

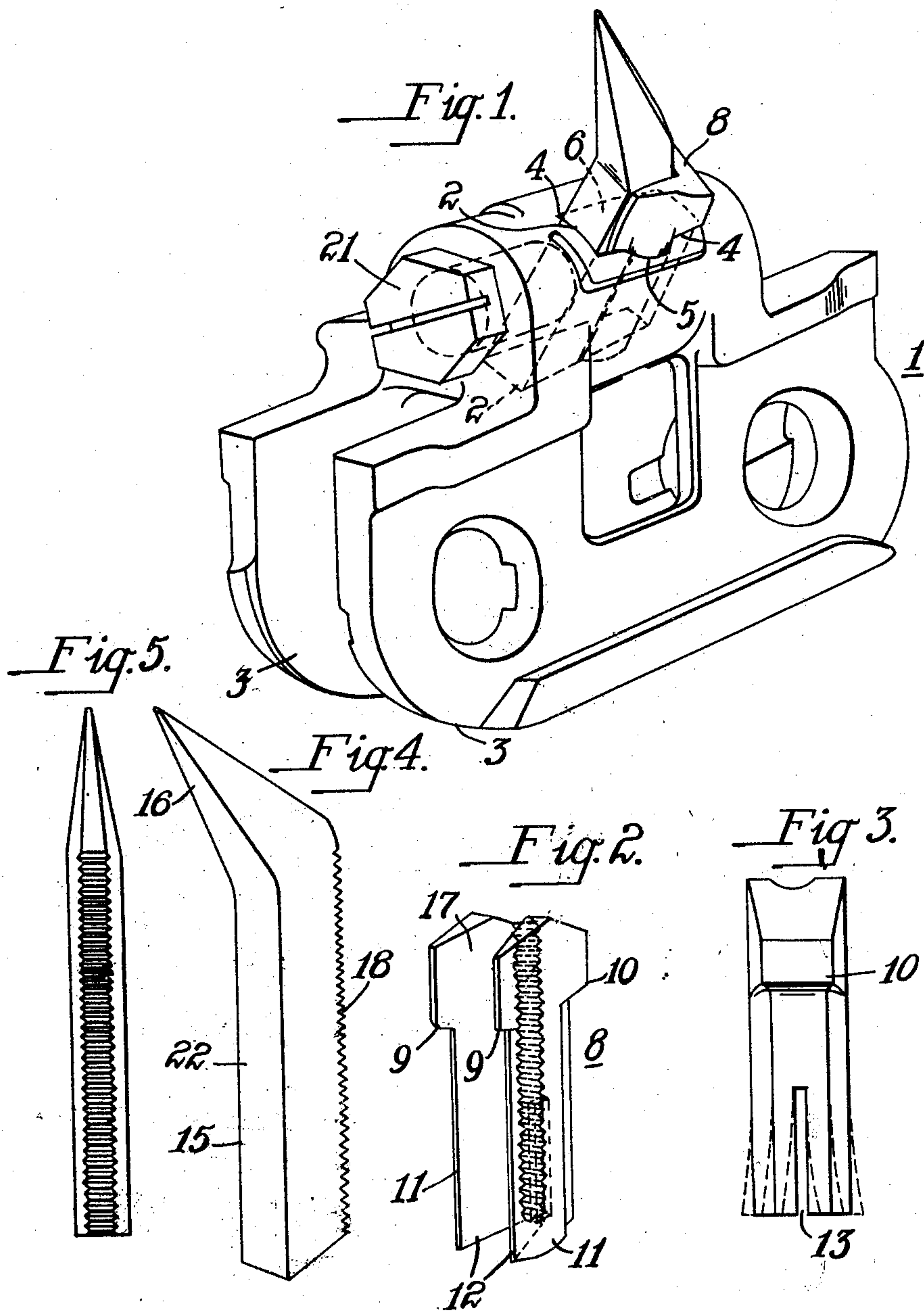
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F. CARTLIDGE

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CUTTER CHAIN

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INVENTOR

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## UNITED STATES PATENT OFFICE

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## CUTTER CHAIN

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This invention relates to cutter chains and particularly to cutting tools and supplementary sockets therefor.

Heretofore cutter chains of the endless type have been constructed and employed for breasting coal in mines with varying degrees of success. The links of the chains of the prior art devices have each been provided with a socket for receiving the bit of the cutting tool. This form of construction has proven unsatisfactory because the wall of the sockets break down and allow the bit of the cutting tool to move in the socket. With continued use of the chain, the links in which the sockets are located finally break or become so battered and worn that new links must be replaced in the chain and the replacements of the links have been so frequent that maintenance charges have been very high and expensive.

Removable supplementary sockets have also been tried and applied to cutter chains of the type referred to above, but have not proven satisfactory because the supplementary sockets have failed in practice in substantially the same manner as the cutter chains which did not include supplementary sockets.

Accordingly, it is an object of the present invention to provide an improved supplementary tool bit socket for links of cutter chains that shall be simple in construction, efficient in operation and easily manufactured and installed.

Another object of the invention is to provide an improved supplementary socket and tool bit that shall not become loose and thereby break down the walls of the socket in the link.

A further object of the invention is to provide for rigidly supporting the bit of a cutting tool in the sockets of the cutter chain links.

Other objects of the invention will, in part, be obvious and will, in part, appear hereinafter from the following description taken in conjunction with the accompanying drawings in which:

Figure 1 is a view in perspective of a link

for a cutter chain having a cutting tool and supplementary socket arranged and constructed in accordance with the invention;

Fig. 2 is a view in perspective of the supplementary socket;

Fig. 3 is a rear plan view of the socket shown in Fig. 2;

Fig. 4 is a view in perspective of the cutting tool shown in Fig. 1; and

Fig. 5 is a rear plan view of the cutting tool shown in Fig. 4.

In Fig. 1 of the drawings a male link 1 for a cutter chain is shown. Since cutter chains embodying the link 1 are employed in the coal fields for breasting coal and are well known in the art, it is not necessary to show and describe in detail a complete cutter chain.

The link 1 is provided with a socket 2 inclined at an angle with reference to flanges 3 of the link. The socket 2 is preferably rectangularly in transverse section. The long sides 4 of the socket 2 are preferably provided with semi-circular recesses 5 and 6 extending the full depth of the socket.

A supplementary socket 8 having a slot 17 of substantially V-shape is disposed in the socket 2. The supplementary socket 8 is provided with flanges 9 and 10 that are disposed to seat upon the link 1 adjacent to the short sides of the socket 2. The socket 8 is also provided with longitudinally extending circular bosses 11 on the outer faces of the legs 12 of the socket, the bosses 11 being disposed to fit snugly into the recesses 5 and 6 of the socket 2 of the link.

In order that the supplementary socket 8 be held firmly in the socket 2, a slot 13 is provided at the lower end thereof. The lower end of the socket 8 may then be spread or flared outwardly as indicated by the broken lines in Fig. 3. The supplementary socket 8 may, therefore, be driven into the socket 2 and held firmly therein by the friction exerted between the lower end of the member 8 and the walls of the recesses 5 and 6 of the socket 2.

Since the supplementary socket 8 is removable from the link 1, it may be made of metal that will withstand the strains to which it is



subjected in practice without undergoing any material deformation. The supplementary socket 8 may also be heat treated so that the desirable metallurgical characteristics may be obtained conducive to long life.

Since the sides of the supplemental socket is provided with the semi-circular bosses 11, the thickness of the walls is such that great strength and rigidity are obtained. The metal of the supplemental socket will, therefore, not be fatigued to such an extent that it will break down or crumble in operation. The cost of maintenance of cutter chains including the supplemental socket 8 of the type shown and described will, therefore, be reduced to a minimum.

The supplementray socket 8 is disposed to receive a cutting tool bit 15, the upper end of which terminates in a cutting point 16. The tool bit 15 and the cutting point 16 are substantially V-shaped in section, the complement of the V-shaped slot 17 in the supplementary socket 8.

In order that the tool bit 15 may be prevented from moving longitudinally of the supplementary socket 8, the bottom of the V-shaped slot 17 in the socket and the edge 18 of the tool bit are provided with notches similar to saw teeth. When the tool bit 15 is mounted in place as shown in Fig. 1, the notches in the bottom of the V-shaped slot 17 and the notches disposed along the edge of the tool bit intermesh to thereby prevent the tool bit from moving longitudinally of the V-shaped slot 17 in the supplementary socket 8.

In order to firmly lock the cutter tool bit 15 and the supplementary socket in place, a set screw 21 may be provided (see Fig. 1). The set screw 21 extends longitudinally along the top of the link and the end thereof presses firmly against the broad edge 22 of the tool bit 15.

While only the male link for a cutter chain has been shown, it is to be understood that the female links may be similarly constructed so far as the supplemental socket 8 and the cutter bit 15 are concerned. The female links may be provided with a socket 2 in the same manner as the male link 1.

While various modifications and changes may be made in the cutter chain links and the supplemental sockets and the cutter bits without departing from the spirit and the scope of the invention, it is to be understood that only such limitations shall be placed on the invention as are imposed by the prior art and the appended claims.

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

1. In combination, a link for a cutter chain having a socket therein substantially rectangular in transverse section, and a longitudinally extending recess in two oppositely opposed walls, a supplemental socket having a

slot therein of substantially V-shape, and a cutting tool having a bit of substantially V-shape disposed in the slot of the supplemental socket in complementary relation thereto.

2. In combination, a link for a cutter chain having a socket therein and longitudinally extending recesses in the walls of said socket, a supplemental socket disposed in the socket, said supplemental socket having longitudinally extending bosses disposed in complementary relation to the longitudinally extending recesses, said supplemental socket being provided also with a tool bit receiving slot of substantially V-shape in section, and a cutting tool including a tool bit of substantially V-shape disposed in the slot of the supplemental socket in complementary relation thereto.

3. A supplemental socket for a cutter chain having a slot of substantially V-shape therein and saw tooth like projections at the bottom of the slot, said socket being split at one end thereof.

In testimony whereof, I have hereunto subscribed my name this 30th day of September, 1929.

FRANK CARTLIDGE.