

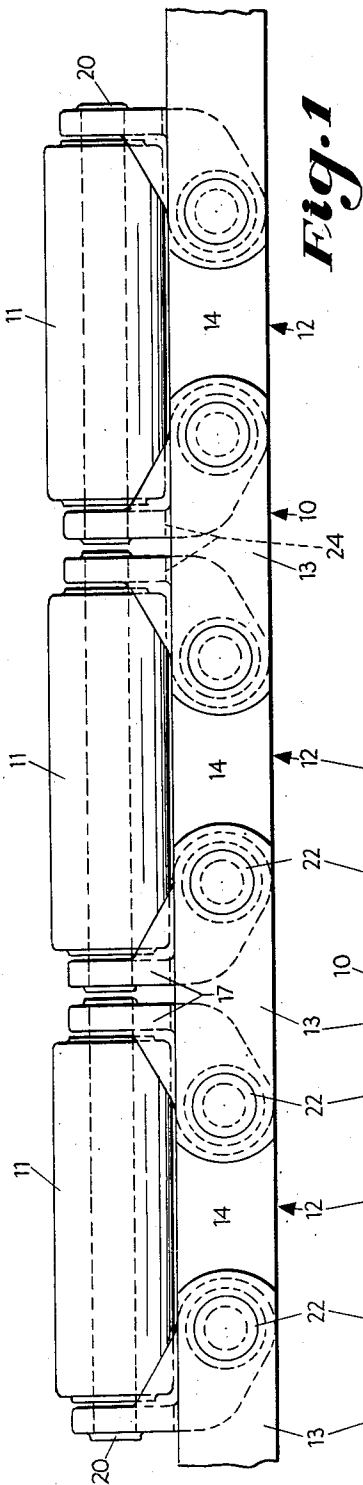
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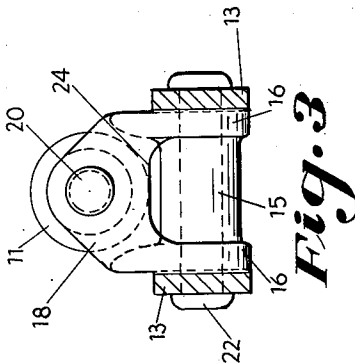
2,554,038

CHAIN HAVING ROLLERS FORMING ITS CONVEYING SURFACE

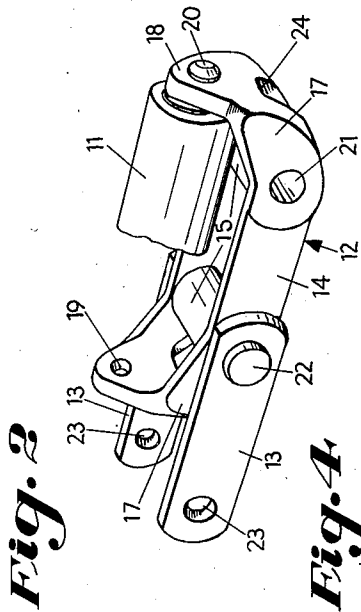
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*Fig. 1*



*Fig. 3*



*Fig. 4*

*Fig. 2*

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## UNITED STATES PATENT OFFICE

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CHAIN HAVING ROLLERS FORMING ITS  
CONVEYING SURFACE

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a corporation of Ohio

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8 Claims. (Cl. 198-183)

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My invention relates to conveyer chains and more particularly to conveyer chains and parts thereof which carry rollers for facilitating the removal of objects such as boards, boxes and the like conveyed thereon sidewardly with respect to the direction of travel of the chains.

One object of my invention is to provide improved chain construction of the type set forth above.

Another object of my invention is to provide improved link structure for chain of the type set forth above.

Another object of my invention is to provide an improved one-piece body adapted to carry an object supporting roller on a chain.

Still another object of my invention is to provide an improved chain construction formed of interconnected adjacent chain units each including a chain link body, frame or block having side straps pivotally connected to one end thereof for connecting the chain link block to a block of the next adjacent unit, the chain blocks carrying rollers the ends of which lie closely adjacent each other when the chain is assembled and supported upon a flat surface.

Other objects of my invention will appear hereinafter the novel features and combinations being set forth in the appended claims.

In the accompanying drawings;

Fig. 1 is a side view of a portion of a conveyer chain embodying the features of my invention;

Fig. 2 is a view in plan of a portion of the chain seen in Fig. 1;

Fig. 3 is a view looking at an end of the chain seen in Fig. 1; and

Fig. 4 is a view in perspective, but on a smaller scale, showing a unit of chain which is comprised of a link, body, frame or block that supports a roller and two side straps or connector members that connect the roller carrying link, body, frame or block with an adjacent link, body, frame or block of another similar unit of chain; a portion of the roller being broken away to show details of the roller supporting link, body, frame or block.

Referring first to Figs. 1 and 2 of the drawings there are shown fragments or portions of a conveyer chain 10 which includes the features of my invention. The fragments of chain shown in these figures constitute but a part of an endless conveyer chain which is adapted to operate over head and foot sprockets of a conveyer, not shown. The chain 10 carries a plurality of rollers 11 the axes of which extend longitudinally or in the direction of travel of the chain 10.

One example of the use of my improved chain is in a sorting conveyer from which sawed lumber or boards are sorted in a saw mill wherein the rollers 11 function to facilitate the removal

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of the sawed lumber or boards which rest upon the upper or conveying surface of the rollers by permitting them to be moved laterally, that is, transversely of the direction of travel of the conveyer chains.

My improved chain 10 includes a plurality of symmetrical one piece chain links, bodies, frames or blocks 12 each of which supports a roller 11. The chain links, bodies, frames or blocks are interconnected by pairs of side straps or connector members 13 and actually the chain is built up of units each of which includes one of the chain links, bodies, frames or blocks 12 and a pair of side straps or connector members 13. One of these units is seen in perspective in Fig. 4 of the drawings.

Referring particularly to Fig. 4 of the drawings, the chain link, body, frame or block 12 is shown as being formed of a casting, although if desired it may be fabricated of individual members welded together. The block 12 carries a roller 11 and includes a pair of parallel spaced generally U-shaped side bar portions 14 which are interconnected and spaced apart by a pair of identical spaced integral knuckles 15 at opposite ends of said side bars. The bottoms of the side bars 14 form flat bases or bearing surfaces 16 which are adapted to ride upon a plane formed by a flat surface of a conveyer bed, trough or the like, not shown. Each of the side bars 14 has upwardly extending leg portions 17 at opposite ends thereof which make acute angles therewith and extend beyond the knuckles 15. Thus the side bar portions 14, as seen in Figs. 1 and 4, are upright generally U-shaped portions of the chain link, body, frame or block 12.

The ends of each leg 17 of the generally upright U-shaped side bar portions fair into generally inverted U-shaped upright end cross brackets 18 which integrally connect adjacent legs 17 of the generally U-shaped side bar portions 14 and which extend substantially at right angles with respect to and lie at the same side of the plane on which the spaced side bar portions 14 lie. The knuckles 15 which interconnect the spaced U-shaped side bar portions 14 are spaced to interconnect the U-shaped side bar portions 14 at their ends and they are so spaced with respect to each other that a tooth of a sprocket, not shown, may interfit between the knuckles and the side bar portions 14.

From the foregoing it will be seen that the chain link, body, frame or block when viewed in plan is substantially rectangular and is comprised of two similar spaced generally upright U-shaped side portions, the adjacent upwardly extending legs of each of which are interconnected by generally inverted upright U-shaped cross brackets, and that the spaced U-shaped side bar portions are interconnected at opposite

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ends by a pair of spaced knuckles adapted to interfit with a tooth of a sprocket.

The inverted U-shaped cross brackets 18 are drilled as at 19 to provide axially aligned openings through which a roller supporting shaft 20 extending longitudinally of the body 12 or in the direction of travel of the chain is received. Preferably the ends of shaft 20 are swedged or riveted to secure the shaft against endwise and rotational movement in the cross bracket portions 18 of the chain block. A roller 11 is carried between the inverted U-shaped cross bracket portions 18 by the shaft 20 with the body of the roller 11 being supported above the knuckles 15 of the chain block and extending at each end an equal distance endwardly beyond each of the knuckles 15. The knuckles 15 are provided with central bores 21 each of which is adapted to receive a cross pin 22 the ends of which extend through the U-shaped side bar portions 14 of the chain block and through openings 23 formed adjacent the ends of the cooperating side straps or connector members 13.

The side straps or connector members 13 are symmetrical, that is, each of them is rounded at each of its ends and is provided with an opening 23 therein which is adapted to be received by a pin 22. The ends of the pins 22 are riveted or swedged to secure the side straps or connector members 13 thereon against rotation, but if desired other means associated with the ends of pins 22 may be employed for this purpose. The pins 22 being secured to the side strap or connector members 13 are in effect a part of them, and they rotate in and co-operate with the central bores 21 in knuckles 15 to form pivots or bearings permitting rotation of the blocks 12 and side bars 13 with respect to each other about the axes of pins 22.

As best seen in Fig. 1 of the drawings, the leg sections 17 of the side portions 14 of each chain block 12 extend longitudinally of the chain 10 and beyond the adjacent knuckle 15 of the block 12 of which the leg 17 and knuckle 15 form parts. It will also be seen that the inverted U-shaped cross brackets 18 lie closely adjacent each other when the chain is assembled and its bearing surfaces 16 are resting upon a flat support whereby adjacent ends of the rollers 11 of adjacent blocks 12 are spaced closely together. It will also be seen that the bottom surface 24 of each of the inverted U-shaped cross brackets 18 lies in a plane which is above the top surfaces of the side strap or connector members 13 and the tops of the bottom sections 14 of the blocks 12, this for the purpose of permitting a tooth of a sprocket to interfit between and co-operate with adjacent knuckles 15 of adjacent chain blocks 12.

In assembling the chain shown in Figs. 1 and 2 of units shown in Fig. 4, the bores or openings 23 in the side straps or connector members 13 are aligned with the central bore 21 in the knuckle 15 of the chain block 12 of another unit and a pin 22 is inserted through the openings 23 and bore 21 and is riveted or swedged to interlock the pin 22 with the side straps 13 thereby forming a portion of chain including two of the units. Obviously by repeating this assembling process a chain of substantially any length may be assembled.

I have previously set forth an illustration of one use of the conveyer chain in connection with lumber mills. It is pointed out that in actual use of the chain in a lumber mill the conveyer in which the chain is used usually includes two or

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more endless roller supporting chains positioned side by side and each of which operates over a flat conveyer bed between head and foot sprockets and that lumber is placed upon the conveyer transversely of the direction of travel of the spaced endless conveyer chains and upon the rollers thereof. The lumber placed upon the conveyers may be of various sizes and as the chain conveys the lumber, men stationed at various points along the length of the conveyer sort and classify the lumber and remove it from the conveyer merely by pulling it upon the rollers 11 sideways or transversely of the direction of travel of the conveyer. It will be seen, of course, that my improved chain may have uses other than in lumber mills such, for example, as in the handling of boxes or objects having flat bottoms.

From the foregoing description it will be apparent that I have provided improved chain structure including chain links, bodies, frames or blocks, each of which is symmetrical and that these one piece symmetrical chain link bodies, frames or blocks are interconnected by simple connector members in the form of flat side straps. It will also be seen that the ends of adjacent roller supporting brackets of adjacent blocks are closely adjacent and face each other and are each spaced an equal distance from a plane intersecting at right angles the plane in which the axes of the connector pins lie and bisecting the distance between the connector pins of the adjacent roller supporting blocks.

Obviously those skilled in the art may make various changes in the details and arrangement of parts without departing from the spirit and scope of the invention as defined by the claims hereto appended and I wish therefore not be restricted to the precise construction herein disclosed.

Having thus described and shown an embodiment of my invention, what I desire to secure by Letters Patent of the United States is:

1. A link for a conveyer chain having a symmetrical one piece body, said body including parallel two spaced side bar portions lying on a plane and interconnecting two spaced cross knuckle portions adapted to interfit with a tooth of a sprocket, said spaced side bar portions extending at each end beyond said spaced cross knuckles and to the same side of said plane at acute angles with respect thereto and the adjacent ends of each thereof fairing into one of a pair of spaced parallel roller supporting end cross bracket portions each forming an end of said body and lying in planes extending substantially at right angles with respect to the plane on which said side bar portions lie and at the same side thereof, a roller shaft extending between said roller supporting bracket portions, and a roller carried by said shaft between said roller supporting portions, the roller lying with its axis extending substantially in the direction of travel of a chain including said link and with said roller lying above said spaced knuckle portions when said side bars are lying on said plane.

2. A conveyer chain including link blocks and side straps interconnecting said link blocks, each of said link blocks being adapted to support a roller upon an axis extending in the direction of travel of the chain and including a symmetrical body having two spaced parallel side bar portions lying on a plane and interconnecting two similar spaced cross knuckle portions adapted to interfit with a tooth of a sprocket, said spaced side bar portions extending at each end beyond said spaced

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cross knuckles and to the same side of said plane at acute angles with respect thereto and the adjacent ends of each thereof fairing into one of a pair of spaced end parallel roller supporting end cross bracket portions each forming an end of said body and lying in a plane extending substantially at right angles with respect to the plane on which said side bar portions lie and at the same side thereof, a roller shaft extending between said roller supporting bracket portions, a roller carried by said shaft between said roller supporting portions, the body of the roller lying with its axis extending substantially in the direction of travel of a chain including said link, and pin means extending through each of said knuckles and at each end through one end of said link block interconnecting side straps.

3. A conveyer chain including link blocks and side straps interconnecting said link blocks, each of said link blocks being adapted to support a roller upon an axis extending in the direction of travel of the chain and including a symmetrical body having two parallel spaced side bar portions lying on a plane and interconnecting two centrally bored cross knuckle portions adapted to interfit with a tooth of a sprocket, a pair of side straps interconnecting adjacent of said link block bodies, one of said straps lying outside each of said side bar portions of said link block bodies, pin means extending through the ends of said side straps and the bores of said knuckle portions, said spaced side bar portions of each of said link block bodies extending at each end beyond said spaced cross knuckle portions and terminating in roller supporting cross bracket portions off-set to the same side of said plane and substantially at right angles thereto whereby a tooth of a sprocket may interfit between the adjacent knuckle portions of the adjacent link block bodies, the roller supporting cross bracket portions of adjacent link blocks lying side by side when said chain is supported upon a flat surface, a roller shaft extending between the roller supporting bracket portions of each link block body, and a roller carried by each of said shafts whereby the ends of said rollers lie closely adjacent each other, travel bodily in a direction along their axes, and material supported thereon may be rolled therefrom at a right angle to their direction of travel.

4. A symmetrical integral one piece chain link body including spaced side bar portions of generally U-shape conformation, a pair of similar spaced knuckle portions interconnecting and spacing said side portions one adjacent each end of said side bar portions, and end connector portions of generally inverted U-shape conformation, each of said inverted U-shaped end connector portions interconnecting adjacent ends of said spaced side portions.

5. A symmetrical chain link including a symmetrical one piece body having spaced parallel side portions of generally U-shape conformation, a pair of identical spaced knuckle portions interconnecting and spacing said side portions,

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and end connector portions of generally inverted U-shape conformation, each of said inverted U-shaped end connector portions interconnecting adjacent ends of said spaced side portions, a shaft means extending between and connected substantially at the top and center of each of said generally inverted U-shaped connector portions, and a roller upon said shaft.

6. A chain link including a symmetrical chain link body having two spaced parallel side bars interconnected by two similar spaced cross knuckles at opposite ends of said side bars and adapted to interfit with a tooth of a sprocket, a pair of similar end cross brackets integrally connected to and above said side bars and at opposite ends thereof, said end brackets being positioned longitudinally outwardly of the adjacent cross knuckles, an elongated roller, and means supporting said roller between said cross brackets with the axis of the roller extending longitudinally of said body and with said roller lying above said spaced cross knuckles when said side bars rest on a horizontal plane, said roller extending longitudinally beyond each of said cross knuckles.

7. A chain link including a symmetrical chain link body having two spaced parallel side bars interconnected by two similar spaced cross knuckles at opposite ends of said side bars and adapted to interfit with a tooth of a sprocket, a pair of similar end cross brackets integrally connected to and above said side bars and at opposite ends thereof, an elongated roller, and means supporting said roller between said cross brackets with the axis of the roller extending longitudinally of said body and with said roller lying above said spaced cross knuckles when said side bars rest on a horizontal plane, said roller extending longitudinally beyond each of said cross knuckles.

8. A chain link including a symmetrical chain link body having two spaced parallel side bars interconnected by two similar spaced cross knuckles at opposite ends of said side bars and adapted to interfit with a tooth of a sprocket, a pair of similar end cross brackets integrally connected to and above said side bars and at opposite ends thereof, an elongated roller, and means supporting said roller between said cross brackets with the axis of the roller extending longitudinally of said body and with said roller lying above said spaced cross knuckles when said side bars rest on a horizontal plane.

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