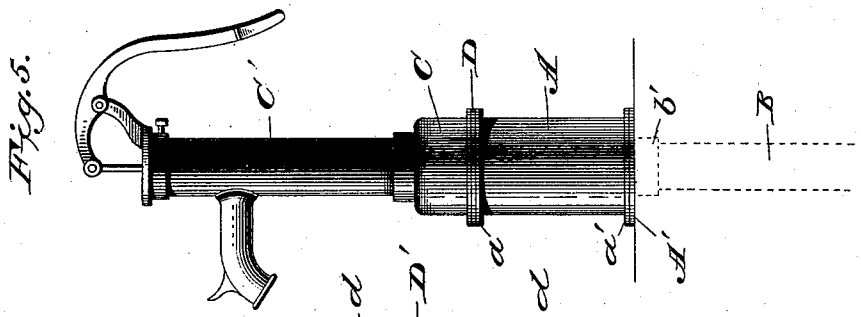
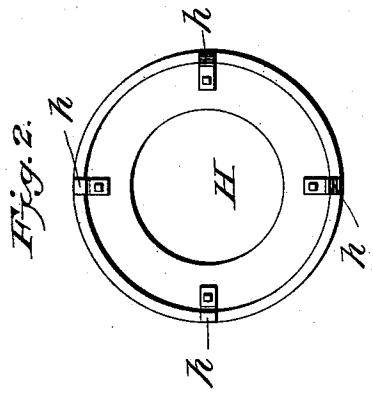
(No Model.)

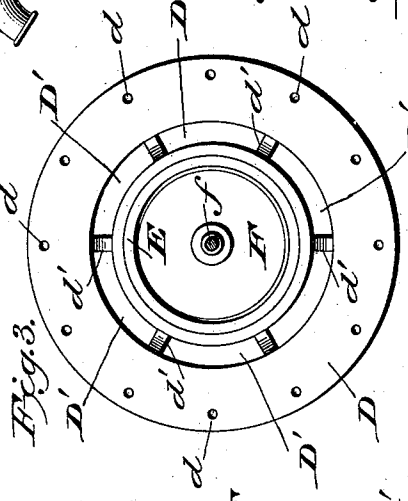
H. MEHL.

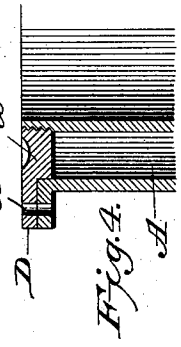
PUMP.

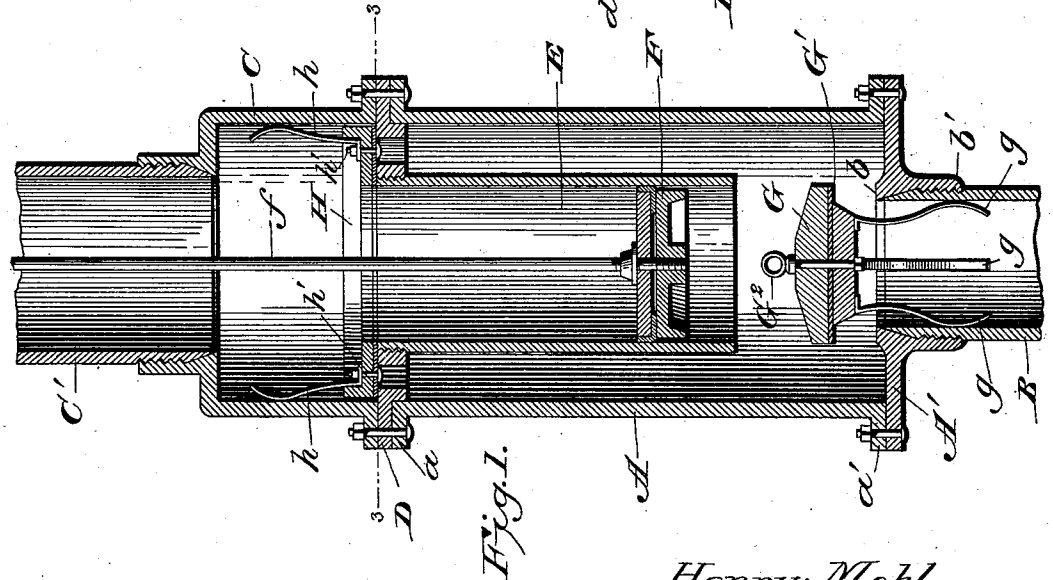
No. 543,394. Patented July 23, 1895.











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PUMP.

SPECIFICATION forming part of Letters Patent No. 543,394, dated July 23, 1895.

Application filed March 7, 1895. Serial No. 540,884. (No model.)

To all whom it may concern:

Be it known that I, HENRY MEHL, a citizen of the United States of America, residing at Bushton, in the county of Rice and State of Kansas, have invented certain new and useful Improvements in Pumps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to provide a pump which can be cheaply manufactured, the device consisting of but few parts, which are readily separated for access to the interior of the pump; and the invention consists in the special construction, combination, and organization of the parts, as will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a vertical sectional view of a pump constructed in accordance with my invention. Fig. 2 is a plan view of the ring-valve of the pump. Fig. 3 is a sectional view on the line 3 3 of Fig. 1. Fig. 4 is a detail sectional view of the seat of the ring-valve, and Fig. 5 is a side view of the exterior of the pump.

A designates the pump stock or casing, which is simply a cylindrical tube of proper diameter, having at its upper and lower ends outwardly-projecting flanges *a* and *a'*. To the lower flange is secured a head A', provided with a valve-seat *b* and a depending portion *b'*, which is internally threaded, the upper end of the depending portion presenting an inclined surface, against which the beveled upper end of the suction-pipe B bears, said pipe being threaded below the bevel to engage the threads of the portion *b'*. This insures a tight joint without the use of packing.

C designates the upper head of the stock or casing, to which the exit-pipe C' is secured in the same manner that the suction-pipe is secured to the head A'. The lower end of the head C is provided with an outwardly-projecting flange having bolt-holes therein, which register with the bolt-holes in the outwardly-projecting flange *a*.

D designates an annular plate, which is provided with bolt-holes *d*, which register with the bolt-holes in the flanges of the stock A and head C. The annular plate D is also provided with apertures D', the connecting walls or ribs *d'* having concave upper surfaces, as shown more clearly in Fig. 4. The inner edge of the annular plate D is provided with screw-threads for securing thereto a cylinder E, which is positioned within the pump stock or cylinder A.

F designates the piston, which is adapted to fit snugly within the inner cylinder E and is attached to the pump-rod *f* in any suitable manner.

G designates the lower valve, which is provided with depending guide-springs *g*, the upper ends of said springs being bent at an angle for attachment to the valve, while the lower ends are curved to bear against the interior of the suction-pipe. This valve comprises two parts, between which is clamped a washer G', which bears upon the valve-seat *b* when the valve is lowered. The parts of the valve are secured together by an eye-bolt G^2, which passes through said parts and receives a nut on its threaded end.

H designates a ring-valve, which is made up of a flanged metallic ring, to the upper part of which, within the flange, are secured guide-springs *h*, which are bent and curved like those attached to the valve G, and are also apertured for the passage of bolts *h'*, the heads of said bolts bearing against a washer or packing-ring placed against the under side of the flanged ring H. As the heads of the bolts project beyond the washer or packing-ring the connecting walls or ribs *d'* of the annular plate D are made concave, as hereinbefore mentioned, so as to prevent the ring-valve being held off its seat. The spring-guides *h* will prevent excessive upward movement of the ring-valve.

In constructing a pump in accordance with my invention it is desired that the suction-pipe B shall be of the smallest diameter and that the inner cylinder E and exhaust or

exit pipe C′ be of substantially the same diameter as the valve G, while the spout of the pump need not exceed the diameter of the suction-pipe. To the top of the exit-pipe is secured a suitable support, to which is pivoted the pump-handle, to which the piston-rod *f* is attached.

In use the lower valve of the pump, being the smaller and having less surface for wear than the upper one, more frequently gets out of order, and consequently oftener needs repairing. Therefore, by reason of the construction herein shown and described, this valve can be readily removed by disconnecting the piston-rod and drawing the piston up through the top of the pump, after which the valve is removed by a tool which engages the eye thereof. The valve can be easily replaced, as the space between the lower end of the inner cylinder E and the upper end of the head A′ is less than the length of the valve, and the spring-guides of the valve are therefore guided by the cylinder E into the suction-pipe.

It will be noted that in the construction of this pump the inner cylinder E depends or hangs from the annular plate D, and I consider this an essential feature, as the greatest strain comes upon the cylinder on the downward stroke of the piston, and it is therefore better able to withstand or resist a pulling strain than if the strain came in the opposite direction. This construction also reduces to a considerable extent the length of the stock or casing A and assembles the working parts of the pump closer together, so that the part of the pump which is of increased diameter will be very short by comparison with pumps of the same class.

I am aware that prior to my invention it has been proposed to provide pumps somewhat analogous in construction, inasmuch as they provide an inner cylinder in which operates a piston and have valves adjacent to the cylinder as well as a valve below the cylinder, and I do not therefore claim such construction, broadly; but

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

1. In combination with a pump constructed substantially as shown, of valves G and H provided with spring guide bars which are attached to the valves and are curved toward each other at their free ends, substantially as shown and for the purpose set forth.

2. In combination with a pump constructed substantially as shown, of a stock or casing A, annular plate D having apertures D′, the parts of the plate between the apertures being concave, a ring-valve having a packing and spring guide bars attached thereto by means of bolts which are positioned in line with the apertures in the annular plate, a cylinder E carried by the annular plate, a piston attached to a piston rod, and a valve G having depending spring guide bars which enter the pipe B carried by the stock or casing, the cylinder E and exit pipe being of the same diameter and of a greater diameter than the suction pipe, substantially as shown and for the purpose set forth.

3. In combination with a pump constructed substantially as shown and provided with a stock or casing A, an annular plate D attached to the stock or casing and provided with apertures, an inner cylinder E attached to said annular plate so as to depend therefrom, a ring-valve H positioned above the annular plate, and a piston and operating means therefor; together with a valve G having depending guide springs *g*, the length of the valve G from its washer to the ends of the guide springs being greater than the distance between the seat for said valve and the lower end of the inner cylinder, substantially as shown, whereby the valve can be guided from the cylinder to its seat, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY MEHL.

Witnesses:
WM. VOLKLAND,
WALLACE H. HORNADAY.