(No Model.)

J. DU BOIS.

COAL MINING MACHINE.

No. 259,108. Patented June 6, 1882.

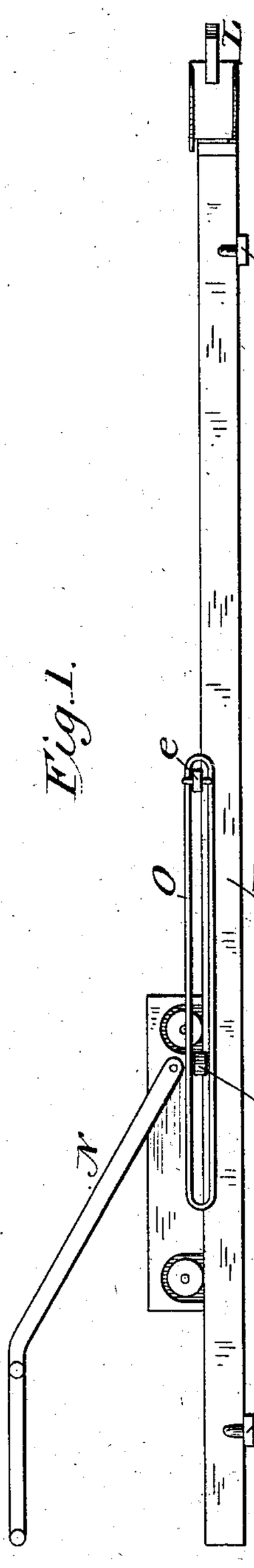

Fig. 1.

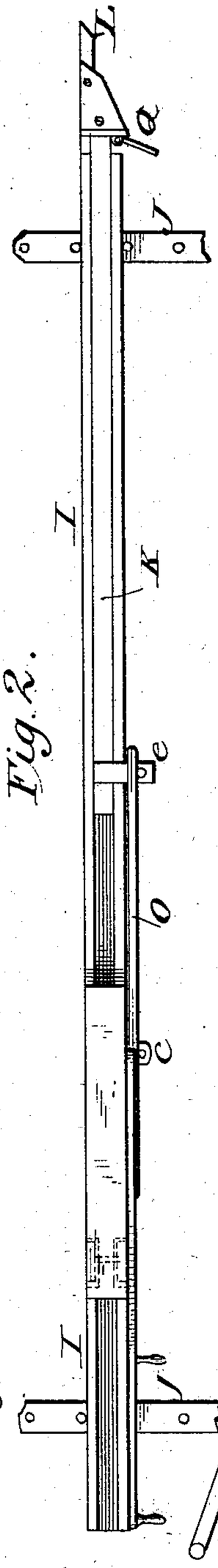

Fig. 2.

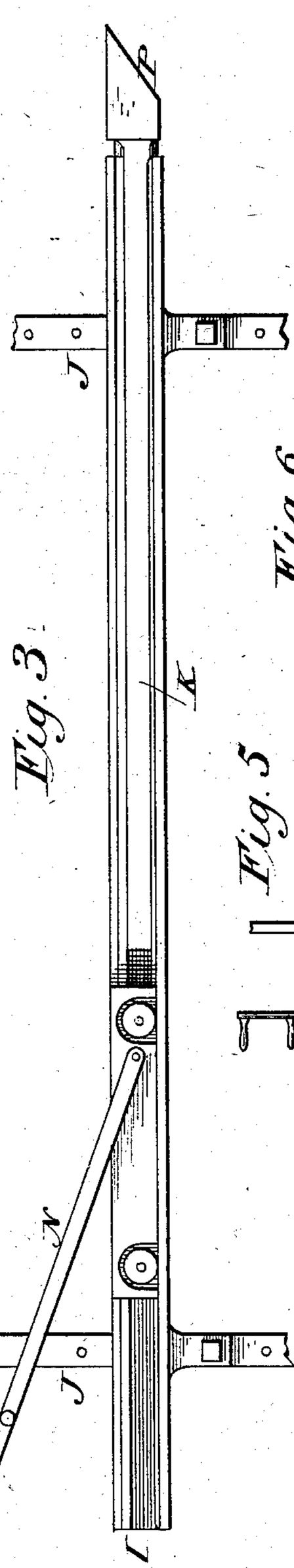

Fig. 3.

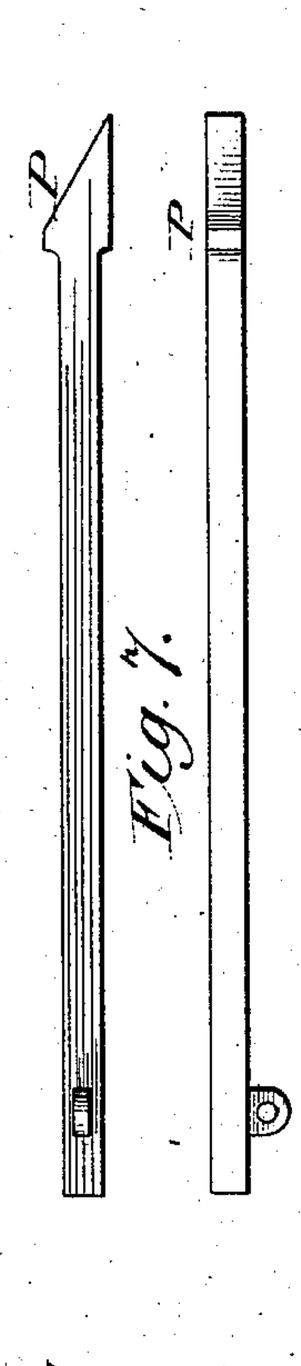

Fig. 6.

Fig. 7.

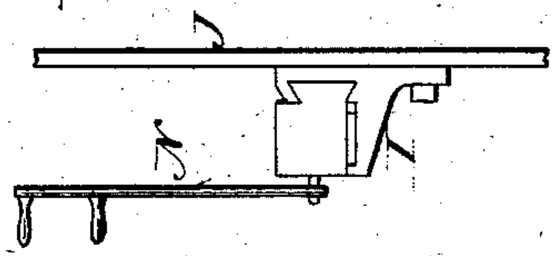

Fig. 5

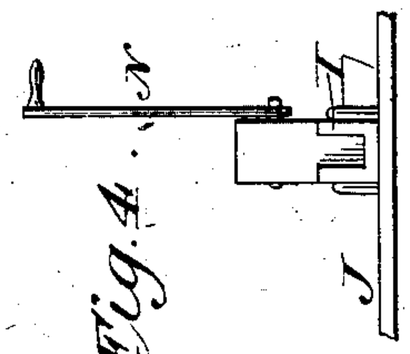

Fig. 4.

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UNITED STATES PATENT OFFICE.

JOHN DU BOIS, OF DU BOIS, PENNSYLVANIA.

COAL-MINING MACHINE.

SPECIFICATION forming part of Letters Patent No. 259,108, dated June 6, 1882.

Application filed November 4, 1881. (No model.)

To all whom it may concern:

Be it known that I, JOHN DU BOIS, of Du Bois, in the county of Clearfield and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Mining Coal, of which the following is a specification.

The object of this invention is to provide a light and cheap machine to be operated by manual power, which may be readily transported from place to place as required, and by means of which the operator may undermine and break down coal with great rapidity and without producing the usual excessive amount of slack or waste.

The invention consists essentially in combining with a reciprocating cutting tool or chisel a suitable guide therefor and a sliding reciprocating ram or hammer provided with means whereby the attendant may drive it forward against the chisel with a percussive action and then withdraw it.

The invention also consists in establishing a loose connection between the chisel and ram, permitting the ram to move independently to a limited extent, whereby I secure two advantageous results: first, permitting the ram to acquire a considerable momentum before striking upon the chisel, and, second, permitting the ram to act with a percussive effect in withdrawing the chisel, whereby the chisel may be jarred or driven loose from the coal, into which it is frequently wedged with great firmness.

The invention also consists in minor details hereinafter described.

The construction may be modified in various details which will suggest themselves to the skilled mechanic without departing from the limits of my invention.

The machine is designed more particularly for cutting a channel horizontally beneath the coal and vertically at the side of the same, the operation being commenced by first boring a hole into the coal to the full depth to which the channel is to be extended, and subsequently extending the channel laterally from the hole by a succession of rectilinear cuts parallel therewith.

The accompanying drawings illustrate the apparatus in its preferred form.

Figure 1 represents a side elevation of the machine for forming the horizontal channel. Fig. 2 is a top plan view of the same. Fig. 3 is a side elevation of the machine in a slightly-modified form for cutting vertical channels. Fig. 4 is a rear end elevation of the machine shown in Figs. 1 and 2. Fig. 5 is a similar view of the machine shown in Fig. 3. Figs. 6 and 7 are respectively a top and edge view of the tool employed for making the first cut, and thereby enlarging the primary hole.

Referring to the machine represented in Figs. 1, 2, and 4, it will be seen to consist simply of a horizontal grooved guide-bar, I, sustained at its ends upon horizontal bars J, being secured in place thereon by the pins and holes, as shown, or in any other suitable manner which will permit the guide to be shifted sidewise as the channel is extended beneath the coal.

As a means of operating the reciprocating chisel or cutter, I mount in the guide behind the same a reciprocating hammer or ram provided with a handle, U, preferably pivoted thereto, by which the attendant, standing in rear of the apparatus, may slide the ram forward and backward. To the chisel and ram I attach a connecting device which will permit the ram to slide to a limited extent. The device shown in the drawings for this purpose consists of a slotted bar or link, O, engaging around lugs *e*, formed on the sides of the chisel and ram, respectively. This link permits the ram to be drawn backward away from the chisel a considerable distance, after which the link compels the chisel to follow after the ram. Upon driving the ram forward it will move a considerable distance and acquire considerable momentum before striking the chisel to drive the same forward. When the ram has moved backward from the end of the chisel it acquires considerable momentum before striking the end of the link, upon which it acts with a percussive or hammering action to withdraw the chisel. This is an important feature, inasmuch as the chisel frequently becomes wedged with great firmness into the coal, so that it would be impossible to withdraw it by a steady pull or strain. The arrangement of the ram to slide in the guide behind the chisel permits of its being moved backward to any required extent, so that in cutting in very hard coal it may be caused to impart blows of great force to the chisel. The link is represented in the

drawings as being held in place by means of the pins passing through the lugs, which admit of its being readily disconnected in the event of its being required to give the chisel an independent motion greater than the length of the link will permit.

It is manifest that any suitable connection which will permit a lost motion between the parts may be applied to the ram and chisel.

The machine represented in Figs. 3 and 5 differs from that shown in the preceding figures only in that its guide is provided with a flat groove in the side to receive the ram, the chisel being sustained upon vertical instead of horizontal supports.

In commencing operations with the machine, in connection with the primary hole before mentioned it is preferred to employ a chisel such as represented in Figs. 6 and 7 to make the first or preliminary cut, after which the chisel represented in the other figures may be employed.

For the purpose of withdrawing the slack or refuse coal cut loose by the chisel, the latter will be provided, as shown in Figs. 1 and 2, with a hinged lip or clearer, Q. This lip will fold backward against the chisel as the latter moves forward; but as the chisel is withdrawn the lip will swing outward against a shoulder to the position shown in Fig. 2. and will then serve to carry the loose material before it out of the cut or channel.

In order to reduce the friction between the ram and its guide, I prefer to mount the ram on rollers or wheels, as shown in Figs. 1, 2, 3, and 4. The wheels are seated in recesses in the side of the ram, upon axles or journals passing through the same, and are arranged upon the guide. By seating the rollers within the body of the ram they are protected from dust and dirt.

As to the method of operation, consisting in boring a primary hole and extending the channel laterally therefrom, the right is reserved to make the same the subject-matter of future application.

Having thus described my invention, what I claim is—

1. In a machine for channeling coal, the combination of the guide, a reciprocating sliding chisel adapted to be projected beyond the guide, and the reciprocating sliding ram operating said chisel, the ram and chisel being connected by means, substantially as described, permitting a limited independent motion in relation to each other.

2. The combination, in a hand channeling-machine, of a horizontal guide, a chisel reciprocating therein and capable of being projected beyond the same, a sliding ram, and a handle for operating said ram, substantially as shown.

3. In a coal-mining machine, the combination of the guide, the reciprocating ram, and the ram-supporting wheels, seated in and covered by the ram and arranged to travel upon the guide, as described and shown, whereby they are protected from dust and dirt.

4. In a hand mining-machine, the combination of a reciprocating chisel or cutter and a reciprocating ram connected therewith, substantially as described, to operate with a percussive action upon the chisel in withdrawing the same from the coal.

5. In a hand mining-machine, the combination of the reciprocating chisel, the reciprocating ram, and a readily-detachable connection, substantially as shown, constructed to permit a lost motion between said parts.

6. In combination with a reciprocating channeling-tool, substantially as described, the lip or clearer pivoted thereto and arranged to swing backward out of action during the advance of the chisel, substantially as shown.

JOHN DU BOIS.

Witnesses:
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GEORGE RICHARD VOSBURG.