

J. H. SEBALD.
PUMP.

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1,036,918.

Patented Aug. 27, 1912.

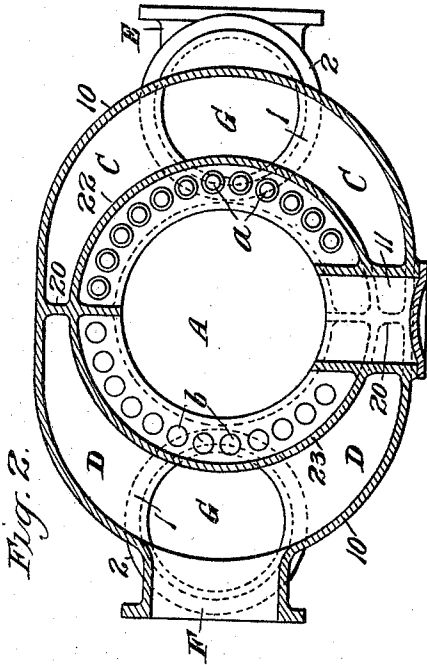
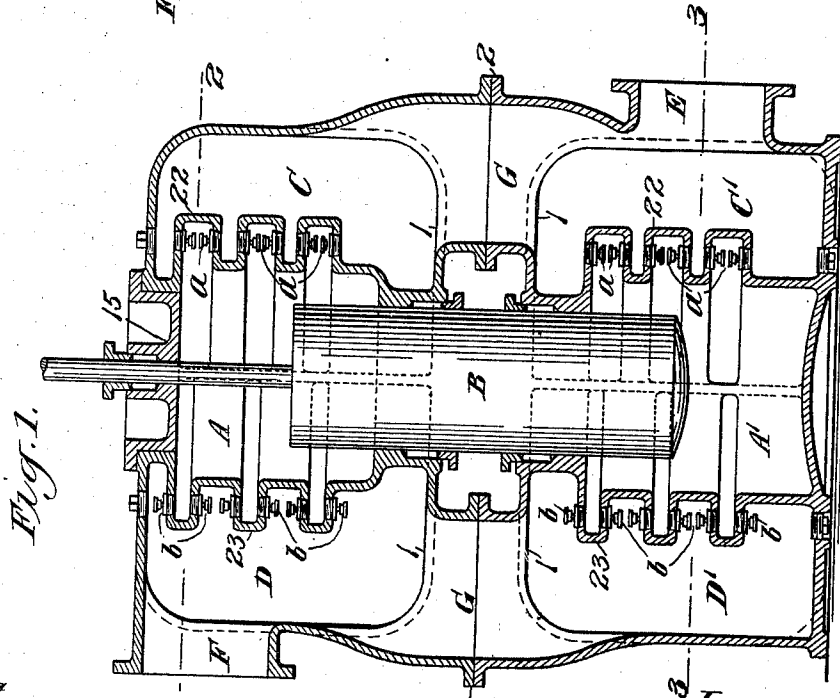
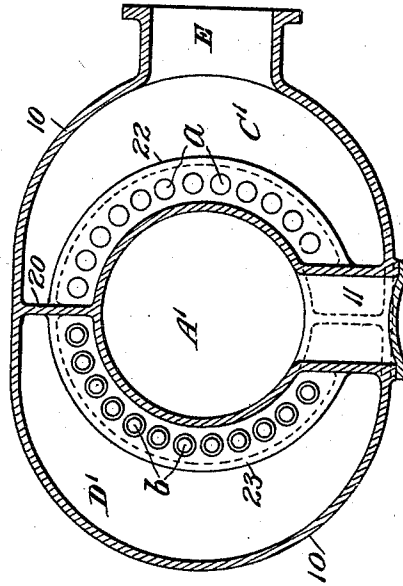


Fig. 3.



Witnesses:
P. N. Tilden
S. C. Brown

Inventor.
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UNITED STATES PATENT OFFICE.

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PUMP.

1,036,918.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOSEPH H. SEBALD, a citizen of the United States, residing at Arlington, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Pumps, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 This invention relates to a novel pump construction, the especial object of the invention being to provide a construction of pump cylinder, pump chambers and valves which shall secure large capacity and direct
15 flow in a pump of very small size, and so formed as to have great strength for weight of metal, and further to provide such a construction which is simple and cheap of manufacture, permitting the cylinder and
20 chambers constituting one end of the pump to be made in a single casting.

The invention is especially intended for vertical double acting pumps, but includes also certain features which may be embodied
25 in single acting or horizontal pumps.

As a full understanding of the invention can best be given by a detailed description of a construction embodying the same, such a description will now be given in connection with the accompanying drawing,
30 illustrating the invention in its preferred form, and the features forming the invention then specifically pointed out in the claims.

35 In the drawings:—Figure 1 is a central vertical section through a vertical double acting pump of the preferred form embodying all the features of the invention. Figs. 2 and 3 are horizontal cross sections on respectively the lines 2 and 3 of Fig. 1.

Referring to the drawings, A and A' are the cylinders of the upper and lower ends of the vertical double acting pump shown, B the plunger center packed between the
45 pump ends, C, C' the suction chambers and D, D' the force chambers of, respectively, the upper and lower ends of the pump, these suction and force chambers being arranged on opposite sides of the pump cylinders.
50 The outer wall 10 of the suction and force chambers extends entirely about the pump cylinder, the suction and force chambers being divided by partitions 20 between the wall 10 and the cylinder so that each chamber extends about and through substantially

one half the circumference of the cylinder. Hand holes 11 through both cylinder and chamber walls are provided for access to the valves on the interior of the cylinder.

The end plates 1 of the inner adjacent
60 ends of the chambers are provided with openings and the chamber walls extended to form pipes G through which the upper and lower chambers connect and which are provided with flanges 2 by which the pipes G
65 are secured together to connect the opposite pump ends, these pipe connections G leaving ample space for convenient access to the packing of the center packed plunger B while being sufficiently large to provide
70 amply for free flow from the lower to the upper chambers of the pump. The force chamber C' at the bottom of the pump has the suction connection E and the force chamber D at the top of the pump the force con-
75 nection F.

The pump cylinders are cast with annular valve chambers 22 on one side, the upper and lower walls of which receive the suction valves *a*, and with annular valve chambers
80 23 on the opposite side, the upper and lower walls of which receive the force valves *b*, provision for a large number of automatic valves being thus made with a pump of small vertical dimensions, this construction
85 securing great strength of the cylinder notwithstanding the large number of valves, so that comparatively light metal may be used. As the suction valves *a* open inwardly and the force valves *b* outwardly, the force
90 valve chambers 23 may be narrower than the suction valve chambers 22 as shown, but it will be understood that this is not essential to the invention and the cylinder may be provided with annular valve chambers
95 of the same width. The construction shown is more compact, however, and the force valve chamber can be made of greater strength than the suction valve chamber, if
100 desired.

The valves of the successive sets are preferably arranged in line with each other, as shown, so that all the valve openings in each cylinder may be bored at one operation and from outside the pump cylinder. This
105 possibility of boring from outside the cylinder enables the construction to be used with integral cylinders too small for boring the valve openings from within the cylinder.

In the construction shown and as is preferred

110

erable, each end of the pump consists of a single casting, including the pump cylinder, force and suction chambers and connection pipe. The entire pump casing construction, therefore, with the exception of the head closing the upper end of the cylinder A, may be formed in two castings which, as shown, are simple and convenient of manufacture. The lower head of cylinder A' may be cast integral with the cylinder and chambers, as shown, but it will be understood that a separate cylinder head may be used at this end of the pump as well as at the other end if desired.

It will be seen that the invention provides a pump of very compact construction, securing large capacity and direct flow of the liquid, with convenient access to the valves, and that the required strength may be secured with very light metal while at the same time the pump is very simple, cheap and convenient of manufacture.

What I claim is:—

1. A pump having suction and force chambers on opposite sides of and extending about the pump cylinder and a plurality of annular valve chambers extending about the cylinder and formed by the cylinder wall, with suction and force valves in the valve chambers opening longitudinally of the cylinder.

2. A pump having suction and force chambers on opposite sides of and extending about the pump cylinder and a plurality of annular valve chambers extending about the cylinder and formed by the cylinder wall, with suction and force valves in the opposite walls of the valve chambers opening longitudinally of the cylinder.

3. A pump having suction and force chambers on opposite sides of and extending about the pump cylinder and a plurality of annular valve chambers extending about the cylinder and formed by the cylinder wall, with suction and force valves in the opposite walls of the valve chambers opening longitudinally of the cylinder, the valves in the successive chambers being arranged in line with each other.

4. A pump cylinder having a plurality of annular valve chambers extending about the cylinder and formed by the cylinder wall, and annular sets of valves in said chambers opening longitudinally of the cylinder.

5. A pump cylinder having a plurality of annular valve chambers extending about the cylinder and formed by the cylinder wall, and annular sets of valves in the opposite walls of said chambers opening longitudinally of the cylinder.

6. A pump cylinder having a plurality of annular valve chambers extending above the cylinder and formed by the cylinder wall, and annular sets of valves in said chambers opening longitudinally of the cylinder, the valves of the successive sets being arranged in line with each other.

7. A pump casing consisting of a pump cylinder having a series of annular valve chambers extending about the cylinder and formed by the cylinder wall, a casing extending about the cylinder with the space between the casing and cylinder divided by partitions to form suction and force chambers, and extensions of said suction and force chambers for connecting two casings to form a double acting pump, said pump cylinder, valve chambers, suction and force chambers, and extensions all being formed integral.

8. A pump having a cylinder A, with a series of annular valve chambers 22, 23 extending about the cylinder and formed by the cylinder wall, annular sets of suction and force valves *a b* in the opposite walls of said chambers opening longitudinally of the cylinder, and suction and force chambers C, D on opposite sides of and extending about the cylinder.

9. A pump having a cylinder A, with annular valve chambers 22, 23 extending about the cylinder and formed by the cylinder wall, annular sets of suction and force valves *a b* in the opposite walls of said chambers opening longitudinally of the cylinder, the valves of the successive chambers being arranged in line with each other, and suction and force chambers C, D on opposite sides of and extending about the cylinder.

10. A double acting center packed pump having the cylinders A A' with annular valve chambers 22, 23 extending about the cylinder and formed by the cylinder walls, annular sets of suction and force valves *a b* in the opposite walls of said chambers opening longitudinally of the cylinders, and suction and force chambers C, C' and D, D' for the opposite ends of the pump arranged on opposite sides of and extending about the cylinders with the suction and force chambers for the opposite ends of the pump secured together to connect the pump ends.

In testimony whereof, I have hereunto set my hand, in the presence of two subscribing witnesses.

JOSEPH H. SEBALD

Witnesses:

WM. SCHWANHAUSER,
E. F. WALKER.