

L. W. JONES.
BORING MACHINE.
APPLICATION FILED JAN. 26, 1909.

969,632.

Patented Sept. 6, 1910.

FIG. 1.

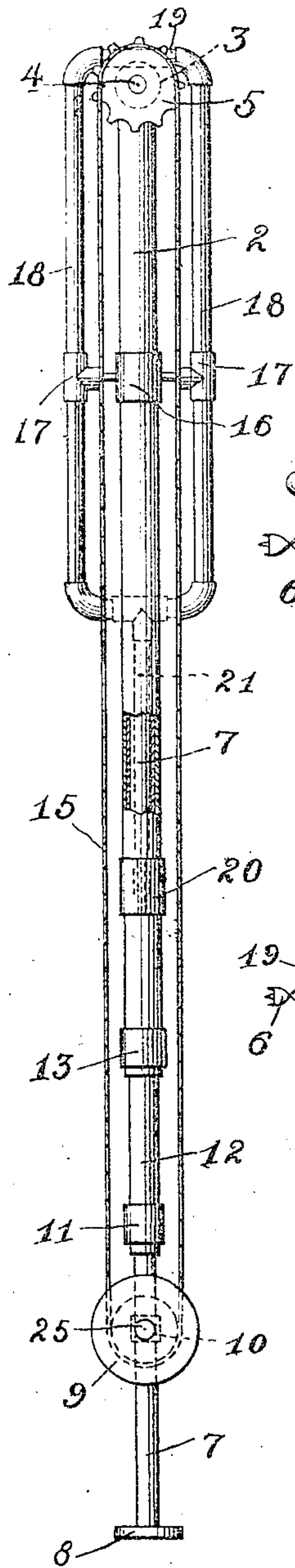


FIG. 3.

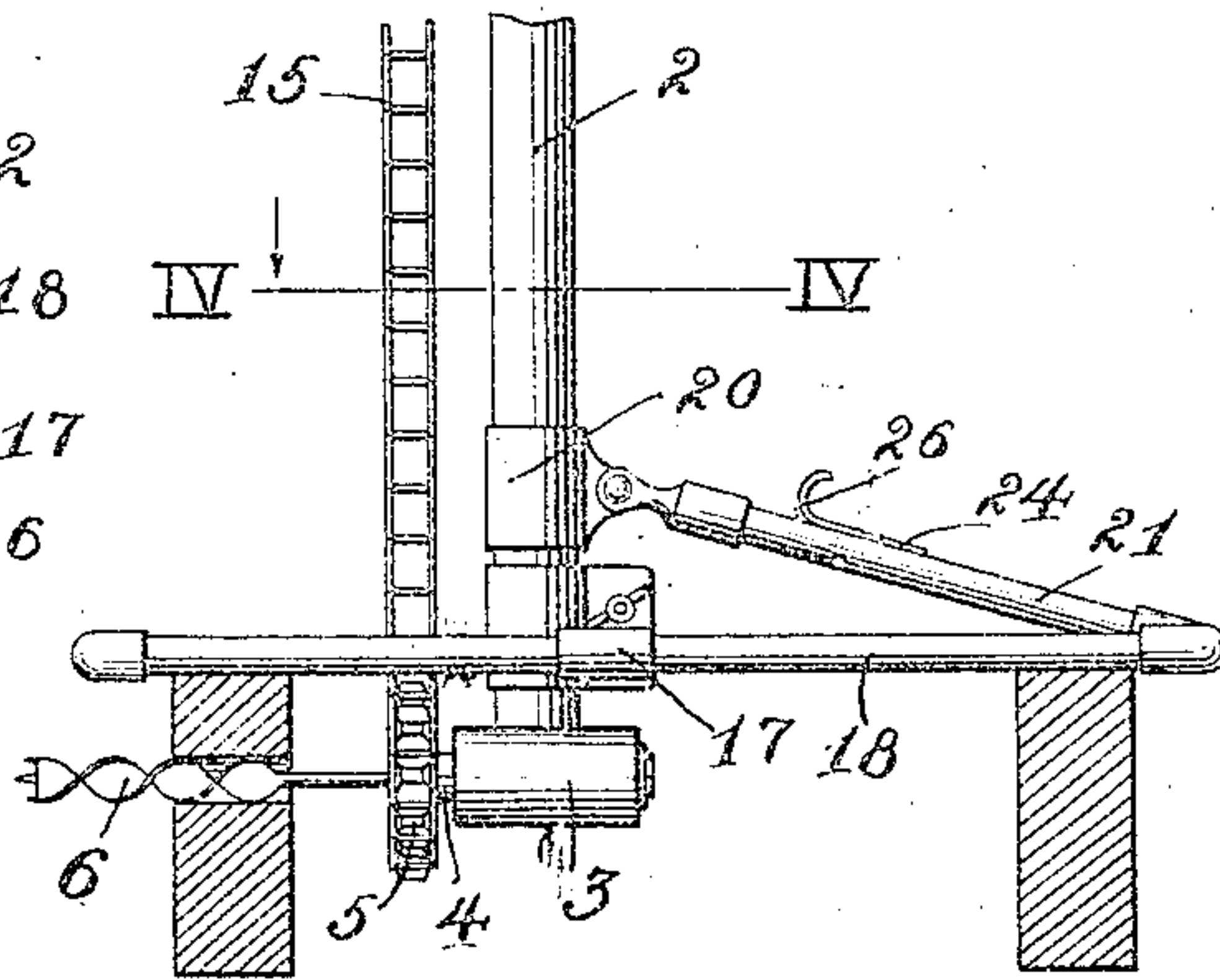


FIG. 2.

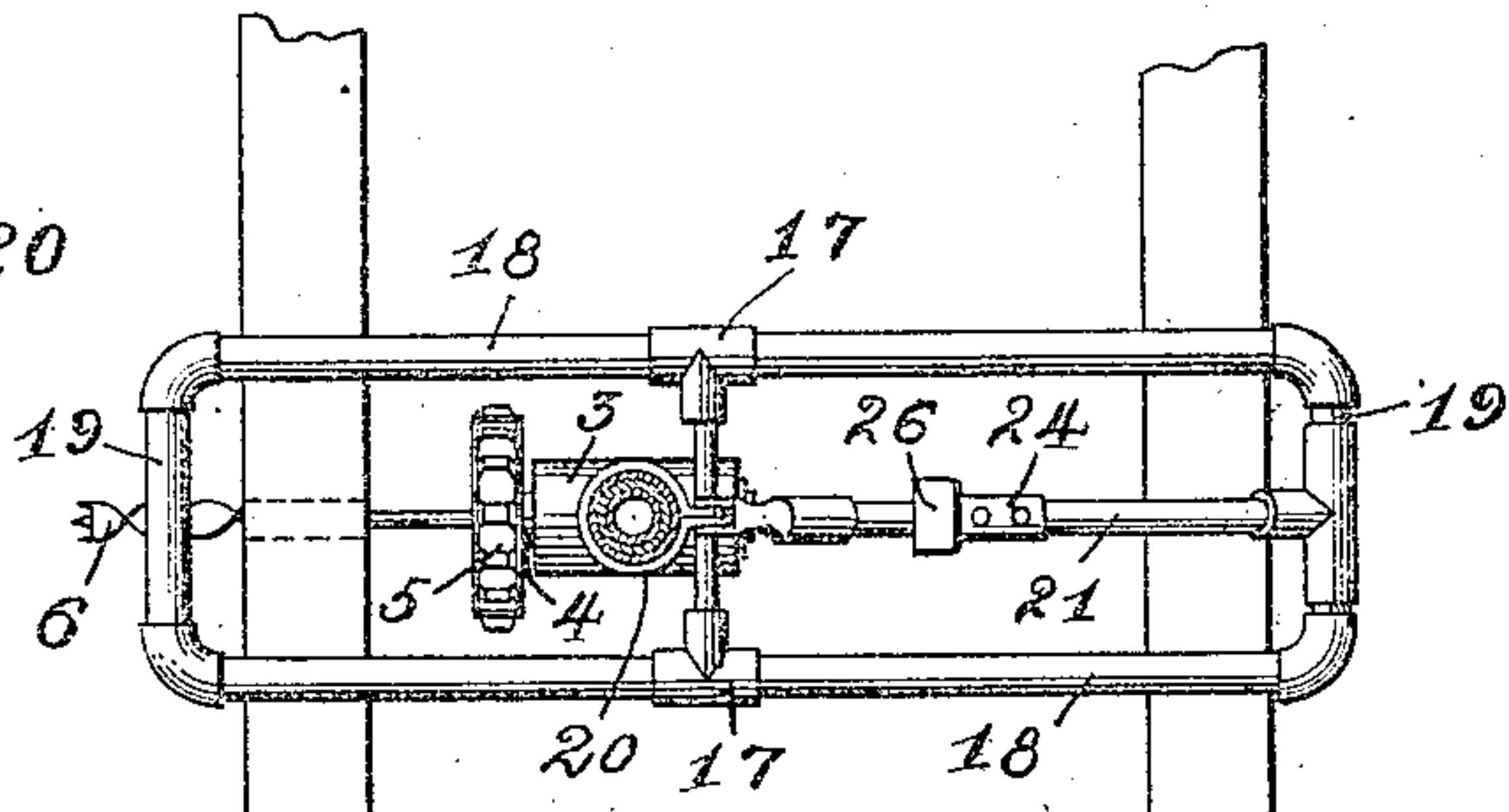
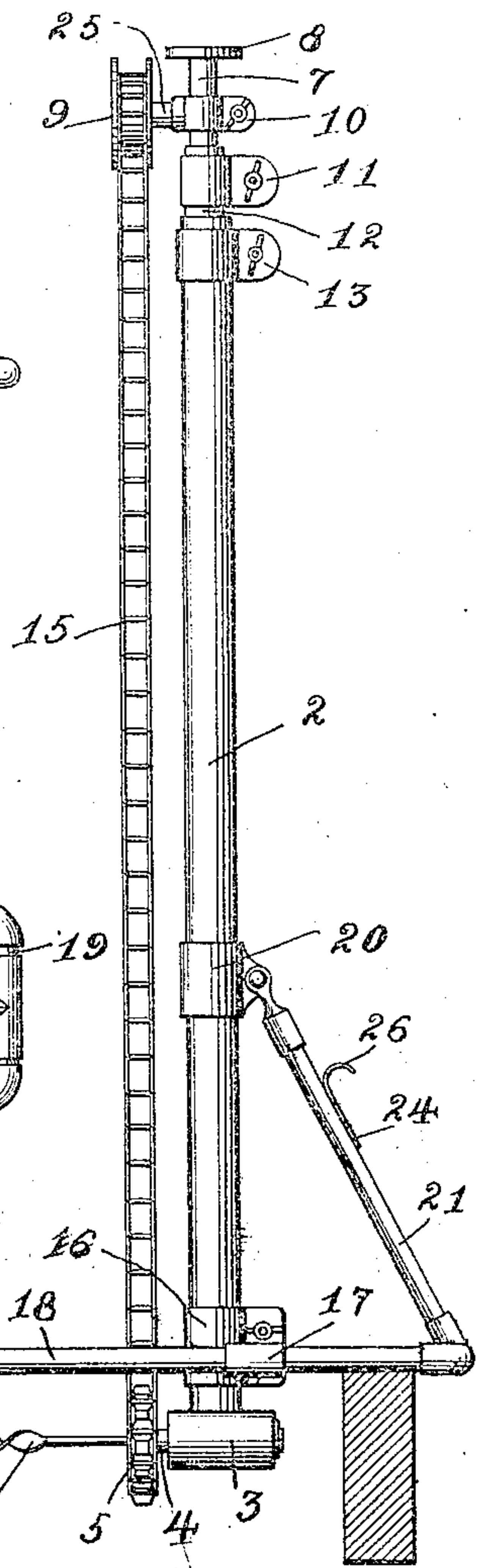


FIG. 4.

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LOUIS W. JONES, OF LOUISVILLE, KENTUCKY.

BORING-MACHINE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, LOUIS W. JONES, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented new and useful Improvements in Boring-Machines, of which the following is a specification.

This invention relates to a machine for boring holes in joists of buildings, particularly holes to receive electric wiring and has for its object to produce a portable hand machine that is adjustable in such manner that the person operating it while standing upon the floor of the apartment can bore holes in the joists above whatever be the height of the latter above the floor; and has for a further object to produce a hand boring machine which is adapted to operate upon floor joists.

I have in the accompanying drawings illustrated the preferred form of my invention, therein representing a machine that is adapted when set in one position to bore in the joists above and when inverted, and properly adjusted, to bore the floor joists below.

In the accompanying drawings, Figure 1 is a front elevation of the machine set up in the position occupied when boring holes in overhead joists, parts being broken away and in section to illustrate details of construction. Fig. 2 is a side elevation of the machine when inverted and the parts adjusted for boring floor joists below. Fig. 3 is a view of the lower part of the machine when adjusted as shown in Fig. 2, the parts however, being in different positions from those represented in said view. Fig. 4 is a horizontal sectional view taken on the line IV—IV of Fig. 3.

The frame of the machine is an extensible column which is preferably formed of a plurality of telescoping tubular sections. For most purposes three sections are preferred and the column of the machine shown in the drawings is represented as being formed of that number of parts, although for some of the purposes of the invention a machine with a column formed of two telescopic parts would be practical. The upper section of the column, 2, is provided at its outer end with a head 3 in which is suitably mounted a rotatable spindle 4 adapted to carry a boring tool 6. To the spindle 4 is secured a sprocket wheel 5 with which engages a drive chain 15.

7 represents the lower section of the column. It is provided at its outer end with a foot piece 8 and telescopes into the section 12.

For most purposes it is desirable to form the column of three parts or sections, an intermediate section 12 being interposed between the upper and lower ones, as indicated in the drawings, clamps 11 and 13, being used, the former at the lower end of the intermediate section 12 for clamping together it and the lower section, and the latter, 13, at the lower end of the section 2 for uniting it and the intermediate section.

A column constructed as described of telescopic sections and holding clamps is susceptible of a wide range of adjustments so that the boring tool can be made to accurately engage with and easily bore into the joists of a room with a fourteen foot or even higher ceiling. It is customary to operate the machine by pulling upon the chain 15 so as to rotate the bit or boring tool, and for effective operation the operator should be able to give a full sweep of the arm as he grasps the chain and draws it down toward the lower wheel 9.

In all boring machines of the general type to which mine belongs employing hand chains for rotating the tool spindle of which I have knowledge, it has been the custom to mount the lower wheel with which the sprocket chain engages upon the same section of the adjustable column as that which carries the head in which the boring tool is mounted, with the result that when the column is extended to carry the bit upward the lower sprocket wheel is correspondingly raised, so that the operator often finds it impossible to reach the chain sufficiently far above the wheel to allow him to give a desirably long pull upon the chain without himself having to stand upon some support above the floor level, which is often inconvenient. To remedy this objection, I mount the lower wheel 9, which is preferably a flanged wheel, to retain the chain in place, in a bearing 25 carried by a clamp ring 10 mounted upon the lower section 7 of the column. The chain is preferably formed of easily separable links so that whenever the length of the column is to be changed the chain is separated and the necessary number of links either added or removed to bring it to the proper length, after which the ends of the chain are coupled together.

This arrangement leaves the lower sprocket wheel at the same distance above the foot piece 8 whatever be the length to which the column is adjusted, so that the operator
 5 can manipulate the chain to the best advantage. By adjustably mounting the lower wheel as described it can be set in such position upon the lower section 7 as best suits the particular machine to which
 10 it is applied, or the convenience of the person operating the machine.

When it is desired to employ the machine for boring in the joists below the floor level, it is inverted from the position indicated in
 15 Fig. 1 and an attachment is brought into use which I will now proceed to describe. This attachment is not usually required when boring in the ceiling joists and when the machine is used for that purpose it may
 20 be entirely removed from the machine, or the parts may be adjusted into the positions indicated in Fig. 1 where they are out of the way.

18, 18, indicate a pair of rods adapted to
 25 rest upon the upper edge of the floor sills and form a support for the machine when inverted as shown in Figs. 2 and 3. These rods are mounted in bearings 17 carried by an adjustable clamp 16 mounted upon the
 30 upper section 2 of the column near the spindle head. The bearings 17 are loose upon the rods 18 and are free to move along the latter, which in use constitute a track for the machine as well as a support there-
 35 for.

It will be understood that by properly adjusting the clamp 16 the boring tool may be set so as to bore any desired distance below the edges of the joists upon which the sup-
 40 porting rods 18 may rest. The rods 18 are united at their ends by cross bars 19, these parts 18 and 19 thus constituting a rigid frame.

20 represents a slide encircling the column
 45 and freely movable along the same.

21 indicates a rigid push bar pivotally connected at one end to the slide 20 and at its opposite end journaled upon one of the cross bars 19. Upon this push bar is pre-
 50 ferably mounted a foot rest 24 which may be provided with a toe clip 26.

The parts being in the positions indicated in Fig. 2 the operator places his foot upon the piece 24 and presses thereon. This
 55 operates to force the point of the bit against the wood and causes the frame of the machine to follow the tool as it enters the joist. At the same time he grasps the chain and operates the bit in the well-known manner.
 60 Upon the hole being bored the frame is slid back upon the rods 18 as the tool is rotated in a reverse direction, the toe clip 26 assisting the operator in restoring the parts from the position indicated in Fig. 3 to the posi-
 65 tion represented in Fig. 2.

It will be readily understood that in a machine such as mine, the column should be held vertical when the parts are in the positions indicated in Figs. 2, 3 and 4, in order that the holes bored shall be parallel with
 70 the edges of the joists. By connecting the push bar 21, which has a fixed bearing or support at its outer end, with the column in the manner described and illustrated, power can be advantageously applied to
 75 force the bit up to its work without changing the column from its vertical position. This is due to connecting the push bar with the column by a sliding collar and a pivot joint. By arranging the fixed bearing for
 80 the outer end of the push bar upon the frame which supports the machine, such frame can be made to serve as a guide for directing the longitudinal movement of the tool, since whatever force may be applied to
 85 the bar tending to advance the column and tool is also applied, but in an opposite direction, to the supporting frame, and hence there is not the same tendency to shift the support as there would be were the fixed
 90 bearing or abutment for the bar provided by some object other than the said support.

It will be understood that when the machine is inverted and operating upon floor joists that the sections of the column will
 95 be telescoped together, reducing the length of the column as much as possible. I am thus enabled to bring its length down to between five and six feet.

The rods 18 which serve to support the
 100 machine when working on floor joists also operate as gages to determine the distance from the edge of the joists at which the tool will bore. It may under some circumstances be found desirable to use this gage in bor-
 105 ing ceiling joists. In that event the machine could be held up by hand with the gage bars 18 resting against the under edges of the joists.

When the machine is arranged as shown
 110 in Fig. 1, not requiring the use of the support, the bars 18 thereof are turned substantially parallel with the column as represented in said figure, and the encircling band 20 is slid along the column until the
 115 push bar lies close to the latter, thus bringing these parts close to and approximately parallel with the column.

What I claim is:—

1. A boring machine comprising a column
 120 carrying near one end a boring tool, a drive mechanism for rotating the tool supported by the column, a support for the column when arranged with the tool-carrying end downward consisting of a pair of bars
 125 adapted to rest upon the edges of a pair of adjacent joists, the said bars constituting guiding tracks between which the column is situated and along which it is movable, connections between the column and the bars
 13

secured fast to the former and adapted to slide lengthwise upon the latter, and a rigid push bar for moving the column and the parts carried thereby along the said tracks having a fixed bearing at its outer end and a sliding connection with the column.

2. A boring machine comprising a column carrying near one end a boring tool, means supported by the column for rotating the tool, a support for the column and tool when adjusted with the tool-carrying end downward consisting of transversely arranged bars adapted to rest upon the edges of adjacent joists and between which the column extends, and connections between the column and said bars, said connections being adjustable lengthwise of the column and free to slide upon the bars, substantially as and for the purposes set forth.

3. A boring machine comprising a column carrying a boring tool, means for rotating the tool, a support for the column adapted to rest upon the edges of adjacent joists, connections between the column and the support free to slide lengthwise upon the latter, and rigid means having bearing upon the said support and movable on said column for moving the column relative to the support whereby the tool may be forcibly applied to the work upon which it operates.

4. A boring machine comprising a column carrying a boring tool, means for rotating the tool, a support for the column adapted

to rest upon the edges of adjacent joists, connections between the column and the support free to slide lengthwise upon the latter and to be guided thereby, and a push bar having a fixed support at its outer end and a sliding and pivotal connection with the column at the inner end, substantially as set forth.

5. A boring machine comprising a column carrying near one end a boring tool and a support for the column arranged to serve as a track along which the column, with the boring tool, is movable, the said support being arranged to be folded parallel with the column when not in use.

6. A boring machine comprising a column carrying near one end a boring tool, means for operating the tool, a support for the column comprising a pair of bars between which the column is situated, a connection between the column and the said bars movable lengthwise of the latter which serve as a track for the column, the support being free to be turned substantially parallel with the column when not in use, a slide encircling the column and freely movable upon the same, and a push bar pivotally connecting the said slide and the support, substantially as described.

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Witnesses:

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