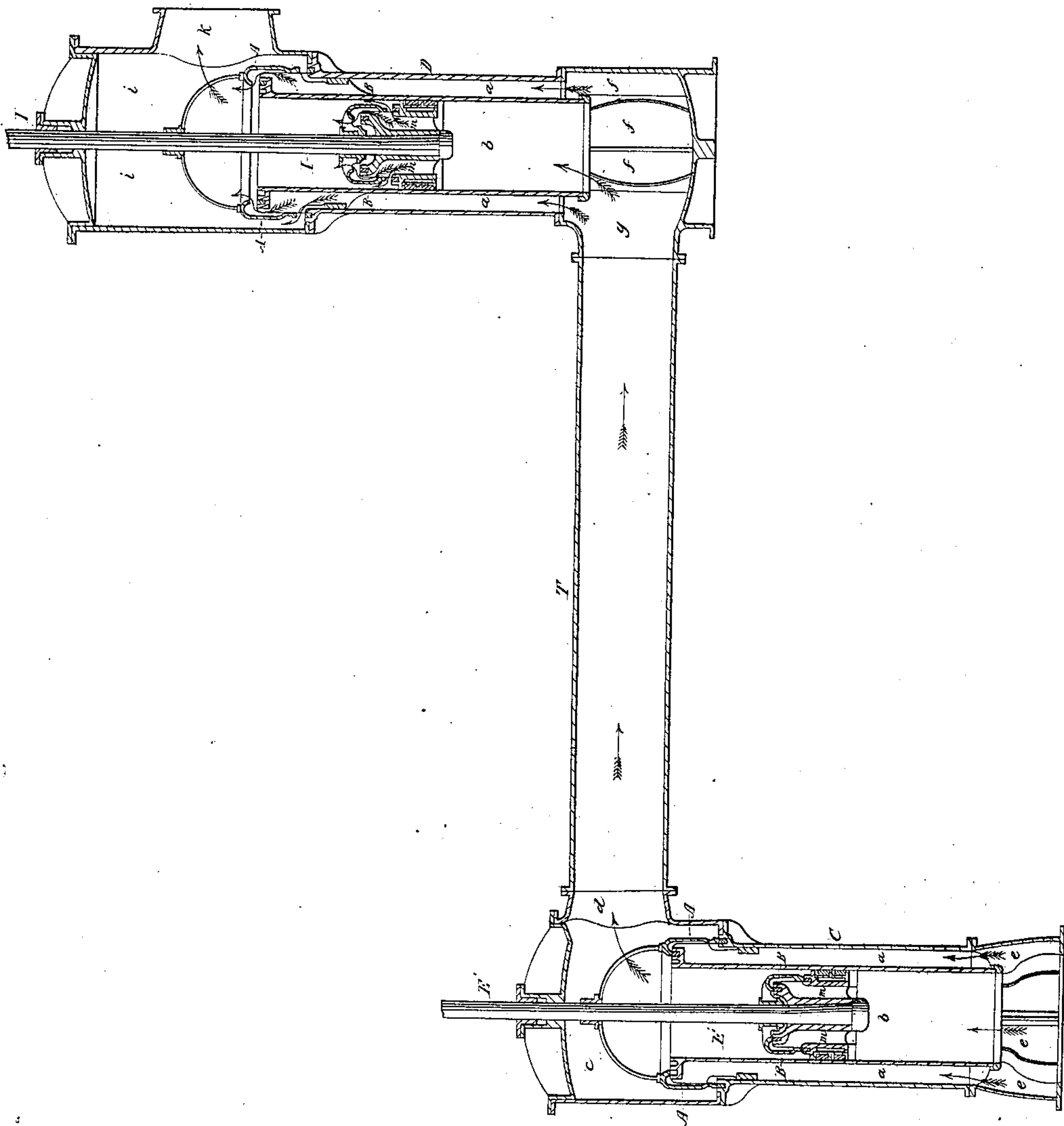


*M. Wright,  
Steam Pump.*

*No 26,139.*

*Patented Nov. 15, 1859.*



*Witnesses.*

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# UNITED STATES PATENT OFFICE.

WILLIAM WRIGHT, OF HARTFORD, CONNECTICUT.

## PUMP.

Specification of Letters Patent No. 26,139, dated November 15, 1859.

*To all whom it may concern:*

Be it known that I, WILLIAM WRIGHT, of the city and county of Hartford, in the State of Connecticut, have invented certain  
5 new and useful Improvements in Double-Acting Pumps for Raising Water Through the Agency of Steam; and I do hereby declare the following to be a full, clear, and  
10 exact description of the construction and operation of the same, reference being had to the accompanying drawing, which represents a longitudinal vertical section through the two pumps and the pipe that connects them together.

15 My invention consists first, in the application of an auxiliary barrel to the working or bucket barrel of a pump, and connecting both barrels by a double beat valve, thus making a combined opening through the  
20 auxiliary and the bucket valve with a minimum lift greater than the area of the pump itself, and obviating to a great degree the frictional resistance that would be produced by passing all the water through the pump-  
25 bucket valves alone; and by which means a clear and open way is gained for the passage of the water without throttling it, and consequently permitting the engine that operates it to work economically, and regularly.  
30 And my invention further consists in placing two pumps, constructed as above, one above the other, and connecting both together by a suitable pipe, so that the load of one pump shall pass through the working  
35 and auxiliary barrels, and the bucket and auxiliary valves, of the other and vice-versa, thus allowing the engine that works the pumps to have complete control over the column of water.

40 To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

45 E', and I, represent the two pump rods, which work respectively in the two pumps C, D; and these two pumps are connected together by a pipe T. The two pump rods may be driven—one from each end of the beam of a steam engine, working directly  
50 over them. I have devised a special steam engine for working these pumps, but of course do not restrict my invention to any special engine, which is applicable to this purpose, meaning to claim the pumps inde-  
55 pendently of the engine that works them. But to show how these pumps may be ad-

vantageously connected to my special construction of steam engine; I have used the same letters of reference in this case, so far as they apply to the pump, as I used in the  
60 description of my steam engine, so that by placing the drawings of each, together, the whole connection will be readily seen and understood. But while the engine referred to, and the pumps, were originally designed  
65 for each other, yet of course I should claim them whether used separately or together.

Each pump is composed of two barrels viz. outer ones *a a*, and inner ones *b b*, the inner ones *b*, being the working barrels, and  
70 the outer ones the auxiliary barrels; each of the barrels *a, b*, of each of the pumps, are properly connected together—those of the pump C, having a common chamber *c*, and a delivery nozzle *d* on it. And at their bot-  
75 toms they are connected to an open chamber *e*, which rests on the bottom of the pump well:—these openings being for the ingress of the water to the pump. The other pump D is precisely like the one C, with the ex-  
80 ception that the bases or lower ends of the auxiliary and working barrels, are connected to an inclosed chamber *f*, which has a nozzle *g*, on its side and connected to the nozzle *d*, of the chamber *c*, of the pump C,  
85 by a horizontal pipe T, of the same diameter as the working barrel of the pumps. The upper chamber *i*, of the pump D, has a delivery nozzle *h* on it which is connected to the force pipe leading to the reservoir.  
90

The pump C, may be placed in a well directly under the steam cylinder of the engine that works it, and its rod E', may connect directly with the steam piston rod  
95 above it, which latter may extend through the steam cylinder, and be suitably packed for that purpose. And the rod I, of pump D, may be connected to the other end of the beam of the engine.

The pumps are suction and lifting  
100 bucket pumps, and double-acting, that is, one or the other is lifting the water, at each steam stroke of the engine, and being connected together by the horizontal pipe T it gives the engine complete control over the  
105 water column.

The pump valves A A, and B, B, are known as the double beat valves, I adopt them because they afford a larger opening  
110 than any other valve with the same lift. No double beat single valve can be arranged for delivery, which will not throttle the



water column, to a greater or less degree, depending on the lift, and producing frictional resistances. To remedy this evil effectually, and to get a large opening with a small lift, I have adopted the within described construction so that, by fitting the working barrels *b*, *b* of the pumps, with outside, or auxiliary barrels *a*, *a*, and connecting both barrels by a double beat valve as at A A, I get an opening through the inner, and outer valves B, A, respectively of the lower pump C, when the upper pump D, is lifting, and an opening through the valves A, B, of the upper pump D, when the lower pump is delivering—said opening being greater in area than that of the working barrel *b*, and this too with only—say, two and a half inches lift of the valves—and on a stroke of ten feet.

The lift of the valves A, B, being so small the concussion or blow produced when seating is correspondingly diminished, but to guard against any blow I have the valves and buckets filled with dash pot cushions on their lifts and seats, as shown by red colors in the drawings, and thus effectually prevent any noise when the valves open and close.

The within described improvements, comprising the connecting of the pumps, and lifting the water by one through the valves of the other, and vice versa, so that the engine that works the pump shall have complete control over the water column;—and in the application of the auxiliary barrel to the working barrels, and connecting both barrels by a double beat valve working in conjunction with the bucket valve, and obtaining thereby an opening for the passage of the water through the valves greater in area than that of the pump itself, and consequently reducing the friction to a minimum,—are points highly important to the perfect and economical working of the engine that drives the pumps.

The action of the pumps, is as follows: Suppose the engine that operates them to be at half stroke on its upward movement, it is evident that the pumps C, D, will also be at half stroke, the first (C) on its upward, and the latter (D) on its downward movement. Now the pump C, as shown in the drawing, is lifting its contents through the horizontal pipe T, through the valve A, of the auxiliary barrel, and valve B, of the descending bucket of the pump D; and the instant the pump C has reached its upward center and commences to descend, pump D, in turn takes the load and lifts it through

the nozzle K, and the force pipe connected to it, to the reservoir. At the same time the pump C, is being filled through the valve A, of the auxiliary barrel *a*, and through valve B, of the descending bucket *m*, ready to be lifted as before, as soon as pump D, has reached its upward center. In this way the action is kept up, never for an instant permitting the column of water in the force tube to come to rest, nor has it any changes from its general line of motion, while the benefit of momentum from the suction lift is effectually secured.

The blue arrows in the drawing show the direction of the column of water through the pumps.

Though I have described the pumps as placed one above the other, and in which position I prefer to place them, yet the passing of the water from one through the other, which is a leading element of the invention may be effected by placing them in other positions, and so long as the pumps are placed in any position that will admit of the column of one, passing through the other pump, I should deem it as involving my invention, and claim it as such.

Having thus fully described the nature and object of my invention, what I claim therein as new and desire to secure by Letters Patent is—

1. The construction of the pump, by the application of an auxiliary barrel to the working or bucket barrel, and connecting both barrels, by a double beat valve, thus effecting a combined opening through the auxiliary and the bucket valves, with a minimum lift of said valves greater than the area of the pump itself, and obviating to a great degree the frictional resistances that would be produced by passing all the water through the pump bucket valves alone—preventing all throttling, and permitting the engine to work more regularly and economically, and substantially as described.

I also claim the placing of one pump above the other, when made as above described, and connecting both together, and passing the load of one through the working and auxiliary barrels, and the bucket and auxiliary valves of the other, and vice versa, thus allowing the engine to have complete control over the column of water, substantially as described.

WM. WRIGHT.

Witnesses:

GEORGE G. SILL,  
GEO. S. GILMAN.