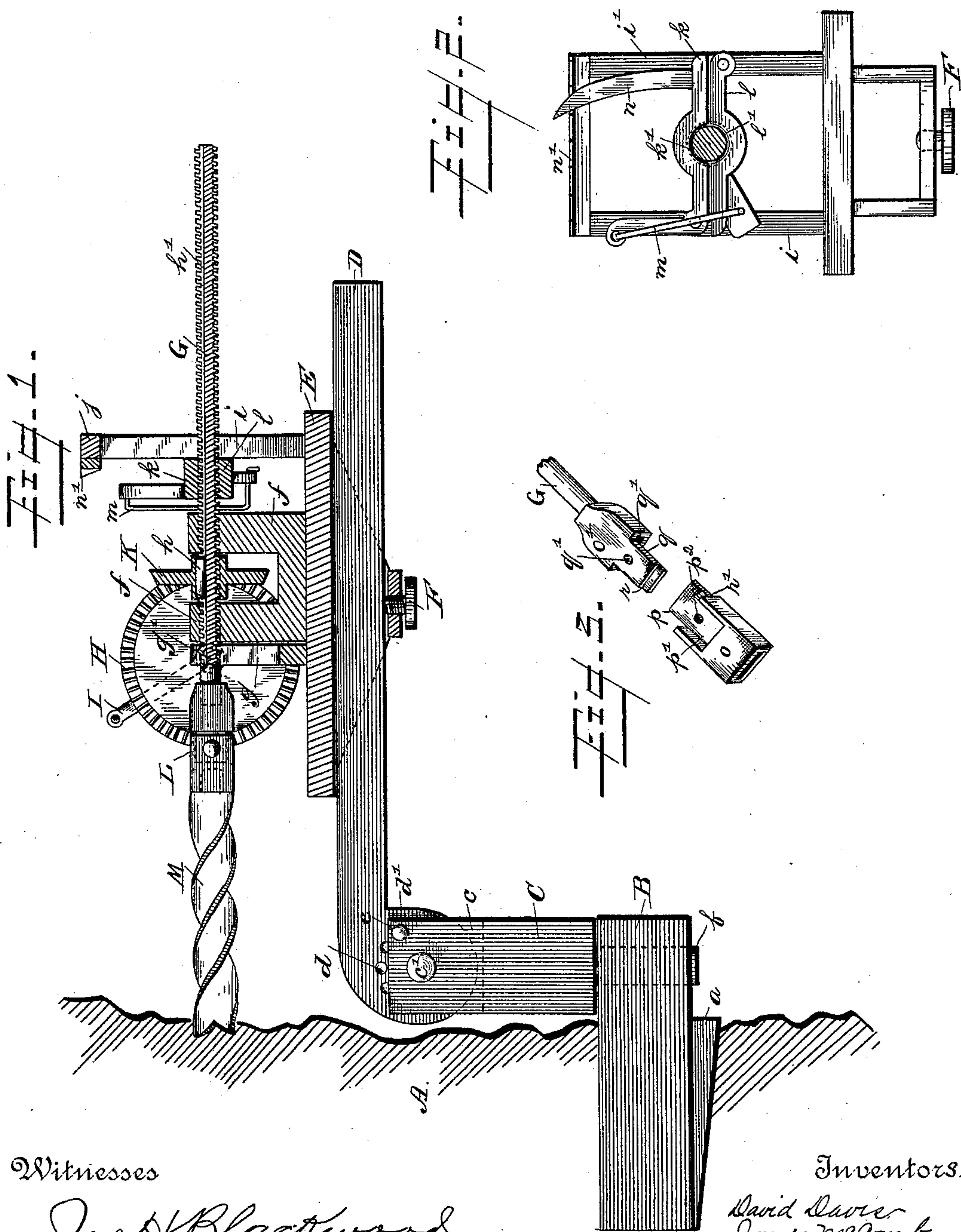


(No Model.)

D. DAVIS & J. McCOMB.  
COAL DRILL.

No. 420,442.

Patented Feb. 4, 1890.



Witnesses

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# UNITED STATES PATENT OFFICE.

DAVID DAVIS AND JAMES McCOMB, OF BUCKINGHAM, OHIO.

## COAL-DRILL.

SPECIFICATION forming part of Letters Patent No. 420,442, dated February 4, 1890.

Application filed March 29, 1889. Serial No. 305,267. (No model.)

*To all whom it may concern:*

Be it known that we, DAVID DAVIS and JAMES McCOMB, citizens of the United States, residing at Buckingham, in the county of Perry and State of Ohio, have invented certain new and useful Improvements in Coal-Drills; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to certain new and useful improvements in coal-drills.

The object we have in view is to improve the construction and arrangement of the parts adapted to enter the coal-bed and support the drilling mechanism, to improve the construction of the bearing-box for the drill-shaft, to improve the means employed for removably attaching the drill to its shaft, and to improve the general construction and arrangement of the parts in other minor details.

To the accomplishment of the above the invention consists in certain novel parts and combination of parts, as will be fully described and claimed.

In the accompanying drawings, to which reference will be made, Figure 1 is a view, partly in elevation and partly in section, showing the machine in position; Fig. 2, a view in detail of the bearing-box and parts connected therewith, and Fig. 3 a view in detail of the device for connecting the drill and its shaft.

In the drawings, A represents a coal-bank.

B is a short arm adapted to be driven into such bank and held in place by a wedge *a*. Arm B protrudes a sufficient distance from the bank to accommodate an upright C, said upright being provided on its lower end with a suitable pin or stud *b*, adapted to enter an opening formed vertically through arm B. At its upper end upright C is bifurcated, and between the arms *c* thus formed a beam D is pivoted, said beam being mounted upon a pin *c'*, which pin passes through suitable holes formed in arms *c* and the beam and held in place by a suitable nut. That end of beam D which is located between the arms C is cam-shaped, and at points near its periphery is provided with a series of holes *d*, each of which in turn is adapted to register

with holes *d'*, one of which is made in each arm *c*. Through the holes *d'* and any desired hole *d* a pin *e* is passed, the angle at which the beam D is to be held being thus determined.

Beam D is arranged to extend rearwardly from the coal-bank, as shown, and upon its upper face a platform E is mounted, said platform being held adjustably in place by a set-screw F, and intended to support the drilling mechanism. Uprights *f f* are mounted upon platform E, and at their upper ends are arranged to serve as guides for the drill-shaft G. A post *g* is also mounted upon the platform, its position being slightly forward and to one side of the front upright *f*, said post being provided at a point near its upper end with an arm *g'*, arranged at right angle to the post and adapted to serve as a bearing for a gear-wheel H, said gear being formed with a sleeve adapted to fit loosely upon said arm and to receive the crank I, by which the gear-wheel is revolved, these several parts being removably mounted upon the arm *g'* and adapted to be transferred to the opposite side of the machine, where a post and bearing-arm similar to the parts *g* and *g'* are provided, such parts not being shown in the drawings.

Upon drill-shaft G, at a point between uprights *f f*, is a smaller gear K, arranged to mesh with gear H. Gear K is provided with a key *h*, which enters a slot or groove *h'*, formed longitudinally in shaft G, whereby the shaft is revolved by said gear, but allowed the necessary forward movement.

Mounted upon platform E to the rear uprights *f* are two uprights *i i'*, connected at their upper ends by a cross-piece *j*. Pivoted upon the front face of upright *i* is a cross-piece *k*, provided on its under face at its center with a semicircular screw-threaded depression *k'*, adapted to register with a similar depression *l'*, formed in the upper face of a second cross-piece *l*, pivoted to upright *i'*, as shown, these cross-pieces *k* and *l* serving to form a box for the drill-shaft. The free end of cross-piece *l* is connected by a link *m* with the pivoted end of cross-piece *k* in such a manner that the elevation of the free end of cross-piece *k* will cause the depression of the corresponding end of cross-piece *l*, the bear-



ing-box being thus opened at both ends by a single operation. Upon the upper face of cross-piece *k*, at a point near its free end, is secured an arm *n*, arranged to engage the 5 teeth of a rack *n'*, secured to the front face of cross-piece *j*, hereinbefore referred to, this arrangement of parts being such as to secure the two parts of the journal-box firmly together while the machine is in operation, 10 while at the same time the opening of such box for the adjustment of the shaft can be readily and conveniently accomplished.

*L* represents our attachment for connecting the shaft and drill, such attachment consisting of two parts *o o'*, the former consisting of a casting cut away on its upper face to form a tongue *p*, and in advance of such tongue hollowed out to form a cavity *p'*, the tongue *p* being provided with the hole *p*<sup>2</sup> and 20 the front end of the casting with a suitable slot to receive and hold the shank of the drill *M*. Casting *o'* is cut away on its under face to form a tongue *q*, and to the rear of such tongue is provided with the cavity *q'*, the tongue being provided with hole *q*<sup>2</sup>, 25 adapted to register with hole *p*<sup>2</sup>, and the casting at its rear end with a slot to receive the drill-shaft *G*. Upon the upper face of tongue *q* a shoulder *r* is formed, which impinges the 30 edge formed on casting *o* by the cavity *p'*, and on the under side of tongue *p* a similar shoulder *r'* is formed, this latter impinging the edge of casting *o'*, formed by cavity *q'*. When the parts are brought together, the two 35 holes *p*<sup>2</sup> and *q*<sup>2</sup> register, and a pin *s* is passed therethrough to hold the parts together.

The operation of the machine is as follows: The device is first secured in position by driving the arm into the coal-bank and se- 40 curing it in place by the wedge *a*. The platform carrying the drilling mechanism is then mounted upon the rear end of beam *D*, and the angle at which the boring is to be done being determined the beam is placed at said 45 angle and secured in such position by the

means of the pin *e*, which is passed through the holes formed in the arms of the upright and the registering hole formed in the beam. The large gear, with its crank, is then mounted upon that side of the machine found to be 50 most convenient, and the shaft and drill operated until the bank has been bored the depth of the drill, after which the bearing-box for the shaft is opened by releasing the arm *n* from rack *n'* and raising one part of 55 such bearing-box, which operation causes the depression of the remaining part thereof. The platform upon which the drilling mechanism is mounted is then advanced a suitable distance toward the bank, the bearing-box 60 again closed, and the boring continued until the desired depth has been bored.

Having thus described our invention, what we claim is—

1. In a coal-drill, the combination, with a 65 shaft, of a screw-threaded bearing-box therefor, consisting of two parts pivoted at opposite ends, a link connecting the free end of one part and the pivoted end of the other, an arm secured to one of such parts, and a rack, as 70 set forth.

2. In a coal-drill, the combination, with shaft *G*, of pivoted screw-threaded cross-pieces *k l*, link *m*, arm *n*, and rack *n'*, as and for the purpose set forth. 75

3. In a coal-drill, the combination, with drill *M* and casting *o*, the latter provided with perforated and shouldered tongue *p* and cavity *p'*, of shaft *G* and casting *o'*, said casting provided with perforated and shouldered tongue 80 *q* and cavity *q'* and pin *s*, as and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

DAVID DAVIS.  
JAMES McCOMB.

Witnesses:  
CHAS. DONAHUE,  
M. H. DONAHUE.