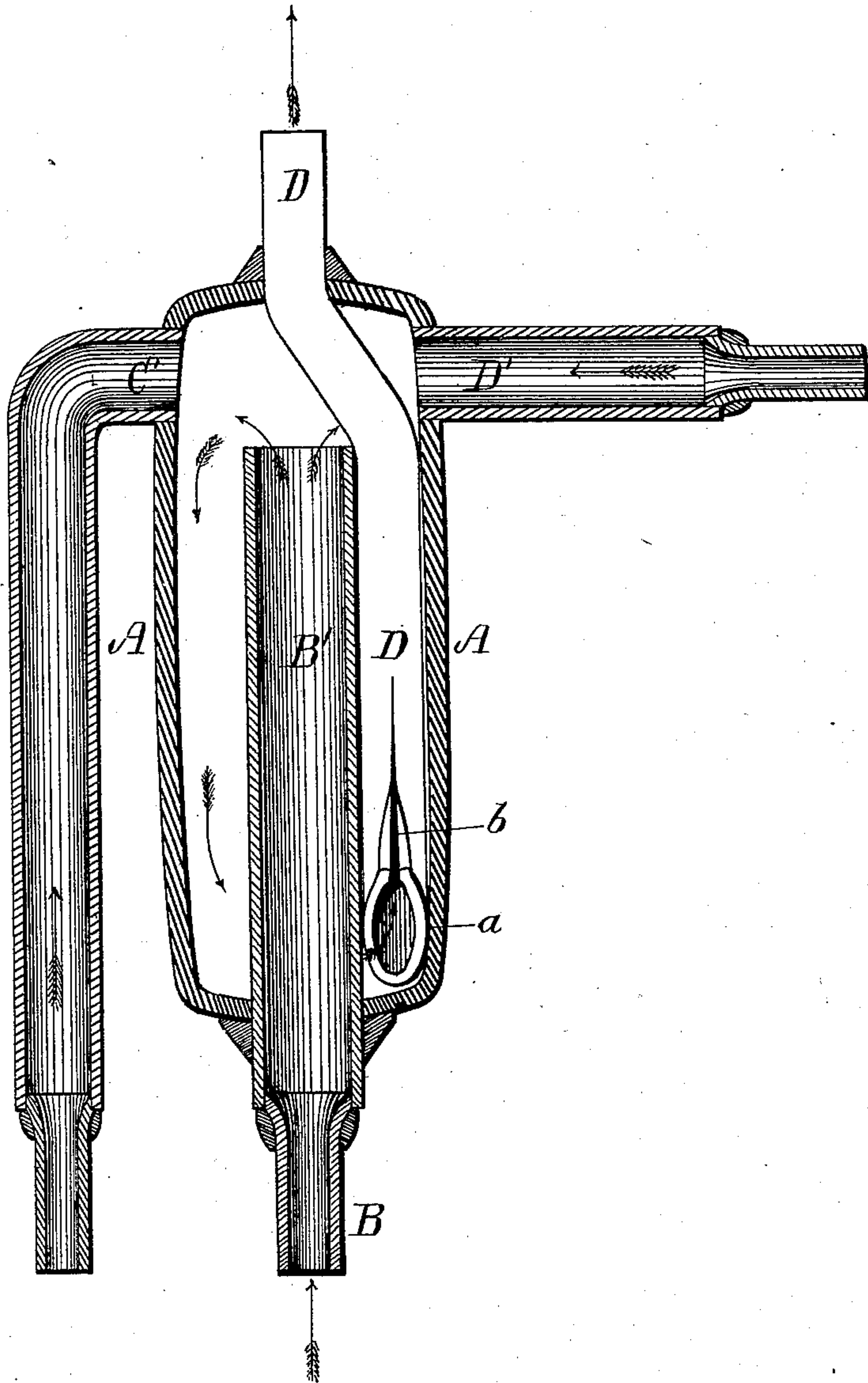


(No Model.)

A. D. PUFFER.
COOLER FOR AERATED WATERS.

No. 255,457.

Patented Mar. 28, 1882.



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UNITED STATES PATENT OFFICE.

ALVIN D. PUFFER, OF BOSTON, MASSACHUSETTS.

COOLER FOR AERATED WATERS.

SPECIFICATION forming part of Letters Patent No. 255,457, dated March 28, 1882.

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To all whom it may concern:

Be it known that I, ALVIN D. PUFFER, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Coolers for Aerated Waters, of which the following is a specification.

My present invention relates to apparatus or devices for reducing the temperature of soda and other aerated waters, in which the water, after passing through the coils of pipe in the ice-chamber, is suffered to flow into a close vessel from an inlet-pipe, and is drawn from the latter by a discharge-pipe, the said closed vessel being adapted to contain above the aerated water the free gas, which would otherwise escape with the water at irregular intervals of time and with disagreeable results, the stream escaping from my device, even under great pressure, in a smooth and limpid stream.

My invention consists, first, in enlarging the area or capacity for delivery of the inlet-pipe within the distributing-chamber, or both within and immediately prior to entering such chamber, by means of which the inflowing liquid is permitted to expand and lose a portion of its pressure and enter the chamber in a quiet stream, thereby retaining to a marked degree more of the gas held in suspension by it than would be the case if the current entered under full pressure and was violently agitated, in which case a considerable portion of the gas is evolved from it and rises to the top of the chamber.

My invention consists, secondly, in the form of the opening in the discharge delivery pipe, whereby such a small amount of free gas as is eliminated from the liquid in the chamber escapes with the liquid into the draft-tube by very minute degrees, and so as to have no appreciable influence upon the liquid as it escapes from the faucet.

The drawing accompanying this specification represents a vertical section of a distributing or dispensing chamber for aerated waters or other analogous liquids under pressure.

In such drawing, A represents a circular oblong metallic case or hollow vessel, which serves as a medium between the ice-box or cooler and the draft-faucet, such vessel being

of sufficient strength to resist considerable internal pressure, and being in the form of similar receptacles which have been in general use for many years.

B in the drawing represents a pipe, which connects with or is a continuation of the coil leading from the ice-box or cooler, this pipe B as it enters the chamber A being considerably enlarged in diameter, as shown at B', and extending nearly to the top of such chamber while it is open, as shown. The aerated water or other fluid under pressure flows from the coil into and through the pipe B', and is discharged into the chamber A at its top, the fluid as it enters this pipe B' being reduced in temperature, and entering the chamber in a comparatively quiet condition, thereby retaining a greater part of the gas held in suspension by it, and avoiding the escape of gas which takes place if the liquid is violently agitated, as would take place in the chamber if the fluid entered the latter with the same velocity with which it leaves the coil. By conducting the enlarged inlet-pipe B' to the upper part of the chamber A, as explained, and delivering the liquid in a quiet state directly into the free gas above the water-level, (provided any has accumulated,) no disturbance or agitation of any account ensues, and the liquid tends to absorb or reabsorb such small amounts of gas above the liquid-level as may be eliminated.

D in the drawing represents a second pipe, of smaller diameter than the first, usually of about equal size with the supply-pipe B, this pipe D extending from the draft-cock and passing down through the chamber A to the bottom, or nearly to the bottom, thereof, this delivery-pipe in lieu of passing downward through the center of the vessel or chamber A, as heretofore, being carried to one side of the tube B', which occupies the center of said vessel, and having its lower end sloping or beveled, as shown at a, in order that gas escaping by it shall do so somewhat gradually, and not to the full extent of the area of the pipe. The pipe D, thus arranged and constructed, is similar to many in common use, and so far contains nothing original with myself.

I have found in practice that with the bevel-shaped mouth, as explained, the gas enters

the tube D in sufficiently large amounts at one and the same time with the water to cause a disagreeable commotion in the water as it escapes from the faucet, and to prevent this and yet afford proper space for the escape of gas I create in the pipe, above the beveled or sloping opening *a*, a contracted or attenuated tapering slit or passage, *b*, narrowing as it extends upward, until it vanishes in the substance of the pipe.

Owing to the comparatively placid manner in which the liquid enters the chamber A through the enlarged pipe B', but a small quantity of gas is eliminated from such liquid; and as the liquid is in the most favorable state to reabsorb this free gas, it is only at long intervals of time that the gas would accumulate to such an extent as to lower the water-level to the top of the slit *b*. Should the gas reach this point, it escapes through the attenuated passage so gradually that its effect upon the liquid at the faucet is not perceptible. Should a considerable quantity of gas from any unusual cause find its way suddenly to the lower part of the chamber, it will escape by the ample opening *a*.

I am aware that it has been customary heretofore to carry a single pipe upward through the chamber A and provide in the top of this pipe a series of apertures to permit of escape of gas from the top of the vessel, such a construction being shown in Letters Patent of the United States granted to T. Warker, dated February 3, 1874, and numbered 147,205. My invention, on the contrary, is designed to retain the gas as long as possible and permit as little as possible to leave the liquid, and I conduct the liquid to the top of the vessel by one pipe and take it therefrom at the bottom at another time. Therefore no gas can escape until it has accumulated sufficiently to expel the liquid from a greater part of the chamber, which, as before observed, would occur only at long intervals of time.

By the removal or escape of gas from the top of the chamber, as in the patent above noted, the pressure it would exert upon the fluid if allowed to remain, as in my vessel, is lost, and the force of the issue at the faucet lowered.

The form of my attenuated passage *b* merging in the full size of the pipe tends to prevent clogging or accumulation of foreign matter in the bore of the pipe. The slit *b*, owing to its form and location, permits of quiet escape of any gas or air that might otherwise accumulate in the chamber and pipe during the act of attaching a full charged fountain, after removal of an empty one.

In lieu of connecting the pipe B' with the interior of the chamber A by passing into it from below, it may be continued up the outside and enter at the top, as shown at C' in the drawing, or it may extend horizontally into the chamber from the outside, as shown at D', according as convenience or use may determine to be best.

I claim—

1. In receivers or vessels for dispensing liquids under pressure, a supply-pipe considerably enlarged from its original area as it enters the vessel, substantially as herein set forth.

2. In receivers or vessels for dispensing liquids under pressure, a supply-pipe enlarged at its discharge end from its original area and discharging the liquid into the upper part of the vessel, and a second and smaller pipe open at bottom for escape of the liquid, and to prevent escape of gas until it accumulates sufficiently to displace a greater part of the liquid in the chamber, substantially as described.

3. The pipe D, provided with the opening or slit *b*, of attenuated tapering form and vanishing at top in the substance of the pipe, and at bottom merging in the larger opening or mouth of such pipe, substantially as and for purposes described.

4. In combination, the vessel A and pipe B', discharging at top of said vessel, and the pipe D, receiving liquid at the lower part of the vessel, and having the attenuated gradually-diminishing aperture *b*, substantially as and for purposes set forth.

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Witnesses:

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