

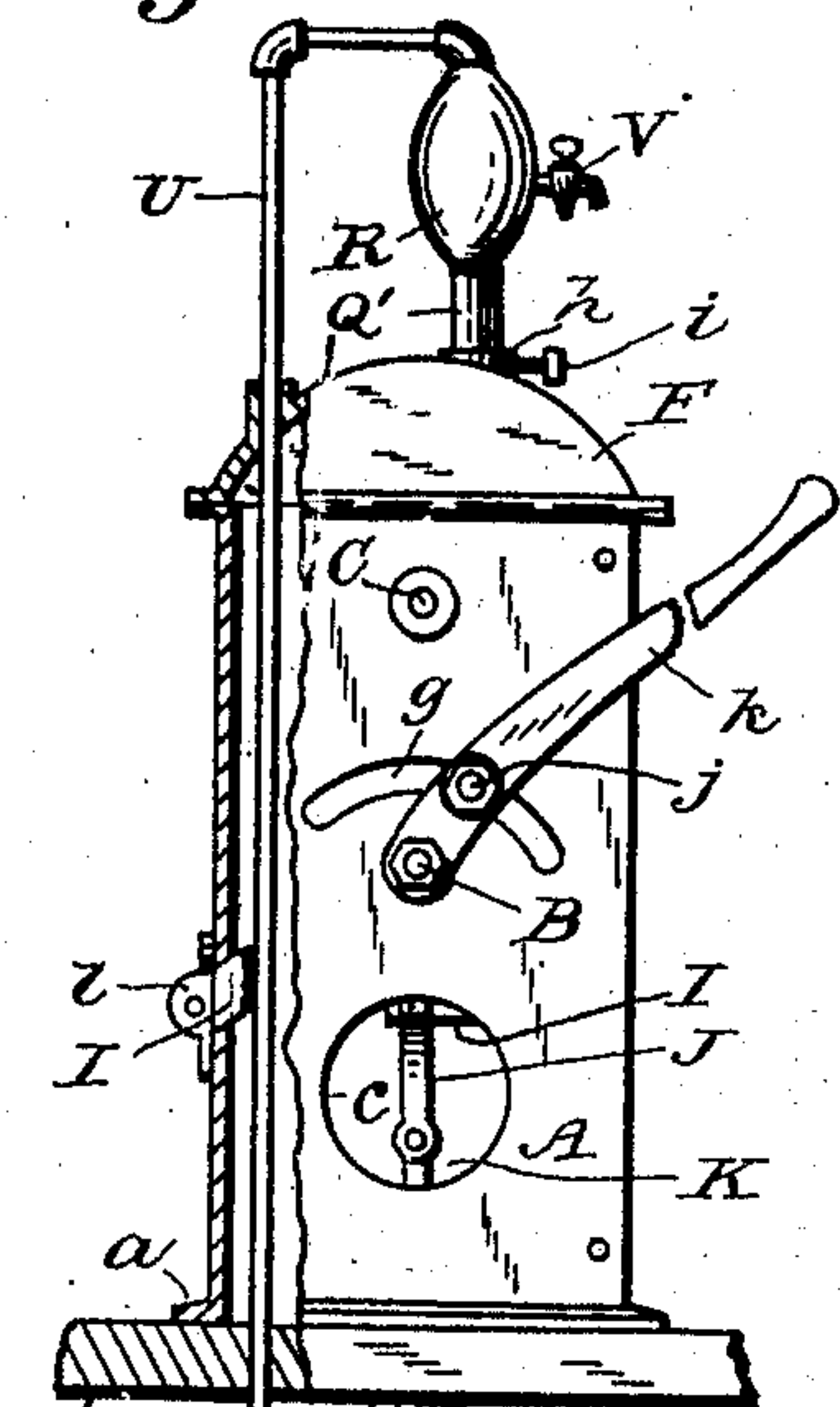
PUMP.

Patented June 6, 1911.

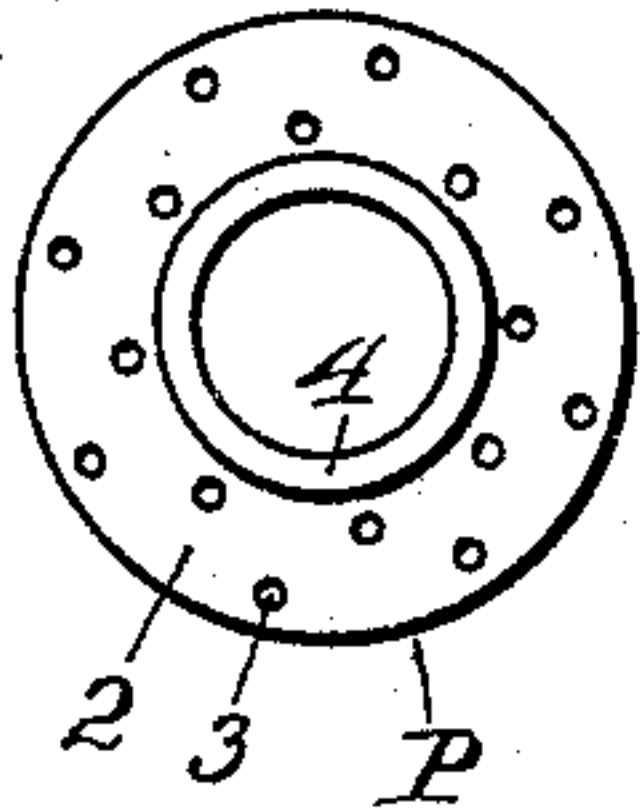
2 SHEETS—SHEET 1.

**994,368.**

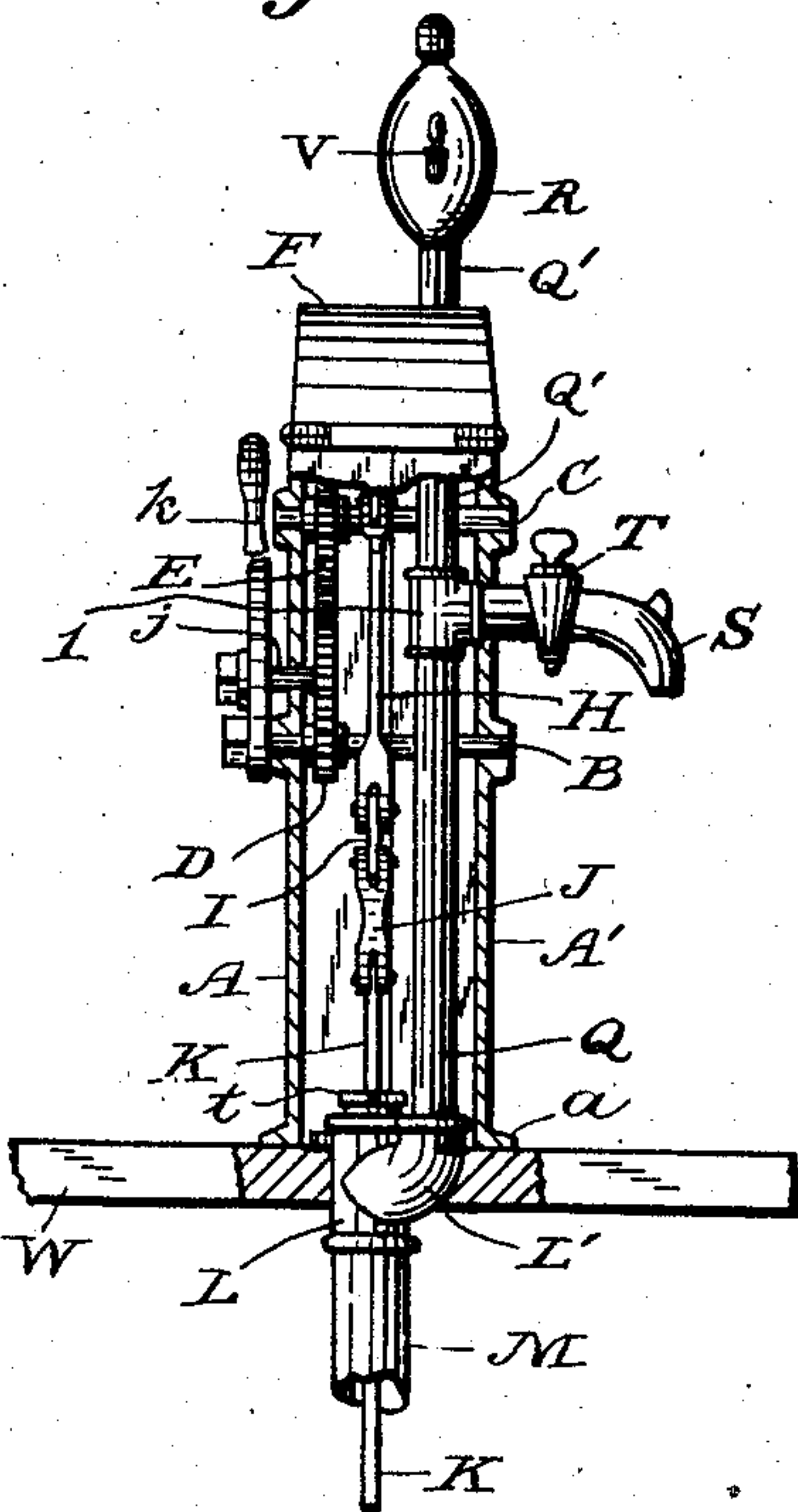
*Fig. 1.*



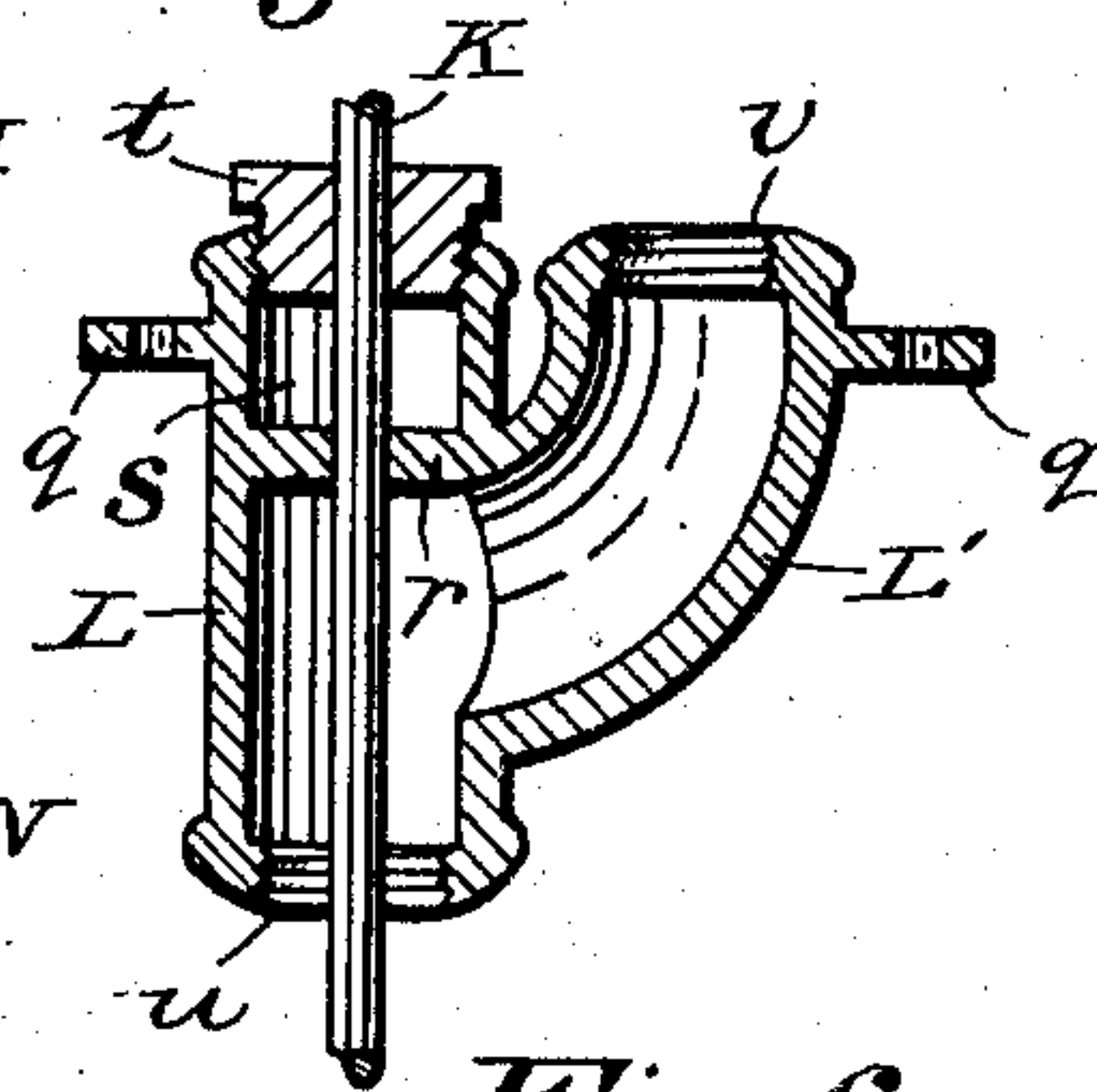
*Fig. 3.*



*Fig. 2.*



*Fig. 4.*



*Fig. 6.*

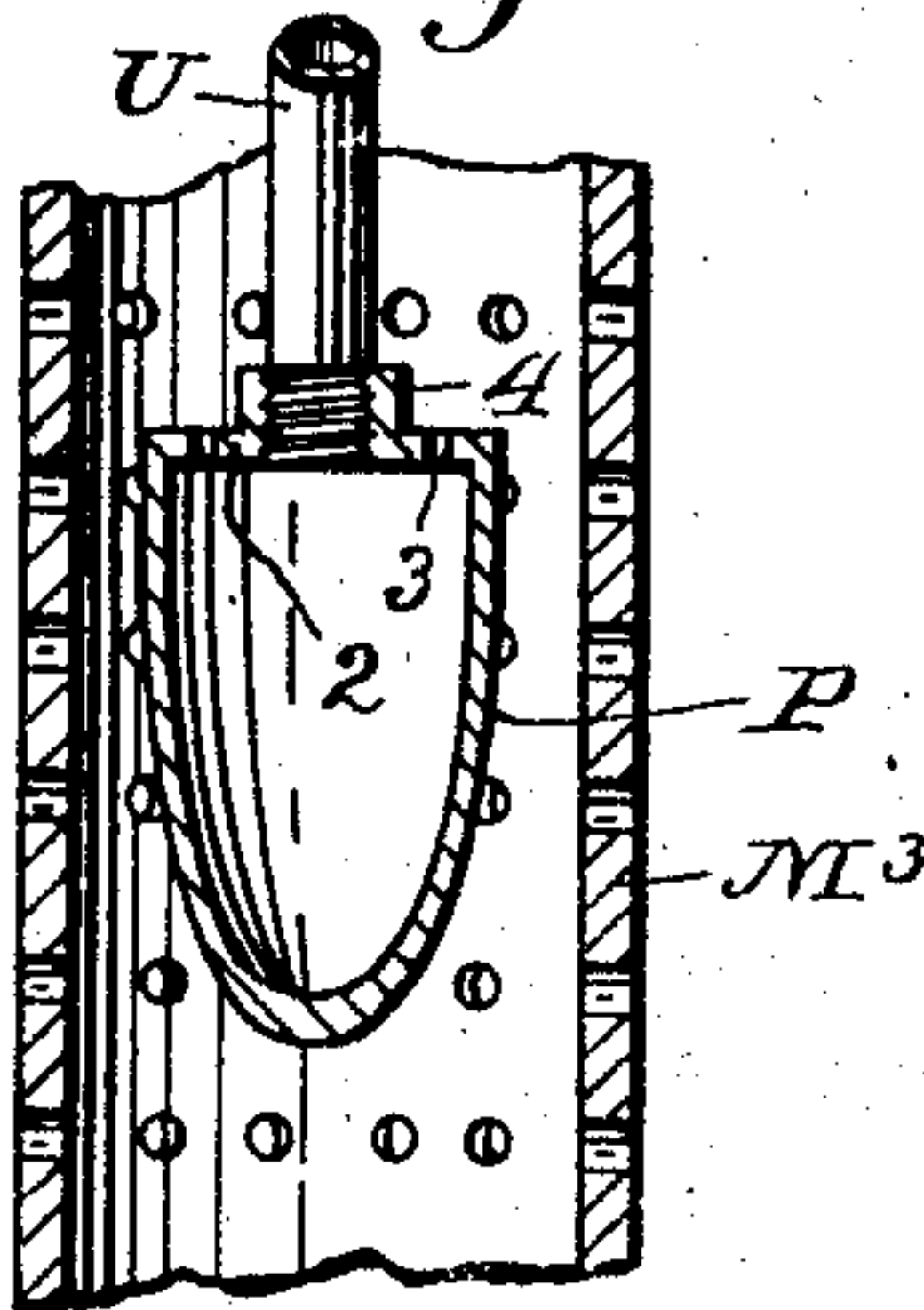
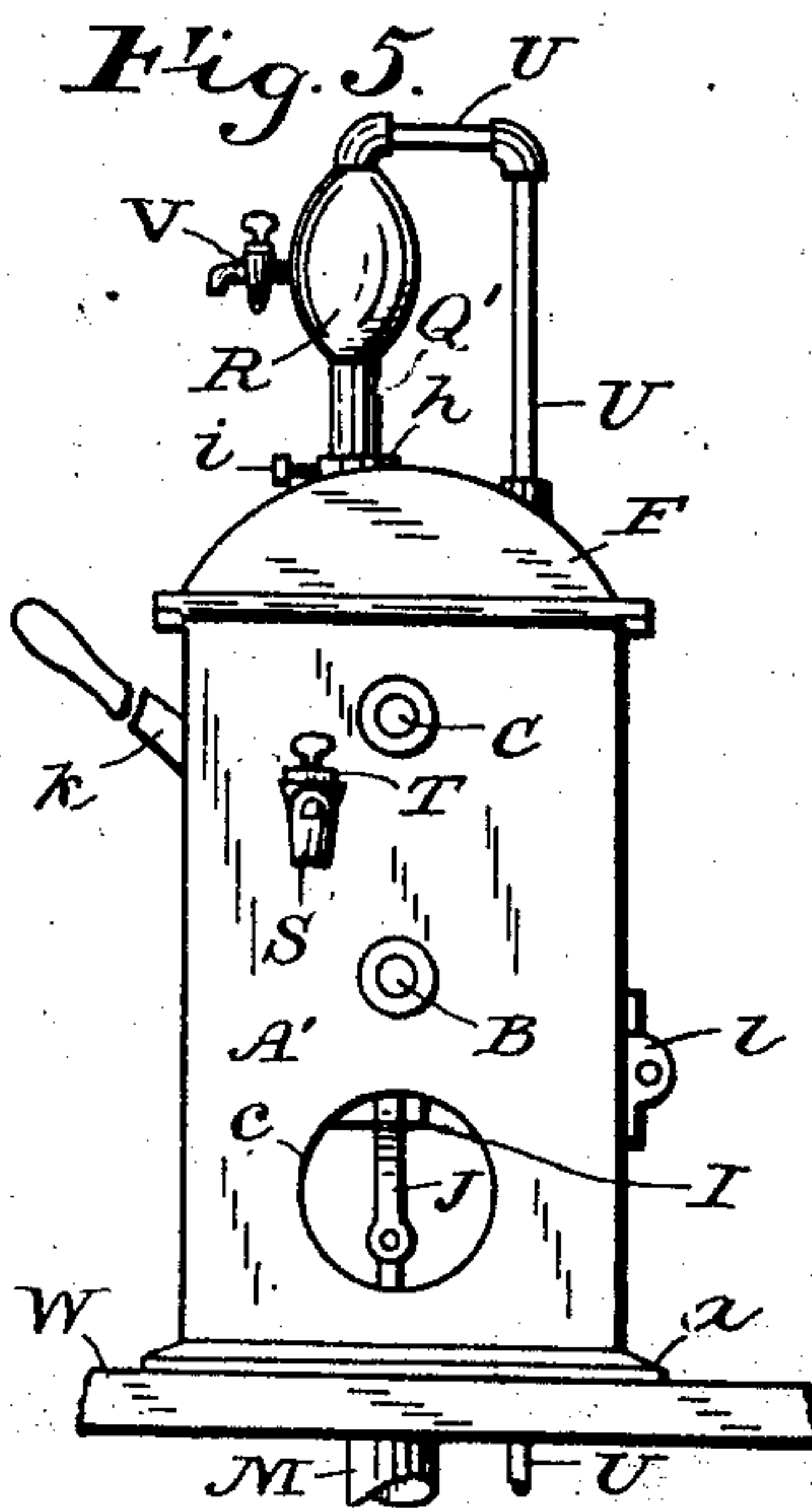


Fig. 5. <sup>v</sup>



*WITNESSES:*

Stella Snider.  
Row W. Vorhies

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'PUMP.

APPLICATION FILED JAN. 4, 1909.

Patented June 6, 1911.

2 SHEETS—SHEET 2.

994,368.

Fig. 7.

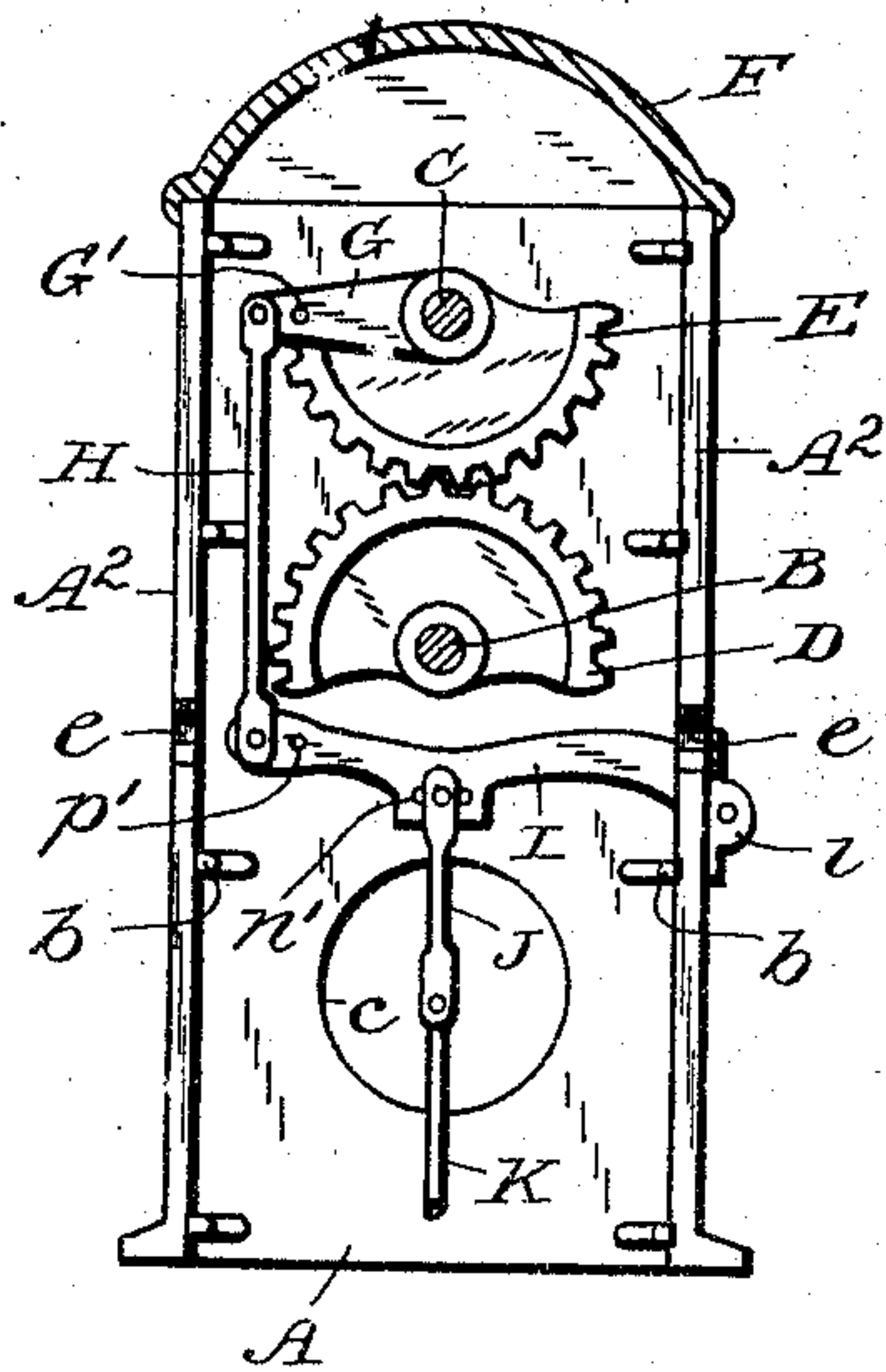


Fig. 8.

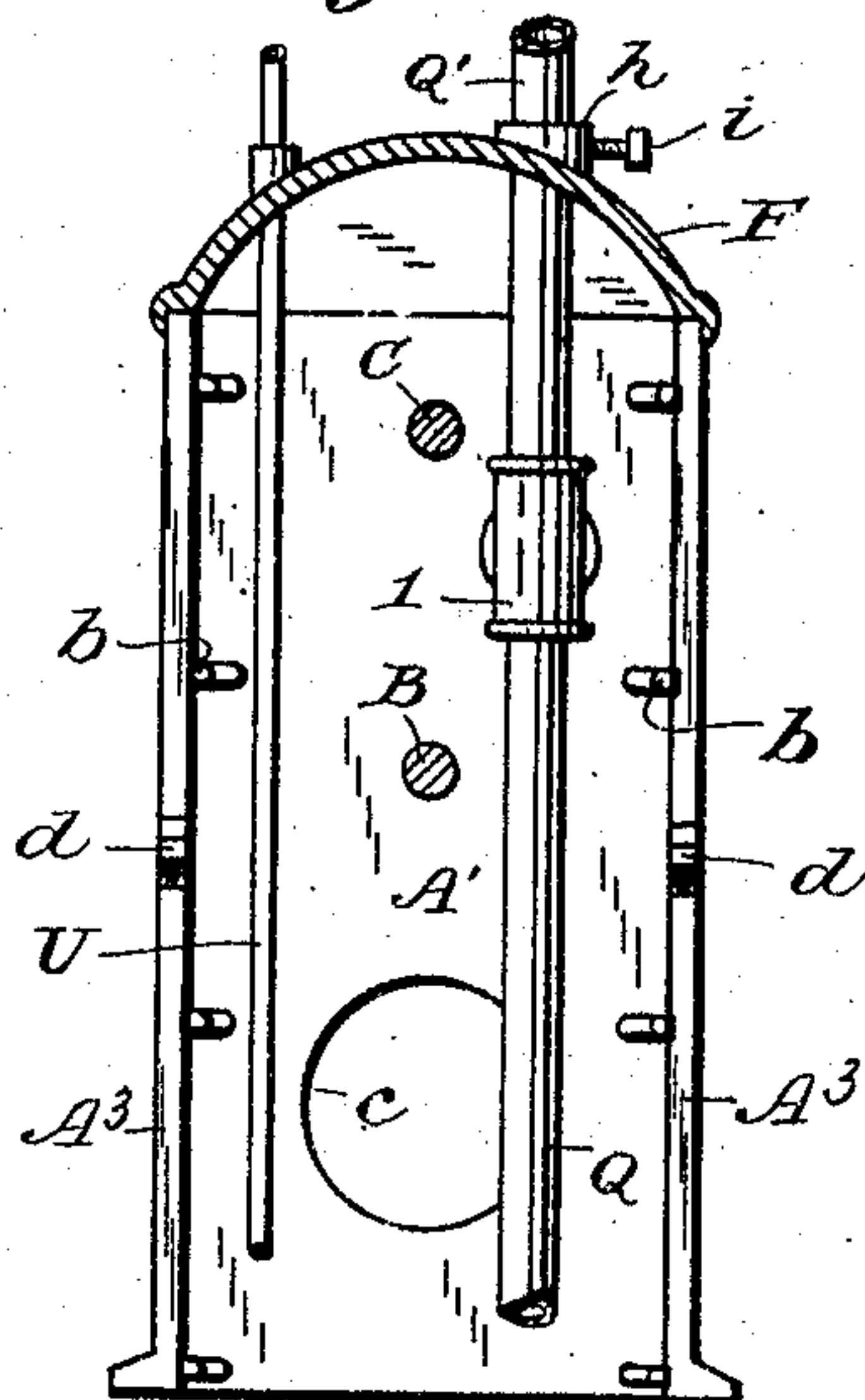


Fig. 9.

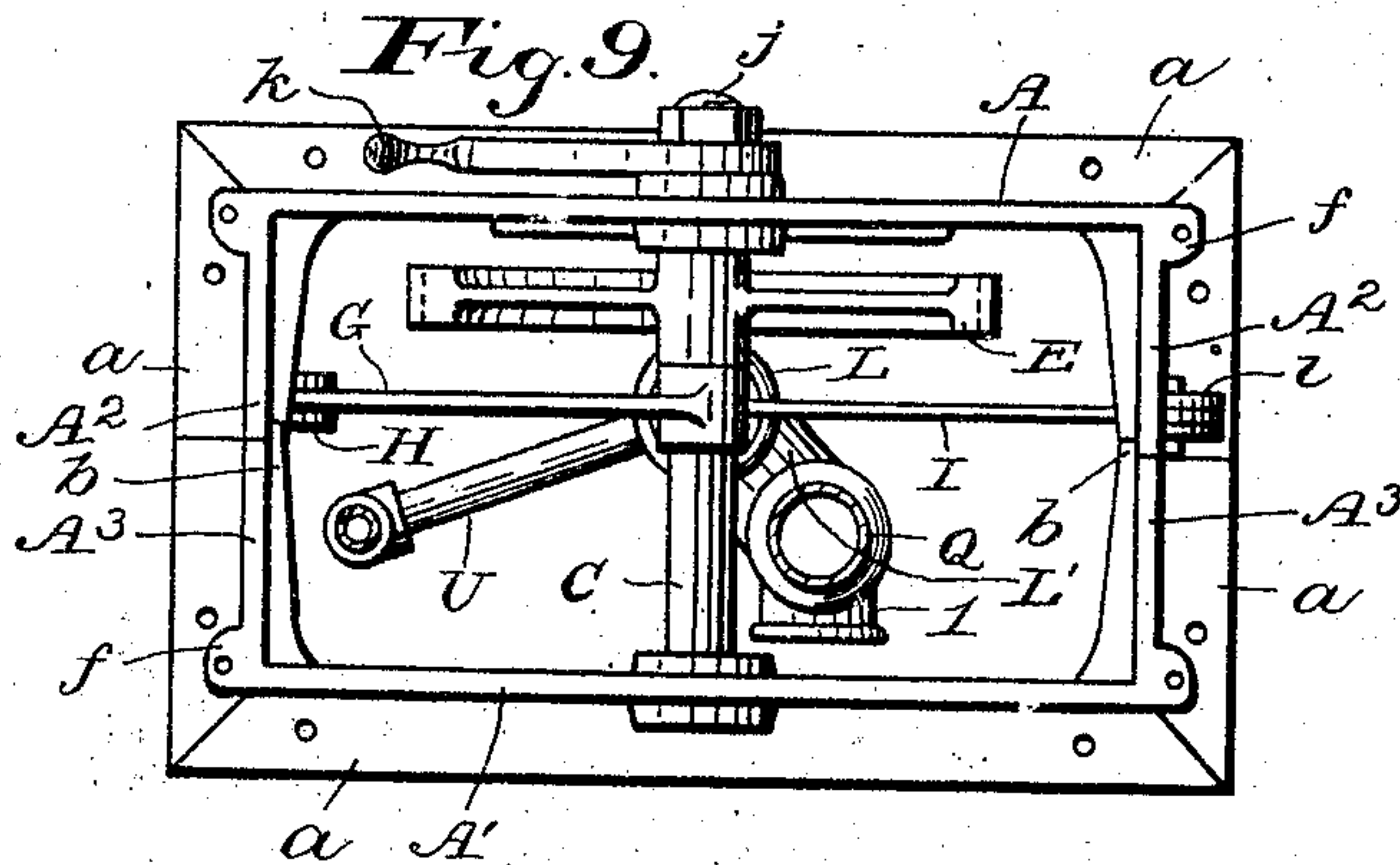


Fig. 11.

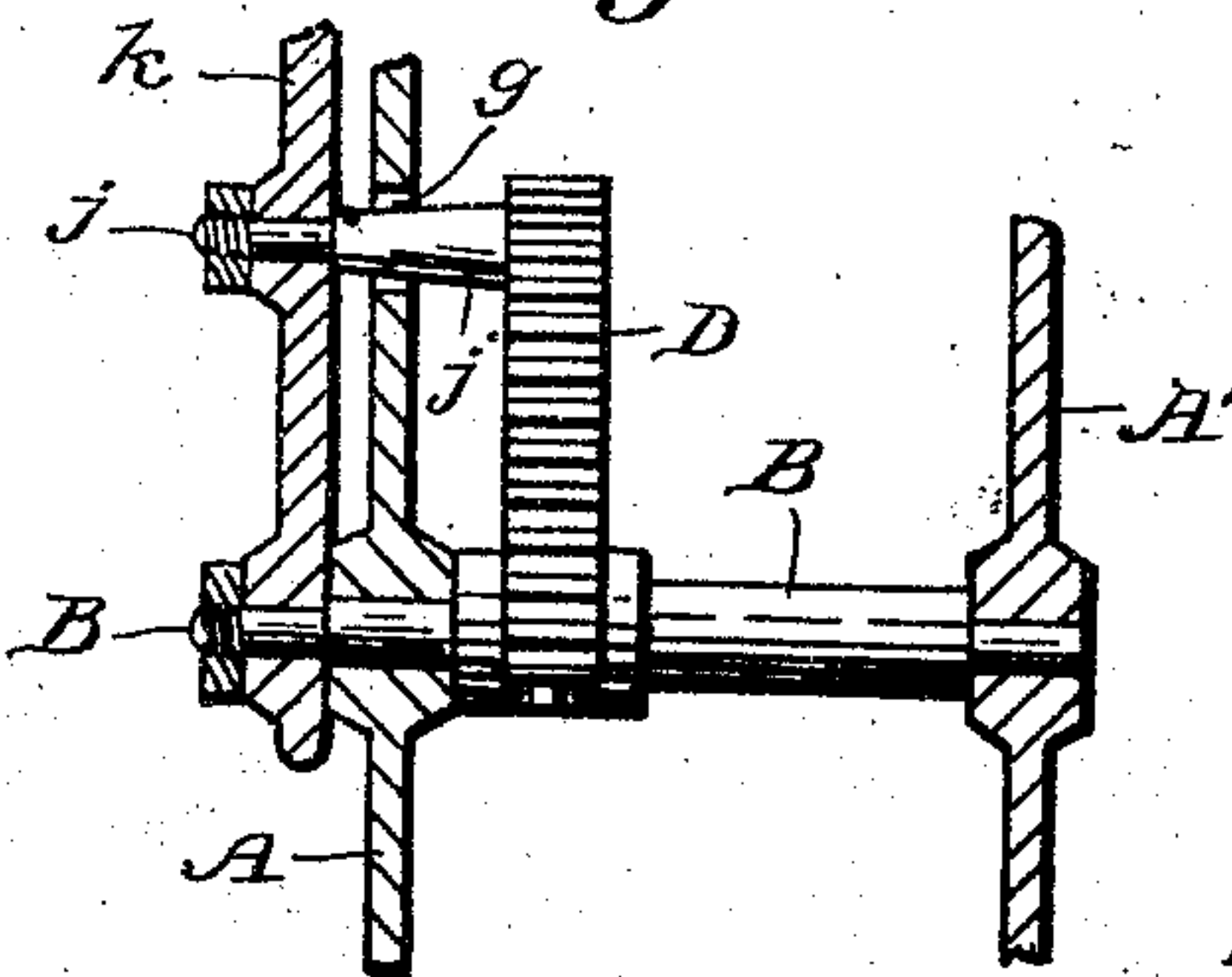
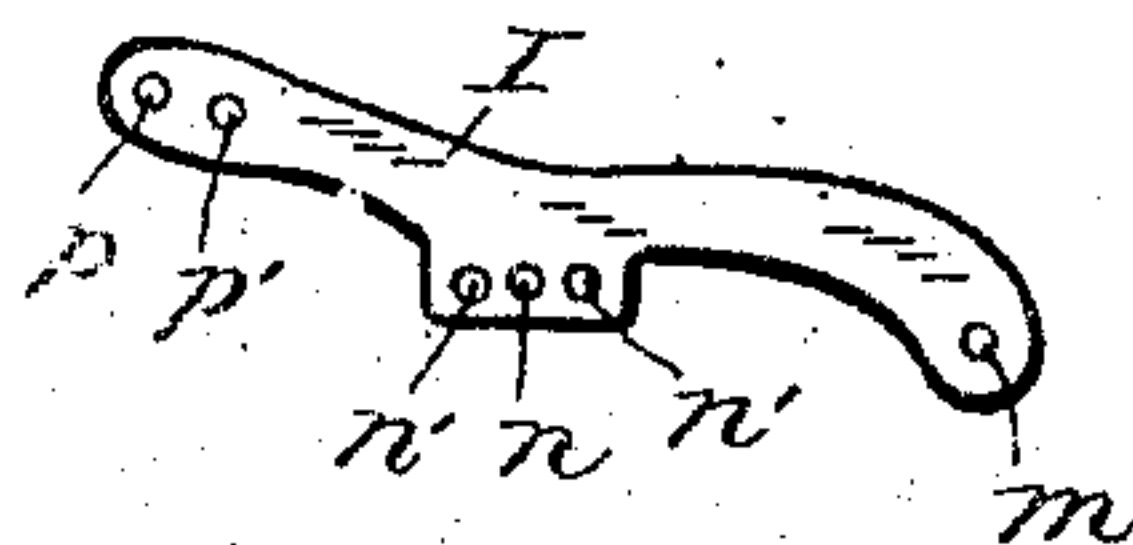


Fig. 10.



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# UNITED STATES PATENT OFFICE.

WILLIAM H. BENNETT, OF INDIANAPOLIS, INDIANA.

## PUMP.

994,368.

Specification of Letters Patent.

Patented June 6, 1911.

Application filed January 4, 1909. Serial No. 470,571.

*To all whom it may concern:*

Be it known that I, WILLIAM H. BENNETT, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Pumps; and I do declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to pumps for deep wells, and has reference more particularly to hand pumps for raising water; the object of the invention being to provide a pump that may be operated easily and steadily, without jerking and pounding, and which may be cheaply constructed and be durable and economical in use.

The invention consists in the application of an air-pipe connected substantially to the discharge pipe and also with the interior of the lower end of the suction-pipe in the water-basin of the earth; in the combination and arrangement of the air-pipe (the "air-pipe" being a duct for the passage of air); and also in the new and useful combination of parts, as hereinafter particularly described and claimed.

Referring to the drawings, Figure 1 is a side elevation view of the pump frame, a portion of which is broken away, and the well tube or suction-pipe, pump cylinder, pump-barrel, and the air-pipe, the lower end of the well tube and point being in section, exposing the air-pipe therein; Fig. 2, a transverse vertical sectional view of the pump frame, the upper portion being an outside view, the operating mechanism and discharge pipe being exposed in the frame; Fig. 3, a top plan view of the air-head usually employed at the lower end of the air-pipe; Fig. 4, a vertical central sectional view of a pipe fitting and packing-box used at the upper end of the pump-barrel; Fig. 5, a side elevation of the pump frame and parts connected therewith, being the side opposite to that shown in Fig. 1; Fig. 6, a central vertical sectional view of the lower end of the well-tube or suction-pipe and also of the air-head; Figs. 7 and 8, interior elevation views of the pump frame, showing sides of parts arranged therein, the frame being seen at the natural parting line thereof, which is central, the cap being in

section; Fig. 9, a top plan view of the pump frame and the mechanism therein, and also other parts connected therewith; Fig. 10, a side view of an intermediate lever usually employed; and Fig. 11, a fragmentary detail view, showing the means whereby the operating lever is connected with the operating mechanism.

Similar reference characters in the several figures of the drawings indicate corresponding parts or features herein referred to.

In construction, the pump frame comprises also an inclosing case for most of the operating parts, and consists of upright sides A and A', having end parts A<sup>2</sup> A<sup>3</sup> extending therefrom to the vertical center plane of frame, the frame body being thus composed of two similar castings, each having a base flange a adapted to be secured to a platform. The frame end parts have lugs b adapted to engage opposite parts of the ends, and also tongues d adapted to engage grooves e in the opposite parts; all for use in matching the two parts when bolting them together. The top of the frame preferably has ears f. The sides A A' usually have apertures c therein.

Suitable rocking shafts B and C are journaled one below the other in the sides A A', the lower shaft B having a toothed segment D attached thereto, and the upper shaft C having a toothed segment E attached thereto and in engagement with the segment D, the segments being portions of gear wheels, either of the same diameter, or of different diameters, as may be desired. The segment D is situated on its shaft near the side A in which is a curved opening g.

The pump frame has a removable cap F covering the internal mechanism, and having suitable perforations through which the pipes may extend, a flange h extending about the larger perforation and having a set-screw i fitted therein.

In order to provide strong connections whereby to apply the power to the pump, the segment D is provided with a stud j that extends through the opening g, and the shaft B also extending through the side A, the lever k is attached to both the shaft B and the stud j and suitably secured thereto. The lever k may be adapted for hand use, of suitable length; and, obviously it may be adapted to be connected with any power machine, if desired.



The shaft C is provided with a rocking-arm G, which at midstroke extends horizontally from the shaft, and a connecting-rod H is pivoted to the arm, the latter having  
 5 one or more pivot-holes G' therein, a second or third hole being used for varying the stroke and the leverage.

A bracket l is attached to the pump frame at one end thereof, preferably outside the  
 10 frame, and to the bracket an intermediate lever I is pivoted at one end thereof having a pin-hole m, a suitable aperture being provided in the frame if the bracket be placed outside thereof, through which the lever  
 15 may extend. The lever I has a pivot hole p to which the rod H is connected, and it may also have an additional hole p' for the same purpose, for also varying the stroke and the leverage applied to the pump-rod  
 20 (or piston-rod) coupler J, which is pivoted to the lever I and also to the pump-rod K. When the pump frame is suitably adjusted relatively to the suction-pipe or well-tube, if it be desired, the rod H may be connected  
 25 directly to the rod K, and the lever I and the coupler J dispensed with. The lever I preferably has a plurality of pivot holes, as n and n' also for varying the stroke and the leverage for the pump piston.

30 At the lower portion of the pump frame a combination pipe fitting is situated, which comprises an offset pipe coupling and a packing box for the pump-rod K. The fitting consists of a body part L and a branch L',  
 35 each preferably having an ear g whereby to fasten the fitting to a platform or timber. In the body part L above the branch is a perforate partition r, above which is a packing-box s fitted with a packing nut t, the  
 40 partition and the nut being adapted to permit the pump-rod to work therethrough. The lower end u of the fitting is attached to the pump-barrel M which is attached to the cylinder N of suitable type having the  
 45 usual piston therein attached to the rod K. The pump-barrel M is practically part of the discharge-pipe, although usually of some length in the ground when the cylinder is placed below the freezing line in the ground.

50 A pipe tee O is connected to the well tube or suction-pipe M<sup>2</sup> proper below the cylinder N, by a suction-pipe or nipple M', the well tube or suction-pipe M<sup>2</sup> extending down below the water line  $\infty$  in the ground, and  
 55 usually having a perforated and screened end portion M<sup>3</sup> and point y; or, if the point to be omitted and the lower end portion be imperforate, it may have a foot-valve, as will be understood, an outer tube or casing  
 60 being employed in such case. A suitable air-head P is usually employed in the bottom of the suction-pipe or well-tube, as will be further explained hereinafter.

65 A discharge-pipe Q is attached to the top v of the branch L', and extends up in the

pump frame. A tee 1 is attached to the pipe Q, and an air-pipe Q' is mounted on the tee and extends up through the cap F, and is preferably provided with an air-chamber R. A spout S is attached to the  
 70 side of the tee 1, extending through a suitable aperture in the side A', and is preferably provided with a stop-cock T.

The air-pipe U is connected to the top of the chamber R (or with the pipe Q') and  
 75 extends down through the cap F and the pump frame, and to and through the side branch w of the tee O, and thence down in the suction-pipe or well tube M<sup>2</sup> to a suitable depth below the surface of the water basin  
 80 in the ground, and is attached to the air-head P when such is employed, as is preferable. The connection with the branch w is air-tight. Usually an air-cock V is attached to the chamber R. A platform W is  
 85 employed upon which to set the pump frame.

The air-head P is preferably oval or egg-shape at the body and lower portions thereof, and has a flat top 2 having perforations  
 3, and also a central aperture having a flange  
 4 by which it is attached to the air-pipe U.

In practical use, the lever k is moved up or down to operate the shaft B, it being designed in the present case that the lever  
 95 should stand nearly vertical when the rod K is at the lower end of its stroke, so that it may not be an obstruction. When the lever is drawn down to a position about the horizontal, the water will be raised. In the  
 100 operation of the lever k, the air that may be above the well water, both above and below the valve in the cylinder N, will rise into the air pipe and chamber and pass through the air-pipe U to the bottom of the well, or perhaps nearly so. In some cases it  
 105 may be desirable to close the cock T or partly so, when starting the pump to work; and at times it may be of advantage to open the cock V either to admit air or to allow  
 110 some air to escape, all of which may be better determined in practice. Should the water stand somewhat high in the pipe U, the air pressure upon it will force the water out at the air-head into and consequently  
 115 up the well tube or suction-pipe with the aid of the piston in the cylinder N. At times, the water will rise and fall intermittently in the pipe U in operation, the air sometimes passing out of the air-head P and  
 120 by its pressure (even though but atmospheric) aid in lifting the water, and of course rising with the water to be again returned, or to pass out of the spout with the water. In case the suction-pipe has a foot  
 125 valve above the lower end of a perforated casing, the air ascending through the perforations 3 will directly assist in raising the foot valve to admit the water into the suction-pipe. By the use of this pump, water  
 130 may be drawn from a greater depth more



easily than is possible by the use of such pumps as have heretofore been produced.

Having thus described my invention, what I claim as new, is—

1. In a pump, the combination of a vertical suction-pipe, a pipe-tee connected to the suction-pipe, a nipple extending into the side of the pipe-tee and secured thereto, an air-pipe connected to the inner end of the nipple and extending downward in the suction-pipe, a pumping cylinder connected with the suction-pipe, a discharge-pipe connected with the cylinder, a spout connected to the discharge-pipe, and an air-pipe connected to the nipple and also with the discharge-pipe above the spout.

2. In a pump, the combination of a vertical suction-pipe, a pipe-tee connected to the suction-pipe, a nipple extending into the side of the pipe-tee and secured thereto, an air-pipe connected to the inner end of the nipple and extending downward in the suction-pipe, a hollow air-head on the lower end of the air-pipe and having apertures in a portion thereof, a pumping cylinder connected with the suction-pipe, a discharge-pipe connected with the cylinder, a spout connected to the discharge-pipe, and an air-pipe connected to the nipple and also with the discharge-pipe.

3. In a pump, the combination of a vertical suction-pipe with an apertured lower end portion, a pipe-tee connected to the suction-pipe, a nipple extending into the side of the pipe-tee and secured thereto, an air-pipe connected to the inner end of the nipple and extending in the suction-pipe to the lower end portion thereof, a hollow air-head on the lower end of the air-pipe and having apertures in the upper portion thereof, a pumping cylinder connected with the suction-pipe, a discharge-pipe connected with the cylinder, a spout connected to the discharge-pipe, an air-chamber connected with the discharge-pipe above the spout, and an air-pipe connected to the nipple and also with the air-chamber.

4. In a pump, the combination of a vertical suction-pipe with an apertured lower end portion, a pumping cylinder connected with the upper portion of the suction-pipe,

a pump-barrel connected to the cylinder, a combination fitting attached to the top of the pump-barrel and having a side branch and also a packing-box in the top thereof, a piston-rod extending from the cylinder through the pump-barrel and the packing-box, a discharge-pipe connected to the side branch, a spout connected to the discharge-pipe, an air-chamber connected with the discharge-pipe, an air-cock connected to the air-chamber, and an air-pipe connected to the air-chamber and extending downward past the pump-barrel and the cylinder and into the suction-pipe below the cylinder, thence downward in the suction-pipe to the lower end portion thereof.

5. In a pump, the combination of a suction-pipe with an apertured lower end portion, a pipe-tee connected to the upper portion of the suction-pipe, a nipple extending into the side of the pipe-tee and secured thereto, an air-pipe connected to the inner end of the nipple and extending in the suction-pipe to the lower end portion thereof, a hollow air-head on the lower end of the air-pipe and having apertures in the upper portion thereof, a suction-pipe section connected to the top of the pipe-tee, a pumping cylinder connected to the suction-pipe section, a pump-barrel connected to the cylinder, a combination fitting attached to the top of the pump-barrel and having a side branch and also a packing-box in the top thereof, a piston-rod extending from the cylinder through the pump-barrel and the packing-box, a discharge-pipe connected to the side branch, a spout connected to the discharge-pipe, a stop-cock connected to the spout, an air-pipe section connected with the discharge-pipe, an air-chamber connected to the air-pipe section, an air-cock connected to the air-chamber, and an air-pipe section connected to the nipple and also to the air-chamber.

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

WILLIAM H. BENNETT.

Witnesses:

HARRY D. PIERSON,  
E. T. SILVIUS.