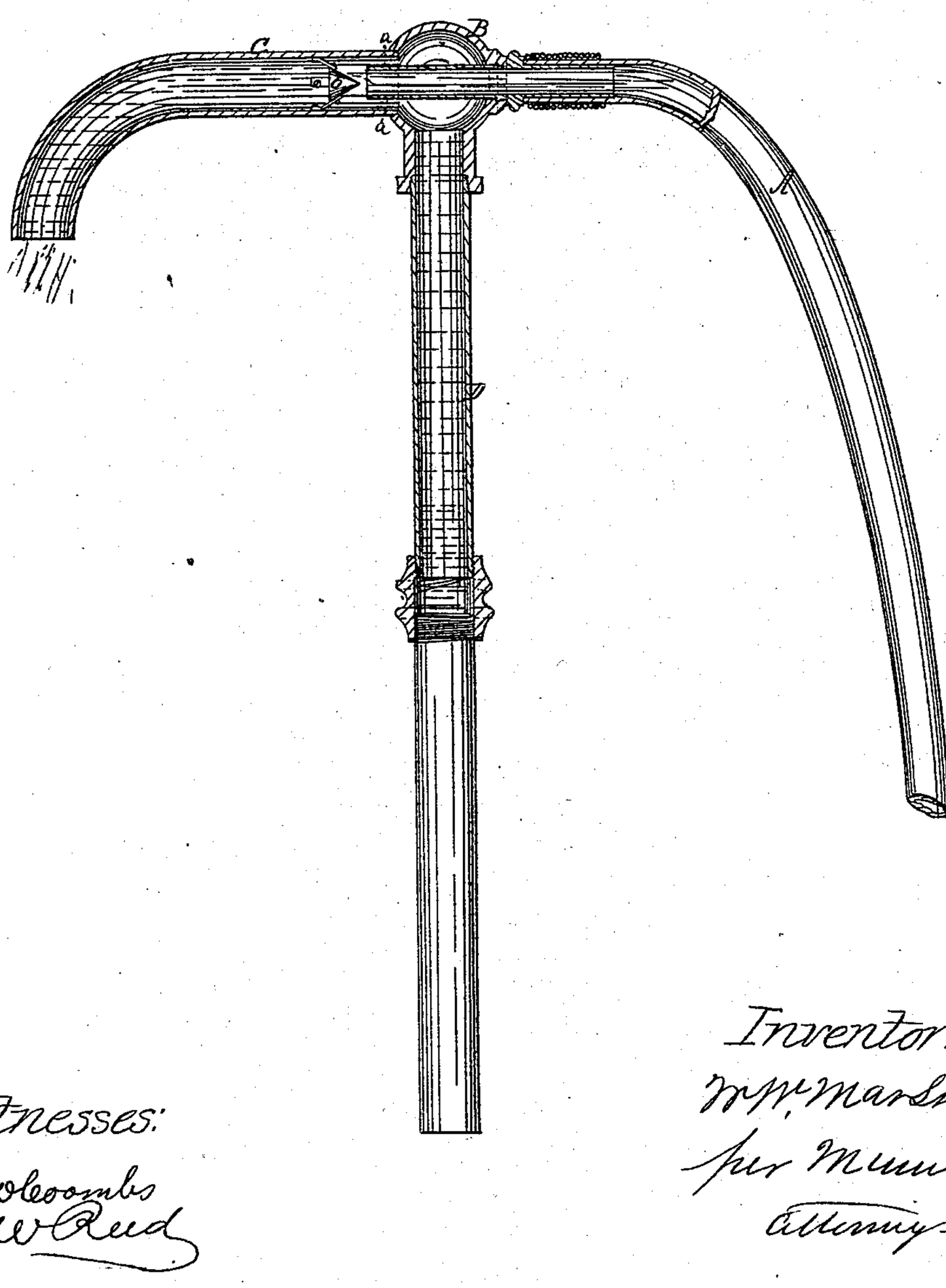
W. W. MARSH.

DEVICE FOR RAISING WATER BY STEAM.

No. 36,661. Patented Oct. 14, 1862.



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UNITED STATES PATENT OFFICE.

W. W. MARSH, OF ST. LOUIS, MISSOURI.

IMPROVED DEVICE FOR RAISING WATER BY STEAM

Specification forming part of Letters Patent No. **36,661**, dated October 14, 1862.

To all whom it may concern:

Be it known that I, W. W. MARSH, of St. Louis, in the county of St. Louis and State of Missouri, have invented a new and Improved Steam-Siphon; 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 a part of this specification.

The drawing represents a vertical central section of this apparatus.

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

A represents the steam-pipe through which steam is admitted from a steam-boiler by opening a suitable stop valve or cock. This steam-pipe may be made of india-rubber or other flexible material, and it ought to be provided with a suitable contrivance enabling the operator to connect it easily to any steam-boiler. The mouth of the steam-pipe is firmly connected to a T-shaped connection, B, and it extends through the head of said T-shaped connection into the inner end of the delivery-pipe C, which is inserted into the T-shaped connection B in such a manner that it runs for a short distance in the same direction as the mouth-piece of the steam-pipe. The inside diameter of the delivery-pipe is somewhat larger than the outside diameter of the mouth-piece of steam-pipe in order that an annular space, *a*, may be left around the latter.

D is the suction-pipe, which is inserted into the T-shaped connection at right angles to the two other pipes, and which connects directly with the annular space *a*, surrounding the mouth of the steam-pipe. Said suction-pipe is made in several sections, which are or may be united by suitable sleeves or couplings, so that the length of the pipe can be easily accommodated to the height to which the water is to be raised. It is obvious, however, from the nature and construction of this apparatus, that the length of the suction-pipe cannot exceed thirty feet, the height to which the water might be raised by the atmospheric pressure with a very perfect vacuum in the suction-pipe. A small cone, *b*, is inserted into the delivery-pipe directly opposite the mouth of the steam-pipe, and pointing toward the latter, for the purpose of spreading the steam as it issues from the steam-pipe, and to facilitate the expulsion of the air and the action of the steam on the water after the latter begins to flow.

The operation is as follows: The length of the suction-pipe having been adjusted to the height to which it is desired to raise the water, its lower end is immersed into the well, reservoir, or vessel containing the water, and the steam-pipe is connected to a steam-boiler. The steam-valve being opened the steam rushes through the steam-pipe and through the delivery-pipe, thereby expelling the air from the latter, and causing a draft over the upper end of the suction-pipe, whereby the air contained in the same is impelled to rush out through the annular space *a*, and to be carried off with the steam. By these means the air in the suction-pipe is rarefied, and the atmospheric pressure causes the water to rise in said pipe and to rush out through the delivery-pipe. If once started, the water is carried out through the latter pipe with a velocity corresponding to the pressure of the steam issuing from the steam-pipe, and a very large quantity of water can thus be raised in a comparatively short time.

This apparatus is particularly applicable to ships' pumps on steam-vessels, and one of its chief advantages consists in the total absence of all valves, so that all impurities contained in or floating on the water pass through without obstruction, and that such impurities are not liable to interrupt the correct action of the apparatus.

Said apparatus is very simple in its construction, it can easily be arranged in working position, it takes up very little room, and it is not liable to get out of order.

It remains to remark that compressed air may be used in place of steam to effect the same purpose, such air being admitted through the pipe in the same manner as the steam, as above described.

I do not broadly claim the use of steam for the production of a vacuum and the driving of water; but

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

The combination of the cone *b* with the pipes C A D, in the manner and for the purpose herein shown and described.

W. W. MARSH.

Witnesses:

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