

No. 750,205.

PATENTED JAN. 19, 1904.

M. E. LAYNE.
WELL MECHANISM.

APPLICATION FILED FEB. 3, 1902.

NO MODEL.

Fig. 1.

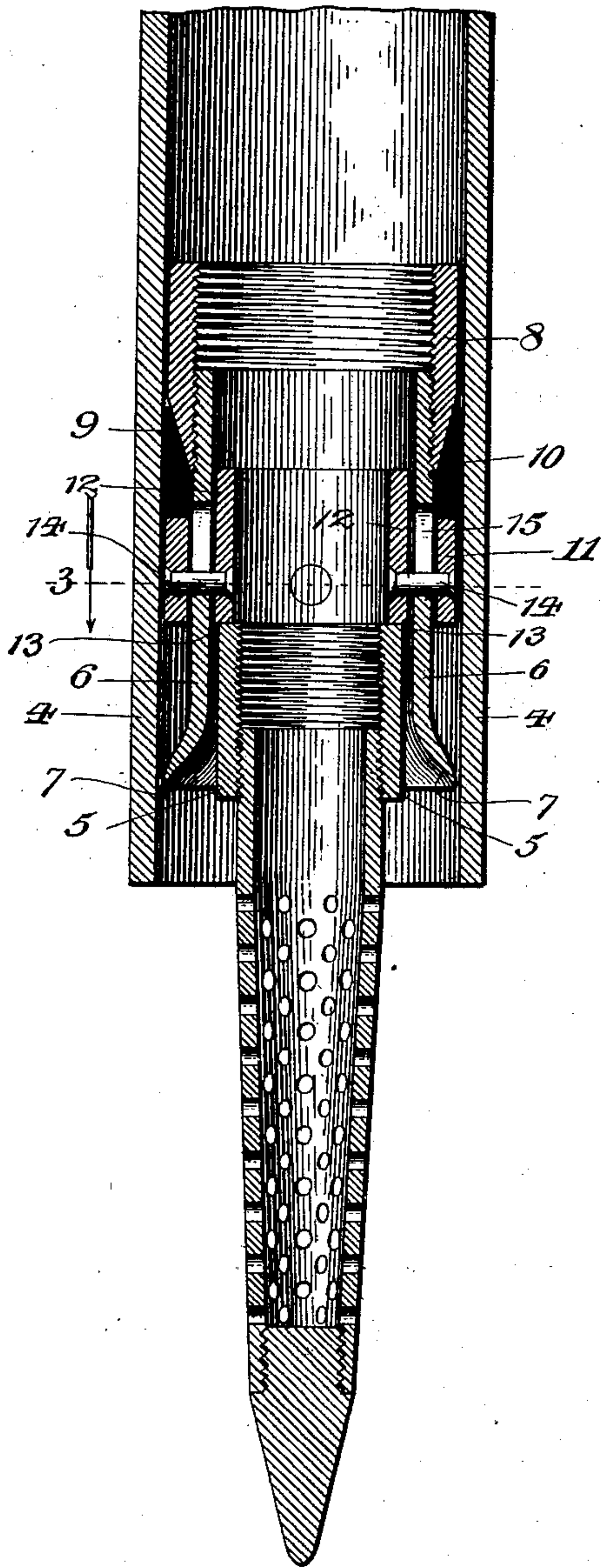


Fig. 2.

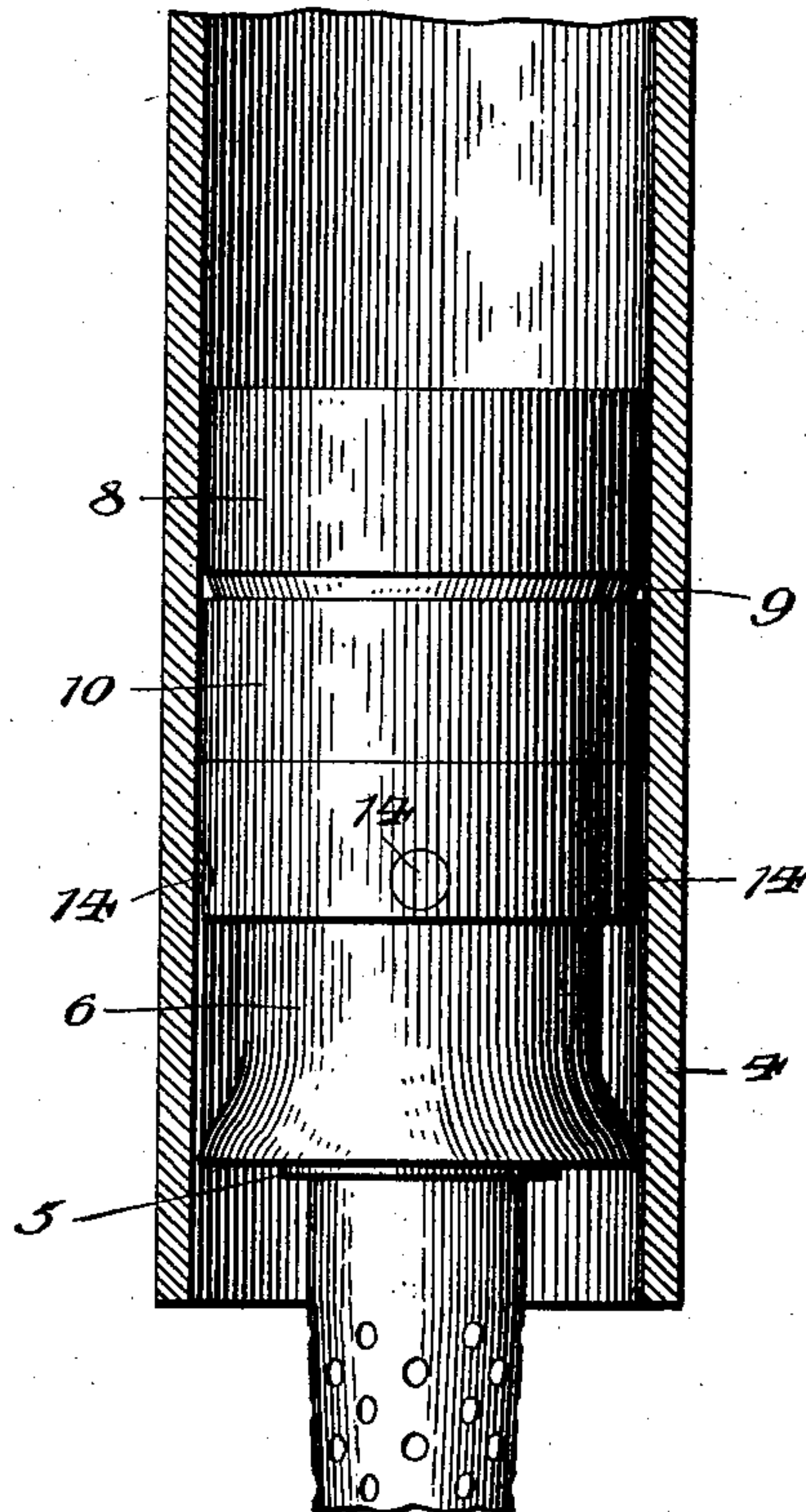
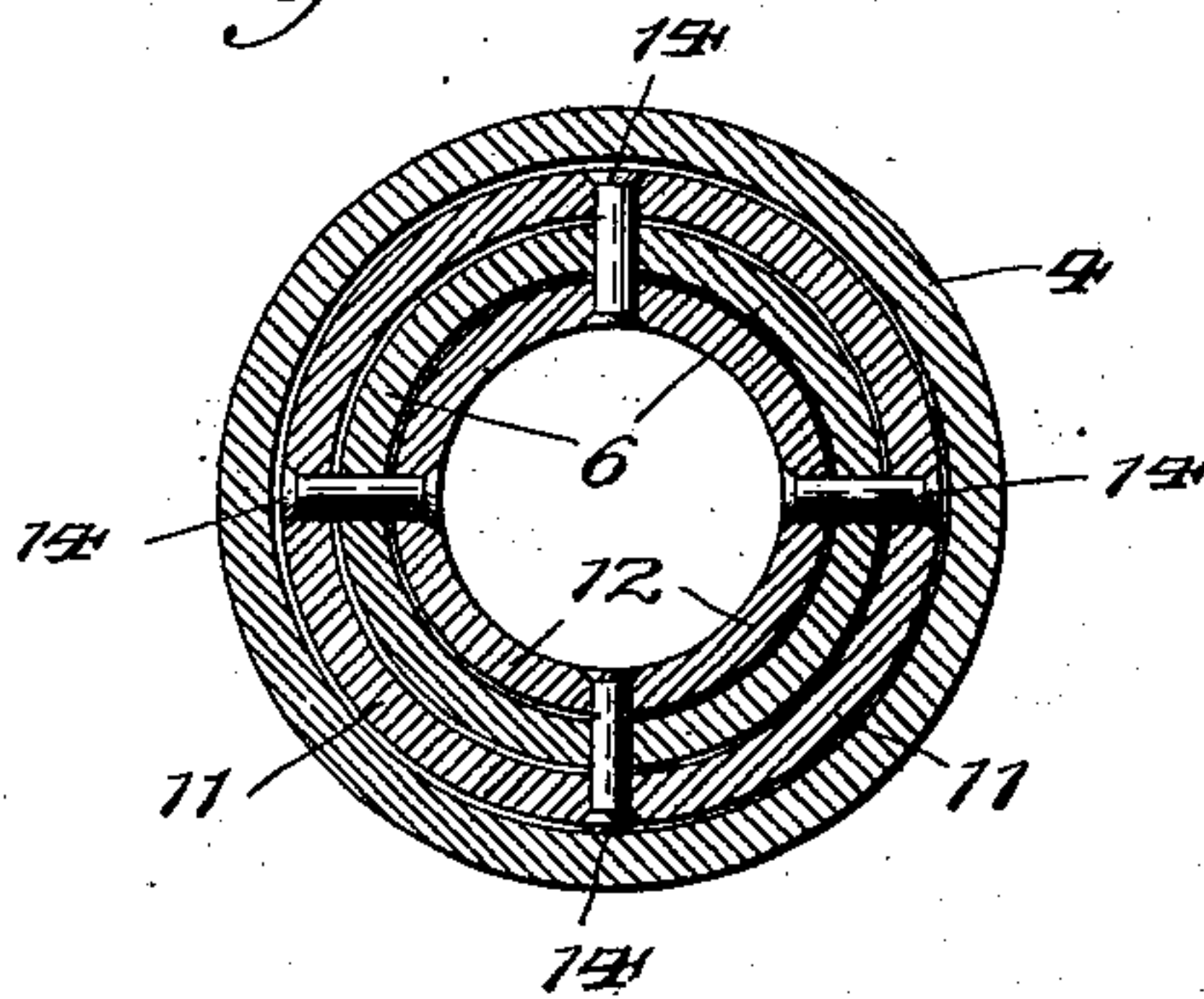


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

MAHLON E. LAYNE, OF ROCK RAPIDS, IOWA.

WELL MECHANISM.

SPECIFICATION forming part of Letters Patent No. 750,205, dated January 19, 1904.

Application filed February 3, 1902. Serial No. 92,383. (No model.)

To all whom it may concern:

Be it known that I, MAHLON E. LAYNE, a citizen of the United States of America, residing at Rock Rapids, in the county of Lyon and State of Iowa, United States of America, have invented certain new and useful Improvements in Well Mechanism, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention has reference to devices employed at the lower end of well casings, for the purpose of centering the well point in the casing, and of permitting the removal of the well point for cleaning, and its subsequent replacement, and for the purpose of providing a tight joint between the well point and the casing, after the point has been put in place.

It is known to those skilled in the art, that with the well points, or as they are sometimes called, screens, heretofore in use, it is necessary at times to take them up and clean them. In certain sections of the country the nature of the soil and the natural conditions otherwise are such that the well points become cemented and dirty—and so firmly secured that it is impossible to get them out without boring the ground or earth around them so as to loosen them. It is particularly with a view to facilitating this last-mentioned operation that my present invention is designed.

The object of my invention, stating it more specifically, is to provide means whereby the well point or screen can be centered within the inside of the casing at the lower end thereof, and made tight, so as to hold it firmly in place when properly centered.

A further object of my invention is to provide means whereby in the use of a seal between the screen and the inside of the casing, the seal cannot be fixed or tightened until the screen is properly fixed in position, that is, clear at the bottom of the well casing, and the inner collar in contact with the top end of the screen.

The above, as well as such other objects as may hereinafter appear, I attain by means of a construction which I have illustrated in preferred form in the accompanying drawings, in which

Figure 1 is a vertical section through the

lower end of a well, showing my improved form of well mechanism,

Figure 2 is a section of the casing, with the parts inside the casing shown in elevation, and

Figure 3 is a transverse section taken on the line 3 of Figure 1.

In carrying out my invention I provide within the lower end of the casing 4 a well point or screen 5, between the upper end of which and the inside of the casing is a centering device 6, which at its lower end is flared out as indicated at 7, into a conical form, for a purpose which will hereinafter more clearly appear.

The centering device 6 has screw threaded connection at its upper end with a ring 8, which is tapered as shown at 9, so as to form a kind of wedge against which the soft packing 10 can be pressed by the collar 11, when the interior collar 12 comes in contact with the upper end of the screen at 13.

The inner collar 12 and the outer collar 11 are fastened together by means of a plurality of rivets or other like fastening devices 14, which pass through slotted openings 15, in the centering device 6, so as to produce a longitudinal movement of the collar relative to the centering device, and ring 8, when the screen 5 is fixed at the bottom of the well in proper position, and the collar 12 strikes the top of the screen to bring pressure upon the soft packing 10 to push the same against the inside of the lower end of the well casing 4, in order to make a tight joint when the screen is in place.

From the above description it is evident, that assuming the parts have been in use in the position shown in the drawing for some time, and that the screen needs cleaning, the same can be removed, even although it is firmly embedded in and solidly held in the earth, by first pulling up the centering device 6, through some rod screwed into the ring 8, and then putting a tool down through the casing 4 and boring the ground out around the screen so as to loosen the same. The screen being lifted by means of a rod screwed into the threaded collar on its upper end. After the screen is cleaned it is replaced in the bottom of the well, and the centering device 6 put

down, the conical or bell shaped end 7 thereof bringing the upper end of the screen to central position relative to the casing, as will be clear from an examination of the drawing, 5 after which the inner collar 12, striking the top end of the screen at 13, compresses the packing 10, and makes a tight joint between the several parts. It is the employment of the centering device 6, operating between the 10 upper end of the screen and the inside of the well casing, which makes it possible to put a tool down inside the casing and still drill around to free the screen, in the manner described. It is also to be observed that in 15 doing this a screen of smaller diameter than is usually employed is necessary.

While I have shown a particular form of screen, and a particular arrangement of seal or packing device, it is to be understood that I do 20 not desire my invention generically considered to be understood as limited in either of these respects, but would include in my broader claims all equivalent constructions of seal or packing, known in the art.

25 Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An improved well mechanism comprising a screen, and a centering device for the 30 screen constructed to pass within the inside of a well casing, and surround the upper end of the screen, whereby on removal of the centering device the drilling out of the screen is possible, substantially as described.

35 2. A well mechanism comprising the combination of a casing, a screen projecting at the bottom of the casing, a device for centering the upper end of said screen, relative to said casing, a soft packing, and means constructed

to bear against the top end of the screen for 40 tightening said packing, substantially as described.

3. In well mechanism a centering device comprising a bell-shaped ring and means to hold it in place against the inner wall of the 45 well casing, a well pipe having its end extending into the casing, and the said centering adapted to pass over the end of said pipe to center the same.

4. A well mechanism comprising the combination of a casing, a sand screen projecting therefrom, the centering device, a soft packing, and means for compressing said packing, 50 receiving pressure from the upper end of the screen, substantially as described. 55

5. A well mechanism comprising the combination of a casing, a screen, a soft packing, a ring, and an inner and outer collar for compressing said packing, said inner collar constructed to abut against the top of said screen, 60 and connections between said inner and outer collar, whereby said packing is compressed by the abutment of the inner collar against the top of the screen.

6. In well mechanism the combination with 65 a well casing, of a sealing device therein provided with means for compressing the packing to fix it in place, and having a depending bell-shaped ring adapted to go over and center a pipe or screen which projects into, the well 70 casing from below, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

MAHLON E. LAYNE.

Witnesses:

PAUL SYNNESTVEDT,
PAUL CARPENTER.