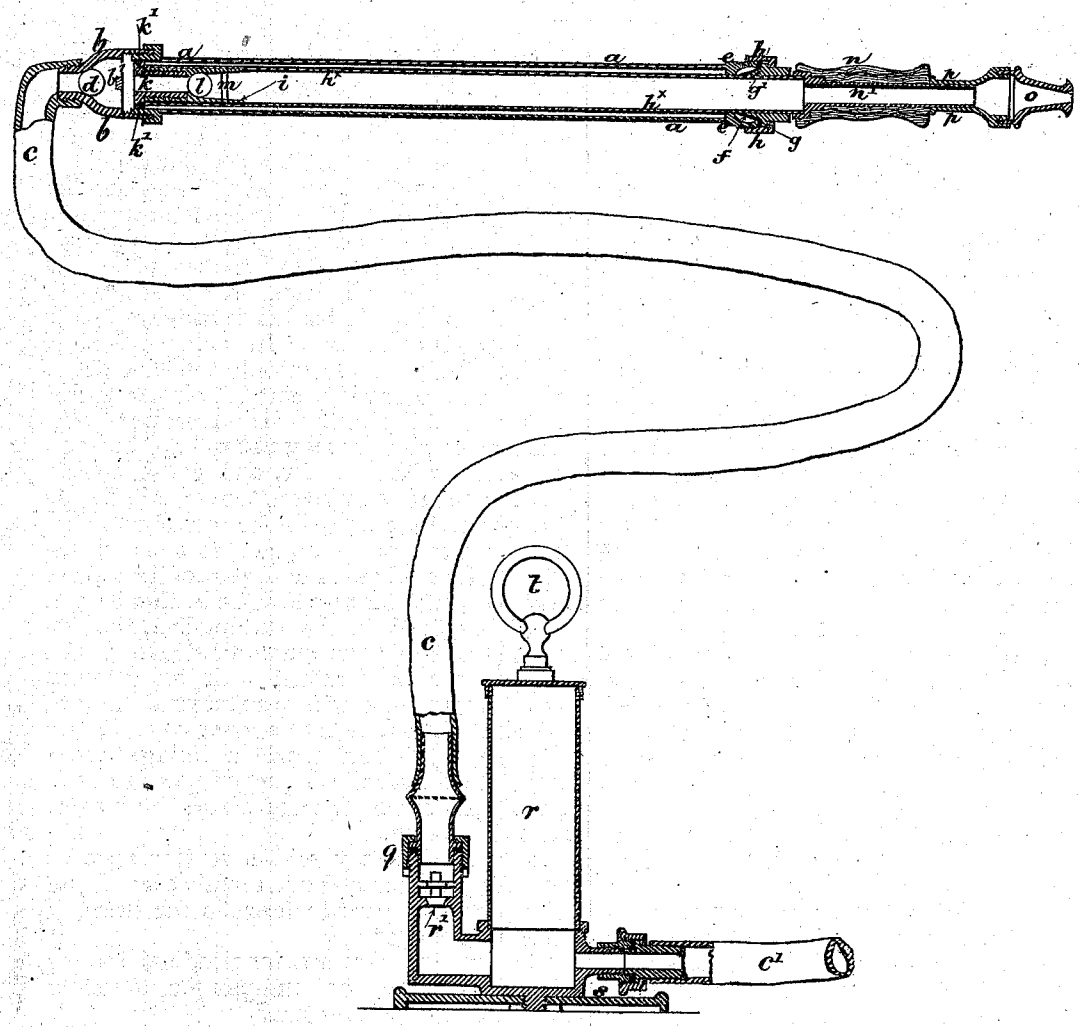
W. B. ROBINS.

Improvement in Portable Garden-Engines.

No. 129,750. Patented July 23, 1872.



William Burnet Robins

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UNITED STATES PATENT OFFICE.

WILLIAM BURNET ROBINS, OF MIDDLESEX COUNTY, ASSIGNOR TO HENRY HAYNES AND EDWARD HAYNES, OF EDGEWARE ROAD, ENGLAND.

IMPROVEMENT IN PORTABLE GARDEN-ENGINES.

Specification forming part of Letters Patent No. **129,750**, dated July 23, 1872.

To all to whom it may concern:

Be it known that I, WILLIAM BURNET ROBINS, of No. 1 Upper Gordon street, Euston Square, in the county of Middlesex, England, a citizen of the United States of America, have invented or discovered new and useful Improvements in Garden-Engines and other similar hand-pumps for throwing jets of water; and I, the said WILLIAM BURNET ROBINS, do hereby declare the nature of the said invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof—that is to say:

This invention has for its object improvements in garden-engines and other similar hand-pumps for throwing jets of water.

According to my invention, I employ a cylinder with a ball or other valve at its lower end to admit the water from the suction pipe or passage. This cylinder has at its upper end a stuffing-box, through which a hollow or tubular plunger passes. This plunger takes the place of the tightly-packed piston heretofore used in syringes or hand instruments. The plunger is formed at its lower end with projections, so that the interior of the cylinder or vessel guides it truly as it is worked up and down, but free passage is given to the water past the end of the plunger. The projections act as stops to prevent the plunger being drawn out of the cylinder. The plunger itself forms the outlet-passage for the water, and in it is the outlet-valve, which, by preference, is of a globular form. The upper end of the plunger carries a handle. Thus it will be seen that when the operator raises the plunger water is drawn into the cylinder, and when he forces down the plunger he expels this water past the exit-valve in the plunger and through a jet or rose in connection with it. The suction-pipe is divided into two lengths; a short length passes from the cylinder to an air instrument, which I call a water-bringer, and the longer length passes from the water-bringer to the source of supply. The water-bringer is connected with the suction-pipe by screw-unions; it is provided with a valve to prevent the return of the water, and it is made with a foot, so that it may stand steadily on the ground. The stuffing-box, through which the plunger of the pump works, I construct in the following manner: The upper end of the cylinder is surmounted by a box, suitably constructed, for the reception of a leather washer; it has a circular shoulder, in which the washer is held. The flat leather washer is cut out with the hole through the center of the leather somewhat less in diameter than the hollow plunger. The plunger is pushed through the central hole in the leather, and by so doing the leather is raised from the flat to the conical form. In this condition the washer is clamped down onto the shoulder of the box by a cover secured by a screw-cap. In order that the backward and forward movement of the plunger may not roll up, displace, and destroy the leather, and cause speedy leakage and air admission, the cover has upon it a supporting-ring or projecting ridge, which surrounds the plunger and fills out and sustains the distended or raised part of the leather washer. In order to allow the leather washer to be thus fixed in the stuffing-box, the projections to limit the outward stroke of the plunger are constructed with an external screw-thread working into an internal screw in the plunger-end, or into a more solid lining-tube inserted therein, which lining-tube I shape at its central and upper parts so as to form in the same piece of metal the bed for the outlet-valve.

In order that my said invention may be most fully understood and readily carried into effect, I will proceed to describe the drawing hereunto annexed.

The drawing shows a longitudinal section of a garden-engine or hand-pump constructed according to my invention.

a a is the cylinder or barrel. At its lower end a collar is fixed upon it, and upon this collar the piece *b* is screwed. It is adapted to receive the flexible suction-hose *c*, and a seat is formed within it for the ball-valve *d*. *b'* is a cross-bar, to limit the play of this valve. At the upper end of the cylinder *a* the stuffing-box *e* is fixed upon it, and at the top of the box is a flat shoulder, against which the leather washer *f* is held by the cover *g*. The cover *g* is clamped down by the cap *h*, which screws onto the outside of the box *e*. *h** is the plunger. The washer *f* is stretched over the plunger be-

ore it is put in its place, and then the edges of the washer are clamped, in the manner described, against the shoulder of the stuffing-box. *g'* is a supporting ring or projection on the cover *g;* it fits within the hollow of the washer and prevents it changing its form as the plunger is worked to and fro through it. *i* is a lining fixed within the plunger at its inner end, and the piece *k*, with the projections or stops *k'*, which may be three or four in number, screws into it. *l* is the delivery-valve; its seat is in the lining *i;* and *m* is a bar to limit the play of the valve. At the outer end of the plunger the handle *n* is fixed, and the delivery-pipe *n'* passes through it. *o* is the delivery-nozzle, which, by the piece *p*, is connected with the pipe *n'*. The action of the apparatus is obvious. At the out-stroke of the plunger water enters the cylinder *a* past the suction-valve *d*, and on the return stroke, the suction-valve closing, the water is delivered through the delivery-valve *l*, in the plunger *h**, to the nozzle *o*. *c* is the shorter length of the suction-hose. It passes to the water-bringer, with which it is coupled by the screw-union *q*. The longer length *c'* is also similarly coupled with the water-bringer. *r* is the vertical cylinder or chamber of the water-bringer, and *r'* a valve located in the vertical outlet-pipe to prevent regurgitation; *s*, a foot, on which the apparatus stands; and *t*, a ring to serve as a handle. Thus, as will be seen, the water-bringer is, in principle, an air-vessel applied to the suction-pipe to maintain a constant flow therein, and the air-vessel is adapted to this special use by combining with it the several parts above set forth. Where the supply of water is close to the point where the engine-jet is required, the water-bringer may be disconnected.

Having thus described the nature of my invention, and the manner of performing the same, I would have it understood that I claim—

1. The combination, in a garden-engine, of the cylinder with a hollow plunger, through which the water passes to the jet, having annular guides at its inner end, which act both as guides for the plunger and as stops to limit the stroke of the said plunger, substantially as before described.

2. The combination of the cylinder and the plunger with the leather packing-washer and its supporting-ring, as hereinbefore set forth.

3. The combination of the inner end of the hollow plunger with the piece which carries the projections screwed into the lining-tube in which the valve-seat is formed, as hereinbefore described.

4. The combination, substantially as described, of a hand-pump or garden-engine and the portable air-vessel, applied as described, with flexible hose, for the purposes herein set forth.

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Witnesses:

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