Jan. 11, 1949. C. J. FORBES 2,458,935

STRADDLE LINK CONNECTOR

Filed Aug. 22, 1947

FIG. 1

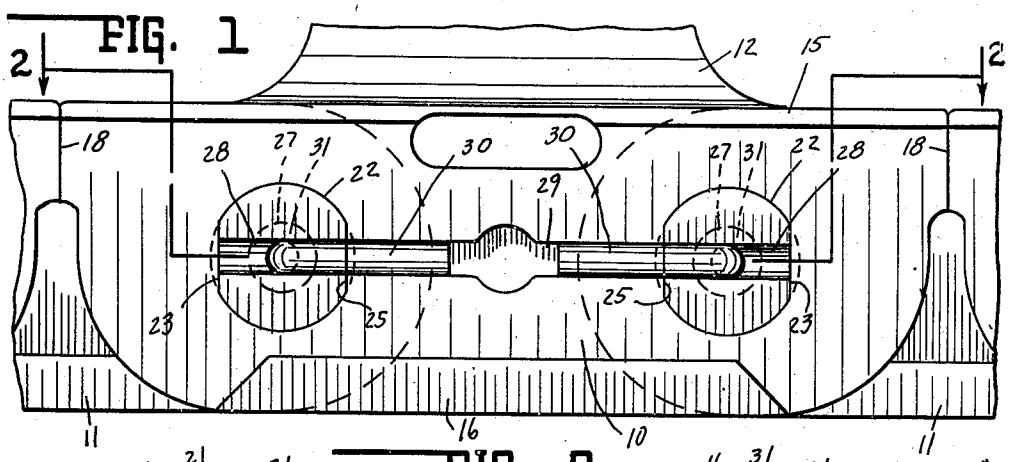


FIG. 2

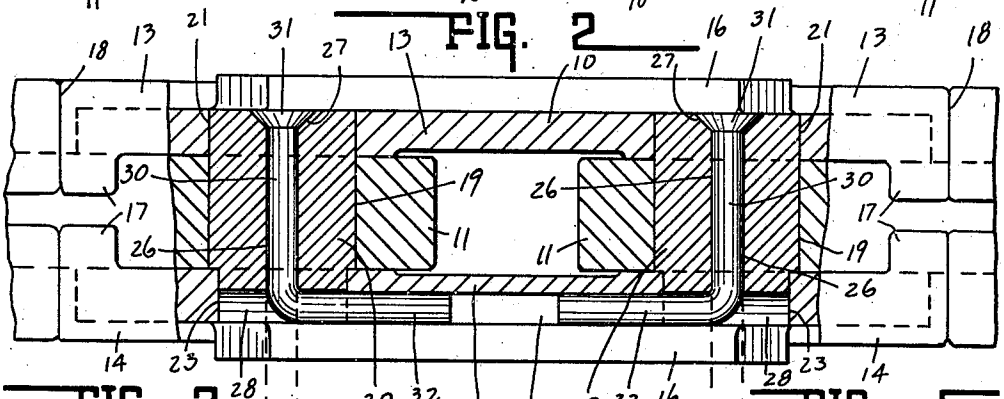


FIG. 3

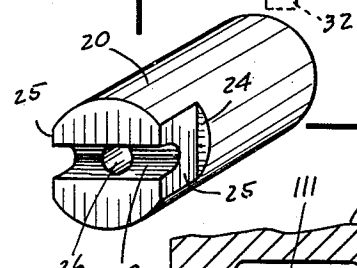


FIG. 4

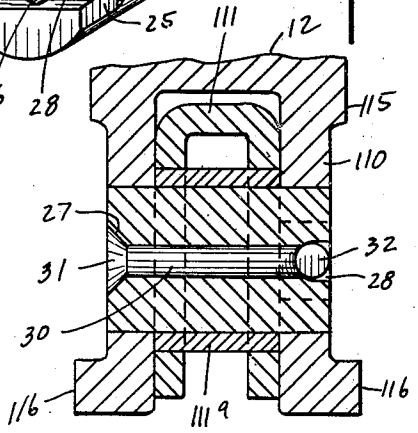
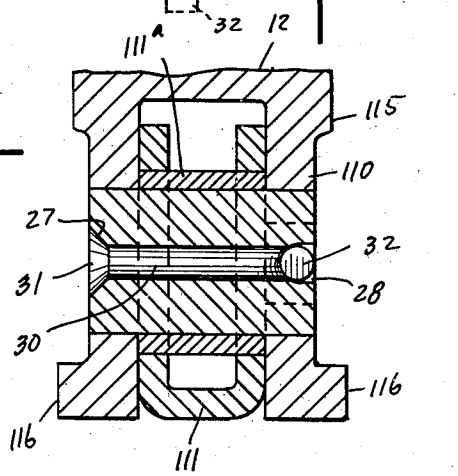


FIG. 5



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STRADDLE LINK CONNECTOR

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11 Claims. (Cl. 74—254)

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This invention relates to a mining machine cutter chain and more particularly the link connections therein.

The chief object of the present invention is to retain all the well-known advantages of certain types of such connection and attain the same by an exceptionally simple rugged construction.

The chief feature of the present invention resides in the barrel pin-link shoulder lock in combination with a locking rivet or anchor pin extending longitudinally through the same and having an elongated end simultaneously seatable in registering grooves or slots in one (and the shouldered) end of the barrel and the adjacent link portion.

Another feature of the invention resides in the reversible character of the barrel.

A further feature of the invention resides in the longitudinal alignment of the link grooves and their communication with each other and termination in the barrel accommodating holes in the link and in the shouldered portion thereof. A further main feature of the invention resides in the straddle and connecting links each being of channel section in transverse section.

Other objects and features of the invention will be set forth more fully hereinafter.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

In the drawings Fig. 1 is a side elevation of a portion of a cutting chain and more particularly of a straddle link thereof and the angular rivet ends exposed thereby.

Fig. 2 is a longitudinal sectional view taken on line 2—2 of Fig. 1 and in the direction of the arrows.

Fig. 3 is a perspective view of the barrel pin looking at the shouldered and notched end thereof.

Fig. 4 is a transverse section of one double channel chain section.

Fig. 5 is a similar view of a reversed form thereof.

In Fig. 1 there is illustrated a portion of a cutting chain structure wherein 10 indicates successive straddle links interconnected by nested connecting links 11. Each straddle link may be provided with cutter mounting head 12, only a portion of which illustrated for it may partake of various forms.

The straddle link comprises a pair of plates 13 and 14 and these upon their exterior faces may be provided with spaced upper and lower gibs 15 and 16. Each plate may, at the ends, or rather the upper corners, include inwardly directed ears 17 which form shoulder 18 to provide for so-called stiff-back chain operation.

Each connecting link at the ends is provided

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with bores 19 of a diameter but slightly greater than the exterior diameter of a barrel 20. Plate 13 at opposite ends has matching holes 21 therethrough. The opposite plate 14 of said straddle link 10 has registering holes 22 therethrough which herein have opposed flat faces 23.

The barrel 20 includes oppositely disposed cut-away portions providing shoulders 24 and faces 25. The barrel is centrally bored as at 26. At the circular end this is counter bored as at 27. At the shouldered end the bore 26 communicates with transverse notch or groove 28.

Plate 14 of straddle link 10 between the adjacent flat faces 23 of adjacent holes 22, is provided upon its exterior with a groove 29, same communicating at opposite ends and aligning with the transverse notches 28 in the barrels of the same straddle link.

The rivet pin 30 extends through the barrel being seated in bore 26 thereof. Its conforming head 31 seats in the bore enlargement 27 and prevents relative axial movement toward the grooved plate 14.

The shoulders 24 also prevent barrel axial movement toward the grooved plate. The cooperating faces 25 and 23 prevent relative rotation between the straddle link and the barrel. The rivet pin 30 is elongated as at 32 and in chain assembly initially projects as shown by dotted lines in Fig. 2.

To prevent axial movement of said rivet toward plate 13 and to prevent axial movement of the barrel 20 toward the same plate, the elongated end 32 is bent angularly until it simultaneously seats in transverse slot 28 in the barrel end and groove 29 in the plate 14.

As shown, such seating occupies but a portion of the slot and the groove. The said groove thus simultaneously accommodates the then longitudinally aligned angular ends 32 of the anchoring rivets 30.

To facilitate assembly the holes in plate 14 are oppositely faced as shown and likewise the complementary barrel ends and the latter are transversely notched entirely across the end, so that it is immaterial whether the barrel be seated as illustrated or rotated 180° and similarly seated. Thus the barrel is reversible although obviously not invertible. The half slot immediately contiguous the plate groove always registers therewith and accommodates the angular end 32 of the rivet pin.

The barrels may be readily fabricated automatically on automatic machines from bar stock and the rivets may be readily fabricated automatically on wire heading machines, thus reducing unit cost of same to almost bare material cost.

In Figs. 1 and 2 the connecting link 11 is shown as of the solid type. In Fig. 4 the corresponding

link 111 is shown comprised of a channel sectioned member which is drop forged and formed from a single sheet. Herein the barrel accommodating holes are somewhat larger than the barrel and therein is disposed a barrel pivoting hardened sleeve 111a. Whenever this sleeve is not desired or unnecessary the connecting link shown would then have its holes but slightly larger than barrel diameter.

The connecting link 111 in Fig. 4 is nested in the straddle link at the adjacent ends and both are similarly directed. Fig. 5 illustrates the same connecting link 111 provided with sleeve 111a but reversely disposed although still nested within the straddle link. In all instances the straddle link may be formed in any one of several well known manners and the cutter bit (not shown) may take any desired form and be supported by the head 12 in any desired or well known manner.

While the invention has been illustrated and described in great detail in the drawings and foregoing description, the same is to be considered as illustrative and not restrictive in character.

The several modifications described herein as well as others which will readily suggest themselves to persons skilled in this art, all are considered to be within the broad scope of the invention, reference being had to the appended claims.

The invention claimed is:

1. In a cutting chain structure of the cutter supporting straddle link type the combination of a pair of channel sectioned links having adjacent ends lapping, the straddle link nesting the connecting link of said pair of links, the lapping ends having registrable holes, a barrel simultaneously seatable in the resulting registrable four holes, a plate portion of the straddle link having a flat face provided in its barrel accommodating hole, the barrel being substantially cylindrical with a central bore therethrough and enlarged at one end, a rivet in the bore and having a head portion seated in the bore enlargement, the opposite end of the barrel having a transverse slot and shouldered to an appropriate depth and conform substantially to the flat face of the straddle link hole, the plate portion having an exterior longitudinally disposed groove, the rivet having an elongated end portion projecting initially beyond the barrel and finally disposed laterally thereof for simultaneous seating in the barrel slot and straddle link groove for retaining the assemblage together against axial separation.

2. A structure as defined by claim 1 where a sleeve is disposed in the aligned connecting link holes and telescopically receives the barrel.

3. A structure as defined by claim 2 wherein the links are similarly disposed.

4. A structure as defined by claim 2 wherein the links are reversely disposed.

5. A structure as defined by claim 1 wherein the links are similarly disposed.

6. A structure as defined by claim 1 wherein the links are reversely disposed.

7. In a cutting chain structure comprising a cutter carrying link and a connecting link, the adjacent ends thereof lapping each other and one link nesting the other, the lapping ends having registrable holes therethrough, a cylindrical barrel disposed therein and having a central bore therethrough, one end of the bore being enlarged, the other end of the bore communicating with a radial slot at and in the corresponding end of the barrel and extending to the periphery thereof, the last mentioned end of the barrel being shouldered and providing a flat face transverse to the shoulder and the radial bore, the nesting link in its exterior face having a longitudinally disposed groove, the hole therein communicating with the groove and having a flat face disposed substantially transverse thereto, the groove and slot being longitudinally alignable, and a rivet disposed in the bore and having at one end a head portion seated in the enlargement thereof and at the opposite end a lateral extension simultaneously seatable in the barrel slot and link groove for assembly retention.

8. Structure as defined by claim 7 wherein the radial slot is of diametral character for barrel reversal, the barrel having an opposed shoulder and face formation and the flat faced link hole having an opposed similar flat face.

9. In a cutting chain structure comprised of successive straddle and connecting links adjacent ends of adjacent links lapping each other, each link at opposite ends having holes therethrough, the adjacent end holes registering, the straddle link having spaced plate portions, one plate portion having its holes provided with a flat face, the faces being substantially parallel and disposed closest to each other and transverse to the longitudinal alignment of the plate holes, that plate having an exterior groove connecting the holes thereto and disposed transverse to the faces, a circular barrel for each set of registering holes, the barrel having a central bore therethrough enlarged at one end, the opposite end of the bore communicating with a radial slot in the corresponding end of the barrel, the slot extending to the barrel periphery, that end of the barrel being shouldered and providing a flat face complementary to the link hole flat face, and a rivet disposed in the bore having at one end a head portion seated in the bore enlargement and at the opposite end an elongated laterally directed portion simultaneously seatable in the barrel slot and link groove for assembly locking purposes.

10. Structure as defined by claim 9 wherein each flat faced hole has opposite thereto a corresponding substantially parallel flat face, the shouldered end of the barrel opposite the shouldering being similarly shouldered and having a second and parallel flat face, the radial slot being of diametral character and terminating at opposite ends on the barrel faces.

11. Structure as defined by claim 9 wherein the straddle link plate portions terminate at each upper corner in inwardly directed ears for stiff-back chain operation.

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