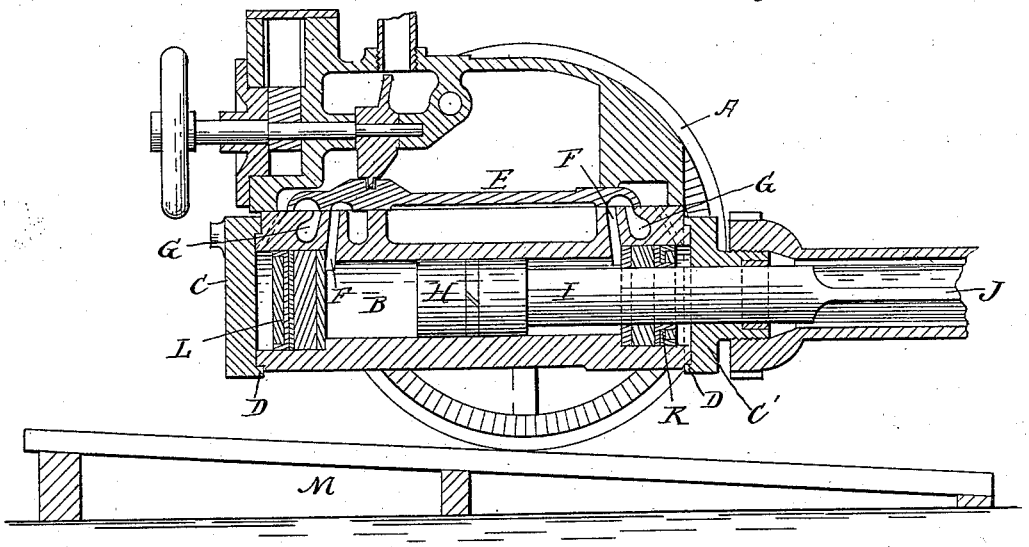
(No Model.)

G. D. WHITCOMB.

COAL MINING MACHINE.

No. 267,047. Patented Nov. 7, 1882.

Fig 1



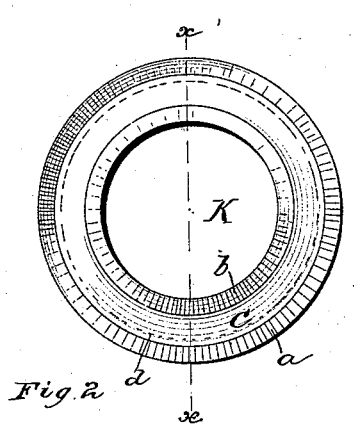


Fig 2

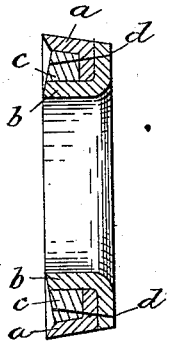


Fig 3

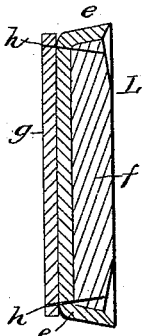


Fig 5

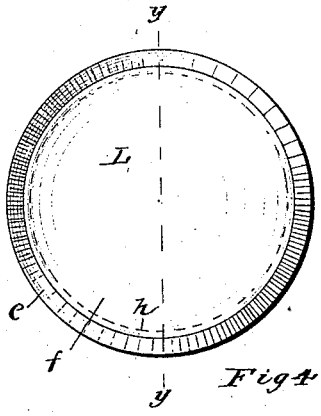
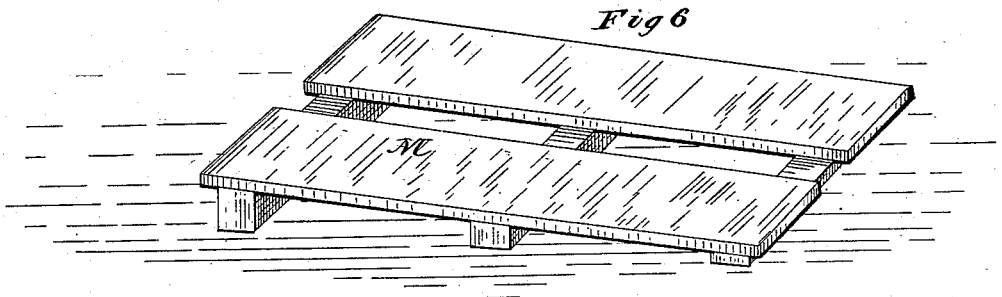


Fig 4

Fig 6



Witnesses
W. C. Corlies.
Jno. C. MacGregor.

Inventor
George D Whitcomb
By Coburn & Thacher
Attorneys

UNITED STATES PATENT OFFICE.

GEORGE D. WHITCOMB, OF CHICAGO, ILLINOIS.

COAL-MINING MACHINE.

SPECIFICATION forming part of Letters Patent No. 267,047, dated November 7, 1882.

Application filed June 12, 1882. (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 county of Cook and State of Illinois, have invented a new and useful Improvement in Coal-Mining Machines, which is fully described in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a vertical central sectional view of my improved coal-mining machine; Fig. 2, a plan view of one of the cushions; Fig. 3, a central sectional view taken at the line *x x*, Fig. 2; Fig. 4, a plan view of the other form of cushion; Fig. 5, a central sectional view taken at the line *y y*, Fig. 4; and Fig. 6, a perspective view of my double-inclined platform.

The object of my invention is to perfect the details of my coal-mining machine patented September 28, 1880, No. 232,792, and June 20, 1882, No. 259,956; and it consists in the combination of devices, whereby the exhaust-ports are between the inlet-ports and ends of the cylinder for the purpose of having the action of the valve aided by the reactive shock of the pick against the coal. This arrangement of valves and ports relative to the cylinder causes the rebound of the pick from making its blow to aid in moving the valve and opening the exhaust-port, thereby saving power and accelerating the action.

My invention further consists in the construction of the cushions, hereinafter fully described; and it also consists in the combination of an inclined platform and the mining-machine for the purpose of utilizing the weight of the machine to hold it to its work, all as hereinafter fully described.

In the accompanying drawings, A represents one of the wheels upon which the machine is supported; B, the cylinder. C C′ are the cylinder-heads, provided with rims or flanges D, which pass over the ends of the cylinder, as shown. E is a valve. F F are inlet-ports. G G are exhaust-ports. H is the piston-head, and I is the piston-rod, made of one piece to obviate the difficulty experienced by joining them together. The round portion of the piston-rod I is made of the same diameter as the largest or diagonal diameter of the square portion J of the rod.

K are cushions inserted in the cylinder over the square portion J of the piston-rod, and fit closely the portion I of the piston-rod, so as to serve as a packing to the front end of the cylinder, as well as a cushion for the piston-head to strike against in case the pick does not hit the coal.

L is a cushion in the rear end of the cylinder for the piston-head to strike against when it makes its back-stroke. These are leather cushions. The cushion K has a double crimp, one crimp fitting against the interior of the cylinder and the other against the piston-rod, which passes through it, thus forming a packing between the piston-rod and the cylinder.

It is difficult to form a double crimp so near together from a single piece of leather. I therefore make the outside crimp, *a*, of one piece and the inner crimp, *b*, of another piece, and overlap their edges, as clearly shown in Fig. 3.

c is a ring placed between the crimps *a* and *b*, and in order to keep the crimp *a* in place I rivet or sew through the pieces, as indicated by line *d*. This fastens the parts of the cushion together, and also keeps the parts in form.

In the cushion L the crimp *e* is formed in one piece, made in form of a disk, with its edges turned up to form a crimp. *f* is a piece set into the disk, and *g* is a back plate, which serves to keep the crimp *e* from bending down, and the parts are fastened together by the rivet or sewing *h*. As the piston-rod does not pass through this cushion, the crimp is made to fit against the cylinder only.

The exhaust-ports G are between the inlet-ports F and the ends of the cylinder, and when the piston moves forward to strike the blow with the pick the recoil on the machine assists to move the valve E forward to open the rear exhaust-port and the front inlet-port. I thereby utilize the recoil force to assist in moving the valve E. By this combination of inlet and outlet ports with the valves I am able to utilize the recoil from the force of the blow to move the valve to open and close the ports. The greatest recoil is occasioned by the forward stroke when the pick strikes the coal, and from the described arrangement of ports it results

that the recoil of the cylinder, which is necessarily equivalent to a forward pull on the sliding valve E, occurs just as the cam which operates that valve gives it its forward push, so that the recoil, co-operating to produce the requisite movement of the valve, diminishes by so much the amount of force which must be applied to the cam, whereas in the ordinary arrangement of the ports the recoil would operate to pull the valve forward relatively to the cylinder, just as the cam must operate to pull it backward, and thus increase the resistance which the latter must overcome.

M is an inclined portable platform, upon which the mining-machine is placed when in operation. It is made to slope toward the work of the machine, so that the weight of the machine holds it to its work and assists to overcome the recoil from the blow of the pick. The incline of the platform also enables the operator to give the machine a downward pitch, so that the weight of the piston and piston-rod assists in giving force to the blow of the pick. This inclination of the platform operates in this way to save power and assist the operator in operating the machine and holding it to its work.

I ordinarily make my platform double, with loose sections, and in such manner that the machine is moved laterally from one platform to another as it is moved from place to place in its work.

The parts of my machine not particularly described herein are the same as are described and claimed in my patents above referred to.

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

1. The combination of the cylinder B, sliding valve E, inlet-ports F, and exhaust-ports G, arranged between the inlet-ports and the heads of the cylinder, substantially as and for the purpose described.

2. The cushion-packing K, having a double crimp made from two pieces, shaped and arranged substantially as specified and shown.

3. The combination of the inclined platform M and mining-machine for the purpose of holding the machine to its work, substantially as specified and shown.

GEO. D. WHITCOMB.

Witnesses:
JNO. C. MACGREGOR,
H. D. HOLLISTER.