

J. W. COLLINS.
PUMP.

No. 193,145.

Patented July 17, 1877.

Fig. 1

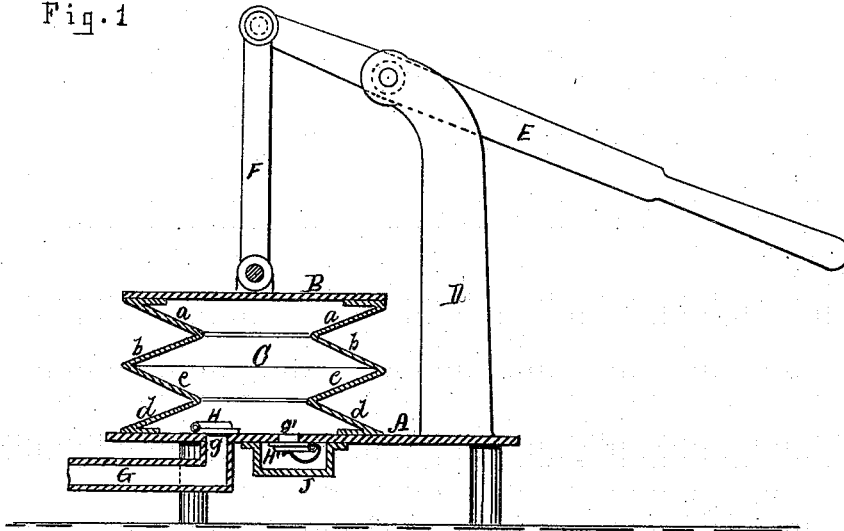
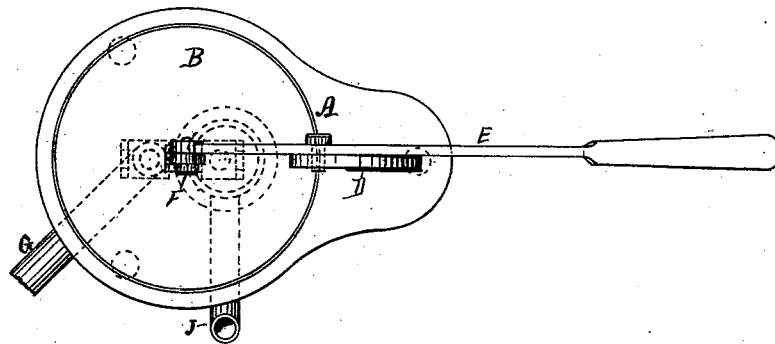


Fig. 2



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UNITED STATES PATENT OFFICE.

JOHN W. COLLINS, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. 193,145, dated July 17, 1877; application filed January 8, 1877.

To all whom it may concern:

Be it known that I, JOHN WEB. COLLINS, of Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Pumps; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 represents a vertical central section of a pump embodying my invention, and Fig. 2 represents a general plan or top view of the same.

Like letters of reference indicate like parts.

The object of my invention is to simplify the construction of pumps so as to dispense with the cylinder and plunger commonly used, and thereby reduce the friction and increase the capacity of the pump. To that end my invention consists in the arrangement of the several parts as hereinafter described and claimed.

In the drawing, A represents a flat metal plate, forming the base of the pump, and B represents an annular metal plate, which is located above the base A, and connected thereto by means of a series of elastic diaphragms, *a b c d*, as shown in Fig. 1, said diaphragms being equal in diameter to the diameter of the plate B, and each is provided at its center with an annular opening, *f*, the diameter of which is nearly equal to the gross diameter of the diaphragms.

The diaphragms *a* and *d* are permanently attached near their peripheries to the lower surface of plate B and base A, respectively, and at their inner edges to the inner edges of the diaphragms *b* and *c*; and the diaphragms *b* and *c* are connected together at their peripheries, forming an air-tight chamber, C, as shown in Fig. 1.

The diaphragms may be made of either leather or india-rubber, or any other suitable material which is sufficiently elastic to allow the plate B to ascend or descend, and to resist the force of the atmospheric pressure upon them when extended.

D is a vertical upright or standard, permanently attached to the base A, and extends upward above the plate B, as shown in Fig. 1. E is the handle, which is fulcrumed to the upper end of the standard D, and is of the proper length to allow its short end to extend to a point immediately over the center of the plate B. F is a connecting-rod, which is connected at its upper end to the handle, and at its lower end to the center of the plate B. G is the suction-pipe, which communicates with chamber C through an opening, *g*, in the base A. H is a check-valve, seated upon the base A, over the opening *g*, to prevent the water from receding from the chamber back into the suction-pipe. J is the discharge-pipe, which communicates with chamber C through an opening, *g'*, in the base A. H' is a check-valve, which is seated against the under side of the base A, to prevent the water from being drawn from the discharge-pipe back into the chamber.

The operation of my said pump is as follows: Force is applied to the long end of the handle, so as to depress it, which imparts an upward movement to plate B, so as to extend the diaphragms, and thereby increasing the size of the chamber C and forming a vacuum therein, when valve H opens and the atmospheric pressure causes the water to ascend through the suction-pipe into said chamber. When the chamber is filled, the long end of the handle is elevated, and plate B is forced downward by the short end of the handle, so as to depress the diaphragms and thereby diminish the size of the chamber, when valve H reseats and valve H' opens, and the water is forced from the chamber into and through the discharge-pipe.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination, with the base A and valves H and H', of the plate B and diaphragms *a*, *b*, *c*, and *d*, substantially as and for the purpose specified.

JOHN WEB. COLLINS.

Witnesses:

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N. C. GRIDLEY.