J. MURPHIN.

Hermetic Sealing Apparatus.

No. 219,971. Patented Sept. 23, 1879.

Fig. 3.

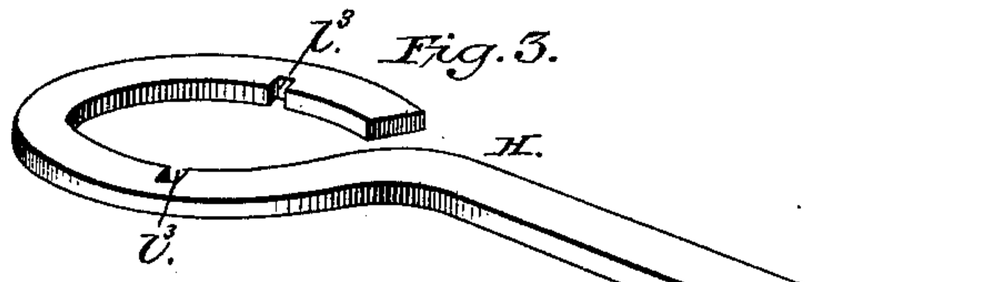

Fig. 5.

Fig. 2.

Fig. 6.

Fig. 1.

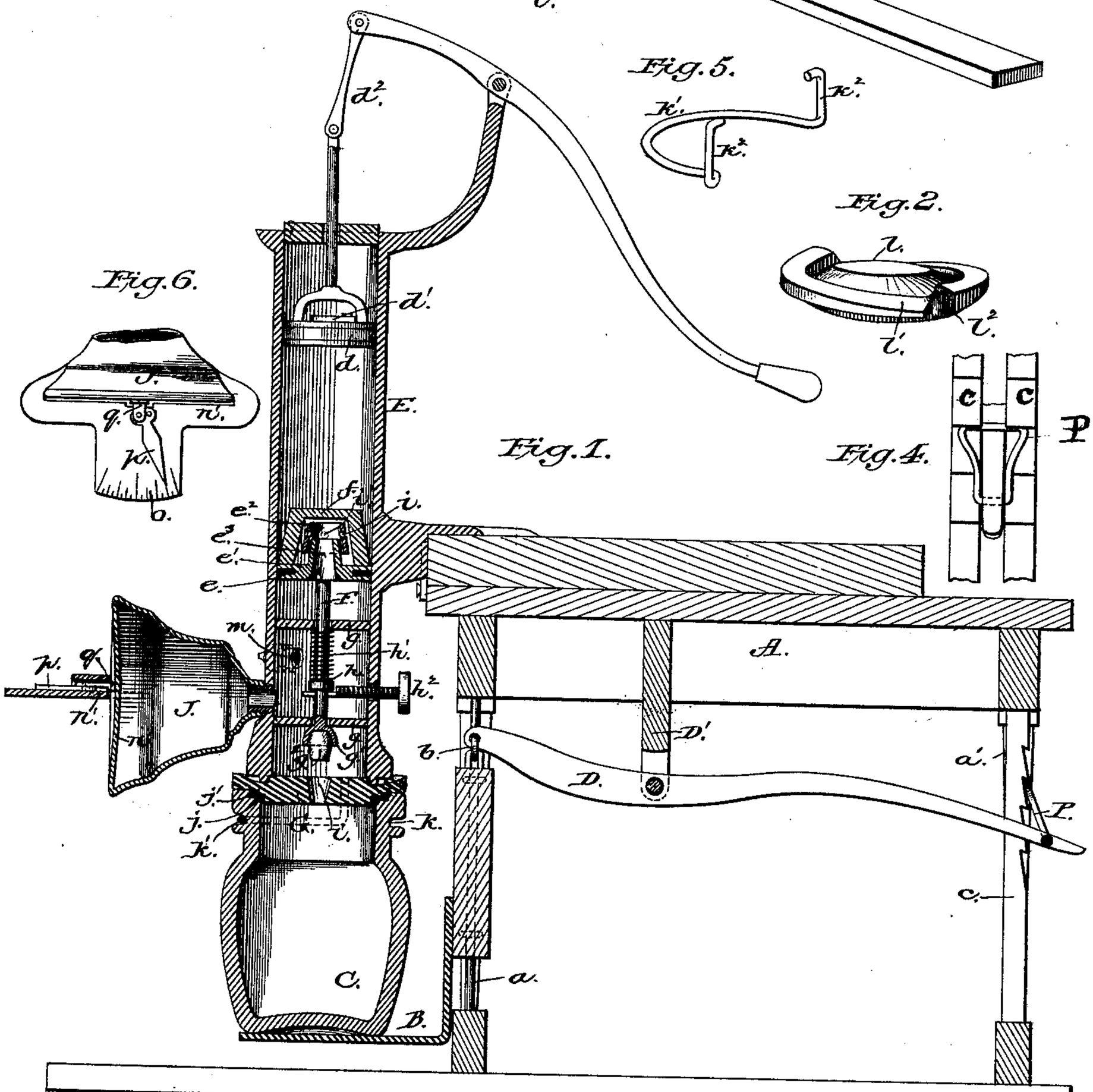

Fig. 4.

WITNESSES

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JOSEPH MURPHIN, OF MALAGA, NEW JERSEY, ASSIGNOR OF ONE-HALF OF HIS RIGHT TO ALFRED B. RICHMAN, OF SAME PLACE.

IMPROVEMENT IN HERMETIC SEALING APPARATUS.

Specification forming part of Letters Patent No. **219,971**, dated September 23, 1879; application filed December 21, 1878.

To all whom it may concern:

Be it known that I, JOSEPH MURPHIN, of Malaga, in the county of Gloucester and State of New Jersey, have invented a new and valuable Improvement in Hermetic Sealing Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a longitudinal central vertical section of my improved air-exhaust pump and can; and Figs. 2, 3, 4, 5, and 6 are details.

This invention has relation to improvements in preserving-cans, and in pumps for exhausting air therefrom previous to hermetically sealing the can-lid.

The object of the invention is principally to devise means for preventing air from rushing back into the can after being exausted therefrom when the said can is removed from the exhaust-pump, and to seal or plug up the opening of the lid before said removal.

The nature of the invention consists in the construction and novel arrangement of parts, as hereinafter shown and described.

In the annexed drawings, the letter A designates a strong table, supported upon legs *a* a^1, and having at one end a strong support, B, upon which is placed the can C. The support B is of right-angular form, its horizontal portion being at right angles to its vertical part, and it is fastened between the legs *a* of the table, so as to be vertically adjustable. It is connected by a flexible coupling, *b*, to the weight end of a vertically-vibrating lever, D, having its fulcrum in a hanger, D′, depending from the bottom of the table. This lever extends the entire length of the table, and passes between two rack-bars, *c c*. It is provided at its power end with a vibrating pawl, P, which, when the lever is thrust down in the act of raising the support B, is engaged with the racks *c* and locks the said lever.

E indicates the exhaust-pump, having the usual plunger *d*, with its upwardly-opening valve d^1, actuated by a lever, d^2, through the medium of a piston-rod. At a sufficient distance below the plunger is the stationary valve *e*, also opening upward. It is constructed as follows: From a metallic plate, e^1, fitting air-tight in the pump-barrel, projects upward a tube, e^3, of the form of a conical frustum, which tube is covered by a metallic cap, e^2, the vertical movements of which are controlled by the usual guard *f*, erected on plate e^1, and straddling the tube e^3. The cap is also of the form of a conical frustum, and fits air-tight upon the said tube. It has in its side a number of perforations, *i*, that when the cap is down are closed, but open when the said cap is up. This occurs when the plunger is moving up the barrel and exhausting, and establishes communication between the pump-barrel below the plunger and the chamber below the valve. The moment the downward stroke of the plunger commences the cap falls and cuts off communication between the parts aforesaid of the barrel.

F indicates the plugger-rod, arranged in guides *g* in the barrel, in the longitudinal axis thereof, and below the valve *e*. This rod has at its lower end an inverted cup, g^1, in which is placed a rubber or other stopple, g^2, and is provided above the lower guide *g* with a collar, *h*, between which and the upper guide *g* is arranged a spring, h^1. The rod F is endwise movable in its guides, and when raised compresses the spring h^1. It is held in the raised position by means of a trigger, h^2, that passes through the wall of the pump and engages under the collar aforesaid. The object of this will hereinafter appear.

The can C has a reduced neck, having on its inside an annular ledge, *j*, and its lid G has a corresponding rabbet, *j′*, the outer part of which rests upon the said ledge and a central conical opening, *i′*. Between the lid and the ledge of the can is usually interposed a packing-ring.

On the outside of the can-neck is formed an annular groove or recess, *k*, in which is placed a semi-annular lock-wire, k^1, composed of wire bent into semi-annular form, with upturned hook-arms k^2 at right angles to the part k^1. This lock is sprung into the recess *k* with its hook ends projecting above the top of the can. It is then ready for use.

The lid G is provided on top near its margin

with the inclines l l^1, and with a notch, l^2, in its edge, and is placed on the can by passing the thinnest part of said lid opposite the notch l^2 under one of the hook-arms k^2. The lid will then drop into place, or be easily forced thereinto. The lock is caused to turn in its groove by means of a wrench, H, having notches l^3, designed to receive the hook-arms k^2, the lid and can being held stationary, and the wedging action thus produced causes the packing-ring to be compressed, and forms an air-tight joint between the can and lid. They are then placed upon the support B, and the upper face of the lid raised into forcible contact with the mouth of the pump, which, being actuated, exhausts the air from the can. The plugger-rod is then released, and the spring h^1 immediately reacting, the stopple is forced into the vent i' of the lid, accurately closing the same. The partial vacuum in the pump-barrel is then destroyed by opening a cock, m, in the side of the said barrel, thus disconnecting the lid and pump, and allowing the can to be removed from the support. It may then be sealed at pleasure.

It will be observed that the stopple closes the lid after the air has been exhausted from the can, but before it is removed from the pump; consequently after such removal it is impossible that air should get into the can.

J indicates a preferably conical vessel, having rigid sides and a flexible bottom, n, and secured in any suitable manner to the lower part of the pump-barrel below the lower valve. This vessel communicates with the lower chamber of said pump, and when air is exhausted therefrom the flexible bottom of the vessel is pushed in, owing to the pressure of the atmosphere. This feature is taken advantage of to gage the vacuum in said vessel as follows: The flexible bottom n is bridged by a horizontal transverse plate, n', the ends of which are fixedly secured to the rigid sides of the vessel, and no part of which touches the said bottom n. The plate n' is provided with a graduated scale, o, traversed by an index or finger, p, having its pivot on plate n', and pivoted to a stud, q, projecting from the flexible bottom n.

It is evident that when the bottom is forced inward by the atmospheric pressure, when the pump is exhausting, the index will swing upon its pivot to a greater or less extent, according to more or less perfect vacuum in the pump-barrel, and that the index will move over the scale to correspond. By this means I am able to so regulate the exhaust as to prevent the contents of the can from being drawn up into the pump.

I disclaim the air-valve with the index in the matter of this application, as I intend to make them the subject of a subsequent application.

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

1. The combination, with a table carrying an exhaust-pump at one end and a vertically-adjustable angular support, B, sashed in said table under the pump, of the vertically-vibrating lever D, flexibly coupled to said support, the pawl P, and the rack-bars c, receiving between them the end of said lever, substantially as specified.

2. The combination, with an exhaust-pump having a chamber below its stationary valve e, of a spring-actuated plugger-rod, F, arranged in guides in said chamber, and provided with an inverted cup or seat for a stopple, and a trigger, h^2, releasing said rod, substantially as specified.

3. The combination, with a can, C, and a lid, G, fixed thereto, and provided with a conical exhaust-hole, i', of an air-exhaust pump, E, a spring-actuated plugger-rod, F, having a seat in its lower end for a detachable stopple, and arranged in the pump-barrel below its stationary valve, and a trigger, h^2, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JOSEPH MURPHIN.

Witnesses:

E. L. PERDRIAUX,

DE LANCEY G. WALKER.