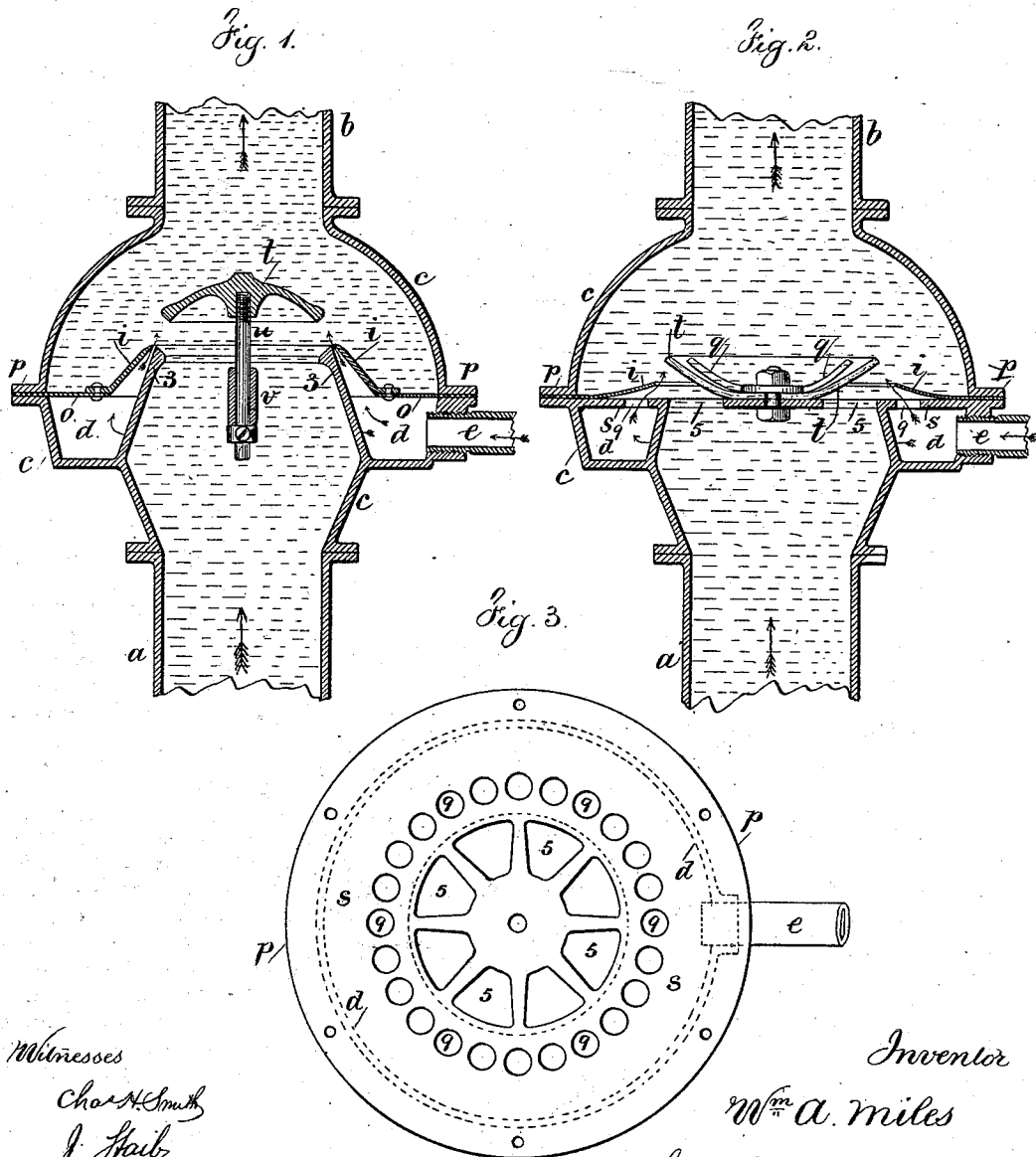


(No Model.)

W. A. MILES.
CONDENSER FOR STEAM PUMPS.

No. 280,212.

Patented June 26, 1883.



Witnesses
Chas. H. Smith
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UNITED STATES PATENT OFFICE.

WILLIAM A. MILES, OF COPAKE IRON WORKS, NEW YORK.

CONDENSER FOR STEAM-PUMPS.

SPECIFICATION forming part of Letters Patent No. 280,212, dated June 26, 1883.

Application filed December 26, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. MILES, of Copake Iron Works, in the county of Columbia and State of New York; have invented an Improvement in Condensers for Steam-Pumps, of which the following is a specification.

Steam-pumps have been made in which the steam is exhausted into the suction water-way.

My present invention is made with reference to a peculiar construction of steam-discharge port or opening and the valve for the same, and the combination therewith of a check-valve for the water-way.

The present improvement is for more uniformly distributing the steam into the column of water, so that the condensation will be more rapid and perfect and a good vacuum will be obtained for the pumping-engine.

In the drawings, Figures 1 and 2 are vertical sections of my improved valve, and Fig. 3 is a plan of the valve-seat.

The suction-pipe *a* is to lead to the water that is to be pumped, and the pipe *b* is to lead to the pump. Between these pipes, and preferably in the upper part of the suction water-way, there is the case *c*, in which is an annular steam-chamber, *d*, into which the exhaust-steam pipe *e* opens.

Above the steam-chamber is an annular valve, *v*, the same being in the form of a conical ring, as seen in Fig. 1, closing at its inner edge upon the upper edge of the water-way tube 3, and being supported by a sheet of flexible metal—such as copper or brass—at *o*, which passes in between the flanges *p* of the two-part case *c*, and yields by its elasticity, to allow the mouth for the exhaust-steam to open directly at the ascending column of water, or else the valve *v* is only composed of a flat or nearly flat ring of thin sheet metal, resting upon the flat or nearly flat seat *s*, as seen in Fig. 2, there being a circular range of holes, 9, in the top of the steam-chamber, which top also forms the valve-seat. In both modes of construction the valve is raised by the vacuum in the suction-pipe being greater than that in the steam-cham-

ber; but if the reverse condition exists, when the pump is running slowly the valve prevents the water passing into the steam-chamber.

Usually I employ a check-valve at the same place in the suction water-way, such valve being a puppet-valve, *t*, on a stem, *u*, guided by a bridge, *v*, as seen in Fig. 1, and closing upon the seat at the upper end of the tubular part 3; or else the seat *s* is continued, as seen in Figs. 2 and 3, and provided with openings 5 in a circular range, above which is the flexible valve *t*, secured by a central bolt, and having a stationary check, *g*, to support the back while the water is flowing through the openings in the valve-seat.

By this improvement the exhaust-steam is directed into the column of water and its perfect condensation secured, so that the pumping-engine has the benefit of the condensation without any material increase in expense.

I claim as my invention—

1. The combination, with the suction water-way and the exhaust-steam pipe in a steam-pumping apparatus, of an annular steam-chamber around the water-way and a valve to exclude water from the steam-chamber, substantially as set forth.

2. The combination, with the suction water-way and the exhaust-steam pipe, of an annular steam-chamber around the water-way, a valve for the same, and a check-valve in the suction water-way, substantially as set forth.

3. The combination, in a steam-pumping apparatus, of the suction water-way, an annular steam-chamber, flat or nearly flat valve-seats, an annular valve of sheet metal, and a central check-valve of flexible material, the seats being perforated for the passage of the steam and water, respectively, substantially as set forth.

Signed by me this 21st day of December, A. D. 1882.

WILLIAM A. MILES.

Witnesses:

GEO. T. PINCKNEY,
WILLIAM G. MOTT.