

UNITED STATES PATENT OFFICE.

LUCIUS J. KNOWLES, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. 116,454, dated June 27, 1871.

To all whom it may concern:

Be it known that I, LUCIUS J. KNOWLES, of the city and county of Worcester and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Devices for Working Steam-Pumps by Hand; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, which represents a longitudinal section of a steam-pump with my devices attached thereto.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it more in detail.

It is often desirable, for pumping water into a boiler before the steam is up, or in many other similar cases, to operate the pump-piston by hand, and various devices have been heretofore devised and used for that purpose. To provide a more simple and convenient device than heretofore used for performing said operation with ease and dispatch (especially with the "Knowles pump") is the object of my present invention; which consists in the combination, with the piston-rod in a steam-pump, of a peculiarly-constructed lever attachment, as hereinafter explained.

In the drawing, the part marked A represents the steam-cylinder. B indicates the steam-piston, and E the piston-rod connecting the pump-piston D and steam-piston B. F indicates the valve; G, the valve-driving piston; and H, the valve-rod; all of which parts may be constructed and arranged in the ordinary manner, and therefore require no further description. I indicates the tappet-arm, which is secured to the piston-rod E, and is provided at its lower end with a headed stud, J, to receive the lower end of the hand-lever, K, in which a notch, *a*, is formed to fit over and embrace the stud J in the manner illustrated. The hand-lever K is fulcrumed, near its center, to an arm, L, by means of the pivot-

bolt M; and the arm L is provided, at its opposite end, with a notch, N, which hooks onto a headed stud, P, fixed to the frame of the pump, as shown in the drawing. The ends of the lever K and arm L are prevented from slipping laterally when in use by the heads upon the studs J P.

The operator, by taking hold of the handle R at the upper end of the hand-lever K, can readily work the pump-piston by swinging the lever back and forth to and from the position indicated by dotted lines. The end of arm L, during the operation, swings up and down so as to conform to the variation in the height of the pivot M as the lever K moves back and forth, thereby permitting its lower end to travel in a straight line without springing or straining any of the parts or binding in any of the several joints, thus producing but little friction between the parts, and enabling the operation of pumping by hand to be performed with the minimum expenditure of force.

The lever K and fulcrum-arm L can be removed from the machine, when not in use, by raising the notches *a* and N from the studs J and P. It will thus be observed that the arm L and lever K can be easily applied to use when required, and then be removed so as not to encumber the machine when working the pump by steam.

Having described my improvements in devices for working steam-pumps by hand, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

The combination, with the piston-rod E and tappet-arm I, of the jointed hand-lever K, notched fulcrum-arm L, and supporting-studs J P, substantially as shown and described.

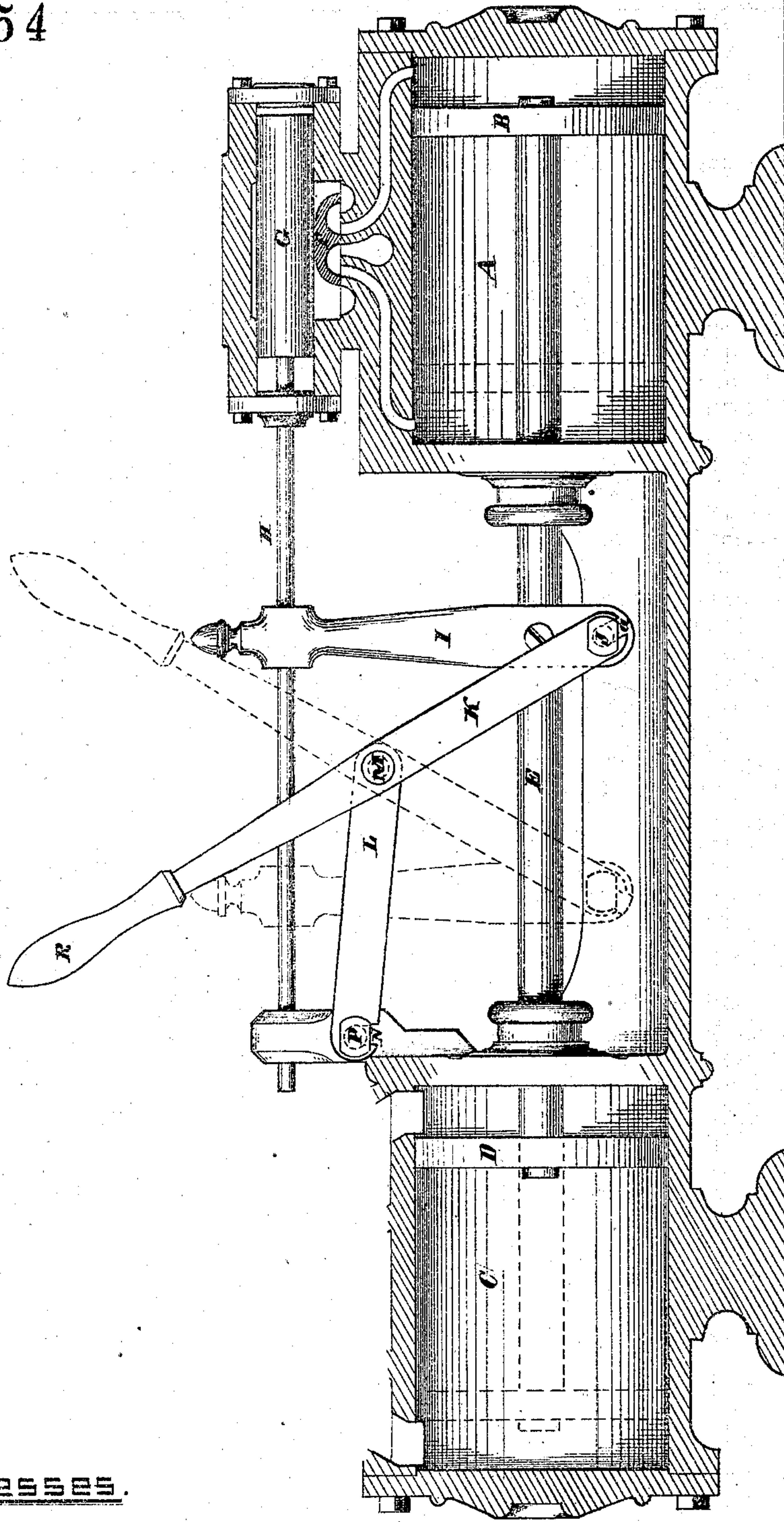
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Witnesses:

THOS. H. DODGE,
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Lucius J. Knowles'
Device for Working Steam Pumps by Hand
PATENTED JUN 27 1871

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Witnesses.

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