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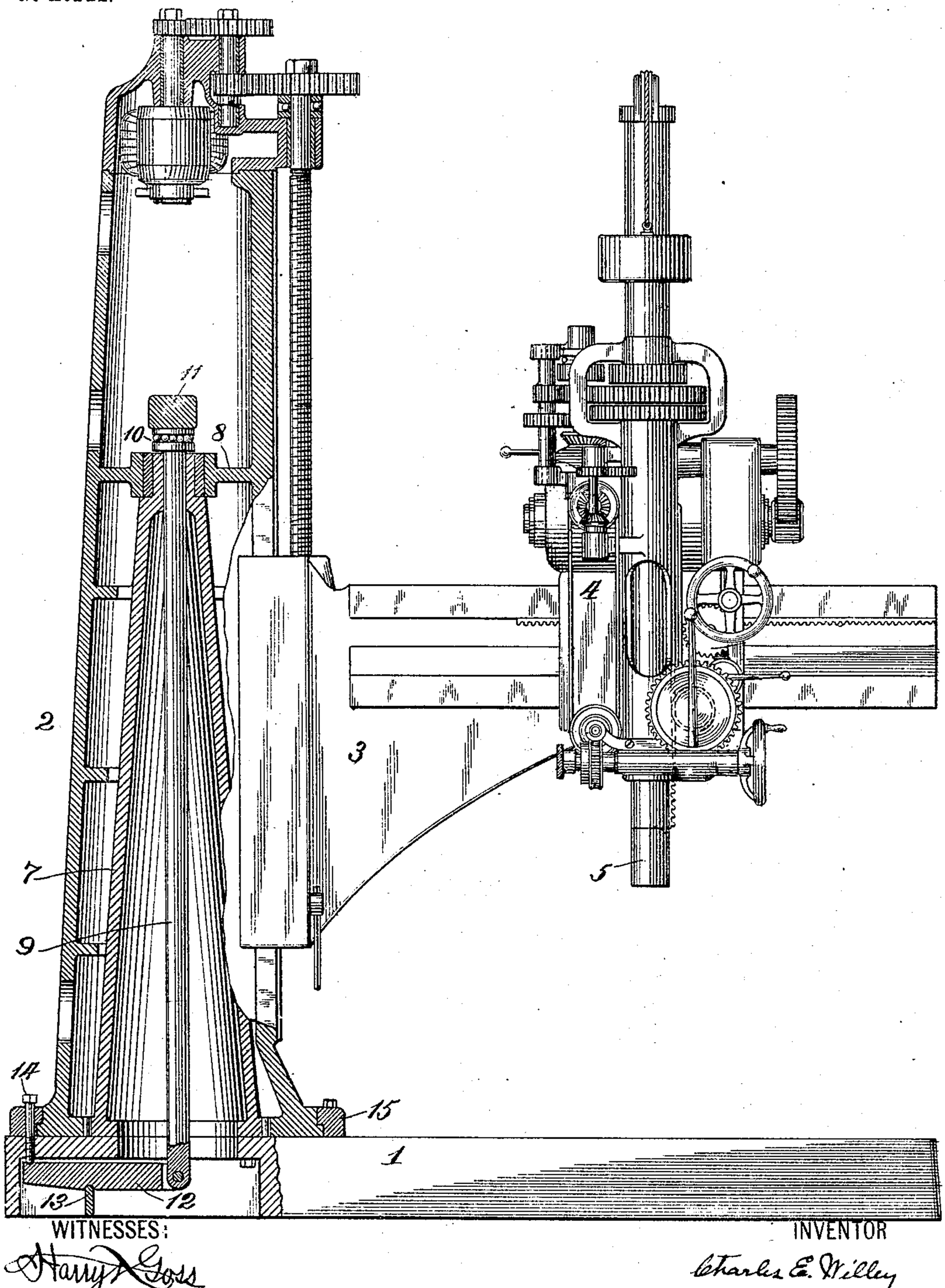
C. E. WILLEY.

DRILLING MACHINERY.

APPLICATION FILED MAR. 7, 1902.

NO MODEL.



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No. 774,629. Patented November 8, 1904.

UNITED STATES PATENT OFFICE.

CHARLES E. WILLEY, OF LOUISVILLE, KENTUCKY.

DRILLING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 774,629, dated November 8, 1904.

Application filed March 7, 1902. Serial No. 97,205. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. WILLEY, a citizen of the United States, residing at Louisville, county of Jefferson, and State of Kentucky, have invented certain new and useful Improvements in Drilling Machinery; and I 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.

My invention relates to improvements in radial drills and similar machine-tools comprising a radial column and mechanism carried thereby; and my invention consists in means for transferring to a suitable bearing the weight of said column when the latter is to be rotated and for shifting the weight of such column from such bearing when the column has reached the desired position.

My invention consists also in the novel combination, construction, and arrangement of the parts.

The object of my invention is to facilitate the rotation of the columns of radial drills and similar machine-tools.

I will now proceed to describe my invention, with reference to the accompanying drawing, in which one form of radial drill embodying my invention is illustrated, and will then point out the novel features in claims.

The said drawing shows a side elevation and partial section of a radial drill constructed in accordance with my invention.

Referring now to the said drawing, the machine there shown comprises a bed-plate 1, a revoluble supporting-column 2, a radial arm 3, adjustable vertically upon said column, and a spindle carriage or head 4, longitudinally movable along said arm. In said carriage is revolubly mounted a tool-spindle 5 and suitable means for driving the same. In the particular construction shown a driving-motor for the spindle is mounted directly upon the carriage, and suitable gearing is provided for transmitting back motion therefrom to the spindle.

The column 2 is hollow, and within it is an annular guide column or "stump" 7, the upper end of which fits into a bearing formed in a flange 8 of the column 2. Within this stump is a central rod 9, guided at its upper end by the stump and carrying a ball-bearing 10, interposed between the upper end of said rod and a cross-bar 11 of column 2. To the lower end of rod 9 is connected an arm 12, pivoted at 13, and a screw 14 is provided, by means of which rod 9 may be raised, so as to transfer the weight of the column 2 and the objects carried thereby to said rod, so as to permit ready rotation of the column, which is raised very slightly from the bed-plate by the upward motion of the rod 9. By reverse rotation of the screw 14 the column may be lowered again until its weight rests on the bed-plate, and said column may then be clamped in position by turning up the nuts of clamping-ring 15.

This construction constitutes a very simple, convenient, and effective means of facilitating the rotation of the radial arm 3 about its axis of support. When the weight of the column is on the bearing 10 the column may be rotated with very little effort, while when the weight of the column has been transferred from the bearing to the bed-plate and said column has been clamped in place it is as firm and immovable as if it were not rotatable.

What I claim is—

1. In a machine of the class described, the combination of a rotatable column, a main support therefor, and a temporary support for said column located within the same, and provided with a bearing therefor, and means for transferring the weight of said column to and from said temporary support, said column having a vertical guide for a projecting arm or member, which guide extends below said bearing; and the said arm or member.

2. In a machine of the class described, the combination of a rotatable column, a main support therefor, and a temporary support for said column located within the same, and provided with a bearing therefor, means for transferring the weight of said column to and from said temporary support, and means for guiding said column when supported by said temporary support, said column having a vertical guide for a projecting arm or member, which guide extends below said bearing; and the said arm or member.

3. In a machine of the class described, the combination with a rotatable column, a support therefor, and a guide-column fitting within the same and serving to guide the same during rotation, of a rod within said guide-column, for supporting said first-named column, provided with a bearing, and means for transferring the weight of said first-named column to or from said supporting-rod.

4. In a machine of the class described, the combination with a rotatable column and a main support for said column, of a temporary support for said column provided with a bearing upon which the column may rotate, means for transferring the weight of said column to and from said temporary support, and means for guiding the column during rotation, engaging the same at widely-separated points along its axis of rotation.

5. In a radial drill, the combination with a rotatable column carrying the radial arm of the drill, a bed-plate, and a guide column or stump fitting within the main column and serving to guide the same, of a supporting-rod adapted to receive the weight of said main column, and provided with a step-bearing for said column, and means for raising and lowering said rod, thereby transferring the weight of the main column to or from it.

6. In a machine of the class described, the combination with a rotatable column, a main support therefor, and means for holding said column against upward movement away from such support, of a temporary support for said column provided with a bearing therefor, and means for transferring the weight of said column to and from said temporary support.

In testimony whereof I affix my signature in the presence of two witnesses.

CHARLES E. WILLEY.

Witnesses:
WM. D. LEE,
ANNA HOLMES