

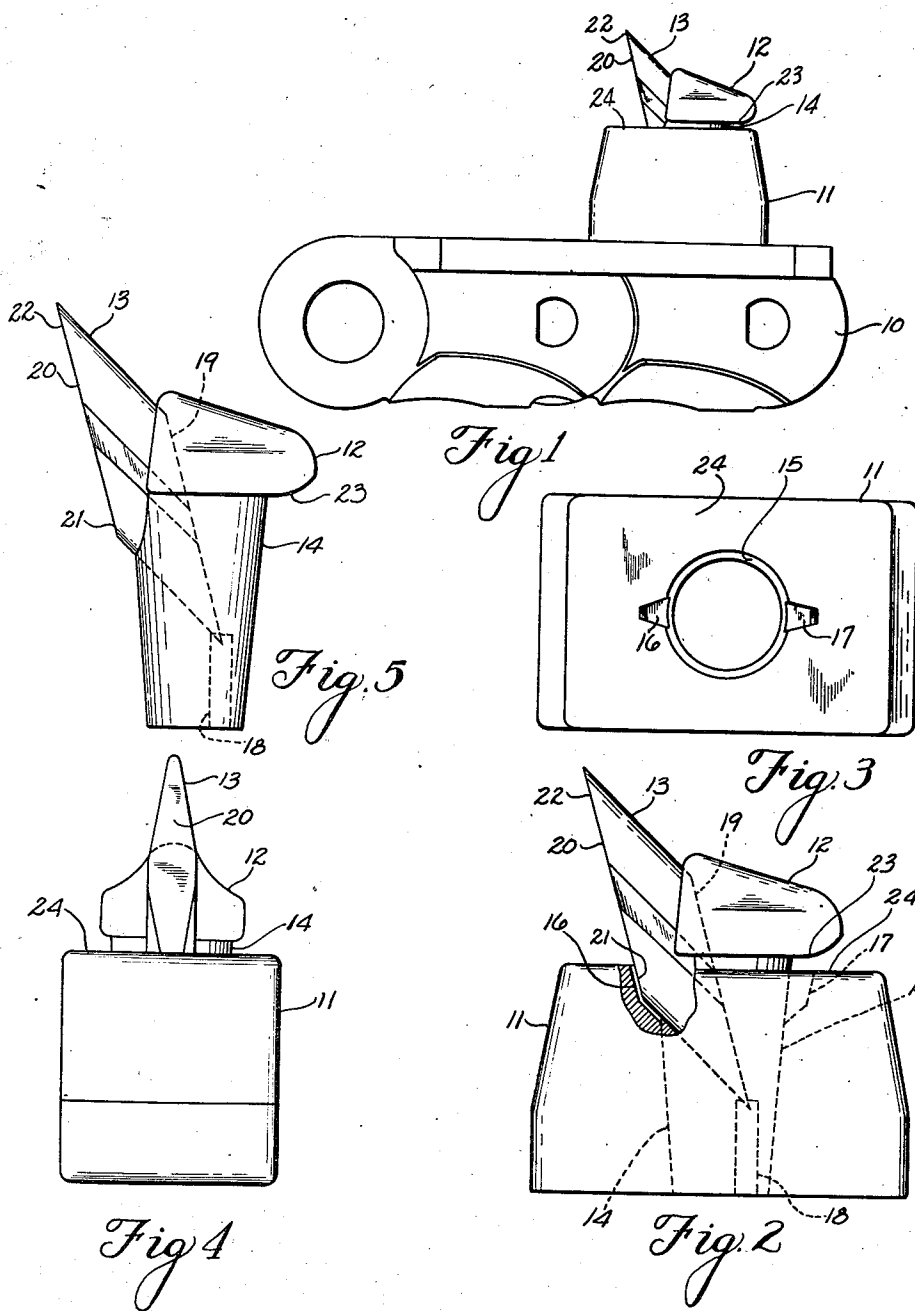
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WEDGE-GRIP HOLDER FOR BITS

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WEDGE-GRIP HOLDER FOR BITS

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My invention relates in general to mining machine cutting chains and more particularly to a bit holder for a mining machine chain lug.

The mining machine chain in which this bit holding body is employed is the type consisting of an endless chain. Each of the several bits held in the chain block of the endless chain will cut its equal share only if all are maintained at a uniform distance or gauge from the chain lug. Further, the area surrounding the cutting bit is subjected to extensive wear because of its exposed position. It has been generally recognized that a suitable replaceable holder for the bit is desirable because it may be replaced at a lower cost than replacing the entire block. Many different types of holders have been used in the past, but generally it is necessary to remove the holder as well as the bit whenever a bit is to be replaced or reversed. Although these holders receive a considerable amount of wear, they do not receive as much wear as the actual cutting bit, and therefore, have a much longer life than the bit. It is desirable, therefore, that a bit holder be used which is readily operable to release the bit from the holder without employing set screws or other devices, and at the same time keep the bit gauge. Therefore, an object of my invention is the provision of a bit holder for a bit carrying block which fits semi-wedgingly in a recess of the block and which is disposed to be raised in the recess for inserting a bit into or removing it from the bit holder.

Another object of my invention is the provision for holding a cutting bit at a uniform distance or gauge from the chain lug.

Another object of my invention is the provision for holding a bit within a recess of a chain lug block with a clearance between the face of the bit and the lug block so as not to interfere with the proper gauging of the bit in the lug block.

Another object of my invention is the provision of improved means to hold a bit holder in a recess of a chain lug by a wedge-grip fit.

Another object of my invention is the provision of an overhanging portion on the bit holder which is spaced from the top of the lug block to receive a tool for removing the bit holder from the recess of the chain lug block.

Other objects and a fuller understanding of my invention may be had by referring to the following description and claims, taken in conjunction with the accompanying drawing, in which:

Figure 1 is a side elevational view of a mining machine chain lug and block having a bit holder

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therein and embodying the features of my invention;

Figure 2 is a side elevational view of the chain block illustrating the position of the lug recess and bit holder surfaces in outline form;

Figure 3 is a top view of Figure 2 with the bit and holder removed;

Figure 4 is a front view of Figure 2; and

Figure 5 is a side elevational view of a bit holder having a bit therein and embodying the features of my invention.

With reference to the drawing, my mining machine chain lug and block to carry a bit holder embodying the features of my invention may comprise a chain lug 10 having a block 11 and a bit holder 12 having a bit 13 fitting therein. The cutting bit 13 may be of any suitable type and is illustrated as a double-ended or pointed type having a rhomboidal outline in side elevation, and having substantially diamond shaped parallel end cutting faces offset relative to each other at a rhomboidal angle.

With reference to Figures 2 and 5 of the drawing, I illustrate an embodiment of a block holder conforming to the features of my invention. In the Figure 2, I illustrate a block recess 15 having a slightly tapering form from the top to the bottom of the block. The bit holder 12 has a shank portion 14 of a tapered construction which fits complementarily within the tapered recess 15. The recess 15 and the shank of the holder are preferably machined to give a taper to form a semi-permanent wedge-fit to hold the holder in the chain lug block. The amount of the taper is slightly more than the so-called Morse taper so as to prevent the shank 14 from becoming wedged too tightly in the recess 15. Thus, when the shank 14 is placed in the recess 15 with a slight amount of force, the shank 14 is semi-wedgingly held in place and may be removed or raised from the recess by applying a wedge-like tool between the undersurface of the overhanging portion 23 and the top surface of the block 24 and producing a lifting force upon the holder. As illustrated in Figure 2, the chain block 11 at the entrance of the recess and on opposite sides thereof is provided with inclined slots 16 and 17 having a bottom wall which meets with the top surface of the lug block. The cutting face 20 of the bit 13 projects outwardly and forwardly from the inclined slot 16 with the inactive portion 21 of the face of the bit disposed within the inclined slot 16 and with the active portion 22 of the cutting face 20 constituting an active cutting face for cutting the coal. Inasmuch as the recess 15 and the holder shank 14

are round the holder is reversible and when the holder is mounted in its reversed position the inactive portion 21 of the cutting face 20 of the bit then is disposed to fit into the inclined slot 17 of the chain lug. The bit holder receives the bit in a bit receiving socket portion 19 and in this invention the side walls of the bit receiving socket portion 19 and the side walls of the bit produce a wedge-grip action between the bit and the holder for holding the bit semi-wedgingly in the bit receiving socket portion 19. Therefore, when the bit is inserted through the bit receiving socket portion 19 and given a slight tap upon the pointed end thereof, a wedging gripping action is produced for semi-wedgingly holding the bit within the holder. It is noted that an opening 18 is provided at the end of the bit receiving socket portion 19 and communicates with the bottom of the shank portion 14 to allow any foreign material which might drop into the socket 19 to egress therefrom and not interfere with the holding of the bit in the socket.

The surfaces of the recess 15 and the shank of the holder 14 may be made with close accuracy by machining and as a result the bit holder 12, when mounted into the recess 15, will proceed a predetermined distance into the recess before it is arrested and brought to a stop. A predetermined stopping place as effected by the wedging action between the shank and the recess produces a definite gauge in the bit 13. That is, the active cutting portion 22 of the bit 13 will be placed a predetermined distance from the top surface of the block 11. The holder maintains the bit in such a position that the inactive portion 21 of the face of the bit is spaced at a distance away from the bottom wall of the inclined slot, whereby a space is left therebetween to prevent wedging of the bit in the inclined slot before the inward movement of the holder into the recess is arrested by the wedge-grip fit between the shank portion and the recess. In removing the bit the holder is first raised a short distance until the bit clears the top surface of the block, after which the bit may be removed from the holder and a new bit inserted in its stead. After the new bit is inserted, or the bit has been reversed end-to-end to present a new cutting point, the holder may again be dropped into the recess and then given a slight tap to wedgingly hold the shank within the recess. The bottom wall of the inclined slot in which the inactive cutting portion of the face of the bit fits, functions as a stop to keep the bit from being withdrawn from the holder when the holder is wedgingly mounted within the recess. In addition, the interfitting engagement of the inactive portion of the face of the bit and the inclined slot into which the bit fits keeps the holder from turning within the recess during cutting operation of the coal or other material. Thus, the holder is locked for forward cutting position when the bit fits into the inclined slot 16 and is locked for cutting in a reverse direction when the inactive cutting portion of the face of the bit fits into the recess 17.

Although I have described my invention with a certain degree of particularity, it is understood that the present disclosure has been made only by way of example and that numerous changes in the details of construction and the combination and arrangement of parts may be resorted to without departing from the spirit and the scope of the invention as hereinafter claimed.

What is claimed is:

1. In a chain lug block having a recess extending downwardly from the top thereof, the improvement of a bit holder receivable in said recess, a bit to fit into said holder, said holder having a bit receiving portion with inner wall surfaces to receive said bit and a shank portion, said shank portion and said recess having complementary tapered walls forming a wedge-grip fit therebetween to hold the shank portion in said recess and to arrest inward movement of said holder into said recess to maintain a fixed cutting gauge for said bit, said recess having at its entrance an inclined slot on one side thereof with a bottom wall meeting with the top of the lug block, said bit having a forwardly and outwardly projecting cutting face, said holder maintaining said bit in a cutting position with a portion of the cutting face disposed within the inclined slot and a portion thereof extending therefrom and constituting an active cutting face of said bit, said holder maintaining said bit cutting face within the inclined slot at a distance away from the bottom wall thereof, whereby a space is left therebetween to prevent wedging of the bit in the inclined slot before the inward movement of the holder into the recess is arrested by the wedge-grip fit between the shank portion and the recess.

2. In a chain lug block having a recess extending downwardly from the top thereof, the improvement of a bit holder receivable in said recess, a bit to fit into said holder, said holder having a bit receiving portion with inner wall surfaces to receive said bit and a shank portion, said shank portion and said recess having complementary tapered walls forming a wedge-grip fit therebetween to hold the shank portion in said recess and to arrest inward movement of said holder into said recess to maintain a fixed cutting gauge for said bit, said recess having at its entrance an inclined slot on one side thereof with a bottom wall meeting with the top of the lug block, said bit having a forwardly and outwardly projecting cutting face, said holder maintaining said bit in a cutting position with a portion of the cutting face disposed within the inclined slot and a portion thereof extending therefrom and constituting an active cutting face of said bit, said holder maintaining said bit cutting face within the inclined slot at a distance away from the bottom wall thereof, whereby a space is left therebetween to prevent wedging of the bit in the inclined slot before the inward movement of the holder into the recess is arrested by the wedge-grip fit between the shank portion and the recess, said inclined slot providing a stop precluding inserting said bit into and withdrawing it from said bit receiving portion of the holder.

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