2 Sheets, Sheet 1.

J. G. Jones,

Mining Coal.

No. 51,405. Patented Dec. 5, 1865.

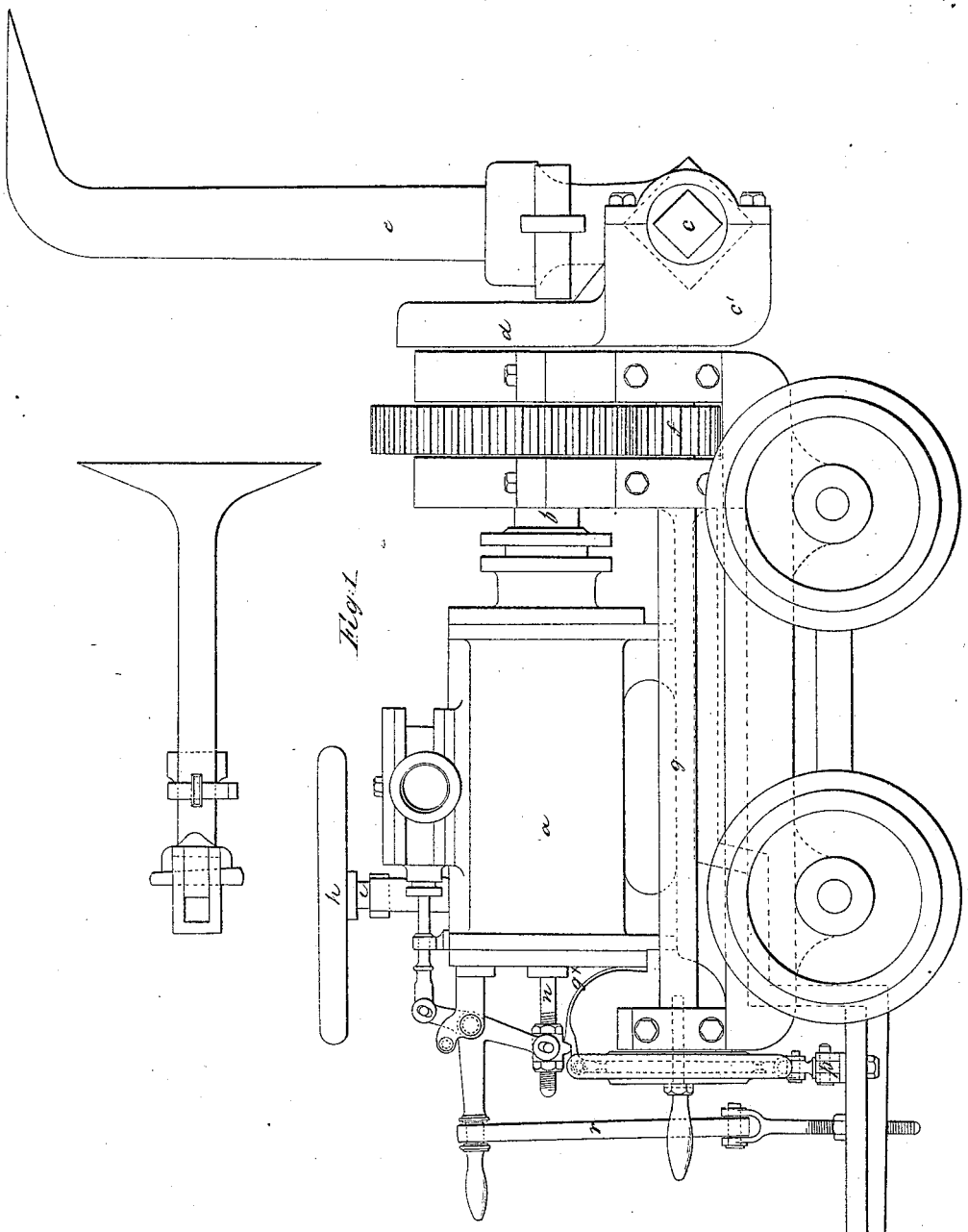


Fig. 1.

Witnesses
Geo Pitt
Houpmacc

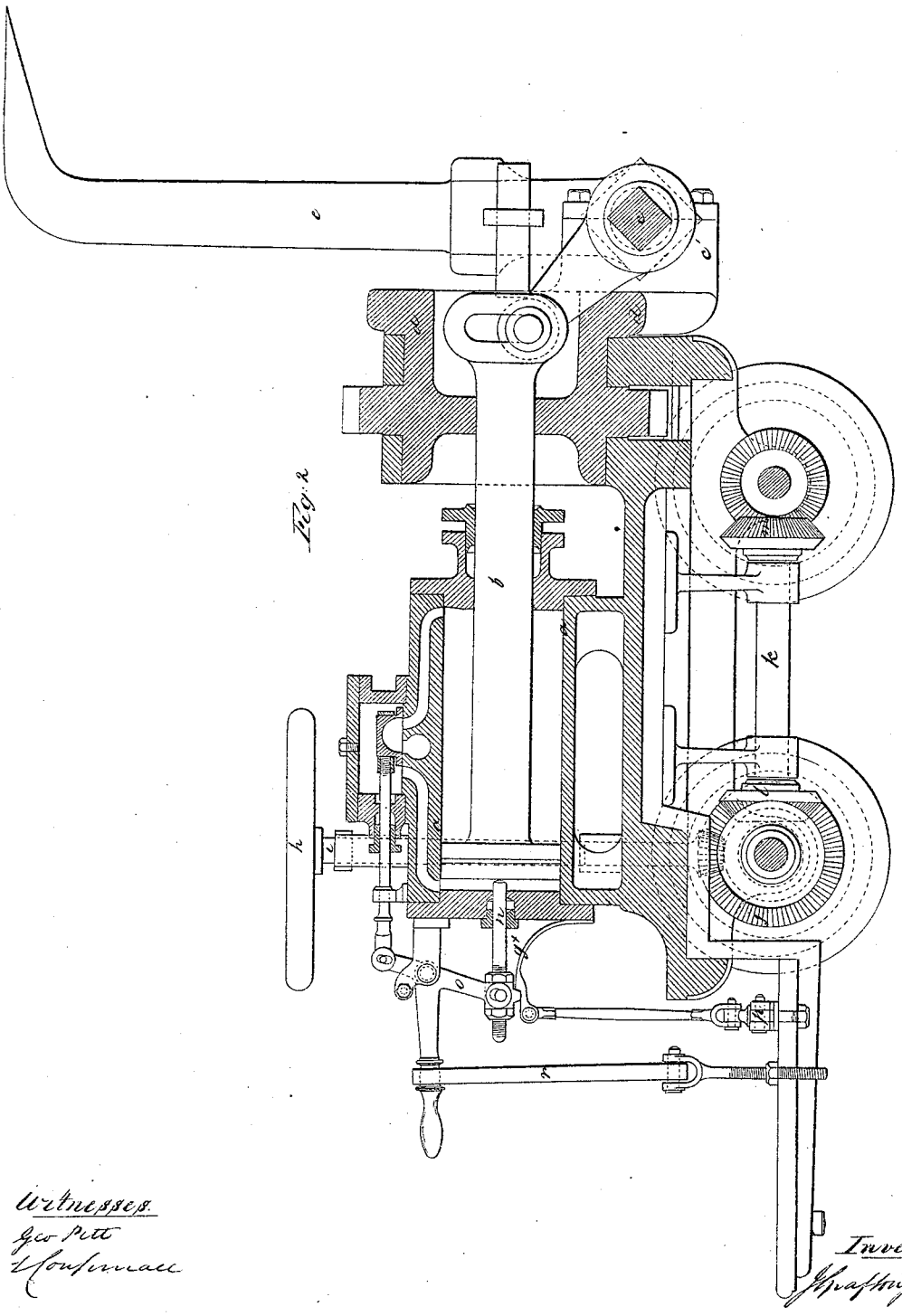
Inventor
J Shafton Jones

2 Sheets, Sheet 2.

J. G. Jones,

Mining Coal.

No. 51,405. Patented Dec. 5, 1865.



Witnesses.
Geo Pitt
Hoffman

Inventor
J. Grafton Jones

UNITED STATES PATENT OFFICE.

JAMES GRAFTON JONES, OF MONMOUTHSHIRE, WALES.

IMPROVED COAL-MINING MACHINERY.

Specification forming part of Letters Patent No. **51,405**, dated December 5, 1865.

To all whom it may concern:

Be it known that I, JAMES GRAFTON JONES, late of 53 Cumming Street, Pentonville, in the county of Middlesex, but now of the Blaina Iron Works, Monmouthshire, engineer, a subject of the Queen of Great Britain, have invented or discovered new and useful Improvements in Machinery Employed when getting Coal, Stone, and other Minerals; and I, the said JAMES GRAFTON JONES, do hereby declare the nature of the said invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement thereof—that is to say:

My invention is applicable in cases where an engine is mounted on a carriage and gives motion to a shaft or axis carrying and working a lever-pick; and the invention consists in the application to such an engine of a cylinder which is capable of being turned in its bearings, so as, from time to time, as desired, to cause the shaft or axis which is actuated by the engine and carried by the cylinder to assume and be worked in different positions, as the nature of the work may require. The engine is also arranged to give motion by a sliding tappet acted on by the piston, and the lever-pick receives its motion direct from the piston-rod by a slot formed at the end thereof. It is preferred to use a horizontal reciprocating engine, and when getting coal or when worked in other confined places it is preferred that the engine should be such as to be worked by compressed air, or the engine may be otherwise worked.

In the drawings, Figure 1 shows a side elevation of machinery arranged and combined according to my invention. Fig. 2 shows a longitudinal section thereof.

a is the cylinder of the engine, fixed to a carriage, as shown.

b is the piston-rod, which is connected to a crank or arm on the shaft or axis *c*. Hence, when motion is communicated to the piston-rod, the shaft or axis *c* will be caused to make a partial rotation in its bearings *c' c'* and give motion to the lever-pick *e*, fixed on or mounted at one end of such shaft or axis.

The bearings *c' c'* of the shaft or axis *c* are fixed to and carried by the cylinder *d*, so that when that cylinder is turned in its bearings the shaft or axis *c* will be caused to assume different positions and the lever-pick will be worked in different directions, as the nature of the work may require.

Around the cylinder *d* are teeth, into which a pinion, *f*, gears. The pinion *f* is fixed on a shaft, *g*, which has on it a hand-wheel, by which the shaft *g* and cylinder *d* may be readily turned. This hand-wheel is to be provided with means of locking or holding it in any position to which it may be turned, in order to retain the shaft or axis on which the lever-pick is mounted in the desired position. This may be done by holes through the hand-wheel for the passage of a bolt or otherwise.

Although I prefer to turn the cylinder *d* by the arrangement shown, the turning and fastening or holding these parts in position may be accomplished by equivalent mechanism.

The carriage, as has before been the case, is caused to move, by means of a hand-wheel, *h*, on an upright shaft, *i*, on which is a pinion which gears in a wheel, *j*, on one of the axles of the wheels of the carriage, and from such wheel *j* motion is communicated to the axle of the other wheels of the carriage by means of the shaft *k* and pinions *l m*, as shown in the drawings.

The valve of the engine is preferred to be actuated by the gearing shown in the drawings.

n is a tappet, which slides in a stuffing-box on the end cover of the engine-cylinder. This tappet *n* is connected to a lever, *o*, which at its other end is connected to the spindle of the slide-valve.

p is a lever acted on by the foot, which releases the spring-catch $g^{\times}$ when the india-rubber spring *r* moves the slide-valve.

Having thus described the nature of my invention and the manner of performing the same, I wish it to be understood that what I claim is—

1. The combination of the cylinder *d*, carrying the bearings *c' c'* of the shaft or axis *c*, with an engine on a carriage, substantially as above described.

2. The combination of the piston with the valve by the tappet *n* and lever *o*, substantially as herein described.

3. The slotted end of the piston-rod *b* acting on the axis *c* by a crank-arm, substantially as described.

J. GRAFTON JONES.

Witnesses:

THOS. BROWN,

JOHN DEAN.

No. 17 Gracechurch Street, London.