

No. 717,180.

Patented Dec. 30, 1902.

J. T. CALLANAN.
WELL CASING PACKER.

(Application filed May 27, 1902.)

(No Model.)

Fig. 1

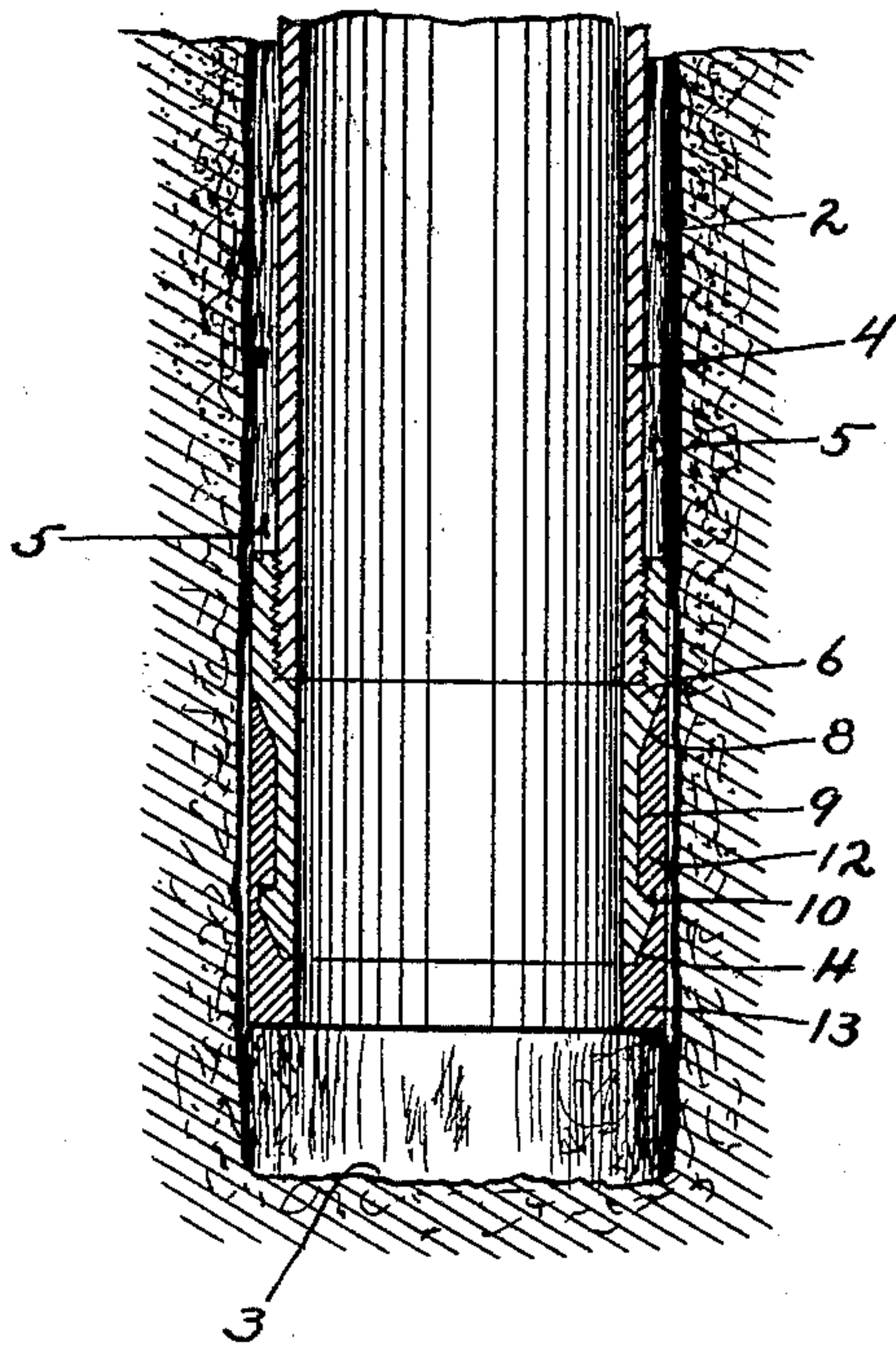


Fig. 2

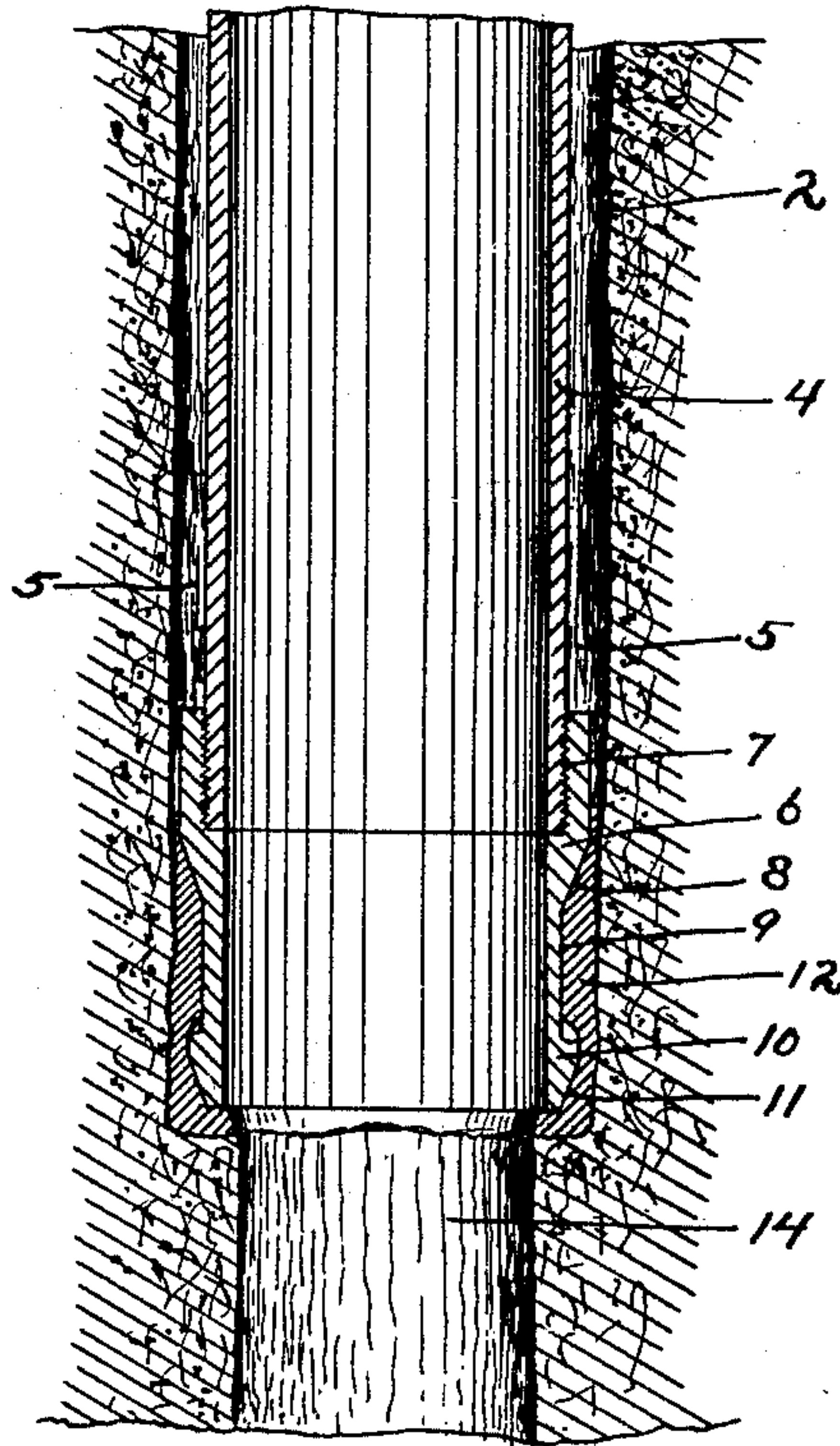
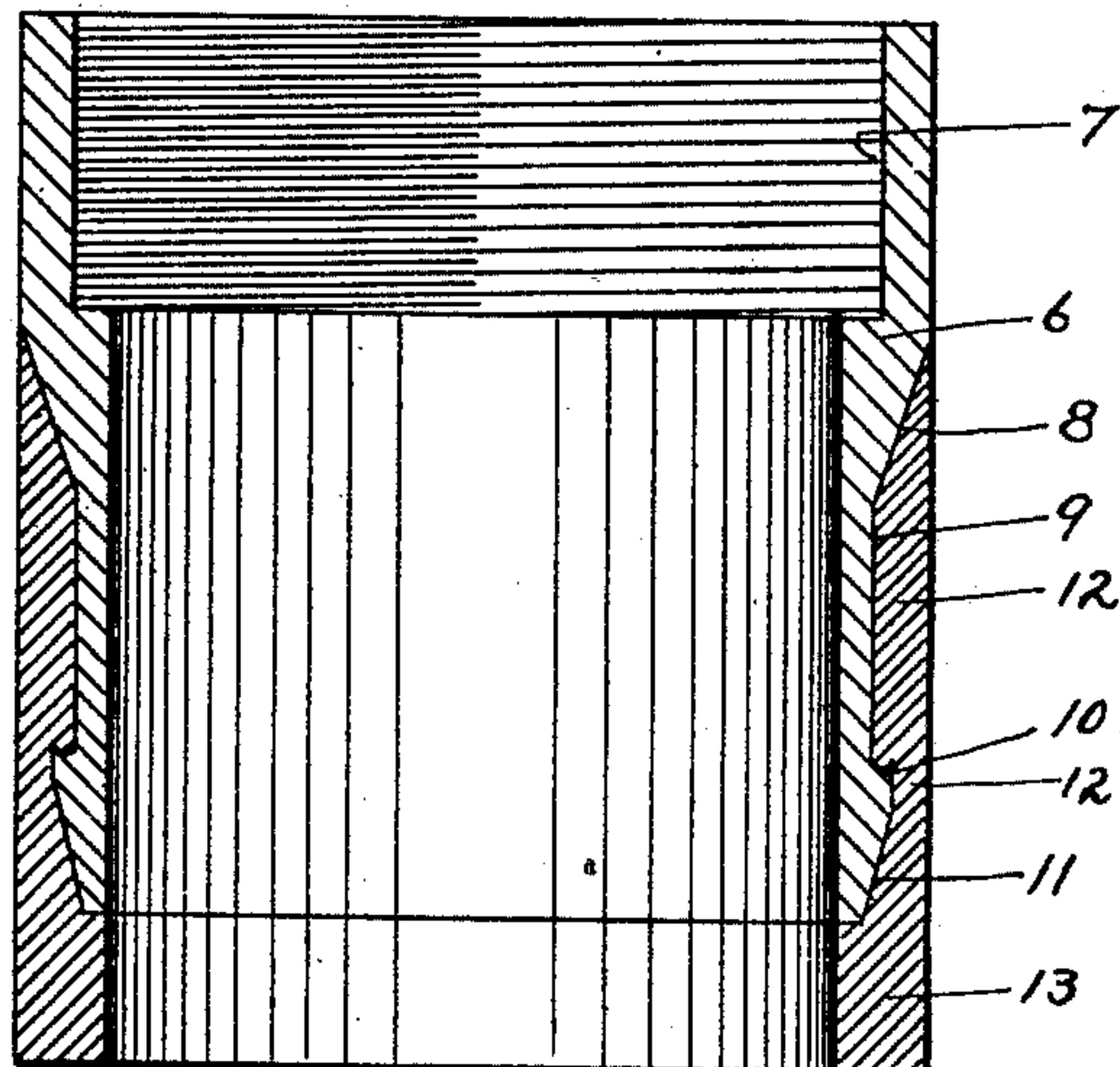


Fig. 3



Witnesses.
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UNITED STATES PATENT OFFICE.

JAMES T. CALLANAN, OF BUTLER, PENNSYLVANIA.

WELL-CASING PACKER.

SPECIFICATION forming part of Letters Patent No. 717,160, dated December 30, 1902.

Application filed May 27, 1902. Serial No. 109,130. (No model.)

To all whom it may concern:

Be it known that I, JAMES T. CALLANAN, a citizen of the United States, residing at Butler, in the county of Butler and State of Pennsylvania, have invented certain new and useful Improvements in Well-Casing Packers, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to means for packing well-casing; and the primary object is to provide an improved bottom end packer adapted to expand when subjected to the weight of the casing and seal the space between the casing and the well-wall, thereby shutting in the water above the packer, excluding it from the casing, also from the continuation of the well below the casing when the well is not cased clear to the bottom.

20 In the preferred form the invention finds embodiment in a shoe or casing terminal of soft metal so mounted that when the casing is lowered into the well and the soft-metal shoe strikes the bottom thereof the weight of the casing expands or distends the same against the well-wall, forming a permanent, effective, and indestructible seal.

30 In the accompanying drawings, Figure 1 is a vertical sectional view of my improvement within a well and before being distended, and Fig. 2 is a similar view with the same distended. Fig. 3 is a sectional view of the packer on an enlarged scale.

Referring to the drawings, 2 represents the well-wall; 3, the bottom thereof; 4, the casing, and 5 the space between the latter and wall 2.

40 The iron or steel body 6 of the packer is of tubular form and preferably of the same internal diameter as casing 4, with the lower end of the latter threaded thereinto, tube 6 being of thicker metal than the casing and formed with internal offset 7 to receive the same. Below its upper end tubular body 6 is reduced exteriorly, forming the incline or bevel 8, which merges into the perpendicular face 9, the latter terminating in the abrupt annular shoulder 10. Between said shoulder and the extremity of the body the latter is tapered or beveled at 11. Incasing this irreg-

ular exterior body 2 is lead 12, which extends therebeneath at 13, forming a continuation of the packer-body 6.

In operation when water-bearing rock, sand, or other strata has been drilled through which it is desired to case the casing is lowered thereinto, and when lead extremity 13 strikes bottom 3 of the hole the weight of casing 4 forces packer-body 6 downward through the lead, crowding the same laterally against well-wall 2. This outward crowding is greatly facilitated by the downwardly tapered or beveled faces 8 and 11, as seen in Fig. 2, the lateral or radial compression of the lead against wall 2 being so great as to effectually and permanently seal the lower end of space 5. The operation and results are the same whether the packer is at the bottom of the finished well or at the lower end of casing far above the bottom, it being a usual practice to continue the drilling through a packed casing, as shown at 14, Fig. 2, as is well known to those skilled in the art. The purpose of shoulder 10 is to retain a hold on the lead, so that when the casing is withdrawn the lead will move upward therewith, the upper face of the shoulder being slightly hollowed, as shown, forming an annular hook for an effective hold on the lead. As there is a substantial thickness of lead 12' on the outer face of this shoulder, the upwardly-crowding tendency of the lead under the weight of the casing is not retarded.

While I prefer lead as a packing material, as it flows readily under pressure and is unaffected by acids, being practically indestructible, it will be understood that the invention embraces any and all other metals and other materials capable of substitution therefor.

I claim—

1. An improved packer comprising a tubular packer-body having its exterior formed with a downwardly-tapering portion, means for securing said body to well-casing, and flexible packing material secured to the body exterior and inclosing said downwardly-tapering portion and extending longitudinally beyond the lower extremity of said body.

2. An improved packer comprising a tubular packer-body having an irregular exterior

surface, means for securing said body to well-casing, and a covering of soft metal secured to and inclosing the irregular exterior surface of the body and extending downwardly beyond the lower extremity of the latter.

3. A bottom end packer for well-casing comprising a rigid packer-body downwardly tapered exteriorly and formed with an exterior annular shoulder, and flexible packing material forming a bottom continuation of the packer-body and extending upward and inclosing said taper and shoulder.

4. A bottom end packer for well-casing comprising a packer-body downwardly tapered exteriorly adjacent its upper end at 8 and correspondingly tapered adjacent its lower end at 11, shoulder 10 intermediate said tapers, and flexible packing material forming a bottom continuation of the packer-body and ex-

tending upward around the exterior thereof and inclosing said tapers and shoulder.

5. A bottom end packer for well-casing comprising a packer-body having its exterior formed with downward taper 11, shoulder 10, perpendicular face 9, and downward taper 8, said formations being from the lower end of the body upward in the order named, and flexible packing material forming a bottom continuation of the packer-body and extending upward and inclosing said body formations.

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

JAMES T. CALLANAN.

Witnesses:

H. T. RATTIGAN,
L. P. WALKER.