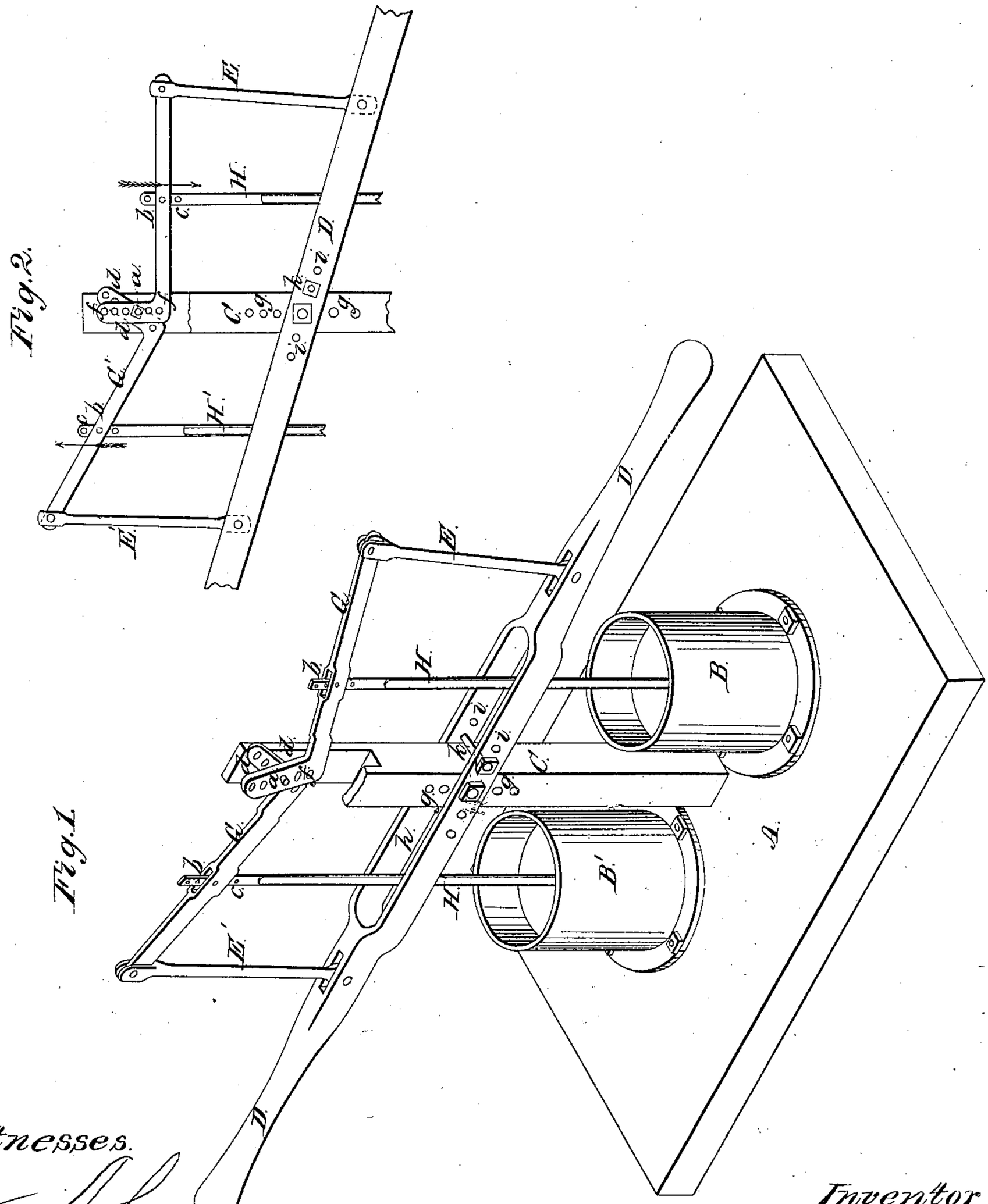
# E. Hale,

## Pump Lever.

No. 41,154. Patented Jan. 5, 1864.




Witnesses.

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# UNITED STATES PATENT OFFICE.

ELIAS HALE, OF TERRE HAUTE, INDIANA.

## IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **41,151**, dated January 5, 1864.

*To all whom it may concern:*

Be it known that I, ELIAS HALE, of Terre Haute, in the county of Vigo and State of Indiana, have invented a new and Improved Arrangement for Operating the Pistons of Double-Cylinder Force-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.

Figure 1 is a perspective view of my improved pump; Fig. 2, a side elevation of the arrangement for operating the pistons.

Like letters of reference indicate corresponding parts in both figures.

My invention consists in an improved arrangement of the actuating parts connected with the pistons of a double-cylinder force-pump, whereby the operating-lever may be raised or lowered at pleasure without adjusting the vibrating bars correspondingly, and the stroke of said lever is gaged to adapt it to the length of the pump-cylinders, so that the pistons will not be withdrawn nor the valves tripped, and so that the piston-rods pass directly through the operating-lever, in order to work easily and regularly.

As represented in the drawings, a suitable base, A, is provided, to which is secured a force-pump of any suitable kind, the two open-topped cylinders B B′ being the only parts of the same shown. The cylinders are situated at suitable distance apart, and between them rests a standard, C, provided with a set of adjusting-holes, *g g*, by which means a double-handled operating-lever, D, is secured and adjusted either higher or lower, as may be desirable or necessary. This operating-lever is provided with a long central opening, *h*, Fig. 1, through which pass the piston-rods, as will presently be explained, and the lever is secured by means of a bolt which passes through its two sides and the standard C. To the operating-lever, at a suitable distance from the center, on either side, are jointed connecting-rods E E′, the opposite ends of which are similarly jointed to vibrating bars G G′ above, said bars extending inward, and having a bend, *d*, at the inner end, provided with a set of adjusting-holes, *f f*, through any of which passes a bolt, *a*, to pivot the bars to the standard. The ordinary device used in place of the vibrating bars G G′ is a single stiff centrally-pivoted bar projecting on either side of the standard. In such an arrangement, in order to adjust the operating-lever higher or lower, the stiff bar must also be adjusted. Intermediately with the standard C and connecting-rods E E′ the piston-rods H H′ are jointed to the vibrating bars, as represented at *b*. The upper ends of the piston-rods are also provided with a set of adjusting-holes, *c c*, by which means they may be adjusted higher or lower at any time. On one or both sides of the standard C the operating-lever is provided with adjusting gage-holes *i i*, into any of which fits a bolt, *k*, as clearly represented in Fig. 1. By the use of this arrangement I am enabled to exactly gage the length of stroke of the pistons as desired, the bolt *k* striking the side of the standard at the extreme of its upward and downward movement, and thus arresting the action of the pistons.

Among the advantages of this arrangement of parts are the following:

First. I am enabled to adjust the operating-lever higher or lower on the standard without similarly adjusting the vibrating bars G G′, the latter turning on the pivot *a* and merely changing their angle, but performing the same functions, whatever may be the relative position of the operating-lever. This cannot be the case with a stiff rock-bar, for in that the bar itself must be adjusted the same as the lever. The adjustability of the operating-lever up and down is necessary in many cases—such, for instance, as to accommodate the-lever to inconvenient positions in which the pump may be placed, or to the different height and capacity of the persons operating it. The adjusting-holes *f f* in the bends of the vibrating bars allow the position of said bars to be changed, if at any time in adjusting the operating-lever the angle should become too acute.

Second. By the employment of the elongated opening *h* in the operating-lever the piston-rods pass directly and centrally from the vibrating bars to the cylinders.

Third. The length of stroke of the pistons is gaged exactly by the employment of the bolt *k*, and this length of stroke is adjustable, so as to be adapted to cylinders of different sizes, by means of the holes *i i*. Were it not for this gage, the pistons would be liable

to be drawn out of the cylinders or forced in so far as to trip the valves in the up and down motions. By the use of this device there can be no difficulty of the kind.

I do not claim separately any of the parts herein described; but

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

The adjustable lever D, provided with the opening *h* and adjusting gage-bolt *k*, the connecting-rods E E′, vibrating bars G G′, and standard C, the whole arranged and operating relatively to the piston-rods H H′ and cylinders B B′ substantially as herein set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ELIAS HALE.

Witnesses:
M. M. HOLMES,
D. G. FORSTE.