

*E. Simkins,
Mining Machine.*

N^o 21,908.

Patented Oct. 26, 1858.

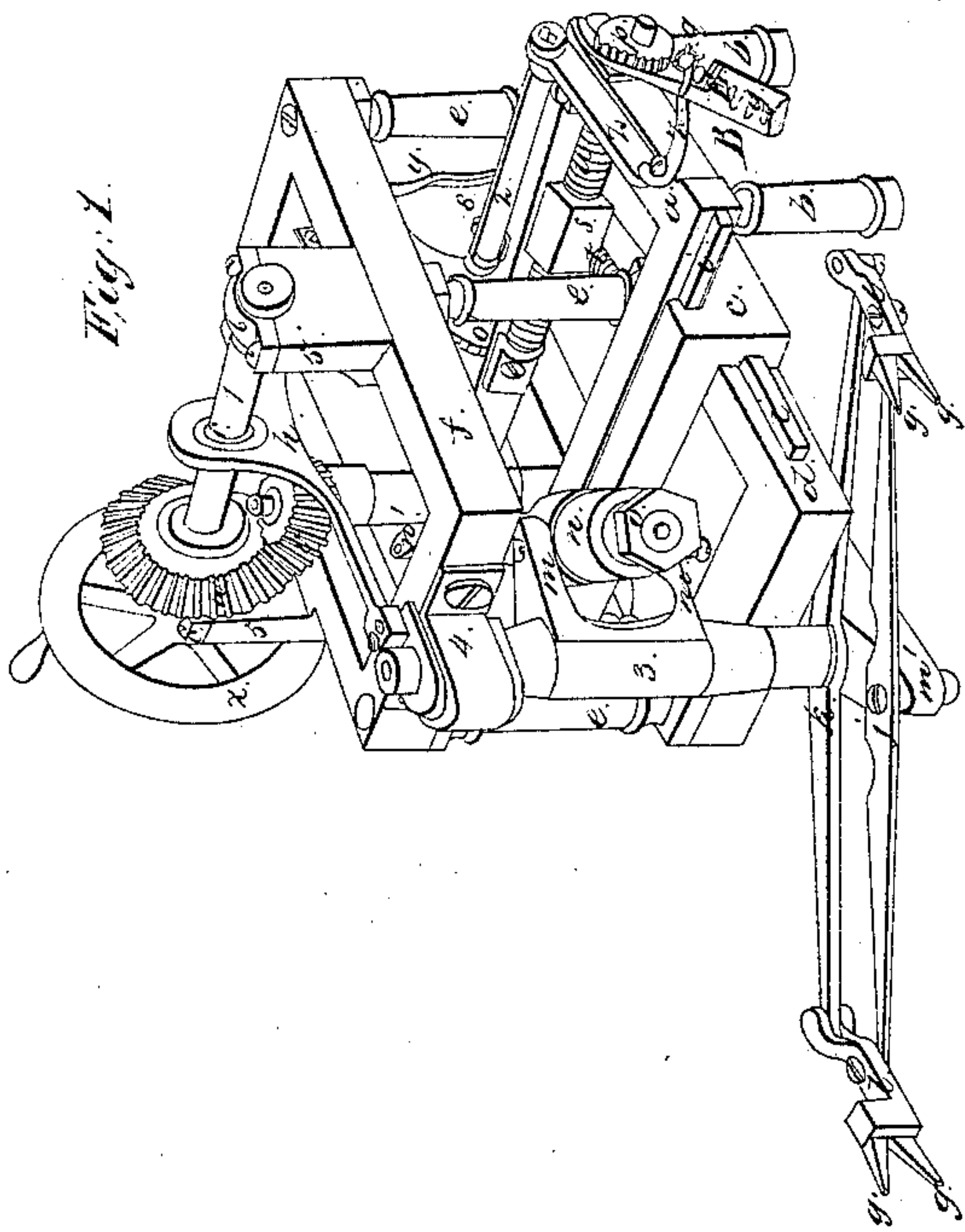


Fig. 3.

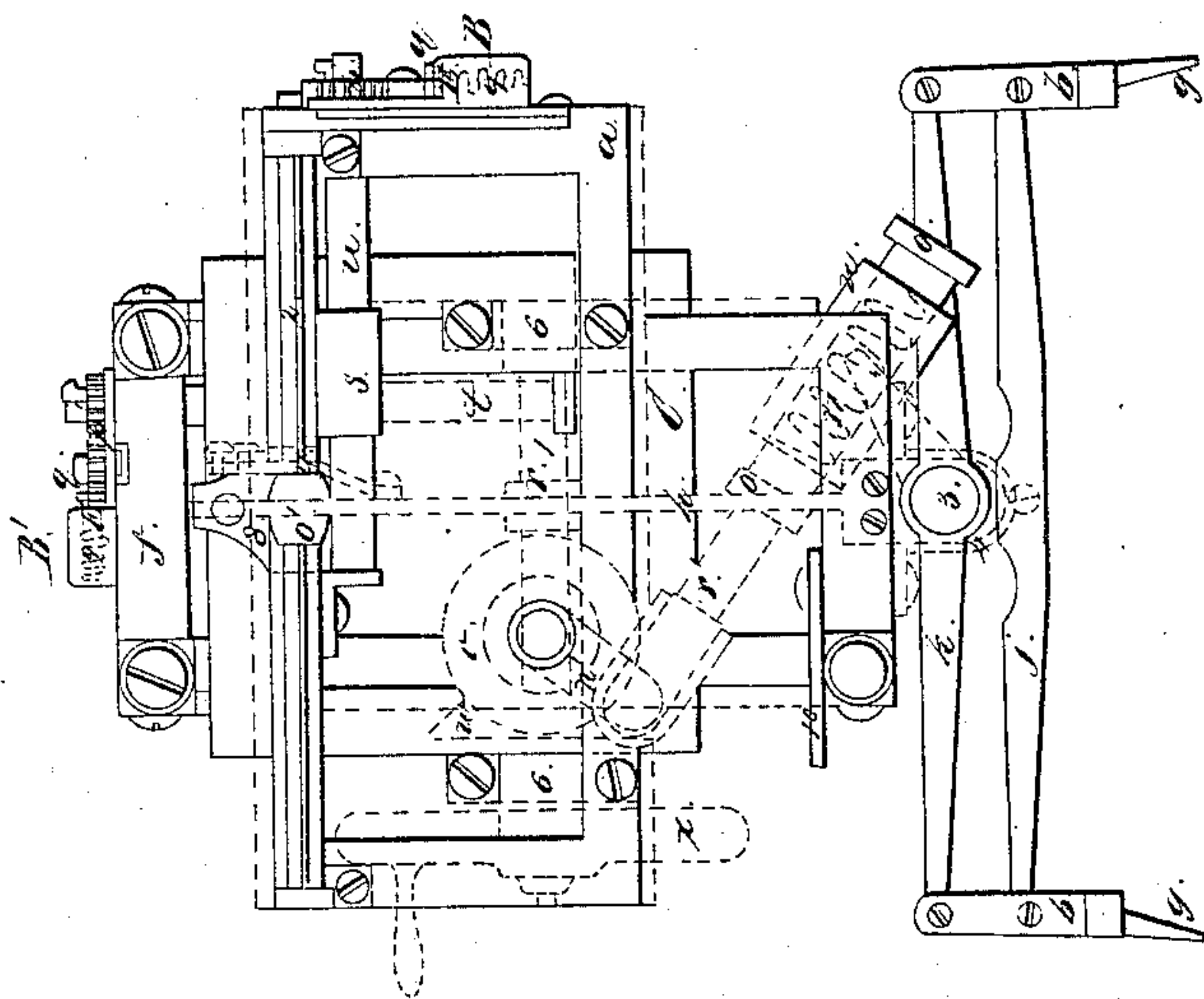
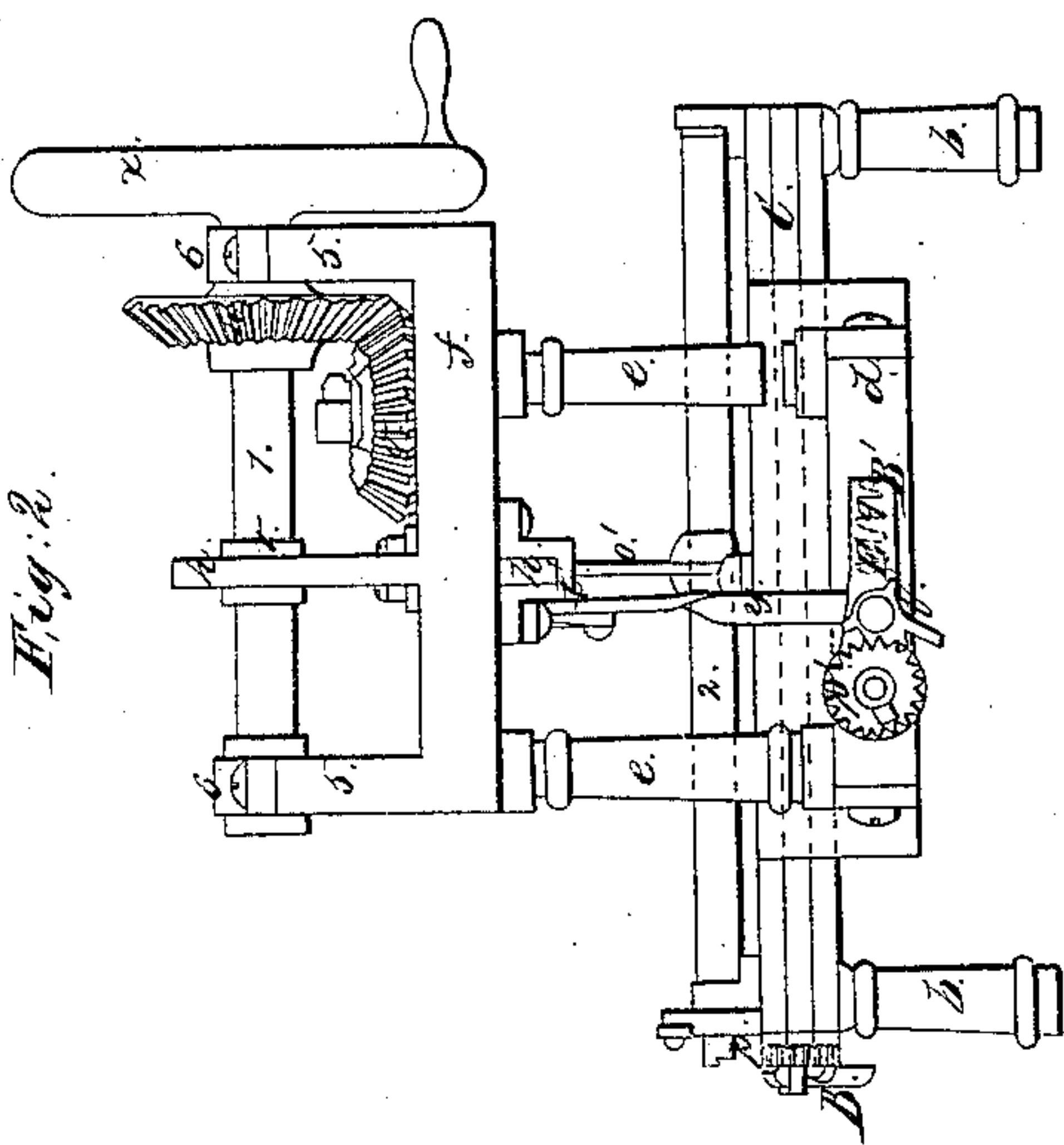


Fig. 2.



UNITED STATES PATENT OFFICE.

ELISHA SIMKINS, OF ALLEGHENY, PENNSYLVANIA.

MACHINE FOR MINING COAL.

Specification of Letters Patent No. 21,908, dated October 26, 1858.

To all whom it may concern:

Be it known that I, ELISHA SIMKINS, of the city and county of Allegheny, in the State of Pennsylvania, have invented a new and Improved Machine for Mining Coal; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, similar letters referring to similar parts.

The nature of my invention consists in a mechanical arrangement for operating picks in such manner as will give them a back, forward, side and angular motion.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawings; Figure 1, is a perspective view of the mining machine. Fig. 2, is an end view. Fig. 3, is a top view.

(a) is the stationary frame.

(b) are the pedestals of frame (a).

(c) is a double or compound slide which can be moved to the right and left and is held up and supported on the frame (a), by means of ribs (i). The frame or slide (d) and the top frame (f) are united to each other by four columns (e) and both the frames (d) and (f) are held up and move back and forward in the double or compound slide (c). To the frame (a) is attached the screw (u) and also the bearings or journal boxes of shaft (2); on the end of the screw (u) is attached a ratchet wheel (p), a double ratchet pawl (B) (which consists of a plate furnished with a spiral spring (9) stud (E) and trigger (q)) is also placed on screw (u) and is moved and operated by lever (z) which is attached to shaft (2) on which is placed a part of a wheel marked (o¹) which moves on shaft (2) and is held in its proper position by means of a groove in the shaft and a tongue in the hub of the wheel, and is moved back and forward on the shaft by the piece marked (8) which is attached to the double or compound slide (c). The wheel (o¹) is operated by the slide-rack (h) which is operated by the cam (r) on the shaft (1) which rests on the plumber-blocks (5) and is held to its place by the caps (6); the shaft (1) is also furnished with a bevel wheel (w) and driving wheel (x). The crank (n¹) has its journal bearings in the sliding frame (d) and top frame (f) and is furnished with a bevel

wheel (v) which gears into the bevel wheel (w); to the crank (n¹) is attached a flexible connecting rod (r¹) which consists of a rod (r¹), cylinder (n), nuts (o) and spiral spring (11) arranged as represented in Figs. 1 and 3, the flexible rod (r¹) with parts is attached to and oscillates between the arms (m) of shaft (3); the lower end of shaft (3) rests and moves in the piece marked (m¹) which is secured to or cast on the sliding frame (d).

The upper end of the shaft is held by and moves in the journal box (4) which is secured to the top frame (f); to the shaft (3) is attached the arms (k) and to arms (k) are attached the pick receivers (l) which are held in their proper position by the connecting rod (j). The picks (g) are made so as to be removed and be replaced by others at pleasure.

The ratchet wheel (p¹) see Fig. 2 is attached to the end of the screw (t) which is secured to the sliding frame (d); the double pawl (B¹) is also placed on the end of the screw (t) and is moved and operated by the compound lever (y) (that is a lever of two or more parts) the fulcrum of which is attached to the top frame (f); the lever (y) is operated by the slide-rack (h). The screw (t) which is secured to the sliding frame (d) is operated by the ratchet wheel (p¹) and ratchet pawl (B¹) and the screw (u) which is secured to the stationary frame (a) is operated by the ratchet wheel (p) and ratchet pawl (B) which is operated by the lever (z); and both the screws (t) and (u) are revolved in the double or compound nut (s); the screw (t) moves the sliding frame (d) back and forward, and the screw (u) moves the double or compound slide (c) sidewise to the right or left and both the sliding frame (d) and the double or compound slide (c) move in accordance with the motion given to the screws (t and u).

The angular motion of the picks is obtained by means of the lever (10) which is connected with the connecting rod (j) and by simply raising or lowering the lever (10) any desired angle of the picks may be obtained. The slide-rack (h) at one end moves or slides in a hanger marked (t¹) (see Fig. 2,) and the other end is secured to the shaft (3) and the back and forward movements of the slide-rack (h) will throw the upper end of shaft (3) back and forward in its journal box (4). This back and for-

ward motion of shaft (3) will cause the picks (g) to cut an opening sufficiently large to clear themselves and thereby prevent them from becoming wedged in the opening which they make. The arrangement of the flexible connecting rod (r¹) as connected with the crank (n¹) and shaft (3) is such that it yields, and as the shaft gives motion to the picks, and as the shaft is constantly changing its position, and as the picks will not at all times enter the coal to the same depth it becomes necessary for the connecting rod to yield in order that the crank (n¹) may pass its center. The size of the machine and its various parts, I leave to the good judgment of the mechanic, but the general arrangement and form of the machine and its parts should in all cases correspond with the form and arrangement described and represented in the drawings and specifications.

The operation of my invention is as follows: By turning the wheel (x) it will revolve the shaft (1) which will revolve the bevel wheel (w) which will revolve the bevel wheel (v) and crank (n¹) which in connection with the connecting rod (r¹) will give the shaft (3) a rocking motion and thereby give to the picks their motion. The sliding-rack (h) is moved back and forward by the cam (v) thereby giving to the upper end of shaft (3) a back and forward motion, and also operates the wheel (o¹), levers (z) and (y) which will operate the ratchet pawls (B¹ and B) which revolve the ratchet wheels (p¹ and p) which give motion to the screws (t and u) which operate the slide frame (d) and the compound or double slide (c) by means of which the side, back and forward motion of the machine is ob-

tained. The desired motion of the screws (t) and (u) is obtained by simply changing the position of the trigger (q) of the ratchet pawls, the trigger being held in proper position by means of the spiral spring (9) and the stud (E); and the desired motion or angle of the picks is obtained by simply raising or lowering the lever (10).

Having thus described the construction and operation of my invention, what I claim as of my invention and desire to secure by Letters Patent of the United States is—

1. The arrangement of the double or compound slide (c) and sliding frame (d) when used in connection with the stationary frame (a) and operated by the screws (t) and (u) and the nut (s) as herein described and for the purpose set forth.

2. The arrangement of the cam (r), slide-rack (h), wheel (o¹) shaft (2), shifting piece (8), levers (z) and (y), ratchet wheels (p¹ and p), and the ratchet pawls (B¹ and B), for the purpose of moving the upper end of shaft (3) back and forward and for operating the screws (t) and (u) as herein described and set forth.

3. The arrangement of lever (10) and the connecting rod (j) for the purpose of regulating the angle of the picks (g) as herein described and as set forth.

4. The arrangement of the flexible connecting rod (r), the crank (n¹) the shaft (3), the arms (k), the pick receivers (t) and the picks (g), as herein described and for the purpose specified.

ELISHA SIMKINS.

Witnesses:

G. P. STECK,
ALEXANDER HAYS.