C. J. KIENZLE.

CUTTING CHAIN.

APPLICATION FILED MAY 3, 1920.

1,375,638.

Patented Apr. 19, 1921.

2 SHEETS—SHEET 1.

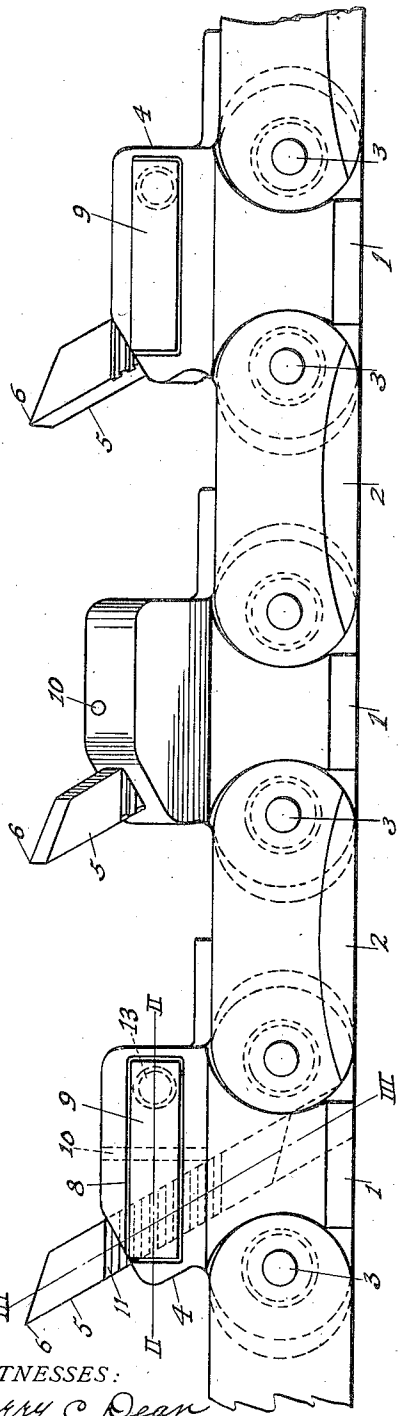


Fig. 1.

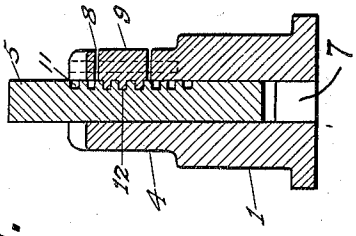


Fig. 3.

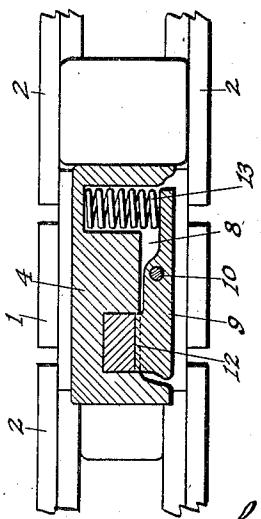


Fig. 2.

WITNESSES:

Harry C. Dean

Dudley T. Fisher

INVENTOR

Charles J. Kienzle

BY

Dyer & Bliss

ATTORNEY

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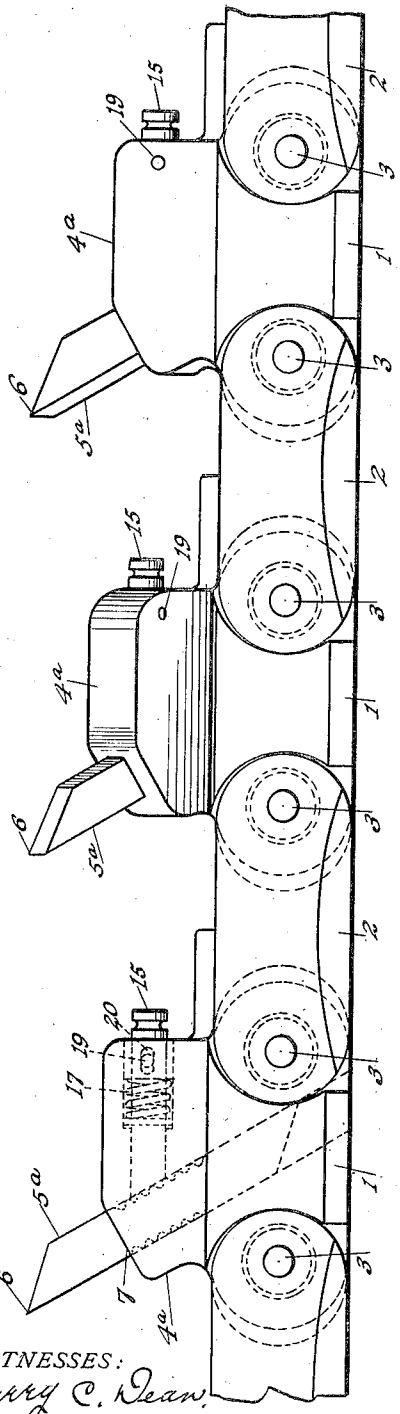


Fig. 4.

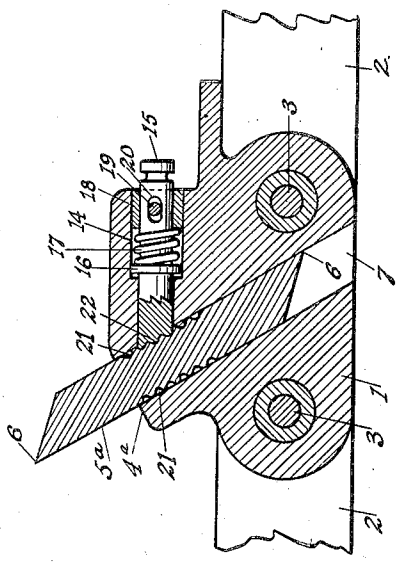


Fig. 6.

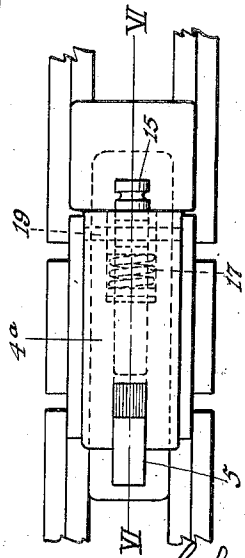


Fig. 5.

WITNESSES:

Harry C. Dean.

Dudley C. Fisher

INVENTOR

Charles J. Kienzle

BY Pennie & Bliss

ATTORNEY

UNITED STATES PATENT OFFICE.

CHARLES J. KIENZLE, OF COLUMBUS, OHIO, ASSIGNOR TO THE JEFFREY MANUFACTURING COMPANY, OF COLUMBUS, OHIO, A CORPORATION OF OHIO.

CUTTING-CHAIN.

1,375,638. Specification of Letters Patent. Patented Apr. 19, 1921.

Application filed May 3, 1920. Serial No. 378,517.

To all whom it may concern:

Be it known that I, CHARLES J. KIENZLE, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Cutting-Chains, of which the following is a specification, reference being had therein to the accompanying drawings.

The present invention relates to certain new and useful improvements in cutting chains for coal mining and other machines.

The especial object of this invention is to provide a chain of strong and simple construction comprising means for securely holding the renewable cutter bits during operation of the machine which will permit of expeditious and convenient replacement and adjustment of said bits.

The means by which I attain this object are fully set forth in the following specification and illustrated in the accompanying drawings of which—

Figure 1 is a side elevation of a portion of a chain embodying my invention.

Fig. 2 is a plan view partly in section taken along the line II—II of Fig. 1.

Fig. 3 is a transverse section taken along the line III—III of Fig. 1.

Fig. 4 is a view similar to Fig. 1 showing a chain of alternative construction.

Fig. 5 is a plan view of one of the links shown in Fig. 4.

Fig. 6 is a longitudinal section taken along the line VI—VI of Fig. 5.

Like numerals refer to similar parts in the several figures.

In the mining of coal, as commonly practised, kerfs are cut in the coal body to permit a sufficient distortion of the material adjacent the said kerfs to dislodge fragments for transportation from the mine. The machines most commonly used for the formation of said kerfs are provided with cutting tools removably attached to suitable chains by the movement of which said tools are forced into the coal to cut it. Tools so used become dull requiring renewals which occasion interruption of the operation of the machine at more or less frequent intervals depending upon the character of the material being mined. I am aware that many devices have been proposed for attaching the cutter bits to mining machine chains which, while securely holding them in correct position during operation, will permit their quick and easy replacement and adjustment. However all such devices with which I am familiar possess certain inherent defects which it is the object of the present invention to overcome.

In Figs. 1, 2 and 3 of the drawings I have illustrated the preferred construction comprising a series of block links 1 connected by strap links 2 and pintles 3. The block links 1 are extended upwardly to form sockets 4 adapted to hold the cutter bits 5 in operative position in the manner well understood in the mining machine art. The cutter bits 5 are preferably straight pieces cut from steel bars of rectangular cross section, the cut ends of which are inclined to produce the cutting edge 6, at each end of the bit. The bit 5 is longitudinally slidable in an aperture 7 of the socket 4 which is proportioned to form a snug sliding fit adapted to hold the bit against angular displacement while permitting its convenient longitudinal adjustment. Formed in one side of the socket 4 is a longitudinally extending elongated recess 8 communicating at its forward end with the aperture 7. In the recess 8 is mounted a dog 9 adapted to limited rotary movement in a horizontal plane about a pivot pin 10. Formed on the side of the cutter bit 5 is a plurality of transverse notches 11 arranged in spaced apart parallelism, and adapted to be engaged by corresponding teeth 12 formed on the inner face of the dog 9. A compression spring 13 arranged to push outwardly upon the rearward end of the dog 9 holds the teeth 12 in engagement with the notches 11 thereby securely locking the bit 5 against movement longitudinally of the aperture 7.

When it is desired to remove or adjust the bit 5 external pressure upon the rearward end of the dog 9 will compress the spring 13 and rotate the dog 9 about the pivot pin 10 to withdraw the teeth 12 from the notches 11 thereby releasing the bit. When the bit has been adjusted to the preferred position, removal of the external pressure permits the spring 13 to act, and automatically lock the bit 5 against movement longitudinally of the aperture 7.

In the alternative construction illustrated in Figs. 4, 5 and 6 the recess 8 is replaced by a centrally disposed longitudinally extending aperture 14 which communicates at

its forward end with the transverse aperture 7. Slidably mounted in the aperture 14 is a plunger 15 having a collar 16 against which the forward end of the compression spring 17 presses. The spring 17 abuts rearwardly against a sleeve 18 which affords a sliding support for the rearward end of the plunger and serves to exclude dirt from the interior of the spring chamber. A transverse pin 19 extends through the metal of the socket 4^a and sleeve 18 to secure said sleeve in position and through a slot 20 in the plunger 15 to prevent rotary movement of said plunger while permitting its limited longitudinal movement. Formed on the edges of the cutter bits 5^a are corrugations 21 arranged in spaced parallelism and adapted to engagement by corresponding teeth 22 formed on the end of the plunger 15. When it is desired to remove or adjust the bit 5^a the plunger 15 may be drawn rearwardly to disengage the teeth 22 from the corrugations 21 and release the bit. After the bit has been adjusted to the desired position the release of the plunger permits the spring to push it forwardly to automatically lock the bit against movement longitudinally of the aperture 7.

What I claim is—

1. In a cutter chain for mining machines, the combination with a block link having a transversely extending aperture, a cutter bit longitudinally movable in said aperture, a plurality of notches formed in the cutter bit, and a spring pressed member adapted to engage the notches to lock the cutter bit against longitudinal movement as and for the purpose set forth.

2. In a cutter chain for mining machines, the combination with a block link having a transversely extending aperture, a cutter bit longitudinally movable in said aperture, a plurality of notches formed in the cutter bit, a locking member adapted to engage said notches to prevent longitudinal movement of the cutter bit, and means to automatically move said locking member into locking position as and for the purpose set forth.

3. In a cutter chain for mining machines, the combination with a block link having a transversely extending aperture, a cutter bit longitudinally movable in said aperture, a plurality of transverse notches formed in the cutter bit, and automatically acting means coöperating with said notches to prevent longitudinal movement of the cutter bit as and for the purpose set forth.

In testimony whereof I affix my signature.

CHARLES J. KIENZLE.