

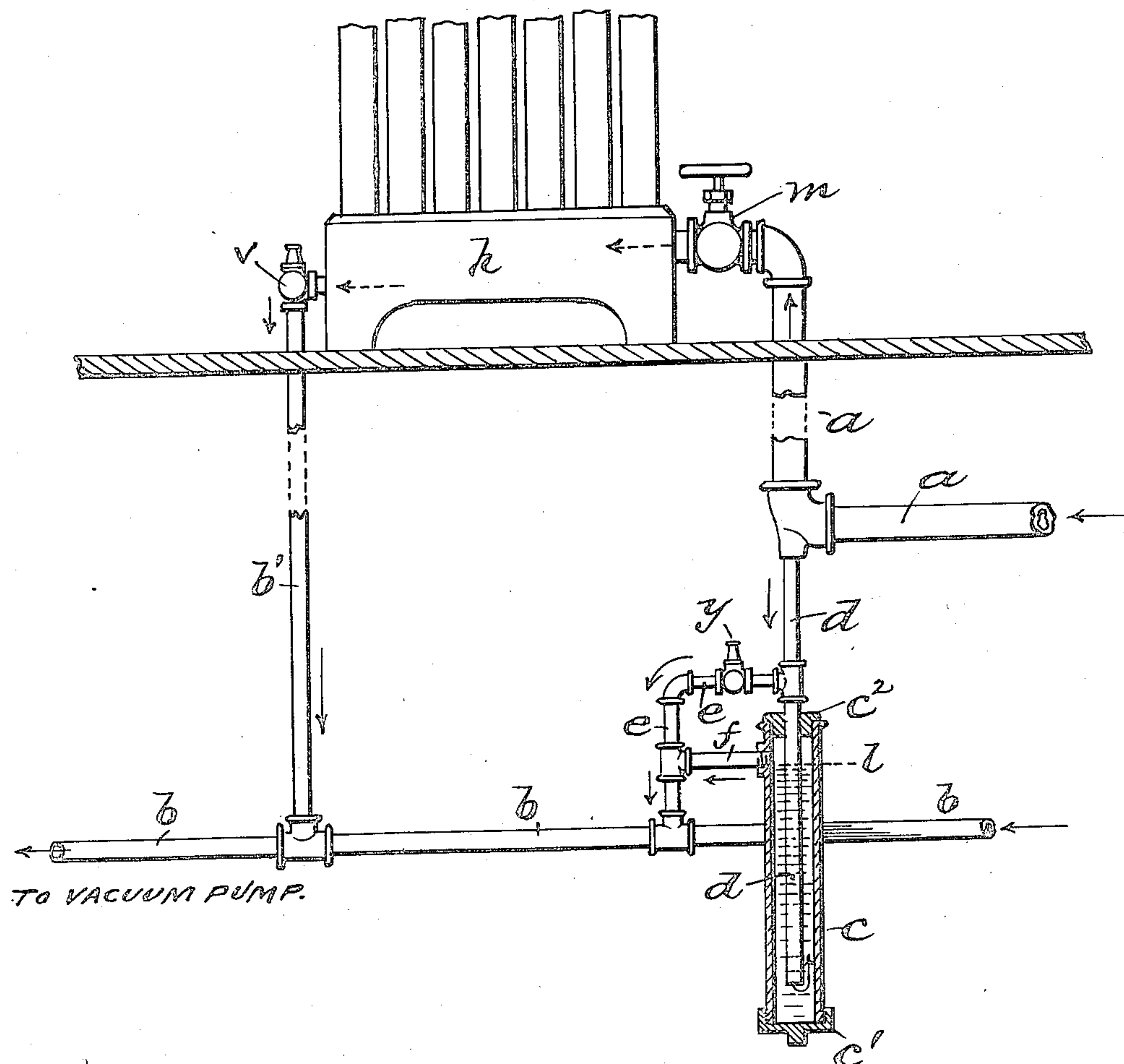
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T. F. DEXTER.

COMBINED STEAM AND WATER TRAP FOR STEAM HEATING SYSTEMS.

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WITNESSES:

C. J. Hennigan.
Calvin H. Brown.

INVENTOR:

Thomas F. Dexter.

By Geo. H. Remington
Atty.

UNITED STATES PATENT OFFICE.

THOMAS F. DEXTER, OF PROVIDENCE, RHODE ISLAND.

COMBINED STEAM AND WATER TRAP FOR STEAM-HEATING SYSTEMS.

No. 844,105.

Specification of Letters Patent.

Patented Feb. 12, 1907.

Application filed November 25, 1905. Serial No. 289,066.

To all whom it may concern:

Be it known that I, THOMAS F. DEXTER, a citizen of the United States of America, and a resident of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Combined Steam and Water Traps for Steam-Heating Systems, of which the following is a specification.

My invention relates to steam-heating systems wherein the heating is effected by means of steam or vapor having a pressure, say, substantially the same as that of the atmosphere.

By means of my invention the water of condensation from the heat-supply main is prevented from entering the heater or radiator, it being removed from the main and discharged into the exhaust or return main by gravity, a water seal being continuously maintained between the inlet and outlet passages leading to and from the device, or, in other words, all the water of condensation in the steam-inlet main connected with the radiator falls by gravity from the main into a valveless well or trap and overflows into the return-main, thereby automatically preventing both the accumulation of water in said inlet-main and the flooding of the radiator.

In carrying out my invention the latter consists, essentially, in the combination, with the supply and return mains, of a steam-heating system of a valveless trap device directly connected and in continuous open communication with said mains, and a small auxiliary or by-pass connection in open communication with the inlet and outlet passages of said trap device, all as more specifically hereinafter set forth and claimed.

The accompanying drawing is a view, partly in elevation and partly in section, of a portion of a steam-heating system, showing my invention applied thereto.

In the drawing, *a* indicates the steam-supply main for supplying exhaust steam or vapor to the heater or radiator *h* of a heating system, and *b* the return-main, adapted to conduct the water of condensation from the said supply-main and radiator to a vacuum or circulating pump by gravity.

My invention resides, essentially, in the combination of a short pipe or well *c*, having top and bottom members or caps *c*² *c*¹, respectively, a valveless or open pipe *d*, connected with the lower end of the supply-pipe *a* and extending downwardly therefrom into

the said well, a valveless overflow-pipe *f* in continuous open communication with the upper end portion of the well and with said return-main *b*, and a by-pass connection *e*, having therein a "vacuum-valve" *y*, so called—that is, any well-known valve device capable of adjustment so as to produce an open contracted passage therethrough, (as, for example, in the valve patented to me October 10, 1905, No. 801,514)—said pipe *e* being connected with the pipe *d* at a point above the well and to the overflow-pipe *f*, or it may be connected with the main *b* direct, the result in either case being the same—*i. e.*, to admit vapor or air into the main *b*, so as to prevent the vacuum induced by the pump from drawing the water from the seal, the presence of such vapor or air in the return-main serving to equalize the pressure therein and in the seal.

By again referring to the drawing it will be seen that exhaust steam or vapor discharged into the supply and rising main *a* enters the heater or radiator *h* through a controlling or stop valve *m*. The water of condensation flows from the base of the radiator via said valve *v* into the branch main or upright pipe *b'* and to the return-main *b*. The steam condensed in the supply-main *a* falls via pipe *d* into the well *c* and, rising therein to the level *l*, flows therefrom unobstructedly into the return-main *b* by gravity, substantially as hereinbefore set forth.

I claim as my invention—

1. The combination with the steam-supply main and the exhaust or return main of a low-pressure steam-heating system, of a valveless trap device or water seal in continuous open communication with said mains and located with respect to them so that the water of condensation flows into and out of said trap by gravity, and a continuously-open by-pass connection for the passage of air or vapor from the said steam-supply main into the return-main, substantially as described and for the purpose hereinbefore set forth.

2. In a low-pressure steam-heating system, the combination with a heater or radiator, and steam supply and return mains connected therewith, of a valveless well constituting a water seal or trap device located below and being in continuous open communication with said supply-main, a connection in continuous open communication with the said return-main and the upper portion of the well, and a continuously-open by-pass con-

nection for permitting the passage of air and vapor from the supply-main to the return-main, all constructed and arranged so that the water of condensation from the supply-
5 main flows into said well by gravity and overflows therefrom into the return-main, substantially as hereinbefore described.

Signed at Providence, Rhode Island, this 24th day of November, 1905.

THOMAS F. DEXTER.

Witnesses:

GEO. H. REMINGTON,
C. A. PEIRCE.