

Sept. 12, 1933.

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1,926,047

CUTTER CHAIN

Filed Dec. 11, 1931

Fig. 1.

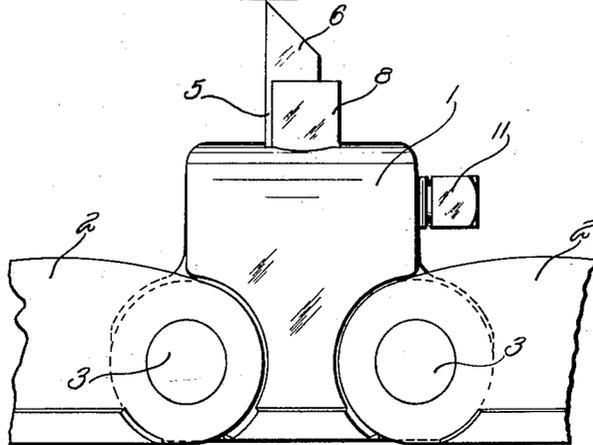


Fig. 3.

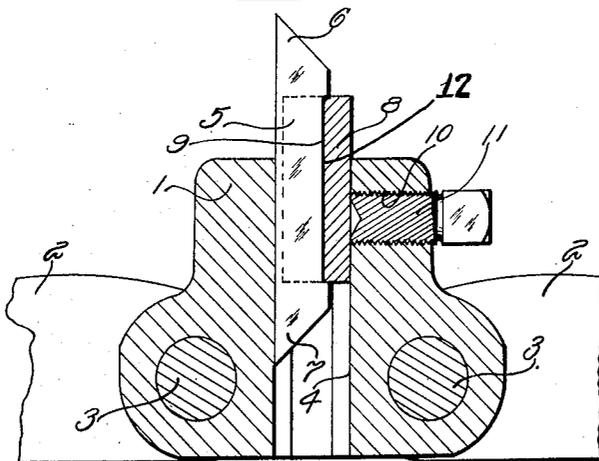
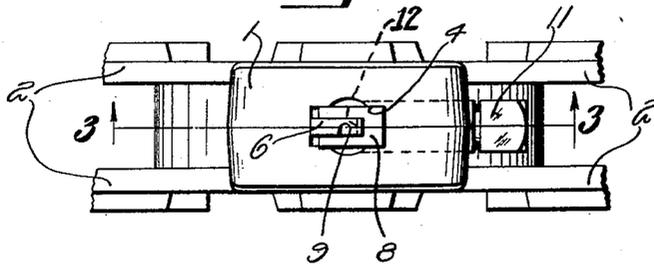


Fig. 2.



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UNITED STATES PATENT OFFICE

1,926,047

CUTTER CHAIN

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Application December 11, 1931
Serial No. 530,349

13 Claims. (Cl. 262—33)

This invention relates to cutter chains and more particularly to improvements in cutter chains for mining machines.

An object of this invention is to provide an improved cutter chain. Another object is to provide an improved cutter chain for coal mining machines. Still another object is to provide an improved cutter bit support for a cutter chain. A further object is to provide improved holding means for securing the cutter bit within the chain block. Still a further object is to provide an improved cutter bit for a cutter chain of the aforesaid character. These and other objects and advantages of this invention will, however, hereinafter more fully appear.

In the accompanying drawing there is shown for purpose of illustration one form which the invention may assume in practice.

In this drawing,

Fig. 1 is a plan view of the illustrative embodiment of the improved cutter chain;

Fig. 2 is a side elevational view of the cutter chain shown in Fig. 1;

Fig. 3 is a longitudinal sectional view taken substantially on line 3—3 of Fig. 2.

In this illustrative embodiment of the invention the improved cutter chain comprises a series of chain blocks 1 connected together by connecting links 2. The links 2 are connected to the bit blocks by usual pivot pins 3. Extending transversely through the bit block is a bit receiving passage 4 adapted to receive the shank of a cutter bit 5 of improved design. In this instance, the cutter bit 5 is of the double-ended type having formed at its opposite ends cutting portions 6 and 7 and of rectangular cross section. For securing the cutter bit within the bit passage 4 there is provided a clamping member 8, herein in the form of a block having a rectangular socket or slot 9 adapted to receive the bit shank and arranged within the bit receiving passage 4 in the manner shown in Fig. 3. Threadedly engaged within an opening 10 formed in the bit block and engageable with the rear face of the clamping member 8 is a set screw 11. The cutter bit 5 is transversely grooved at 12 on its rear face and the clamping block is seated in this groove to hold the bit against longitudinal displacement therefrom and to properly position the bit therein. The bit shank is preferably composed of an extremely hard substance, as for instance steel tempered to the desired hardness, while the clamping member 8 is of a relatively soft metal so that, when the set screw 11 is tightened, it bites into the body of the clamping member

thereby to clamp rigidly the parts in position, the bit being securely held in place by the clamping pressure distributed along the relatively long clamping surface of the member 8 and the rear face of the bit. When the point 6 of the bit becomes dull, the set screw and clamping member may be readily loosened and the bit turned end for end to present a new and sharp cutting end, the bit thereafter being clamped into position by the elements 8 and 11.

As a result of this invention it will be noted that an improved cutter chain is provided wherein the cutter bits are held in the bit block in an improved manner. It will further be noted that, by the provision of the intermediate clamping element 8 between the set screw and the bit shank, it is possible to form the bit shank of an extremely hard material, the member 8 being of a relatively soft material so the set screw may readily bite into the same to securely hold the parts in position. It will further be evident that, due to the improved design of the cutter bit having a plurality of cutting positions, it is possible to present a new cutting surface simply by turning the bit end for end and, due to its simplicity, may be readily and cheaply replaced. These and other advantages of the cutter chain will be clearly apparent to those skilled in the art.

While there is in this application specifically described one form which this invention may assume its practice, it will be understood that this form of the same is shown for purposes of illustration and that the invention may be modified and embodied in various other forms without departing from its spirit or the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. A cutter chain comprising a bit block having a bit receiving opening, a cutter bit having its shank receivable in said opening, and means for securing said cutter bit within said opening comprising an adjustable clamping element having a relatively long clamping surface engaging the rear edge of the bit for clamping the forward edge of the bit against the bit block and an adjustable element engaging the rear surface of said clamping element for forcing the latter forwardly.

2. A cutter chain comprising a bit block having a bit receiving opening, a cutter bit having its shank receivable in said opening, an adjustable clamping element having a slot cut in its forward face for receiving the bit shank for clamping the forward edge of the bit against the

bit block, and an adjustable element engaging the rear surface of said clamping element for forcing the latter forwardly.

3. A cutter chain comprising a bit block having a bit receiving opening, a cutter bit having its shank receivable in said opening, an adjustable clamping element engaging the rear edge of the bit shank and extending into said opening for clamping the forward edge of the bit against the bit block, and a set screw threadedly engaged with said bit block and engaging the rear surface of said clamping element.

4. A cutter chain comprising a bit block having a bit receiving opening, a cutter bit having its shank receivable in said opening, an adjustable clamping element engaging the rear edge of the bit shank and extending into said opening for clamping the forward edge of the bit against the bit block, and a set screw threadedly engaged with said bit block and engaging the rear surface of said clamping element, said clamping element having cut in its forward face a longitudinal slot for receiving the shank of said bit.

5. A cutter chain comprising a bit block having a bit receiving opening, a double-ended cutter bit having its shank receivable in said opening and having cutting portions at its opposite ends, an adjustable clamping element engaging the rear edge of said bit shank between said cutting portions for clamping the forward edge of the bit against the bit block, and an adjustable element engaging the rear surface of said clamping element for forcing the latter forwardly.

6. A cutter chain comprising a bit block having a bit receiving opening, a double-ended cutter bit having its shank receivable in said opening and having cutting portions at its opposite ends, an adjustable clamping element engaging the rear edge of said bit shank between said cutting portions for clamping the forward edge of the bit against the bit block, and an adjustable element engaging the rear surface of said clamping element for forcing the latter forwardly, said clamping element having cut in its forward face a longitudinal slot for receiving the bit shank.

7. A cutter bit having a rectangular-shaped body and inclined cutting ends, the rear face of the body being transversely grooved throughout a major portion of its length to receive holding means and having opposed shoulders adjacent said cutting ends for engagement with the holding means to prevent longitudinal displacement of the bit from the holding means.

8. A cutter bit having a rectangular-shaped body and oppositely disposed, outwardly inclined, identical cutting ends, the rear face of the body being transversely grooved throughout a major portion of its length to receive holding means and having opposed shoulders adjacent said cutting

ends for engagement with the holding means to prevent longitudinal displacement of the bit from the holding means.

9. A cutter chain comprising a bit block having a bit receiving opening, a cutter bit having its shank receivable in said opening, said shank being transversely grooved, and means for securing said cutter bit within said opening comprising an adjustable clamping element having a slot for receiving the bit shank and engaging shoulders on the bit at the ends of the transverse groove in the bit shank and an adjustable element engaging said clamping element.

10. A cutter chain comprising a bit block having a bit receiving opening, a cutter bit having its shank receivable in said opening, said bit having identical cutting ends and an intermediate portion transversely grooved, and means for securing said cutter bit within said opening comprising an adjustable clamping element having a slot for receiving the bit shank and engaging shoulders on the bit shank at the ends of the transverse groove in the bit shank and an adjustable element engaging said clamping element.

11. A cutter chain comprising a bit block having a bit receiving socket, a cutter bit having its shank receivable in said socket, a clamping element of relatively soft material engaging the bit to clamp the bit in position in said socket, and a hardened adjusting element engaging said relatively soft clamping element with a biting action for clamping the parts in position in said socket and for preventing longitudinal displacement of the clamping element from the socket.

12. A cutter chain comprising a bit holder having a bit receiving socket, a cutter bit having its shank receivable in said socket, a supplementary member providing a socket for receiving the rear edge of the bit shank, said supplementary socket providing member being receivable in the bit receiving socket in said bit holder and an adjustable element engaging the rear side of said supplementary socket providing member for clamping the forward edge of the bit against the forward face of the bit holder socket.

13. A cutter chain comprising a bit holder having a bit receiving socket, a cutter bit having its shank receivable in said socket, a supplementary member providing a socket and having means engageable with the bit shank in interlocking relation for preventing longitudinal displacement of the bit from the supplementary socket providing member, said supplementary socket providing member being receivable in the bit receiving socket in the bit holder, and an adjustable element engaging the rear side of said supplementary socket providing member for clamping the bit against the forward face of the bit holder socket.

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