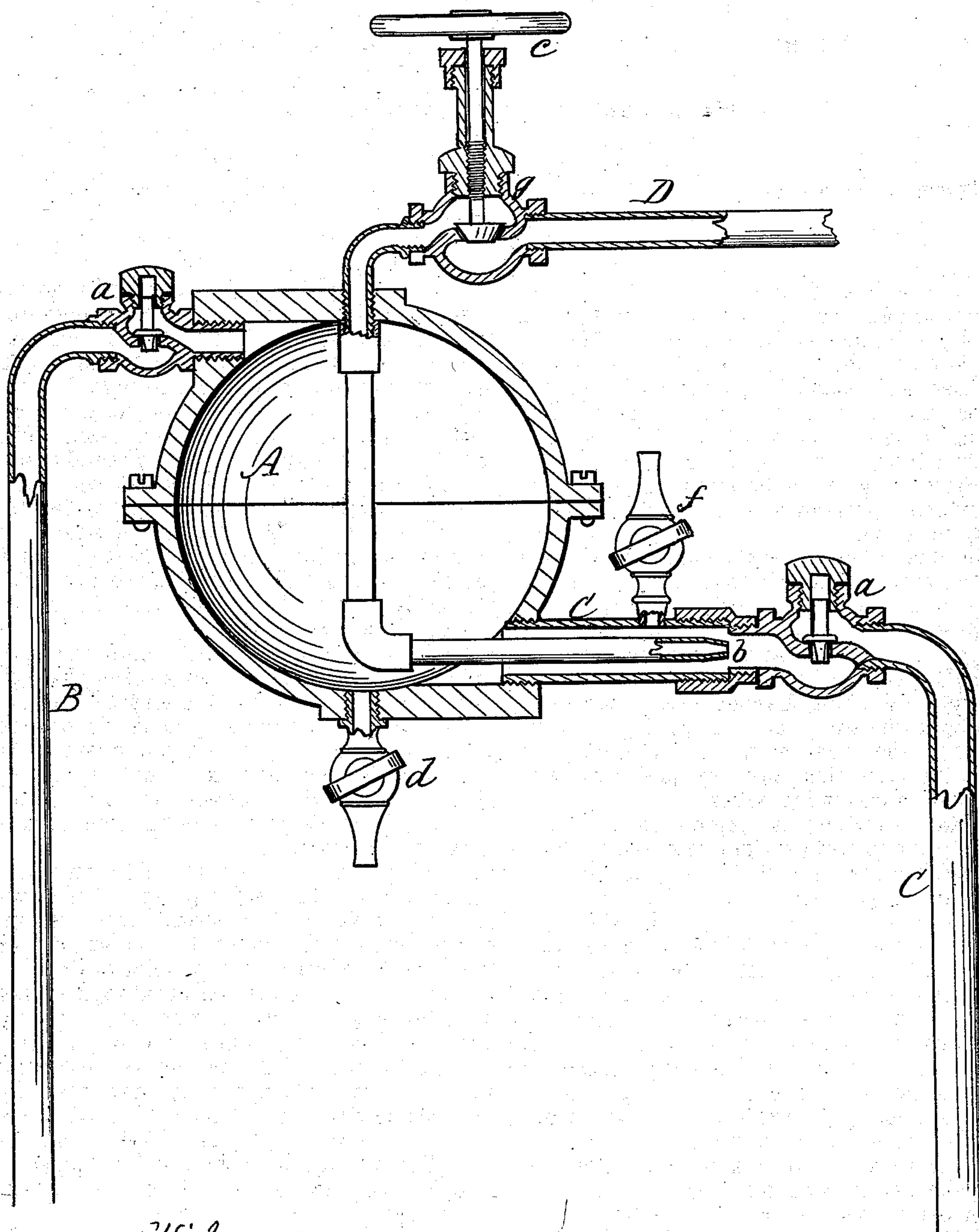


## Steam-Traps.

Patented Oct. 6, 1874.



George W. Harrold.  
R. F. Asgood.

C. A. Prouty



# UNITED STATES PATENT OFFICE

CYRUS A. PROUTY, OF ROCHESTER, NEW YORK.

## IMPROVEMENT IN STEAM-TRAPS.

Specification forming part of Letters Patent No. **155,621**, dated October 6, 1874; application filed June 1, 1874.

*To all whom it may concern:*

Be it known that I, CYRUS A. PROUTY, of the city of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Steam-Traps; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawing, which represents a central vertical section of my invention.

The object of my improvement is to return the waste-water produced by condensation in the pipes for steam-heating to the boiler again under pressure; and the invention consists of an apparatus, as hereinafter described, so arranged that a jet of live steam performs the double office of drawing the condensed water up by suction to the trap, and then forcing it by injection to the boiler, as will be more fully set forth, the same being accomplished by a constant and unremitting action.

In the drawings, A represents the trap, which is simply an air-tight receptacle of any desired form, and elevated at any desired distance above the water-level of the boiler. It is connected, by a pipe or pipes, B, with a receiver or receivers below, which serves to catch and retain the condensed water which runs therein from the steam-pipes running through the building or other place to be heated.

A suction is produced in the trap A by the jet of steam, as will be presently described, which draws the condensed water up into the trap, whence it is forced into the boiler again. C is the eduction-pipe, which connects the trap A with the boiler at any point below the water-line, and serves to convey the condensed water back to the boiler. It may be conveniently connected with the mud-pipe of the boiler. D is the steam-pipe, connected with the steam-dome or any other part of the boiler in the steam-space. It opens into the top of the trap, thence passes down through the same, and thence is turned into the eduction-pipe C any desired length, and has a nozzle, b, through which the steam escapes, thereby blowing or forcing the water forward through the eduction-pipe into the boiler.

It will be seen that the steam-jet performs a double function: first, it draws the water up through pipe B into the trap by suction; and, second, it forces the water thus drawn up back into the boiler through pipe C; and, furthermore, this action is constant and unremitting, requiring no other attachments. The only condition is that the trap A shall stand at a higher point than the water-level of the boiler, by which means the gravity of the water therein will be sufficient to enable it to pass to the boiler. This is necessary, since the back pressure through pipe C exactly balances the forward pressure of the steam through pipe D.

Each of the pipes B C has a check-valve, a, so arranged as to prevent back action through the pipes, but to allow a free forward motion. That in the steam-pipe may have globe-valve g, with a wheel, c, by which the steam is let on or cut off. The bottom of the trap has an air-cock, d, and the eduction-pipe also has an air-cock, f, for the purpose of allowing escape of the air at any time.

This improvement may be used in other connections than with heating-pipes. It is applicable in all cases where steam-pipes are employed producing condensed water, and serves to convey such water to the boiler again.

I am aware that various arrangements are in use for returning waste-water to the boiler; but, so far as I am aware, they are different in construction from mine, above described, and act intermittently or at intervals. By this intermitting action there is much waste of heat, as, during the time of filling and before discharging, the action in the pipes is stopped and deadened, and no circulation takes place.

In my device, as the circulation is constant, no such stagnation can take place, thus giving a larger percentage of heat.

Another advantage is, that, by the constant action of the apparatus, as above described, the water is returned to the boiler at a high temperature, as the steam-jet comes in contact with the whole body of water as it passes through the eduction-pipe.

An important feature in my invention is the

unremitting and constant action of the apparatus, producing both a suction and a discharge of the water, and requiring no attention except to turn on and cut off the supply of steam.

By the employment of this invention the boiler is kept free, in a great degree, from lime.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In combination with the trap or air-tight casing A, the pipe B, for connection with a receiver; the eduction-pipe C, for connection

with a boiler below the water-line; and the steam-pipe D, passing through the trap and into the eduction-pipe, to act upon the check-valve therein for forcing such water back into the boiler from whence it issued, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

C. A. PROUTY.

Witnesses:

R. F. OSGOOD,

GEORGE W. HARROLD.