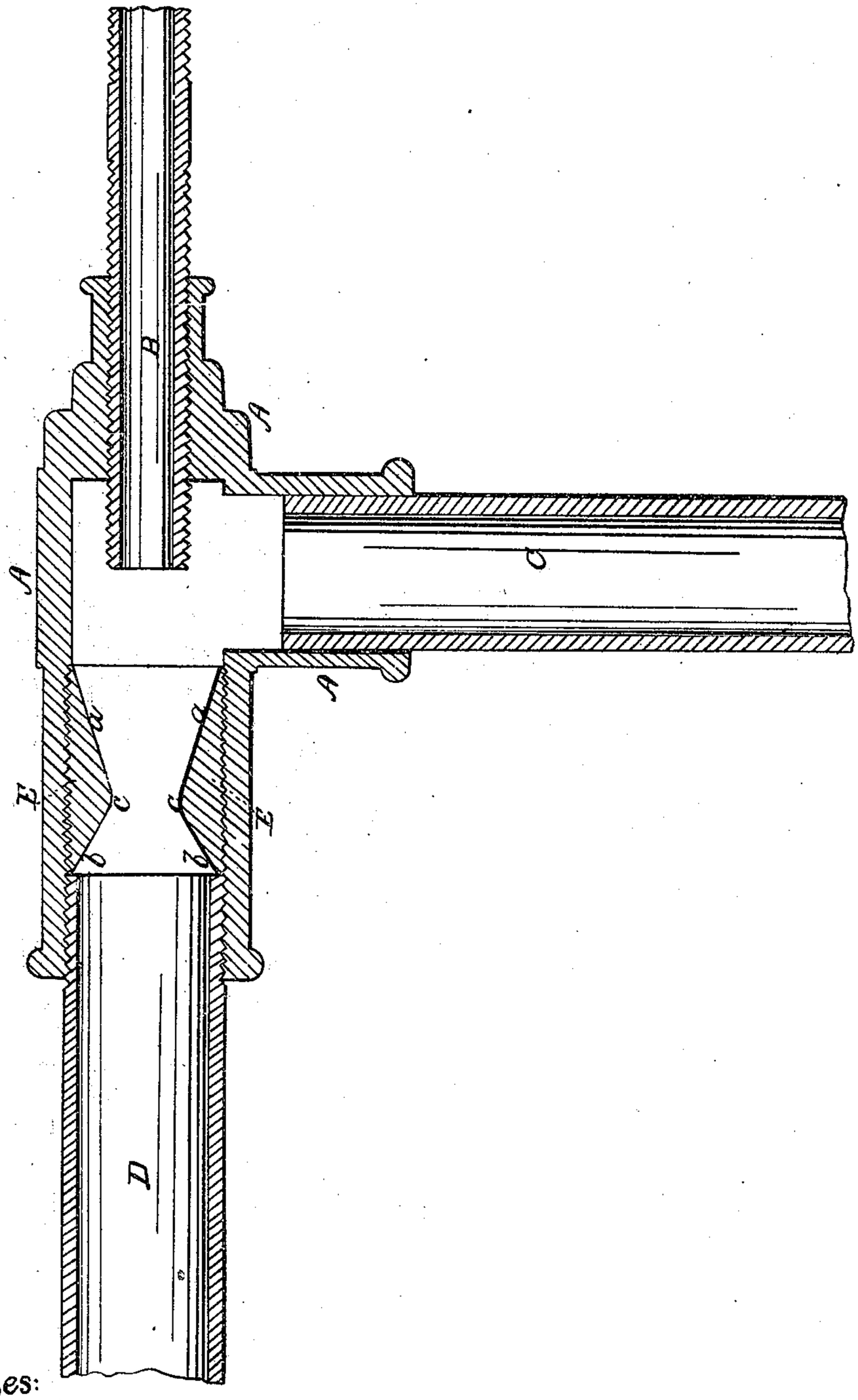
H. S. Lansdell.

Steam Siphon for Raising Water.

No. 41,158. Patented Jan 5. 1864.



Witnesses:

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HENRY S. LANSDELL, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN STEAM-SIPHONS FOR RAISING WATER.

Specification forming part of Letters Patent No. **41,158**, dated January 5, 1864; antedated November 2, 1863.

To all whom it may concern:

Be it known that I, HENRY S. LANSDELL, of the city of St. Louis, in the county of St. Louis and State of Missouri, have invented a new and useful Improvement in Steam-Siphons; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, such drawing representing a vertical section of a steam-siphon with my improvement.

The subject of my invention is an improvement in that class of devices for elevating or forcing water in which steam or air is made to act against a body of water introduced into the apparatus by atmospheric pressure or by any other suitable means.

My invention particularly consists, first, in so constructing and arranging the apparatus that the end of the injection-pipe shall occupy a position within a globe or socket opposite some part of the orifice, through which water is introduced into the said globe or socket instead of projecting into the entrance of the discharge-pipe, as is the case with previous devices; second, in an improved device employed to limit the capacity of the discharge-pipe at or near its entrance when water is to be forced under a heavy pressure or elevated to a considerable height.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is the T-shaped glove or socket, to which are connected the steam-pipe B, the suction-pipe C, and delivery-pipe D. The suction-pipe may be dispensed with when it is convenient to place the globe or socket A directly in the well or source from whence the water is to be obtained or discharged, the globe or socket in such case having simply one or more lateral openings for the ingress of water; but I prefer generally in all cases to use a suction-pipe of sufficient length to obviate the necessity of immersing any portion of the steam-pipe. The steam-pipe is of considerably smaller caliber than the suction and delivery pipes, and the orifice of the said steam-pipe is arranged to stand in the socket or globe A, over or opposite the opening of the suction-pipe, and said steam-pipe does not enter the delivery-pipe at all.

a b are two reversed hollow or annular cones, forming the contraction of the delivery-pipe D near the mouth of the steam-pipe. These may be most conveniently formed by means of a hollow thimble, E, which is bored conically from each end, and fitted tightly into the portion of the socket A which receives the pipe D, the two conical bores meeting in an edge, *e*, which forms the line of greatest contraction, at which the bore may be about the same as that of the steam-pipe when the water is to be elevated to a considerable height or forced under heavy pressure. At other times this contracting device may be dispensed with.

The operation is as follows: Steam, being admitted by the pipe B, rushes into and through the delivery-pipe D, expelling the air from and producing a draft in the latter pipe, and so producing in the suction-pipe and globe or socket A a more or less perfect vacuum, into which the water rises to meet the steam issuing from the steam-pipe, which drives it through the delivery-pipe.

By shortening the steam-pipe, as described, and contracting the delivery-pipe in conical form at a point not far distant from the mouth of the steam-pipe, the draft in the suction-pipe and the force acting to drive the water through the delivery-pipe are increased, and the water can be raised with greater velocity and forced to a much greater height.

The delivery-pipe may be bent upward or in any other direction, according to where the water is to be delivered.

Compressed air may be used instead of steam as the agent for raising and forcing the water.

The following are some of the advantages of my plan terminating the injection-pipe B within the globe A, instead of extending it into the discharge-pipe D, as has been the usual practice hitherto: First, the pipe B, being carried through the water for a less distance, delivers its steam at a higher temperature, and hence causes it to act with much greater force upon the water; second, the entire diameter of the pipe D, or so much of it as is desired, may be availed of for the passage of water, instead of limiting the capacity to a contracted annular space around the end of the injection-pipe; third, the steam or air is made to act directly against the air and water in front of it as it passes in a compact body

into the discharge-pipe, and thus a vacuum is produced and water driven through the pipe much more rapidly than when the steam is surrounded by an annular body of water within said pipe, as in other devices; fourth, by discharging the steam within the enlarged chamber or socket A so much of it as is not driven directly into the discharge-pipe is suddenly condensed and thereby produces a partial vacuum, to increase the atmospheric pressure by which water is driven through the pipe C.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The arrangement of the globe or socket A, injection-pipe B, and delivery-pipe D, when the pipe B terminates within the globe or socket A, above or opposite any part of the induction C, substantially as and for the purposes set forth.

2. The combination of the above arrangement with the reversed cones *a b*, in the manner herein shown and described.

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Witnesses:

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