2 Sheets—Sheet 1.

J. B. MILLER.

Coal Breaker.

No. 201,817. **Patented March 26, 1878.**

Fig. 1.

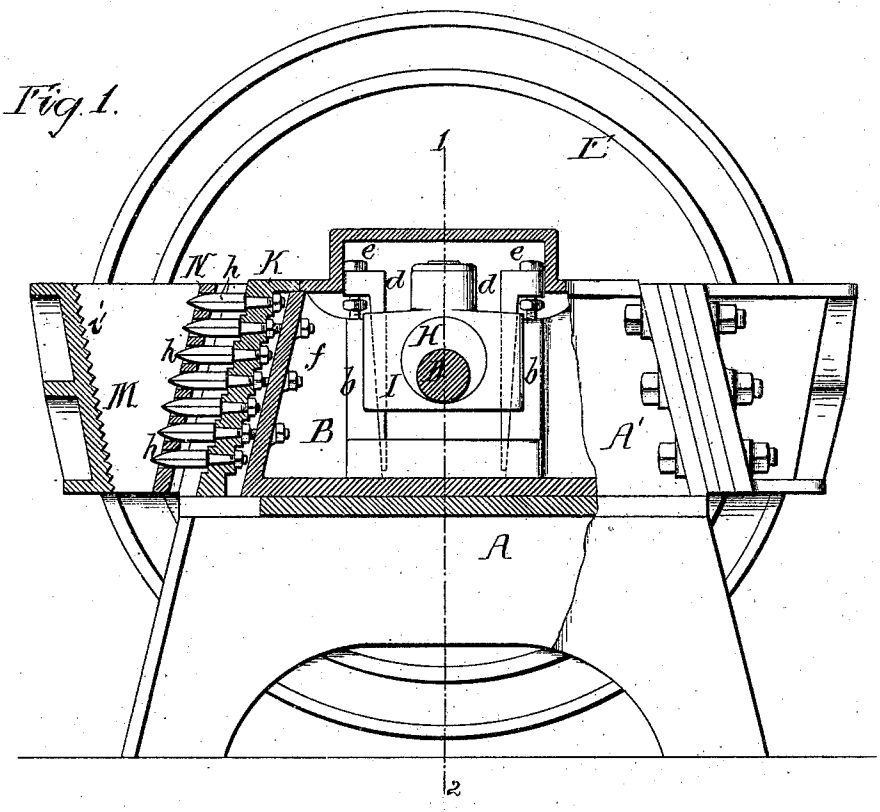
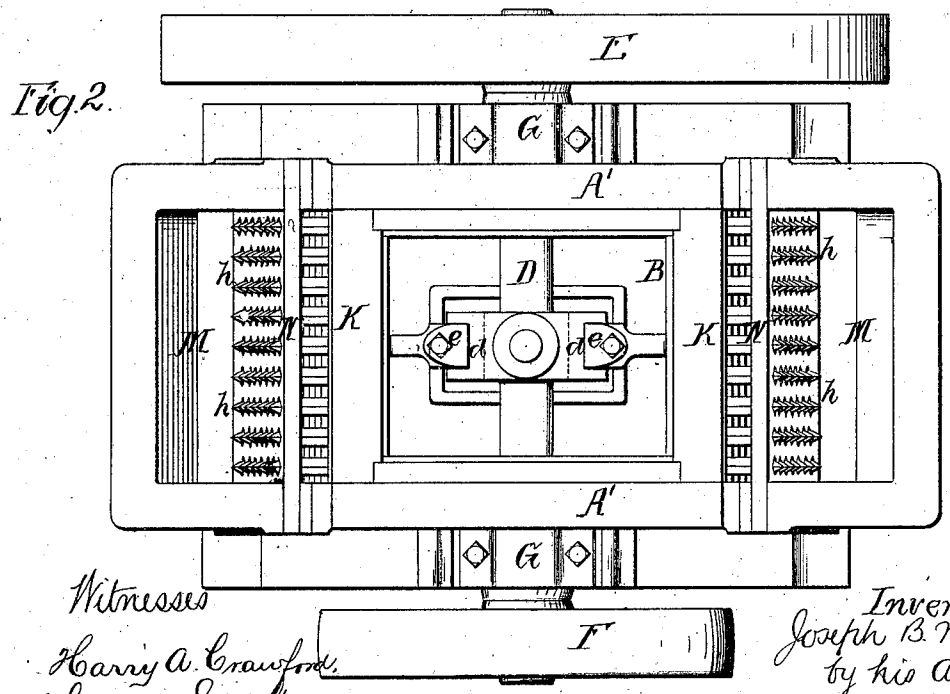


Fig. 2.



Witnesses
Harry A. Crawford.
Harry Smith

Inventor
Joseph B. Miller
by his Attorneys
Howson Bros

2 Sheets—Sheet 2.

J. B. MILLER.

Coal Breaker.

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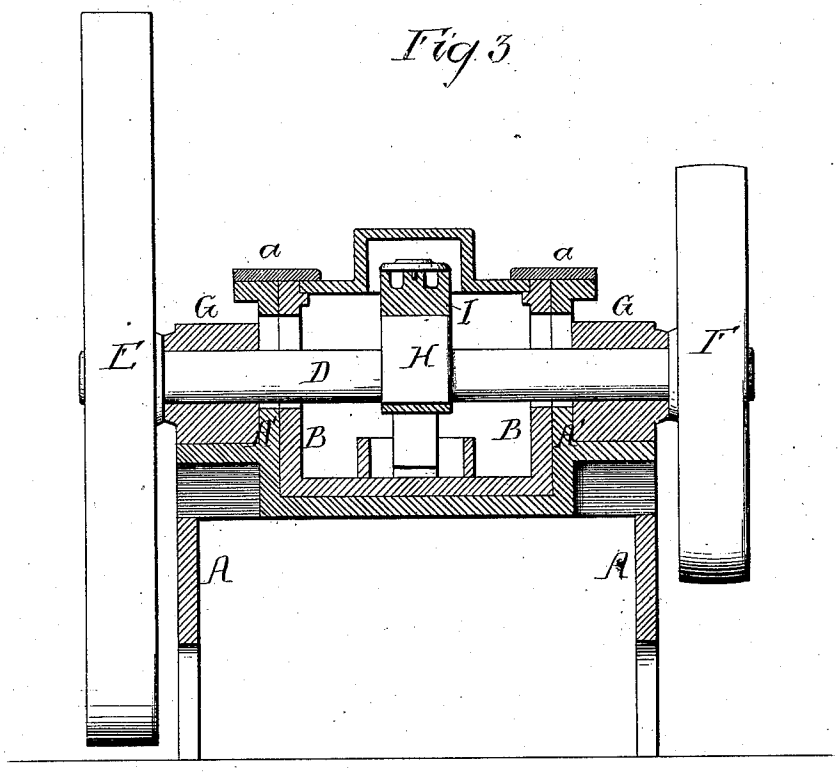
Fig 3



Witnesses.
Harry A. Crawford.
Harry Smith.

Inventor.
Joseph B. Miller
by his Attorneys
Howson & Howson

UNITED STATES PATENT OFFICE.

JOSEPH B. MILLER, OF WILKESBARRE, PENNSYLVANIA.

IMPROVEMENT IN COAL-BREAKERS.

Specification forming part of Letters Patent No. **201,817**, dated March 26, 1878; application filed July 28, 1877.

To all whom it may concern:

Be it known that I, JOSEPH B. MILLER, of Wilkesbarre, Luzerne county, Pennsylvania, have invented a new and useful Improvement in Machinery for Breaking Coal and other Minerals, of which the following is a specification:

The object of my invention is to make a compact, substantial, and effective machine for breaking coal and other minerals.

In the accompanying drawing, Figure 1, Sheet 1, is a side view of my improved machine for breaking coal and other minerals; Fig. 2, a plan view of Fig. 1; and Fig. 3, Sheet 2, a transverse vertical section on the line 1 2, Fig. 1.

A is a suitable base, to the top of which are secured the opposite side frames A′ A′, which serve as guides for the sliding box B, the latter bearing on the base, and being confined vertically by strips *a a*, secured to the said frames. D is the driving-shaft, furnished at one end with a substantial fly-wheel, E, at the opposite end with a pulley, F, and having bearings G G, properly secured to the base. On this shaft, midway between the opposite sides of the sliding box, is formed an eccentric, H, adapted to a block, I, which is so fitted to vertical guides *b b* in the box B that it can slide freely between the same.

I prefer to make each guide *b* inclined on one side, against which the inclined side of a taper key, *d*, bears, the head of each key being confined vertically to the adjoining guide by a set-screw and tightening-nut, *e*. The object of these taper keys will be rendered apparent hereinafter.

To plates K, adjacent to each inclined end *f* of the box B, are secured a series of pointed teeth, *h*, the shanks of some of these teeth passing through the said inclined end *f* of the box, and thus serving, with suitable nuts, to secure the plates K to the same.

To each end of the frames is secured a receiver or hopper, M, the inclined outer end of which is serrated internally, or provided with internal teeth. An inclined perforated plate, N, is secured between each hopper and the ends of the frames *b b′*, the perforations coinciding with the teeth *h*, so that the latter may slide to and fro in them freely.

I prefer to make the teeth square, and the perforations in the plate N of a corresponding form, so that the teeth shall have no tendency to turn and become loose.

The space between the serrated end *i′* of the hopper and the perforated plate N, this space being necessarily wider above than below, is the receiver for the coal to be broken. As the box B is reciprocated by the action of the eccentric H, the pointed teeth are first withdrawn from, and then projected through, the perforated plate.

Pieces of coal which, owing to their size, become jammed in the upper portion of the hopper are fractured by the upper series of teeth; but when the teeth recede, the fractured pieces fall to the lower and more contracted portion of the hopper; and this is continued until the coal, broken to the desired size, escapes at the lower end of the hopper, new lumps of coal being meanwhile deposited in the upper portion of the hopper.

These operations go on at both ends of the machine at the same time, as the appliances at one end of the machine are the same as those at the other.

It may be desirable to have the teeth project farther into one hopper than into the other, so that the coal may be broken into smaller pieces at one end of the machine than at the other. This may be brought about by the adjustment of the taper keys in a manner which will be readily understood without description.

I claim as my invention—

1. The combination of the frame A′ of a mineral-breaking machine with a box, B, armed with teeth and adapted to slide on said frame, and with the hopper M, bounded on one side by the perforated plate N, all substantially as described.

2. The combination of the reciprocating box or frame B and the detachable plate K, carrying the teeth, with the hopper M and perforated plate N.

3. The combination of the box or frame, its guides, and adjustable taper keys with the driving-shaft D, and eccentric H on the same, and the sliding block I.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOS. B. MILLER.

Witnesses:
E. H. JONES,
F. SMITH.