

(No Model.)

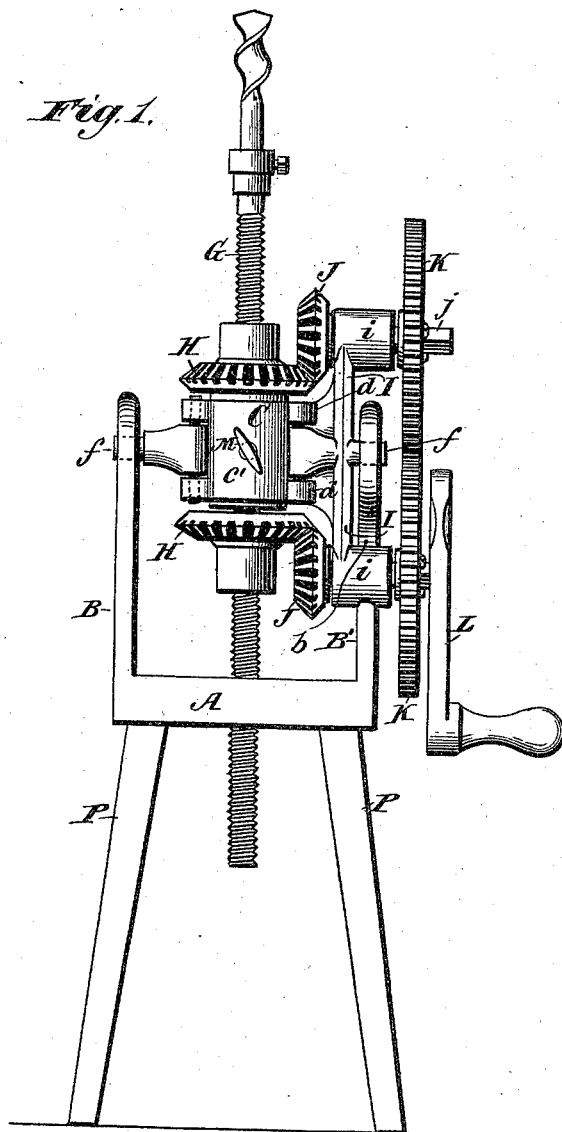
2 Sheets—Sheet 1.

E. CARNDUFF.  
COAL OR ROCK DRILLING MACHINE.

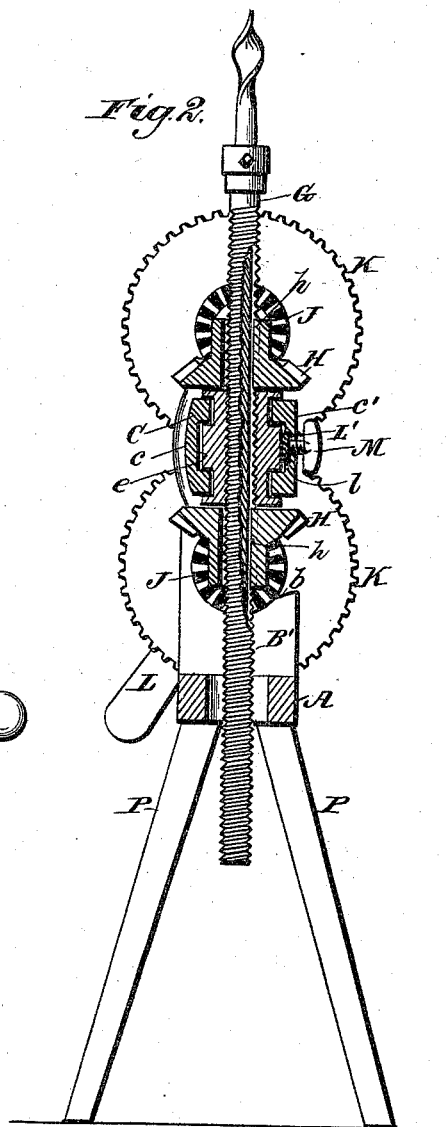
No. 526,294.

Patented Sept. 18, 1894.

*Fig. 1.*



*Fig. 2.*



*Witnesses.*  
*Abner Smith*  
*Thos. A. Green*

*Inventor.*  
*Edward Carnduff.*  
*By James L. Norris.*  
*Atty.*

(No Model.)

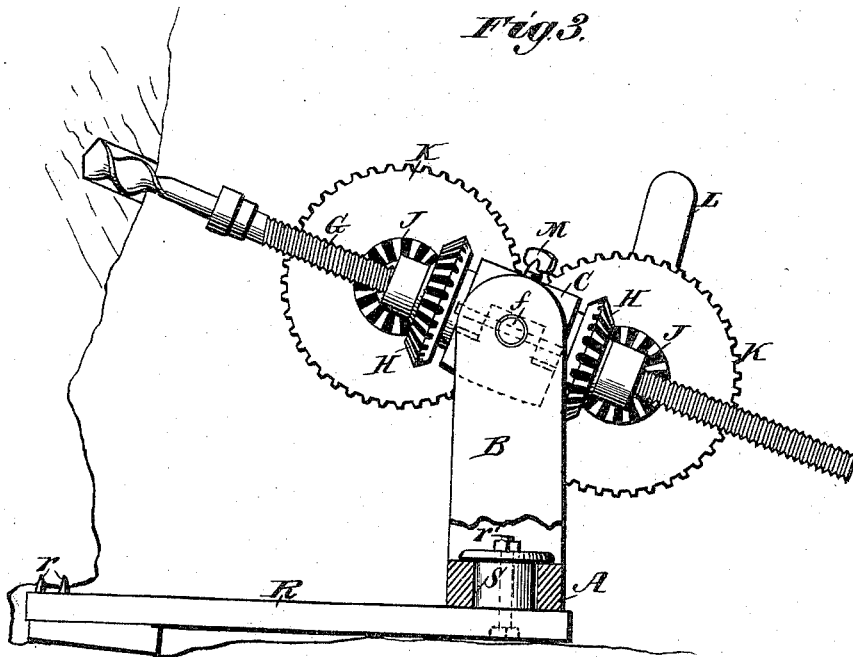
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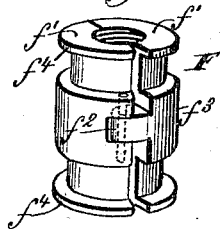
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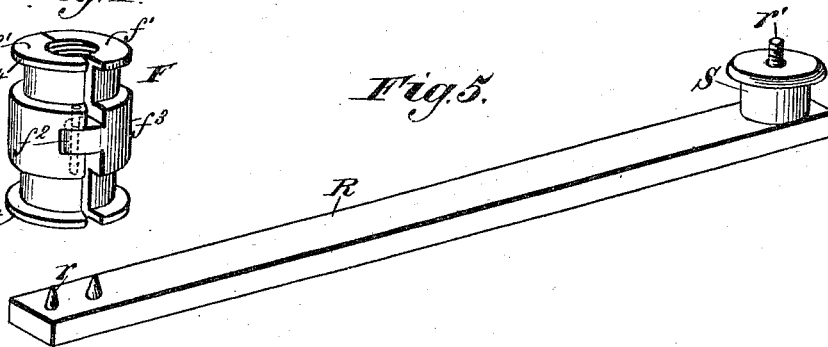
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



Witnesses,  
*Albert G. Green,*  
*Thos. A. Green*

Inventor,  
*Edward Carnduff.*  
By  
*James L. Norris,*  
*Atty.*

# UNITED STATES PATENT OFFICE.

EDWARD CARNDUFF, OF WHAT CHEER, IOWA.

## COAL OR ROCK DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 526,294, dated September 18, 1894.

Application filed April 20, 1894. Serial No. 508,333. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD CARNDUFF, a citizen of the United States, residing at What Cheer, in the county of Keokuk and State of Iowa, have invented new and useful Improvements in Coal or Rock Drilling Machines, of which the following is a specification.

My invention relates to certain new and useful improvements in coal or rock drilling machines, and it consists in the novel construction and arrangement of parts hereinafter fully described and specifically set forth in the claims following the description, due reference being had to the accompanying drawings forming a part of this specification, wherein—

Figure 1 is a front elevation of my improved drilling machine. Fig. 2 is a vertical central section thereof. Fig. 3 is a side elevation showing the drill in position for drilling a hole at an incline. Fig. 4 is a detail perspective view of the sectional threaded feed cylinder, and Fig. 5 a detail view illustrating the supporting bar for holding the drill in operative position.

Referring to the drawings A indicates the base of the machine having secured thereto two uprights or standards B, B', constituting the frame of the machine within which is journaled the sectional cylinder C carrying the drill. Said cylinder is constructed in two halves *c, c'*, hinged together at their opposite sides as at *d, d'*, and provided with an internal annular groove or recess *e*. One of the members of said cylinder, as *c*, is provided with oppositely projecting trunnions *f* which are journaled in bearings in the uprights B, B', upon which the cylinder is adapted to be turned or oscillated for the purpose hereinafter described.

Within the cylinder C is fitted a sectional sleeve F consisting of two semi-circular members *f, f'*, hinged together as at *f<sup>2</sup>* and internally screw threaded, said sleeve upon its periphery and midway between its ends being provided with an annular collar *f<sup>3</sup>* adapted to fit within the groove or recess *e* in the cylinder C, and at its opposite ends is provided with flanges *f<sup>4</sup>* that overlap the ends of the cylinder C, said collar and flanges forming a firm and solid base for receiving the end thrust of the drill.

G indicates the drill rod provided at its lower end with the usual clutch for gripping the drill, and is screw threaded throughout its length to engage the internal screw threads of the sleeve F. Said rod is fitted in the split sleeve F and the latter is seated in the cylinder C as before described.

Fitting loosely over the rod G above and below the cylinder C are beveled pinions H, each provided with an internal spline or feather *h* that engages a longitudinal groove *g* formed in the rod G and by means of which said pinions communicate their motion to the drill rod.

Secured to or formed integral with the member *c* of the cylinder C are two oppositely projecting arms I provided at their ends with bearings *i* in which are journaled shafts *j*, each of said shafts having secured to one end a beveled pinion J that gears with one of the pinions H, and at its other end with a gear wheel K, the latter wheels being geared together and one of them being provided with a crank L for operation by hand, or with a pulley to be driven by power. As thus constructed the drill together with all the operative mechanism may be oscillated or tilted upon the trunnions *f* to adjust the drill to any desired inclination, and in order to permit the drill to assume a perpendicular position the upright B' is recessed or cut away, as at *b*. Owing to the excessive thrust of the drill rod when employed in drilling hard coal or rock the threads thereof and of the split sleeve are subjected to great wear, and in order that this wear may be compensated for I form a recess *l* in the inner face of one of the sections, as *c'*, of the cylinder C and arrange therein a follower L that is adapted to be forced against the split sleeve F by a set screw M tapped through the section *c'*. When the thread of the drill rod or the sleeve F becomes worn and the rod caused to work loosely in said sleeve, the set screw is turned to force the follower L against the split sleeve F causing said sleeve to tightly embrace the rod.

The operation of the machine will be readily understood. Motion is imparted to one of the wheels K, either by hand or power, which, by means of the gearing described revolves the two pinions H in the same direction and

at the same speed. Said pinions by means of the splines or feathers *h* and the grooves *g* in the drill rod rotate the latter, and as it rotates in the threaded sleeve *F* said sleeve feeds the drill downward. By providing the duplex or double system of gearing as described, the drill may be driven with great speed and power, as the power is applied to the drill at two different points preventing torsional twisting of the drill, and balancing the strain upon the opposite sides of the drill bearings.

The drilling machine as shown in Fig. 1 is supported upon legs *P* which are detachably secured in the base *A* of the machine, this being a convenient and desirable manner of supporting a portable drill designed for light work. For more effective work, however, I provide a supporting bar *R* provided at one end with two or more spurs or points *r* said bar being secured at its opposite end to the base *A* of the machine by a bolt *r'* that is tapped through said bar and through a flanged burr *S* seated in an aperture formed in said machine base. The bar is secured in position by inserting its end in a hole or recess drilled in the coal or rock and then driving in a wedge to force in the spurs or points *r*. The base *A* carrying the drill may be adjusted to any desired angle relatively to the bar *R*, and the drill may also be tilted in its bearings in said base at different angles, the two adjustments thus permitting the drill to be adjusted so as to drill in any direction.

For performing light work the gear wheels *K* and one of the beveled pinions *J* may be removed, and by removing one of the pintles of the hinged joint in the sectional cylinder said cylinder may be spread open and the drill rod removed from the machine.

Having described my invention, what I claim is—

1. In a drilling machine, the combination with the frame, of the sectional cylinder *C* comprising two semi-cylindrical sections hinged together and provided with trunnions journaled in said frame, said cylinder being provided with an internal annular groove, a split sleeve comprising two hinged sections provided with a peripheral collar fitting in said groove, a threaded drill rod carried by

said sleeve, a wheel feathered on the drill rod, means for rotating said wheel, a follower seated in the groove in said cylinder, and a set screw for forcing said follower against the split sleeve, substantially as described.

2. In a drilling-machine, the combination with the frame, of the sectional cylinder *C* comprising two hinged sections provided with trunnions *f* journaled in said frame, said cylinder being provided with an internal annular groove *e*, the split sleeve *F* comprising two hinged sections provided with a collar *f'* fitting in the groove *e*, a threaded drill rod carried by said sleeve, a wheel feathered on the drill rod, and means for rotating said wheel, substantially as described.

3. In a drilling-machine, the combination with the threaded drill rod *G*, of the internally threaded split sleeve *F* engaging said rod and seated in a sectional cylinder, the sectional cylinder *C* mounted in bearings in the frame of the machine, beveled pinions *H* feathered on the drill rod above and below the split sleeve, beveled pinions *J* meshing with the pinions *H*, and gear wheels *K* for driving said pinions, said wheels being geared together and one of them provided with means for driving it, substantially as described.

4. In a drilling-machine, the combination with the frame, of the sectional cylinder *C* comprising two hinged sections *c*, *c'*, the section *c* being provided with trunnions *f* journaled in said frame and having the oppositely projecting arms *I* provided with bearings *i*, the split internally threaded sleeve *F* seating in the said cylinder, the threaded drill rod *G* fitted in said sleeve, shafts *j* journaled in the bearings *i* and carrying beveled pinions *J*, beveled pinions *H* feathered on the drill rod and engaging the pinions *J*, and gear wheels *K* mounted on the shafts *j* and geared together, and means for driving one of said wheels, substantially as described.

In testimony whereof I have hereunto set my hand and affixed my seal in presence of two subscribing witnesses.

EDWARD CARNDUFF. [L. S.]

Witnesses:

JOHN N. MACKEY,  
L. C. WILSON.