

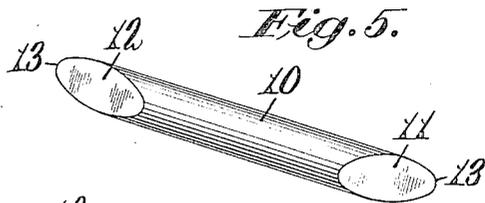
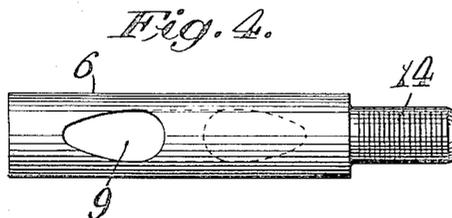
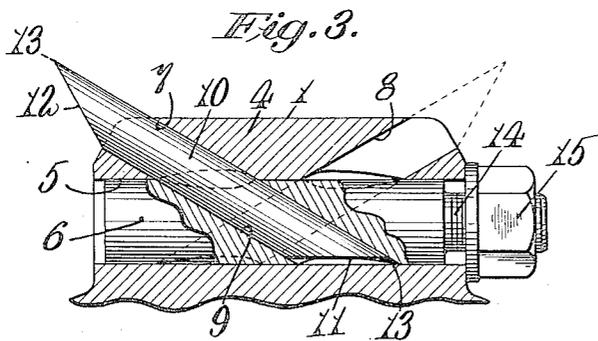
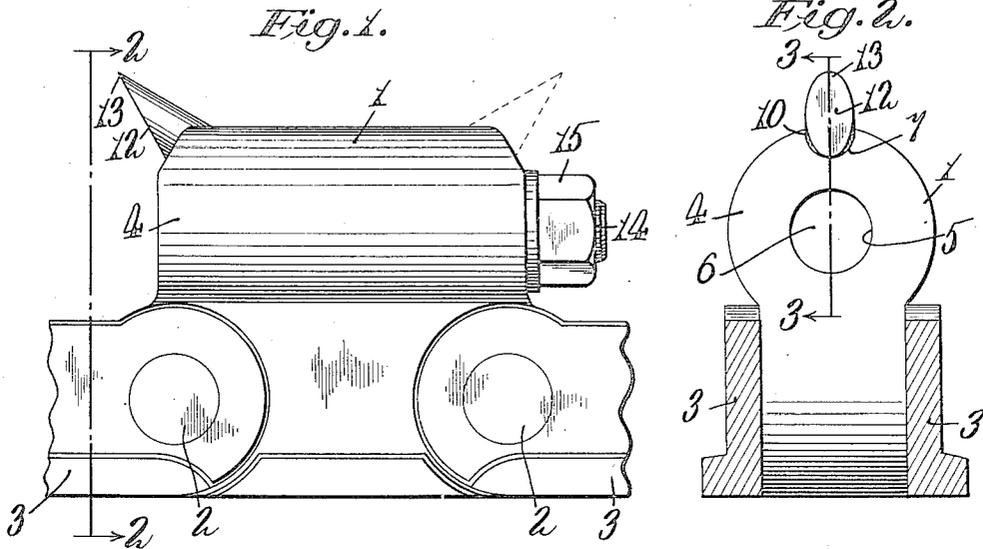
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CUTTER CHAIN

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2,028,811

CUTTER CHAIN

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10 Claims. (Cl. 262—33)

This invention relates to cutter chains, and more particularly to improvements in cutter chains especially designed for use with coal cutting appliances.

An object of this invention is to provide an improved cutter chain. Another object is to provide an improved bit block for a cutter chain and improved means for holding the cutter bit within the bit block. Still another object is to provide an improved reversible cutter chain. These and other objects of the invention will, however, hereinafter more fully appear.

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

In this drawing,—

Fig. 1 is a side elevational view of the illustrative form of the improved cutter chain;

Fig. 2 is a cross sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a longitudinal section taken on line 3—3 of Fig. 2;

Fig. 4 is a detail view showing the improved bit holder;

Fig. 5 is a perspective view showing the cutter bit.

In this illustrative construction, the improved cutter chain comprises a bit block 1 of improved design, pivotally connected by transverse pins 2 to side straps 3. The cutter chain is of the reversible type and is adapted to cooperate with any suitable form of driving means for driving the same in either of opposite directions. Extending longitudinally through the body 4 of the bit block is a bore 5 of uniform diameter for receiving a cylindrical bit holder 6. The bit block body is provided with oppositely inclined bores 7 and 8, while the cylindrical bit holder is traversed by an inclined bore 9, the bore 9 when in the position shown in Fig. 3 registering with the bore 7. The bore 7 opens at the forward end of the block body at the top thereof, while the bore 8 is similarly located at the rear end of the block body. Received in the bores 7 and 9 is a cylindrical body 10 of the cutter bit. This cutter bit may be identical in design to that disclosed in the copending application of one Morris P. Holmes, Serial No. 658,804, filed Feb. 27, 1933, and is in the form of a cylindrical rod section having beveled end surfaces 11 and 12 forming cutting points 13 at the opposite ends of the cylindrical bit body. The bit may be formed from various symmetrically shaped bar stock, and it is not desired to limit the invention to the particular form shown. The cutter bit has its points 13, 13 at its opposite ends and at the extremities of elongated faces which are identical in outline, lie in planes forming a dihedral angle, and are individually symmetrical as to both major and minor axial lines. The rearward end

of the cylindrical holder 6 is provided with a reduced threaded portion 14 for receiving an adjusting nut 15 acting against the rear face of the bit block body.

When the cutter bit is inserted in the position shown in Fig. 3 and the nut 15 tightened, the bit holder is drawn axially in the rearward direction to rigidly clamp the cutter bit within the opening 7. When the cutting end 13 of the cutting face 12 becomes dull, the nut 15 is loosened, thereby to permit axial release of the cutter bit from the bores 9 and 7; and the bit is then turned end-for-end within the bores 7 and 9, thereby to present a new cutting point, the inclined surface 11 of the bit at that time presenting the active cutting point. The nut 15 is then again tightened to draw the bores 7 and 9 slightly out of alinement to clamp the bit against axial displacement from the bore 7. When it is desired to operate the cutter chain in the reverse direction, the nut 15 is loosened and the cutter bit withdrawn from the bores 7 and 9. The cylindrical bit holder 6 is then turned through 180° to bring the bore 9 in registry with the oppositely inclined bore 8 in the bit block. The cutter bit is then inserted in the bores 8 and 9, and the nut 15 is then again tightened to clamp the bit in operative position. In lieu of rotating the bit holder 6 in the manner above described, the bit holder may be turned end-for-end to bring the bores 8 and 9 into registry, the nut 15 then acting on the opposite face of the bit block body. Also if desired, the bit holder may be provided with a plurality of inclined bores 9, one registering with the bore 7 and the other registering with the oppositely inclined bore 8 in the bit block, so that readjustment of the bit holder would be unnecessary when reverse operation of the cutter chain is desired. In the improved cutter chain, the bit blocks are arranged in series and connected together by the side straps 3, and different bit blocks are provided with bores which correspond to the bores 7 and 8, and whose axes are respectively similarly inclined with respect to the axial line of the bore 5, but which lie in pairs in different axial planes passing through the axis of bore 5, so that as the cutter chain is driven a kerf is cut in the material acted upon thereby, to a width sufficient to receive the cutter chain blocks, by the bits in said bores.

As a result of this invention, it will be noted that an improved cutter chain is provided, having an improved bit block and associated bit holding means for holding the bit in place within the block. It will further be noted that the improved cutter chain is of an extremely simple design, the improved bit block sockets being formed by simple boring operations and the improved bit holder being formed of a cylindrical piece of bar stock turned into shape, thereby greatly de-

creasing the cost of manufacture. These and other uses and advantages of the improved cutter chain will be clearly apparent to those skilled in the art.

- 5 While I have in this application specifically described one form which my invention may assume in practice, it will be understood that this form is shown for purposes of illustration only, 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:

- 15 1. A cutter chain comprising a bit block having a longitudinal bore, a cutter bit holding element having a cylindrical body receivable in said longitudinal bore, said bit block having a longitudinally-inclined transversely disposed bit receiving opening terminating at its inner end in said longitudinal bore and said bit holding element having a longitudinally-inclined transversely disposed bit receiving opening, said inclined openings when alined adapted to receive the body of a cutter bit, the inner end of the bit terminating within said opening in said holding element, and means for adjusting said holding element axially in its bore to clamp the bit in position in said inclined bit block opening.

- 20 2. A cutter chain comprising a bit block having a longitudinal bore, a cutter bit holding element having a cylindrical body receivable in said longitudinal bore, said bit block having a longitudinally-inclined transversely disposed bit receiving opening terminating at its inner end in said longitudinal bore and said bit holding element having a longitudinally-inclined transversely disposed bit receiving opening, said inclined openings when alined adapted to receive the body of a cutter bit, the inner end of the bit terminating within said opening in said holding element, and means for adjusting said holding element axially in its bore to clamp the bit in position in said inclined bit block opening including an adjustable holding-element-adjusting member and means formed at one end of said bit holding element with which said adjustable member cooperates in effecting axial adjustment of said holding element.

- 30 3. A cutter chain comprising a bit block having a longitudinal bore and a relatively inclined bore communicating with said longitudinal bore, a bit holder arranged in said longitudinal bore and having a bore alined with said relatively inclined bore, said alined bores adapted to receive a cutter bit, and a cutter bit receivable in said alined bores, said inclined bit block bore terminating at said longitudinal bore and the inner end of said bit terminating within the bore in said bit holder.

- 40 4. A cutter chain comprising a bit block having a longitudinal bore and a relatively inclined bore communicating with said longitudinal bore, a bit holder arranged in said longitudinal bore and having a bore alined with said relatively inclined bore, said alined bores adapted to receive a cutter bit, a cutter bit receivable in said alined bores, said inclined bit block bore terminating at said longitudinal bore and the inner end of said bit terminating within the bore in said bit holder, and means engageable with said holder for adjusting the latter axially to bring said bit-receiving bores slightly out of alinement to hold the cutter bit in position.

5. A cutter chain comprising a bit block having a longitudinal bore, oppositely disposed relatively inclined bit-receiving bores communicating with said longitudinal bore, and a bit holder mounted in said longitudinal bore and traversed by a bit-receiving opening adapted to register selectively with either of said relatively inclined bores.

6. A cutter chain comprising a bit block having a longitudinal bore, oppositely disposed relatively inclined bit-receiving bores communicating with said longitudinal bore, a bit holder mounted in said longitudinal bore and traversed by a bit-receiving bore adapted to register selectively with either of said relatively inclined bores, and means cooperating with said holder for adjusting the same axially to move said registering bores slightly out of registry to hold a cutter bit in position within one of said relatively inclined bores.

7. A reversible cutter chain comprising a bit block, and bit holding means rotatably mounted in said bit block and rotatable into one position to hold the bit in a position to cut in one direction and into another position to hold the bit in a position to cut in the reverse direction, said bit holding means operative in said first-mentioned position to hold the bit in position to cut in the first-mentioned direction only, and when in the second-mentioned position to hold the bit in position to cut in the reverse direction only.

8. A cutter chain comprising a bit block having a longitudinal bore, a cylindrical bit holder receivable in said bit block bore, a bore in said bit block relatively outwardly and forwardly inclined with respect to and terminating at its inner end in said longitudinal bore, a cutter bit receivable in said inclined bore and engageable at its inner end with the walls of said longitudinal bore and having an outwardly and forwardly projecting cutting end, the bit being positioned in its bore angularly about its longitudinal axis by said engagement of its inner end with the walls of said longitudinal bore, and means for adjusting said bit holder to clamp said bit in position within said inclined bore.

9. A cutter chain comprising a bit block having a longitudinal bore, a cylindrical bit holder receivable in said bit block bore, a bore in said bit block relatively outwardly and forwardly inclined with respect to and terminating at its inner end in said longitudinal bore, a double ended cutter bit having pointed cutting ends, said bit receivable in said inclined bore, the inner inactive cutting end of the bit engaging the walls of said longitudinal bore, the active cutting end of the bit extending outwardly and forwardly with respect to the bit block, the bit being positioned in its bore angularly about its longitudinal axis by engagement of its inner inactive cutting end with the walls of said longitudinal bore, and means for adjusting said bit holder to clamp said bit in position in said inclined bore.

10. A cutter chain comprising a bit block having a longitudinal bore, oppositely disposed relatively inclined bit-receiving bores communicating with said longitudinal bore, and a cylindrical bit holder mounted in said longitudinal bore and traversed by a bit-receiving opening adapted to register selectively by rotation of said bit holder in its bore with either of said relatively inclined bores.

LEON E. SIMMONS.