

(No Model.)

S. C. LECHNER.
COAL MINING MACHINE.

No. 287,032.

Patented Oct. 23, 1883.

Fig. 1.

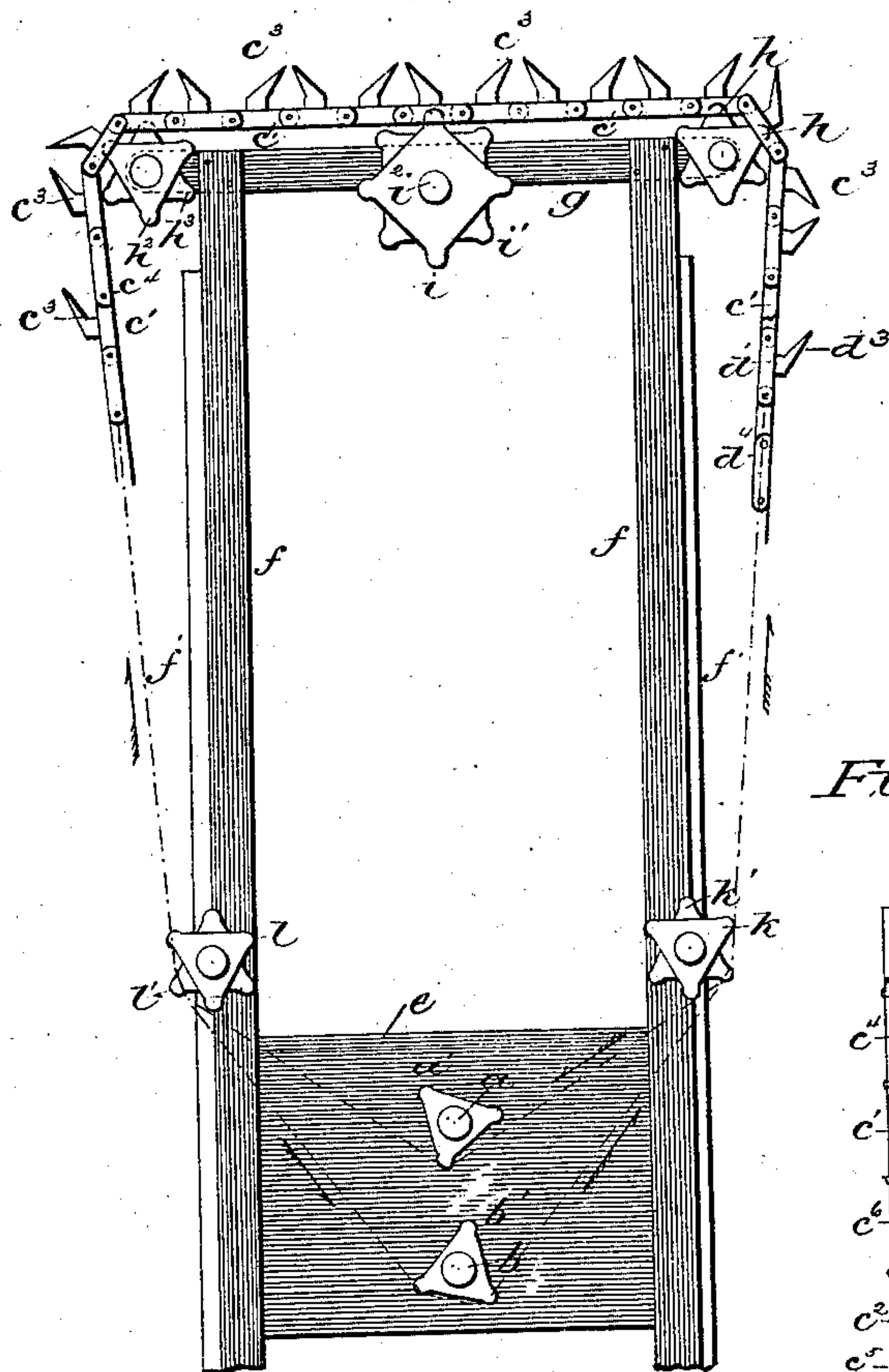


Fig. 2.

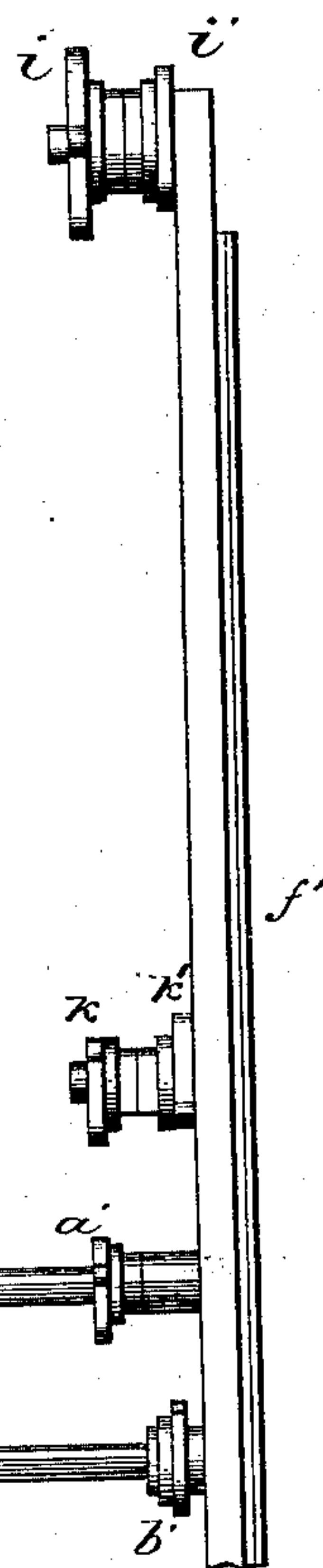


Fig. 3.

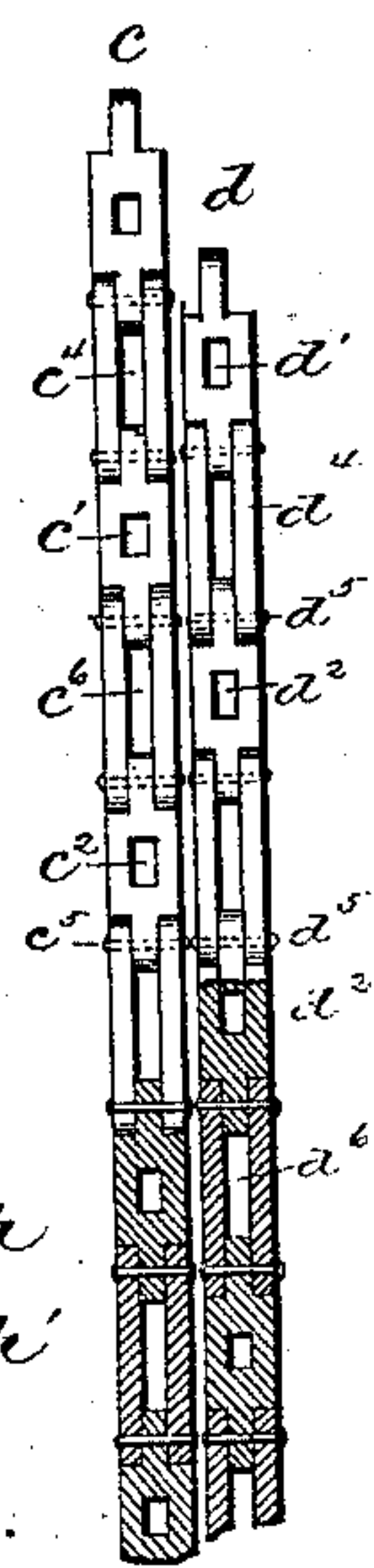


Fig. 4.

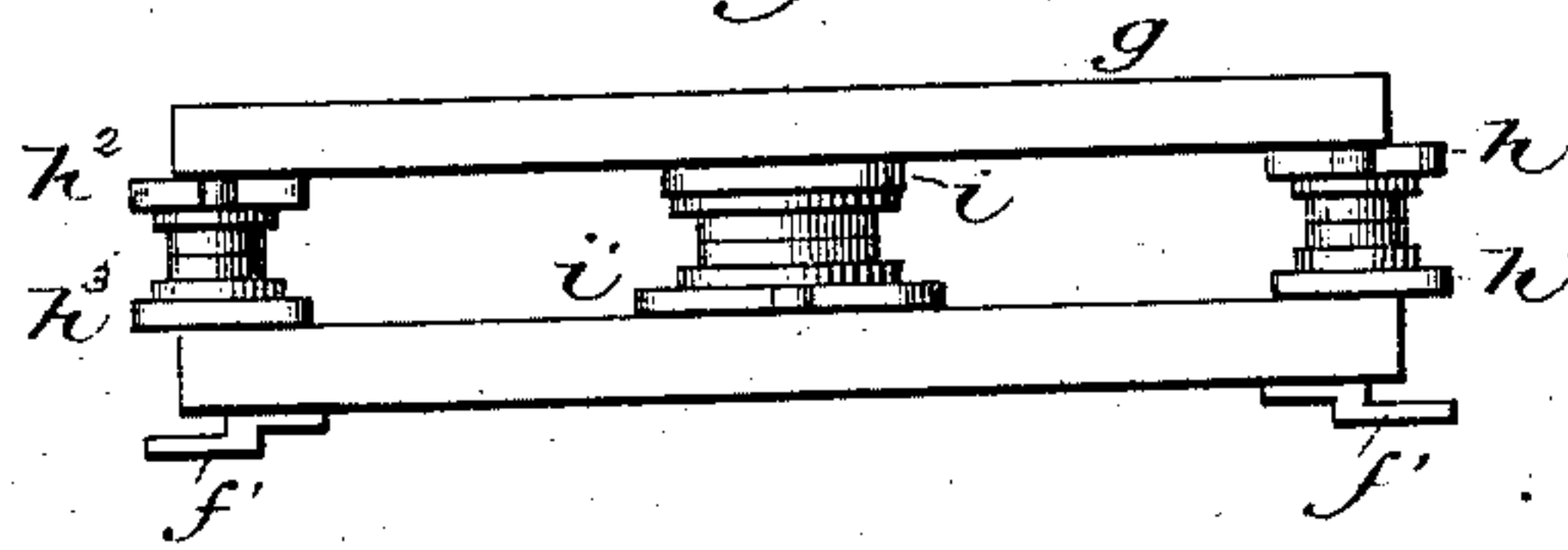
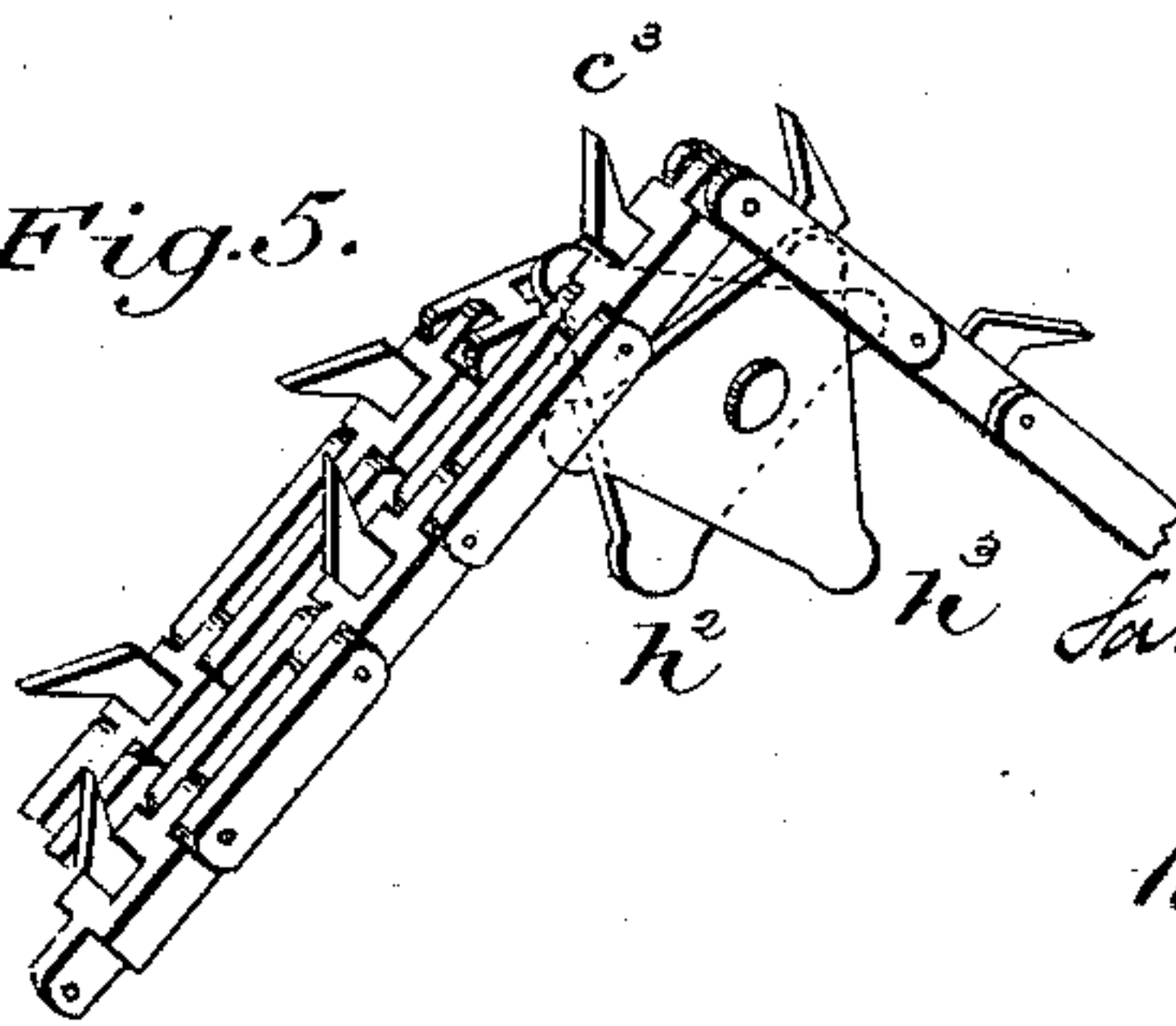


Fig. 5.



Witnesses:
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UNITED STATES PATENT OFFICE.

SAMUEL C. LECHNER, OF COLUMBUS, OHIO.

COAL-MINING MACHINE.

SPECIFICATION forming part of Letters Patent No. 287,032, dated October 23, 1883.

Application filed July 28, 1883. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL CLARENCE LECHNER, of Columbus, in the county of Franklin and State of Ohio, have invented a new and useful Improvement in Coal-Mining Machines; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to improvements in that class of coal-mining machines described in an application for Letters Patent filed by V. A. Lechner on March 31, 1883. In such machine the cutters are secured to a pair of endless chains, driven by sprocket-wheels mounted on an advancing carriage and moving in parallel lines in the same horizontal plane down the center until they encounter the breast of coal or other rock, and then turning at right angles in opposite directions and moving separately upward along the face of the breast, so that they exert their power in opposite directions and the strain of one set of cutters is upon or against that of the other.

To enable others skilled in the art to make and use my invention, I will now describe it by reference to the accompanying drawings, in which—

Figure 1 is a plan view of my improvement. Fig. 2 is an edge view. Fig. 3 is an enlarged view of the chains, some of the links being shown in section. Fig. 4 is an end view of the cutter-carrying frame. Fig. 5 is a perspective view of one pair of idle-wheels, illustrating the passage of the chains over the same.

Like letters of reference indicate like parts in each.

In my improvement the shafts which drive the oppositely-moving cutter-chains are arranged one behind the other, as at *a b*, Fig. 1. These shafts, which are vertical, are provided with sprocket-wheels *a' b'*, by which the cutter-chains *c* and *d* are driven. The sliding frame, upon which the cutter-chains are mounted, is composed of the bridge *e*, bars *f f*, and cross-bar *g*, and is provided with suitable guide-flanges, *f'*, on the under side of the bars *f*, designed to move in guides or ways in the stationary frame of the machine, as will be readily understood by those skilled in the art. At the outer ends of the cross-bar *g* are idle sprocket-wheels, (on one side marked *h h'* and on the other *h² h³*.) At the middle of the cross-

bar is a pair of idle sprocket-wheels, *i i'*, mounted on a shaft, *i²*. On the bars *f*, near the carriage *e*, are idle sprocket-wheels *k k'* and *l l'*. The chains *c d* are composed of cutter-links *c' d'*, having holes *c² d²* for securing the shanks of the cutters *c³ d³*, and intermediate links or bars, *c⁴ d⁴*, pivotally secured to the links *c' d'* by rivets *c⁵ d⁵*, and forming holes or recesses *c⁶ d⁶* for the teeth of the sprocket-wheels. The two driving-shafts *a b* turn in opposite directions, driving the chains *c d* similarly.

The operation is as follows: The machine being placed with its forward end against a breast of coal or other rock, the cutter-chains are driven in opposite directions, as indicated by the arrows. The chain *c* makes the upper and the chain *d* the lower half of the cut. The sprocket-wheels *i i'* hold the cutters up to their work at the middle of the cross-bar *g*, and prevent them from canting, and the wheels *h h' h² h³* and *k k'* guide and direct the chains in their movements. The strain on the cutters of one chain is against that of the other, and as they move past and near to each other upon the same plane and are subject to the same strains, the machine is evenly balanced, and not liable to lateral displacement, nor to make an uneven cut. The cut made by this machine is clean and perfect throughout, there being no central portion of the rock remaining untouched by the cutters and requiring to be chiseled out. Furthermore, the cut is cleaned by the lower cutters, *d³*, of all the cuttings which fall in the kerf, they being pushed out by the progressive movement of the cutters as they fall in front of them. The outer ends of the bars *f* are supported and braced against the strain of the cutters by the cross-bar *g*.

I do not limit myself to the form of chains shown and described, but include other forms of chains capable of carrying cutters and of being driven by suitable wheels.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a chain-cutter mining-machine, the combination of two cutter-chains driven side by side in opposite directions, two driving-wheels turning in opposite directions for moving the chains, a frame upon which the cutter-chains are mounted, and idle-wheels at the outer end of the frame for guiding, directing, and

supporting the cutter-chains and presenting them to the work, substantially as and for the purposes described.

2. In a chain-cutter mining-machine, the combination of a cutter-frame having a cross-bar extending in the line of the cut, and provided with two loose sprocket-wheels at each end, with two cutter-chains capable of moving side by side in opposite directions over said wheels and along the outer edge of said cross-bar, substantially as and for the purposes described.

3. In a chain-cutter mining-machine, the combination of a cutter-frame, having a cross-

bar extending in the line of the cut, and provided with loose sprocket-wheels at each end and sprocket-wheels in the middle, with two cutter-chains capable of moving side by side in opposite directions over said wheels and along the outer edge of said cross-bar, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 13th day of July, A. D. 1883.

SAMUEL CLARENCE LECHNER.

Witnesses:

J. J. ACHAUER,

B. F. ACHAUER.