

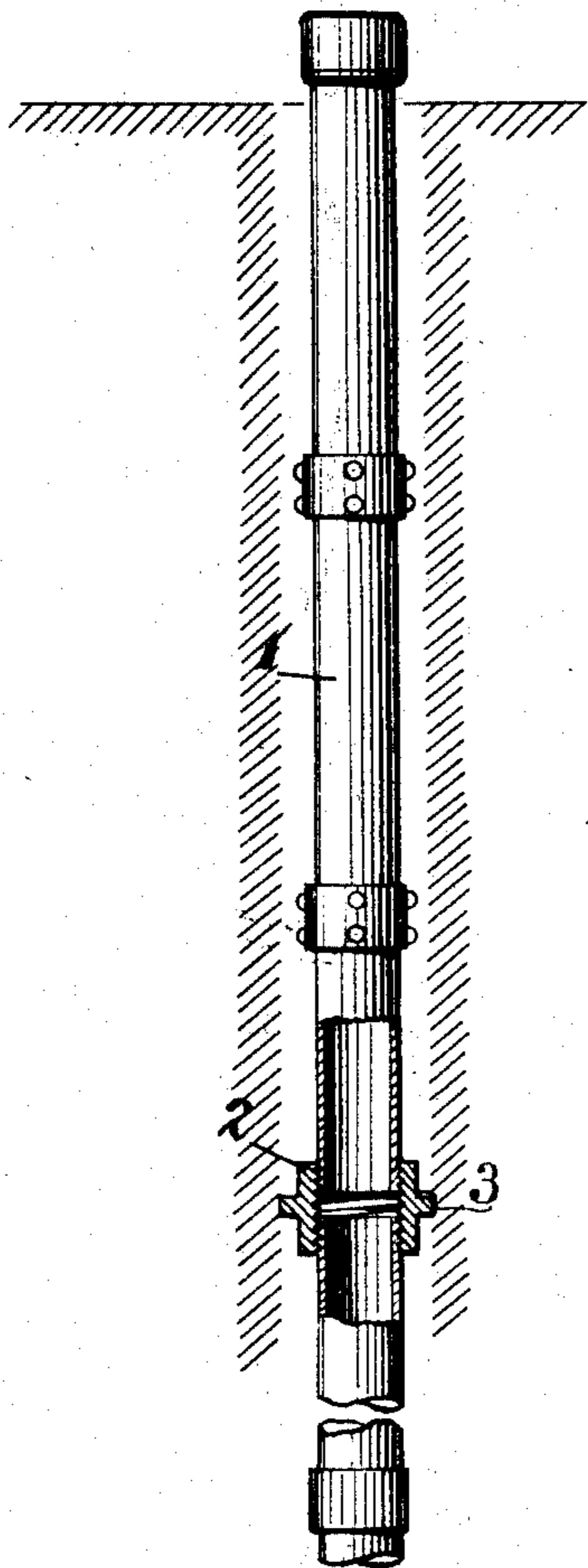
M. E. LAYNE.
WELL MECHANISM.
APPLICATION FILED DEC. 3, 1907.

905,440.

Patented Dec. 1, 1908.

2 SHEETS—SHEET 1.

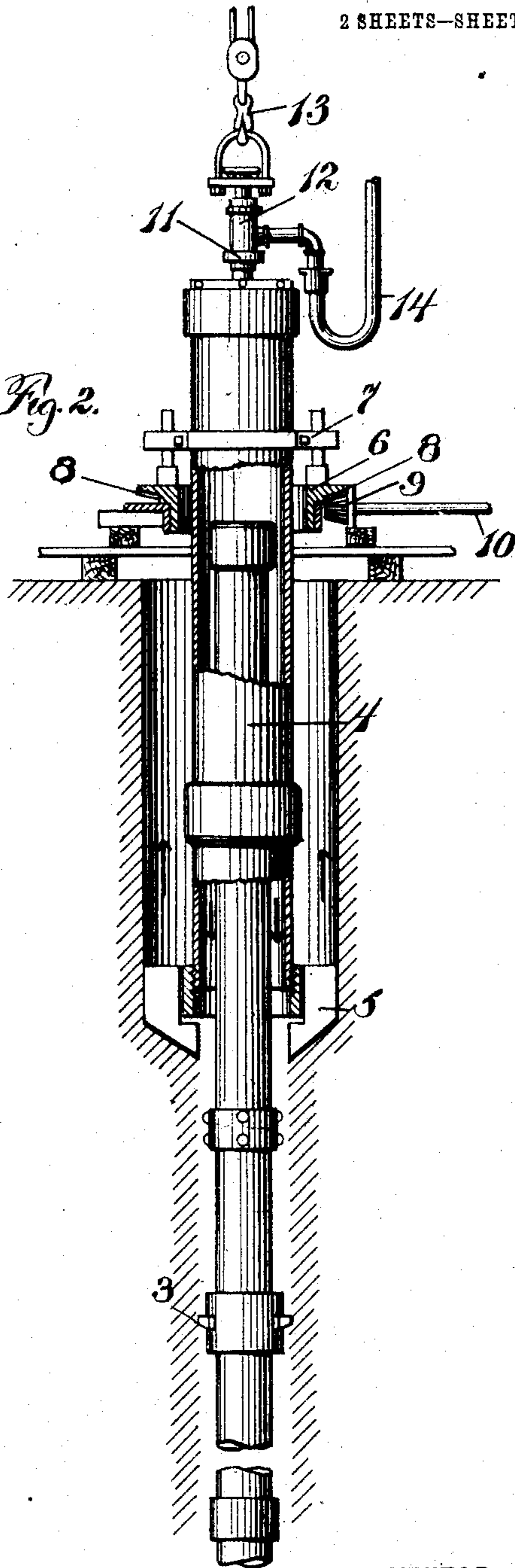
Fig. 1.



WITNESSES

Harvey L. Lechner
J. C. Bradley

Fig. 2.



INVENTOR

Mahton E. Layne
by atty
Paul Symmestredt

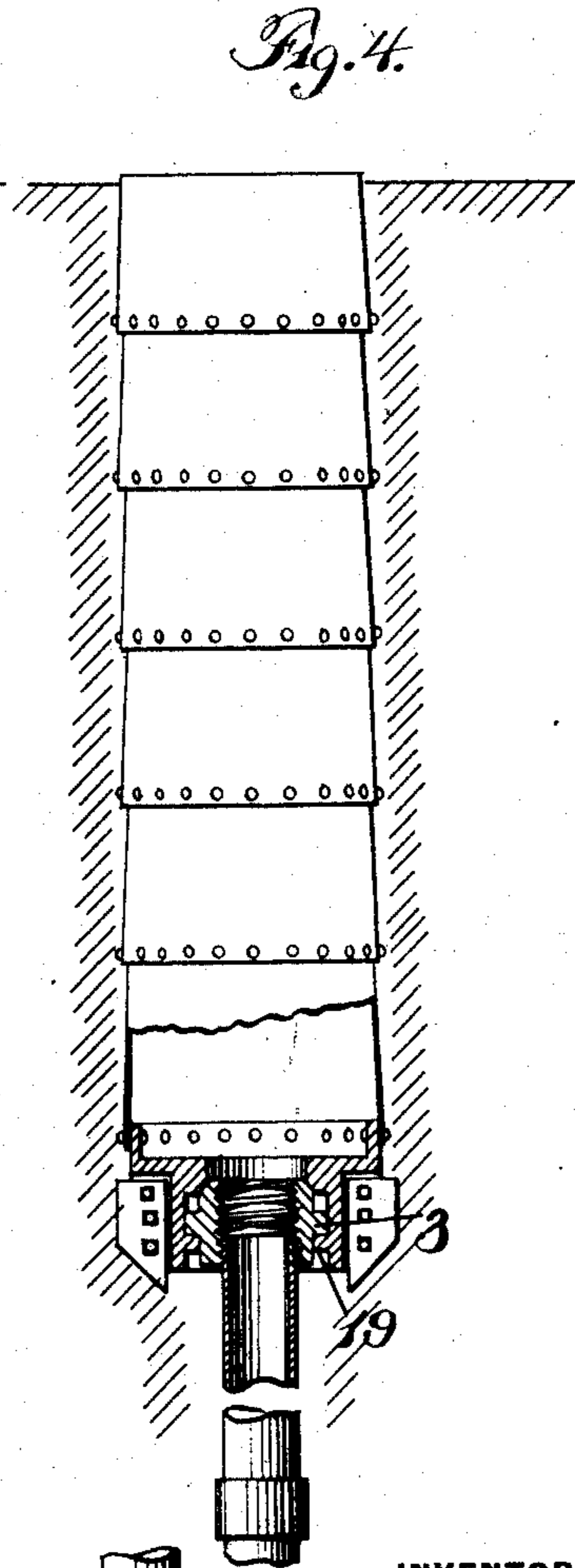
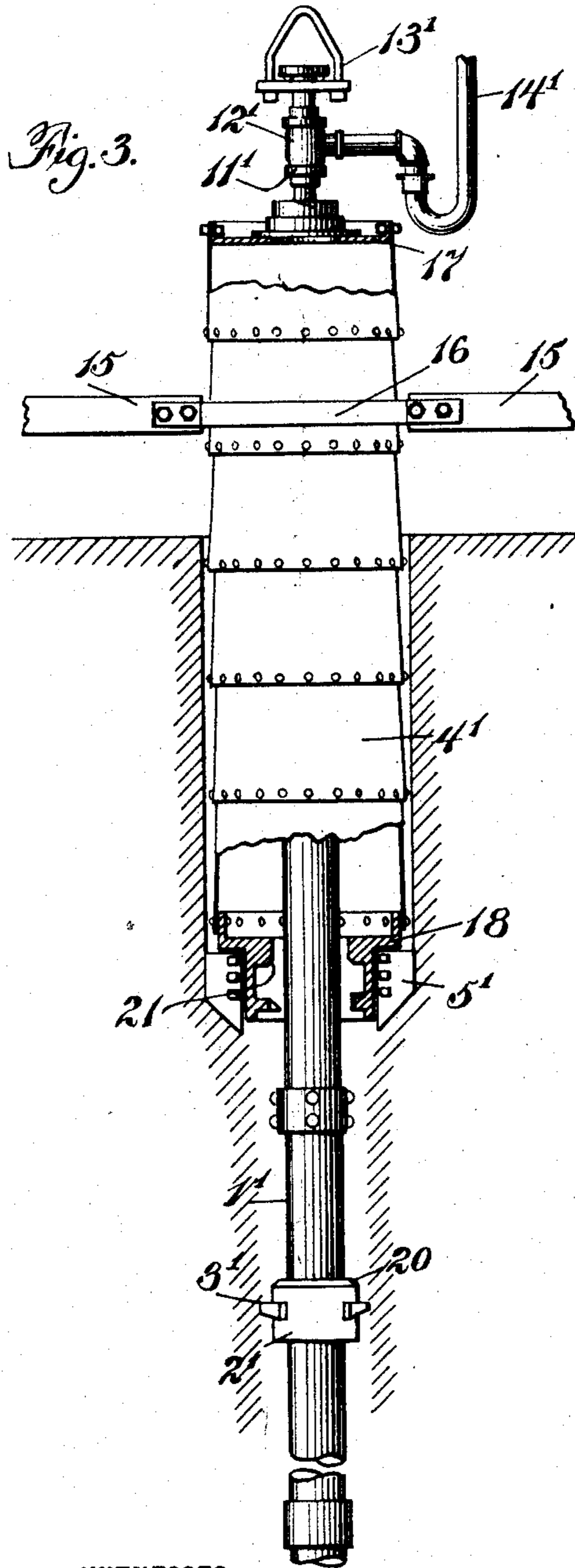
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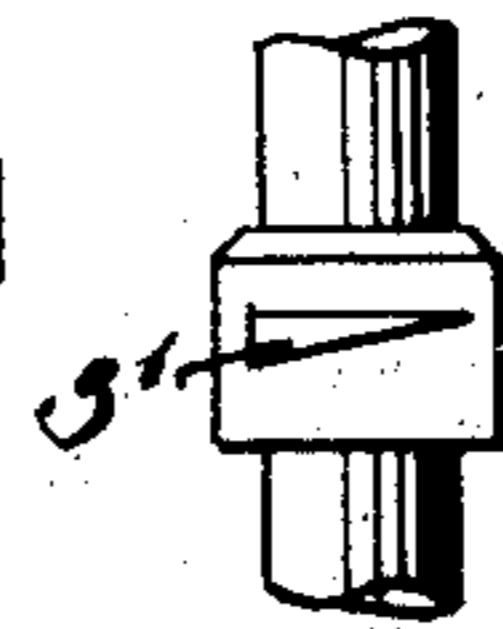
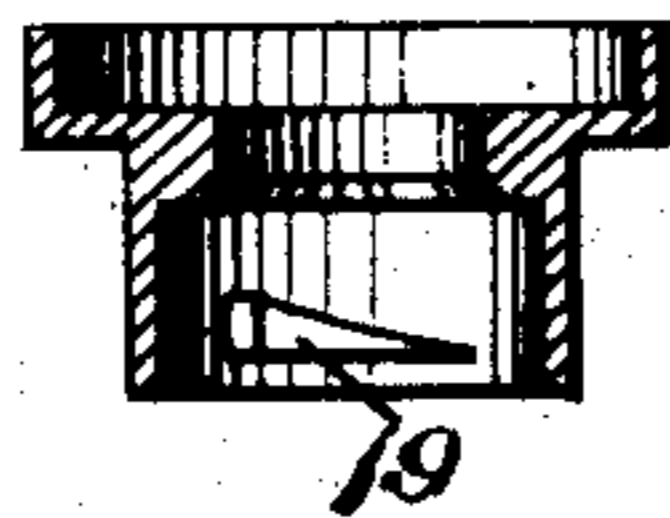
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2 SHEETS—SHEET 2.



WITNESSES
Harvey L. Lechman Fig. 5.
J. C. Bradley



INVENTOR
Mellon E. Layne
Fig. 6.
Paul Symmetrecht

UNITED STATES PATENT OFFICE.

MAHLON E. LAYNE, OF HOUSTON, TEXAS.

WELL MECHANISM.

No. 905,440.

Specification of Letters Patent.

Patented Dec. 1, 1908.

Application filed December 3, 1907. Serial No. 404,969.

To all whom it may concern:

Be it known that I, MAHLON E. LAYNE, a citizen of the United States, residing at Houston, in the county of Harris and State of Texas, have invented certain new and useful Improvements in Well Mechanisms, of which the following is a specification.

The invention relates to the means for coupling the well pit casing in position on the well casing after such casing has been positioned. The invention has for its objects; the provision of a coupling means between the pit casing and well casing to which the pit casing may be tightly secured before the upper portion of the well casing is removed; the provision of a coupling means which may be easily adjusted from the surface of the ground by simply rotating the casing, and in general to simplify and improve the coupling means and reduce the labor incident to the operation of securing the pit casing and well casing together to a minimum. Certain embodiments of the invention are illustrated in the accompanying drawings, wherein:—

Figure 1 is a side elevation of the well casing in position, a portion of such casing with its coupling being shown in section,

Figure 2 is a side elevation partly in section showing one form of mechanism for excavating the pit for the reception of the pit casing,

Figure 3 is a side elevation partly in section of another arrangement of apparatus for excavating the pit, in which form the pit casing is positioned as the excavating proceeds,

Figure 4 is a side elevation partly in section illustrating the completed apparatus with the pit casing coupled to the well casing and the upper section of the well casing detached from the lower section,

Figure 5 is a section through the coupling member employed, and

Figure 6 is a side elevation of the coupling sleeve employed.

Heretofore in the installation of pit casings at the upper end of well casings, it has been customary to excavate by hand a pit of the desired depth and diameter in which the casing was positioned and the well casing then cut off at a point adjacent the bottom of the pit casing. The pit casing was ordinarily left open at the bottom although in some cases a filling of concrete was inserted. This operation is expensive and tedious, due

to the labor of excavating for the pit, and leaves, as above indicated, an opening at the bottom of the casing. My invention is designed to provide a rapid and effective means for positioning the pit casing, coupling it to the well casing and closing the lower end of such pit casing. Briefly stated, this is accomplished in one instance by rotating a larger pipe over the well casing, which larger pipe is provided with drilling members of a diameter approximately equal to the diameter of the pit to be produced, and during such drilling forcing a supply of water down through the pipe and up through the pit outside of the pipe to carry away the material excavated, after which the pit casing is inserted in the pit thus produced, the lower end of the pit casing being provided with coupling means adapted to coöperate with corresponding coupling means on the well casing, whereby a rotation of the casing will tightly clamp the pit casing and well casing together, after which the upper member of the well casing may be removed. In another instance this same result is secured by using the pit casing as the larger pipe member and providing its lower end with the cutters extending out a distance slightly greater than the diameter of the pit casing. The water is forced through the pit casing in the manner as above described, and when the casing reaches the proper distance its further rotation clamps it to the well casing in the manner heretofore described.

Referring now to the apparatus as illustrated in the drawings, 1 is the well casing which may be sunk to any desired depth, in a manner well known in the art, 2 is a coupling sleeve for fastening two sections of the well casing 1 together, which sleeve is positioned at a depth corresponding to the position to be occupied by the lower end of the pit casing, and provided on its outer surface with a pair of inclined cam locks 3, 4 is a larger pipe fitting over the well casing and provided with a plurality of cutting members 5 whose outer edges extend out to a position substantially equal to the diameter of the pit to be produced, 6 is a framing mounted for rotation and tightly clamped to the top of the tube 4 by means of the straps 7, 8 is a bevel gear on the under side of such frame, which gear is driven from the pinion 9 carried by the shaft 10, which in turn is driven by any suitable driving means, 11 is

a swivel joint between the pipe 4 and the T 12 which T is supported from above by the tackle 13 as shown, and 14 is a pipe for supplying water to the interior of the rotating pipe 4. In sinking the pit by means of this apparatus, the pipe 4 with its cutters 5 is rotated, and water is at the same time forced into its interior through the pipe 14. The cutters 5 are carried down through the ground by virtue of the weight of the apparatus, and the material cut out by the members 5 is carried to the surface of the ground by the flow of water which passes down through the pipe 4, and up to the pit as indicated by the arrows. When the cutters reach a position adjacent the coupling sleeve 3 the operation of the apparatus is stopped and the pipe 4 removed. The pit casing may now be fitted into the cavity thus secured, and locked to the coupling sleeve 2 by means of the coupling mechanism which will be described in connection with the apparatus as shown in Figures 3 and 4, which apparatus is operated to secure the excavation in a somewhat different manner than the apparatus just described, but is secured in position by the same coupling means.

Referring now to Figures 3 and 4, 1' is the well casing, 2' is the coupling sleeve provided with the pair of cam lugs 3' which parts are substantially the same as those illustrated in Figures 1 and 2, 4' is the pit casing which takes the place of the pipe 4 in Figure 2, 5' are the cutters, 15 are levers for rotating the pit casing, which levers are clamped to the pit casing removably by means of the straps 16, 11' is a swivel connection between the castings 17 at the top of the pit casing and the T 12', 13' is the supporting tackle, 14' is the pipe for supplying water to the interior of the pit casing 4', and 18 is a coupling member secured to the bottom of the pit casing, and adapted to lock the bottom of such pit casing securely to the coupling sleeve 2'. The interior of this coupling member 18 is provided with a pair of cam lugs 19 (Fig. 5), which cam lugs are the reverse of the cam lugs 3' on the coupling sleeve 2'. When the coupling member 18 passes over the coupling sleeve 2', a further rotation of the pipe causes the cam lugs 3' and 19 to ride upon each other thereby forcing the upper beveled edge 20 of the coupling sleeve tightly against a corresponding beveled surface 21 on the coupling member 18. After the coupling sleeve has been securely clamped in position as indicated in Figure 4, that section of the well casing above the coupling sleeve is unscrewed thus leaving the well casing in communication with the interior of the pit casing. It will be understood that the attachment of the pit casing is accomplished in the manner just described when the pit is previously prepared by the apparatus shown in Figure 2.

Where the pit is to be sunk in very hard material, the form of apparatus shown in Figure 2 is preferably employed to preliminarily excavate the pit after which the pit casing is lowered into position and rotated to lock it to the coupling sleeve. It will be seen that the foregoing arrangement provides for convenient and effective attachment of the pit casing to the well casing, and that a secure water tight connection may be very easily made to the lower well casing member before the upper well casing member is removed.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent is the following:—

1. In combination, an inner well casing in sections, an outer larger casing, and cooperating closure means on the inner casing intermediate its ends and on the outer casing adjacent its lower end whereby the casings may be made to fit detachably together when the outer casing is lowered over the inner casing.

2. A coupling member for a well casing comprising an interiorly threaded coupling sleeve provided on its exterior with spaced coupling lugs.

3. A coupling member for a well casing comprising an interiorly threaded coupling sleeve provided on its exterior with spaced coupling lugs having inclined camming surfaces.

4. In combination, a pair of meeting well casing sections, a coupling sleeve secured to such sections and having engaging means on its outer surface, a larger casing having on its lower end a coupling member adapted to engage the coupling sleeve and provided with engaging means for cooperating with the first mentioned engaging means.

5. In combination, a pair of meeting well casing sections, a coupling sleeve threaded to such sections and having engaging means on its outer surface, a larger casing having on its lower end a coupling member adapted to engage the coupling sleeve and provided with cam engaging means for engaging the first mentioned engaging means whereby the rotation of the larger casing will force the coupling member tightly into engagement with the coupling sleeve.

6. In combination, a pair of meeting well casing sections, a coupling sleeve threaded to such sections and spaced locking lugs on its outer surface, a larger casing having on its lower end a coupling member adapted to engage the coupling sleeve and provided with spaced locking lugs for cooperating with the first mentioned locking lugs, the surfaces of the cooperating lugs being inclined so that the coupling members are cammed tightly together by the rotation of the coupling member.

7. In combination, an inner well casing provided intermediate its ends with an engaging collar, an outer larger casing, and a bottom therefor having an opening to receive
5 the well casing and provided with closure means for cooperating with the engaging collar when the outer casing is lowered over the inner casing.

8. In combination, an inner well casing in
10 sections, an outer larger casing, cooperating closure means on the inner casing intermediate its ends, and on the outer casing adja-

cent its lower end whereby the casings may be made to fit detachably together when the outer casing is lowered over the inner casing, 15 and cutting means secured to the lower end of the outer casing.

In testimony whereof I have hereunto signed my name in the presence of the two subscribed witnesses.

MAHLON E. LAYNE.

Witnesses:

J. C. BRADLEY,
DOERING BELLINGER.