

(No Model.)

2 Sheets—Sheet 1.

T. MURRAY.
COAL MINING MACHINE.

No. 253,747.

Patented Feb. 14, 1882.

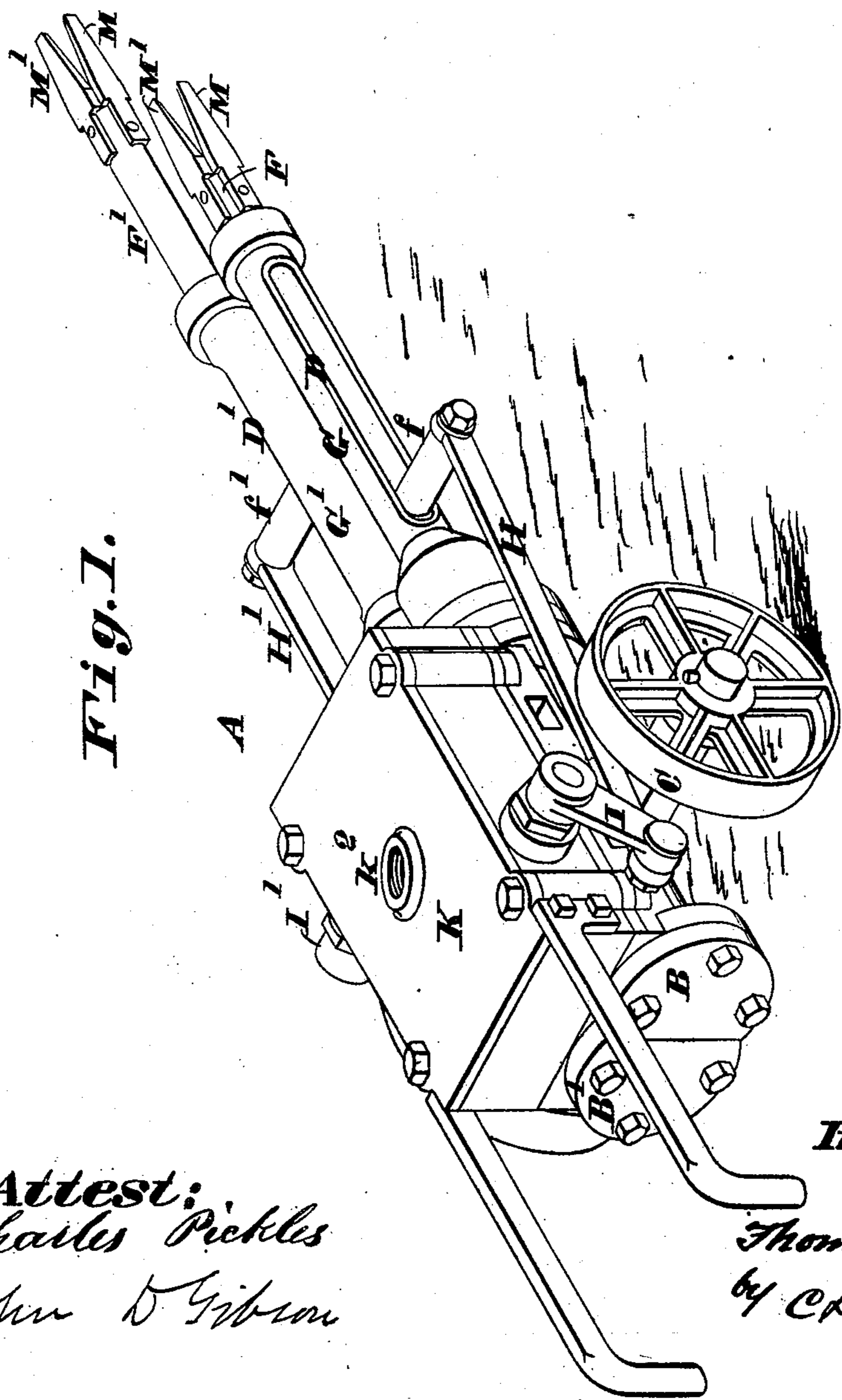


Fig. 1.

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Inventor:
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by C. D. Moody,
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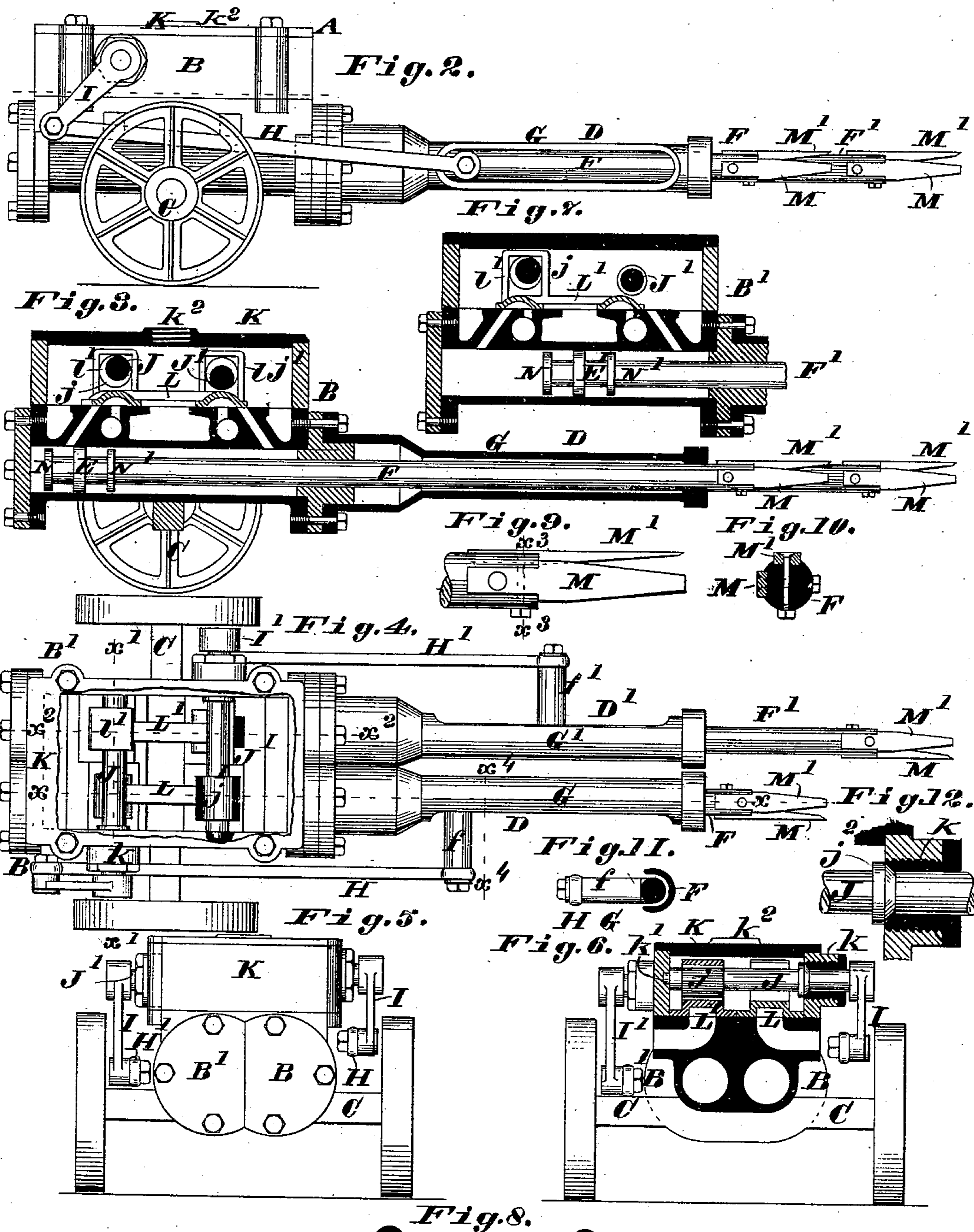
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2 Sheets—Sheet 2.

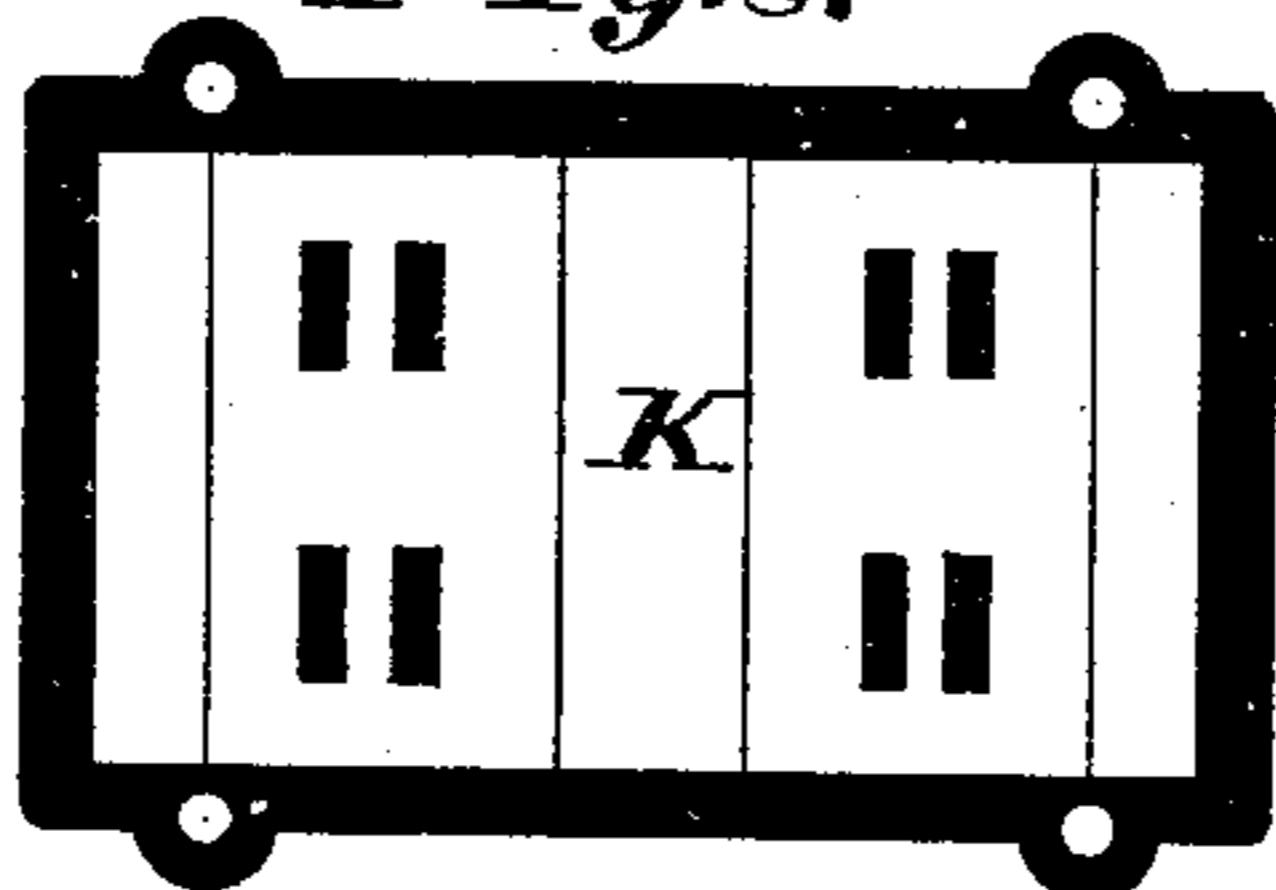
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UNITED STATES PATENT OFFICE.

THOMAS MURRAY, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO
ANDREW C. BRYDEN, OF SAME PLACE.

COAL-MINING MACHINE.

SPECIFICATION forming part of Letters Patent No. 253,747, dated February 14, 1882.

Application filed October 8, 1881. (No model.)

To all whom it may concern:

Be it known that I, THOMAS MURRAY, of St. Louis, Missouri, have made a new and useful Improvement in Coal-Mining Machines, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a view in perspective of the improved machine; Fig. 2, a side elevation; Fig. 3, a vertical longitudinal section taken on the line xx of Fig. 4; Fig. 4, a plan, a portion of the top plate of the valve-chest being broken away to exhibit the valve mechanism; Fig. 5, a rear end elevation, the handles not being shown; Fig. 6, a vertical transverse section taken on the line $x'x'$ of Fig. 4; Fig. 7, a vertical longitudinal section taken on the line x^2x^2 of Fig. 4; Fig. 8, a plan of the valve-seat; Fig. 9, a side view of the forward end of one of the picks; Fig. 10, a section taken on the line x^3x^3 of Fig. 9; Fig. 11, a section taken on the line x^4x^4 of Fig. 4; and Fig. 12, a detail, being a sectional view, showing the means for packing the shaft where it passes through the side of the valve-chest.

The same letters denote the same parts.

The present invention is an improvement in coal-mining machines, wherein the coal-cutting tools are attached to and operated by an engine such as an air-engine.

Referring to the drawings, A represents the improved machine, consisting, generally considered, of a pair of engines, B B', arranged side by side upon a single carriage, C, and operating a pair of coal cutting or picking devices, D D'. The engines are intended more especially to be operated by compressed air. The engines and their respective piston-rods are in close proximity, and the movement of each engine and rod is utilized in operating the valve mechanism of the other engine.

E E' represent the pistons of the engines B B', respectively, and F F' the piston-rods.

G G' represent the guides for the rods. The rod F is provided with an arm, f , to which is pivoted a rod, H, which in turn is pivoted to a crank, I. The latter is fastened to a shaft, J, which extends into and transversely through

the valve-chest K, turning in the bearings $k k'$ therein, and furnished with the cam j . The cam turns in a strap or eye, l , which is attached to the valve L' of the engine B'. The rocking of the shaft J in the bearings $k k'$ operates the valve L', and the movement of the engine B thus effects the movement of the engine B'. The rod F' is similarly provided with an arm, f' , and a rod, H', is similarly used to connect the arm f' with the crank I' upon the shaft J', which similarly extends into the valve-chest, turning in bearings therein, and provided with the cam j' , which in turn rotates in a strap or eye, l , which is attached to the valve L of the engine B. The shaft J', rocking in its bearings, operates the valve L, and the movement of the engine B' thus effects the movement of the engine B. In this manner the auxiliary engine, which heretofore it has been customary to employ in coal-mining engines for operating the engine-valve, is dispensed with. A further and important advantage, however, derived from the present combination of a pair of engines with a single support is, that the latter and the entire device can in practice be held much steadier and more easily in its place than when but a single engine and striking device is used. In the latter case the recoil in striking is very apt to throw the engine and carriage to one side, and to such an extent as to necessitate the stopping of the engine; but with two devices for striking the coal, as in the present construction, this difficulty is largely obviated. Not only more work can be done with the two engines than with one, but, owing to the fact that coal is liable to be of uneven consistency, there is a better opportunity for striking the coal effectively with two striking devices than with but one.

Each striking device D and D' is preferably furnished with two or more chisels, M M', in place of a single chisel. The chisels, however, are concentrated at one side of the piston-rod, rather than all around the end of the rod; and the most desirable arrangement of chisels is that shown, two—M M', at right angles to each other and at one side of the end of the rod, as shown more distinctly in Figs. 9, 10. This pro-

vides for cutting the coal rapidly and without clogging the drill.

As shown in the drawings, the piston E in the engine B is not moving. The piston E' in the engine B' is moving toward the rear end of the machine. The air-supply is through the inlet k^2 , and it is cut off preferably at half-stroke. The pistons are worked about half a stroke in advance of each other. Both valves L and L' are contained and operated in a single valve-chest, K. The shafts J J' have a slight play transversely in the valve-chest, and the bearings in the wall of the chest, where the shafts pass through, are packed, as shown in Fig. 12, the shaft being furnished with a flange, j^2 , which, by reason of the air-pressure within the valve-chest, is forced with sufficient power against the side of the shaft-bearing to prevent the escape of the air. The piston-rods F F' are similarly furnished with disks N N' on each side of the pistons E E'. The disks are slightly smaller in diameter than the engine-cylinder. As the piston is moved to and fro the air in front of the disk escapes gradually past the disk and to the exhaust-port, operating to cushion the stroke.

I claim—

1. The combination, in a coal-mining machine, of a pair of engines and a pair of picking devices, each of said engines operating the valve-gear of the other engine, as and for the purpose described.

2. The combination of the engines B B', the rods F F', arms $f f'$, rods H H', cranks I I', shafts J J', cams $j j'$, chest K, bearing k , flange j^2 , and valves L L', substantially as described.

3. The combination, in an air-engine, of the chest K, the bearing k , the shaft J, and flange j^2 , substantially as described, and for the purpose set forth.

4. The combination of the engines B B', the rods F F', the guides G G', the arms $f f'$, the rods H H', the cranks I I', and the shafts J J', substantially as described.

5. The combination of the engine B, the piston E, and the disks N N', substantially as described.

6. The combination of the rod F and two or more chisels, M M', said chisels being grouped exclusively at one side of the end of the rod, substantially as described.

7. A coal-striking device having two or more chisels grouped exclusively at one side of the end of the striker-rod, for the purpose described.

Witness my hand.

THOMAS MURRAY.

Witnesses:

CHAS. D. MOODY,
CHARLES PICKLES.