

E. F. ANDREWS.

SAND-PUMP.

No. 174,180.

Patented Feb. 29, 1876.

Fig. 1.

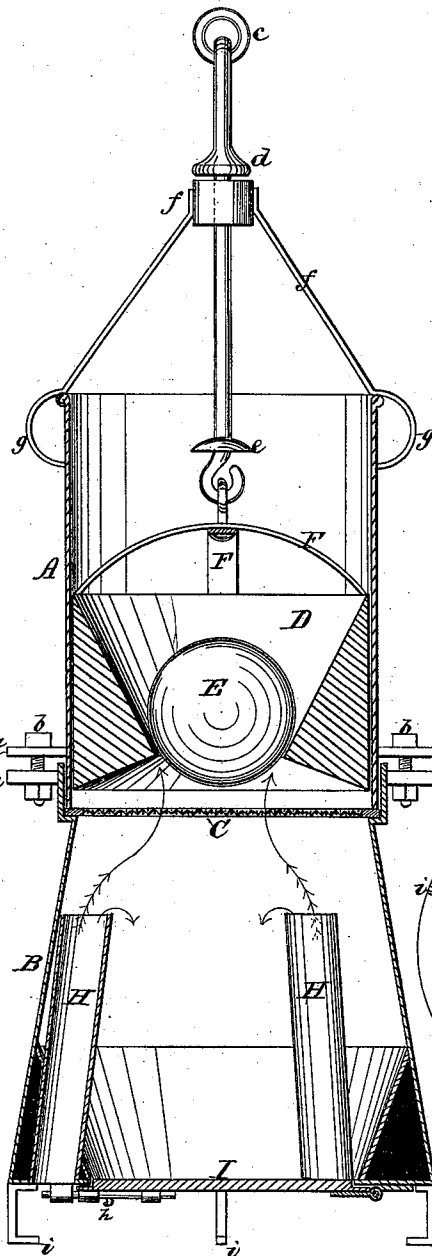


Fig. 3.

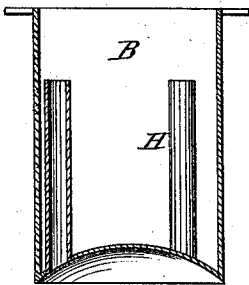
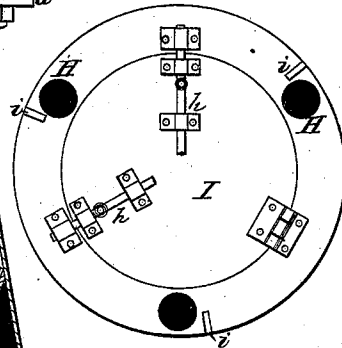


Fig. 2.



WITNESSES:

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EDWARD F. ANDREWS, OF AUGUSTA, GEORGIA.

IMPROVEMENT IN SAND-PUMPS.

Specification forming part of Letters Patent No. **174,180**, dated February 29, 1876; application filed February 2, 1876.

To all whom it may concern:

Be it known that I, EDWARD FRANK ANDREWS, of Augusta, in the county of Richmond and State of Georgia, have invented a new and Improved Portable Sand and Mud Pump; and I do hereby declare that the following is a full, clear, and exact description of the same.

Many wells, particularly those known as "bored wells," are liable to occasionally become partially filled with sand, mud, or other foreign substances or impurities.

The object of my invention is to provide an improved pump for removal of the same, without at the same time removing the water from the well. To this end I adopt the construction and arrangement of parts hereinafter described and claimed.

In the accompanying drawing, Figure 1 is a sectional elevation of my improved pump; Fig. 2, a plan view of the bottom thereof. Fig. 3 is a sectional elevation of a sand-chamber of modified construction.

The barrel of the pump is formed of two parts—the piston-chamber A, and sand and mud chamber B—which are connected by flanges *a* and screws *b*. A cloth or wire-gauze strainer, C, is clamped and confined between the parts A B, the same forming the top of the latter B, as shown. The centrally-apertured piston D is provided with a ball-valve, E, which is inclosed by a wire guard, F, but has entire freedom of movement within the same, so as to alternately open and close the opening in the piston, as the piston reciprocates. The plunger or piston-rod is provided with a ring, *c*, for attachment of a chain or cord, and with suitable stops *d e* for limiting the play of the rod in guide *f*. Lugs *g* are attached exteriorly to the top of the piston-chamber or case A, to act as guides and fenders while the pump is being raised and lowered in the well.

In order to loosen or stir up the sediment in the well, I attach claws or prongs *i* to the base of chamber B, as shown. A series of open-ended tubes, H, three or more in num-

ber, are arranged within the sand and mud chamber B, the same being set vertical in the circular rim or base of the chamber, and being in length about two-thirds the height of the chamber. The bottom of the chamber is closed by a hinged bottom, I, secured by slide-bolts *h*.

It is evident that when the pump is lowered into a well containing sand, mud, and other solid foreign matter of such a nature as enables it to pass up the tubes H, and the piston is then raised, the vacuum thus created will cause the sand or mud, &c., to be taken up and enter the tubes H along with the water. The sand or mud will be arrested by the strainer, and thus be deposited in the chamber B, while the water will raise the ball-valve, and pass through the piston upon its descent.

This operation may be continued until the chamber B has become filled with sand or mud, when the pump will be drawn out of the well, and the contents discharged by opening the hinged bottom.

The arrangement of the tubes in a circle leaves the middle portion of the chamber free, and allows space for the application of the hinged bottom. The sand or other sediment received into the chamber is also more readily discharged from the chamber than would be the case if a single large tube were arranged in the center of the chamber.

The water which passes through the strainer is forced out of the top of chamber A, and thus returned to the well.

The modified form of the bottom of the sand-chamber, Fig. 3, is concave, so that the same will tend somewhat to exclude the water and concentrate the body of sand which it is desired to draw into the pump, thus materially facilitating the action of the pump.

It is of course necessary that the piston-rod or piston shall be constructed of material having sufficient weight to force the piston down when tension is removed from the hoisting-cord.

The piston-valve should also be of stone,

metal, or other material of greater specific gravity than water.

I do not claim, broadly, the employment of tubes for delivering sand or other sediment into a pump-chamber; but

What I claim is—

1. In a sand-pump, the chamber B, having the tubes arranged in a concentric circle, the piston D, and intervening strainer C, as shown and described.

2. In a sand-pump, the chamber B, having the concentric circle of tubes, and the hinged bottom closing the opening between the mouths of the tubes, as shown and described.

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Witnesses:

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