patent

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[56]

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ABSTRACT: A top plate assembly is secured to a roller chain having spaced pin and roller links interconnected by pivots. The assembly includes a rectangular locator block positioned between the spaced link plates having a width that is approximately equal to the space between the roller link plates and a length that is approximately equal to the space between the pin link plates. Pins transverse the space between two opposed link plates and are secured thereto. Each pin is engaged with a groove located along the block's length or width depending upon the block's position between the link plates. The upper surface of each positioned block is proximate the upper edge of the chain and is fused to a flat article carrying plate that defines a segment of an article carrying surface along the chain.

[54] **TOP PLATE ASSEMBLY FOR CONVEYOR CHAIN**
3 Claims, 5 Drawing Figs.

[52]	U.S. Cl.....	198/195, 198/189
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[51] Int. Cl.....B65g 15/30,
B65a 17/00

[50] **Field of Search**..... 198/189(MR), 195

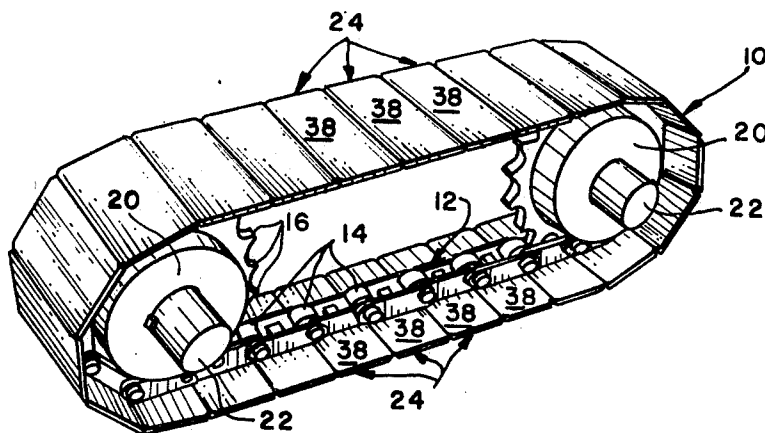


FIG. 1

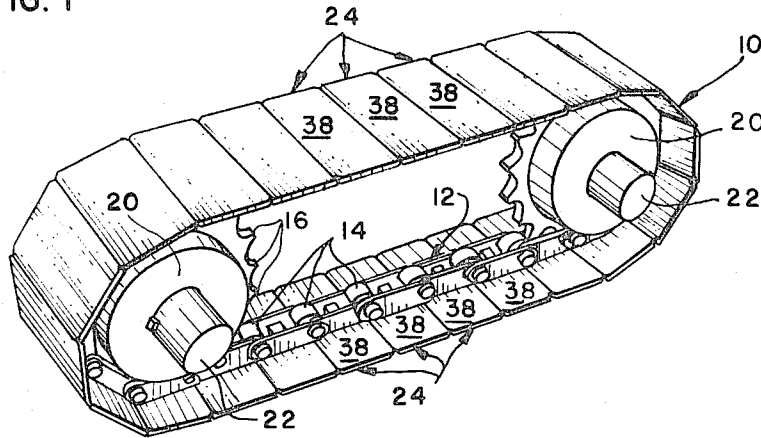


FIG. 2

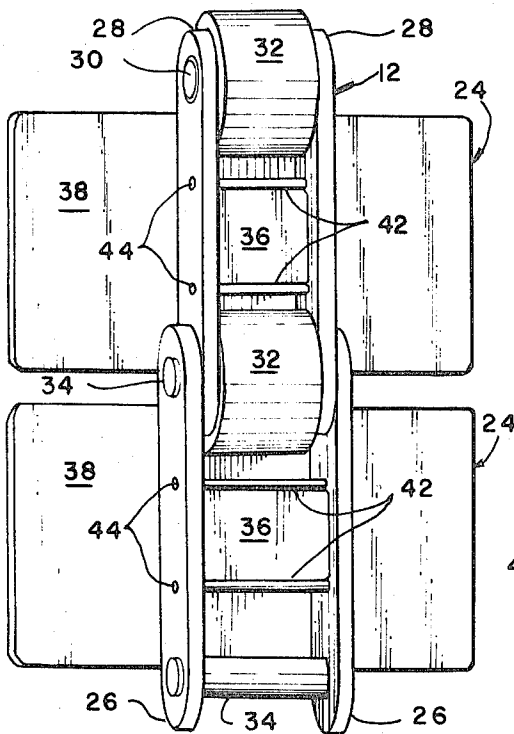


FIG. 3

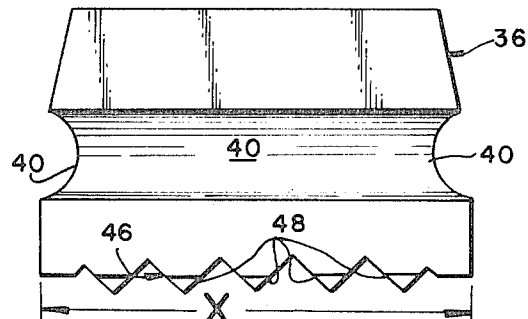


FIG. 4

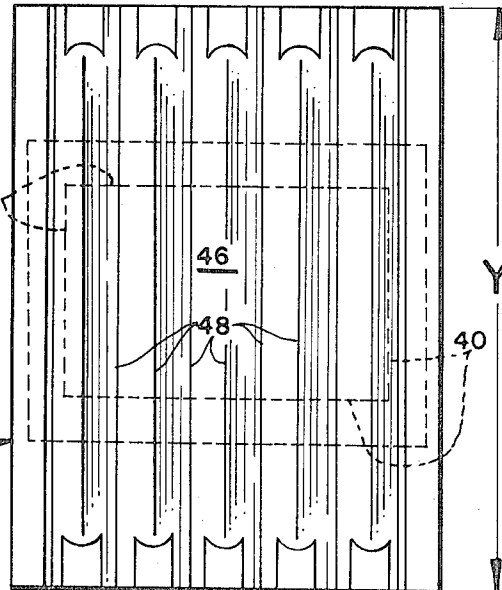
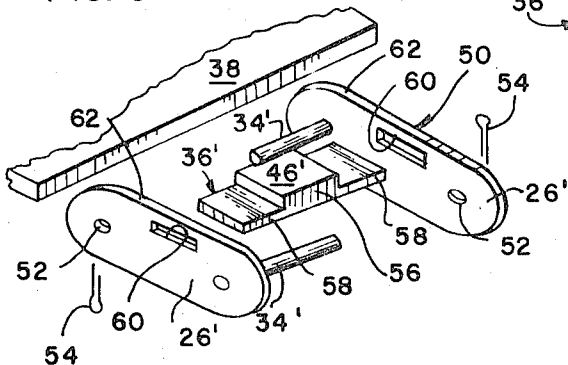


FIG. 5



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TOP PLATE ASSEMBLY FOR CONVEYOR CHAIN

This invention relates to conveyors, particularly, link type chain conveyors having nonmetallic flat top plates.

It is often desirable in material handling conveyors to combine the high tensile strength properties of steel chain with the slickness, corrosion resistant, and nonmarking characteristics of top plates made from synthetic compounds. Generally, these top plates are one piece and are injection molded from nylon or DELRIN. Each plate is then riveted, pinned or snapped on to a section of a steel chain. These known top plate designs require new and costly molds for each size change and design variation.

This invention may be utilized to provide inexpensive and easily constructed top plate assemblies of various sizes and shapes. A flat plate may be attached angularly or laterally to a molded part secured to a link-type chain. Each plate may be secured to one or more chains as desired. The molded parts can be rectangular blocks made to fit in one position between the roller link plates of a roller-type chain and in another position between the pin link plates of the chain. These molded parts can be suitably attached to the links by pins or tabs. The flat plates may be inexpensively extruded in extended lengths and cut to the prescribed size. Attachment of the flat plates to the molded parts may be by ultrasonic welding or cementing.

The foregoing and objects and advantages of this invention will become apparent from the following description of the accompanying drawings wherein:

FIG. 1 is a perspective view illustrating an endless conveyor embodying features of this invention;

FIG. 2 is a bottom perspective view illustrating a section of the conveyor shown in FIG. 1.

FIG. 3 is an enlarged side view illustrating a locator block;

FIG. 4 is a top view of the locator block illustrated in FIG. 3; and

FIG. 5 is an exploded view of a section of a conveyor illustrating another embodiment of the invention.

Referring now to the embodiment shown in FIGS. 1—4 of the drawings, FIG. 1 illustrates an endless conveyor 10 comprising a roller type chain 12 having rollers 14 that are engageable with teeth 16 of sprocket wheels 20. The sprocket wheels 20 are mounted on shafts 22 whose axes lie in a direction normal to the conveyor's line of travel. Top plate assemblies 24 are secured to the chain 12 and are movable around the sprocket wheels 20 in a known article conveying manner. Plates (not shown) may be mounted under the chain 12 along the article carrying path to support the conveyor during article conveyance.

As shown in FIG. 2, a section of chain 12 may comprise spaced, alternate pin and roller link plates 26 and 28. Each pair of roller link plates 28 may be interconnected at their ends by bushings 30. Rollers 32 may be rotatably mounted on each bushing 30. Pins 34 may interconnect the ends of the pin link plates 26 and may be rotatably engaged in the bushings 30.

Each top plate assembly 24, as shown in FIGS. 2—4, may comprise a locator block 36 and an article plate 38. The locator block 36 may be molded from a synthetic compound such as nylon or polyethylene and may have a width x approximately equal to the space between two opposed roller link plates 28 and a length y approximately equal to the space between two opposed pin link plates 26. Hollows in the form of parallel circular grooves 40 may appear along the length and width of each locator block 36. Each block 36 may be positioned between a pair of spaced link plates 26 or 28 and secured thereto by pins 42 engaging the respective lateral set grooves 40. These pins may be retained in apertures 44 in the respective link plates. The upper surface 46 of each block 36, as secured, lies proximate the upper side of the chain 12 and may have energy directors in the form of grooves 48 thereon.

An article plate 38 may be cut from an elongated extruded strip in given lengths. These strips may be made from synthetic compound and may have a given width and thickness. Each plate 38 then be secured to the upper surface 46 of a locator block 36 by ultrasonic welding or cementing in any given pat-

tern or placement to form a section of an article conveying surface. It should be noted that these article plates 38 may extend across two or more chains 12 and may be secured to locator blocks 36 on each chain 12.

FIG. 5 illustrates another embodiment of this invention in combination with pin link assembly 50. It is to be understood that this embodiment may also be used with a roller link assembly which may be constructed in a similar manner with parts previously described.

Spaced, opposed pin link plates 26' may have pins 34' secured to one end and aligned with an aperture 52 in the corresponding end of the opposed link plate 26'. These pins 34' may project through bushings 30 secured to roller links previously described and through the aligned apertures 52. Cotter pins 54 may be used to secure the pins 34' in the apertures 52.

A locator block 36' made of a synthetic compound is illustrated having a center locator section 56 and opposed ears 58. Each ear 58 may be projected through a slot 60 proximate the upper edge 62 of each pin link plate 26'. The upper surface 46' of each center section 56 may be proximate the upper edges 62 of the link plates 26' are assembled. As previously described, an article plate 38 may be secured to each upper surface 46'.

The locator blocks 36' as described, may be extruded in given lengths along the locator section 56 and cut to the proper size so that the ears 58 fit into the slots 60. The center section 56 may be designed and molded to fit between a pair of spaced pin link plates 26' or a pair of spaced roller link plates (not shown).

If desired, the article plates may be made in double widths to cover both a pin link and a roller link assembly. Each double width plate may be secured to a locator block 36 or 36' attached to either a pin link or roller link assembly.

Repair or replacement of the top plate assembly 24 in FIG. 5 may be quickly and easily made by removing the cotter pins 54, separating the pin link plates 26', removing the ears 58 from the slots 60 and inserting a new locator block 36'. An article plate 38 may be secured to the locator block 36' before or after assembly. In the embodiment illustrated in FIGS. 1—4, the top plate assemblies 24 may be disengaged from the chain 12 by removing the pins 42.

It is to be understood that the foregoing description and the accompanying drawings have been given only by way of illustration and example. It is also to be understood that changes in form of the elements, rearrangement of parts, and substitution of equivalent elements, which will be obvious to those skilled in the art, are contemplated as within the scope of the present invention.

I claim:

1. In a top plate assembly for a link chain having spaced opposed pin link plates and spaced opposed roller link plates connected to the pin link plates by pivots: the combination of locator blocks positioned between said spaced opposed link plates, each of said locator blocks having a first pair of sides that are spaced apart a distance that is approximately equal to the distance between said spaced pin link plates, and a second pair of sides that are spaced apart a distance that is approximately equal to the distance between said spaced roller link plates, said first pair of sides on certain locator blocks being located in the correspondingly dimensioned space between spaced pin link plates and said second pair of sides on other locator blocks being located in the correspondingly dimensioned space between spaced roller link plates, means securing said locator blocks to related spaced opposed link plates, and article conveying plates each secured to one of the locator blocks proximate an edge of said link chain to form an article conveying surface.

2. The combination set out in claim 1 wherein each of said locator blocks has a hollow along each of said sides, and said means securing said locator blocks comprises pins secured at their ends to spaced opposed link plates, each of said pins being mateably engaged with one of said hollows.

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3. In a top plate assembly for a link chain having alternate pairs of spaced opposed pin link plates and spaced opposed roller link plates interconnected at their ends by pivots: the combination of locator blocks positioned between spaced opposed link plates, and aperture in each of said spaced opposed

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link plates bordering a locator block, ears on said locator blocks projecting outwardly into said apertures, and an article conveying plate secured to each locator block proximate an edge of said link chain to form an article conveying surface.

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