

M. Wilcox,

Steam Pump.

N^o 49,461.

Patented Aug. 15, 1865.

Fig 1.

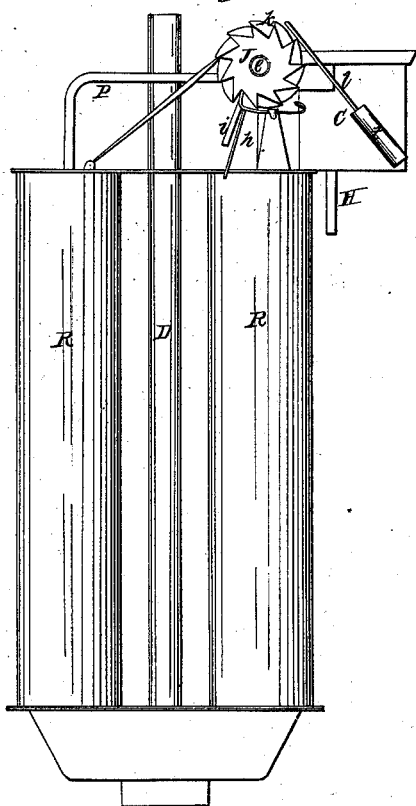


Fig 2.

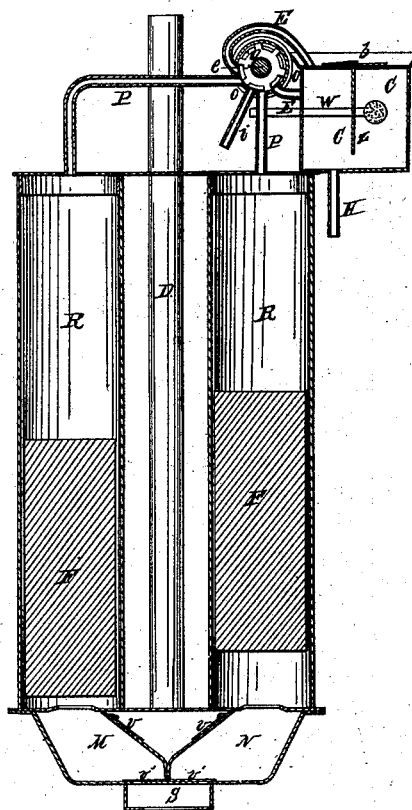
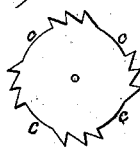


Fig 3.



Witnesses.

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IMPROVEMENT IN STEAM-PUMPS.

Specification forming part of Letters Patent No. 49,461, dated August 15, 1865.

To all whom it may concern:

Be it known that I, MARTIN WILCOX, of Sacramento, in the county of Sacramento and State of California, have invented certain new and useful Improvements in Steam-Pumps; and I do hereby declare that the following is a full and complete description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation. Fig. 2 is a vertical section. Fig. 3 is a detached section.

Like letters of reference denote like parts in the views.

The nature of my invention consists in the peculiar arrangement of parts for condensing steam, exhausting it from the receiver, and discharging uncondensed steam and air from the pump; also, to working the steam-gate, as hereinafter described.

In Figs. 1 and 2, R R represent receivers; F F, floats that work in them.

D is a pipe for discharging water from both the receivers, through chambers M and N, by valves *v v'*.

S is the supply-passage, conveying water through the valves *v' v'* into the chambers M N.

C is a condenser that exhausts steam from the receivers through pipes E E.

P P are pipes carrying steam to and from the receivers.

i is the ingress-pipe for steam from the boiler. *g* is a revolving gate, letting steam alternately to and from the receivers.

o is the case inclosing the gate.

w is a pipe for conveying cold water into the condenser, and H is a pipe for carrying the water out.

b is a discharge-valve, and *z* a partition partially dividing the condenser.

In Fig. 1, K is a ratchet-wheel placed on the shaft of the steam-gate *g*, and works loose on it.

J is a toothed wheel secured on the shaft *e*, that works the pendulum *h*.

t is a cylinder, communicating at its lower end with the condenser, and works a piston to which is attached a latch, *l*, for operating the wheel J.

Fig. 3 represents another form of a toothed wheel, to be used in place of J when the pendulum cannot be long enough to measure the intervals of the stroke of the pump.

The operation of the pump is as follows: The gate being set to admit steam to either one of the receivers, it is necessarily cut off from the other, the gate and passages being so arranged that while one receives the other discharges steam. The steam entering the receiver at the upper end displaces water, which discharges by means of the pipe D through the chambers M or N and valves *v'*, until the float strikes the bottom, and closes the passage into the chamber below. When the gate changes its position the receiver which was before taking steam discharges it and the one before discharging receives it. When steam is let into the condenser from the receiver its expansive force lifts the valve *b* and drives out any steam or air before contained there, and also forces outward the piston in the cylinder *t*, setting the latch *l* forward upon the wheel *k*. When the expansive force of the steam in the condenser C is spent, cold water enters through the pipe *w*, causing condensation in the chamber C, closing the valve *b*, and drawing the piston in the cylinder *t* back, thus by means of the latch *l* turning the wheel *k*. As the wheel J is attached to *k* by a spring on the shaft *e* between the wheels the motion of the wheel *k* is communicated to J by the spring as soon as the pendulum swings to the right position to allow J to turn. When the wheel J turns the gate turns with it, and at no other time.

The length of the pendulum is regulated to suit the length of time occupied by the alternation of filling and discharging of the receiver. When a pendulum cannot be used sufficiently long to meet the required time of action in the receiver a modified form of toothed wheel, as seen in Fig. 3, is used in the place of J.

The spaces *c* between the clusters of teeth indicate the number of positions to which the gate works, and the number of teeth in each cluster determines the number of vibrations the pendulum must make between the changes of the gate. The number of teeth, and also the number of positions of the gate, with the necessary position of steam-passages to the gate, are to be arranged to suit each part.

The cylinder *t* may attach to and communicate with the receiver instead of the condenser, if desired; or a diaphragm may be used instead of a cylinder and piston. The condenser is not required to be of the same form or pro-

portion as herein shown. The partition is for the purpose of preventing the immediate contact of steam with the jets of cold water when it first enters C. The pipe *w* is made to discharge beyond the partition for the same reason. The pressure of uncondensed steam contained in C upon the first entrance of the next discharge of steam interrupts the flow of condensed water before the hot steam reaches that point. Water kept standing on the upper part of C will prevent the valve *b* from drawing air when closed.

I do not limit the application of my invention to any particular number of receivers used in one pump, as it may be applied to any number of receivers discharging by one or more pipes. The pipe H is not indispensably necessary, as the condensed water might be forced out at *b*.

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

1. The condenser C, in combination with the receivers R, for exhausting the receiver and discharging uncondensed steam, constructed and operating substantially as set forth.

2. The combination and arrangement of the cylinder *t* and its piston, for working the steam-gate *g* in the manner substantially as described.

3. The combination of the pendulum *h*, for regulating the motion of the gate *g* in the manner substantially as described.

MARTIN WILCOX.

Witnesses:

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