(No Model.)

W. ODGERS.

DIAMOND ROCK DRILL.

No. 369,654. Patented Sept. 6, 1887.

Fig. 1.

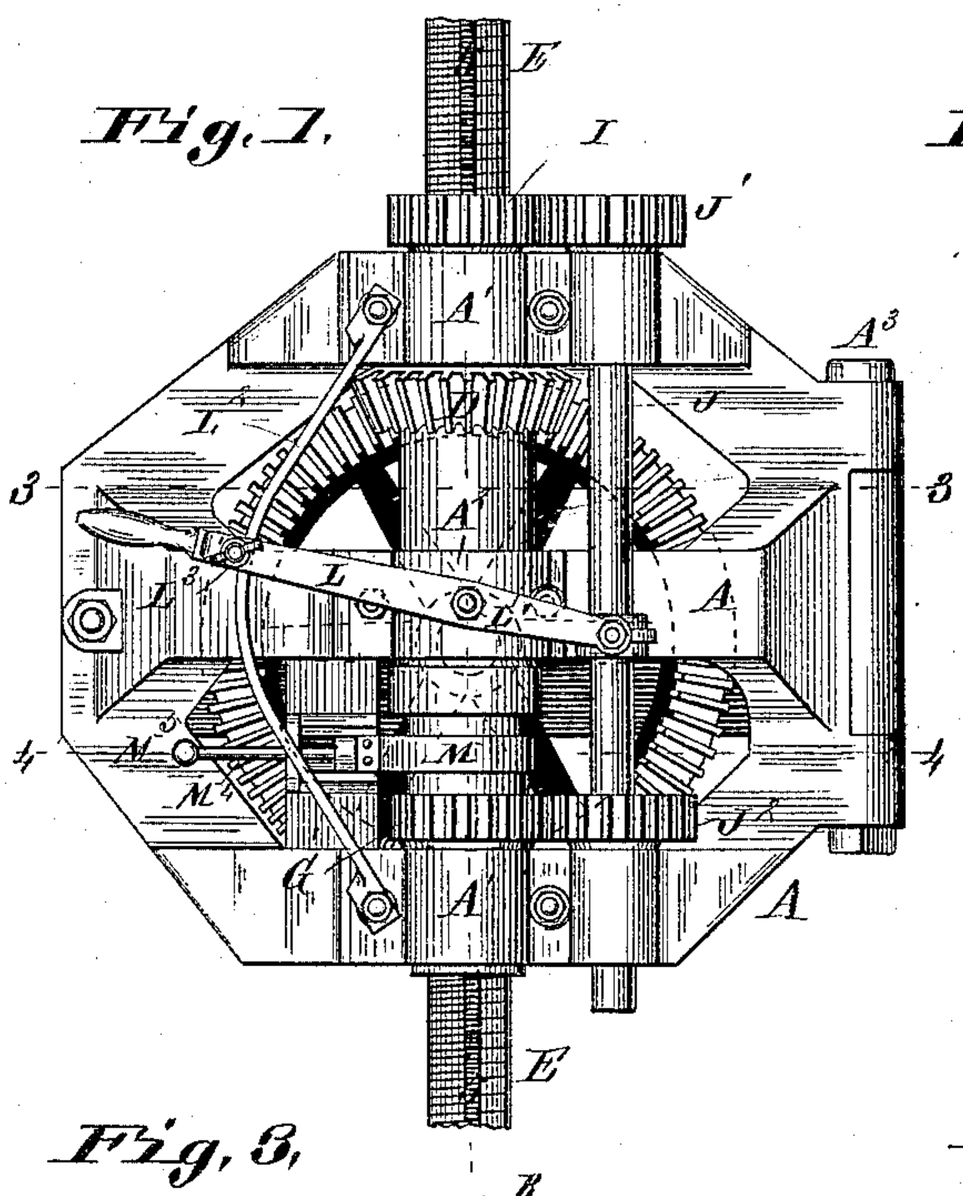

Fig. 2.

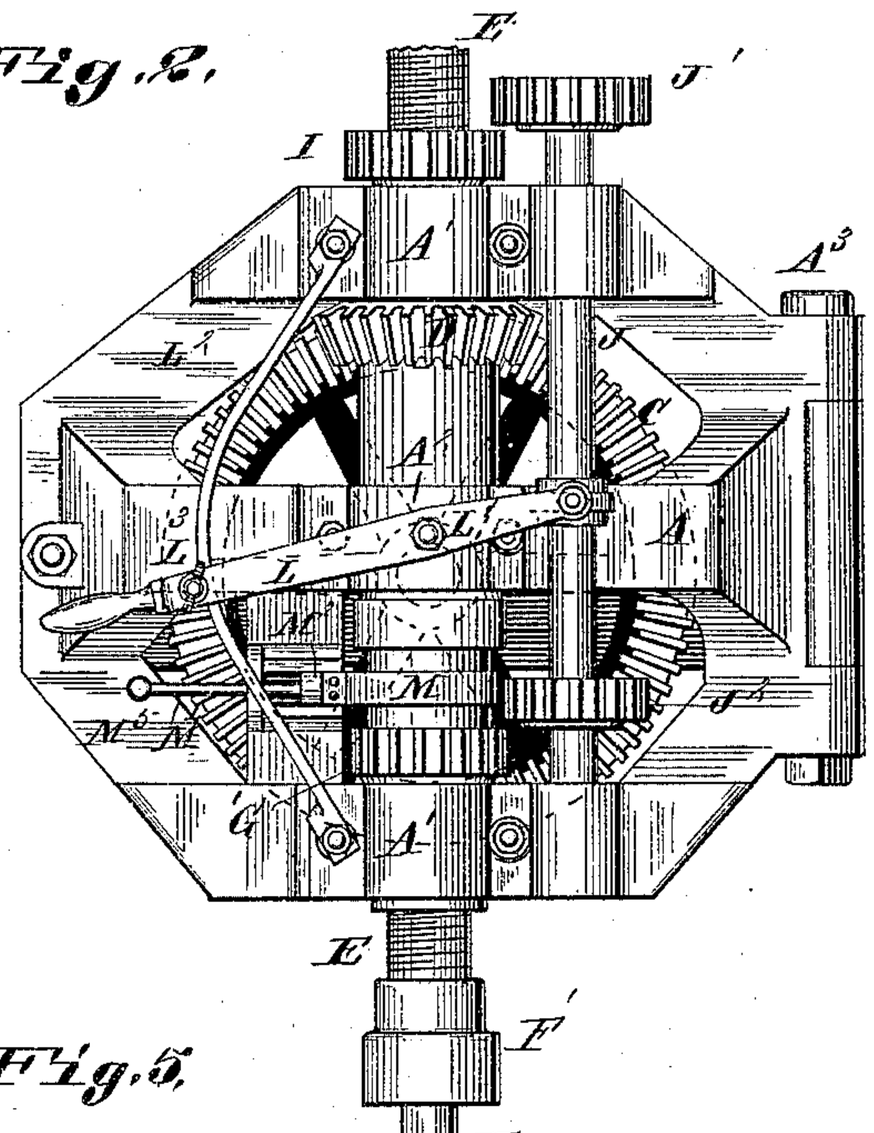

Fig. 3.

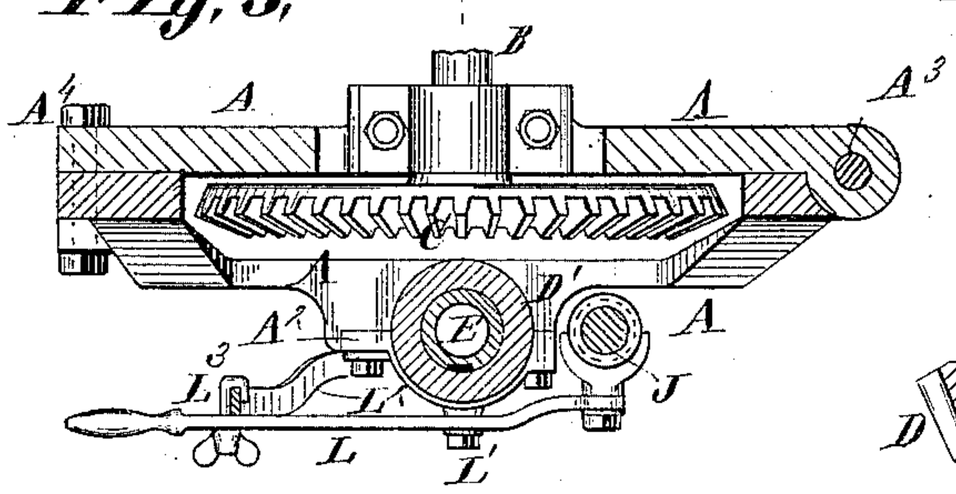

Fig. 4.

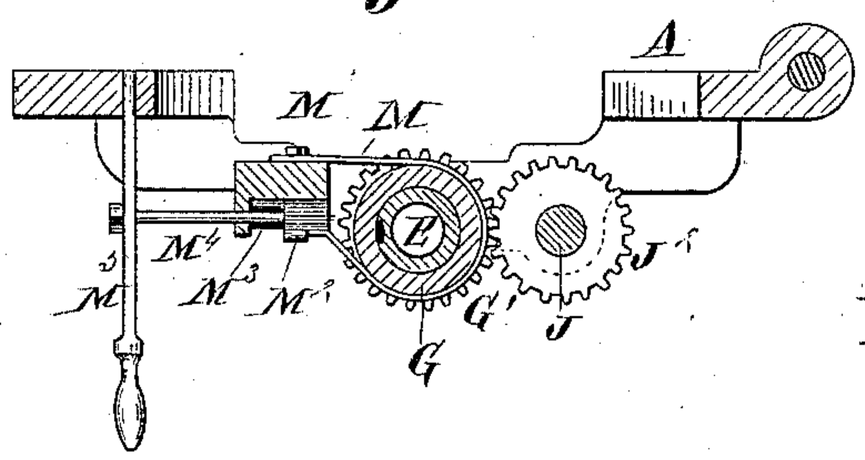

Fig. 5.

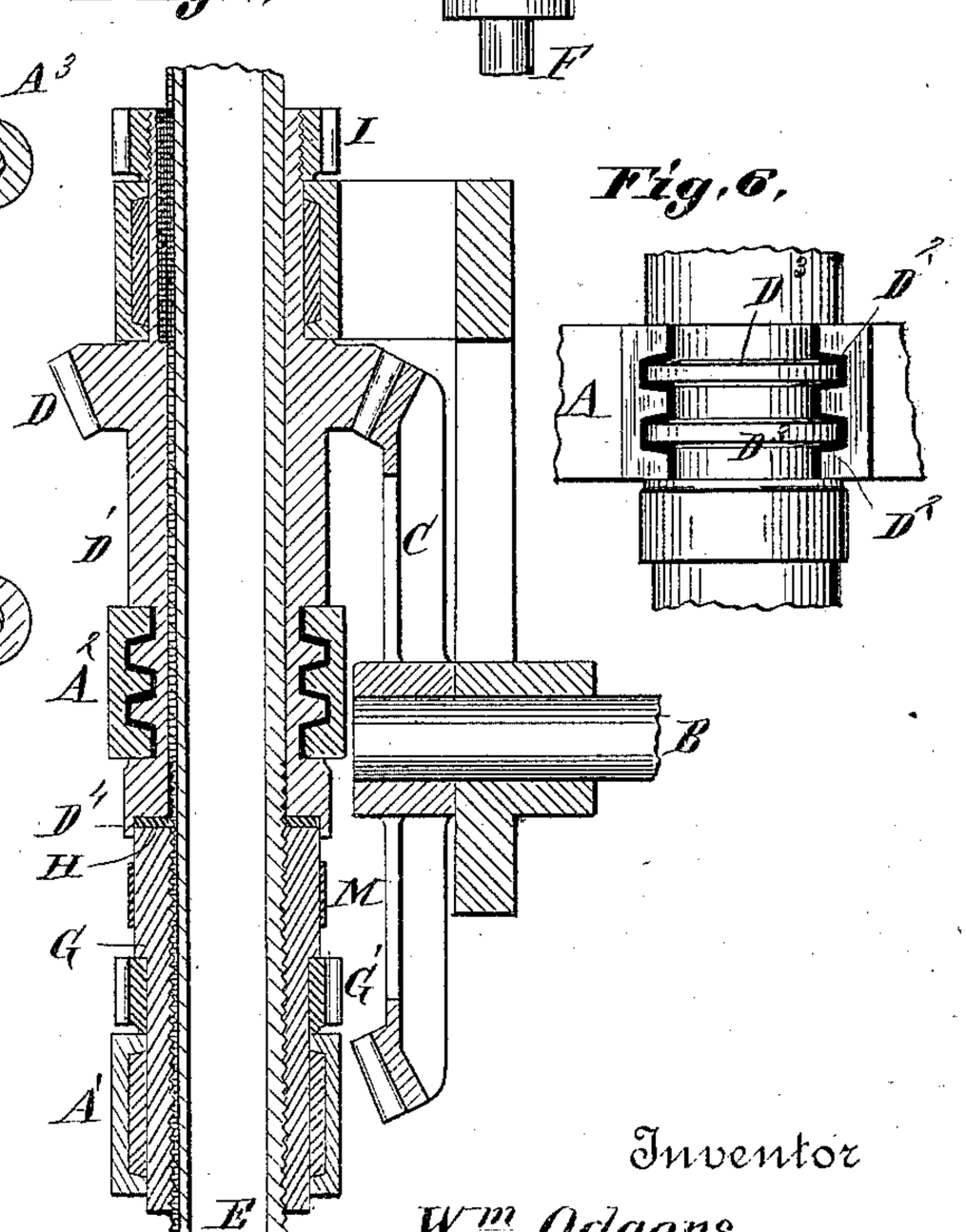

Fig. 6.

Witnesses.
F. A. Hopkins.
H. B. Knight

Inventor
Wm Odgers,
By his Attorneys,
Knight Bros

UNITED STATES PATENT OFFICE.

WILLIAM ODGERS, OF BONNE TERRE, MISSOURI, ASSIGNOR OF ONE-HALF TO ROBERT TETTEY, OF SAME PLACE.

DIAMOND ROCK-DRILL.

SPECIFICATION forming part of Letters Patent No. 369,654, dated September 6, 1887.

Application filed June 28, 1886. Serial No. 206,423. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ODGERS, of Bonne Terre, in the county of St. François and State of Missouri, have invented a certain new and useful Improvement in Diamond Rock-Drills, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is an elevation of my improved drill, showing only part of the central portion of the shaft. Fig. 2 is a like view showing the lower part of the shaft with the bit attached and showing the feed out of gear, it being shown in gear in Fig. 1. Fig. 3 is a transverse section taken on line 3 3, Fig. 1. Fig. 4 is a similar view taken on line 4 4, Fig. 1. Fig. 5 is a longitudinal section taken on line 5 5, Fig. 1, showing the upper portion of the shaft, but not the extreme upper end of it. Fig. 6 is a detail view illustrating the thrust-bearing.

My invention relates to certain improvements in diamond drills; and my invention consists in features of novelty, hereinafter fully described, and pointed out in the claims.

Referring to the drawings, A represents the frame of the drill. B represents the main driving-shaft, provided with a master-wheel, C, meshing into a pinion, D, on the sleeve D′. Through this sleeve passes the hollow shaft E of the drill, as shown, the two being connected by spline, or feather and groove, as usual, so that the turning of the shaft B will cause a continuous revolution or turning of the shaft E. Upon the lower end of the shaft E is the ordinary bit, F, secured to the shaft by a chuck, F′, as usual.

The frame A is provided with end journal-boxes, A′, as usual, and in addition to these bearings I provide a central journal-box, A^2, through which the sleeve D′ passes, the part of the frame A to which the box A^2 is secured being hinged to the other part at A^3, and secured at the other side by a clamp or bolt, A^4. By removing the clamp A^4 the frame may be opened out to permit the master-wheel to be put on, &c. The sleeve D′ has a groove, D^2, and collar D^3, connection with the frame and box A^2, thus providing a thrust-bearing. (See Figs. 5 and 6.) This central bearing for the sleeve and the shaft that passes through it adds materially to the strength and durability of the drill.

G represents the feed, consisting of a screw-threaded sleeve fitted on the correspondingly screw-threaded shaft E beneath the sleeve D′, and preferably entering at its upper end within an annular groove, D^4, formed in the lower end of the sleeve D′. Within this groove D^4, and between the lower end of the sleeve D′ and the upper end of the feed-sleeve G, is a friction-ring, H, which (when it becomes worn) may be taken out and replaced by another. The feed-sleeve may be operated to cause the movement of the drill by the ordinary method—that is, by differential gearing consisting of pinion I on one end of the sleeve D′, meshing into a pinion, J′, on a shaft, J, journaled in the frame A, the shaft being provided with a pinion, J^2, meshing into a pinion, G′, on the sleeve G. One of these pinions, preferably that J^2, has one or two cogs more than the pinion into which it meshes, which causes a slower revolution of the sleeve G than the revolution of the sleeve D′, which gives the feed, the friction ring or disk H acting as a bearing between the sleeve G and sleeve D′.

The shaft J may be moved to disengage the pinions from the position shown in Fig. 1 to that shown in Fig. 2. This movement is made by means of a lever, L, pivoted at L′ to the frame, and which is held to either adjustment by a rack, L^2, and clamp L^3.

Another method of producing the feed is by means of a brake consisting of a strap, M, secured at M′ to the frame of the machine, and which passes around the sleeve G, and is secured at its other end to a sliding block, M^2, held in a recess, M^3, of the frame, which is connected by a rod, M^4, to a hand-lever, M^5. It will thus be seen that by pulling on the hand-lever M^5 the brake will be tightened on the sleeve G, preventing its turning as rapidly as the sleeve D′, thus causing the feed of the drill.

I claim as my invention—

1. The combination, with the externally screw-threaded drill-shaft, a sleeve surrounding it and connected therewith by a spline and

groove, and bearings for holding said sleeve against endwise movement, of a second sleeve internally screw-threaded and fitted on said shaft, means for holding said sleeve against endwise movement, and a friction-brake for retarding its rotation, substantially as set forth.

2. In a diamond drill, in combination with the drill-shaft, the sleeve through which the shaft passes, and frame provided with end and central bearings for the sleeve, the frame being made in two parts hinged together, substantially as set forth.

3. In a diamond drill, in combination with a frame, the drill-shaft, sleeve surrounding the shaft and by which the shaft is turned, feed-sleeve, and friction-ring placed between the said sleeves, substantially as and for the purpose set forth.

4. In a diamond drill, in combination with a frame, the drill-shaft, sleeve through which the shaft passes and by which it is turned, feed-sleeve through which the shaft passes, flange on the lower end of the driving-sleeve within which the upper end of the feed-sleeve fits, and friction-ring between the said sleeves, substantially as set forth.

5. In a diamond drill, in combination with the frame, the drill-shaft, sleeve through which the drill-shaft passes and by which it is turned, feed-sleeve, and brake for acting upon the feed-sleeve to produce the feed, substantially as set forth.

6. In a diamond drill, in combination with a frame, the drill-shaft, sleeve through which the drill-shaft passes and is turned, and brake for retarding the movement of the feed-sleeve, consisting of a strap, sliding block, connecting-rod, and lever, substantially as set forth.

WILLIAM ODGERS.

In presence of—
F. DESLOGE,
JNO. M. DESLOGE.