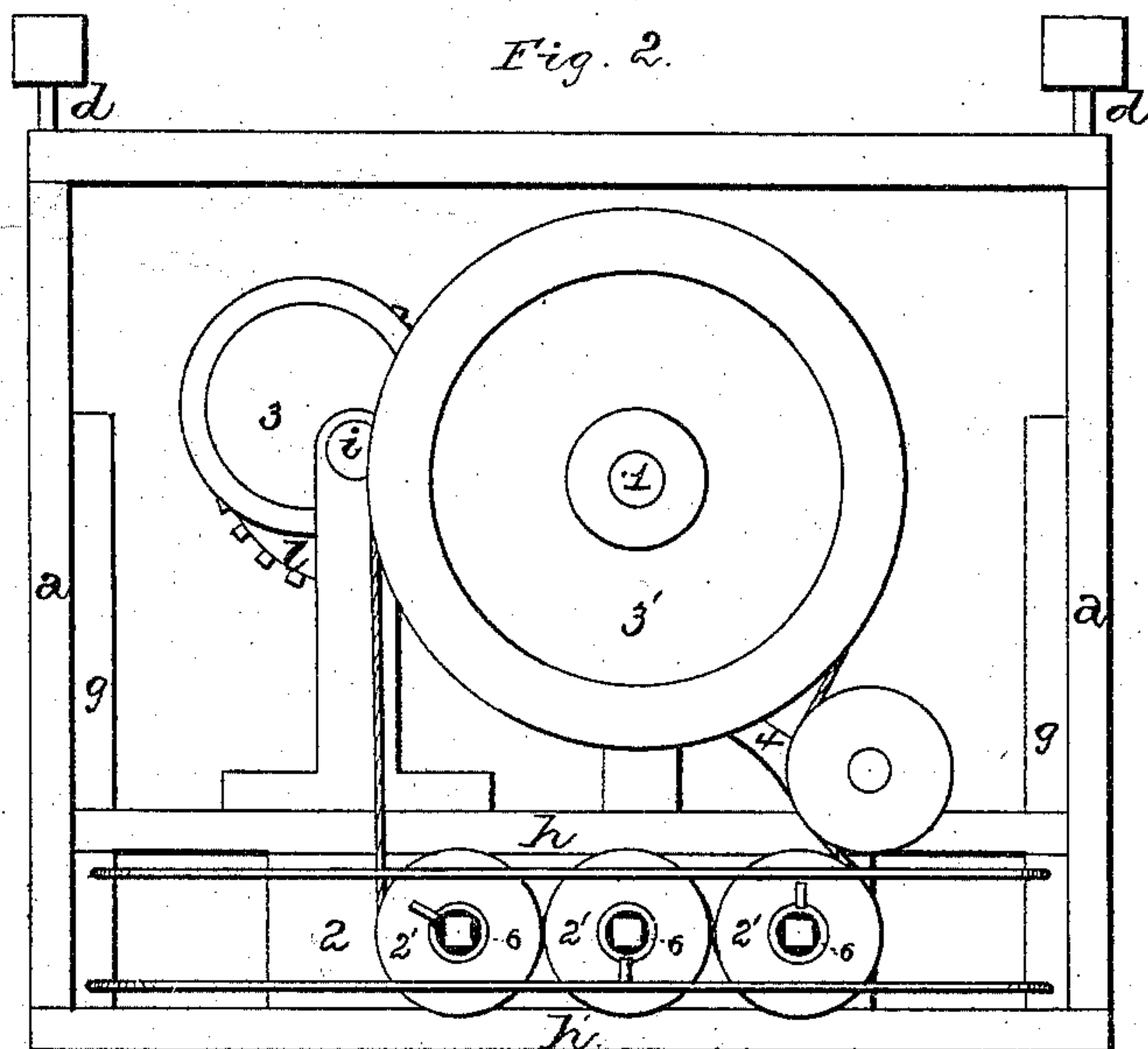
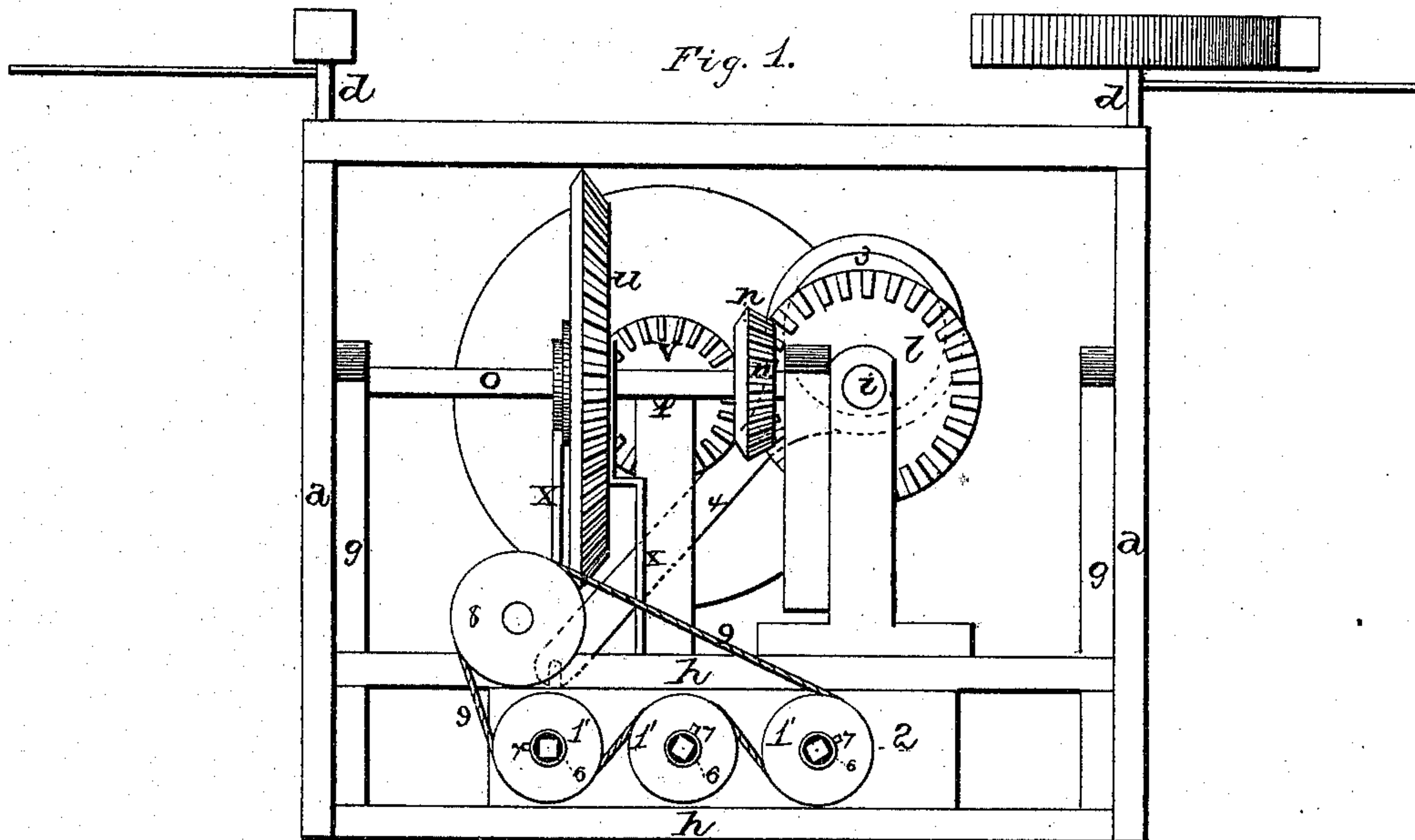


**F. M. W. PRICE.**  
**Machines for Mining Coal.**

No. 142,582.

Patented September 9, 1873.



WITNESSES.

*James G. Smith*  
*Alex Davidson.*

INVENTOR

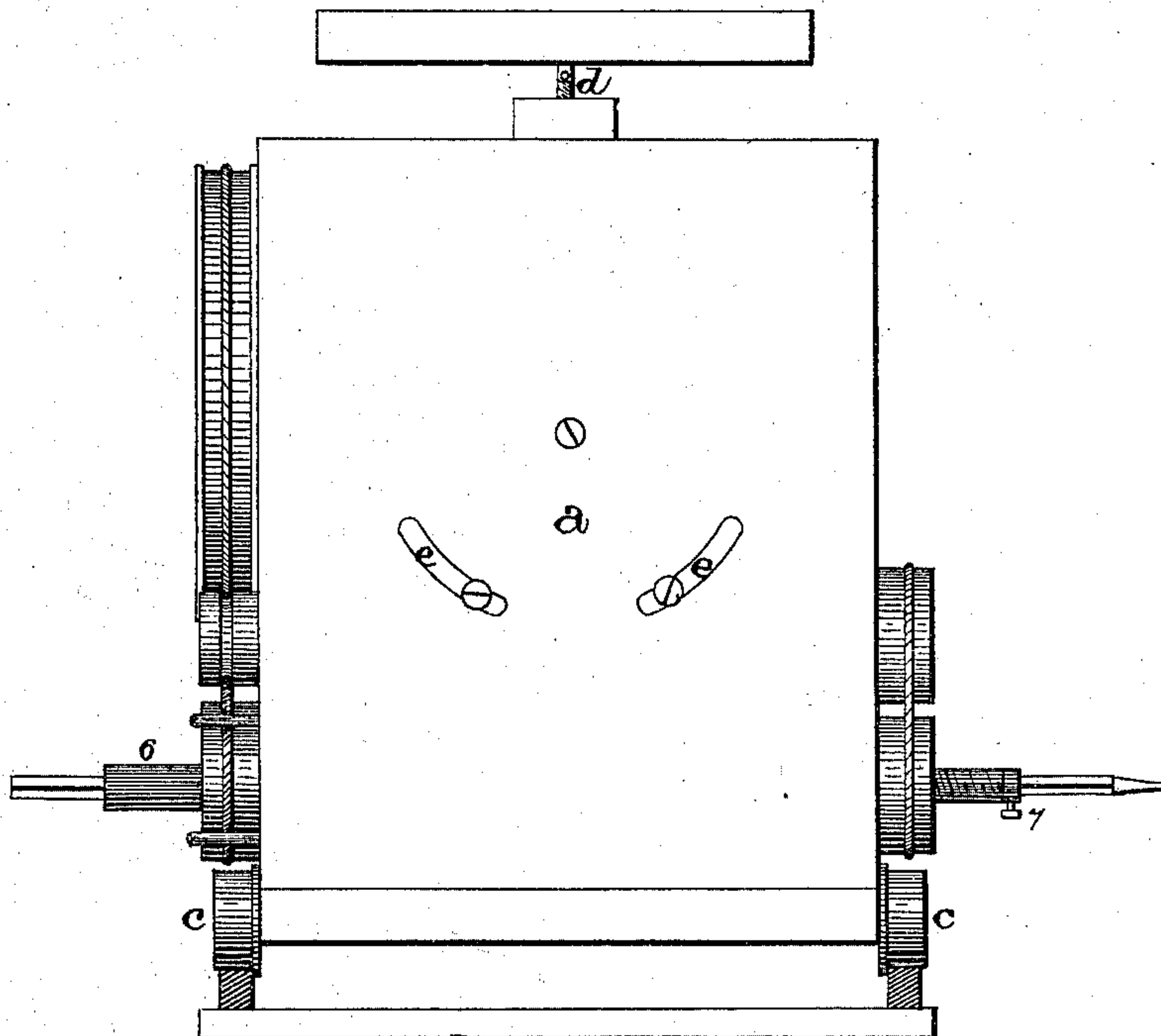
*Francis M. W. Price.*  
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*Attorney.*

**F. M. W. PRICE.**  
**Machines for Mining Coal.**

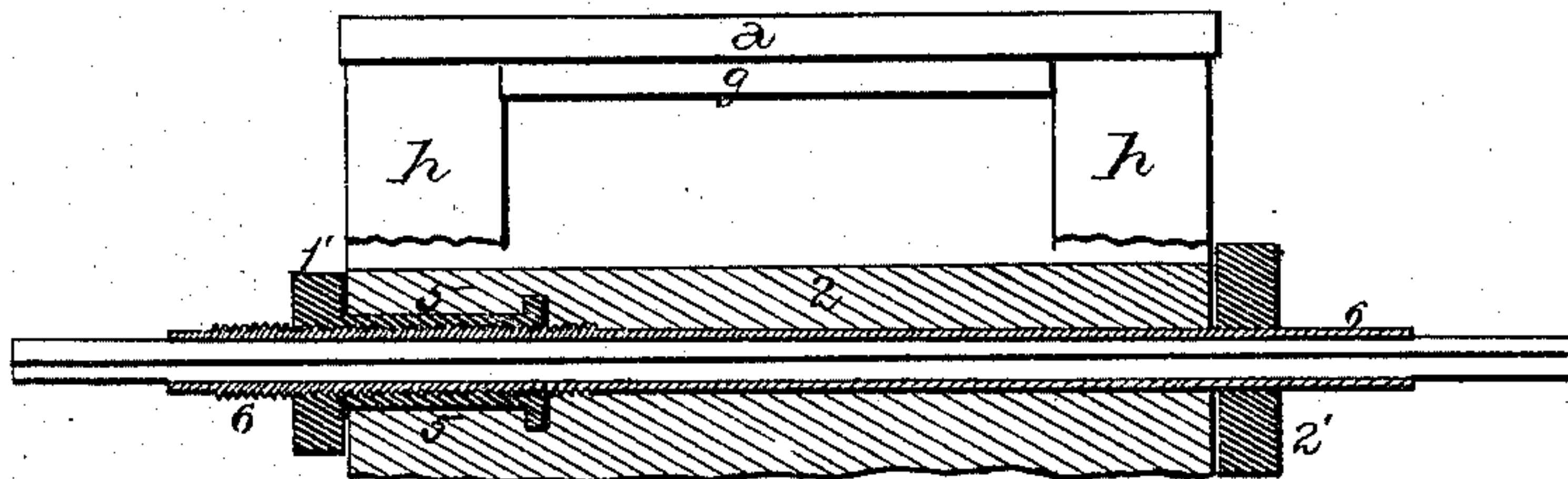
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*Fig. 3.*



*Fig. 4*



WITNESSES

*James M. Price*  
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*attorney.*



# UNITED STATES PATENT OFFICE.

FRANCIS M. W. PRICE, OF DANVILLE, ILLINOIS.

## IMPROVEMENT IN MACHINES FOR MINING COAL.

Specification forming part of Letters Patent No. 142,582, dated September 9, 1873; application filed February 21, 1873.

*To all whom it may concern:*

Be it known that I, FRANCIS M. W. PRICE, of Danville, in the county of Vermillion and State of Illinois, have invented a certain Machine for Mining Coal and other Minerals, of which the following is a specification:

The nature of my invention relates to an improvement in machines for mining coal; and it consists in the arrangement and combination of parts, which will be more fully set forth hereafter.

The accompanying drawings represent my invention.

*a* represents metal castings, joined or connected together at top and bottom by suitable cross-pieces, and which form the frame in which the operating mechanism is supported, and which is provided with wheels *c*, so that it can be readily moved back and forth upon the usual mine-track. Each one of these castings has a socket formed in its top, in which is placed a suitable jack-screw, *d*, for supporting the timbers of the mine just above the place where the machine may be at operation, and for steadying the machine. To the inner side of each of the castings *a*, which have a number of slots or openings, *e*, of suitable shape and size cut through them, is secured a smaller casting, *g*. These castings are connected together by the bars *h*, and the smaller casting can be raised and lowered by means of the slots *e*, so as to adjust the drills to any desired position. The machine is intended to be driven by compressed air in two oscillating cylinders, which will be attached to a crank on the shaft *i*, the cylinders being pivoted or supported in suitable castings provided for them. Upon the shaft *i* is placed the driving-wheel *l*, which meshes with the pinion *n* placed upon the end of the square shaft *o*, and through which motion is communicated to the bevel-gear *u*. This wheel *u* is provided with a larger hub than is usual, so as to prevent as much as possible a swaying of the wheel when a little worn, and which is held in gear with the pinion *v* on the shaft 1 by the tongs *x*. To the operating shaft *i* is connected an eccentric, 3, which is connected to the slide 2 by means of the connecting-rod 4. The slide 2 is caused to move back and forth between the guides *h* by the eccentric, carry-

ing the whole gang of drills with it, and which is composed of two parts, having suitable openings entirely through it through which the square drill-rods pass. The slide also serves as boxes or sleeve-holders for the sleeves 5, and may have a filling of babbitt metal. The sleeves 6, through which the drill-rods pass, extend through from side to side, and on their front ends have a coarse right or left hand thread, according to the direction of the motive power, which works in a corresponding screw on the inside of the sleeve 5. The drill-rods are secured to the sleeves 6 by means of set-screws 7, so that when the sleeves are rotated, or move forward or back, the drills will be carried with them.

Motion being communicated through the pulley 8 and belt 9 to the pulleys 1' formed upon the outer ends of the sleeves 5, the sleeves 6, carrying the drills, are caused to revolve and move forward or back to feed the drills to or from the coal; and the slide 2, having a reciprocating movement at the same time, a compound movement is imparted to the drills—reciprocating and rotary.

The drill-points, made of finely-tempered steel, are secured to the ends of the drill-rods by an ordinary sleeve or other suitable device, so that as soon as the point wears away it can be readily renewed. The rear ends of the sleeves 6 extend out beyond the side of the slide 2, and are keyed to the pulleys 2', as shown in Fig. 2, which receive motion from the driving-wheel 3' on the shaft 1.

Instead of the belt and pulleys here shown, if so preferred, the driving-wheel and wheels 2', and intermediate pulley 3', which communicates motion through the shaft 4' to the pulley 8, will all be provided with cogs and be made to mesh together.

The tongs *x*, which hold the wheel *u* in position upon the shaft *o* are rigidly secured to the top of the slide 2, so that when the slide is caused to reciprocate all of the operating parts reciprocate with it. When, however, it is simply desired to drill holes, the connecting-rod is disconnected from the slide, and then the slide and the parts connected with it remain stationary, and the drills are fed straight forward instead of cutting a long groove in the face of the coal. When the



sleeves have moved the drills forward the length of the screw-threads on their surface the set-screws are loosened, the sleeves move back, and then again fastened to the drill-rods, and fed forward as before.

Having thus described my invention, I claim—

1. In the machine for mining coal or other minerals, a slide, carrying a gang of drills, which receive a reciprocating and a rotary motion by the action of the cam, substantially as set forth.

2. The sleeves 5 6 in combination with operating mechanism for feeding the drills forward, substantially as shown.

3. The combination of the slide 2, carry-

ing the drills, with the eccentric and shaft *i*, substantially as described.

4. The castings *a*, having the slots *e* for the adjustment of the drills, in combination with the castings *g*, substantially as specified.

5. The combination of the shafts *i o*, wheels *l n u v 3'*, eccentric 3, rod 4, slide 2, and gearing to communicate motion to the drills, substantially as set forth.

6. A mining-machine in which the various parts are arranged and combined for operation, substantially as shown and described.

FRANCIS M. W. PRICE.

Witnesses:

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L. H. LINHART.