

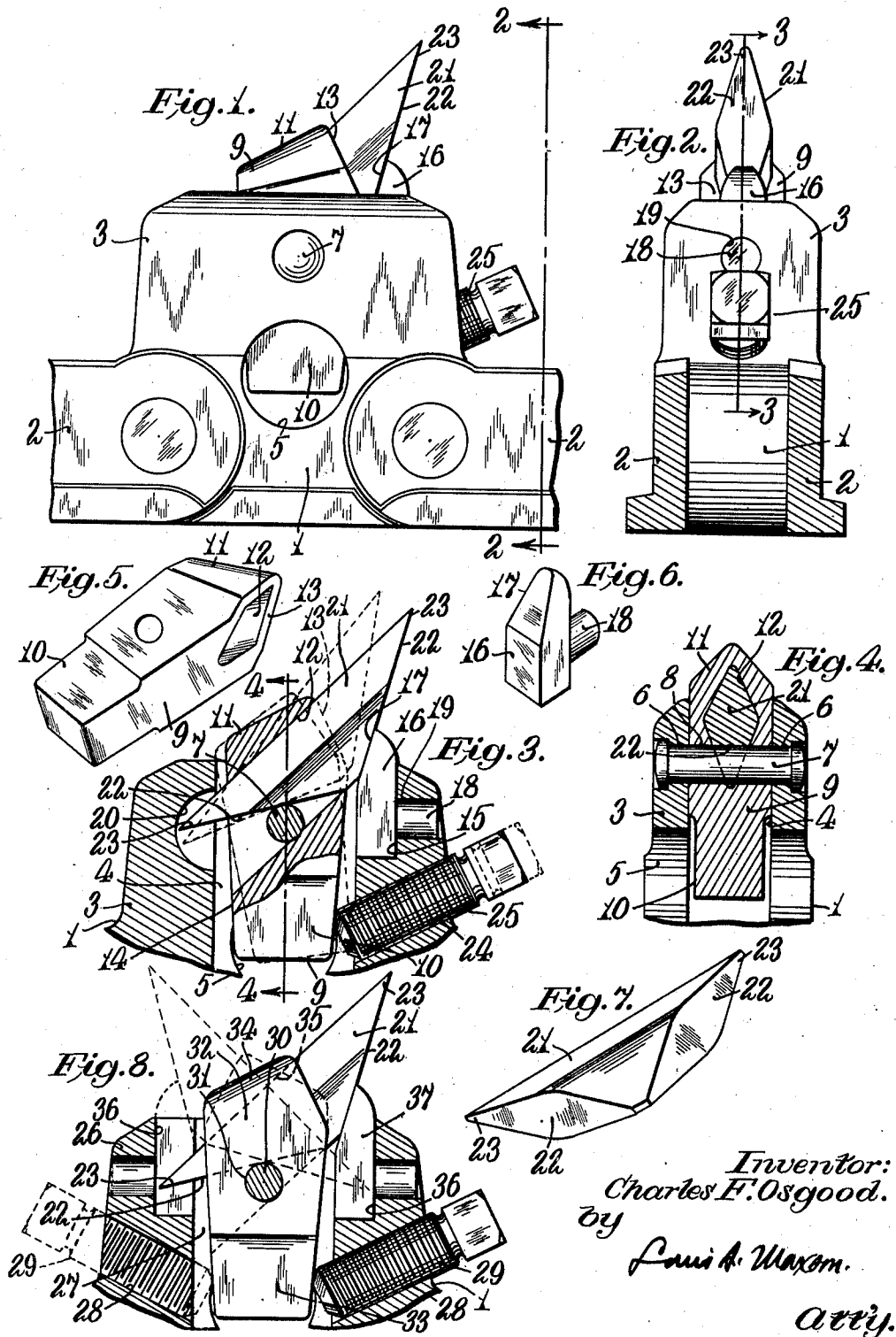
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CUTTER CHAIN

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CUTTER CHAIN

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This invention relates to cutter chains, and more particularly to improvements in supporting and holding means for a cutter bit of the double-ended, reversible type, especially designed for use

5 with the cutter chains of coal cutting machinery. An object of this invention is to provide an improved cutter chain having improved means for supporting and holding a cutter bit in cutting position thereon. Another object is to provide an improved supporting and holding means for a reversible cutter bit of the double-pointed type. A still further object is to provide an improved bit holder of the pivoted type having a socket for receiving a cutter bit and in which the pivot member for the holder provides an abutment for the cutter bit in the holder socket. Yet another object is to provide an improved bit holder mounted on a chain block for pivotal movement and having a pivot pin traversing the bit receiving socket in the holder whereby the pivot pin also serves as an abutment for the cutter bit in the holder socket, the inner end of the cutter bit abutting the pivot pin so that the pivot pin receives the inward cutting thrust of the bit within the holder socket. A still further object is to provide an improved clamping arrangement for a reversible cutter bit whereby the bit is clamped firmly in cutting position on the chain block. These and other objects and advantages of the invention will, however, hereinafter more fully appear.

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

35 In this drawing,

Fig. 1 is a side elevational view of an illustrative embodiment of the improved cutter chain.

40 Fig. 2 is a cross sectional view taken substantially on line 2—2 of Fig. 1, the chain block and cutter bit being shown in end elevation.

Fig. 3 is a view in longitudinal vertical section taken substantially on line 3—3 of Fig. 2 with parts shown in elevation.

45 Fig. 4 is a cross sectional view taken substantially on line 4—4 of Fig. 3.

Fig. 5 is a perspective view of the pivoted bit holder.

Fig. 6 is a perspective view of the bit engaging anvil.

50 Fig. 7 is a perspective view of the cutter bit.

Fig. 8 is a view similar to Fig. 3 showing another illustrative embodiment of the invention.

In the illustrative embodiment of the invention shown in Figs. 1 to 7, inclusive, 1 designates 55 a chain block, a series of which are pivotally

connected together by strap links 2. The chain block has a projecting lug 3 having a socket 4 opening outwardly through the outer surface of the lug and traversed by a bore 5 extending transversely through the block. Extending transversely across the block socket 4 and secured at 6 within the opposite sides of the block lug is a pivot pin 7, and pivotally mounted at 8 on this pivot pin is a bit holder 9. As illustrated, the bit holder 9 is in the form of a lever having a shank portion 10 projecting inwardly within the block socket and an integral head 11 projecting outwardly from the block socket in the manner shown. Extending completely through the holder is an outwardly and forwardly inclined bit receiving socket or opening 12, this socket opening forwardly through the front surface 13 of the holder head and rearwardly through the rear surface 14 of the holder; and the pivot pin 7 traverses the bit receiving socket 12 in the manner shown in Figs. 3 and 4. Secured within a recess 15 in the chain block lug in advance of the socket 4 is a bit engaging anvil 16 having an inclined rearward surface 17 against which the cutter bit abuts in a manner to be later explained. This anvil has an integral pin 18 having a press fit within a bore 19 in the block lug. By driving out the pin 18 from the lug bore, the anvil may be readily replaced, if desired. The chain block lug at the rear side of the socket 4 is recessed at 20, this recess opening forwardly within the block socket and receiving the inactive cutting point of the bit. Received in the holder socket 12 is a cutter bit 21 herein of the double-pointed reversible type. This cutter bit is herein preferably of substantially diamond shape in cross section and triangular in shape in side elevation, and has relatively inclined cutting faces 22 lying in the sides of the triangle, these cutting faces terminating in cutting points 23, 23 at the opposite ends of the triangle base at the same side of the bit. When the cutter bit is inserted within the holder socket, the inner inactive cutting face 22 of the bit rests against the pivot pin 7 in the manner shown, and the inner portion of the active cutting face of the bit abuts the inclined surface 17 of the anvil. Threaded within an outwardly inclined opening 24 in the chain block lug at the front side of the socket 4 is a set screw 25, and this set screw, when tightened, engages the shank 10 of the bit holder 9, thereby to swing the bit holder about its pivot to clamp the cutter bit tightly between the anvil and pivot pin within the holder socket. The recess 20 provides clearance and

protection for the inactive cutting point of the bit. When the set screw 25 is loosened, the bit holder 9 may be swung into the dotted line position shown in Fig. 3, so that the cutter bit 21 may be readily released from the holder socket 12, thereby to enable the cutter bit, when one cutting point becomes dull, to be reversed within the holder socket to present a sharp cutting point to the work.

10 In the illustrative embodiment of the invention shown in Fig. 8, the cutter chain is of the reversible type adapted to operate in either of opposite directions, and the chain block is constructed so that the bit holder may be supported thereon in reversed positions. In this construction, the chain block lug 26 has a socket 27, and formed in the lug at the opposite sides of the socket are threaded openings 28, 28 adapted selectively to receive a set screw 29. Traversing the block socket and secured within the opposite sides of the block lug is a detachable pivot pin 30 on which is pivotally mounted at 31 a bit holder 32. As in the embodiment of the invention above described, the bit holder is in the form of a lever having a shank portion 33 projecting inwardly within the block socket and an integral head 34 projecting outwardly from the block. Extending completely through the holder is an outwardly and forwardly inclined socket 35 for receiving the cutter bit 21, and the pivot pin 30 extends transversely through the holder socket. The block lug at the opposite sides of the socket 27 is recessed at 36 and these recesses are adapted selectively to receive an anvil 37 similar to the anvil 16 above referred to. When the cutter bit 21 is inserted within the holder socket its inner inactive cutting face abuts the pivot pin 30 in the manner shown, and the inner portion of the active cutting face of the bit abuts the anvil so that when the set screw 29 is tightened, the cutter bit is firmly clamped in position between the anvil and pivot pin within the holder socket. The rear inactive anvil receiving recess 36 receives the inactive cutting point of the bit. When it is desired to reverse the position of the cutter bit on the chain block, the set screw is removed from and transposed to the other threaded opening 28, and the pivot pin 30 is withdrawn axially from the block so that the bit holder may be removed from the block socket. The anvil 37 is then removed from its recess and transposed to the other recess. The bit holder is then turned within the block socket, as indicated in dotted lines in Fig. 8, and thereafter the pivot pin 30 is inserted in place. When the parts are thus disposed and the set screw is tightened, the cutter bit is clamped firmly in position with its active cutting point projecting in the opposite direction, as shown in dotted lines in Fig. 8.

60 In both illustrative embodiments of the invention, it will be noted that by the provision of the pivoted bit holder and anvil the cutter bit is firmly clamped in cutting position on the block. Further, by constructing the parts so that the pivot pin also serves as an abutment for the bit for limiting the inward movement of the bit within the holder socket, the construction is simplified. It will also be evident that the parts are relatively simple and rugged in design and may be cheaply manufactured. Other uses and advantages of the improved cutter chain will be clearly apparent to those skilled in the art.

While there are in this application specifically described two forms which the invention may assume in practice, it will be understood that

these forms of the same are shown for purposes of illustration and that the invention may be further 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 rotatable holder having a bit receiving opening, a pivot member for said holder on which the holder is rotatably mounted, said pivot member traversing said holder opening, and a cutter bit received in said holder opening and resting against said pivot member.

2. In a cutter chain, a pivoted bit holder having a bit receiving socket extending therethrough, a cutter bit received in said holder socket, and a pivot pin for said holder also serving as an abutment for the cutter bit within the holder socket.

3. In a cutter chain, a chain block having a socket, a pivot pin mounted in said block and traversing said socket, a bit holder pivotally mounted in said block socket on said pivot pin and having a bit receiving socket, said pivot pin traversing said holder socket, and a cutter bit received in said holder socket and resting against said pivot pin.

4. In a cutter chain, a rotatable holder having a bit receiving opening, a cutter bit received in said opening, and a combined pivotal holder mounting and bit abutment member extending through said opening and on which said holder is rotatably mounted, said cutter bit seated against said member in said opening.

5. In a cutter chain, a chain block having a socket, a pivot pin mounted in said block and traversing said socket, a bit holder lever pivotally mounted on said pivot pin and having a shank projecting inwardly within said block socket and an integral head projecting outwardly from said block socket, said holder having a bit receiving opening extending therethrough, said pivot pin traversing said holder opening, and a cutter bit received in said holder opening and resting at its rearward end against said pivot pin.

6. In a cutter chain, the combination comprising a chain block having a socket, a pivoted bit holder arranged in said block socket and having a bit receiving socket, means on said block providing a pivotal mounting for said holder, and a cutter bit received in said holder socket, said pivotal-mounting-providing-means also serving as an abutment against which the end of the bit reacts.

7. In a cutter chain, the combination comprising a chain block having a socket, a pivoted bit holder arranged in said block socket and having a bit receiving socket, means on said block providing a pivotal mounting for said holder, and a cutter bit received in said holder socket, said pivotal-mounting-providing-means extending transversely of said holder and traversing the holder socket, the inner end of said cutter bit reacting against said pivotal-mounting-providing-means within said holder socket.

8. In a cutter bit supporting and holding structure, bit supporting and holding means providing a socket and a pivot pin extending through said socket, said bit supporting and holding means including a bit holding member pivotally mounted on said pivot pin for swinging movement thereon between bit-clamping and bit-releasing positions, and a cutter bit received in said socket and resting against said pivot pin.

9. In a cutter bit supporting and holding structure, a block, bit supporting and holding means

mounted on said block and providing a socket
and a pivot pin extending through said socket
and mounted at its ends in said block, said bit
supporting and holding means including a bit
5 holding member pivotally mounted on said pivot
pin for swinging movement thereon between bit-

clamping and bit-releasing positions, and a cut-
ter bit received in said socket and resting against
said pivot pin and abutting against a surface on
said block.

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