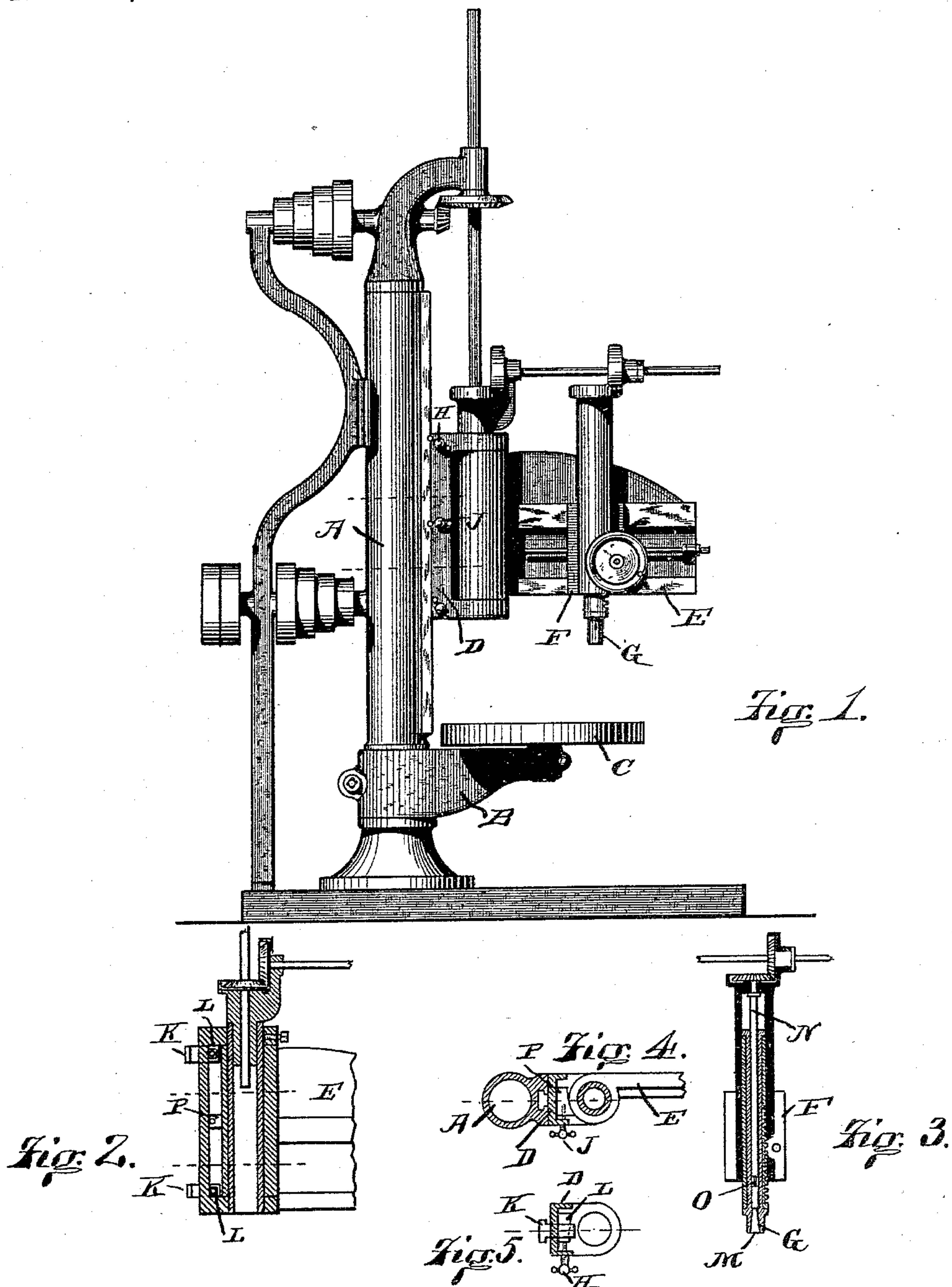


(No Model.)

W. S. ROGERS.
DRILLING MACHINE.

No. 411,616.

Patented Sept. 24, 1889.



Witnesses:
Wadsworth
A. C. Rogers.

Winfield S. Rogers
by James W. See

Inventor

Attorney

UNITED STATES PATENT OFFICE.

WINFIELD S. ROGERS, OF CINCINNATI, OHIO, ASSIGNOR TO THE UNIVERSAL
RADIAL DRILL COMPANY, OF SAME PLACE.

DRILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 411,616, dated September 24, 1889.

Application filed March 22, 1889. Serial No. 304,329. (No model.)

To all whom it may concern:

Be it known that I, WINFIELD S. ROGERS, of Cincinnati, Hamilton county, Ohio, have invented certain new and useful Improvements in Drilling-Machines, of which the following is a specification.

This invention has reference to metal-drilling machines, often spoken of as "drill-presses;" and my improvements will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of a drilling-machine illustrating my improvements; Fig. 2, a vertical section of the saddle to which the drill-arm is pivoted; Fig. 3, a vertical section of the drill-spindle and its bearing; Fig. 4, a horizontal section in plane of line *a* of Fig. 1 of the column of the machine and the arm-saddle, and Fig. 5 a horizontal section of the saddle in plane of line *b* of Fig. 1.

In the drawings, A indicates a vertical column supported by the usual foot-plate; B, a table-arm fitted for rotary adjustment near the base of the column, the column forming the pivot on which this arm swings; C, a circular table supported by its center at the outer end of the table-arm and fitted, as usual, for rotation with reference thereto; D, an arm-saddle secured to the front of the column and fitted for vertical adjustment thereon; E, a horizontal arm carried by the arm-saddle upon a vertical pivot, the arm being capable of swinging upon this pivot; F, a spindle-saddle fitted for adjustment in and out upon the arm E, this saddle forming the bearing for the drill-spindle; G, the drill-spindle; H, clamp-screws by which the arm-saddle is fixed to the column A in adjusted position thereon; J, a clamp-screw by which the arm E is fixed for angular adjustment; K, T-blocks serving to unite the arm-saddle to the column, the heads of these blocks engaging in the usual T-slots in the face of the column; L, wedges engaging these T-blocks and actuated by the clamp-screws H, the clamp-screws thus serving to adjust the wedges and clamp the arm-saddle firmly to the face of the column; M, the taper drill-socket in the lower end of the drill-spindle, which drill-spindle

has a central bore to receive its vertical driving-shaft; N, the vertical driving-shaft fitting the central bore of the drill-spindle and splined therein, and serving as the means by which motion is imparted to the drill-spindle, while at the same time the drill-spindle is capable of vertical motion in its bearing as the feeding progresses; O, a stud upon the lower end of this vertical shaft, adapted when the drill-spindle is raised to its extreme height to enter downwardly into the taper drill-socket of the spindle; P, a friction-pad carried by the arm-saddle D and actuated by the clamp-screw J and bearing against the hub of the arm E, whereby the arm E is clamped in adjusted angular position with reference to the arm-saddle.

The gearing by which rotary motion is transmitted to the drill-spindle will be understood from the drawings without further explanation. The feeding apparatus for raising and lowering the spindle is of the ordinary construction. When the drill-spindle is raised to its highest point, the stud O serves in expelling the drill from the socket N. The table and drill-arm both have swinging motions upon vertical pivots, and the drill-arm has a vertical adjustment upon the column, and the drill-spindle has a rotary adjustment upon the drill-arm.

It will be seen that the arm-saddle is held to the column by T-bolts, so to speak, carried by the arm-saddle and sliding in the usual T-slot of the column, and that these T-bolts are really cotter-bolts, the wedges L forming the cotters, and the screws H the means for adjusting the cotters. The arm is pivoted to the arm-saddle and can be turned on its pivot as desired and there clamped by pad J. When the drill-spindle is completely raised in its bearing, the stud O engages such tool-shank as may be in the spindle-socket and expels it.

I claim as my invention—

1. In a drilling-machine, the combination, substantially as set forth, of a vertical column, a table-arm pivoted thereto near the base and capable of a swinging motion with reference to the column, a table carried by the outer end of said table-arm, an arm-sad-

dle fitted for vertical adjustment upon said column, a radial arm carried by said saddle upon a vertical pivot, and a spindle-bearing fitted for horizontal adjustment upon said radial arm.

2. In a drilling-machine, the combination, substantially as set forth, of a column, a table-arm carrying a table and fitted for swinging motion near the base of the column, an arm-saddle fitted for vertical adjustment upon said column, a radial arm pivoted to said saddle and carrying a horizontally-adjustable spindle-bearing, clamps for fixing the saddle in adjusted position with reference to the column, and a clamp for fixing

the radial arm in adjusted angular position with reference to the arm-saddle.

3. In a drilling-machine, the combination, substantially as set forth, of a drill-spindle G, having a central longitudinal bore and having a taper socket M in its lower end communicating with said bore, vertical shaft N, engaging the central bore of the spindle, and stud O on the lower end of said shaft, adapted to engage the shank of the drill which may be disposed in said drill-socket.

WINFIELD S. ROGERS.

Witnesses:

JAMES T. COLLINS,
JAMES E. BLAKE.