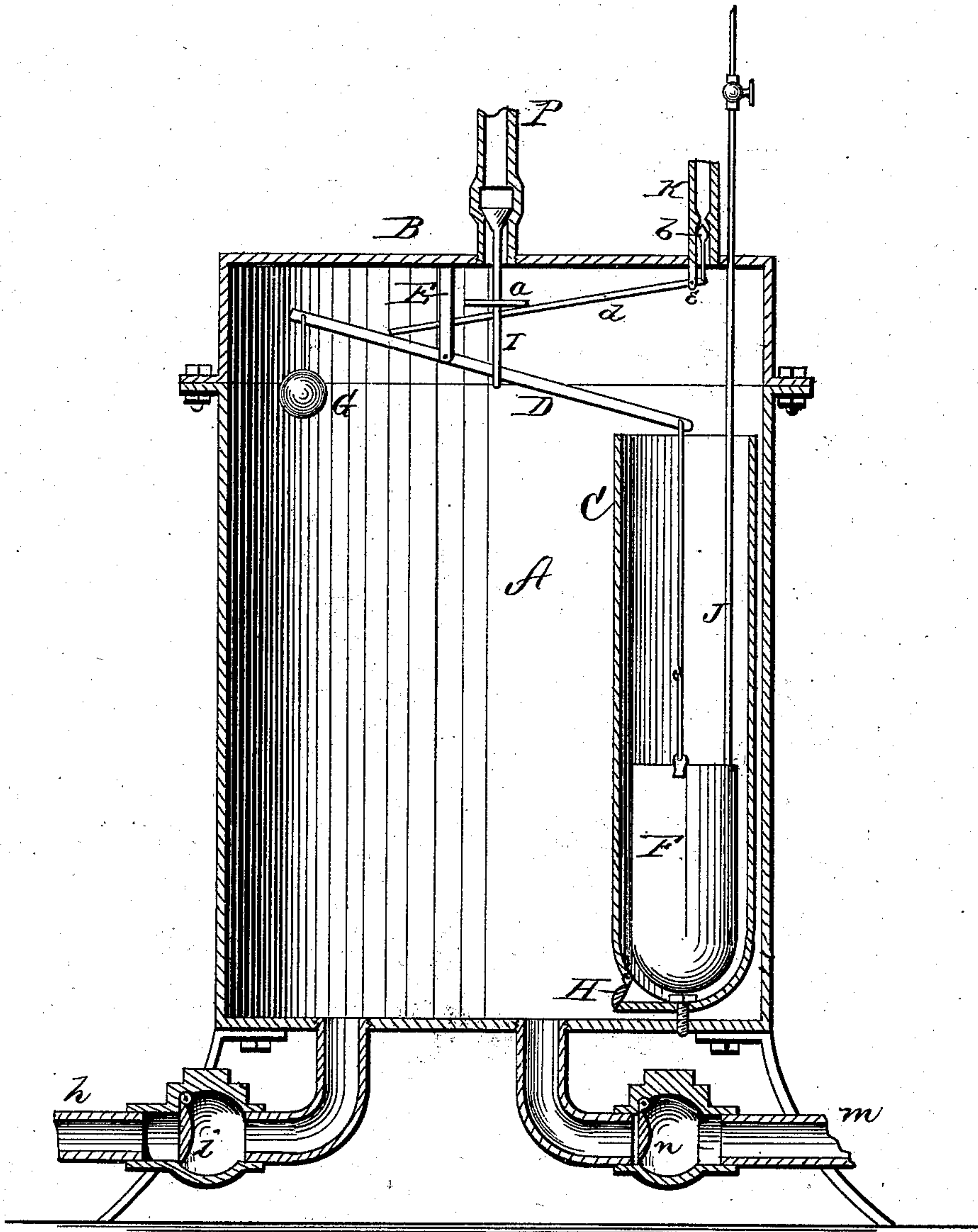


T. B. & S. S. DAVIS.
Steam-Trap.

No. 224,661.

Patented Feb. 17, 1880.



WITNESSES

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THOMAS B. DAVIS AND SAMUEL S. DAVIS, OF ROCK ISLAND, ILLINOIS.

STEAM-TRAP.

SPECIFICATION forming part of Letters Patent No. 224,661, dated February 17, 1880.

Application filed January 5, 1880

To all whom it may concern:

Be it known that we, THOMAS B. DAVIS and SAMUEL S. DAVIS, of Rock Island, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Steam-Traps; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which forms part of this specification.

The nature of our invention consists in the construction and arrangement of an automatic steam-trap for returning the water of condensation from coils and heating-pipes back into the boiler, whether the boiler is above or below the coils, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which our invention appertains to make and use the same, we will now proceed to describe its construction and operation, referring to the annexed drawing, in which the figure is a central vertical section of our invention.

A represents a cast-iron chest of any suitable dimensions, provided with a lid, B, bolted or otherwise firmly secured thereon. C is a vessel fastened within the chest A by a set-screw in its bottom, and provided with a valve, H, which is near its bottom, and opens outward. D is a lever passing through the lower end of its fulcrum E, and working upon a pivot. F is a vessel open at the top, and suspended from one arm of the lever D, and working freely up and down in the vessel C. This vessel is provided with a drain-pipe, J, which is to be made use of only when the trap is at rest to prevent the water in said vessel F from freezing.

G is a cast weight on the opposite arm of the lever D from the vessel F, and is not quite heavy enough to overbalance and raise the vessel F when the same is full of water, as it always is when the trap is in use. I is a steam-valve resting on and straddling the lever D near the fulcrum E, and between said fulcrum and the vessel F. It is provided with a flange, a, to prevent the steam from blowing down into the water and throwing it over into

the vessel C. The valve I opens upward, and its movements are governed by the lever D.

K is an air-vent, provided with a valve, b, fulcrum e, and lever d, the long arm of which rests on the lever D, between the fulcrum E and weight G, and moves up and down with it, opening or closing the valve.

When steam is turned into the coils from the boiler the water of condensation flows into a steam-tight reservoir which sits below the level of all the coils. The trap sits four or five feet above the water-line of the boiler.

A pipe, h, connects the bottom of the reservoir to the bottom of the trap, and is provided with a check-valve, i, opening toward the trap. Another pipe, m, connects the water-space of the boiler to the bottom of the trap, and is provided with a check-valve, n, opening toward the boiler. A pipe, P, connects the steam-space of the boiler to the top of the trap, the flow of steam being governed by the steam-valve I.

The pressure from the boiler on the coils forces the water from the reservoir up in the pipe h, opening the check-valve i, and into the trap, the air escaping through the vent K. The water rises in the trap around the vessel C until it reaches its top, when it overruns and rises in C around the vessel F, which is full of water. The water rising around F diminishes its weight until the weight G will overbalance and raise the vessel F and valve I against the pressure, and at the same time close the air-vent K. Steam rushes in through the valve I, and the pressure closes the check i in the pipe to the reservoir. The pressure is now the same on the trap as on the boiler, and as water seeks its level under the same pressure, the weight of water in the trap on the check-valve n in the pipe m to the boiler opens the same and the water runs down into the boiler. As the water runs down in the trap around the vessel C it also runs out of said vessel through the valve H and increases the weight of the vessel F until the water is from under the same, when it will drop and close the steam-valve I and open the air-vent K. The steam now rushes out at K and the pressure diminishes, the check-valve in water-pipe m to boiler closes and the one in the reservoir-

pipe *h* opens and the trap fills and works as before.

Instead of filling the vessel with water we may use powdered charcoal, or anything of the same specific gravity.

Instead of having the vessel *F* full of water at all times, we can use it empty at all times, and have the buoyancy of the vessel, or a float of any suitable substance, when the water is around it, raise the lever *D* and the valve *I*; and with this machine it is optional whether we use the weight *G* or not.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a steam-trap, the combination of the stationary inside vessel, *C*, with valve *H*, the lever *D*, vessel *F*, and steam-valve *I*, all constructed and arranged to operate substantially as shown, and for the purposes herein set forth.

2. In a steam-trap, the air-vent *K*, with its valve *b* and lever *d*, in combination with the lever *D* and vessel *F*, all constructed and arranged for operation substantially as and for the purposes herein set forth.

3. The combination of the chest *A*, with pipes *h m* and valves therein, the stationary vessel *C*, with valve *H*, vessel *F*, lever *D*, steam-valve *I*, and air-vent *K*, all constructed and arranged to operate substantially as and for the purposes herein set forth.

In testimony that we claim the foregoing as our own we have affixed our signatures in presence of two witnesses.

THOMAS B. DAVIS.
SAMUEL S. DAVIS.

Witnesses:

GEO. W. ROBERTSON,
JAS. M. WILMANS.