

tight connection with the upper portion of said reservoir, and a pump extending downward through the closed head of said reservoir and below the level of water therein, substantially as herein described. 3rd. The combination, with an air-tight reservoir sunk in the earth, of drive-wells connected with the upper part of said reservoir, a pump for delivery water from said reservoir and an air pump connected with the top of the reservoir for exhausting air from said reservoir and wells, substantially as herein described. 4th. The combination, with an air-tight reservoir A sunk in the earth, of a pump extending downward through the closed head of the reservoir and having a discharge pipe above said head, a number of drive-wells connected with the upper part of the reservoir, and a continuously operating air-pump or auxiliary pump having its suction and discharge openings communicating respectively with the upper part of the reservoir and the discharged of the main pump, substantially as herein described. 5th. The combination, with an air-tight reservoir sunk in the earth, of a pump for delivering water therefrom, a main pipe extending from the upper part of said reservoir and a number of drive-wells connected with said main pipe, substantially as herein described. 6th. The combination, with an air-tight reservoir sunk in the earth, of a pump for delivering water therefrom, a main pipe E and drive-wells G connected with the main pipe and severally provided with valves g, substantially as herein described. 7th. The combination, with an air-tight reservoir sunk in the earth, of a pump for delivering water therefrom, main pipes E severally provided with valves h and drive-wells E connected with said main pipes, substantially as herein described. 8th. The combination of the air-tight reservoir A sunk in the earth, a pump for delivering water therefrom, and main pipes and drive-wells E, E provided with valves h, substantially as herein described.

No. 22,734. Means for Procuring Water from the Earth. (*Moyens de tirer l'Eau du Sol.*)

William D. Andrews, Brookhaven, N.Y., U.S., 3rd November, 1885; 5 years.

Claim.—1st. The combination, with a main well consisting of an air-tight cylinder or tube sunk below the level of water on the earth, and having water inlet openings, at the lower part of supplemental tube or drive wells having an air-tight connection with the upper part of said main well, and a pump for delivering water from said main well, substantially as herein described. 2nd. The combination, with the air-tight main well having the flaring perforated lower portion which is sunk below the level of water in the earth, of a pump extending downward through the closed head of the well and below the level of water therein, and a number of supplemental drive-wells connected with the upper of the main well, substantially as herein described. 3rd. The combination, with a main well consisting of an air-tight cylinder sunk below the level of water in the earth, and having water inlets openings at the lower part of a pump extending downward through the closed upper end of the well, supplemental drive-wells connected with the upper part of the main well, and an air pump connected with the upper part of the main well, substantially as herein described. 4th. The combination, with a main well A having water-inlet openings at the lower part, of a pump extending downward through the closed head of the well and having a discharge outlet above said head, a number of supplemental drive-wells connected with the upper part of the main well, and an auxiliary pump having its suction connected with upper part of said main well, and its outlet connected with the discharge from said pump, substantially as herein described. 5th. The combination, with the main well consisting of an air-tight cylinder A having water-inlets at the lower part, of a pump extending downward through the closed head of the well, and an auxiliary pump connected with the upper end of the well, substantially as herein described. 6th. The combination, with the well consisting of an air-tight cylinder A having the downwardly flaring perforated and strainer, protected lower portion A₁, of a pump cylinder or casing extending downward through the closed upper end of the well to a point below the water level therein, substantially as herein described. 7th. The combination, with a main well consisting of an air-tight cylinder sunk below the level of water in the earth, and having water-inlet openings at its lower part, of a pump for delivering water from said main well, a main pipe extending from the upper part of said well and a number of supplemental drive-wells connected with said main pipe, substantially as herein described. 8th. The combination, with a main well consisting of an air-tight cylinder sunk below the level of water in the earth, and having water-inlet openings at its lower part, of a pump for delivering water from said main well, a number of main pipes G₁ extending from the upper part thereof, and each provided with a valve a, and supplemental drive-wells G connected with said main pipes, substantially as herein described. 9th. The combination, with a main well A consisting of an air-tight cylinder having openings in its lower part, of a pump for delivering water therefrom, a number of main pipes G₁, each provided with a valve a, and supplemental drive-wells G connected with said main pipes G₁ and severally provided with valves g, substantially as herein described.

No. 22,735. Apparatus for Sinking Wells.

(*Appareil pour Percer les Puits.*)

William D. Andrews, Brookhaven, N.Y., U.S., 3rd November, 1885; 5 years.

Claim.—1st. The combination, with a well consisting of a cylinder or tube having a downwardly-flaring lower portion and an upwardly contracted shoe or tip within said lower portion, of a guard or lining tube extending upward from said upwardly-contracted shoe or tip, substantially as and for the purpose herein described. 2nd. The combination, with a well consisting of a cylinder or tube having a

downwardly-flaring lower portion, and an upwardly-contracted shoe or tip within said lower portion, of an upwardly-flaring guard or lining-tube extending from said upwardly-contracted shoe or tip, and fitted to the said cylinder at the top of said flaring lower portion, substantially as and for the purpose herein described. 3rd. The combination, with a well consisting of a cylinder or tube composed of sections united by internal flange-joints and having at and within the lower end an upwardly contracted shoe or tip, the smaller diameter of which is less than the internal diameter of said flange-joints, of an upwardly-flaring guard or lining-tube fitting the exterior of said shoe or tip and the interior of one of said flange joints, substantially as and for the purpose herein described. 4th. The combination, with a well consisting of a cylinder or tube having openings in its lower portion covered by a strainer of a removable guard or lining-tube extending upward within said cylinder to a point above said openings and serving to prevent the entrance of water through said openings, substantially as and for the purpose herein described. 5th. The combination, with a well consisting of a cylinder or tube having a perforated downwardly-flaring lower portion, and an upwardly contracted shoe or tip within said lower portion, of an upwardly-flaring guard or lining-tube removably fitted to the exterior of said upwardly-contracted shoe or tip and also removably fitted to the interior of said cylinder or tube above its flaring portion, substantially as and for the purpose herein described. 6th. The combination, with a well consisting of the cylinder A composed of sections united by internal flange-joints and having the downwardly-flaring perforated and strainer-protected A₁, of the upwardly-contracted shoe or tip B and the upwardly-flaring guard or lining-tube C removably fitted to the exterior of said shoe or tip and to the interior of one of said flange-joints above the flaring portion A₁, substantially as and for the purpose herein described.

No. 22,736. Pump. (*Pompe.*)

William D. Andrews, Brookhaven, N.Y., U.S., 3rd November, 1885; 5 years.

Claim.—1st. The combination, with an upright cylinder or casing having at its lower part a working-barrel, of a piston consisting of an annular body provided with valves, and an upward tubular extension also provided with valves, substantially as herein described. 2nd. The combination, with an upright cylinder or casing having at its lower part a working-barrel, of a piston fitting said working-barrel and consisting of an annular body provided with valves and an upwardly-flaring tubular extension forming a valve-seat d, substantially as herein described. 3rd. The combination, with an upright cylinder or casing and a working-barrel fitted to the lower end thereof and capable of being introduced and removed through said cylinder or casing, of a piston consisting of an annular body provided with valves and an upward tubular extension also provided with valves, substantially as herein described. 4th. The combination, with the cylinder or casing A having at its lower part a working-barrel B, and having above said barrel an annular enlargement of the piston consisting of an annular body provided with valves and an upwardly-flaring tubular extension also provided with valves, substantially as herein described. 5th. The combination, with an upright cylinder or casing having at its lower part working-barrel, of two pistons consisting of annular bodies provided with valves and upward and downward tubular extensions also provided with valves, substantially as herein described. 6th. The combination, with the cylinder or casing A and the removable working-barrel B, the cylinder having an annular enlargement above said working-barrel, of the upper valvular piston C having an upwardly-flaring extension and valve-seat d, d₁, the lower valvular piston D having a downwardly-flaring extension and valve-seat d, d₁ and mechanism for moving said pistons simultaneously toward and from each other, substantially as herein described.

No. 22,737. Well and Reservoir for Procuring Water from the Earth.

(*Puits et Reservoir pour tirer l'Eau du Sol.*)

William D. Andrews, Brookhaven, N.Y., U.S., 3rd November, 1885; 5 years.

Claim.—1st. A well or reservoir to be sunk in the earth having a downwardly-flaring lower portion and inwardly-contracted tip-piece or shoe connected thereto, substantially as and for the purpose herein described. 2nd. A well or reservoir to be sunk in the earth consisting of a cylinder composed of internally-flanged sections, and having a downwardly-flaring lower portion, and a downwardly-flaring tip-piece or shoe within the lower portion, substantially as herein described. 3rd. A well or reservoir to be sunk in the earth consisting of the cylinder A composed of sections united by internal flange-joints a, and having a downwardly-flaring or upwardly-contracted shoe B adapted to receive the lining-guard E or perforated tube F, the upper end of which shoe B is smaller in diameter than the internal diameter of the flange-joints a, substantially as and for the purpose herein described. 4th. A well to be sunk in the earth consisting of a cylinder having a downwardly-flaring lower portion in which are inlet openings protected by a perforated or reticulated strainer, substantially as and for the purpose herein described. 5th. A well to be sunk in the earth consisting of a cylinder composed of internally-flanged sections having a downwardly-flaring and perforated lower portion protected by a strainer, and also having an upwardly-contracted shoe within the said lower portion, substantially as herein described. 6th. The combination, with a well consisting of a cylinder having a downwardly-flaring and perforated lower portion protected by a strainer, and having an upwardly-contracted shoe within said lower portion, of a supplemental strainer extending from said shoe to the interior of the cylinder at a point above the openings in said downwardly-flaring portion, substantially as and for the purpose herein described. 7th. The combination, with the cylinder A having a downwardly-flaring and perforated lower portion and the upwardly-contracted shoe B, of the removable tube G and its strainer fitting upon the exterior of said shoe and extending therefrom upward to a point above the perforated and flaring lower portion, substantially as herein described.