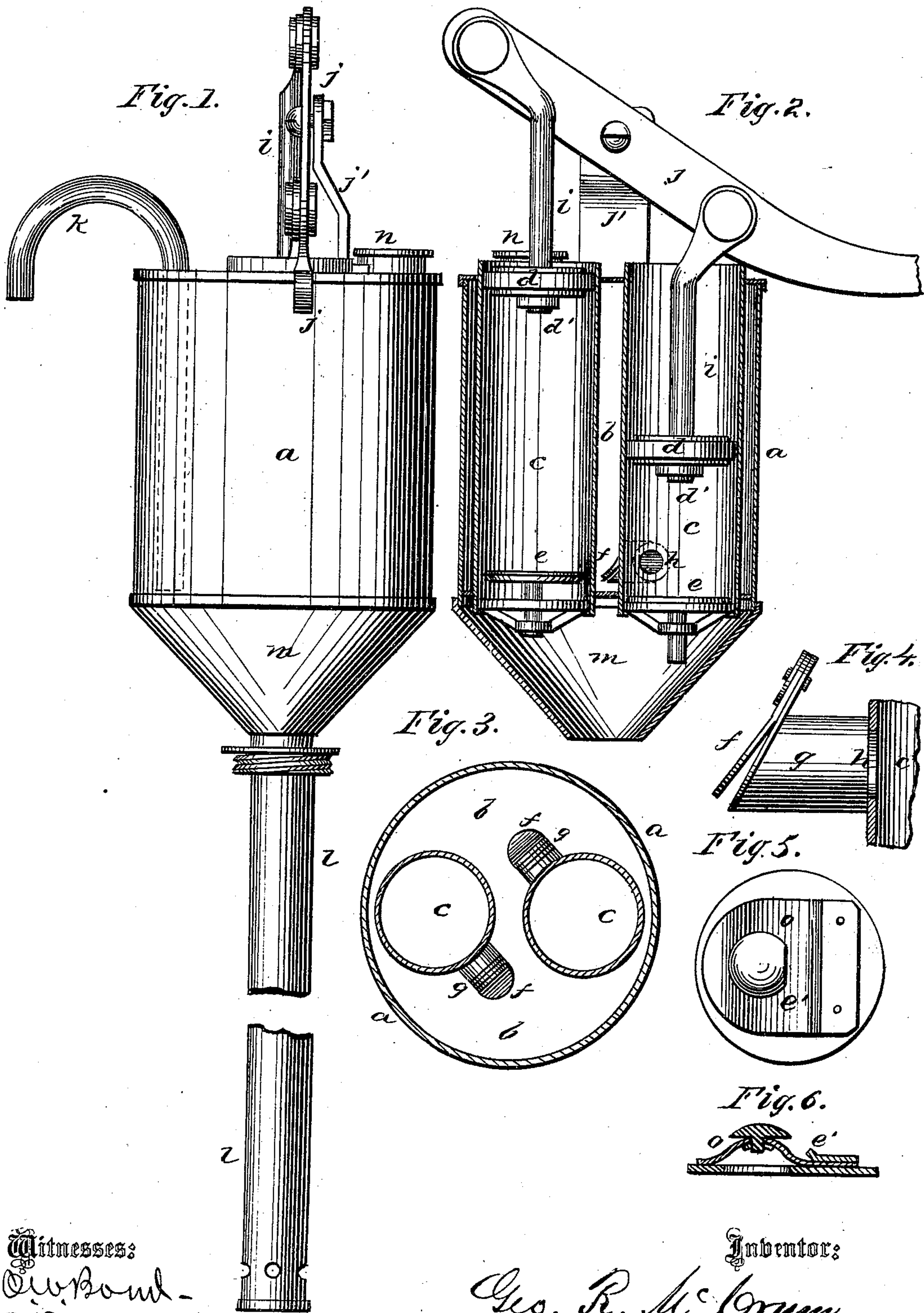


G. R. McCrum.  
PUMP.

No. 177,413.

Patented May 16, 1876.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. 177,413, dated May 16, 1876; application filed February 9, 1876.

*To all whom it may concern :*

Be it known that I, GEORGE R. McCRUM, of the city of Chicago, Cook county, State of Illinois, have invented new and useful Improvements in Pumps, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is an elevation; Fig. 2, a vertical section; Fig. 3, a cross-section on line *x x* of Fig. 1; Fig. 4, a detail of the discharge-valve; Figs. 5 and 6, details of the improved lower or receiving valve.

The object of this invention is to reduce a double-acting force-pump into a small compass, so that it can be used either as an oil or spirit pump; and its nature consists in placing an exterior cylinder around the pump-cylinders to form an air-chamber, and in the construction and arrangement of the valves, as hereafter set forth and claimed as new.

In the drawings, *a* represents the exterior cylinder or case; *b*, the air-chamber; *c*, the pump-cylinders; *d*, the pistons or plungers; *e*, the lower or receiving valves; *f*, the discharge-valves; *g*, the tube forming the seat of the discharge-valves; *h*, the side opening for the tube *g* into the pump-cylinder; *i*, the piston-rods; *j*, the pump handle or lever; *k*, the discharge-tube; *l*, the suction-tube; *m*, the enlargement of the upper end of the suction-tube; *n*, the opening, with a screw-cap, for charging or emptying the pump; *o*, the cup-shaped rubber flap on the valve *e'*.

The outer case *a*, which I have called a cylinder, is most conveniently made in that form, but it may be made angular, if desired. For an oil-pump a convenient size for the cylinder will be about five inches in length and in diameter. Inside of this cylinder *a* are placed two pump-cylinders, *c*, as shown, which may be about an inch and a half in diameter. The sizes here given may be increased or diminished, as desired. The pump-cylinders *c* are made in any usual and well-known manner, and if desired may be provided at their lower ends with spindle-valves *e*, or other common valves; but I prefer to apply the valve *e'*, which valve is made on a plain disk, which can be easily soldered to the lower end of the tube *c*, and is provided with a cup-shaped rubber flap, *o*, loaded or capped with a small piece

of metal, as shown at Fig. 6. By forming the valve *e'* in this manner the rubber presses first at its outer edge upon the seat, so that a very slight pressure, not more than the weight of the oil in the pump, will prevent its leaking, so that the oil will not run down when the pump is standing still. When heavy pressure is applied the metal cap will force the rubber down to its seat at the inner edge, so as to properly withstand such pressure.

The seat *g* of the valve *f* is made of a simple tube provided with a flat face, against which the valve rests, and is made larger than the opening *h* into the pump-cylinder. By making it larger, or extending it below the opening, a little oil will always stand in the pump and against the valve *f*, so as to prevent its drying, or partly drying and sticking. These valves *f* are arranged on opposite sides of the pump-cylinders, as shown at Fig. 3. By arranging them in this manner they can be placed in a small cylinder without being close enough to each other to interfere with their proper action.

The discharge-pipe *k* extends down into the outer cylinder or case *a* nearly to the bottom, as shown, so that the case *a*, in addition to its office of supporting the pump-cylinders and pump-lever, forms an air-chamber, which gives the contents of the pump a steady flow when discharged through the pipe *k*. By this arrangement I am enabled to get a sufficiently large air-chamber to equalize the flow in a very small pump. The pump is placed on a suction-tube, *l*, which is enlarged at *m* sufficiently to bring it within the operation of either of the pump-cylinders, or it may be branched at that point, carrying a branch to each of the pump-cylinders. The suction-tube *l* is provided with proper openings, and is designed to be inserted into the bung-hole of a barrel or opening of a tank, so as to pump out its contents, and should have a sufficient length to reach to or nearly to the bottom of the tank or barrel to which it is to be applied. The handle *j* of the pump is mounted upon the cylinder or case *a*, and is connected with the pistons *d* by suitable rods *i*, as shown.

When the pump is used, if it is placed in a barrel or tank nearly full, it will start without



charging; otherwise it will be necessary to charge it through the opening *n*, which is provided with a screw-cap, which may be packed, if it should be air-tight, in order not to interfere with the working of the air-chamber *b*. After the pump is once charged it will continue to work, as by the arrangement of the valve *f* with its seat *g* with the opening *h* a little oil or other liquid will remain in the pump at all times.

By this construction and arrangement of the parts I am enabled to get a double-acting force and suction pump into a very small space, so that it can be used for the purpose stated; and as the parts are arranged to support each other, all of the cylinders and tubes can be made of sheet metal or sheet-metal tubing.

The lever *j* is mounted on the post or bracket *j'*, and is centrally pivoted over and supported upon the air-chamber or case *a*. The pistons *d* are made by compressing a piece of rubber

between two metal disks by means of a nut, *d'*, and as the rubber wears away is expanded or forced out, and made to fit by simply screwing up the nut; and its size may be diminished by unscrewing the nut. By this construction I avoid repacking the valves when they become worn so as to leak.

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

1. The combination of the cylinders *c c*, with their discharge-valves located upon opposite sides, with the cylinder or case *a*, substantially as specified.

2. The valve *g*, located partly below the opening *h*, in combination with the cylinders *c* and case *a*, substantially as and for the purpose set forth.

GEORGE R. McCRUM.

Witnesses:

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