

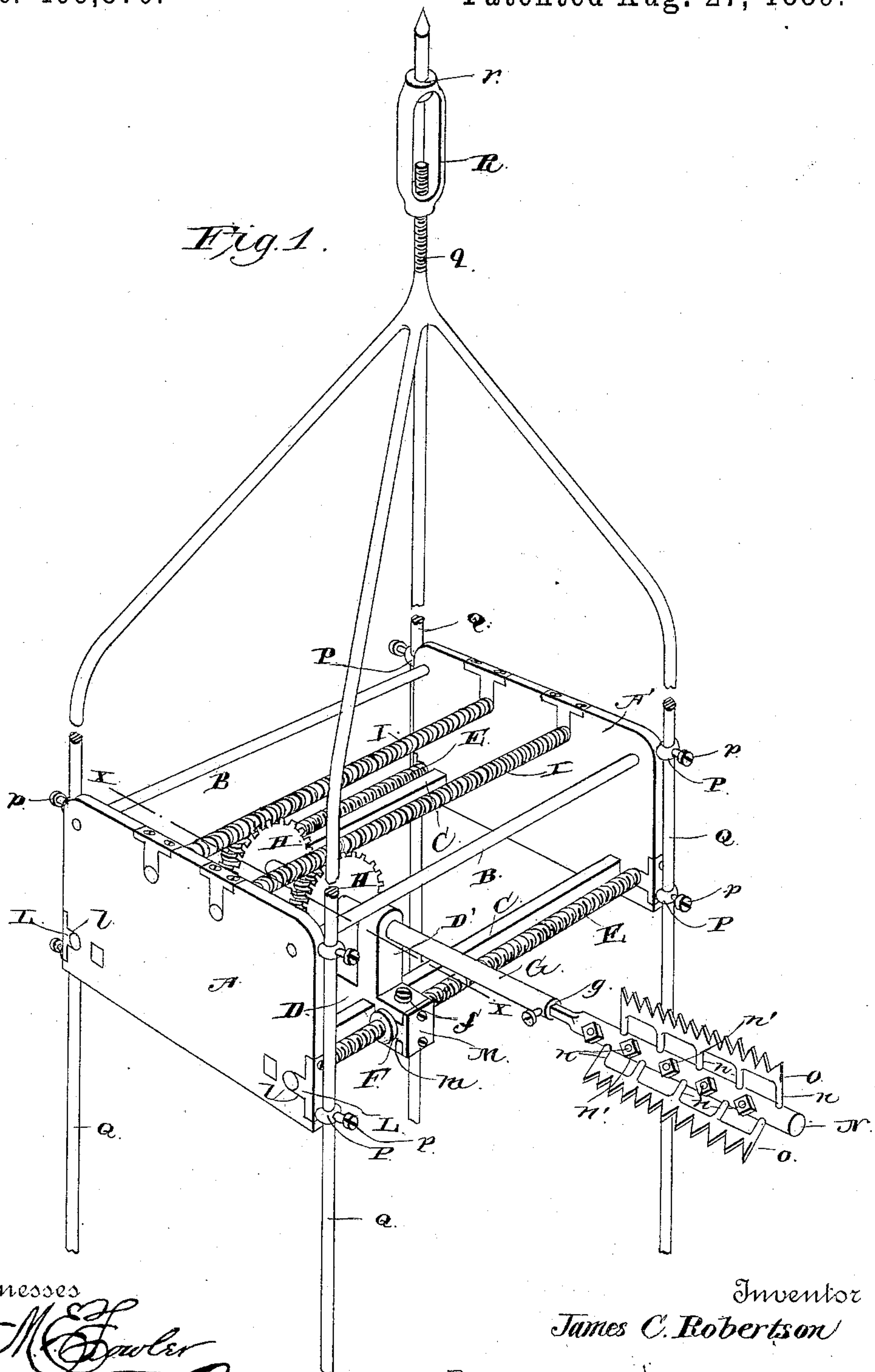
(No Model.)

2 Sheets—Sheet 1.

J. C. ROBERTSON.
COAL CUTTING MACHINE.

No. 409,870.

Patented Aug. 27, 1889.



Witnesses

M. E. Fowler
J. F. Riley

Inventor

James C. Robertson

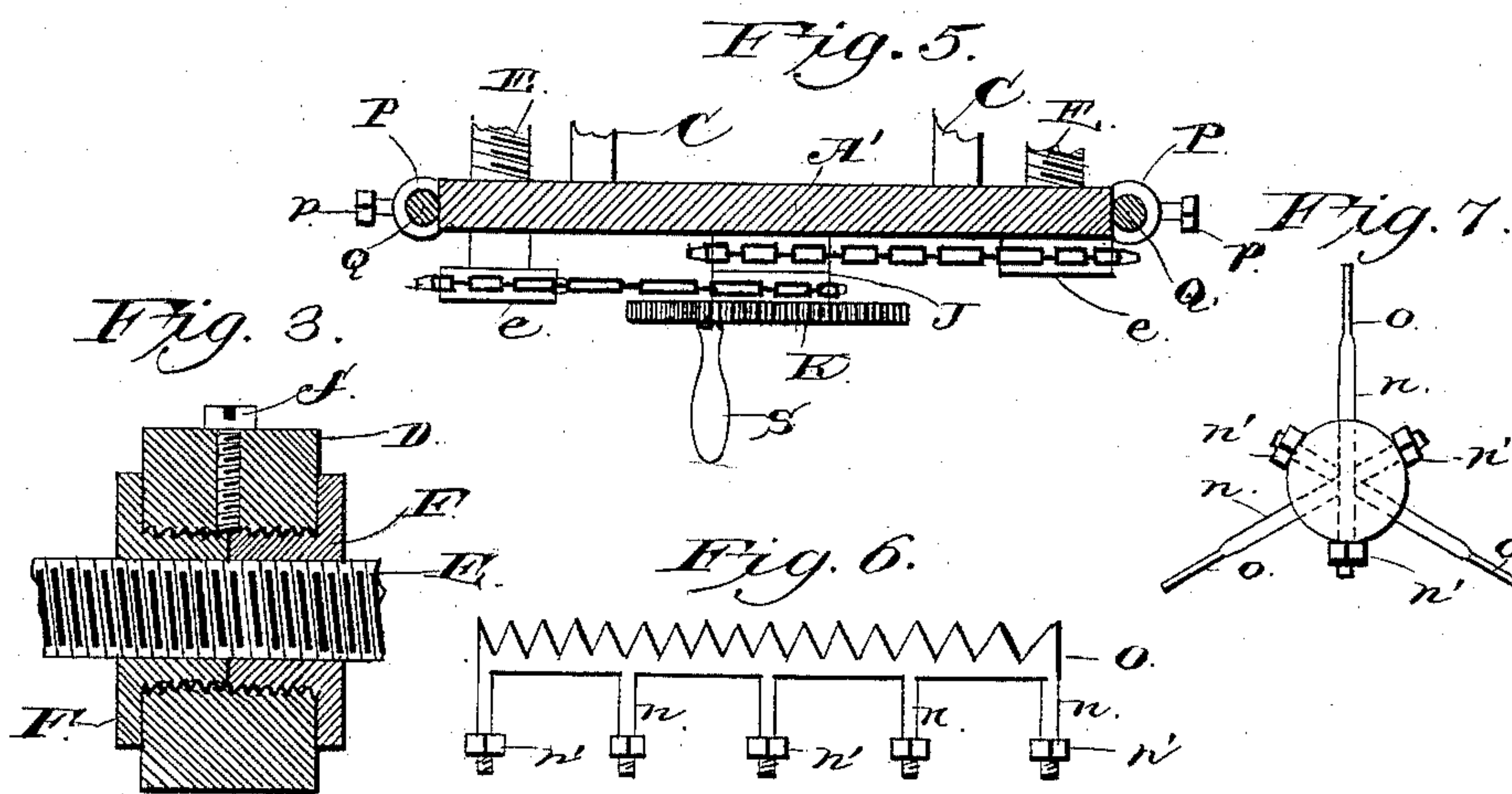
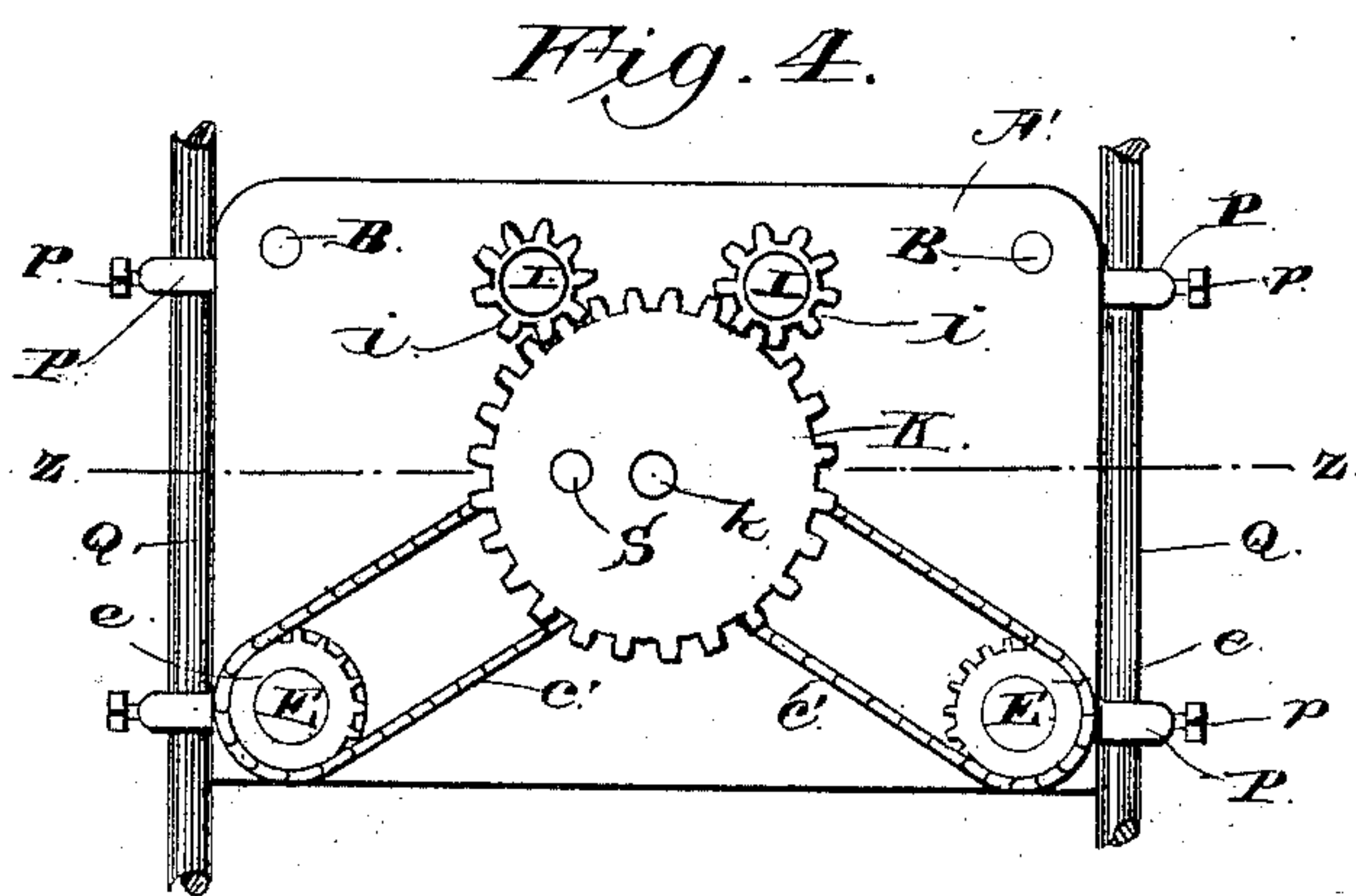
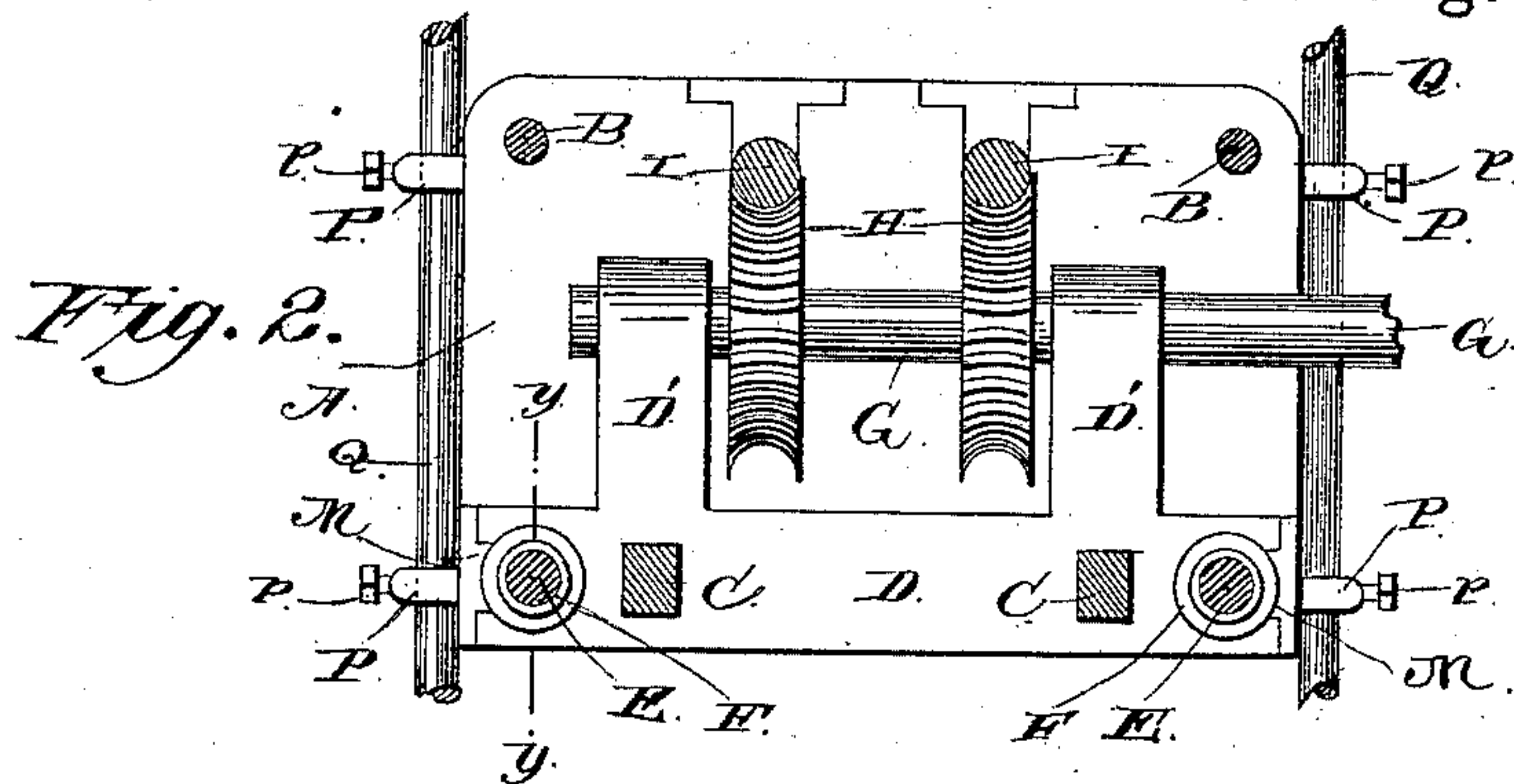
By His Attorneys

C. A. Snow & Co.

J. C. ROBERTSON.
COAL CUTTING MACHINE.

No. 409,870.

Patented Aug. 27, 1889.



Witnesses

M. C. Fowler
J. F. Riley

Inventor

James C. Robertson

By *his* Attorneys

Adams & Co

UNITED STATES PATENT OFFICE.

JAMES C. ROBERTSON, OF MORRISDALE MINES, ASSIGNOR OF ONE-HALF TO
ALEXANDER HOOD, OF PHILIPSBURG, PENNSYLVANIA.

COAL-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 409,870, dated August 27, 1889.

Application filed August 28, 1888. Serial No. 283,952. (No model.)

To all whom it may concern:

Be it known that I, JAMES C. ROBERTSON, a citizen of the United States, residing at Morrisdale Mines, in the county of Clearfield and State of Pennsylvania, have invented new and useful Improvements in Coal-Cutting Machines, of which the following is a specification.

This invention relates to coal-cutting machines, and has for its object the provision of a machine that will be capable of cutting into the bed of the coal any desired depth and length, the mining-tool being rotated and advanced to its work at the same time by mechanical appliances which receive their motion from a single master-wheel.

The improvement consists of the novel features, which hereinafter will be more particularly described and claimed.

In the drawings, Figure 1 is a perspective view of a machine embodying my invention. Fig. 2 is a cross-section on the line xx of Fig. 1. Fig. 3 is a detail section on the line yy of Fig. 2. Fig. 4 is an end view, showing the gearing. Fig. 5 is a horizontal section of one end of the machine on the line zz of Fig. 4. Fig. 6 is a detail view of a saw-blade. Fig. 7 is an end view of the mining tool or saw.

The frame is composed of the end plates A and A', the longitudinal rods or bolts B B, and the bottom bars C C. The carriage D, mounted on the bars C C, and free to slide on said bars from one end plate to the other, is controlled in its movements by the feed-screws E E, which have bearings at their ends in the end plates A and A', and which pass through threaded sleeves F in the said carriage. These sleeves have a flange at one end and are made in halves, and are externally threaded to screw in corresponding threaded openings in the said carriage. The set-screws f , passing through the carriage and bearing on the sleeves, hold them in position. The carriage is provided with standards D', which form bearings for the shaft G. The outer end of this shaft is adapted to receive a suitable mining-tool, and for this purpose is provided with the chuck g . The worm-wheels H H, keyed to the shaft G, mesh with corresponding worm-threaded rods I, which extend par-

allel with the feed-screws E, and are journaled at their ends in the end plates A and A'. The ends of the feed-screws E E project beyond the end plate A', and are provided with sprocket-wheels ee , which are connected with the double sprocket-wheel J by the sprocket-chains $e'e'$. The ends of the worm-threaded rods I I extend beyond the same plate A', and have pinions i on the said extended ends which mesh with the master-wheel K. The double sprocket-wheel J and the master gear-wheel K are cast together; or, if made separate, are secured together in any suitable manner, and are journaled on the same stud k . It is intended to have the several sprocket-wheels, pinions, and master gear-wheel made removable, so they may be replaced by others of a different size in order to vary the speed of the feed-screws and the worm-threaded rods.

The end plates have slots l , extending from the bearings of the feed-screws through the edge of the said plates, to permit the ready removal of the said feed-screws. These slots are closed by blocks L, which have flanges overlapping the plate on each side of the slot and screwed to the said plate by suitable fastening devices passing through the said flanges. The carriage D also has slots m , to admit of its being removed from the said feed-screws. These slots m are closed by blocks M, which are constructed like the blocks L.

The mining-tool consists of the arbor N and the blades O, having their outer edges serrated and their inner edges provided with arms n , which extend through transverse openings in the arbor. These arms n are threaded on their outer ends and have nuts n' screwed thereon to hold the blades to the said arbor. The blades are disposed around the arbor, and are arranged to have the teeth of one blade to come opposite the space between the teeth of the adjacent blades, so that the tool in one complete revolution will act on every particle of coal within its path.

The end plates are provided with eyes P at each end, through which the standards Q pass, the frame being held adjustably on the standards by the set-screws p , which pass through the said eyes P. The upper ends of

the standards are brought together to form the stem q , which is threaded and receives the turn-buckle R, which is mounted thereon. The upper end of this turn-buckle terminates
5 in the center r .

The frame may be of any desired length, and is supported solely on the standards Q. These standards rest on the bottom of the shaft and are held at their upper ends by the turn-
10 buckles R, which have their pointed ends forced into the roof of the said shaft. By rotating the turn-buckle on the threaded stem q , its end r may be forced in or withdrawn from the bed of coal, according to the direc-
15 tion in which it is rotated and as may be required to steady or loosen the said standards. Before applying the machine a hole must be drilled in the bed of coal the required size and depth. To adjust the machine, the min-
20 ing-tool secured to the shaft G is inserted in the hole in the stratum of coal, the carriage being at one end of the frame, motion being imparted to the master-wheel by suitable power. The crank S, being provided for the
25 purpose, communicates its motion to the feed-screws E E and the worm-threaded rods I I, through the instrumentalities hereinbefore described, and rotates the shaft G and advances the carriage D, carrying the tool to
30 its work. When the carriage has reached the other end of the frame, it can be quickly returned to its normal position by loosening the set-screws f and unscrewing the sleeves F and pushing it along on the bars C, the
35 feed-screws passing freely through the openings from which the sleeves F have been removed.

Having thus described my invention, I claim—

40 1. The combination of the end plates A A', the longitudinal rods connecting the same, the feed-screws journaled in the end plates, the carriage mounted transversely on the feed-screws, the cutter-shaft mounted on the car-
45 riage, and mechanism for simultaneously rotating the feed-screws and the cutter-shaft, substantially as set forth.

2. The combination of the end plates A A',

the rods B and bars C, connecting the said plates, the carriage supported transversely 50 on the bars C, the worm-shafts journaled in the end plates and extending over the carriage, the cutter-shaft mounted on the carriage, and mechanism for simultaneously ro-
55 tating the worm-shafts and sliding the carriage on the bars C, as set forth.

3. The combination of the end plates A A', the rods B and bars C, connecting said end plates, the carriage mounted transversely on the bars C and provided with standards D' on 60 its upper side, the cutter-shaft journaled in said standards, and mechanism for simultaneously rotating the cutter-shaft and sliding the carriage on the bars C, as set forth.

4. The combination of the end plates A A', 65 the rods B and bars C, connecting said end plates, the feed-screws journaled in the end plates, the carriage mounted transversely on the bars C and having its ends engaging the feed-screws, the worm-shafts journaled in the 70 end plates above the carriage, the cutter-shaft mounted on the carriage and provided with worm-wheels engaging the worm-shafts, and mechanism for simultaneously rotating the feed-screws and the worm-shafts, as set forth. 75

5. In a mining-machine, the combination, with the frame, the carriage, and the feed-screw, of the sleeve internally threaded to fit the feed-screw, made in the two halves and ex- 80 ternally threaded and screwed in the said carriage, and the set-screw for holding the sleeve in place, substantially as described.

6. The combination, with the arbor having diametrical openings, of the blades O, each having a series of arms n , passing through 85 said openings and provided with screw-threaded extremities, and the nuts n' , mounted on said extremities and adapted to be turned up against the arbor, as set forth.

In testimony that I claim the foregoing as my 90 own I have hereto affixed my signature in presence of two witnesses.

JAMES C. ROBERTSON.

Witnesses:

WM. E. IRWIN,
JESSIE SCOTT.