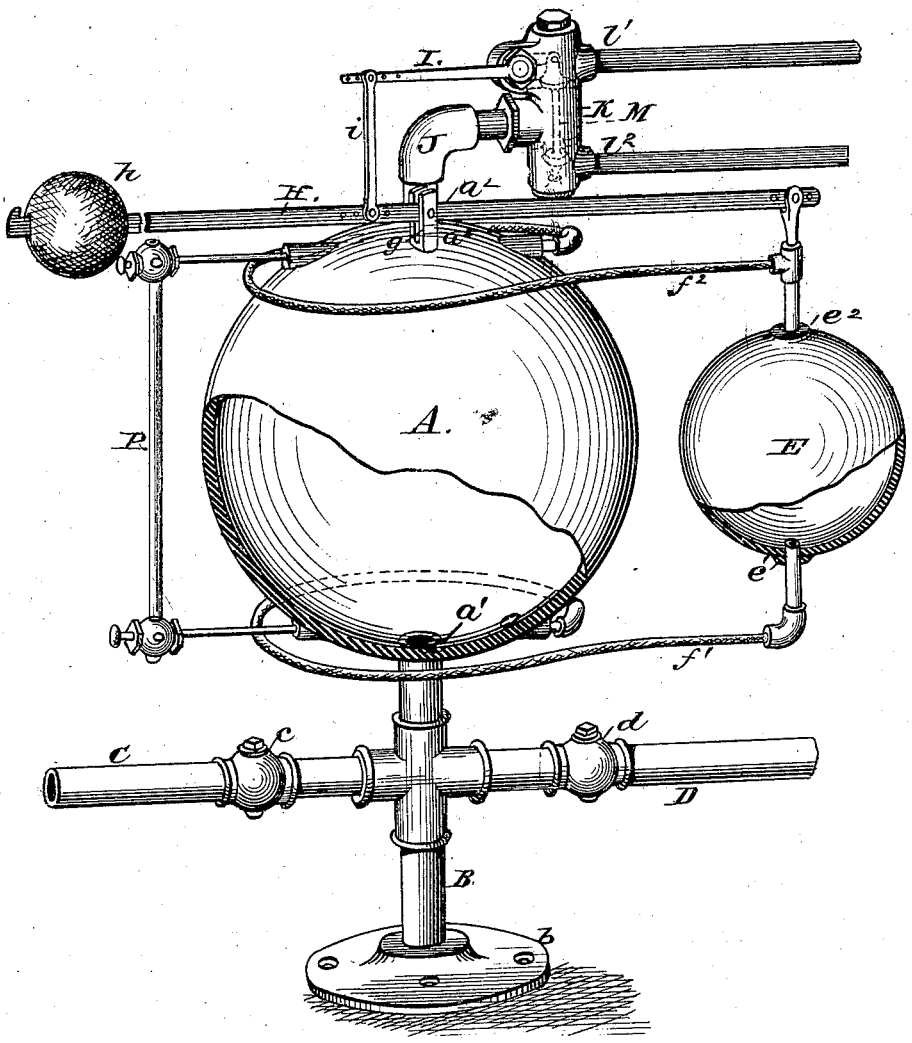
T. KIELEY.
Steam-Traps.

No. 197,782. Patented Dec. 4, 1877.



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TIMOTHY KIELEY, OF NEW YORK, N. Y.

IMPROVEMENT IN STEAM-TRAPS.

Specification forming part of Letters Patent No. **197,782**, dated December 4, 1877; application filed June 4, 1877.

To all whom it may concern:

Be it known that I, TIMOTHY KIELEY, of the city and county of New York, in the State of New York, have invented certain new and useful Improvements in Steam-Traps; and that the following is a full, clear, and exact description thereof.

My invention relates to that class of steam-traps in which a stationary receiver and a movable receiver are employed in connection with each other for collecting water of condensation or water from other sources, and feeding it to a steam-boiler.

The invention consists in a novel construction and form of the receivers themselves, and in certain novel combinations and arrangements in connection therewith of other parts of the apparatus, whereby several advantages are obtained, as hereinafter particularly described.

In carrying out my invention, the receivers may be made in spherical or spheroidal form, and each cast in a single piece. By this means the construction and form may be cheapened and simplified, and a saving effected, both in material and labor.

The receivers are connected with each other by two flexible pipes, each of which leaves one receiver on one side thereof, and is coiled around the same before entering the other receiver. By this means the requisite length and flexibility of pipe are obtained, and, at the same time, the two vessels may be placed quite close to each other, and thus occupy less space than if the pipes extended rectilinearly from one receiver to the other.

The stationary receiver is supported by a standard or upright pipe, which also serves as the medium of communication between said receiver and the inlet and outlet pipes, which conduct the water into and out of the same. Said upright pipe thus serves a double purpose.

The movable receiver is connected with a weighted beam, to which is also connected the valve mechanism. This beam has its fulcrum on the top of the stationary receiver, which also supports the valve mechanism. This arrangement of the beam co-operates with the arrangement of the receivers and the flexible pipes in effecting a reduction of the space occupied by the apparatus.

By the construction and arrangement of parts above described, an apparatus is produced which is cheap, simple, and compact, occupies a comparatively small space, and effectually serves the purposes for which it is intended.

The accompanying drawing illustrates the manner of carrying out my invention, being a perspective view, partly in section, of an apparatus embodying my improvements.

A represents a stationary receiver, which is preferably spherical in form, and is cast in one piece, having two openings, a^1 a^2, diametrically or axially opposite to each other. The lower opening, a^1, communicates with a pipe, B, which is here represented as forming a standard or support for the receiver, being provided with a flanged foot, *b*, by which it may be secured to the floor.

Communicating with this pipe or standard are two pipes, C D, one leading into and the other leading out of said standard, said pipes being provided with check-valves. The pipe C is provided with an inlet-valve, *c*, and conducts the water from the source thereof to the receiver A. The pipe D is provided with an outlet-valve, *d*, and conducts the water from the receiver to the steam-boiler, as hereinafter described.

E represents the movable receiver, which is also, preferably, spherical in form and cast in one piece, with two openings, e^1 e^2, opposite to each other, as above described. The lower opening, e^1, communicates with one end of a pipe, f^1, the other end of which leads from the lower portion of the stationary receiver A, and the upper opening, e^2, communicates with one end of a similar pipe, f^2, the other end of which leads from the upper portion of said receiver. The pipes f^1 f^2 are sufficiently long and flexible to allow the movable receiver to rise and fall, as hereinafter described; and in order to economize space, and, at the same time, preserve the desired degree of flexibility, the pipes f^1 f^2 are coiled around the stationary receiver, as shown, said pipes leaving the

stationary receiver on one side thereof, and making a complete circuit before connecting with the movable receiver.

On the top of the stationary receiver is a standard, *g*, in which is pivoted a beam, H. One end of this beam is connected, by a suitable link or pivot, with the movable receiver E, and the other end carries an adjustable weight, *h*, by means of which the movable receiver may be nicely balanced in position.

Connected with the top of the receiver A, at the upper opening a^2, is a pipe, J, leading from the receiver A to a valve-chamber, K, in which is a double-seated valve, M. This valve is operated by a lever, I, which is connected by a link, *i*, with the beam H. The upper part of the valve-chamber K communicates at l^1 with a pipe leading from the dome of a steam-boiler, and the lower part communicates at l^2 with a pipe leading to the waste-pipe, or any other suitable place.

The operation is as follows: The water enters through the pipes C and B into the lower portion of the stationary receiver A, and, passing through the pipe f^1, enters the movable receiver E, rising to the same level in both vessels. When the parts are in the position shown in the drawing, with the movable receiver E balanced by the weight *h*, the valve M rests against its upper seat in the valve-chamber K, so that any air contained in the receivers may pass through the lower valve-seat and escape by the outlet l^2. When a sufficient quantity of water has entered the movable receiver E to overbalance the weight *h*, said movable receiver descends and depresses one end of the beam H and elevates the other, so as to raise the long arm of the lever I and move the valve M away from its upper seat and press it against its lower seat in the chamber K, and thus allow steam from the boiler to enter through the inlet l^1. The steam thus entering the receiver A passes through the pipe f^2 into the receiver E, exerting an equal pressure in both vessels, and forcing the water therefrom through the pipes B and D to the steam-boiler. When the whole of the water has been forced out of the vessels, so as to allow the weight *h* to balance the movable receiver, the parts will resume their former position, so as to collect another quantity of water.

The apparatus may be provided with an ordinary water-gage, P, for the purpose of indicating the height of the water in the vessels. The movable receiver is smaller than the stationary receiver, being only used for operating the valve.

I do not claim, broadly, the combination of a stationary receiver and a movable receiver connected by flexible pipes, and operating in connection with valve mechanism, as I am aware that such is not new. Neither do I claim, broadly, the construction of a receiver in a spherical form, or in a single piece.

What I claim as new herein, and desire to secure by Letters Patent, is—

1. The combination, with the receivers A and E and the valve mechanism, of the beam H, arranged with its fulcrum on the stationary receiver, as shown and described, for the purpose specified.

2. The combination, with the receivers A and E, the valve mechanism, and the beam H, having its fulcrum on the stationary receiver, of the flexible pipes f^1 f^2, coiled around one of said receivers, as described, whereby the requisite length and flexibility of pipe are obtained and economy of space is secured, substantially as and for the purpose specified.

TIMOTHY KIELEY.

In presence of—
JAMES M. KERR,
W. KUFFNER.