

(No Model.)

A. D. COOK.
WELL TUBE VALVE.

No. 575,213.

Patented Jan. 12, 1897.

Fig. 1.

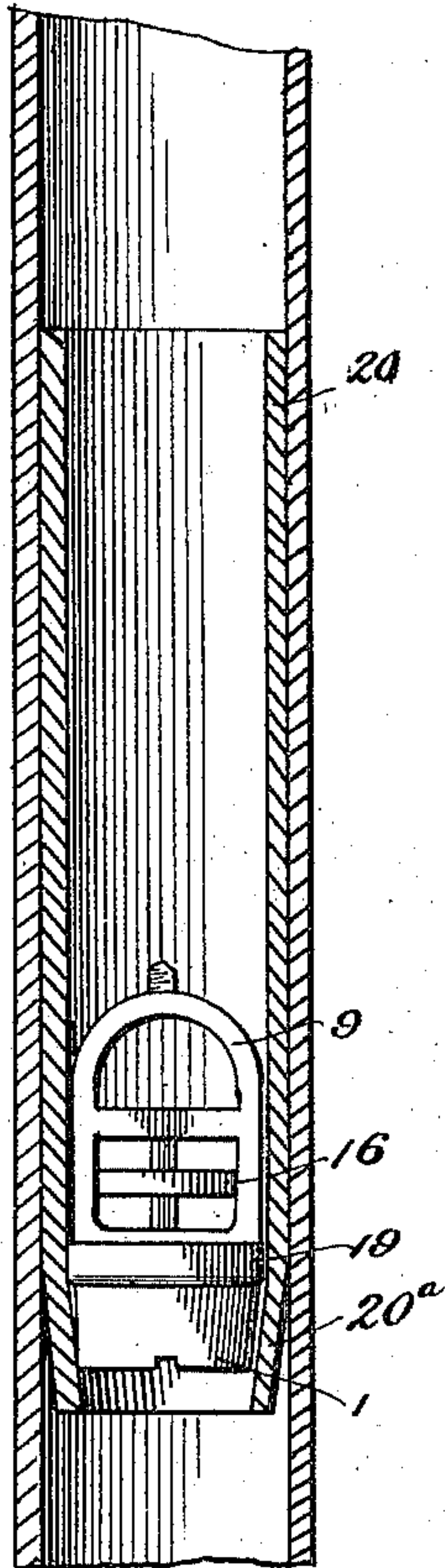


Fig. 2.

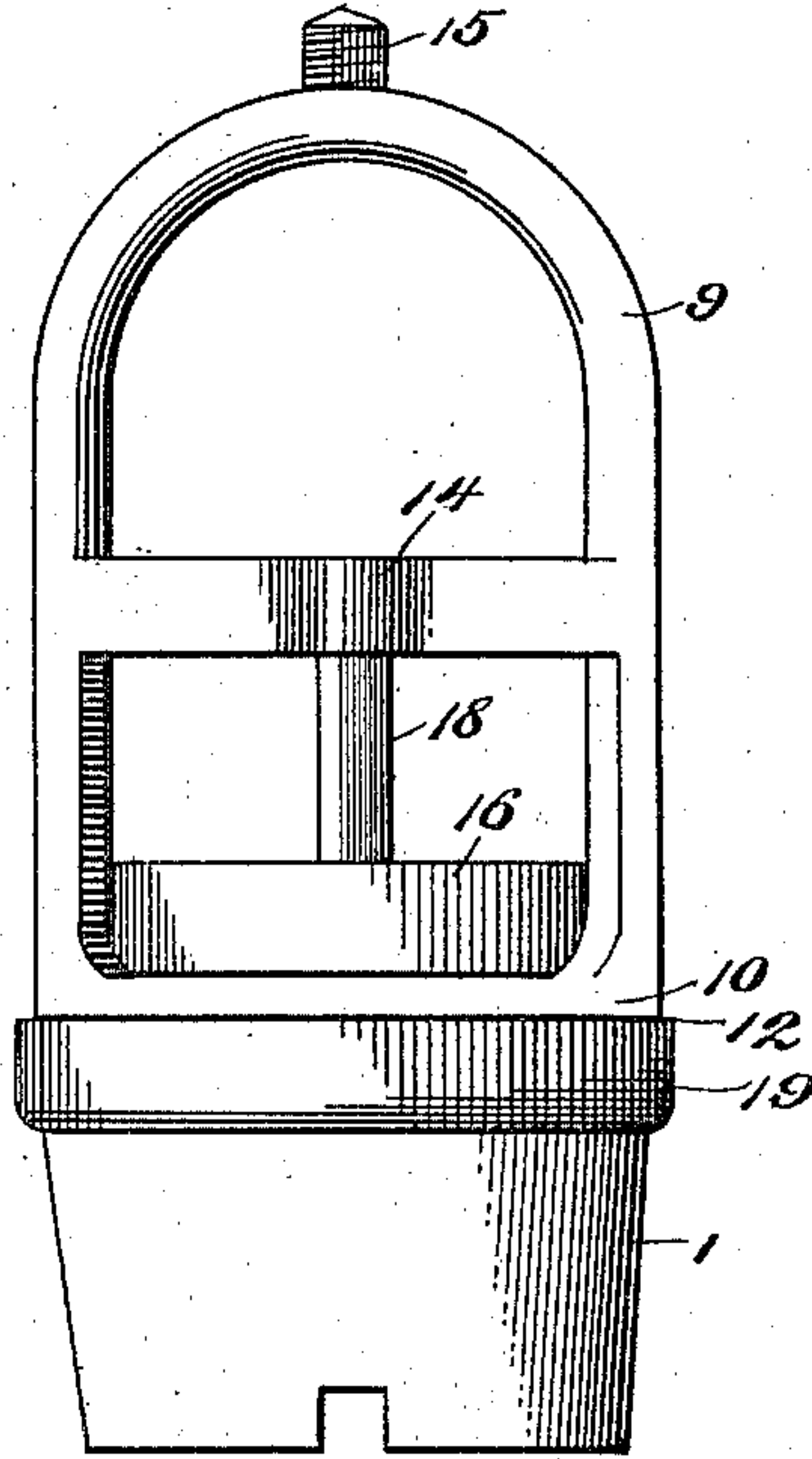


Fig. 3.

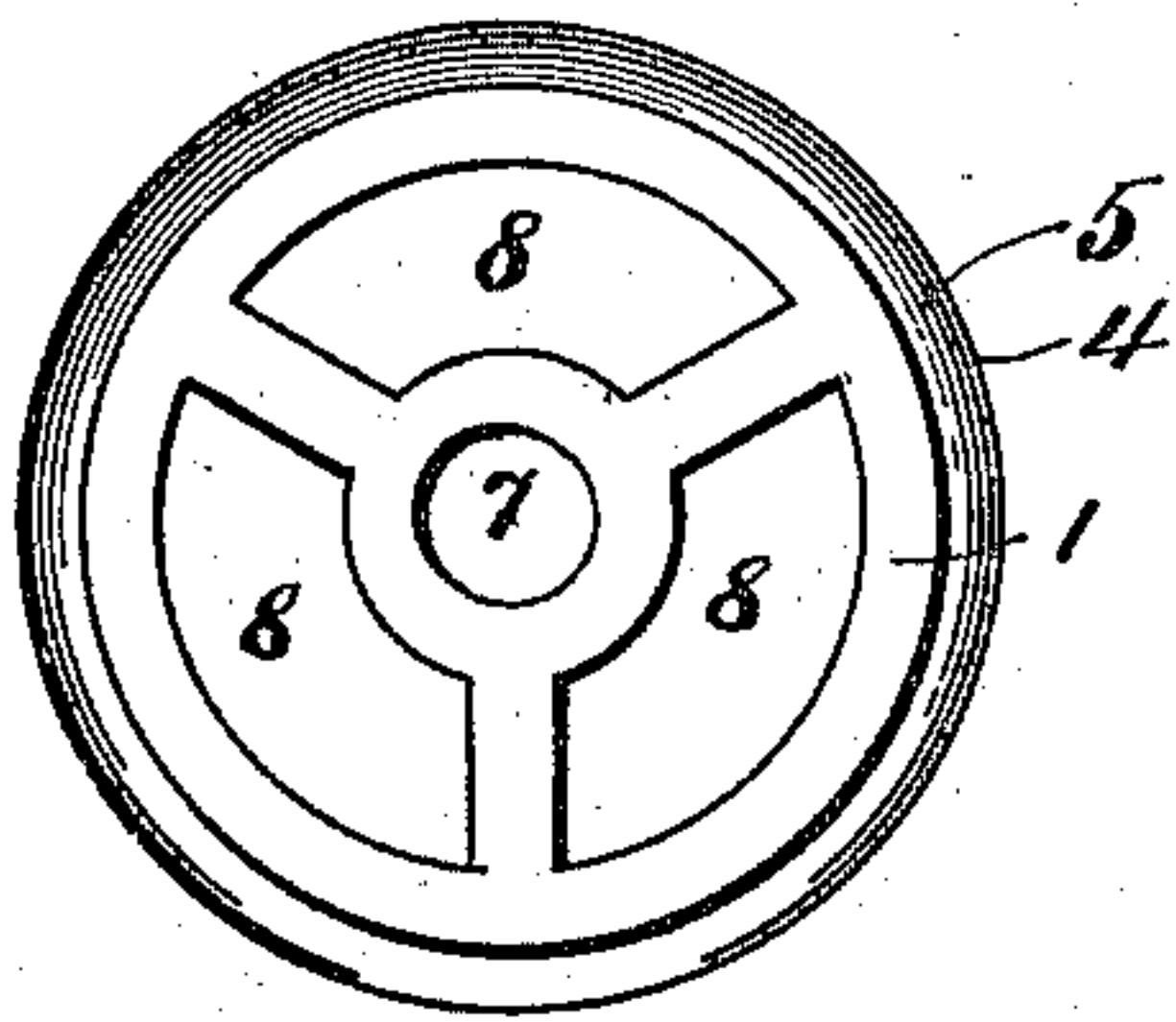
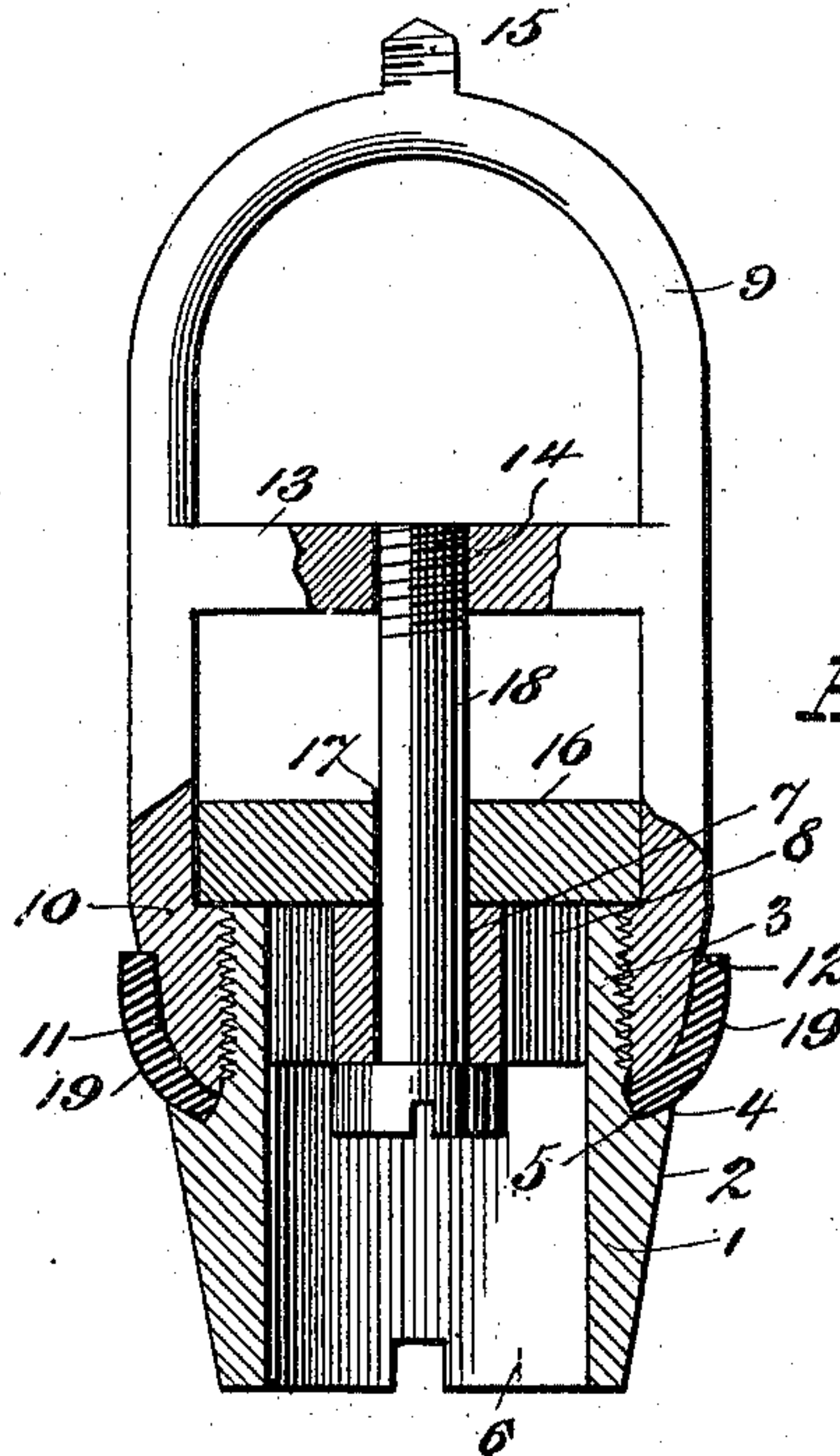


Fig. 4.



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UNITED STATES PATENT OFFICE.

AUGUST D. COOK, OF LAWRENCEBURG, INDIANA.

WELL-TUBE VALVE.

SPECIFICATION forming part of Letters Patent No. 575,213, dated January 12, 1897.

Application filed September 24, 1896. Serial No. 606,871. (No model.)

To all whom it may concern:

Be it known that I, AUGUST D. COOK, a citizen of the United States, residing at Lawrenceburg, in the county of Dearborn and State of Indiana, have invented certain new and useful Improvements in Well-Tube Valves; 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 tubular wells, and has special reference to certain improvements made in the foot or check valves employed therein.

The objects of my invention are to produce a cheap and simply-constructed valve adapted for the above-mentioned purpose, the same being composed of few easily produced and assembled parts, which is strong and durable, and which is adapted to fit snugly within the well-tube in such manner as to prevent accidental dislodgment and form a tight joint with the surface of the tube.

Other objects and advantages of the invention will hereinafter appear, and the novel features of the invention will be particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a longitudinal section of a portion of a tubular well with my improved valve in position. Fig. 2 is a side elevation of the valve in detail. Fig. 3 is a plan view of the valve-cylinder, the same being detached. Fig. 4 is a partial section and side elevation of the valve.

Like numerals of reference indicate like parts in all the figures of the drawings.

In practicing my invention I employ a valve-cylinder 1, the same having its lower half reduced toward its lower end or tapered externally, as indicated at 2. Above this point the cylinder is reduced and made cylindrical, as indicated at 3, and is externally threaded, as shown. By such reduction of the upper end of the cylinder of the valve it will be seen that a shoulder 4 is produced at about midway the same, said shoulder being annular or extending entirely around the cylinder, and the same is formed with a groove 5 in its bottom. The lower portion of the cylinder is chambered, as indicated at 6, and the upper end of the same is provided with a cen-

tral perforation 7, around which latter is arranged a series of inlet ports or openings 8.

9 designates an inverted-U-shaped yoke, the same being formed as a part of an annular ring 10, that is sufficiently large to receive the reduced cylindrical portion of the valve-cylinder. This ring is internally threaded, as shown, to engage the threads of said cylindrical portion of the valve-cylinder, but is not quite so deep as the same. The ring is reduced at its lower portion, as indicated at 11, and by such reduction there is produced an annular shoulder 12 immediately above the same. The opposite terminals of the yoke are connected at a point above the ring by a transverse bar 13, the same being integrally formed with the yoke and provided with a central enlargement 14, that is bored and threaded in line with the opening 7 of the valve-cylinder. The upper end of the yoke may or may not be provided with the usual threaded stud 15, which may receive and be engaged by the threaded socket end of a rod lowered into the tube for the purpose of removing the valve or adjusting the same.

Located on the valve-cylinder, the upper end of which forms the valve-seat, and between the two terminals of the yoke is the valve-disk 16, the same being free to move vertically to and from its seat and thus cover and uncover the ports or openings 8 therein. This disk is centrally perforated, as indicated at 17, and may be made of rubber or other suitable material and is guided in its vertical reciprocations by a vertical bolt 18, which is inserted upwardly through the chamber 6 of the valve-cylinder, through the opening 7, through the opening 17 of the valve-disk, and is finally threaded in the opening formed in the enlargement of the cross-bar of the yoke, the head of the bolt or screw being located under and against the upper end of the valve-cylinder.

19 designates a cup-shaped annular leather packing, the lower end of which is seated in the annular groove 5 of the valve-cylinder, and the remaining portion of which snugly embraces the exterior of the ring 10, which latter somewhat conforms thereto, as shown. The upper end of the packing terminates against the shoulder 12 of the ring, which shoulder bears thereagainst. This packing, it

will be observed, is clamped within the groove 5 by the lower end of the ring, and by adjusting said ring farther down upon the cylinder the shoulder 12 of the ring will cause the packing to spread evenly and thus cause the valve to more snugly fit within the tubing.

The well-tube 20 is somewhat reduced at its lower end, as indicated at 20^a, and into this reduced lower end the valve is forced. If for any reason the packing should become loose, the valve as a whole may be readily adjusted in the before-mentioned manner and a close fit between its packing and the wall of the tube be assured.

The valve operates to permit the flow of water therethrough in the usual manner, to wit, the disk leaves its seat and uncovers the valve-openings as the plunger of the pump ascends and closes as it descends.

It will be seen that all the parts of the valve may be readily separated and again assembled after cleaning, repair, &c.; also that the same may be readily withdrawn from its position for such or any other purpose without danger of breaking, as the manner in which the bolt or screw is mounted serves to bind the parts rigidly together and removes a portion of the strain caused by withdrawing the same from the terminals of the yoke and ring, and in this manner force is applied both at the upper and lower sides of the packing, the pulling effect being derived from the yoke-terminals and ring and the pushing effect being derived from the valve-cylinder through its shouldered groove 4 and 5.

Having thus described my invention, what I claim is—

1. In a tubular-well valve, the combination with a valve-cylinder externally reduced at its upper end and having a shoulder at the lower end of its reduction, the lower interior portion of the cylinder having a chamber the

upper end of which is provided with an opening having surrounding ports, of a ring threaded on the upper reduced end of the cylinder, a yoke having a cross-bar mounted on the ring, said cross-bar being perforated and threaded, a packing-ring arranged between the shoulder of the cylinder and the lower end of the ring and embracing the latter, a perforated valve-disk located on the upper end of the cylinder and having a central perforation, and a screw inserted through the opening in the upper end of the cylinder and valve-disk and threaded in the cross-bar, substantially as specified.

2. In a tubular-well valve, the combination with a valve-cylinder externally reduced at its upper end and threaded and provided with a grooved shoulder at the lower end of said reduced threaded portion, the lower interior portion of the cylinder having a chamber the upper end of which is provided with a central opening having surrounding ports, of a ring threaded on the upper end of the cylinder a yoke having a cross-bar mounted on the ring, said cross-bar being perforated and threaded, said ring being externally reduced below its upper end and forming a shoulder 12, the cup-shaped packing clamped within the groove of the shoulder of the cylinder by the lower end of the ring said packing embracing said ring and terminating against and borne upon by the shoulder 12 thereof, the perforated valve-disk located on the cylinder, and the bolt passed through the opening in the cylinder, valve-disk and cross-bar of the yoke, substantially as specified.

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

AUGUST D. COOK.

Witnesses:

CHARLES L. SKINNER,
WILLIAM F. COOK.