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Horton

[11] **3,846,922**

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[54] **STABILIZING MEANS FOR CHAIN DITCH DIGGING IMPLEMENT**

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[52] **U.S. Cl.** ..... **37/83,** 37/191 A, 83/830, 299/82

[51] **Int. Cl.** **E02f 5/06**

[58] **Field of Search** ..... 37/191 A, 192 A, 83, 86, 37/84, 85; 83/830, 832–834; 299/82–84

[56] **References Cited**

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1,419,382	6/1922	Humphreys et al.	37/86
2,389,936	11/1945	Rupp	299/84
2,501,083	3/1950	Owen	37/86 X
2,636,291	4/1953	Reagle	37/191 A
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FOREIGN PATENTS OR APPLICATIONS

755,807	8/1956	Great Britain	37/191 A

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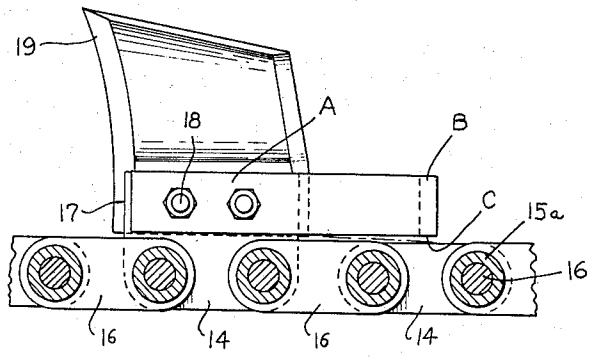
[57] **ABSTRACT**

A stabilizing element is carried adjacent a trailing edge of the implement supporting bracket on a ditch digger having a power driven chain wherein, the stabilizing element extends rearwardly at least to and across a medial portion of a next succeeding full link following the bracket to limit relative movement between the bracket and the full link when digging, but permitting articulated movement therebetween when passing about said sprocket.

2 Claims, 3 Drawing Figures



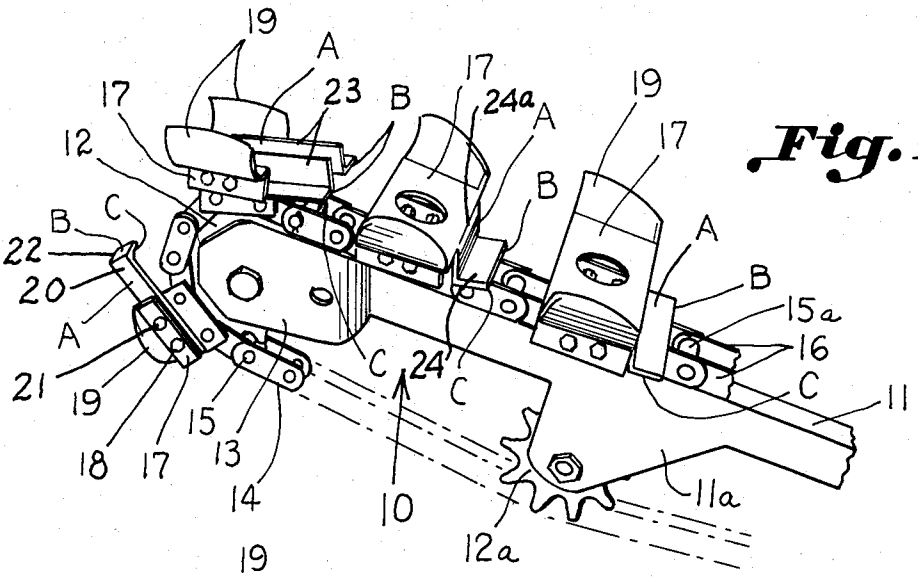


Fig. 1.

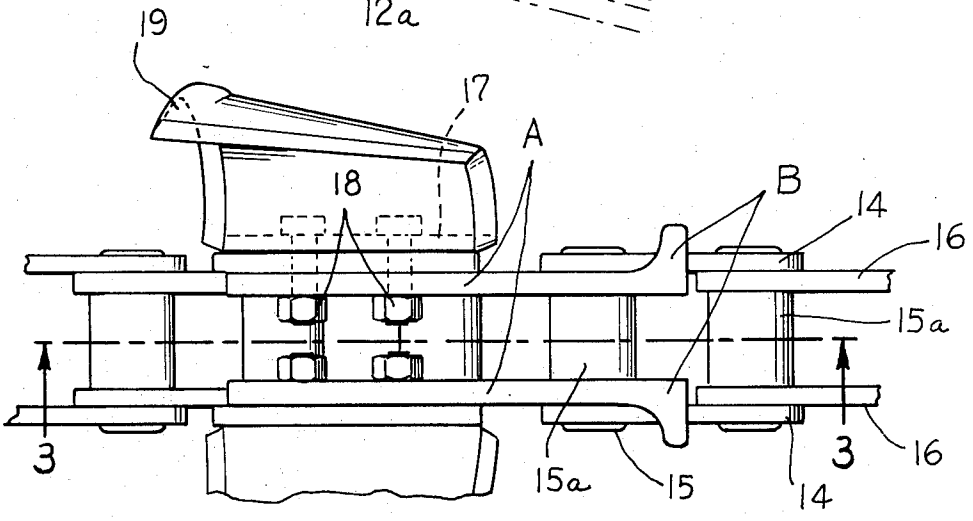


Fig. 2.

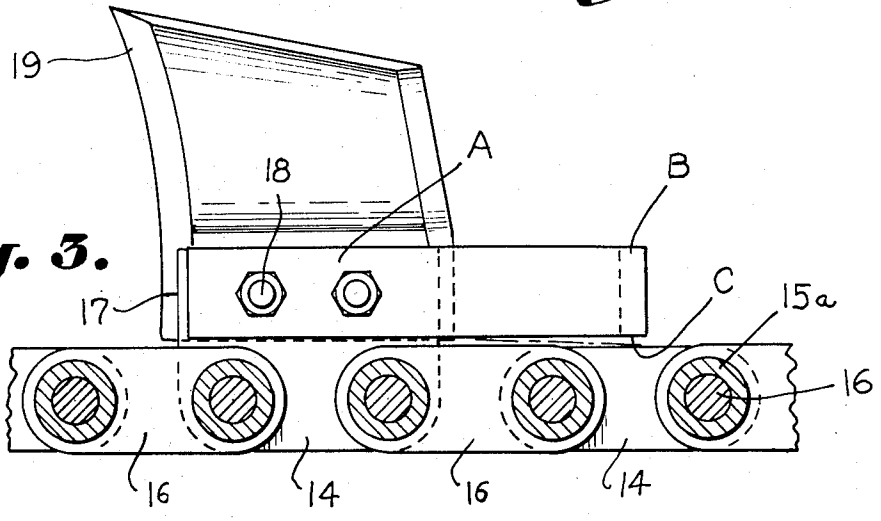


Fig. 3.

STABILIZING MEANS FOR CHAIN DITCH DIGGING IMPLEMENT

This invention relates to a solution of the problems brought about by the tightening of the power operated chain of a ditch digger which results from a rearward pivoting movement of the implement and the link to which the implement is fixed when the implement engages an obstacle when digging. While the invention is described in terms of advantages derived when the implement engages an obstacle, such as a large rock, such advantages are also derived when encountering the obstacles occurring during normal digging.

BACKGROUND OF THE INVENTION

Although the problem of the excessive tightening of ditch digger chains with attendant binding and wear on associated parts has long persisted, no practical solution has been found. Prior attempts to provide an efficient implement carrying chain include provision of the disclosure of U.S. Pat. No. 2,636,291. The digging implement is attached to a link with a rearward extension for engaging the chain at a next succeeding pivot point. But this structure does not address itself to the problem and results in excessive pressure at the pivot point of the chain.

BRIEF DESCRIPTION OF THE INVENTION

A solution to the foregoing problem is brought about by affording a rigid connection between the implement mounting means and a medial portion of a link following the pivot point of the next adjacent link when digging. Thus, excessive tightening of the chain is avoided and the force tending to pivot the implement and associated link is transmitted and distributed to the chain remote from the implement.

Accordingly, an important object of this invention is the provision of stabilizing means to prevent excessive rearward pivoting movement of a chain carried implement to avoid the problems associated with excessive tightening of the chain.

BRIEF DESCRIPTION OF THE DRAWING

The construction designed to carry out the invention will be hereinafter described, together with other features thereof.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawing forming a part thereof, wherein an example of the invention is shown and wherein:

FIG. 1 is a perspective view illustrating the boom of a chain ditch digger with implement stabilizing means constructed in accordance with the invention,

FIG. 2 is a enlarged plan view of the implement stabilizing means illustrated in FIG. 1, and

FIG. 3 is an longitudinal elevation taken on the line 3—3 in FIG. 2.

DESCRIPTION OF A PREFERRED EMBODIMENT

The drawing illustrates a ditch digging machine having a power operated endless chain carried about a sprocket with links pivoted adjacent each end thereof carrying bracket means attached at a lower portion thereof to a link and projecting thereabove carrying a digging implement adjacent an upper portion thereof.

A stabilizing element A is carried adjacent a trailing end of the bracket means. The element A includes an extension B projecting rearwardly of said bracket means and a portion of one link next adjacent said bracket means at least to a medial portion of a next succeeding link rearwardly of said one link. A lower engaging surface C is carried by the portion extending rearwardly which extends across engaging the portion of said next succeeding link. The stabilizing element is fixedly carried with respect to said bracket and said medial portion to limit relative movement therebetween when said digging implement engages an obstacle when digging, but permitting articulated movement therebetween when passing about the sprocket. Preferably, the stabilizing element has integral connection to said bracket means which is mounted on an outer link with said next succeeding link being an outer link.

Referring more particularly to FIG. **1**, the boom of a power operated ditch digging machine is broadly designated at **10.** The boom includes a trackway **11** and carries a sprocket **12** adjacent the free-end thereof supporting the chain for digging, permitting articulated turning movement thereof during such operation. The sprocket is rotatably mounted in the bracket **13.** An idler sprocket is illustrated at **12***a* rotatably mounted in the depending bracket **11***a*.

The endless chain has longitudinal links formed by opposed spaced outer sections **14** pivoted adjacent each end thereof on transverse pins **15.** Each pin **15** also pivotally carries, adjacent its end, spaced opposed inside sections **16** forming intermediate links (FIG. **2**). The pins **15** each include an enlarged spacer **15**a intermediate the links.

Suitable bracket means **17** are provided and attached at a lower portion thereof, preferably to an outer link, as by bolts **18.** Implements **19** have integral connection to the bracket means at an upper portion thereof. It will be noted that the width of the digging implements vary becoming progressively larger for any set thereof as illustrated. Thus, the bracket means may vary slightly in configuration to accommodate the varying size of the implements.

The stabilizing elements may similarly vary in form as illustrated. One form of the stabilizing element A is illustrated in the form of a link **20** disposed in a vertical plane and is fixed to the bracket means as by bolts **21.** The extension B is provided in the form of an offset member **22** extending from a free end of the element A across the next succeeding link to the link adjacent the implement carrying link. The lower surface of the offset member **22** serves as the lower engaging surface. The element A is further illustrated as including opposed longitudinal angle members **23.** The angle members **23** are suitably secured to the bracket means **17** as by welding (not shown). The element A and associated parts may also be provided in the form of a transverse angle member **24** having a vertical leg suitably secured as by welding at **24***a* to the bracket means **17.**

It has been found that the productivity of a digger chain constructed in accordance with the present invention has increased enormously. There has been less wear on the chain and associated parts, requiring few replacement parts.

While a preferred embodiment of the invention has been described using specific terms, such description is for illustrative purposes only, and it is to be understood that changes and variations may be made without de-

parting from the spirit or scope of the following claims.

What is claimed is:

1. In a ditch digging machine having an endless chain carried about a sprocket with alternate inner and outer links pivoted to each other carrying bracket means attached at a lower portion thereof to a link and projecting thereabove carrying a digging implement adjacent an upper portion thereof, the improvement comprising: a stabilizing element carried adjacent a trailing end of said bracket means, said element including an extension projecting rearwardly of said bracket means and a portion of one link next adjacent said bracket means beyond a pivot point of a succeeding link rearwardly of said one link at least to a medial portion of a next succeeding link, a lower engaging surface carried by said

extension which engages a medial portion of said succeeding link, and said stabilizing element being fixedly carried with respect to said bracket and said medial portion to limit relative movement therebetween dividing the force exerted by said stabilizing element between pivot points of said succeeding link when said digging implement engages an obstacle when digging but permitting articulated movement therebetween when passing about said sprocket.

2. The structure set forth in claim **1,** wherein said stabilizing element has integral connection to said bracket means which is mounted on an outer link with said next succeeding link being an outer link.

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