July 24, 1934. B. S. CARR 1,967,496

LADDER CHAIN

Filed Feb. 25, 1933

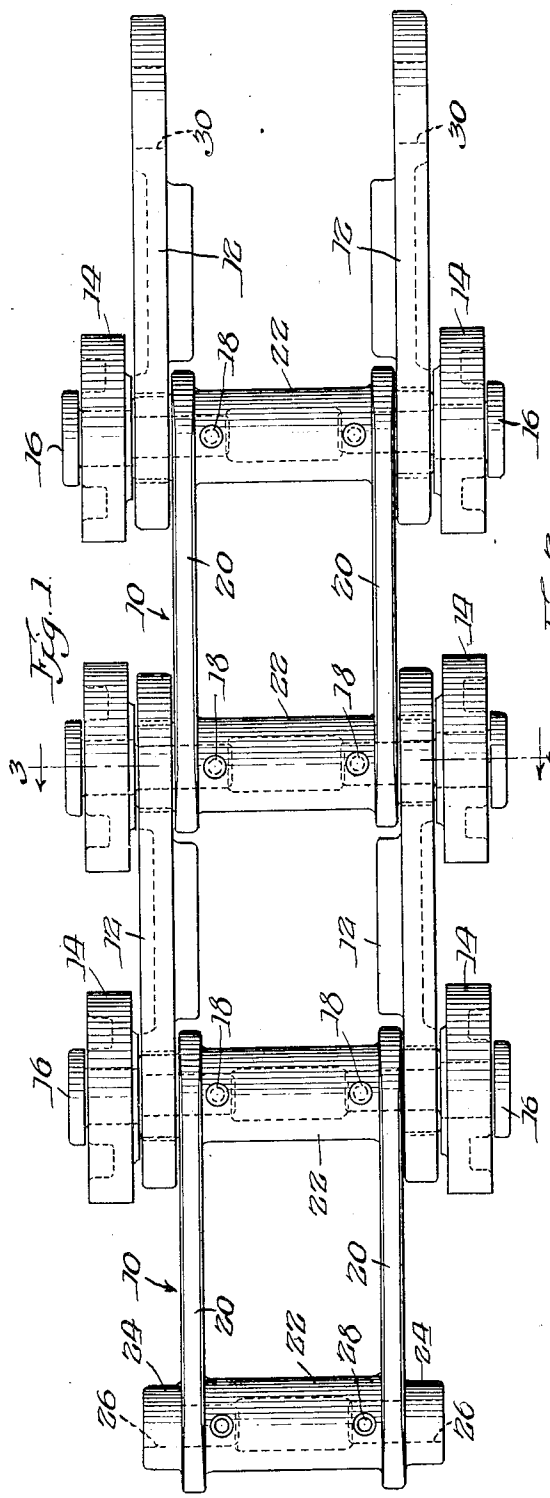


Fig. 1

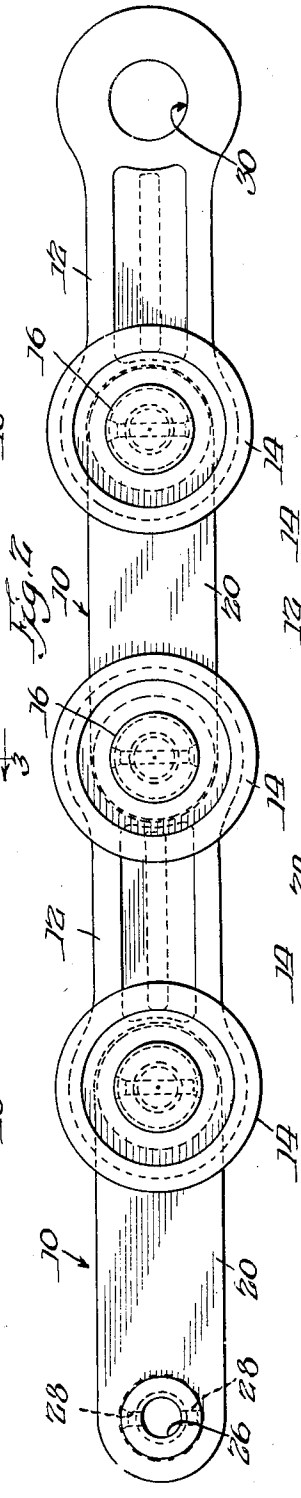


Fig. 2

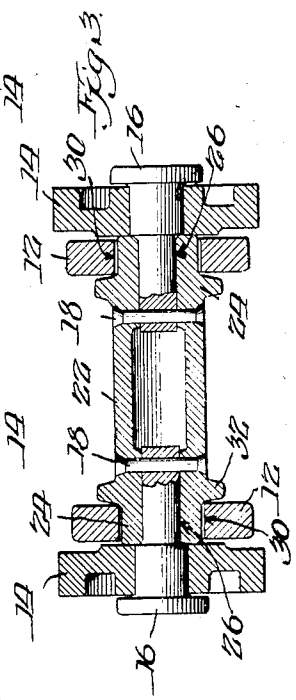


Fig. 3

Witness
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Patented July 24, 1934

1,967,496

UNITED STATES PATENT OFFICE

1,967,496

LADDER CHAIN

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Application February 25, 1933, Serial No. 658,565

8 Claims. (Cl. 74—32)

This invention relates to ladder chains, and has been illustrated in such a chain as might be used for various types of heavy work, of which dredging is one example. For various purposes the particular links of the chain might be provided with special extensions, such as scraper blades, but for the sake of simplicity, no such extensions or attachments have been illustrated.

For many years considerable thought has been devoted to the development of chains of the general type illustrated, but such chains have been only partially satisfactory for one reason or another. It is the purpose of the present invention to provide a chain in which the features of sturdiness, compactness, durability, cheapness and ease of assembly, and ease of action and use are combined to a greater extent than before. In the illustrated form of the invention, this object has been accomplished by providing frame links spaced by pairs of bar links which engage bosses on the frame links, and by providing rollers which bear laterally against said bosses holding said bar links in place, and being pivoted on pins which extend through said bosses.

With these and various other objects in view, the invention may consist of certain novel features of construction and operation, as will be more fully described and particularly pointed out in the specification, drawing and claims appended hereto.

In the drawing, which illustrates an embodiment of the device, and wherein like reference characters are used to designate like parts,

Figure 1 is a plan view of a section of one embodiment of this invention;

Figure 2 is a side elevation of the same; and

Figure 3 is a section taken through the line 3—3 of Figure 1.

Although my invention may take many forms, only one form has been chosen for illustration. This form is made up of the frame links 10, the bar links 12, the rollers 14, the pins 16 and rivets 18. The shape and construction of the frame link 10 is shown most clearly at the left end of Figure 1. Although only one end of this link is clearly exposed, the other end is identical with it. These links are made up of the side members 20, the barrel members 22 and the bosses 24. The bosses and barrel members are provided with bores 26 into which the pins 16 may be inserted. The bores may be enlarged at the central portion for the sake of ease in fitting and to reduce the weight of metal. Radial holes 28 may be provided as shown, for rivets.

The structure of the side links 12 is clearly shown at the right-hand end of Figures 1 and 2, being provided at each end with a hole 30 of a size to fit snugly over the bosses 24 without binding. As clearly shown in Figure 1, a pair of the links 12 couple together two of the frame links 10 by being slipped over the respective bosses 24. The side bars 12 are preferably held in place by the rollers 14 which are rotatably carried by the pins 16. The pins 16 are shaped as shown clearly in Figure 3, and are securely held in place by the rivets 18 passing through the holes 28.

The operation of the chain is obvious, but it may be pointed out that the bosses 24 should be slightly longer than the thickness of the associated part of the bar link 12 so that the link wil not be pinched between the roller 14 and the enlarged portion 32 of the frame link. Likewise the pin 16 should be of such dimension that the roller 14 will not be bound by being pinched against the bosses 24. With these dimensions, it is seen that the roller 14 may rotate fairly freely, bearing on one side against the comparatively small head of the pin 16 and on the other side against the comparatively small end of the bosses 24.

It is to be understood that many other embodiments of the invention, including some in improved form, will be apparent, and in the course of time more will be devised by those skilled in the art. It is not desired that this invention be limited to the details described, for its scope includes all such forms or improvements as come within the spirit of the following claims, construed as broadly as the prior art will permit.

What is claimed is:

1. A chain comprising inner links and side bars, each of the inner links having protruding hollow bosses at its ends upon which the side bars are loosely journaled, and rollers secured to said bosses and located to retain said side bars on said bosses, said bosses being shaped to permit the free removal of said side bars therefrom when said rollers are removed.

2. A chain comprising inner links and side bars, each of the inner links having protruding hollow bosses at its ends upon which the side bars are loosely journaled, and rollers secured to said bosses and located to retain said side bars on said bosses, said bosses being longer than the thickness of the side bars at the point of engagement, whereby pinching of the side

bars between the rollers and the inner link is prevented.

3. A chain comprising inner links and side bars, each of the inner links having protruding hollow bosses at its ends upon which the side bars are loosely journaled, and rollers secured to said bosses by axial pins riveted to said inner link, said bosses being longer than the thickness of the side bars at the point of engagement, whereby pinching of the side bars between the rollers and the inner link is prevented, said pins being of such length that the rollers are held loosely against the bosses.

4. A chain comprising inner links and side bars, each of the inner links having protruding hollow bosses at its ends upon which the side bars are loosely journaled, and rollers secured to said bosses each by a separate axial pin secured to said inner link, said bosses being longer than the thickness of the side bars at the point of engagement, whereby pinching of the side bars between the rollers and the inner link is prevented, said pins being of such length that the rollers are held loosely against the bosses.

5. A chain comprising inner links and side bars, each of the inner links being formed with integral transverse barrel portions and having protruding hollow bosses at its ends upon which the side bars are loosely journaled, and rollers secured to said bosses and located to retain said side bars on said bosses, said bosses being shaped to permit the free removal of said side bars therefrom when said rollers are removed.

6. A chain comprising inner links and side bars, each of the inner links being formed with integral transverse barrel portions and having protruding hollow bosses at its ends upon which the side bars are loosely journaled, and rollers secured to said bosses and located to retain said side bars on said bosses, said bosses being longer than the thickness of the side bars at the point of engagement, whereby pinching of the side bars between the rollers and the inner link is prevented.

7. A chain comprising inner links and side bars, each of the inner links being formed with integral transverse barrel portions and having protruding hollow bosses at its ends upon which the side bars are loosely journaled, and rollers secured to said bosses by axial pins riveted to said bosses, said bosses being longer than the thickness of the side bars at the point of engagement, whereby pinching of the side bars between the rollers and the inner link is prevented, said pins being of such length that the rollers are held loosely against the bosses.

8. A chain comprising inner links and side bars, each of the inner links being formed with integral transverse barrel portions and having protruding hollow bosses at its ends upon which the side bars are loosely journaled, and rollers secured to said bosses each by a separate axial pin secured thereto, said bosses being longer than the thickness of the side bars at the point of engagement, whereby pinching of the side bars between the rollers and the inner link is prevented, said pins being of such length that the rollers are held loosely against the bosses.

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