B. DEWOODY.

DEEP WELL PUMP.

APPLICATION FILED APR. 18, 1908.

928,639.

Patented July 20, 1909.

2 SHEETS—SHEET 1.

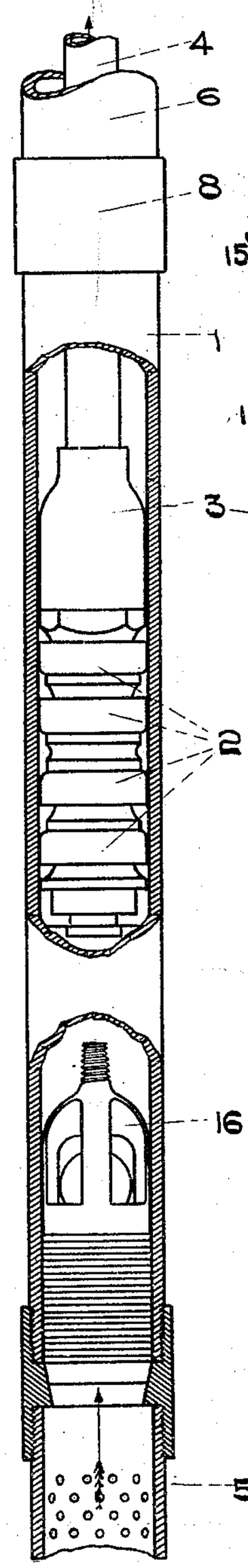

FIG. 1.

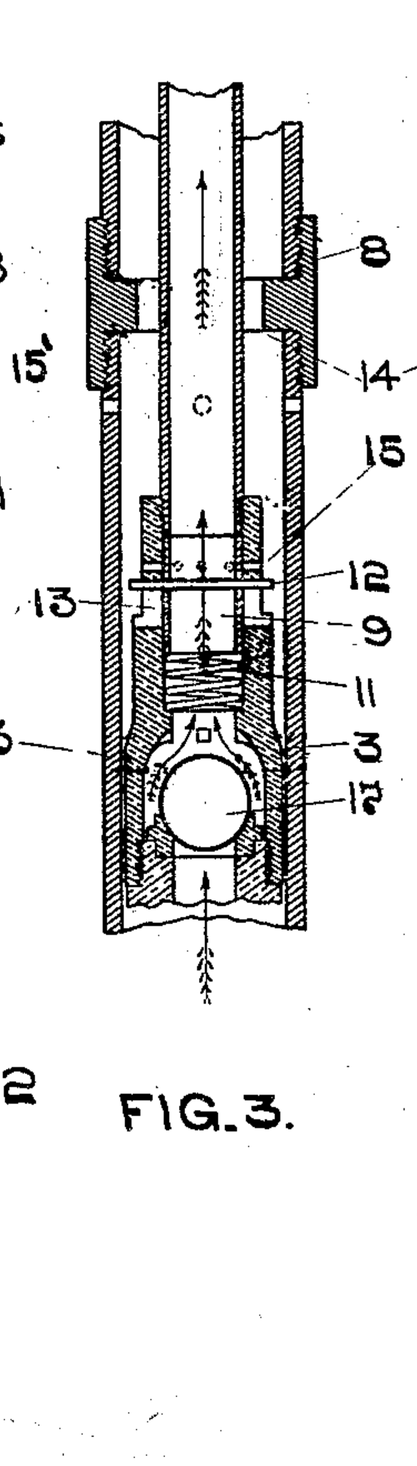

FIG. 3.

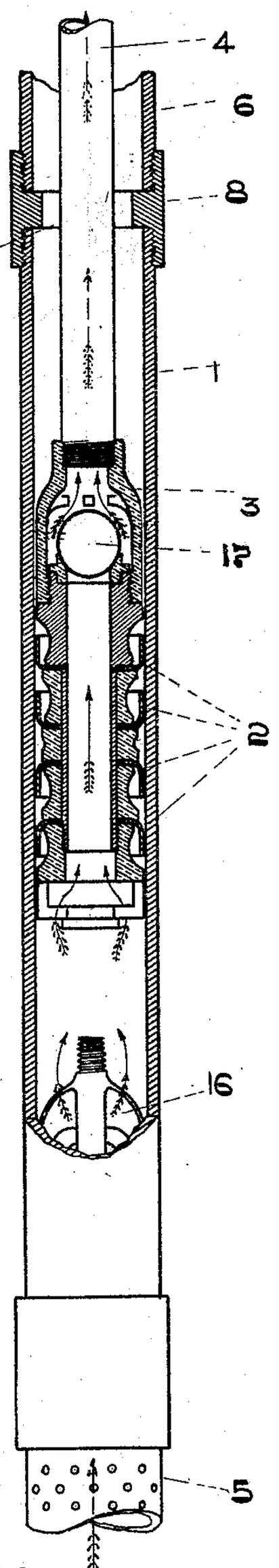

FIG. 2.

WITNESSES

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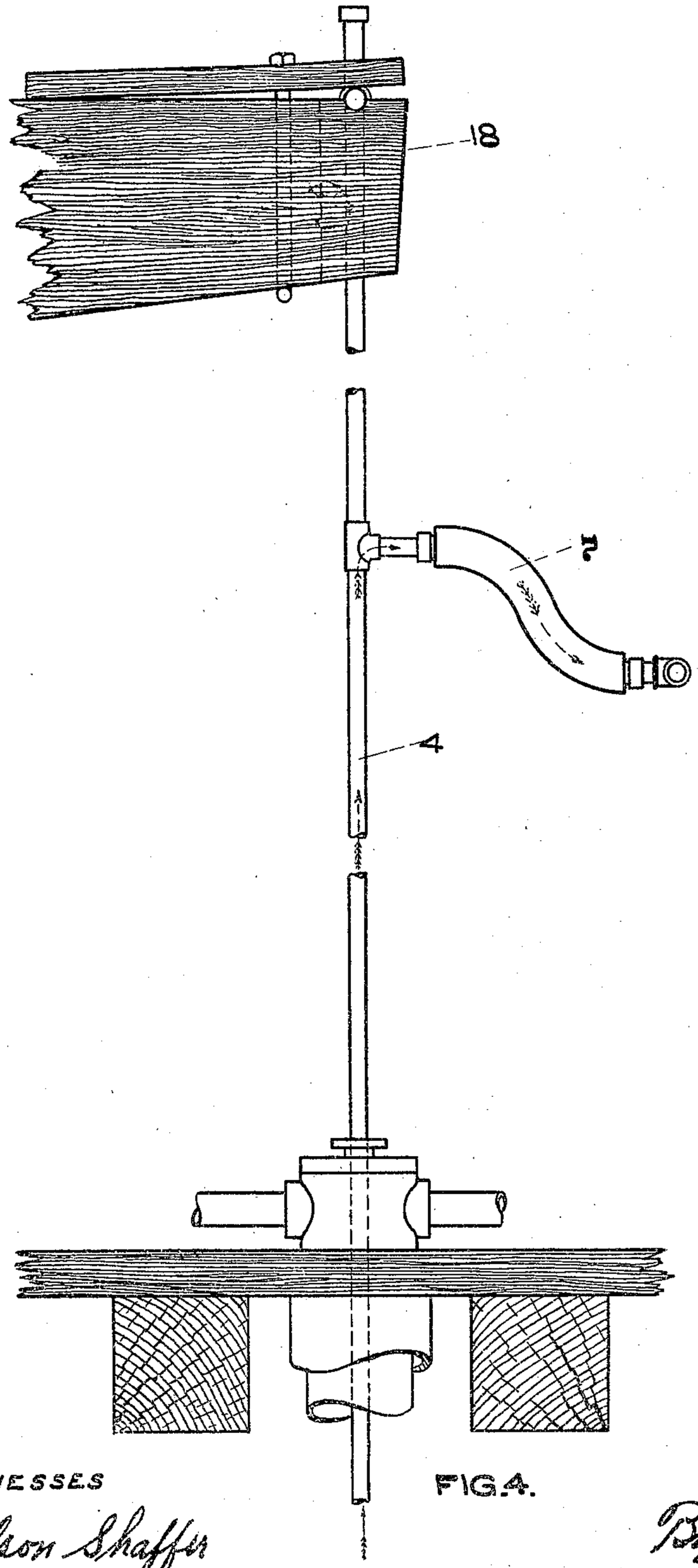

FIG.4.

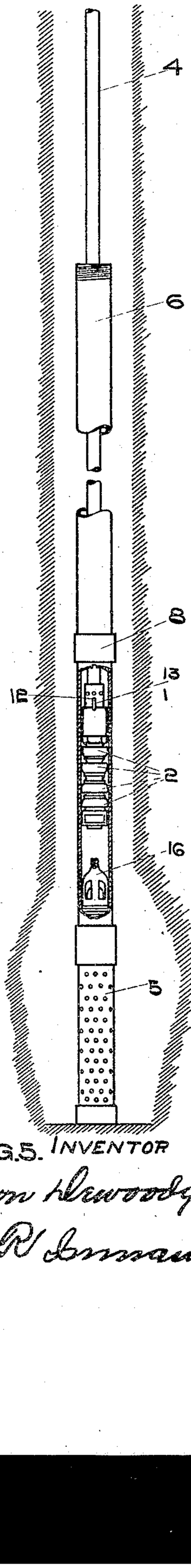

FIG.5.

WITNESSES

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UNITED STATES PATENT OFFICE.

BYRON DEWOODY, OF FRANKLIN, PENNSYLVANIA.

DEEP-WELL PUMP.

No. 928,639. Specification of Letters Patent. Patented July 20, 1909.

Application filed April 18, 1908. Serial No. 427,918.

To all whom it may concern:

Be it known that I, BYRON DEWOODY, citizen of the United States, residing at Franklin, in the county of Venango and State of Pennsylvania, have invented certain new and useful Improvements in Deep-Well Pumps, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to improvements in deep well pumps, the construction and operation of which will be fully understood from the following specification, reference being had to the accompanying drawings which form a part hereof and in which:—

Figure 1 is an elevation, partly in section, of the working-barrel and valves employed in my deep well pump. Fig. 2 is a vertical section of the working-barrel, showing also the piston in section. Fig. 3 is a vertical section of the upper portion of a piston, showing the construction of a drain-valve which may be employed with my improved pump. Fig. 4 is an elevation of the upper portion of a well which is equipped with my device. Fig. 5 is a vertical section of the lower portion of a well which is equipped with my invention.

My improved deep-well pump is designed especially to be applied to oil wells, and to obviate the necessity of using tubing which now forms a portion of the equipment of such wells, and to thus materially cheapen the cost of their construction and maintenance.

The construction of my improved device is substantially as follows:—

I employ a working barrel 1, of the usual form and construction, but in assembling the piston I place the cups 2 thereon so that a portion of them face upward and a portion thereof face downward. The valve-case 3, at the top of said piston is of special construction, the wall thereof being imperforate, so that the oil does not escape therefrom into the tubing, as is the case in the usual form of piston, but passes upward,—as indicated by the arrows—through the hollow sucker-rod or conduit 4, which is a particular feature of my invention. The working-barrel may be anchored, or held down by means of tubing 5 secured to the bottom of barrel 1, and, if desired, tubing 6 may be extended upward from the working barrel to serve as additional weight or anchorage.

A flexible connection 7 may be attached at or approximate to the upper end of pipe 4 for the purpose of conducting oil to a receiving tank.

The necessity of withdrawing the working barrel from the well often arises, and for the purpose of supplying means for doing this, I place a collar 8, of special construction at the upper end of the working barrel, the opening in which collar is contracted so as to engage the cage 3 of the piston, when said piston is drawn upward, and prevent its withdrawal from said barrel. By this construction, the working barrel may be withdrawn from the well by means of the pipe or conduit 4. When the working barrel is to be withdrawn from the well, as aforesaid, it is desirable that the fluid should be drained from the pipe 4, and as a means for accomplishing this, I provide an automatic drain-valve 9, at the upper end of the piston, the construction of which is as follows: Within the upper portion of the chamber of the valve-cage 3, I place a sliding sleeve, 9 which is held normally in the position shown by means of the spiral spring 11, a pin 12 passes through said sleeve, and each end thereof projects through the slots 13 in the neck of said valve-case: When the piston is drawn upward, the projecting ends of pin 12 come in contact with the lower face of the annular projection 14 of the collar 8, which forces the sleeve downward and uncovers the holes 15, through which the fluid in pipe 4 readily escapes. Holes 15′ in the upper end of the working-barrel permit the escape of fluid therethrough to facilitate the drainage aforesaid.

The standing valve 16, at the lower end of the working barrel, is of the usual construction, the function and operation of which are well known to those familiar with oil pumping devices.

My piston is preferably of the ball type, and the ball 17, which occupies cage 3, prevents the regurgitation of the fluid.

The tubular rod 4 may be attached to any suitable means for operating the piston, but I have here shown a walking-beam 18, such as is often employed for this purpose.

What I claim and desire to secure by Letters Patent is:

1. In a deep-well pump, a working barrel located in proximity to the bottom of the well, means for anchoring said barrel, a standing valve located in said barrel at the bottom thereof, a piston in said barrel adapted to the upward passage of oil therethrough,

means in said piston preventing the regurgitation of said oil, a tubular rod attached to said piston adapted to the purpose of operating the same and also as means for conducting oil from said working barrel to the surface of the ground, and a drain-valve positioned above said piston and adapted to automatically drain said tubular rod when the same is being withdrawn from the well.

2. In a deep-well pump, a working barrel adapted to be positioned in proximity to the bottom of the well, a check-valve located in the lower portion of said barrel, in combination with a piston consisting of a tubular stem having a plurality of oppositely-faced packing-cups secured thereon, an enlarged, imperforate valve-chamber positioned at the upper end of said tubular stem, a check-valve in said chamber, means for conducting fluid from said chamber to the surface of the ground, said fluid-conducting means being also adapted as operating means for said piston, and means positioned above said chamber adapted to automatically drain said fluid-conducting means when the same is withdrawn from the well.

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

BYRON DEWOODY.

Witnesses:

GILSON SHAFFER,

E. R. INMAN.