Jan. 20, 1953 S. T. TRANSEAU 2,625,830

ATTACHMENT LINK FOR SPROCKET CHAINS

Filed Sept. 20, 1950 2 SHEETS—SHEET 1

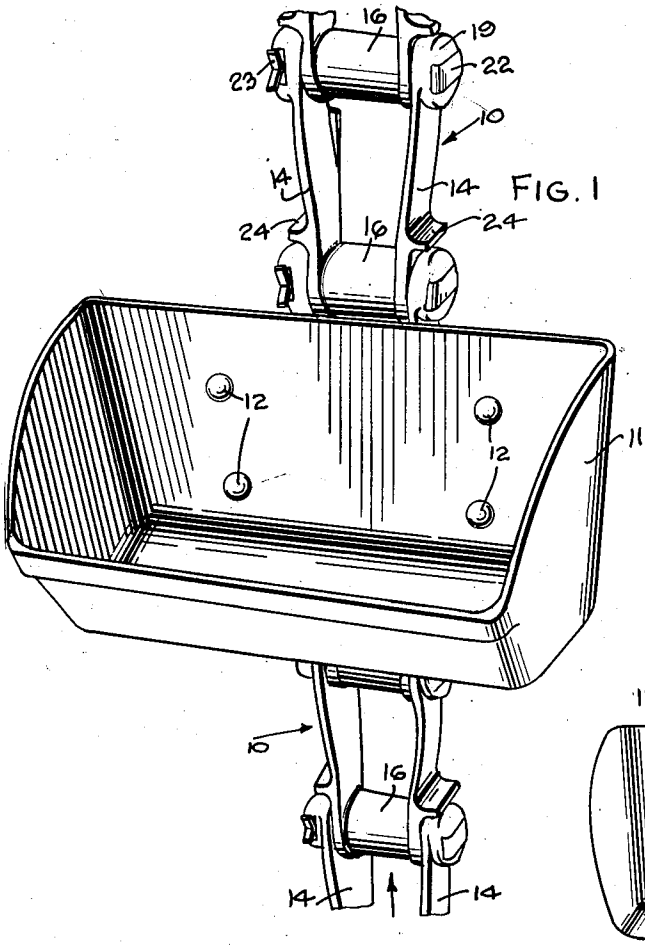
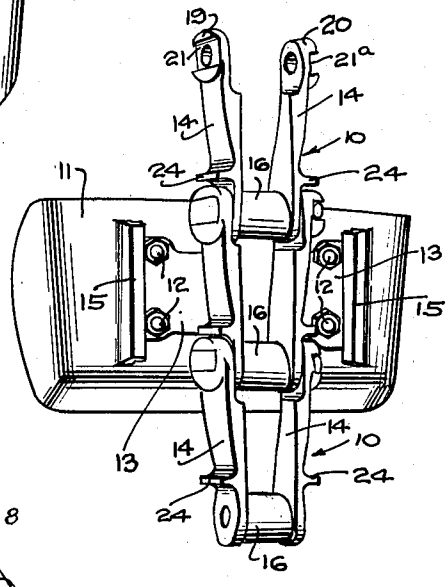


FIG. 1

FIG. 2



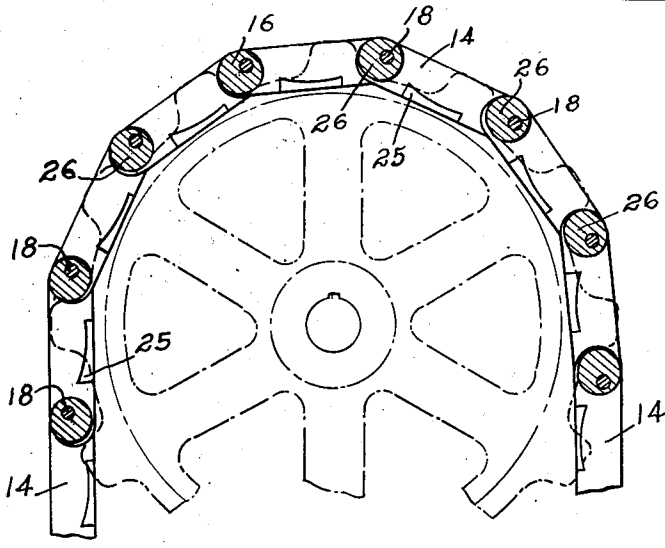


FIG. 8.

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ATTACHMENT LINK FOR SPROCKET CHAINS

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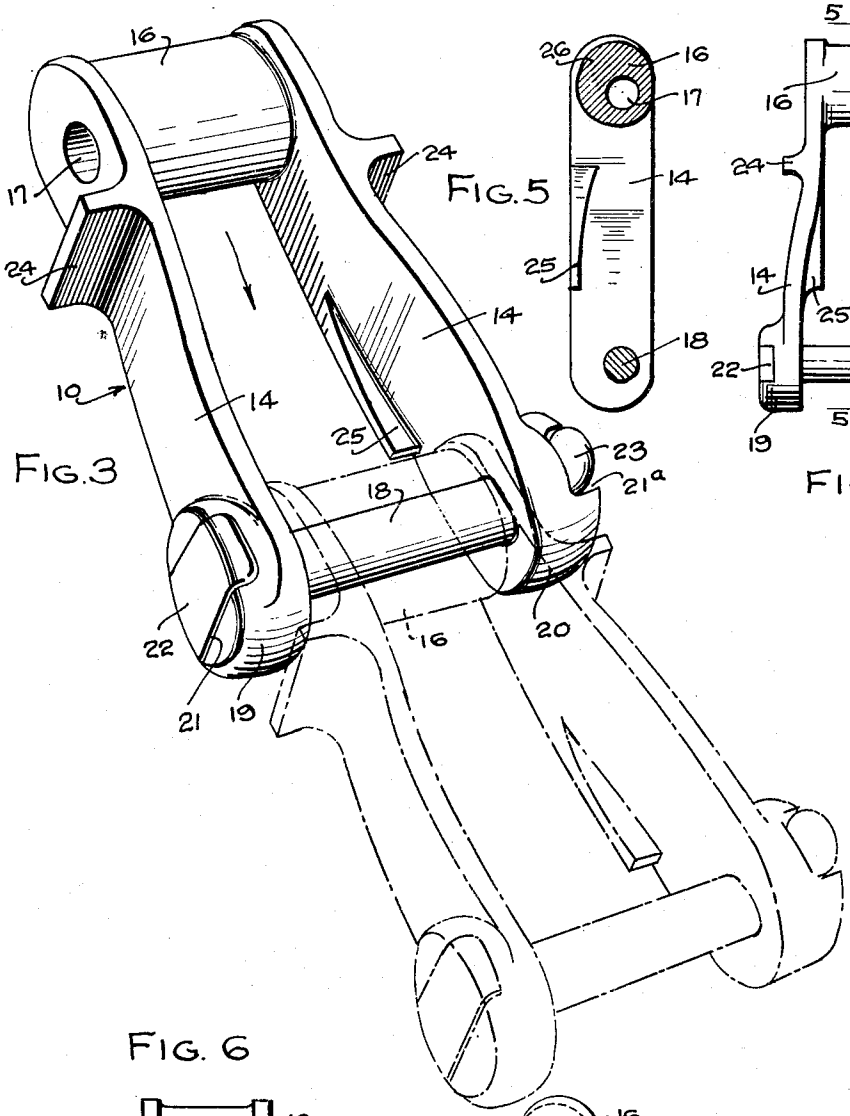


FIG. 3

FIG. 5

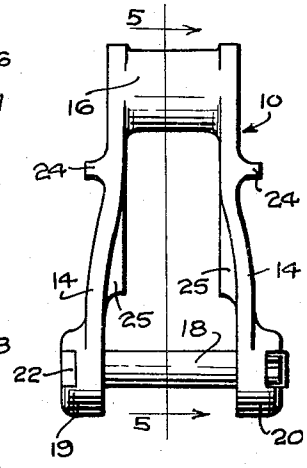


FIG. 4

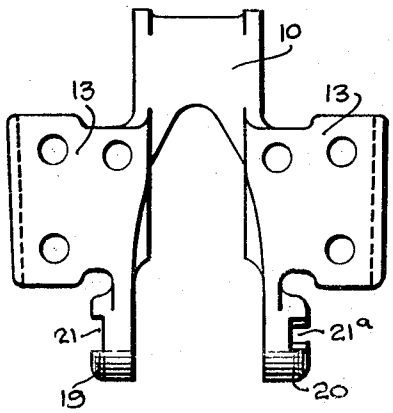


FIG. 6

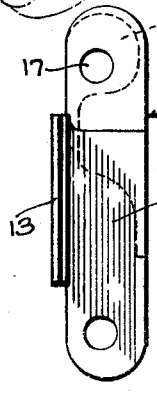


FIG. 7

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ATTACHMENT LINK FOR SPROCKET CHAINS

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3 Claims. (Cl. 74—255)

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The present invention relates generally to chain conveyors of the bucket type and more particularly to an improved construction of conveyor chain link.

In chain conveyors of the articulated link type, heretofore in use and driven generally by sprocket or traction wheel mechanisms, the life of the links is relatively short due to frictional wear not only between the link connecting pin and its bearing barrel, but also between the barrel and the driving wheel. Such wear is aggravated where abrasive material is being conveyed necessitating frequent repair and replacement of parts, which is not only a troublesome factor in operating conditions, but is a cost item of major proportions.

Among the principal objects of the present invention is to provide an improved construction of chain conveyor link wherein the barrel for receiving the link connecting pin is specially reinforced to considerably increase the operating life of the link.

A further object is to provide a chain link wherein the barrel for receiving the link connecting pin is of a design and construction which is self-compensating against wear due to friction, the wall of the barrel being of such increased thickness eccentrically of barrel axis as to provide for maximum thickness in the regions of maximum wear of the barrel.

Still another object is to provide a barrel bearing for a chain link wherein the length of wear upon a bearing due both to pin joint friction and wheel drive friction, as compared to ordinary bearing constructions, is materially increased and cost of repairs and replacements correspondingly reduced.

Other objects and advantages of the present invention will appear more fully hereinafter, it being understood that the present invention consists substantially in the combination, construction, location and relative arrangement of parts, all as will appear more fully hereinafter, as shown in the accompanying drawings and as finally pointed out in the appended claims.

In the accompanying drawings, Figure 1 represents, in perspective, a fragmentary length of a chain bucket conveyor formed of links embodying one form of the present invention;

Figure 2 represents a rear perspective of a chain link with material carrier bucket attached thereto;

Figure 3 represents a perspective of one of the links of a conveyor chain as constructed in accordance with the present invention, while showing in dotted lines the relation of an associated link;

Figure 4 represents on a reduced scale, a front elevation of an illustrative link;

Figure 5 represents a section on line 5—5 of Figure 4;

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Figure 6 represents a rear elevation of a link as modified for mounting of a bucket thereon;

Figure 7 represents a side elevation of the link shown in Figure 6; and

Figure 8 is a partial elevational view showing a chain made up of the links of the present invention in working engagement with a drive wheel, the latter being shown in phantom and the chain links being shown in longitudinal section.

Referring to the drawings wherein a portion of the length of a bucket conveyor or bucket elevator is shown in Figure 1, it will be observed that such conveyor is made up of a succession of articulated chain links 10, to certain of which material carrying buckets 11, as shown in Figures 1 and 2, are respectively attached in suitably spaced relation. Each bucket 11, in this instance, is anchored in place upon a chain link 10 by bolts 12 passing through anchoring plates 13 preferably formed as integral side extensions of the two side bars 14 of the particular link 10 adapted to receive a bucket. As an added reinforcement for the bucket and link assembly, a pair of undercut rails 15—15 are attached to the bottom of the bucket 11, these rails being so laterally spaced apart as to frictionally receive therein the outer marginal edge portions of the bucket mounting plates 13—13.

Since the present invention relates more particularly to the individual chain links, reference is now made to Figures 3, 4 and 5 wherein a link illustrative of the invention is shown comprising the aforesaid side bars 14 terminating at one end in an integral barrel 16 having a through bore 17 for the reception of the interconnecting pin for the adjacent associated link. Such a pin 18 is shown in Figure 3 for connecting the link 10 with its adjoining link shown in phantom, it being noted that said pin 18 passes through the barrel 16 of one link and through the bifurcated end of the adjoining link. The side bars 14—14 of each bifurcated link respectively terminate in laterally spaced bosses 19 and 20 having axially alined openings for projection therethrough of the shank of the pin 18, these bosses being each of greater thickness than that of the side bars of which they respectively form integral parts.

The boss 19 is formed with a transverse slot or notch 21 in its outer face to receive the complementally shaped head 22 of the pin 18, while the boss 20 is similarly slotted or notched, as at 21^a, to receive a cotter pin 23 which is projected through the free end of the pin 18 to lock the latter in position. Thus, the outer faces of the bosses 19 and 20 are respectively free of projections and protect the head of the pin 18 and its locking cotter pin 23 from wear against abrasion when the chain passes through abrasive material.

To further protect the pin 18 from abrasive

wear, each of the side bars 14—14 of the bifurcated link 10 is provided with an outwardly projecting deflector rib 24, these ribs 24—24 being transversely alined and being operative to function as deflectors to prevent abrasive or other material from being forced into the pin barrel around the pin 18. Also, the inner faces of each side bar 14 is provided with an inwardly presenting rib 25, the free inner edges of these ribs 25—25 being substantially parallel to serve as lateral guides for the sprocket or traction wheel with which the conveyor chain is associated. In addition, these ribs 25—25 serve to reinforce and strengthen the side bars 14—14 of the bifurcated chain link.

For the purpose of increasing the life of a link in a chain of this type and reducing the time for replacing parts worn by friction between the barrel 16 and its pin 18, or between the barrel 16 and the driving wheel for the chain, the wall of each barrel 16 of the link 10 is eccentrically thickened, as at 26, so that while the axis of the bore 17 of the barrel is disposed in the plane of pull of the chain, the barrel of the link is provided with a thickened wall portion in the regions of its maximum wear. Thus, as best shown in Figure 5, the wall of the barrel 16 increases outwardly to a maximum along a line extending radially from the axis of the bore and generally coincident with the line of maximum force applied by the barrel against the pin when the chain is pulled in the direction of the arrow as shown in Figures 1, 2 and 3.

The general contour of the eccentrically thickened wall of the barrel 16 imparts to the latter an ovate section having its major axis disposed along the line of force creating or inducing maximum wear due to friction. Thus, considering the straight line pull upon a link passing through the alined centers of two pins in the same link, it will be observed that the maximum wall thickness of the barrel is at the outer and under side of the pin receiving bore 17 rather than on the inner side thereof, thereby increasing measurably the life of the barrel not only against internal frictional wear thereof by the link connecting pin, but also against external wear thereof by the sprocket or traction wheels with which the chain is associated for driving and guiding the same in its operation. In this connection it is important to note that the thickened wall portions of the chain link barrel are respectively in the regions which are subject directly to the wear-resulting forces of the barrel against the link-connecting pin and the drive wheel, the first of which forces tends to internally wear out the pin-receiving bore 17 of the barrel, while the second of which tends to wear away the external surface of the barrel in the region of its contact with the chain driving and guiding wheels.

It will now be apparent that a complete unitary chain link has been devised wherein a rugged assembly has been attained including provision for increasing the thickness of wear areas so that the life of parts exposed to frictional wear is materially increased and therefore repairs and replacements reduced to a minimum.

It will be understood, of course, that the present invention is susceptible of various changes and modifications which may be made from time to time without departing from the general principles or real spirit of the present invention, and it will be accordingly understood that it is intended to claim the present invention broadly, as well as specifically as indicated by the appended claims.

What is claimed as new and useful is:

1. An endless chain adapted to be trained over a driving wheel comprising a plurality of links joined together in articulated relation by pivot pins extending transversely through opposite ends of each link, the articulated links of the chain being respectively provided with laterally spaced side bars integrally connected at least at one end of each link by a transversely extending wheel-engaging barrel having formed therein an eccentrically disposed bore for receiving one of the pivot pins aforesaid, said pivot-pin-receiving bores in the several links being all thus displaced eccentrically of the axes of the barrels in which they are formed to provide all of said barrels with thickened wall portions, the thickened wall portion of each barrel being restricted substantially to that circumferential quadrant of the barrel wall which forms the trailing portion of the barrel on the wheel-engaging side thereof, said thickened wall portions of the barrels of the several articulated links being disposed with their regions of maximum thickness all similarly oriented with relation to the direction of travel of the chain about the drive wheel.

2. An endless chain adapted to be trained over a driving wheel comprising a plurality of links joined together in articulated relation by pivot pins extending transversely through opposite ends of each link, the articulated links of the chain being respectively provided with laterally spaced side bars integrally connected at least at one end of each link by a transversely extending wheel-engaging barrel having formed therein an eccentrically disposed bore for receiving one of the pivot pins aforesaid, said pivot-pin-receiving bores in the several links being all thus displaced eccentrically of the axes of the barrels in which they are formed to provide all of said barrels with thickened wall portions, the thickened wall portion of each barrel having its region of maximum thickness restricted substantially within that circumferential segment of the barrel wall which is disposed (1) rearwardly of a transverse plane extending diametrically through the pivot-pin-receiving bore of the barrel of a given link at right-angles to a longitudinally extending plane through said given link which is common to the axes of the pivot pins at opposite ends of said given link and (2) upon the wheel-engaging side of said longitudinally extending plane, the several articulated links of the chain being assembled with the thickened wall portions of all of the barrels similarly oriented with respect to the direction of travel of the chain about the drive wheel.

3. In an endless chain as defined in claim 1 wherein said pivot pins of each link are commonly disposed in a longitudinally extending plane which is displaced outwardly from the longitudinal wheel embracing edges of the side bars of the link a distance greater than one-half the width of said side bars.

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