

July 19, 1949.

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2,476,852

WIRE LOCK, CUTTER CHAIN STRUCTURE

Filed Feb. 21, 1946

FIG. 1

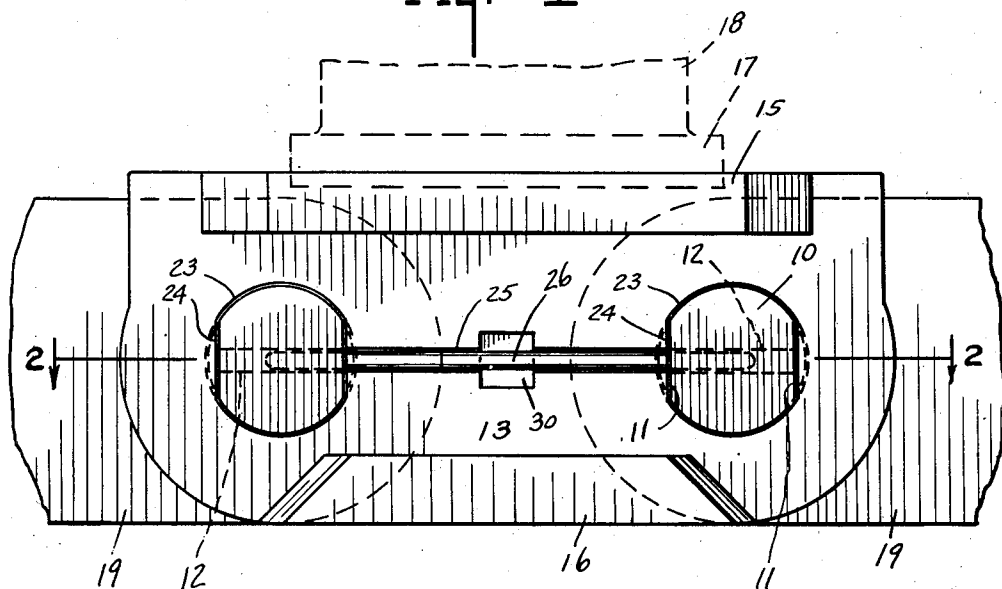


FIG. 2

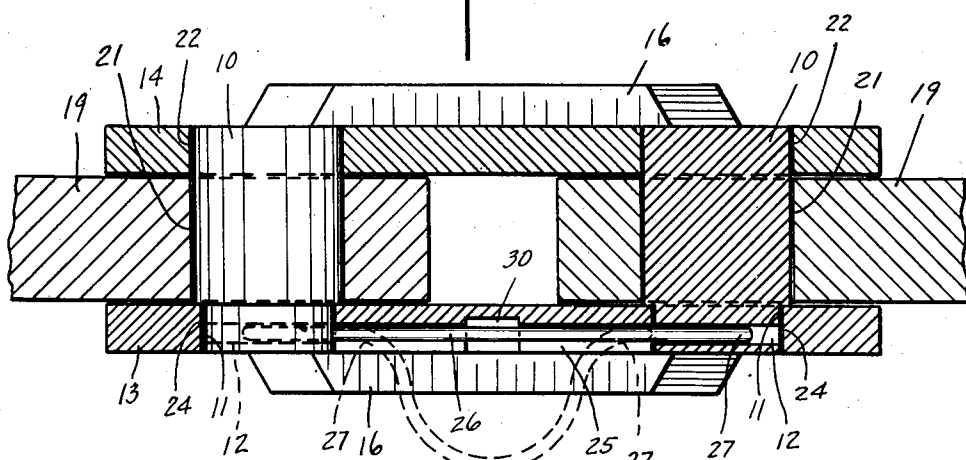


FIG. 3

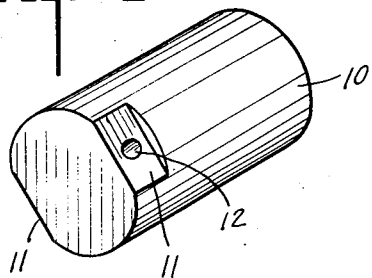
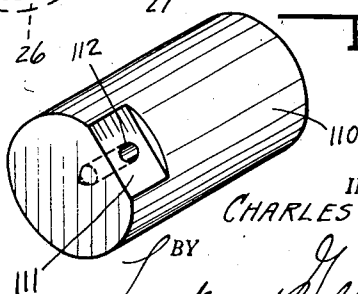


FIG. 4



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2,476,852

WIRE LOCK, CUTTER CHAIN STRUCTURE

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Application February 21, 1946, Serial No. 649,137

3 Claims. (Cl. 74-254)

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This invention relates to a chain structure and more particularly to a cutting chain chiefly utilized in the cutting of coal.

Chains of this general type are subjected to stresses and strain not common to conventional chains and therefore are subjected to breakage. Any breakage results in the cutting machine remaining idle until repairs or replacements are made.

The chief object of the present invention is to provide in such a cutting chain, readily separable connections of positive retention type, which chain can be quickly and easily opened, parts replaced and quickly reassembled.

The chief feature of the invention is the pivot or connecting pin, the head supporting same and the pin lock associated with both.

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, Figure 1 is a side elevational view of a portion of a cutter chain embodying the invention, the view being restricted to but one head and the adjacent ends of the head adjacent links, the cutting portion of the head being omitted since it may have any one of a number of shapes and formations.

Figure 2 is a central sectional view taken on line 2-2 of Figure 1 and in the direction of the arrows.

Figure 3 is a perspective view of the pivot pin.

Fig. 4 is a perspective view of a modified form of pin.

In Fig. 3 of the drawings, 10 indicates a pivot of generally cylindrical form which at one end is provided with two flat and parallel faces 11 and with a transverse or diametral bore 12 there-through.

In Fig. 2 there is illustrated a pair of side plate portions, 13 and 14 the former also being illustrated in Fig. 1. The exterior of each is provided with upper and lower gibs 15 and 16 tapered at opposite ends as illustrated.

The two plate portions are united by the top or cross bar portion 17 from which projects upwardly a head portion only a portion 18 of which is illustrated. It may project upwardly at any desired angle and mount any desired cutter in any suitable manner.

Resting between the side plates at opposite ends are the adjacent ends of links 19 which also may have gibs thereon if desired. Each includes a cylindrical bore 21 of slightly larger size

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than the pin 10. Side wall 14 also includes spaced bores 22 of the same size.

Plate 13 however, includes bores 23 that have parallel flat sides 24 spaced apart slightly greater than the flat sides 11 are spaced apart. Plate 13 on its outer face includes groove 25 that at opposite ends terminates at the adjacent faces 24 of the two bores 23 and at right angles thereto.

A flexible pressure shearable initially arched member 26, see dotted lines in Fig. 2, has its oppositely directed and aligned ends 27 seatable in the confronting groove aligned bores 12 of the pins 10 when the links are applied to the lug structure and the pins 10 are associated therewith through bores 22 in plate 14.

Obviously the flat construction, while permitting pin application and seating, is reversible, that is in either of two positions 180 degrees apart can the pin only be fully seated in plate 13 for link retention for then only will the reduced pin ends properly register in bores 23.

When so seated and registered, the pins are fixed relative to the plates and the links only pivot on the now non-rotatably supported pins. When so mounted, bores 12, as stated align with groove 25, and ends 27 of member 26, when the member is slightly compressed, can be seated in the ends of the groove 26 and the adjacent ends of bores 12. Then the bendable member 26 is straightened by pressure to fully nest in groove 25 as shown by full lines in Fig. 1 and Fig. 2.

This operation forces the ends 27 further into bores 12 so that even if the now straightened member 26 with its aligned ends 27 shifts at one end to the end of a bore 12, the other end 27 will still be seated in the other aligned bore 12 to an appreciable extent. Thus the pins are locked against axial displacement or separation from the parts heretofore assembled.

When repair replacement is required pin 10 need only be driven from plates 13 and 14 in the reverse direction which simultaneously shears the common key member. This frees the lug from the adjacent links and a new part can be substituted, the chain reassembled as before described and the pins locked as before described.

Whenever it is desired to reuse the member 26-27, a nut pick type member may be employed and associated with the groove seated portion 26 by application to it at the milled out portion or recess 30. Such picker can be used to rebend the member 26 sufficient to retract ends 27 to clear slots 12. When so cleared the pins 10 can be retracted as before from the links and lug. The picker removed member 26 can then be re-

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formed as shown by dotted lines in Fig. 2 and again used for pin locking after the lug has been replaced.

Either method of separation is optional and material shortage will require only re-use of member 26—27.

Whenever desired, see Fig. 4, the pin 110 may include but one flat face 111 and the bore 112 may extend through the pin or terminate short of same as illustrated. Such pin requires corresponding complementary formation of the hole 23 in the plate 13. With this form the pins are not turned 180° and usable interchangeably in either position.

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 chain having successive links and lugs successively connected together in pivotal relation, the combination with a pair of links having bores in adjacent ends and a straddle type lug having side plate portions and a connecting portion, said lug nesting the link ends between the side plate portions, of a pair of pins extending from plate to plate and seated in aligned plate bores, certain of the plate bores and pin ends having cooperating locating and rotation preventing surfaces, one of the plates having in its exterior face a longitudinally directed groove ex-

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tending from one pin seating bore in that plate to the other bore therein, each pin adjacent to that groove having a crosswise disposed bore therein capable of registering with the adjacent end of the groove, and an initially arched and straightenable groove seatable means having opposite ends disposable in the entrance to the pin bores when groove associated, said ends passing oppositely into both last mentioned bores when the last mentioned means is straightened to substantially occupy the groove for pin axial separation prevention.

2. A chain as defined by claim 1 wherein the groove lies in a plane common to the pivotal axes of the links and the pin bores are alignable with the groove and each other, and each bore extends diametrically across and through the pin end.

3. A chain as defined by claim 1 wherein the groove between its ends is intermediately and laterally enlarged for tool accommodation for means removal from the pin bores.

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