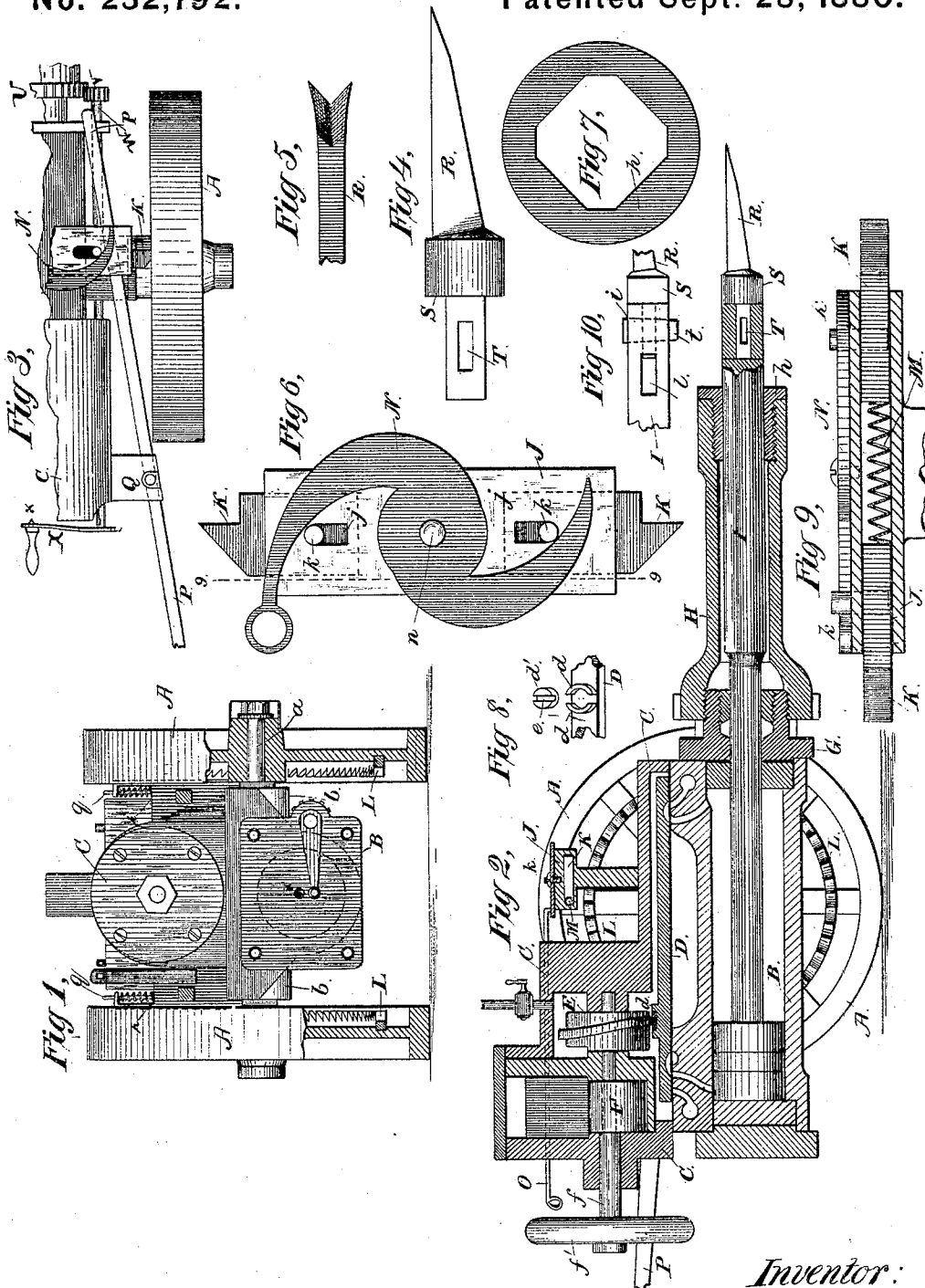


(No Model.)

G. D. WHITCOMB.  
Mining Machine.

No. 232,792.

Patented Sept. 28, 1880.



Attest:  
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Attys.

# UNITED STATES PATENT OFFICE.

GEORGE D. WHITCOMB, OF CHICAGO, ILLINOIS, ASSIGNOR OF THREE-FOURTHS OF HIS RIGHT TO SARAH HARRISON, JOHN J. HARRISON, AND ORANGE BUTLER, OF WAYNE, MICHIGAN.

## MINING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 232,792, dated September 28, 1880.

Application filed March 19, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE D. WHITCOMB, a citizen of the United States, residing at Chicago, in the State of Illinois, have invented  
5 Improvements in Mining-Machines, of which the following is a specification.

My invention relates to certain improvements in that class of coal-mining machines described in Patents Nos. 198,610 and 219,090,  
10 granted to Jonathan W. Harrison on December 25, 1877, and September 2, 1879, respectively.

My invention consists in the applying of a slide-valve operated by a suitable cam rotated  
15 by a single eccentric engine for controlling the supply and exhaust of a double-acting mining-engine.

My invention consists, further, of a combination of circular ratchets upon the supporting-  
20 wheels and suitable pawls operating in the same, said pawls being protracted by a spring and retracted by a cam under the control of the operator.

My invention further relates to a pair of adjustable handles, which may be shortened or  
25 lengthened, or removed altogether, as desired.

My invention further relates to a peculiar shape of pick.

In the accompanying drawings, Figure 1  
30 represents a rear view of a coal-mining machine embodying my improvements, the supporting-wheels being partly broken away to exhibit the ratchet and journal. Fig. 2 is a longitudinal vertical section through the axis  
35 of cylinder. Fig. 3 is a plan view of one side of the machine. Figs. 4 and 5 are side and edge views of the pick. Fig. 6 is a plan view of the pawls and accessories. Fig. 7 shows the bushing through which the pick-holder  
40 slides. Fig. 8 is a perspective view of the slide-valve and its oscillating cup-guide. Fig. 9 is a vertical section through the line 9 9, Fig. 6. Fig. 10 shows another form of pick-holder.

45 A may represent two wheels supporting a cast cylinder, B, journaled in them. A wrought-iron or steel shaft, *a*, cast or otherwise fixed into the projecting lugs *b*, which extend from

the sides of the cylinder for that purpose, constitutes the axle, which, by virtue of its material, is proof against breakage from the  
50 concussions of the machine. Surmounting the cylinder is a steam-chest, C, inclosing the slide-valve D and its operating-cam E. The cam E is operated by a single eccentric rotary  
55 engine, F, which runs independently of the rest of the machine. The shaft *f* of this engine extends through the casing and has a hand-wheel, *f'*, keyed to it for the purpose of  
60 starting the eccentric.

I prefer to make the slide-valve balanced, as shown, and upon its upper face I cast two  
annular arcs, *d*, which serve to guide a horizontally-oscillating cup *d'*, said cup being  
65 slotted at *e* upon its upper face for the reception of the cam E. The free motion of this cup allows it to adjust itself perfectly to the varying direction of the cam E, and by so doing obviates all unnecessary wear.

The piston-rod stuffing-box G projects sufficiently from the cylinder-head to allow of  
70 being screw-threaded on its outer side, upon which is screwed the pick-holder sleeve H, the outer end of which has a bushing, *h*, screwed into it, the non-circular opening in which  
75 corresponds to the shape of the pick-holder I, which slides in it, these parts being all constructed the same as in the before-mentioned patents.

Attached on the upper side of the steam-  
80 chest C is a rectangular box, J, which serves as a guide to two pawls, K, that, by engaging in the circular ratchets L on the inside of the supporting-wheels, prevent any retrograde  
85 motion of the machine.

A spring, M, serves to protract the pawls, while an S-shaped cam, N, pivoted at *n* and  
impinging against the pins *k*, which extend from the pawls through the slots *j*, enables the  
operator, by means of rod *o*, to retract the  
90 pawls whenever it is desired to back the machine.

In order to conveniently handle the machine I provide two arms, P, which slide in guides  
Q, and are held in any desired position by  
95 means of pins *q* in said guides and holes *p* in

the arms. By this means of adjustment the machine can be made to occupy the smallest possible space when required.

5 The pick R is of the represented chisel form, the bevel being wholly on one side. This prevents the pick from glancing at each thrust, and thus relieves the machine of any side pressure. The edge of the pick has a V-shaped notch, as shown, so that the wear of the tool  
10 does not destroy the points so quickly.

I also provide a shoulder, S, upon the pick, which, resting against the end of the pick-holder, affords a solid abutment for withstanding the shock of the blow.

15 The rear end of the pick is inserted into a hole in the end of the pick-holder I, and has a slot, T, for receiving a key, t, which, passing through a corresponding slot, i, in the pick-holder I, secures the pick in place. The pick-  
20 holder I may have an additional slot, l, as shown in Fig. 10, immediately in rear of the pick, for the purpose of inserting a wedge for dislodging the pick in case it should be difficult to remove.

25 A gear-wheel, U, on the rear end of the sleeve H, meshes with a pinion, V, having one-fourth the number of teeth. This pinion is keyed to a shaft, W, on the other end of which is a winch, X, by means of which the sleeve  
30 H and pick R may be rotated by the operator into any desired position.

A projection, x, from the handle X, springs into a hole, x', in the rear cylinder-head, whereby the pick may be held in any one of four different positions.

35 Having thus described my invention, the following is what I claim as new and desire to secure by Letters Patent—

1. In a mining-machine, the slide-valve D, operated by a rotating cam, E, said cam being driven by a rotary engine, F, substantially  
40 as described.

2. In a mining-machine, the combination of slide-valve D, annular arcs d, oscillating cup d', and rotating cam E, substantially as and  
45 for the purpose described.

3. In a mining-machine, the arms P, sliding in guides Q, and adjustable by means of pins q and holes p, substantially as shown and described.  
50

4. In a mining-machine, the circular ratchets L on the supporting-wheels, and pawls K, operated by spring M, S-shaped cam N, and pins k, substantially as described.

5. The chisel-shaped pick R, having the V-  
55 shaped notch in its edge, substantially as and for the purpose set forth.

GEORGE D. WHITCOMB.

Witnesses:

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WALTER DALZELL.