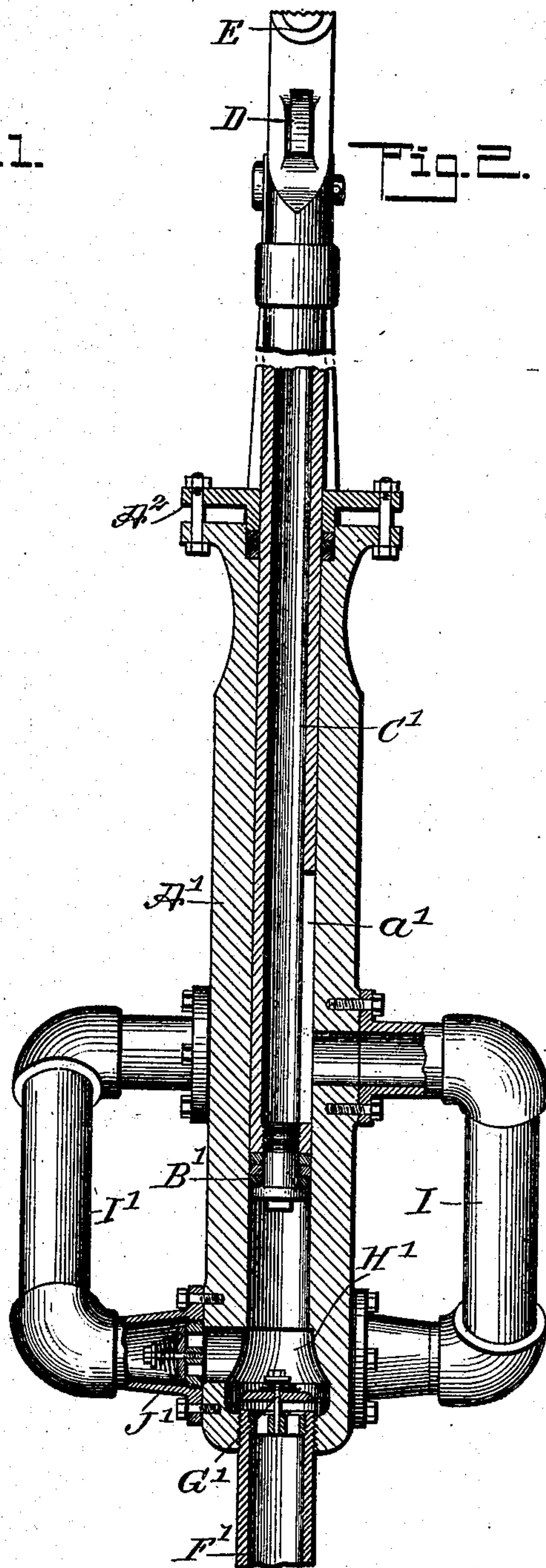
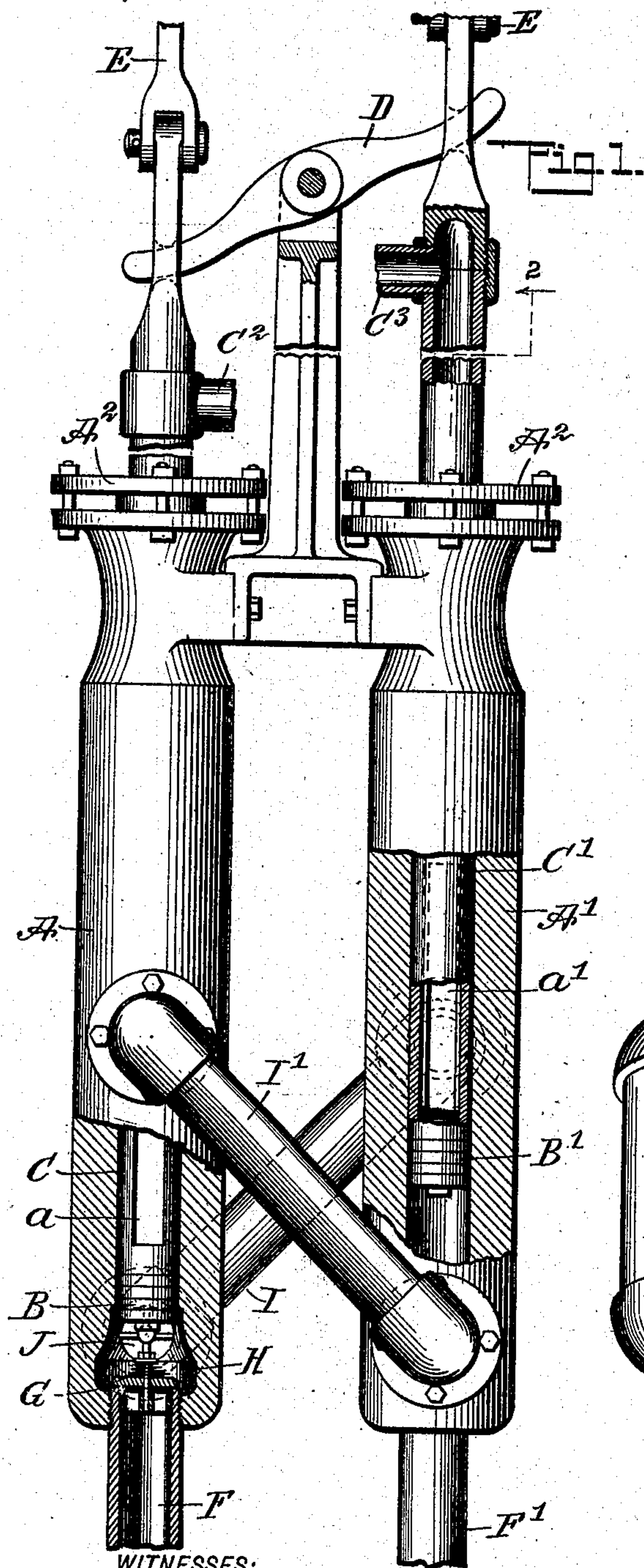


No. 885,798.

PATENTED APR. 28, 1908.

A. P. SMITH.
BALANCED PUMP.
APPLICATION FILED DEC. 22, 1906.



WITNESSES:

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ALBERT P. SMITH, OF SUMPTER, OREGON.

BALANCED PUMP.

No. 885,798.

Specification of Letters Patent.

Patented April 28, 1908.

Application filed December 22, 1905. Serial No. 292,958.

To all whom it may concern:

Be it known that I, ALBERT P. SMITH, a citizen of the United States, and a resident of Sumpter, in the county of Baker and State of Oregon, have invented a new and Improved Balanced Pump, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved pump, arranged to require comparatively little power for operating the pump by employing two single acting pumps, of which one delivers through the other, and the descending plunger of one pump aids the lifting of the water in the other pump.

The invention consists of novel features and parts and combinations of the same which will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in both views.

Figure 1 is a side elevation of the improvement, parts being shown in section; and Fig. 2 is a transverse section of the same, on the line 2—2 of Fig. 1.

In the barrels A and A' of two single acting pumps reciprocate plungers B and B', having hollow plunger-rods C and C' extending through suitable stuffing-boxes A² arranged on the upper ends of the barrels A and A'. The upper outer ends of the plunger-rods C and C' are connected with each other by a suitable walking beam D, so that when one plunger-rod and its plunger descends, the other rises, and vice versa. The outer ends of the plunger-rods C and C' are connected by suitable means E with an engine or other motor, to impart the desired reciprocating motion to the plungers B and B'.

The lower ends of the barrels A and A' are provided with suction pipes F and F', connected at their upper ends by suction valves G and G' with suction chambers H and H', arranged in the lower portions of the barrels A and A'. The suction chamber H is connected, by a pipe I, with the barrel A' a distance above the plunger B' at the time the latter is at the end of its upward stroke; and the upper end of the said pipe I connects at all times with an elongated port a' formed in the wall of the plunger-rod C', so that communication is established at all times

between the pipe I and the interior of the hollow plunger-rod C'. In a like manner the suction chamber H' is connected, by a pipe I', with the barrel A, and this pipe I' is at all times in communication with the interior of the hollow plunger-rod C by way of an elongated port a formed in the plunger-rod C. Check valves J and J' are arranged in the pipes I and I' at their entrance ends to the suction chambers H and H', to prevent return flow of the water in the said pipes I and I'.

The operation is as follows: As illustrated in Fig. 1, the plunger B' is on the up-stroke, while the plunger B descends, and during the up-stroke of the plunger B' water is drawn, by way of the suction pipe F' and the suction valve G' into the suction chamber H', and the water previously drawn into the suction chamber H is forced out of the same by way of the valve J into the pipe I, to pass from the latter, by way of the port a', into the hollow plunger-rod C'. When the movement of the plungers B and B' is reversed, then the water drawn into the suction chamber H' is forced out of the same by the descending plunger B', and through the valve J', pipe I' and port a into the hollow plunger-rod C, now on its up-stroke, so that the descending plunger B' aids the lifting of the water in the hollow plunger-rod C. In a like manner, on the next reversal of the movement of the plungers B and B', the water forced out of the suction chamber H by the descending plunger B is forced into the plunger-rod C' of the now ascending plunger B'. The water passing up the hollow plunger-rods C and C' is discharged from the same at their upper ends by suitable spouts C² and C³.

From the foregoing it will be seen that the pump is practically balanced, as the water raised into the suction chamber of one pump is forced into the other pump and discharged through the same, as above described. Thus, on the down-stroke of a plunger B or B' in its barrel, it does not meet the upward flow of the water raised by the plunger on the ascending stroke, but instead the descending plunger forces the water into the hollow plunger-rod of the opposite pump during the time this plunger-rod and its plunger are on the up-stroke.

The pump shown and described is very simple in construction and composed of comparatively few parts not liable to get easily out of order.

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

1. A pump comprising two single acting
5 pumps, a plunger in each barrel having a hollow plunger rod provided within the barrel with a port, stationary pipe connections from one pump barrel to the other pump barrel and communicating with the port of the
10 plunger rod, and means for moving the plunger in one pump down while the other ascends.

2. A pump comprising two single acting
15 pumps each having a barrel, a plunger in each barrel having a hollow plunger rod extending up to the point of delivery of the water, the plunger rod being of the same diameter as the bore of the pump barrel and fitting closely within the same, each plunger
20 rod being provided within the pump barrel with a port in its wall, and stationary pipe connections from one pump barrel to the other pump barrel and communicating with the port of the plunger rod.

25 3. A pump comprising two single acting pumps, each having a pump barrel provided with an opening in its side, a plunger in each barrel provided with a hollow plunger rod extending above the barrel of the pump and
30 having a discharge spout at its upper end, the plunger rod being of the same diameter as the bore of the pump barrel and fitting closely within the same, each plunger rod be-

ing provided with an elongated port in its wall, the port being within the pump barrel 35 and communicating with the opening in the side of the pump barrel, and stationary pipe connections between the pump barrels to discharge the water from one pump into the hollow plunger rod of the other pump by way 40 of the corresponding port in the plunger rod.

4. A pump comprising two single acting
45 pumps, each having a pump barrel provided with a valved suction chamber, each barrel having an opening in its side above the suction chamber, a plunger in each barrel having a hollow plunger rod extending up to the point of delivery of the water, the plunger rod fitting closely in the pump barrel and provided in its wall with an elongated slot, 50 the slot being within the pump barrel and registering at all times with the opening in the side of the pump barrel, stationary pipe connections from the suction chamber of one pump barrel to the opening in the side of the 55 other pump barrel, and check valves at the junction of the pipe connections with said suction chambers.

In testimony whereof I have signed my name to this specification in the presence of 60 two subscribing witnesses.

ALBERT P. SMITH.

Witnesses:

THOS. M. PETERS,
ALFRED A. AYA.