Nov. 19, 1940. W. F. FISCHER 2,222,025

CHAIN

Filed Feb. 8, 1939

Fig. 1.

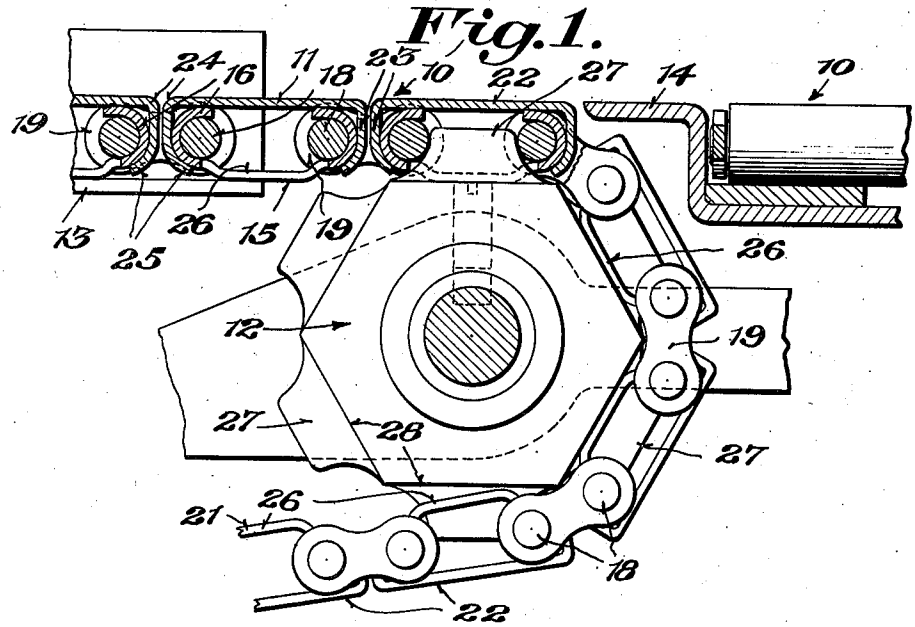


Fig. 2.

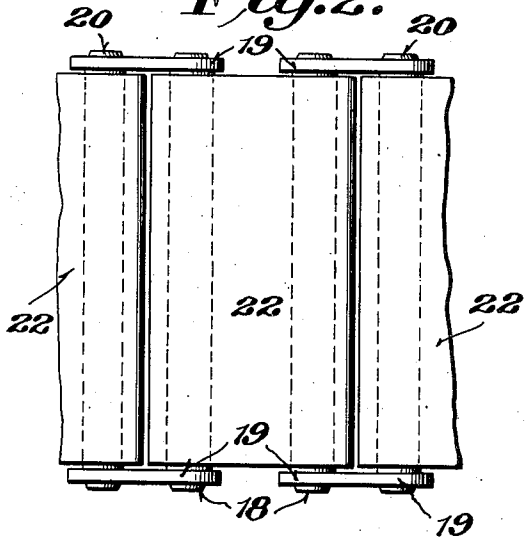


Fig. 3.

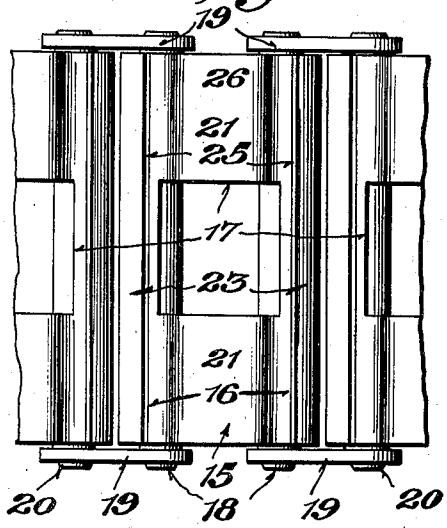
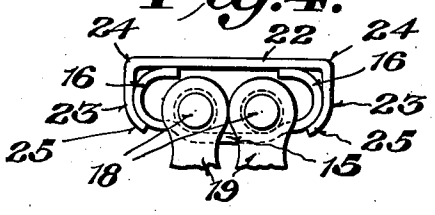


Fig. 4.



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CHAIN

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Application February 8, 1939, Serial No. 255,332

10 Claims. (Cl. 198—189)

This invention relates to improvements in a chain suitable for use as a conveyor of articles or as a driving chain.

It is an object of this invention to provide a conveyor chain having links formed of two parts to define a link casing capable of being readily assembled or disassembled without the use of tools, whenever it is desirable to change the length of the chain or to replace worn parts of the link.

It is a further object of this invention to provide a conveyor chain having its links formed of two parts with ends in telescoped relation so that the ends of the links are formed of two engaging layers of material.

It is a further object of this invention to provide a conveyor chain having links formed of a pair of plates provided with curved end portions substantially coextensive with the width of the plates, and housing hinge pins having a length substantially equal to the width of the plates.

It is a further object of this invention to provide a conveyor chain having links formed of a pair of elongated plates having curved end portions, and with the end portions in nested relation, and to provide means to limit motion of the nested portions in a transverse direction.

It is a further object of this invention to provide a conveyor chain having links formed of two parts in assembled relation to define a link casing, with a first part formed of a material treated to resist wear as it slides along a support, and with a second part forming a cover for the first part to define a link casing therewith.

It is a further object of this invention to provide a link casing comprising a wear plate having end portions in elevated relation to an intermediate dished portion of the plate, and a cover member having lips engaging and bracing the end portions of the wear plate.

Other and further objects and features of this invention will more fully appear from the following description, taken in conjunction with the accompanying drawing.

In the drawing:

In Figure 1 there is shown a portion of a conveyor chain with parts in end section, with parts in plan, with parts in elevation, and with parts broken;

In Figure 2 there is shown a partial top plan view of a conveyor seen from above, and with parts broken;

In Figure 3 there is shown a partial bottom plan view of a conveyor seen from below, and with parts broken; and

In Figure 4 there is shown an end view of a link as the parts thereof are about to be disassembled, and with parts broken.

In Figure 1 there is shown a portion of a conveyor 10 having the links 11 of the present invention, and driven by a sprocket wheel 12 of short radius. The links 11 slide along a suitable platform or support 13 to carry articles to be transferred to a platform 14 positioned adjacent and above the sprocket wheel 12, and it will be evident that although the sprocket wheel is of short radius, the links 11, and the articles on them, are substantially parallel to the platform 14 immediately prior to the point at which the links begin to descend in a vertical direction.

The link 11 is formed of two parts, each part being a rectangular plate having outstanding and inwardly curved lips or end portions, and with the two parts assembled in telescoped relation to define a rectangular casing with open sides, and to provide a housing and a bearing surface for a pair of spaced hinge pins which are each connected externally of the link to hinge pins of the next adjacent links forward and rearward of a certain link, respectively.

The lower part, or wear plate, of the link is a rectangular plate 15 having upstanding and inwardly curved end lips 16, and the plate 15 is provided with a slot 17 through which the tooth of a sprocket wheel may extend to engage a hinge pin 18 seated in the curved lip.

The hinge pin 18 extends beyond the sides of the plate 15 and is coupled at its ends by coupling members 19 to a similar hinge pin 20 to be placed in the next adjacent link. The coupling members 19 may be secured to the pins 18 and 20.

For a certain contemplated duty, the plate 15 is formed of hardened steel, because this plate will slide over spaced angle irons, or the equivalent, which form the platform 13, but it is obvious that other materials than steel may be used to meet the conditions imposed by other duties than that now contemplated.

The slot 17 may be centrally disposed to leave side wings 21 on the lower plate to slide along the support 13.

The upper or article-carrying part of the link is a rectangular plate 22 having depending lips 23 which are inwardly curved at their free ends. All of the lip may be curved, but when the lip 23 has a straight portion merging into a curved free-end portion, the lip provides a shoulder indicated at 24, and against which a similar shoul-

der on the next adjacent link may abut to maintain the chain substantially horizontal should the chain have to bridge a gap in the platform 13. The upper part 22 carries the articles placed on the conveyor, and may be of any suitable material chosen with respect to the materials or articles carried by it.

The plate 22 is slid endwise over the plate 15 into telescoped relation with it, and when the parts are assembled the link is one having end portions formed of two layers of material. The hinge pins 18 are suitably placed in the lower plate 15 so that the upper plate 22 may be slid into place, and this is indicated in Figure 4. It will be obvious that when the chain is in its normal or "straightened-out" condition the end coupling members 19 form effective means to limit side movement of the plates 15 and 22.

The plate 15 may be substantially flat when care is taken to reduce the depth of the lips 23 so that the free ends 25 thereof will not engage the platform, but it is advantageous to dish the plate 15 as indicated at 26 to thereby provide an intermediate bearing surface lower than the ends of the plate and maintain the ends of the plate in spaced relation to the platform 13. When the sprocket wheel 12 has centrally disposed teeth 27 and there is a shoulder 28 on the wheel, dishing of the lower plate facilitates the turning of the links on this shoulder, as is readily apparent upon inspection of Figure 1.

The upper plate 22, when in assembled relation to the lower plate, as shown in Figure 1, obviously forms a tension member bracing the ends of the lower plate, and discouraging any tendency of the ends of the lower plate to straighten out under load conditions.

It is obvious that the plate 15 or the plate 22, or both of them, may be formed of material resilient enough to enable the cover plate 22 to be snapped into engaged relation with the plate 15.

Because the pin 18 has a length equal to the width of the plate 15, it is self-evident that the bearing load on the pin and on the lip will be low compared with what it would be were the pin and lip substantially less than the width of the plate, and that the arrangement disclosed makes for decreased friction, long life, and low power, maintenance, and renewal charges.

The slot 17 provides means through which lubricant may be placed in the casing as the chain travels along its return or unloaded path.

It is obvious that the links may be readily removed from the chain for renewal of parts or to change the length of the chain, and without necessitating the use of tools, for when the centers of the drive sprockets are brought close enough to provide slack in the chain, the hinge pins 18 in the link may be moved to the position indicated generally in Figure 4, and then the cover may be slid endwise and out of engagement with the lower part of the link, to release the lower part for its removal from the chain.

While the link 11 has been described in connection with an endless conveyor belt or driving chain, it is obvious that it may be used as an endless track element without departing from the spirit of the invention.

I am aware that many changes may be made and numerous details of construction varied through a wide range without departing from the principles of this invention, and I, therefore, do not purpose limiting the patent granted hereon otherwise than necessitated by the prior art.

I claim as my invention:

1. In a conveyor chain to be driven by a sprocket wheel, a two-part casing formed of a wear plate having upstanding and inwardly directed curved lips at the opposite ends thereof, and an article-carrying member extending between and engaging said lips, said wear plate being provided with means defining a slot to receive a tooth of a sprocket wheel.

2. In a conveyor chain to be driven by a sprocket wheel, a wear plate having upstanding and inwardly directed curved lips at the opposite ends thereof, said plate being dished in the portion intermediate the ends thereof to provide a wear surface lower than the ends of said plate, said dished portion being provided with means defining a slot to receive a tooth of a sprocket wheel.

3. In a conveyor chain to be driven by a sprocket wheel, a casing comprising a wear plate having upstanding and inwardly directed curved lips at the opposite ends thereof, and an article-carrying plate having depending and inwardly directed curved lips disposed in nested relation to the lips of said wear plate, said wear plate being provided with means defining a slot to receive a tooth of a sprocket wheel.

4. In a conveyor chain to be driven by a sprocket wheel, a casing comprising a wear plate having upstanding lips at the opposite ends thereof, and an article-carrying member having depending lips at the opposite ends thereof and frictionally engaging said upstanding lips in telescoped relation thereto, said wear plate being provided with means defining a slot to receive a tooth of a sprocket wheel.

5. In a conveyor chain, a two-part elongated casing comprising a wear plate having upstanding and inwardly directed curved lips at the opposite ends thereof, a cover member extending between and engaging said lips, a hinge pin in said casing and having its opposite ends extending outwardly of said casing, and coupling members on the opposite ends of said pin, said pin being normally in bearing engagement with the inner curved surface of a lip and with said coupling members then disposed to limit transverse relative movement of said plate and said cover, said pin being arranged for movement longitudinally of said casing to release said plate and said cover for relative transverse movement in disassembling said casing.

6. In a conveyor chain, a two-part elongated casing comprising a wear plate having upstanding lips at opposite ends thereof, a cover member extending between and slidably engaging said lips, a hinge pin in said casing and normally in bearing engagement with a lip, and means on said pin normally disposed to limit relative transverse movement of said cover and said plate, said pin being arranged movable longitudinally of said casing to release said cover and said plate for relative transverse movement in disassembling said casing.

7. In a conveyor chain, a wear plate having upstanding and inwardly curved lips at opposite ends thereof and having a dished portion intermediate the ends, and means forming a brace for said lips, said means comprising a cover plate having depending inwardly curved lips at opposite ends thereof, said cover being disposed with its lips in overlying engagement with the lips of said wear plate.

8. In a conveyor chain, a two-part elongated casing comprising a first plate having curved lips at opposite ends thereof, and a second plate having resilient curved lips at opposite ends thereof and disposed resiliently engaging the curved lips of said first plate and in telescoped relation thereto, and with the curved lips of one plate disposed exteriorly of the curved lips of the other plate.

9. In a conveyor chain, a two-part elongated casing formed of a pair of spaced opposed plates each having curved lips of resilient material at opposite ends thereof and with the curved ends of the opposed plates disposed connecting the plates in telescoped relation, and with the curved lips of one plate disposed exteriorly of the curved lips of the other plate.

10. In a conveyor chain to be driven by a sprocket wheel, a plurality of two-part casings, each casing being formed of an elongated wear plate having upstanding lips at the opposite ends thereof and being provided with a slot to receive a tooth of a sprocket wheel, and an elongated article-carrying member having depending lips at the opposite ends thereof and frictionally engaging said upstanding lips, coupling means connecting said casings, the opposite ends of said article-carrying members being shaped and arranged cooperable with said coupling means to define opposed abutting surfaces adapted to maintain said casings in aligned and substantially horizontal relation when said casings are disposed extending unsupported.

WALDO F. FISCHER.