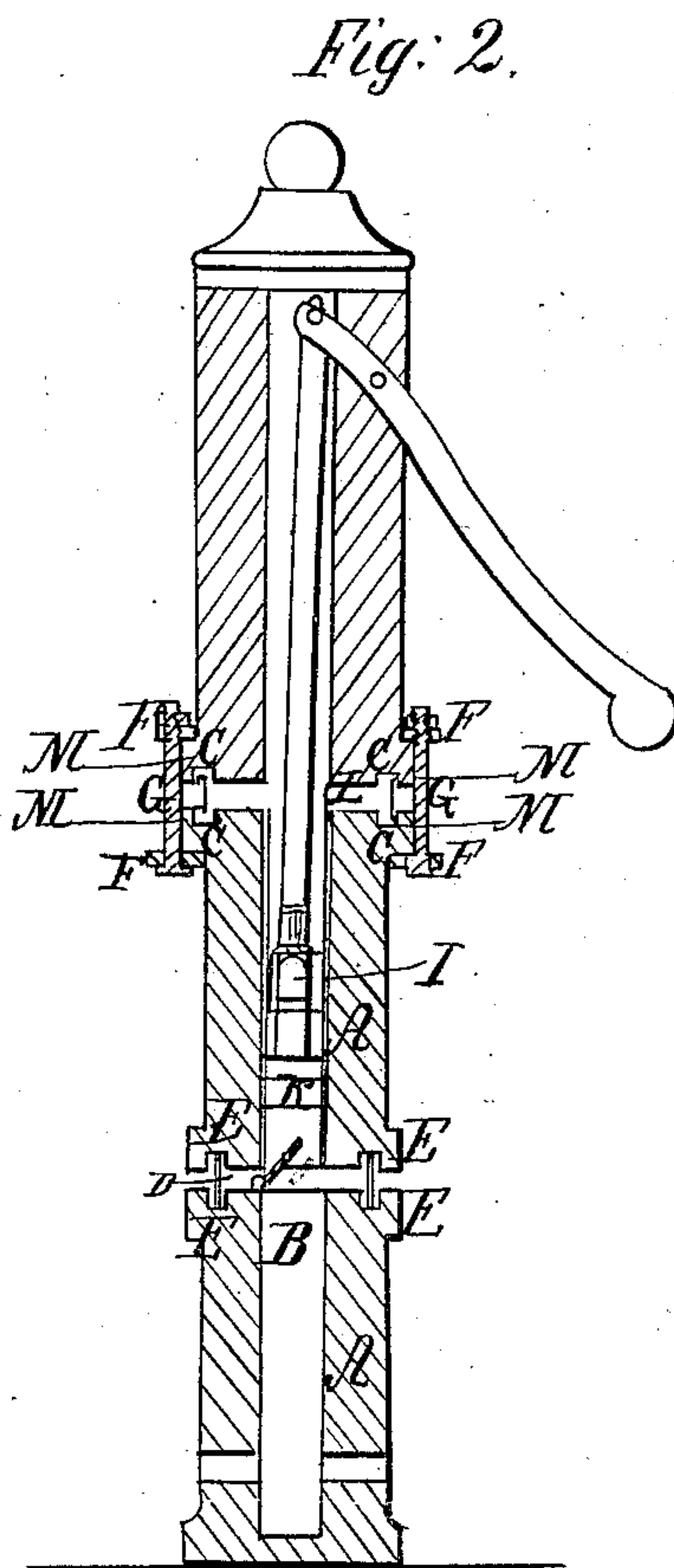
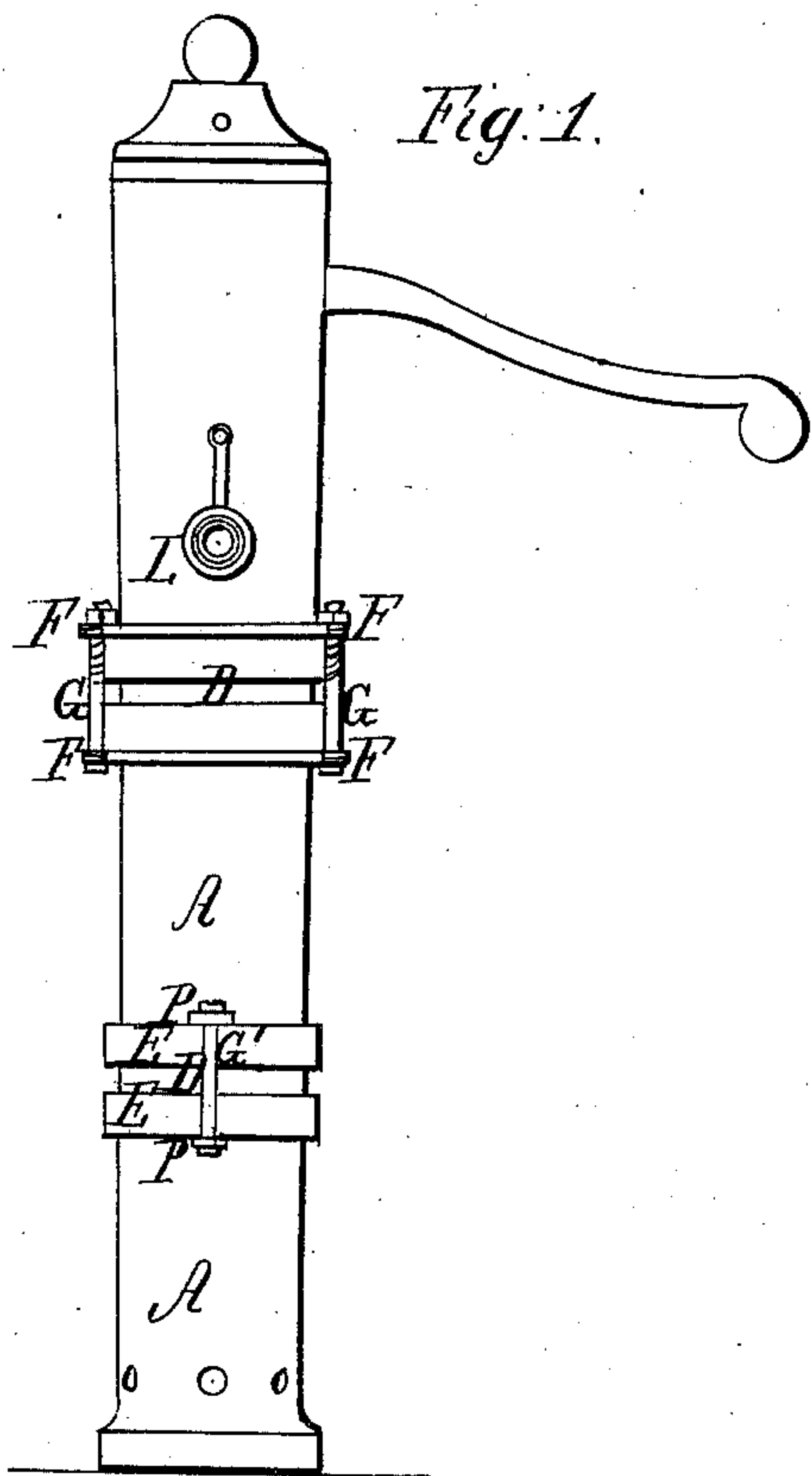
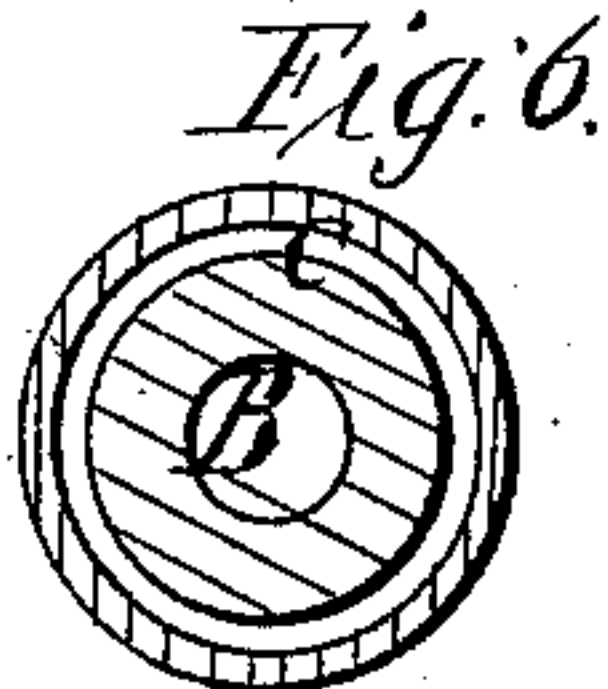
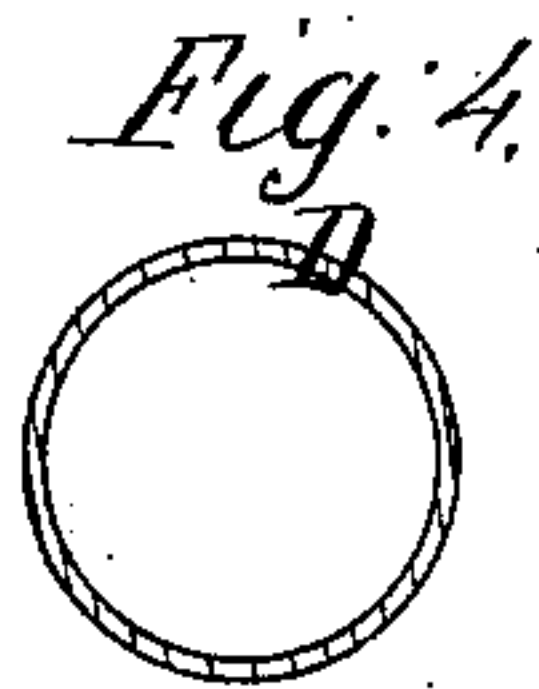
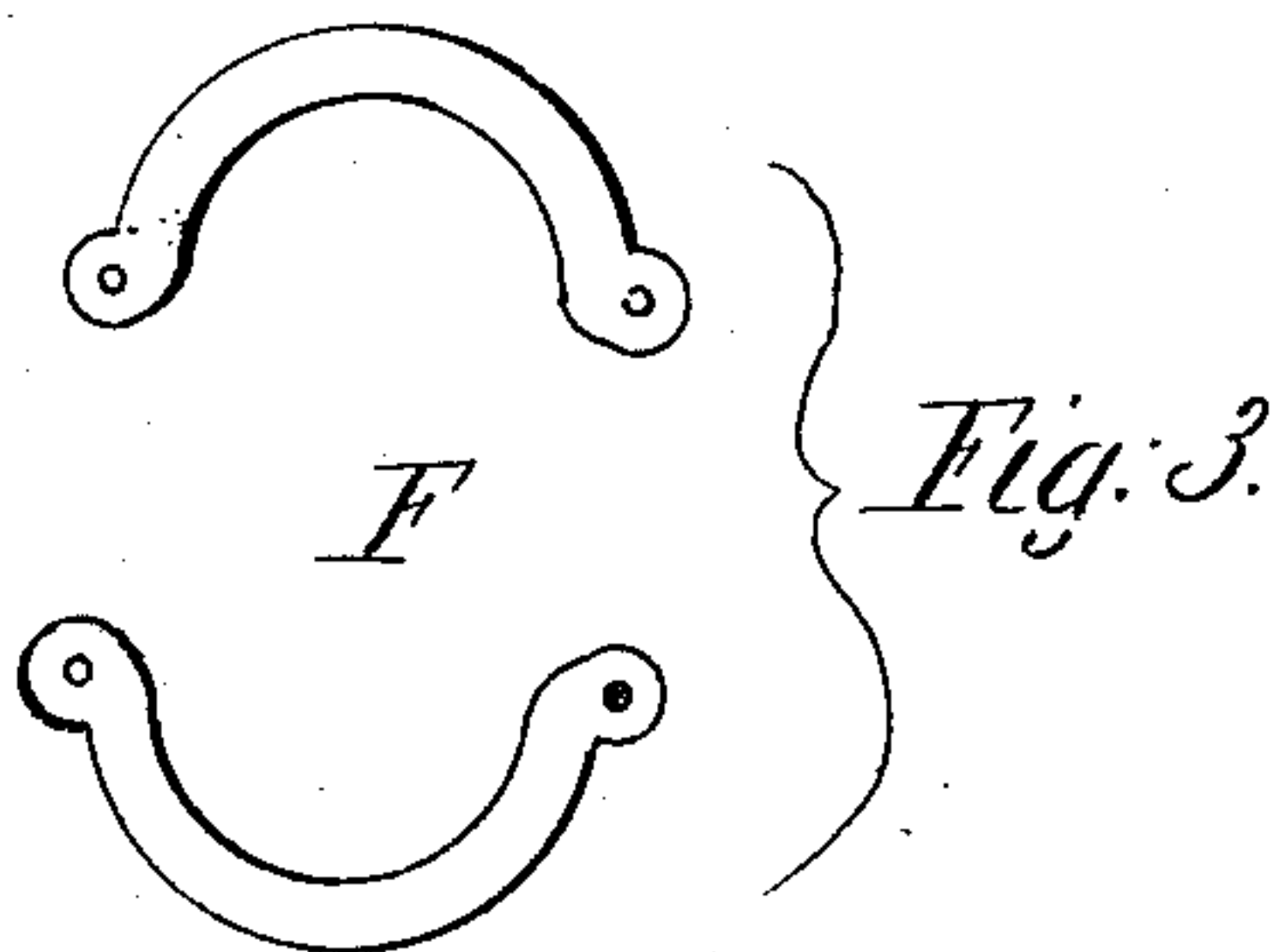


A. Van Vorhes.

Pump Cylinder,

No. 1,139.

Patented May 3, 1839.



UNITED STATES PATENT OFFICE.

ABRAHAM VAN VORHES, OF ATHENS, OHIO.

MODE OF MAKING THE JOINTS OF STONE-PUMPS WATER-TIGHT.

Specification of Letters Patent No. 1,139, dated May 3, 1839.

To all whom it may concern:

Be it known that I, ABRAHAM VAN VORHES, of Athens, Athens county, State of Ohio, have invented a new and useful improvement in pumps for wells, cisterns, and all culinary purposes by constructing them of stone and stoneware instead of wood, thus securing the purity of the water and the durability of the pump, and that the following is a full and exact description, reference being had to the annexed drawings.

Put blocks of good sand stone of convenient dimensions, say from four to six feet in length, or of any length most convenient, and twelve or fourteen inches diameter, with the drill in common use for boring stone, drill holes through those blocks of stone of, from two, to four inches diameter, according to the position they are intended to occupy in the pump. Two inches in diameter is generally sufficient for the bore below the plunger, and four inches above. The diameter of the bore, the distance between the valve and plunger will depend on circumstances. All must be regulated by the circumstances, and constructed according to the principles that regulate the common pump.

After the blocks of stone are bored, the ends are to be dressed off at right angles with the bore so that when placed on top each other the column will stand perpendicular. This being done, the blocks are to be fitted together and made air-tight in the following manner: Insert a block of wood in the bore, and with a pair of compasses describe a circle ten or twelve inches diameter (if the blocks will admit) on the ends of the blocks, and with a chisel cut a groove *c* Figures 2 and 6 in the stone three fourths of an inch deep and three eighths of an inch in width; and so of all the ends of the blocks that are intended to form joints. The grooves should be of equal depth, and smooth at the bottom. This done, weld bands or hoops of iron *D*, Figs. 1, 2 and 4, two inches broad, and one eighth of an inch in thickness and of a diameter sufficient to drop into the grooves before mentioned. Into the bottom of these grooves insert a rope *M*, Figs. 2 and 5, or moderately twisted oakum, saturated with pitch or hardened tar; drop in the ring, set on the next stone, and joint will be perfectly air-tight. If the bands are well coated with pitch the joint will remain perfect for ages.

When it is intended to use stone or stone

ware only so far as the water may usually stand in the well or cistern, and wood for the top; there will be no necessity for any fastening to the joints other than a few pieces of wood from the opposite sides of the well or cistern; but where it is intended to construct the entire pump of stone or stone-ware it will be necessary to secure the joints. This can be effected by drilling small holes in opposite sides of the blocks and inserting horizontal bolts of iron *P* fastened in the stone with melted lead five or six inches from the ends of the stone. The bolts should have a hole close to the sides of the stone for the purpose of receiving a vertical bolt *G* with a head and screw nut which being moderately screwed will secure the joint. That part of the pump above the ground should be neatly finished either round or an octagon form to suit the fancy; and should a joint occur above ground it should be secured in the following manner: At each end of the stone or block of stoneware intended for the joint have a swell or enlargement of five or six inches in length and of one or two inches greater diameter than the body of the stone or block with a square shoulder; then bend edge-wise two small pieces of bar iron in semi-circular form so as to fit around the block and rest on the shoulder; rivet the two semi-circular pieces of iron together at one end, bring them around the stone or block and fasten the other ends with a small bolt and screw. The bands *F* then placed around each end of the stone or blocks intended for the joint; should have three holes inserted at equal distance so that vertical bolts *G* can be passed through, and the joints brought home with screws.

When the pump is to be constructed of stone-ware the blocks will be formed on the wheel and turned with collars at the ends for the purpose of moving bands for holding the joints, the same manner as if made of stone. The grooves for receiving the hoops or bands will also be made while on the wheel and the joints made tight in the same manner as when made of stone; or the end of the block can be turned on the wheel with a groove about three fourths of an inch wide and half an inch deep; and the end of the next block intended to match with the foregoing must be turned with a tongue about half an inch wide and the same in depth to match the beforementioned groove;

and then with tarred rope or oakum the joint is made perfectly air-tight without the use of the band as in the case of stone. The groove in stone-ware blocks should be much
5 wider than the tongues to avoid the inconvenience resulting from the warping of the blocks in burning. The stone-ware blocks must be made much less than those of stone, say three feet in length and six inches in
10 diameter in the body of the blocks and eight inches at the collars, and it will be burnt and glazed in all respects like the best stone-ware.

When the pump is constructed entirely
15 of stone, or stone-ware one of the blocks of stone or stone-ware should have a copper or tin tube inserted fourteen or sixteen inches in length and made fast and air-tight in the stone, or block of stone-ware, by calking—
20 tarred oakum must be drawn in between the tube and the stone until it is made tight. This tube is intended for the plunger or sucker to move in; otherwise the roughness of the stone would soon destroy the plunger. The
25 tube must be of a sufficient diameter to admit a plunger of the usual size and construction, and placed at a proper depth in the well owing to circumstances.

The valve, or valves, in stone or stone-ware pumps must be placed in the joint; 30 the surface of the block is made smooth; a piece of copper sufficiently large to cover the bore of the stone with one edge bent around a wire, and the wire bent in the form of a staple and the ends inserted in the block with 35 lead serves as a hinge for the action of the valve. To the bottom of this copper plate must be riveted a good piece of sole leather; and the valve is complete.

If there is not sufficient room in the joint 40 for the action of the valve; the upper stone must be cut away within the ring or band. The valves and plunger in the stone and stone-ware pumps must be constructed after the manner of the common pumps. 45

What I claim as my own invention and not previously known in the above described pumps is—

The manner of making the joint air-tight by the application and use of the groove and 50 band and oakum or tarred rope in the stone pumps; in the manner described.

ABRAHAM VAN VORHES.

Witnesses:

A. G. BROWN,
N. B. PURINTON.