June 16, 1942. L. G. BLEYER 2,286,332

CHAIN LINK ATTACHMENT FOR TRAVELING WATER SCREENS

Filed Feb. 1, 1940 2 Sheets-Sheet 1

FIG. 1.

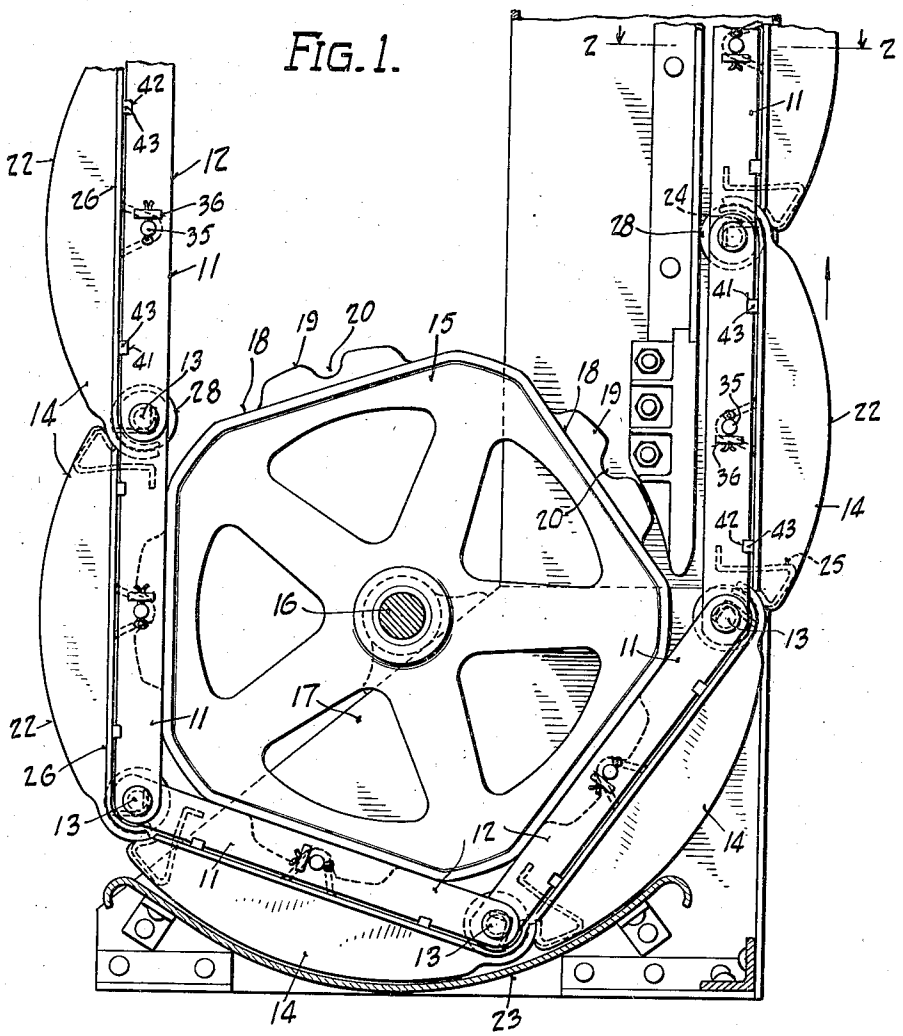
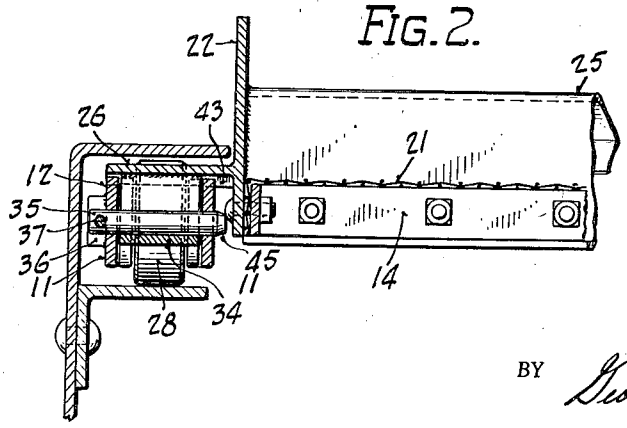


FIG. 2.



Lloyd G. Bleyer
INVENTOR.

BY George A. Evans
ATTORNEY.

June 16, 1942. L. G. BLEYER 2,286,332

CHAIN LINK ATTACHMENT FOR TRAVELING WATER SCREENS

Filed Feb. 1, 1940 2 Sheets-Sheet 2

FIG. 3.

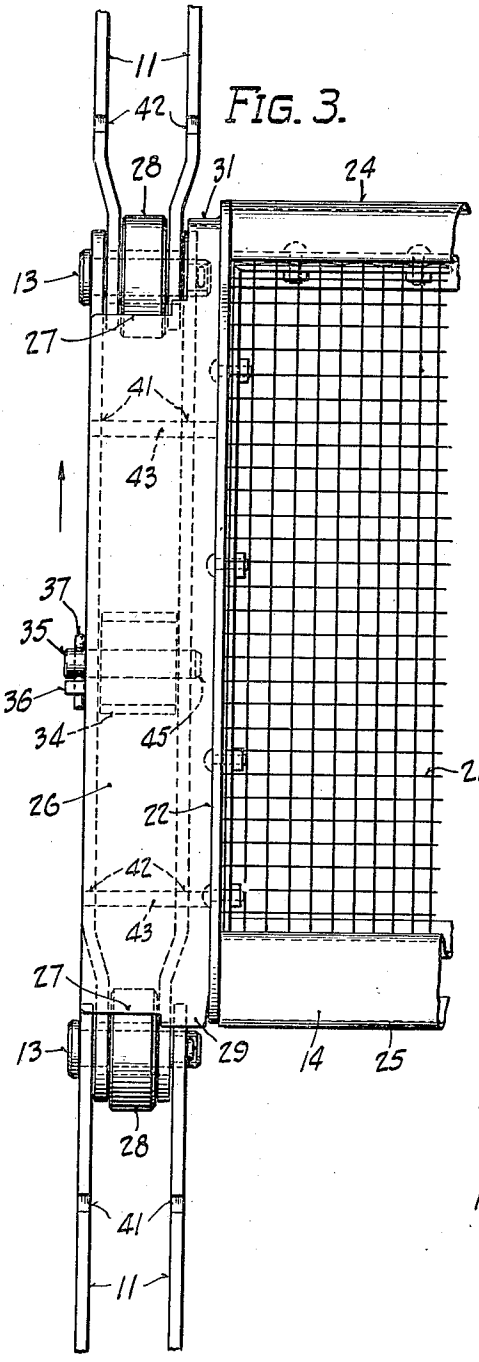
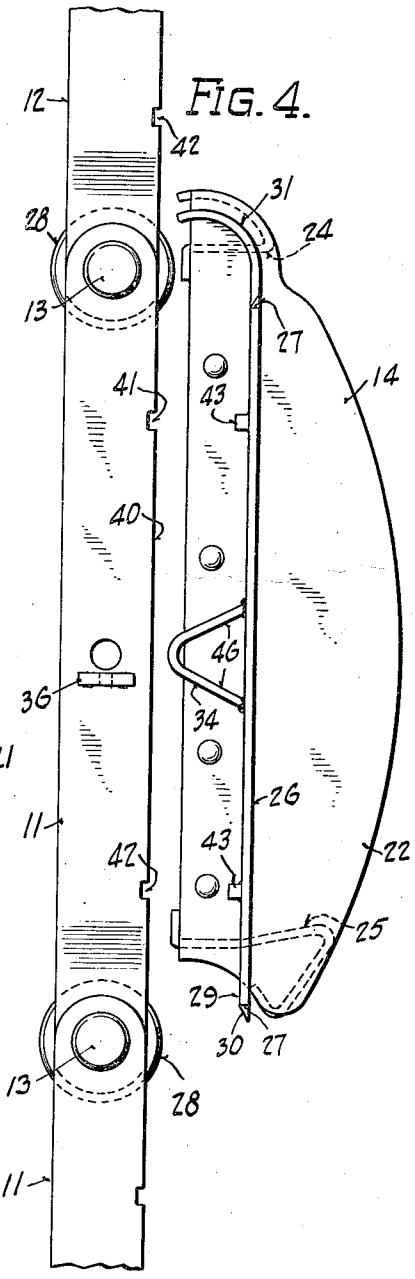


FIG. 4.



Lloyd G. Bleyer
INVENTOR.

BY George A. Evans
ATTORNEY.

Patented June 16, 1942 2,286,332

UNITED STATES PATENT OFFICE

2,286,332

CHAIN LINK ATTACHMENT FOR TRAVELING WATER SCREENS

Lloyd G. Bleyer, Milwaukee, Wis., assignor to Chain Belt Company, Milwaukee, Wis., a corporation of Wisconsin

Application February 1, 1940, Serial No. 316,726

7 Claims. (Cl. 210—175)

This invention relates to chain link attachments such as may be employed with traveling water screens of the type commonly used for screening large quantities of water in industrial establishments and power plants. Such screens are customarily arranged so that the ends of a screen section may each be attached to a link of a strand of endless chain, the chains following parallel paths and being trained around sprockets mounted one above the other in the course of flowing liquid. On vertical runs the opposing horizontal edges of adjacent screens are maintained in close, overlapping contact to provide a trash seal, whereas during articulation of the chain at the head and foot of the conveyor, the screen sections are free to articulate with the chain. An illustration of this type of conveyor is shown in U. S. Letters Patent 1,856,381 issued May 3, 1932, to Francis P. Gary, assignor to Chain Belt Company and also in Letters Patent 1,815,137 issued to me on July 21, 1931.

It is an object of the present invention to provide improved means for attaching conveyor units and particularly screen panels to chain links, whereby the load may be carried equally by each side bar of the chain links, and the elements maintained in resilient tension at all times during the course of chain travel.

Another object of the invention is to provide an improved connection between the chain and each side of a flight or screen basket whereby the baskets may be more easily attached to the chain with assurance that there can be no play in the attachment.

Still another object is to provide an improved means of connecting the screen and chain whereby they may be more readily disassembled in case repairing or inspection is required.

With the above and other objects in view which will appear as the description proceeds, the invention resides in the novel details of construction and combination of parts more fully hereinafter disclosed.

Reference is made to the accompanying drawings in which like characters designate like parts in all views and in which:

Figure 1 is a vertical cross sectional view of the foot section of an endless water screen, parts being broken away;

Figure 2 is a transverse sectional view of one end of a panel and its guide rail taken along the line 2—2 of Figure 1;

Figure 3 is an enlarged elevational view of one end of the screen panel showing the method of attachment to the chain strands, and

Figure 4 is a side view of the chain with a screen panel in position for assembly therewith.

In the drawings, the number 11 designates the side bars of a sprocket chain 12, the links of which are pivotally connected by pins 13 in the well-known manner. For purposes of illustration, the invention is shown in connection with a traveling water screen in which corresponding in width to the length of chain side bars 11, are screen panels or baskets 14, each basket being attached at the end thereof to a link of chain strand.

In Figure 1, the lower portion of the water screen is shown with the screen panels 14 articulated as the chain 12 passes about the foot or driven sprockets 15. Two such sprockets are provided, one at each side of the water passageway, these sprockets being engaged by strands of chain between which lie the screen baskets as previously described. Sprockets 15 are journalled on a cross shaft 16, suitably mounted on the boot 17 of the supporting frame. Each sprocket wheel 15 has a series of straight flat rim portions 18 adapted to be successively engaged by a link of the chain as the wheel is rotated by the travel of the chain. Extending outwardly from the sprocket wheel intermediate each straight flat portion is a shoe 19 notched as at 20 for engagement with the screen frame members as will be more particularly described.

Each screen basket 14 comprises a screen 21, rigidly attached to a frame which includes end plates 22 having a curved outer edge conforming substantially to curvature of transverse seal plate 23 at the lower end of the supporting frame and secured to opposed boots 17. End plates 22 are rigidly attached to transverse members 24 and 25 of the screen frame. Juxtaposed faces between the transverse member 24 of one basket and that of member 25 of the adjacent basket are curved on a radius drawn from the center of the chain pins 13 so as to maintain at all times a seal between screen panels.

Secured to the outer side of the plate 22 is a flange 26 disposed laterally of the chain 12 and extending for the full width of the chain. The ends of flange 26 are notched or cut back as at 27 to accommodate rollers 28 journalled on bushings forming bearings for the chain pins 13 in the usual manner. One end 29 of the flange 26 adjacent the notched portion 27, may be chamfered or beveled as at 30 and the opposite end may be curved as at 31. The portion 30 co-acts with the curved portion 31 of the adjacent

flange to provide an additional seal between the flanges on adjacent baskets.

On the side of the flange **26** adjacent the chain **12** there is a stirrup or saddle **34** disposed medially of the chain length and adapted to be engaged by a pin **35** extending through the side bars **11**. Near one end of the pin **35**, outside the side bars **11**, a hole may be drilled, this hole to be aligned with a hole in a lug **36** mounted in a corresponding position on the outer side bar to accommodate a cotter pin **37** for securing the pin in the side bars. As shown in Figure 1, the bottom of the stirrup **34** has a radius concentric to that of pin **35**, in order that the stirrup and members associated with it, i. e. the basket, may be drawn toward the chain when the pin is inserted. The longitudinal edges **40** of the chain side bars facing the flange **26** are notched as at **41** and **42** to accommodate, by a snug fit, anchor strips **43** secured transversely to the flange on the chain side and in registry with the notches. Strips **43** are slightly thicker than the depth of the notches **41** and **42** in order to space the flange **26** a slight distance from the chain.

From this description it will be seen that the strips **43** and notches **41** and **42** prevent movement of the basket lengthwise of the chain and also space the flange **26** a short distance from the chain, whereas the saddle and pin **35** prevent movement of the basket away from the chain. By providing a pair of strips **43** for each chain link, each strip located a distance on either side of the pin **35**, it is possible to effect a resilient tension between the parts as the saddle is drawn over the pin.

To facilitate driving the pin **35** through the saddle and the aligned holes in the side bars, one end of the pin may be tapered as at **45**. Consequently, as the pin is driven home, the basket is pulled tight with respect to the chain. By spacing the basket from the chain and then tensioning the pin in its saddle, it is possible to eliminate tolerances which were bound to occur under former practices between pins and the holes arranged in the side plates. Such tolerances resulted in play between the chain and the flights and eventually pins were pulled from the chain side bars.

Referring to the driven sprocket **15**, it will be observed that the notches **20** on the lugs **19** are designed to accommodate the stirrups **34** as a result of which the driven force is transmitted from the chain through the stirrup to the sprocket. In order to provide smooth action between the chain and sprocket, the legs **46** of the stirrup **34** approach the flange **26** obliquely, thus providing a driving surface closely resembling that of a cut gear tooth.

To disconnect the chain from the screen basket, it is only necessary to remove the cotter pin **37**, which is at the outer side of the chain, and pull out the pin **35**. Once the basket is removed, it is an easy matter to dis-assemble the chain links.

While the invention has been described in connection with a traveling water screen, it is not intended to be limited to such applications, but may be useful with a variety of conveyors. Accordingly, no limitation is to be implied from the embodiment illustrated herein.

What I claim is:

1. In combination with a chain composed of links having side bars, conveyor flights extending over the longitudinal edges of said side bars, spacer members spacing said flights from the longitudinal edges of said side bars, and resilient tensioning means holding each of said flights in spaced relationship with a chain link.

2. In combination with a chain composed of links having side bars provided with notches crosswise of the longitudinal edges of the side bars, a conveyor flight having projections extending through sets of notches and resilient tensioning means disposed between said projections holding said projections in said notches.

3. In combination with a chain composed of links having side bars notched along one longitudinal edge thereof, a conveyor flight having a member arranged parallel to said side bars and extending over said notches, projections on said members arranged to engage said notches, a stirrup arranged medially of said projections, attached to said flight and a pin extending through said side bars and said stirrup tensionally connecting said flight with said link.

4. In combination with a chain composed of links having side bars, a conveyor fight having a member arranged to bear against the longitudinal edge of each side bar of a chain link, and resilient tensioning means extending between chain side bars intermediate of the link for connecting said flight to said chain.

5. In combination with a chain composed of links having side bars, a conveyor flight overlapping the longitudinal edges of the chain side bars, sets of grooves aligned in the longitudinal edges of the side bars, and tongue members on said flight associated with aligned grooves for maintaining said flight in transverse alignment with respect to a chain link, and resilient-tensioning means maintaining tongue and groove relationship between said flight and said chain link.

6. In combination with a chain composed of links having side bars, a conveyor flight such as a screen basket having a portion overlapping the chain and arranged to bear against the longitudinal edges of the side bars of a link, means for maintaining said flight in transverse alignment with said link, a stirrup projecting from said flight between said side bars, said stirrup having a cross section longitudinally of the chain, resembling that of a gear tooth, whereby said saddle may act as a tooth with the chain sprockets, and a pin extending between said side bars and said stirrup tensionally connecting said flight with said link.

7. The combination of elements specified in claim 4 in which the conveyor members attached to the chain extend the full length of the links and the end edges are bevelled on a radius about the center of the chain pins in order that a seal may be maintained between adjacent flights in the space alongside the chain during articulation thereof.

LLOYD G. BLEYER.