

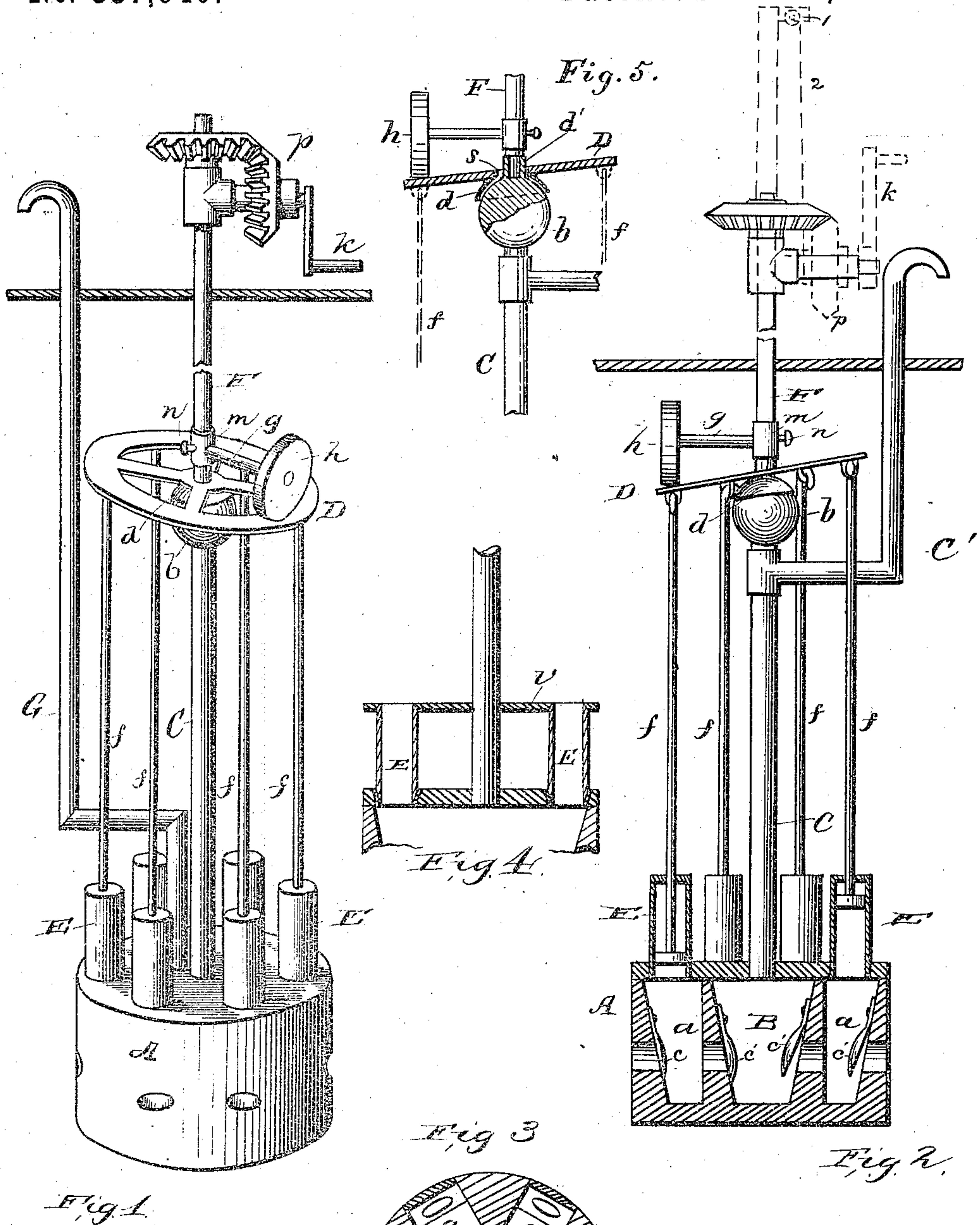
(No Model.)

W. P. ANDREWS.

PUMP.

No. 337,040.

Patented Mar. 2, 1886.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM P. ANDREWS, OF DANA, INDIANA.

PUMP.

SPECIFICATION forming part of Letters Patent No. 337,040, dated March 2, 1886.

Application filed September 26, 1885. Serial No. 178,265. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. ANDREWS, a citizen of the United States, residing at Dana, in the county of Vermillion and State of Indiana, have invented new and useful Improvements in Pumps, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to the class of pumps having two or more pistons working in separate cylinders; and the invention consists in an improved construction adapted to be operated, as hereinafter fully set forth and claimed.

In the drawings referred to, Figure 1 is a perspective view of a force-pump having a number of pistons and cylinders provided with my improvements. Fig. 2 is a vertical section showing a hollow shaft forming a water-pipe. Fig. 3 represents a horizontal section of the valve-box. Fig. 4 is a vertical section showing a modification in the construction of the pump-cylinders. Fig. 5 is a vertical section of tilting platform and other details.

A designates a circular valve-box having a central water-chamber, B, around which are arranged a number of compartments or water-passages, *a*, through which water passes from the outside to the central chamber. Each of the passages *a* is provided with two valves *c*, the valve *c* being placed at the outer end and the valve *c'* at the inner end of the passage, as shown.

C indicates a fixed vertical shaft extending upward from the center of box A, and provided with or having formed on its upper extremity a ball, *b*. The upper central portion of the ball is provided with a projection, *d'*, having a socket to receive and form the bearing of the lower end of the rotative shaft F. The projection *d'* extends through the central opening in and forms lateral bearing for the tilting platform, as shown in Fig. 5 of the drawings.

D is a tilting platform which is mounted on the ball *b*, and is provided with a collar, *d*, on its lower side, which fits over the ball and allows the peculiar rocking motion of the platform, as hereinafter stated. To the platform D and at its periphery are secured the upper ends of a number of piston-rods, *f*, each rod extending downward into a cylinder, E, which is fixed in the top of the valve-box A, directly

over and communicating with one of the compartments or water-passages *a*.

F is a vertical rotative shaft above and on the same line with fixed shaft C, and stepped in the socketed projection *d'* on the ball *b*, the platform D, which rests on the ball, having a central aperture to receive the projection *d'*. Near the lower end of said shaft, extending at right angles therefrom and adjustably fastened thereto, is an arm, *g*, at the outer end of which is journaled a heavy wheel, *h*, so held in position that it bears on the platform D near its periphery, and as the shaft F is rotated the wheel *h* is caused to travel around along the periphery of platform D, pressing its periphery downward below the level of the central portion of the wheel which rests on the ball *b*, and as the periphery of the platform D is pressed downward at one part, the opposite part is correspondingly raised. This rocking motion of the wheel imparts the requisite movements to the plungers in the cylinders E, the plunger-rods being connected with the tilting platform, as before stated, and as the several pistons are thus successively operated the water is drawn through the passages *a* to the central chamber, B, and forced upward through a pipe, G, leading from the chamber upward, terminating in position to discharge the water as desired. The arm *g* is preferably attached to the shaft F by means of a sleeve, *m*, and a set-screw, *n*, which allows its adjustment upward or downward on the shaft to regulate the stroke of the pistons.

The means for rotating shaft F and operating the pump mechanism may be a crank, *k*, and bevel gear-wheels *p*, as shown in Fig. 1, or the pump may be driven by power from a wind-wheel, the device described being well adapted for operation with a wind-wheel for a motor, the stock or vertical shaft of the wheel extending from the upper end of shaft F and being keyed thereto.

When the fixed shaft C is made hollow and serves as a water-pipe, as shown in Fig. 2, another pipe C' is connected with the shaft-pipe C just below the ball *b*, and is extended upward and is connected with or forms the discharge spout.

The cylinders E may be made of wood, glass, or any suitable material. If made of glass, they are to be set in sockets lined with

rubber and fastened down with a cap-piece,
v. (See Fig. 4.)

The tilting platform is placed in the well at the water-level, where the platform and all its operating mechanism are under the platform of the well and protected from the weather, and the valve-box with its cylinders, water-chamber, and valve is at or near the bottom of the well, so that the water-passages *a* are constantly filled by the pressure of the water.

This pump, constructed as set forth, has great advantages in its durability and ease of operation. It discharges water in a steady continuous stream, and is especially adapted for deep wells and cold climates. The construction is also well adapted for the employment of a wind-wheel for driving power, the vertical shaft *F* being extended by an additional shaft, on which the wind-wheel is mounted, such shaft being easily raised to its position by a simple apparatus indicated in dotted lines in Fig. 2—namely, a pulley, 1, over which is passed a rope, 2, one end of which is attached to the axle of the vertical bevel-gear *p*, said wheel being removed, the other end of the rope being attached to a section of pipe which is connected with the wind-wheel shaft. The crank *k* is turned, winding the rope and raising the shaft to a vertical position, when it may be adjusted in connection with shaft *F*. The shaft being tubular and made in sections, the operation is repeated for each section added.

What I claim as new is—

1. The combination of the fixed shaft *C*, having the ball *b*, provided with the socket projection *d'*, the tilting platform *D*, having a central opening to receive the socket projection, and having the collar *d*, adapted to fit over the ball, the rotative shaft *F*, stepped in the socket projection *d'*, the arm *g*, adjustably attached to the rotative shaft, the wheel *h*, carried by the adjustable arm, and the piston-rods *f*, at-

tached to the tilting platform, substantially as and for the purposes described.

2. The combination of the valve-box *A*, located at or near the bottom of the well and provided with the central water-chamber, *B*, water-passages *a*, having valves *c c'* and cylinders *E*, connected with the water-passages, the fixed hollow shaft *C*, adapted to form a water-pipe connected at the lower end with the water-chamber and provided at its upper portion with the branch pipe *C'* and the ball *b*, having the socket projection *d'*, the tilting platform *D*, located at the water-level in the well and having the central opening to receive the projection *d'*, and provided with the downwardly-extended collar *d*, adapted to fit over the ball, the piston-rods *f*, connected with the tilting platform, and means, as set forth, for imparting rocking motion to the tilting platform, substantially as and for the purposes described.

3. The combination of the valve-box *A*, located at or near the bottom of the well and provided with the central water-chamber, *B*, water-passages *a*, having valves *c c'* and the cylinders *E*, connected with the water-passages, the fixed shaft *C*, provided with the ball *b*, having the socketed projection *d'*, the tilting platform *D*, located in the well and having the central opening to receive the projection *d'*, and provided with the downwardly-extended collar *d*, adapted to fit over the ball, the pistons connected with the platform *D*, the water-pipe *G*, connected with the central water-chamber, *B*, and extended upward out of the well, and means, as set forth, for imparting rocking motion to the tilting platform, substantially as and for the purposes described.

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

WILLIAM P. ANDREWS.

Witnesses:

STEWART WISHARD,
LESLIE ANDREWS.