

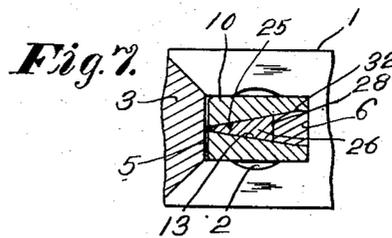
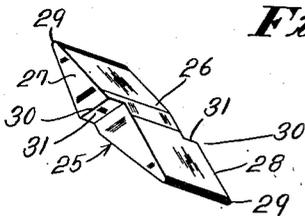
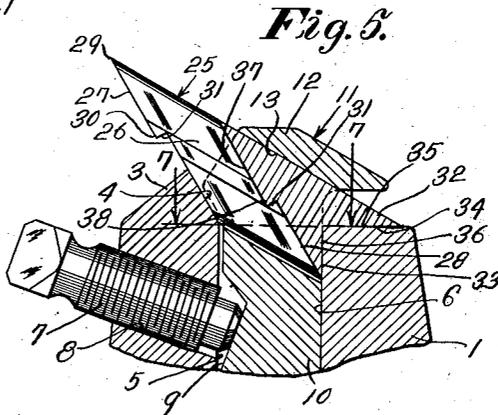
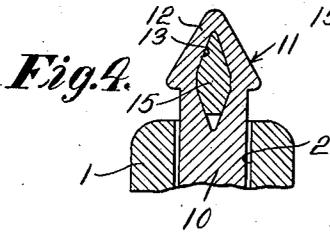
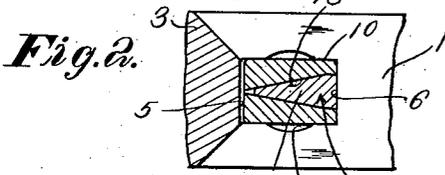
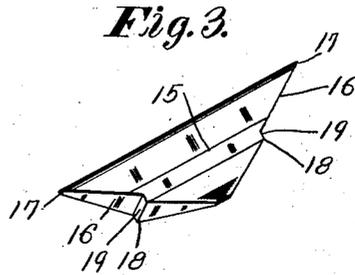
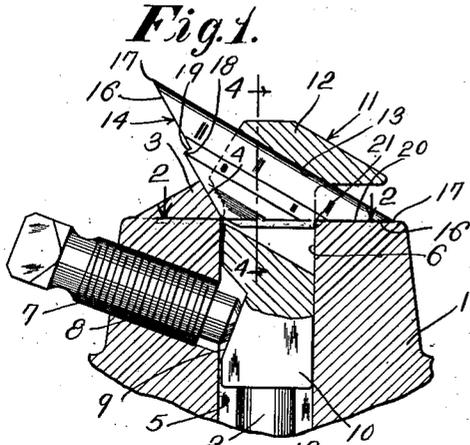
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L. E. SIMMONS

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CUTTER CHAIN

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Inventor:
Leon E. Simmons.
by Charles F. Osgood,
Attorney.

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CUTTER CHAIN

Leon E. Simmons, Claremont, N. H., assignor to
Joy Manufacturing Company, Pittsburgh, Pa.,
a corporation of Pennsylvania

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515,493. Divided and this application February
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3 Claims. (Cl. 262—33)

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This invention relates to cutter chains and more particularly to an improved cutter bit and cutter bit mounting and holding means for a mining machine cutter chain.

An object of the present invention is to provide an improved cutter chain. Another object is to provide an improved mounting and holding means for a cutter bit. A further object is to provide an improved cutter bit. Yet another object is to provide an improved cutter bit having improved gauging means to predetermine the bit gauge. Still another object is to provide improved means for holding a cutter bit in cutting position on a chain block. A still further object is to provide an improved cutter bit of the double pointed, reversible type having shoulders providing abutment surfaces formed on its cutting faces in a novel manner. Another object is to provide an improved bit holder for a small, double pointed, reversible cutter bit. Other objects and advantages of the invention will, however, hereinafter more fully appear.

The present application is a division of my co-pending application Serial No. 515,493, filed December 24, 1943, now abandoned.

In the accompanying drawing there are shown for purposes of illustration two embodiments which the invention may assume in practice.

In this drawing:

Fig. 1 is a view in central longitudinal vertical section taken through a portion of a cutter chain constructed in accordance with a preferred illustrative embodiment of the invention.

Fig. 2 is a horizontal sectional view taken substantially on line 2—2 of Fig. 1.

Fig. 3 is a perspective view of the improved cutter bit shown in Fig. 1.

Fig. 4 is a detail vertical sectional view taken on line 3—3 of Fig. 1.

Fig. 5 is a vertical sectional view similar to Fig. 1, showing a modified embodiment of the invention.

Fig. 6 is a perspective view of the cutter bit shown in Fig. 5.

Fig. 7 is a detail horizontal sectional view taken on line 7—7 of Fig. 5.

In both illustrative embodiments of the invention, the improved cutter bit and bit supporting and holding means are shown associated with a mining machine cutter chain including a chain block 1 having a right angle socket 2 disposed normal to the path of travel of the chain, and an upstanding lug 3 is formed integral with the block in advance of the socket and has an inwardly and downwardly facing surface 4 extending along the forward wall of the socket, in the manner shown in Fig. 1. The socket 2 is generally rectangular in shape in cross section, as shown in Fig. 2, and has plane parallel front and rear walls 5 and 6. At the forward side of the chain block a usual set screw 7 is threaded in an inwardly and downwardly inclined opening 8

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beneath the upstanding lug 3, and the inner end of the set screw engages an inclined surface 9 on the forward side of the lower portion of a shank 10 of a holder, generally designated 11, of an improved design.

The improved holder 11 has a head 12 integral with the shank 10, and extending completely through the holder head and the adjacent portion of the holder shank and opening rearwardly through the rear side of the holder shank is an obliquely disposed opening 13 for receiving a cutter bit, generally designated 14, of an improved design.

The cutter bit 14, as shown in Fig. 3, has a body 15 of generally triangular shape in side elevation and preferably of diamond shape in cross section and formed with oppositely inclined cutting faces 16 of elongated diamond shape terminating in cutting points 17 at the opposite extremities of the bit at the same side of the bit body. The cutting faces have ledgelike shoulders 18 providing abutment surfaces 19 disposed at right angles to the cutting faces.

The cutter bit, when in cutting position on the chain block, as shown in Fig. 1, has its inner inactive cutting face 16 resting at 20 directly on the exterior surface of the chain block at the rear side of the block socket, and the inner abutment surface 19 on the rear bit face rests at 21 directly against the rear plane wall 6 of the block socket. The front active cutting face 16 of the bit, at its inner portion, rests directly against the inclined surface 4 on the upstanding front lug 3 of the chain block. When the set screw 7 is tightened, the holder is thrust inwardly in the block socket to clamp the cutter bit firmly in the position shown. When the set screw is released from the holder, the holder may be moved outwardly in the block socket a slight distance to disengage the front bit face from the front abutment 3 to enable the cutter bit to be readily withdrawn forwardly from the holder opening 13 over the top of the front abutment. When one cutting point of the bit becomes dull, a sharp point may be presented to the work simply by reversing the bit end for end and reinserting the bit in the holder opening and again clamping the bit in cutting position on the block by again tightening the set screw. The cutter bit, due to its relatively inexpensive design, may be discarded when both points become dull.

In the modified construction shown in Figs. 5, 6 and 7, a different form of cutter bit and a different form of bit supporting means are employed. The chain block 1, holder 11 and the set screw 7 are similar to those of the preferred embodiment above described. The cutter bit, as shown in Fig. 6, is generally designated 25 and comprises a body 26 generally rhomboidal in shape in side elevation and having parallel front and rear plane cutting faces 27 and 28 of elongated diamond shape, terminating in cutting

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points 29 at the opposite extremities of the bit on the opposite sides of the bit body. The bit is preferably generally diamond shape in cross section, and the cutting faces 27 and 28 are formed with projecting shoulders 30, providing abutment surfaces 31 disposed at right angles to the cutting faces. The chain block and holder, in this construction, are designed to secure a triangular shaped cutter bit, as shown in Fig. 3, in cutting position on the block, and when it is desired to secure the rhomboidal cutter bit 25, shown in Fig. 6, on the block, the triangular shaped cutter bit is removed from the holder opening 13 and replaced by the rhomboidal cutter bit 25. Inserted in the holder opening 13 is a bit support in the form of a filler member 32 of wedge-like shape having at its inner end rectangularly disposed surfaces 33 and 34 respectively engaging the exterior of the chain block at 35 and the plane rear wall 6 of the chain block socket 2 at 36. The rear inactive cutting face of the cutter bit engages a forwardly facing surface 37 on the bit support or the filler member 32, and the latter has a shoulder 38 which cooperates with the rear abutment surface 31 on the bit for locking the bit against endwise displacement from the holder opening. The inner portion of the active front cutting face 27 of the cutter bit, when the latter is in cutting position on the chain block, as shown in Fig. 5, rests against the inwardly and downwardly facing inclined surface 4. When the set screw 7 is tightened, the holder is thrust inwardly in the block socket 2 to clamp firmly the filler member 32 and the cutter bit in position against the chain block, with the filler member serving as a rear abutment for the cutter bit. When the set screw is released from the holder, the holder and filler member may be moved outwardly a slight distance in the block socket to disengage the front bit face from the front abutment 3 to enable the cutter bit to be readily released forwardly from the holder opening. As in the other embodiment of the invention, the cutter bit may be reversed end for end in the holder opening to present a sharp cutting point to the work when the other point has become dull, and, in this reversed position, the abutment on the other bit face engages the shoulder 38 on the filler member 32.

It will be evident that while rhomboidal and triangular shaped cutter bits of diamond shape in cross section are shown, other bit shapes may be employed to advantage.

As a result of this invention, an improved cutter chain is provided having improved bit mounting and holding means whereby a cutter bit may be secured in position on a chain block in an improved manner. It will further be evident that an improved cutter bit is provided which has novel means for predetermining the bit gauge. It will further be evident that an improved supporting and holding means is provided whereby cutter bits of different types may be held selectively in position on a chain block. By the provision of the abutments on the cutting faces of the cutter bit, not only may the bit gauge be predetermined, but also a stable support for the bit against the block is provided. By the provision of a filler member which is inserted in the holder opening, a rhomboidal shaped bit, as well as a triangular shaped bit, may be supported and held in cutting position on a chain block. Other uses and advantages of the invention will be clearly apparent to those skilled in the art.

While there are in this application specifically described two embodiments which the invention

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may assume in practice, it will be understood that these embodiments are 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. In a cutter chain, a chain block having a socket and a rearwardly facing inclined surface at the forward wall of the socket, a reversible cutter bit having spaced cutting faces terminating in cutting points at the opposite extremities of the bit and having shoulders on its cutting faces providing abutment surfaces, the front face of the bit engaging said inclined rearwardly facing block surface, and the abutment surface of the shoulder on the inner bit face resting against the rear wall of the block socket and the inner bit face resting against the exterior surface of the chain block, and a holder receiver in said block socket for securing said bit in cutting position on said block and having an opening for receiving the cutter bit.

2. In a cutter chain, a chain block having a socket normal to the path of travel of the chain, a holder having a shank received in said socket and a bit receiving opening extending obliquely through the holder, said block having a rearwardly facing inclined surface at the front wall of said socket, a cutter bit received in said holder opening and having a forward surface engaging said rearwardly facing inclined surface and its inner end resting on the exterior of said block rearwardly of said socket, said bit having at its inner end a shoulder engaging the rear wall of said block socket, and means for adjusting said holder in said block socket to clamp the bit in cutting position on said block, the rearward thrust of the bit when the latter is clamped in position by said holder being received by said rear socket wall engaged by said bit shoulder.

3. In a cutter chain, a chain block having a socket and a rearwardly facing inclined surface at the forward wall of the socket, a reversible cutter bit having spaced cutting faces terminating in cutting points at the opposite extremities of the bit and having shoulders on its cutting faces providing abutment surfaces, the front face of the bit inwardly of the abutment surface thereon engaging said inclined rearwardly facing block surface, and the abutment surface of the shoulder on the inner bit face resting against the rear wall of the block socket and the inner inactive cutting face resting on the exterior of said block rearwardly of said rear socket wall, and a holder received in said block socket for securing said bit in cutting position on said block and having an opening for receiving said cutter bit, said holder when forced inwardly in said block socket securing said front bit face and said inner abutment surface tightly against said block.

LEON E. SIMMONS.

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