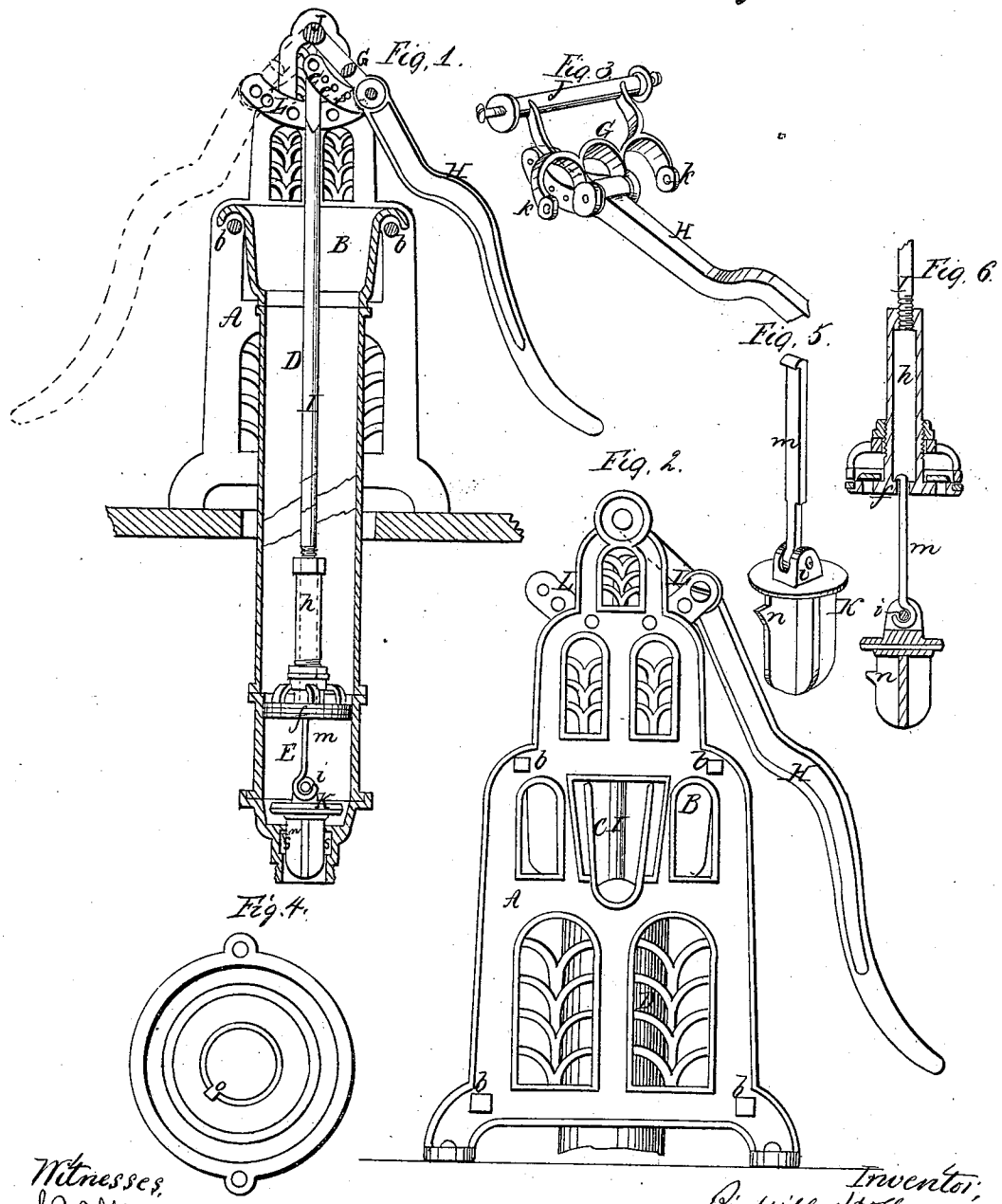
B. Holly,

Pump Lift.

No. 29,266. Patented July 24, 1860.



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UNITED STATES PATENT OFFICE.

BIRDSILL HOLLY, OF LOCKPORT, NEW YORK.

PUMP.

Specification of Letters Patent No. 29,266, dated July 24, 1860.

To all whom it may concern:

Be it known that I, BIRDSILL HOLLY, of Lockport, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Well-Pumps; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1, is a vertical section through the center of my pump. Fig. 2, is an elevation of one side of the supporting frame or stock. Fig. 3, is a separate perspective view of the adjusting yoke G, and part of the lever H. Fig. 4, is a plan view of the seat or box of the lower valve. Fig. 5, is a perspective view of the lower valve K, and of the link *m* connecting it with the piston. Fig. 6, is a section of the piston and its hollow stem *h*, in connection with the link *m*.

Similar letters designate corresponding parts in all of the figures.

The top or stock of my improved pump consists of two cast-iron plates A, formed, as shown in the drawings, with several series of arched openings, around the edges of which are flanges which give increased thickness, and consequently strength to the metal. The external edges of the plates are formed in the same manner. These side-plates are connected to each other by four cross-bolts, or stretchers, *b b*, secured by heads, screw-nuts, or other suitable means, upon the outer side thereof, and forming together a rectangular frame which rests upon the platform of the well, and forms the support of all the operating parts of the pump. Fig. 2, represents the appearance of the front of one of the side plates and Fig. 1, being a sectional view of the pump, shows the back or inner side of the other.

The spout-section B, consists of a rectangular flaring basin, with the spout, C, situated upon one side the bottom being provided with an opening of dimensions corresponding with the cylinder or pipe D, with which it is connected. This pipe extends downward as far as may be required to suit the depth of the well, until it connects with the cylinder proper, E, in which the piston, *f*, works. Two opposite sides of the spout-section are curved over in the form of a hook, and rest on the cross-bolts, *b*, *b*, as shown in Fig. 1; while the spout protrudes through an opening in the side plate provided for that purpose. The weight of the cylinder and its adjuncts is, therefore, supported wholly by the spout-section resting on the two cross bolts *b b;* an arrangement at once cheap and effective, as it requires no fitting of the castings, thereby saving a considerable expense, while it can be raised or detached readily, and admits of shifting the spout to either side as convenience may require. By thus suspending the working parts, that rigidity is avoided which is inseparable from cast iron joints when bolted or secured together, and which is often the cause of breakage and damage when the pump is subjected to jarring or vibrations.

The lever H, has its fulcrum in the adjustable yoke G, which is constructed with an arbor or axis J, directly over the center of the cylinder, or on a vertical line with the piston rod I. The arms, *k k*, which form part of the lower section are bolted or otherwise secured to an arc L, on each of the side frames. These arcs are provided each with several bolt holes, all of which are of the same radial distance from the center of the arbor J, so that when the yoke is turned the holes *k k* in the lever arms will correspond with either of those in the arc. By turning the yoke nearer to the center, and placing the piston rod a corresponding distance nearer the fulcrum pin in holes *e e* provided for the purpose, the power of the lever is increased to adapt it to wells of greater depth, so that no more power is required to work it than for wells of moderate depth. The stroke of the piston is shortened, but the labor being rendered easy a greater number of strokes may be made in the same length of time, and the working capacity kept about the same as for shallow wells. This becomes a feature of importance in connection with the construction which enables the cylinder to be placed as low down as is desirable by adding to the pipe D, and piston rod I, and adapts it for use in the deepest wells. The yoke may be placed at the opposite end of the arc, and the relative position of the handle reversed thereby without turning the pump should it be desired. The short end of the lever is provided with a number of holes *e e*, in either of which the head of the piston rod may be placed, as before stated, and the lever is so curved as to constitute an elbow-joint, which gives the greatest power at the beginning of the stroke, making it start easily.

The piston is provided with a hollow stem *h* which extends upward for a distance equal to or exceeding the stroke of the piston. It has a nut at the top into which the piston rod I, is inserted by a screw. The lower valve K, which is a stem or puppet valve, has a pin *i* or other equivalent means of attachment on the top thereof, to which is connected the hook of the link *m*. The upper end of this link passes through the piston by means of a slot through which the hooked head of the link will pass if in an oblique direction, but when it hangs vertically, as it does when left to itself, it cannot be released. When in it plays freely in the hollow of the stem *h* as the piston and valve work in performing their separate functions, but when it is desired to examine or repair the lower valve this device enables it to be removed without taking up the pump, by simply drawing the piston up through the pipe D, which is effected in this manner: The stem of the valve has a stop projection *n* on one side, which drops through the notch *o* Fig. 4, in the valve seat when it is inserted. This notch occupies such a position relative to the pump lever that it has to be turned one quarter of a revolution in order to permit the latter to be connected with the piston rod. The stop then occupies an annular recess *s*, in the valve box which allows it all the vertical movement required by the valve in operating. The link *m* is flat and inserted in an oblong hole or slot in the piston which does not allow it to turn; therefore when the piston is turned the valve also turns, and when brought to coincide with the notch *o* may be drawn out at pleasure. This is a matter of much importance, inasmuch as the lower valve is liable to require attention or repairs, as it obviates the removal of the pump entire, which is a work of considerable difficulty when the well is a deep one.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the curve-flanged spout-section B, with the side-plates A, A, and cross-bolts *b*, *b*, so as to furnish a suitable and convenient support for the pump cylinder and its dependent parts, and a ready means of reversing the position of the spout, the whole constructed, arranged, and operating substantially as herein specified.

2. The arrangement and combination of the adjustable fulcrum yoke G, and arcs L, L, having adjusting holes therein, with the lever H, having a curved short arm with adjusting holes *e*, *e*, therein, all substantially as and for the purpose herein specified.

3. The connecting link *m*, between the piston and valve K, in combination with the notch *o* and stop *n*, operating substantially as and for the purposes herein set forth.

BIRDSILL HOLLY.

Witnesses:

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