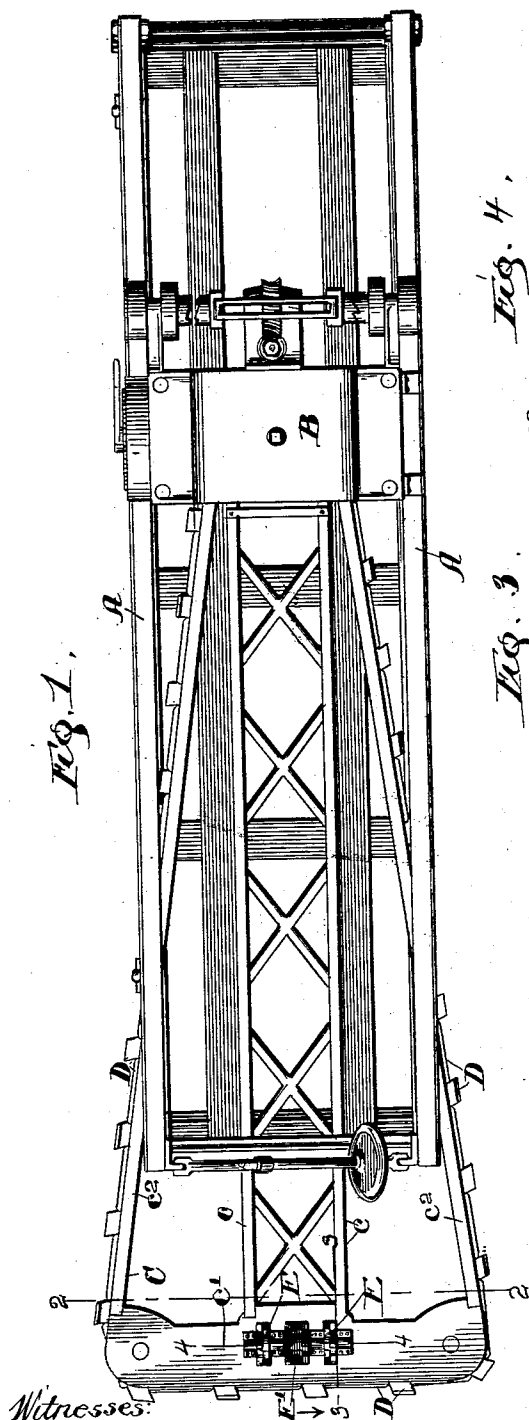


(No Model.)

R. H. WILES.
ELECTRIC MINING MACHINE.

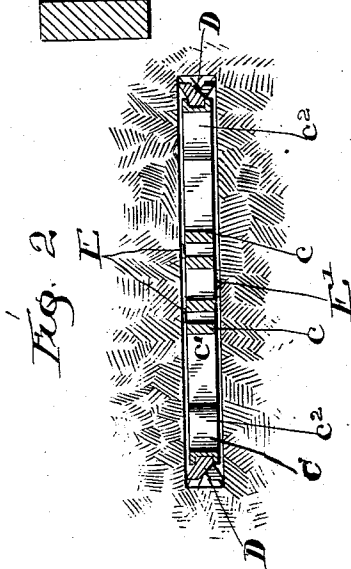
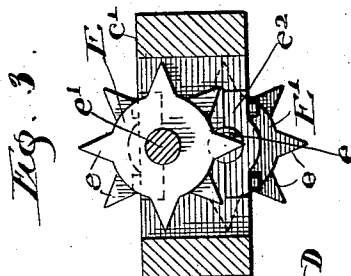
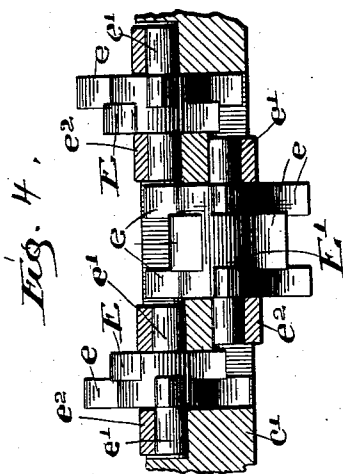
No. 568,933.

Patented Oct. 6, 1896.



Witnesses:

Chas. O. Sherway,
H. L. Phelan.



Inventor:

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UNITED STATES PATENT OFFICE.

ROBERT H. WILES, OF FREEPORT, ILLINOIS.

ELECTRIC MINING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 568,933, dated October 6, 1896.

Application filed May 22, 1896. Serial No. 592,540. (No model.)

To all whom it may concern:

Be it known that I, ROBERT H. WILES, a citizen of the United States of America, residing at Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Electric Mining-Machines, of which the following is a specification.

My invention relates to certain improvements in mining-machines of the class known as "chain-machines," and more particularly to certain auxiliary devices for guiding the cutting mechanism while in operation, the novel features of which will be fully described in this specification and particularly pointed out in the claims.

The invention is illustrated in the drawings presented herewith, in which—

Figure 1 is a plan view of a complete chain-machine with my improved guiding device applied thereto. Fig. 2 is a cross-section of the machine in line 2 2 of Fig. 1 and showing the same in working relation with the coal-bed. Fig. 3 is a detail cross-section in line 3 3 of Fig. 1 and showing the toothed guiding-wheels, and Fig. 4 is a detail transverse section in line 4 4 of Fig. 1.

In the views, A A are the longitudinal members of the frame of a mining-machine of the class known as "chain-machines."

B is the motor, adapted to propel the cutting-chain and also to force the same into the coal as it is cut away.

The chain-carrying frame C is here shown as composed of longitudinal members c , suitably braced, transverse head c' , and diagonal guiding members c^2 , the members c and c^2 being rigidly secured to the motor-frame and adapted to be carried therewith as the motor travels along the stationary frame A. The motor is provided with suitable gearing for propelling itself along the stationary frame and also for giving to the endless cutting-chain D a continuous motion about the frame C. The transverse member or head c' guides the cutting-chain in a lateral direction, and it is in this plane that the cutters operate upon the bed.

It is obvious that as the cutting-tools operate upon the bed (the chain traveling in the direction indicated by the arrow in Fig. 1) they have a great tendency to throw the

frame C in an opposite direction, thus preventing the machine from properly operating upon the coal-bed and at the same time greatly endangering the machine. It is to the prevention of this I have devised the present invention.

As seen in the drawings, a series of toothed wheels E E E' are journaled upon the head c' which engage with the walls of the kerf and embed their teeth in the walls as the chain-carrying frame is forced into the kerf, thus preventing any lateral motion whatever to the frame C. These wheels are preferably arranged so that the teeth of a portion of them project above the frame and the teeth of the remainder project below the same. It is obvious that as the chain-carrying frame C is forced into the coal-bed the teeth e of the wheels E E E' will embed themselves successively in the upper and lower walls of the kerf, and as they are withdrawn will simply leave small depressions therein; and I prefer to make the teeth of the same lateral width at the apex as at the base, in order that there may be no lateral movement of the frame C as the teeth are withdrawn from the indentations. The cutting-wheels may, however, be arranged in two series, the teeth of one series projecting above the frame and the other series below the same, and the teeth on all the wheels offset, so that a great number of teeth will always be in engagement with the walls of the kerf. The exact manner of journaling these guiding-wheels is not essential to my present invention, but I have shown the head c' cut away in order to receive the shafts e' of the wheels, caps e^2 being screwed down upon the opposite sides of the shafts to form the opposite bearing-surfaces for the shafts.

Having now described and explained my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine of the class described, the combination with a suitable carriage, of devices arranged, upon the carriage, to cut a kerf into which the carriage may advance, means for forcing the carriage into the kerf so cut, and a wheel revolubly mounted upon the carriage and arranged to bite into one, only, of the kerf's broader walls as the carriage is forced forward.

2. In a machine of the class described, the combination with a suitable carriage, of devices arranged upon the same to cut a kerf into which the carriage may advance, means for forcing the carriage forward in the kerf, a wheel revolubly mounted in the carriage in position to project from one broader face only of the carriage and bite into the adjacent kerf-wall as the carriage advances, and a second wheel arranged to bite the opposite kerf-wall in a similar manner.

3. In a mining-machine adapted to form a kerf or cut, the combination with a carriage adapted to advance into the kerf and suitable cutting mechanism for forming the kerf in advance of the carriage, of a toothed wheel mounted on the carriage and free to rotate in a plane approximately perpendicular to the carriage and approximately parallel to the line of motion thereof, the teeth of the wheel being adapted to embed themselves successively in one of the walls of the kerf as the wheel is rotated by its contact with said wall and the forward motion of the carriage.

4. In a mining-machine adapted to form a kerf or cut, the combination with a carriage adapted to advance into the kerf and suitable cutting mechanism for forming the kerf in advance of the carriage, of a series of toothed wheels mounted on the carriage and free to rotate in a plane approximately perpendicular to the carriage and approximately parallel to the line of motion thereof, the teeth of the wheels being adapted to embed themselves successively in one of the walls of the kerf as the wheels are rotated by their contact with said wall and the forward motion of the carriage.

5. In a mining-machine adapted to form a kerf or cut, the combination with a carriage adapted to advance into the kerf and suitable cutting mechanism supported by the carriage and adapted to form the kerf in advance thereof, of two toothed wheels supported by

the carriage and each free to rotate in a plane approximately perpendicular to the plane of the carriage and approximately parallel to the line of motion thereof, the teeth of said wheels being adapted to embed themselves in the respective walls of the kerf as they are rotated by their contact with said walls respectively, and the forward motion of the carriage of each of said wheels being adapted to relieve the carriage of the pressure brought to bear upon it through the other wheel.

6. In a mining-machine adapted to form a kerf or cut, the combination with a carriage adapted to advance into the kerf and suitable cutting mechanism supported by the carriage and adapted to form the kerf in advance thereof, of a toothed wheel mounted on the carriage, the teeth of said wheel being of the same lateral width at the apex as at the base, and said wheels being free to rotate in a plane approximately perpendicular to the carriage and approximately parallel to the line of motion thereof, the teeth of the wheels being adapted to embed themselves successively in one of the walls of the kerf as the wheels are rotated by their contact with said walls and the forward motion of the carriage.

7. In a mining-machine of the class described, the combination with the head, *c'*, and the cutting-chain, *D*, adapted to form a kerf in advance of said cutting-head, of a series of guiding-wheels, *E*, *E'*, *E''*, journaled in said head, the teeth of said wheels being adapted to embed themselves successively in one of the faces of the kerf as they are rotated by their contact with said walls and the forward motion of the head, *c'*.

In witness whereof I have hereunto set my hand this 11th day of April, A. D. 1896.

ROBERT H. WILES.

Witnesses:

CHAS. O. SHERVEY,
M. L. SHEAHAN.