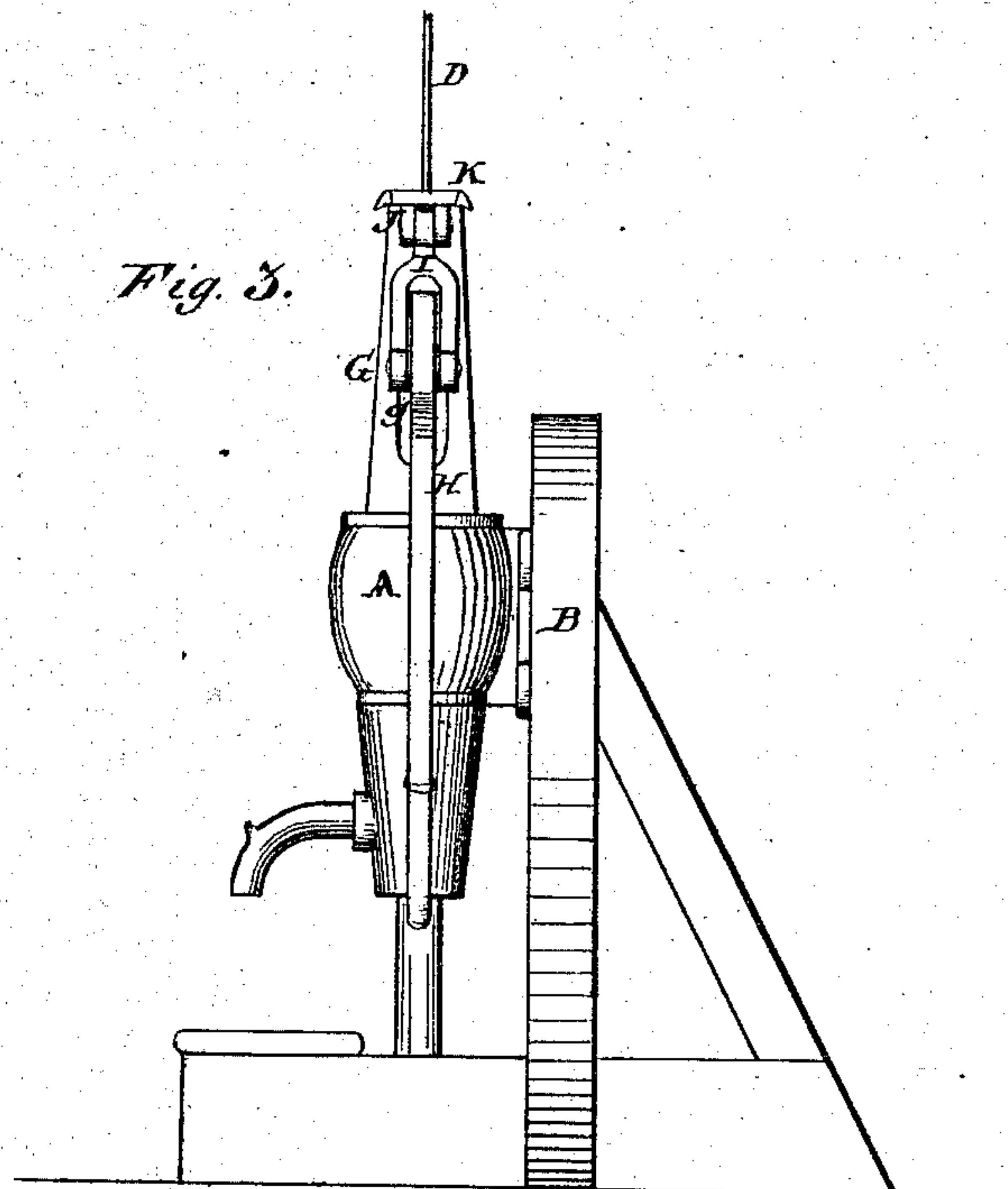
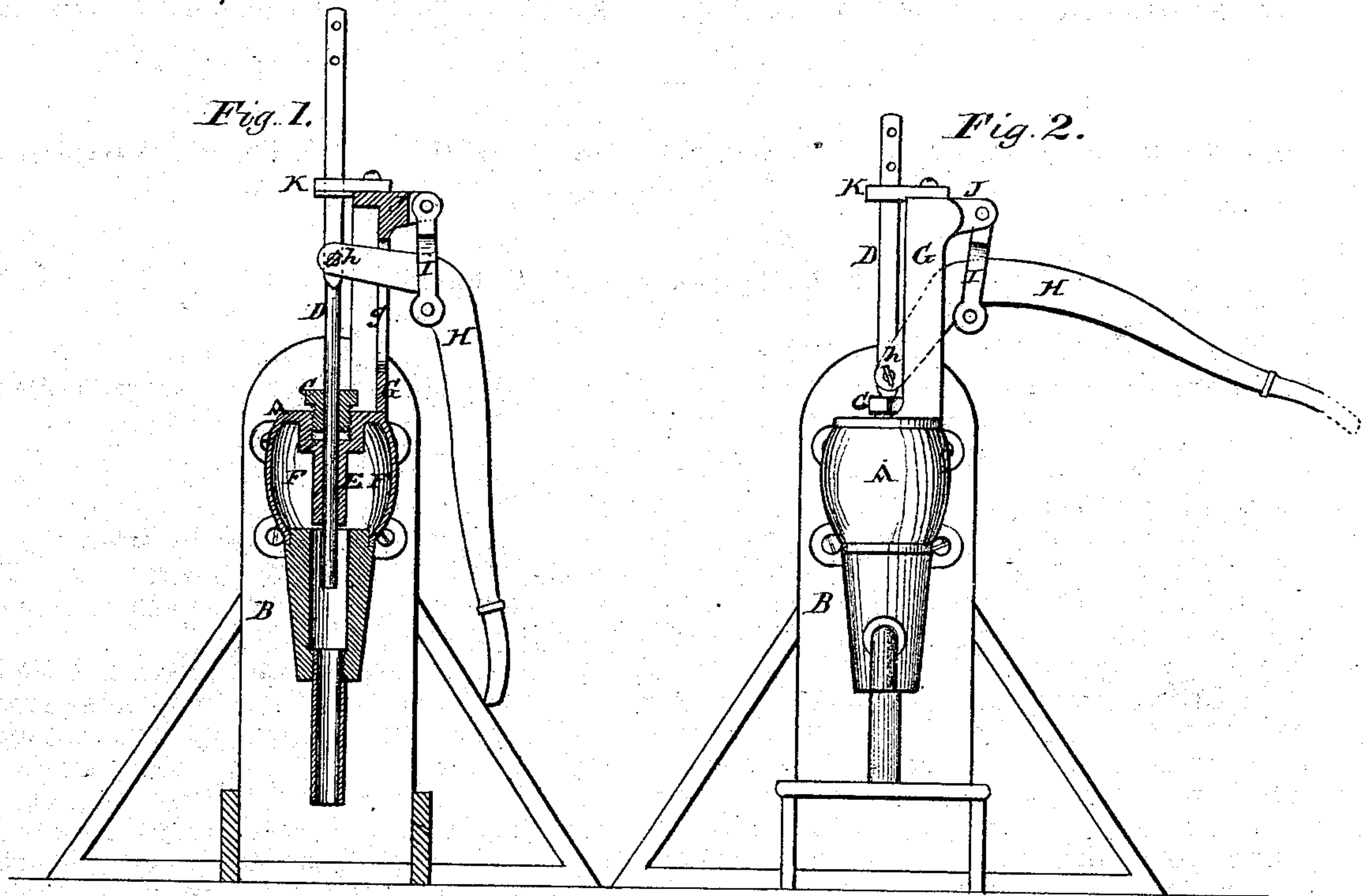


L. H. WHEELER.
Pumps.

No. 156,612.

Patented Nov. 3, 1874.



Witnesses;
John H. M. Sweet
Parker H. Sweet Jr.

Inventor:
Leonard H. Wheeler
By Alex. A. Klaucke & Co.
his attorneys

UNITED STATES PATENT OFFICE.

LEONARD H. WHEELER, OF BELOIT, WISCONSIN; HARRIET W. WHEELER,
EXECUTRIX.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. 156,612, dated November 3, 1874; application filed
September 5, 1870.

To all whom it may concern:

Be it known that I, LEONARD H. WHEELER, of Beloit, in the county of Rock and State of Wisconsin, have invented a new and useful Improvement in Pumps, of which the following is a specification:

In that class of pumps in which the piston-rod is operated either by a pump-handle, or by a wind-wheel, serious difficulties have heretofore arisen when the latter motive power has been employed, in view of the fact that the swivel-joint ordinarily employed for preventing the rotary movement of the piston-rod, which arises from the varying position of the wind-wheel, may become so inoperative from friction as to unscrew the piston-rod of the pump. The object of my invention is to obviate this defect, and, at the same time, to prevent entirely any lateral movement of the piston-rod, which secures a direct vertical movement of the latter; and to these ends my invention consists in the employment of a piston-rod flattened or squared at its upper end, and passing through a similarly-formed stationary guide, located above the range of the handle, the flattened end of the piston-rod extending above the stationary guide for attachment to the connecting-rod of the windmill, in combination with a bifurcated pump-handle, pivoted to the flattened piston-rod, and having its fulcrum in an oscillating link, articulated to a projection from the pump.

In the accompanying drawings, Figures 1 and 2 are front elevations of my improved pump, being shown in section in the former; and Fig. 3 is a side elevation of the same.

A represents the pump-head of a pump securely attached to a supporting-frame, B, from one side of which pump-head a standard, G, rises, having a slot, *g*, through which the shorter arm of the bell-crank shaped pump-handle H passes. The handle H is hung between the arms of the link I, which swings freely in the line of motion of the pump-handle, and which is suspended from a projection, J, extending outwardly from the top of the standard G. The end of the shorter arm of the handle H is made to embrace the piston-rod D, and is attached to the same, by means of a pin, *h*, in such a

manner that the length of the stroke of the piston-rod may be regulated by attaching the handle higher or lower on the rod; and that the handle may be entirely detached from the piston-rod, if desired.

The upper end of the piston-rod D is flattened or made rectangular or square in cross-section, and fits into a correspondingly-formed stationary guide, K, attached to the standard G.

By this construction it will be seen that all lateral movement of the piston-rod and windmill attachment is prevented, while all rotary motion of the piston-rod is prevented by the engagement of the flattened upper end of the piston-rod with the similarly-formed stationary guide. The flattened form of the upper end of the piston-rod also enables me more readily to attach the bifurcated end of the pump-handle to the piston-rod.

The operation of my suspended pump-handle, when not used with wind-power, is as follows: When the free arm of the handle H is lifted the smaller inner arm is depressed, and the link I swings forward of its vertical line. On depressing the handle the inner arm is thrown upwardly, raising the piston-rod, and the link swings outwardly until about one-half of the stroke of the piston is made, when, to finish this stroke, the link again swings inwardly. In each complete up-and-down stroke of the piston-rod the suspended link makes two motions forward and backward. These motions are the same as would have to be made by the piston-rod were the pivot of the handle a fixed one, in which case the motion of the piston-rod would not be a strictly vertical one, and thus guides could not be applied. But, as a guide is necessary to enable the piston-rod to be operated by wind-power, and must necessarily be so high that it would be more than inconvenient to remove or replace the guide in changing from wind to hand power, and vice versa, the arrangement of the pump-handle in the swinging link obviates all difficulties.

In many cases it is imperatively necessary to have the pump-head tightly closed to prevent dirt from entering the pump. In that case the piston-rod works in an opening in the

pump-head only sufficiently large to allow the free passage of the piston-rod, but no lateral movement of the same. And in this case the piston-rod would have to be provided with a portion having a lateral motion were the handle pivoted at a fixed point; and then some provision would have to be made to make the piston-rod rigid in its entire length, to enable wind-power to be applied.

My arrangement of the swinging handle and swinging links covers all the points in a simple and effective way.

In the drawings I have shown the pump-head as made close at the top by means of a stuffing-box, C, through which the piston-rod D passes. From the top of the pump-head extends downwardly and inwardly a tube, E, surrounding the piston-rod, and leaving an air-space, F, between the walls of the pump-head and the tube E. I have shown this construction as an example where the piston-rod cannot have lateral motion; but this construction forms no part of my invention, for my invention can be applied to all forms and kinds of pumps with advantage.

I am aware that pump-handles have heretofore been employed in which the handle has its fulcrum in the upper end of an oscillating link, the latter being pivoted to the pump-head at a point below the fulcrum of the handle, and I therefore lay no claim to such construction, which differs entirely from mine, and which is objectionable for the following reasons: The strain in lift-pumps is principally on the upward motions of the plunger, the weight of the rod in most cases being sufficient to effect the downward movement of the plunger. The upward movement of the pump-handle, and

the downward pressure upon the fulcrum of the pump-handle, are sustained, through the link, directly on its fulcrum as long as the centers of the working-joints of the link are in the same vertical line; and when these centers are moved out of the same vertical line, by depressing or elevating the pump-handle, which must always occur in operating the handle, a lateral pressure of the plunger is inevitable. By my construction this lateral pressure is almost entirely obviated, for the following reasons: As the handle is depressed the tendency is to move the end of the pump-rod near the handle away from the operator, which would cause the plunger to bind on the opposite side of the pump-barrel, but the upward movement of the outer end of the pump-handle in the arc of a circle causes the lower or free end of the link to move away from the pump-barrel, and thus compensates for the movement of the pump-rod near its handle, and prevents, in a great degree, the lateral pressure. Precisely the same result is attained by my construction in the downward movement of the pump-handle.

I claim—

The piston-rod D, having its upper end flattened or made rectangular in cross-section, in combination with the stationary guide K, provided with a similarly-formed grooved bifurcated handle, H, and an oscillating link, substantially as described, and for the purpose set forth.

LEONARD H. WHEELER.

Witnesses:

R. TATTERSHALL,
C. N. PARSONS.