

April 18, 1961

D. W. KING

2,980,236

CHAINS FOR CONVEYORS

Filed Oct. 16, 1958

2 Sheets-Sheet 1

FIG. 1.

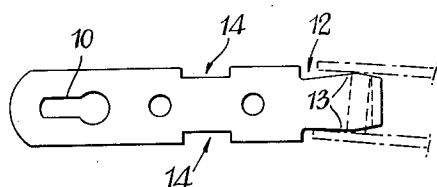
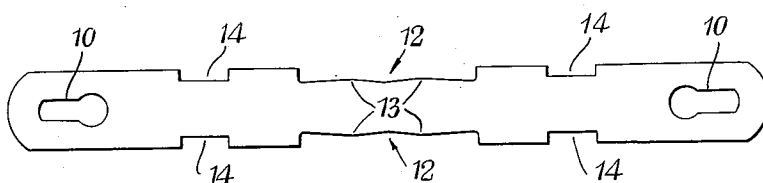


FIG. 2.

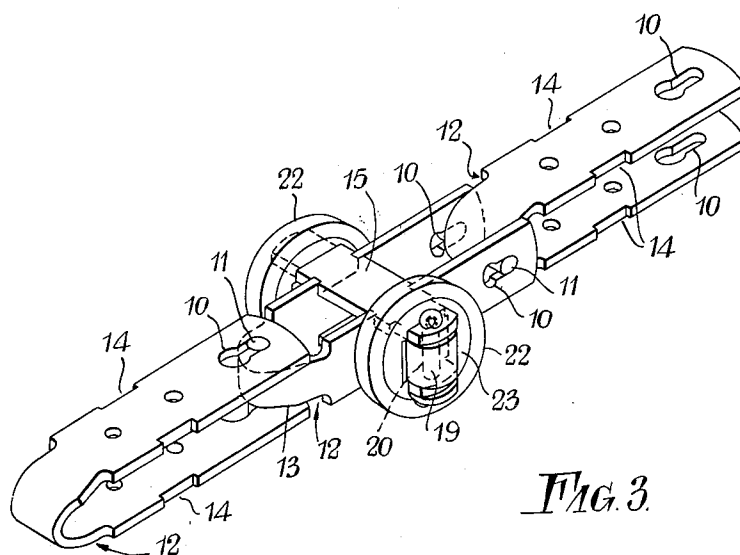


FIG. 3.

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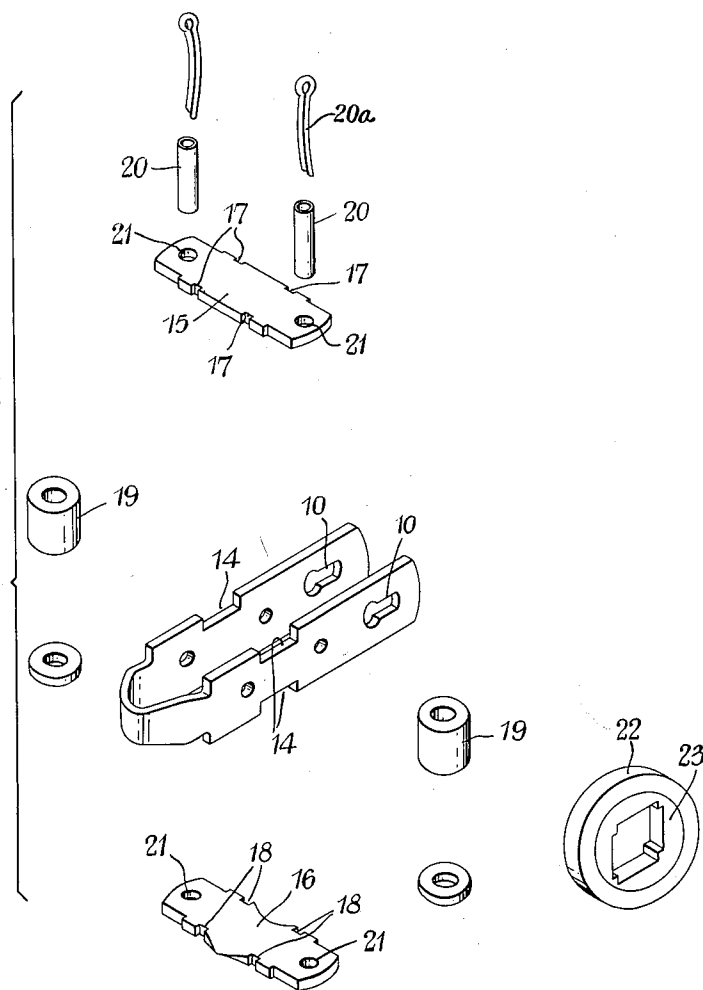
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FIG. 4.



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CHAINS FOR CONVEYORS

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1 Claim. (Cl. 198—189)

This invention relates to chains for use in conveyor systems.

Hitherto it has been common practice in certain types of conveyors to utilise a chain made up of a plurality of links each comprising a metal strip bent to a U or substantially U shape, successive links being turned through 90° relatively to each other and being interconnected by means of connecting pins. With such chains successive connecting pins are of course disposed with their longitudinal axes at right angles to each other so that with the chain extending horizontally every alternate connecting pin will be disposed horizontally transversely to the length of the chain while the intervening alternate pins will be disposed vertically. In chains of the kind indicated it has been proposed as disclosed in the specification of my prior British Patent No. 737,377 to provide in the region of each normally horizontal pin a guide wheel and roller assembly adapted to cooperate with a fixed track of box like or channelled section in which the chain is adapted to run in order to provide rolling support and guidance for said chain both vertically and laterally. Commonly the chain links are so dimensioned that the connecting pins are at 4" pitch and thus, seeing that they are disposed in the region of each alternate pin the guide wheel and roller assemblies are at 8" pitch. While the constructions hitherto in use have in general proved to be satisfactory, difficulties due to the spacing between the wheel and roller assemblies have nevertheless been encountered when a chain is required to travel around a relatively sharp bend or curve.

It is the chief object of the invention to evolve an improved chain link construction which will allow of a reduction in the spacing between the guide wheel or roller assemblies and will thus overcome the difficulties indicated above while at the same time providing a chain capable of taking greater loads than hitherto.

According to the invention there is proposed for use in the construction of a chain a substantially U-shaped link of strip metal the edges of the limbs of said link being recessed to receive and locate supporting elements of a guide wheel and roller assembly while the base portion of the U has its edges recessed and so shaped that on connection of an adjoining link thereto the connecting pin will be capable of a tilting movement. Preferably the supporting element of the guide wheel or roller assembly will comprise a pair of plate like elements which are adapted to be applied at opposite sides of the link to sandwich or clamp the latter therebetween and are so formed that on application to said link they will be locked automatically against endwise or lateral movement.

In order that the said invention may be clearly understood and readily carried into effect the same will now be more fully described with reference to the accompanying drawings in which:

Figure 1 shows a shaped blank from which a chain link is formed,

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Figure 2 shows a finished link in side elevation,

Figure 3 shows three links assembled to form part of a wheel and roller assembly,

Figure 4 is an exploded view showing the components of a wheel and roller assembly.

Referring now to the drawings it will be seen that a link to be employed in the make up of a conveyor chain comprises initially a flat blank of the form shown in Figure 1, such blank having been pressed or otherwise produced from sheet or strip metal of an appropriate gauge and having been subjected to appropriate heat treatment to ensure the required degree of toughness. To produce the finished link the blank shown in Figure 1 is subsequently bent to a substantially U shape. As will be seen from the drawings each limb of a U-shaped link so produced is provided at or adjacent its free end with a slot 10 of substantially keyhole form, such slots being aligned in the finished link and being adapted in known manner to receive a connecting pin 11 (Figure 3) by means of which the link may be coupled to the next adjacent link on assembly of a chain. The blank is also so formed that on completion of the link recessed or cut away portions 12 will be present in the region of the base or closed end of the substantially U-shaped link which will serve to accommodate the outer ends of the limbs of the next adjoining link on assembly of successive links to form a chain as illustrated in Figure 3. Furthermore, the edges 13 defining the recessed or cut away portions 12 will be shaped in the manner illustrated so that when two links are interconnected provision will be made for an additional degree of relative angular movement between the links i.e. in addition to the normal pivotal or swinging movement about the axis of the connecting pin the pin itself will be capable of a tilting movement as indicated in dotted lines in Figure 2.

In addition to the above mentioned slots 10 and recessed portions 12, the limbs of the U-shaped link are also provided in a zone intermediate their ends, with a further cut away portion or recess 14 in each longitudinal edge thereof, such further cut away portions or recesses being hereinafter termed 'trolley recesses.' As will be seen the trolley recesses 14 in each limb of the link are disposed directly opposite to or in alignment with each other and also with the corresponding recess in the other limb of the link.

To provide for the mounting of a guide wheel or roller assembly on a link of the form described above two plates 15 and 16 are provided which are adapted to be applied one to the top and one to the bottom of the link to extend transversely with respect thereto. As will be seen each of the plates 15 and 16 is provided with pairs of notches or recesses 17, 18 respectively the arrangement being such that upon application of the plates 15 and 16 to the link the portions of reduced width defined by the respective notches or recesses 17, 18 will seat accurately within the appropriate trolley recesses 14. By reason of the provision of said notches or recesses on the edges of the plates 15 and 16 and also of the trolley recesses 14 said plates will on application be effectively interlocked with the link to which they are applied in such a manner that, provided said plates are prevented from relatively outward movement, they will be held effectively both against endwise movement in either direction transversely of the link and also against movement lengthwise of the link itself. The plates 15 and 16 are so dimensioned that when in position the end portions thereof will project laterally outwardly by equal amounts from the opposite sides of the link and the arrangement is such that once in position a guide wheel and roller assembly may be mounted on each pair of the aforesaid projecting end portions at each side of the link in the

manner disclosed in the specification of British Patent No. 737,377. The application of the guide wheel and roller assemblies which are disposed one at each side of the link will effectively clamp the plates 15 and 16 in position about the link. As described in the aforesaid prior Patent Specification each guide wheel and roller assembly will comprise a roller 19 rotatable about a sleeve 20 held in position by a pin 20a located in apertures 21 in the projecting end portions of the respective plates 15 and 16 and a second wheel or roller 22 freely rotatable about a stationary hub 23 which is applied over the rotatably projecting end portions of said plates 15, 16 after the first mentioned roller 19 is in place, the arrangement being such that the two wheels or rollers 22, 19 will be free for rotation about axes at right angles to each other.

By virtue of the present invention it will be possible to mount a wheel or roller assembly on each link of the chain if so required and thereby effectively to reduce the pitch of such assemblies along the chain. Of course the pitch or spacing of the guide wheel and roller assemblies along a chain may be varied as required depending upon the loads which the chain will be required to take in use, the path of travel and so forth. Furthermore, by the shaping of the edges of the base part of each U-shaped link to allow for tilting of the connecting pin a more flexible chain will be produced. Finally by virtue of the construction proposed above it will be possible to produce a chain which will be capable of sustaining greater loads than a chain of substantially the same gauge as produced hitherto.

What is claimed is:

A chain structure comprising a U-shaped link including parallel legs having aligned longitudinal edges provided with aligned recesses constituting transverse troughs, plates in said troughs and provided with recesses to accommodate said legs whereby to form a locking arrangement preventing movement of the plates transversely of said legs, the plates being parallel planar members including portions extending outwardly from opposite sides of said link, bearing members on said outwardly extending portions and having openings to accommodate the latter, said portions having openings aligned transversely of said plates, rollers between said plates and having bores aligned with the latter said openings, sleeves on said plates and having openings aligned with said bores, said sleeves being adapted to maintain said bearing members against said legs, pins extending through said sleeves, plates and rollers to lock the same together and to lock said plates to said legs, wheel members on said bearing members and a central portion connecting said legs and including the foremost portion of said link, said central portion tapering towards the foremost portion from a position spaced from the latter and tapering rearwardly of said position.

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