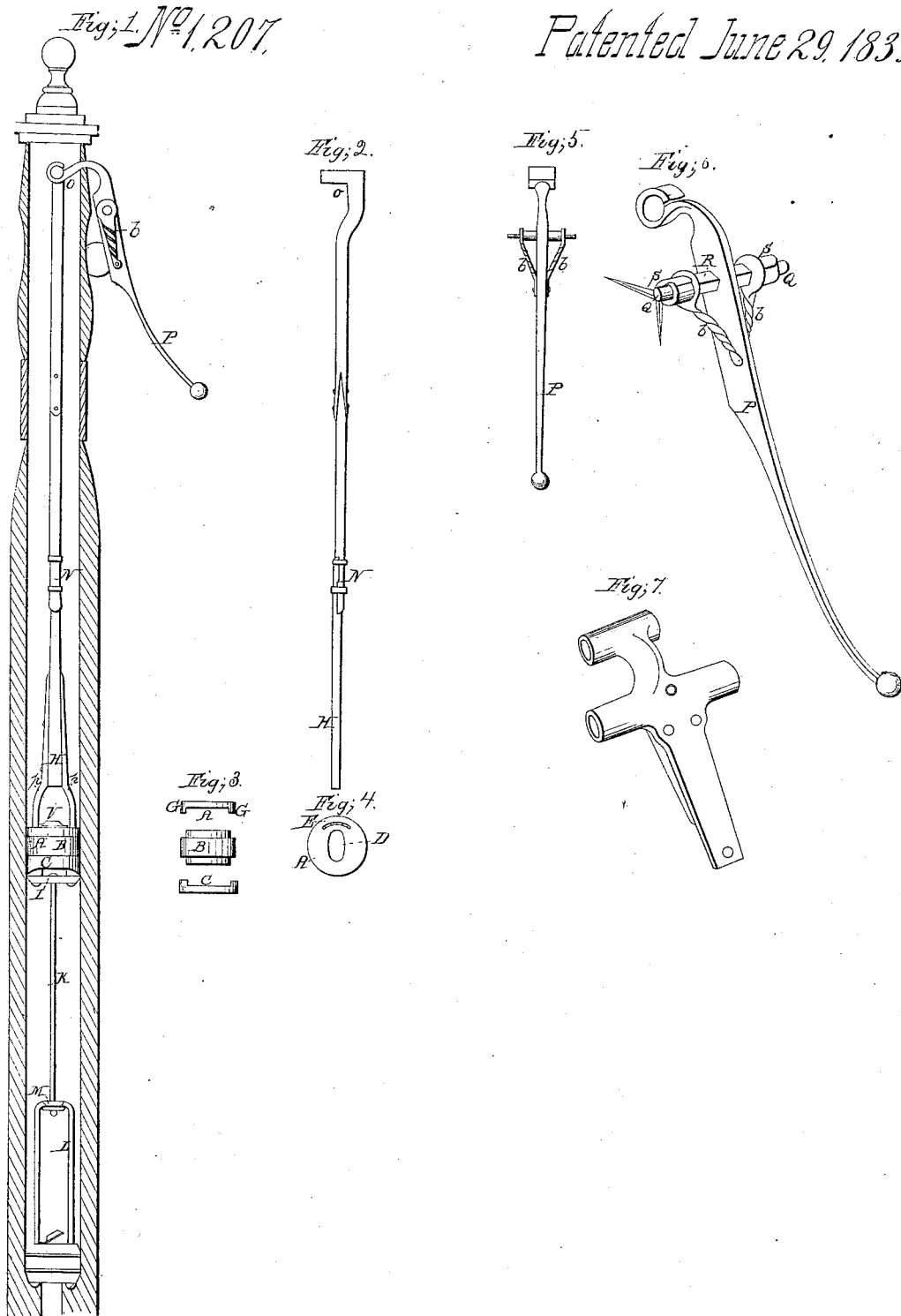


H.L. Hughes,

Pump Brake,

Patented June 29 1839.



UNITED STATES PATENT OFFICE.

HUMPHREY L. HUGHES, OF WARREN COUNTY, VIRGINIA.

PUMP.

Specification of Letters Patent No. 1,207, dated June 29, 1839.

To all whom it may concern:

Be it known that I, HUMPHREY L. HUGHES, of Warren county, State of Virginia, have invented certain new and useful Improvements in Suction and Lifting Pumps, which are described as follows, reference being had to the annexed drawings of the same, making part of this specification.

In the pump as ordinarily constructed there exists several serious defects: 1st. The piston and its valve are liable to get out of order. 2nd. The iron piston rod impregnates the water with a disagreeable taste. 3rd. The bore of the pump stock is generally too large causing too great a weight of water to rest upon the valves. 4th. The working parts are disproportioned, weak and easily put out of order; besides being difficult to be removed for repairing them. 5th. The lower valve and stationary box are raised with great difficulty for repair when out of order. 6th. The connection of the pump handle with the axle is weak for want of proper braces. 7th, in raising water over a hill the air which gets into the conveying tube through the pores of the wood or otherwise—rises to the highest point and interferes with the pumping. The defects are proposed to be removed in the manner hereafter described.

Figure 1, is a vertical sectional view of the pump; Fig. 2, piston rod; Fig. 3, side view of the piston; Fig. 4, top view of the upper section of the piston; Fig. 5, view of the back of the handle; Fig. 6, perspective view of the handle and braces; Fig. 7, perspective view of cast iron handle; Fig. 8, view of apparatus for raising water over hills.

The same letters of reference refer to the same parts in the several figures.

The upper and lower valve and box being similarly constructed, the upper one only will be described.

The main body of the piston is composed of three parts A. B. C.

The middle piece B is made of wood, or lead, into which the nails or screws are inserted for securing the valve; the two other pieces A, C, are cast iron.

The upper piece A, is a circular plate—the diameter of the bore of the pump where the piston works called the working chamber; in the center of said circular plate is an oval aperture D' corresponding to simi-

lar apertures in the other two pieces extending through the piston to allow the water to rise in the same plate and near the periphery thereof is another aperture or slot E to allow the nails that secure the valve to pass through to the center or wood piece: the valve V is placed on top of this plate over the center aperture and opens upward it is made in the usual manner: around the edge of the upper plate is a rim or flange G projecting downward a sufficient distance to form a circular hollow cast iron cap A into which the upper end of the center or wood piece is inserted, previously turned off to fit therein.

The lower casting C is formed like the upper one excepting that the second aperture is omitted in this, the same not being necessary; said casting is placed inversely the lower ends of the center piece B is turned to fit the inside of the casting. The three parts of the piston are held firmly together by means of the two prongs p p of the forked end of the piston rod H passing through them all and through a cross bar I, placed across the under side of the piston and then having the extremities of said prongs well riveted. Around the center piece of the piston is secured a piece of sole leather or packing to cause the piston to work tight in the working chamber of the pump.

The cross bar I is a straight piece of iron having a hole at each end for the prongs of the piston rod to pass through and a hole in the center to receive a rod K. To the cross bar against the under side of the piston is attached a vertical rod K extending downward and passing loosely through a round aperture in the vertex of the iron bail L of the stationary box containing the lower valve and having a button M or head riveted on the lower end of said vertical rod to prevent it passing above the bail; by this means the piston and lower box are attached together; but although thus attached together the piston is not prevented from rising and falling while the lower box remains stationary, for by making the connecting rod longer than the stroke of the piston and causing it to work loosely through the bail without touching it, the desired object is effected. The bail is made in the usual manner.

Now the object in thus attaching the work-

ing pistons and stationary box together by means of the before described intermediate connecting rods and buttons is to enable any person to raise the stationary box when-
 5 ever it may become necessary in order to repair the valve or for any other purpose, without the necessity of using a rope and hooks; it is done by simply raising the piston rod; and when said lower box is to be
 10 replaced it is lowered into its seat and the piston rod let down which causes the cross bar under the piston to strike upon the top of the bail and after a few strokes it will be properly secured in its place.
 15 From many years experience in making pumps I am enabled to say with confidence that this is a very valuable improvement in the pump. The making of that part of the piston of metal upon which the valve
 20 works instead of wood prevents that leakage which arises from the wearing away of the upper surface of the box when made of wood as in the common piston or box of wood pumps. 2nd. The piston rod is to
 25 be constructed of wood nearly the diameter of the bore of the pump or less if preferred, and spliced wherever required for increasing its length in the manner represented at N and the parts held together by rings or
 30 bands. 3rd. The bore of this pump is to be about $2\frac{1}{2}$ inches in diameter, which will lessen the quantity of water resting upon the valves and cause the pump to work much easier. 4th. The upper end of the
 35 piston rod at *o o* forms a right angle on two sides of a square instead of a segment of a circle as heretofore; it is placed in a vertical position with the horizontal part *o* passed through a round aperture formed in
 40 the short end of the lever or handle P by turning said end over upon a round pin for the purpose of forming said aperture correctly, the end of the lever being previously flattened out on an anvil in order to make
 45 a broad and secure bearing. This mode of connecting the piston to the pump handle is very secure, easily accomplished, not liable to wear away rapidly, and far superior to any now in use as will be evident to any
 50 person on a moment's reflection.

The old mode of connecting by means of a hook and clevis pin is very weak and insecure and difficult to unite; besides the key is liable to fall into the pump, causing

much trouble to get it out again. And the 55 hook wears away very soon.

The fulcrum Q Q, of the axle R of the lever or handle P, are likewise made flat and broad previous to being turned up to form ears and to their being inserted into the 60 pump; these ears R are turned half around the axle forming boxes leaving one side of the box open for the insertion of the axle, which, when put in its place is secured by means of pieces of iron S, S, bent at one 65 end to the same curvature of the ears of the other or straight ends being inserted into mortises in the plates forming the fulcrum of the axle immediately behind the axle so as to act as keys while the curved ends lie 70 over upon the ears and serve as caps—therefore these pieces may be called key-caps. The before described simple and permanent mode of constructing the bearings of the axle of the handle or lever is a 75 great improvement to the pump.

In the present imperfect mode of constructing pumps the handle soon becomes loose on the axle, for the want of proper braces, and in order to remedy this evil I 80 apply oblique braces *b, b*, riveted to the sides of the lever and axle at an angle of about 35 degs.; one on each side which makes the connections of the handle very strong. The handle may also be constructed partly of cast-iron and partly of wood, see Fig. 7, the cast part having a long round 85 aperture in it through which is passed loosely a round rod similar to the axle of the last described axle, which rod is fastened permanently at each end by the ears, the handle in this case moving on said fixed rod as its fulcrum, instead of the rod or axle moving as before described in the ears as fulcrum. The casting is furnished with 95 flanges by which it is secured to the wood part of the handle.

The invention claimed and desired to be secured by Letters Patent consists in—

The mode of connecting the piston and 100 stationary box by the rod and button in the manner described and for the purpose set forth.

HUMPHREY L. HUGHES.

Witnesses:

BENJ. RAWLINGS,
 ROBERT S. HICKMAN.