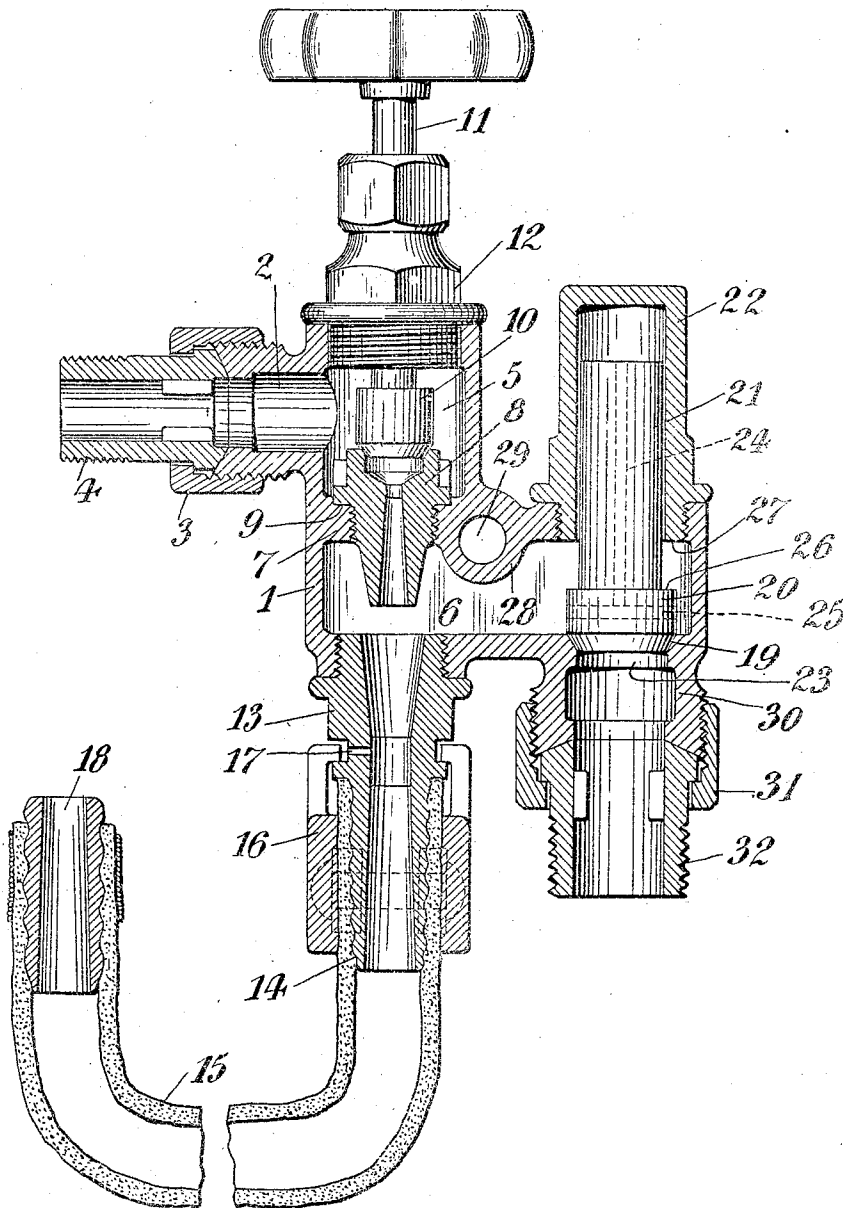


L. KASSANDER.
JET PUMP APPARATUS.
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1,109,682.

Patented Sept. 8, 1914.



WITNESSES:

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JET-PUMP APPARATUS.

1,109,682.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, LEOPOLD KASSANDER, a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in Jet Pump Apparatus, of which the following is a specification.

This invention relates to jet pump apparatus commonly used to lift or expel liquids from a receptacle and it is one of the objects of the invention to construct such apparatus so as to make it particularly adapted for the wetting of coal in the tender of a locomotive.

Another object of my invention is to accomplish such results in a simple manner, providing a device which is entirely self-contained, eliminating all separate operating valves.

Other objects of my invention will appear in the following specification in which a preferred form of my jet pump apparatus is disclosed.

The invention is illustrated by the aid of the accompanying drawing in which the figure shows a longitudinal central vertical section through the apparatus, the operating valve being shown in elevation.

1 represents a shell or main casing, having at the top on one side thereof a branch 2, adapted to receive a coupling nut 3 and pipe sleeve 4 for connection with a steam pipe.

5 is a steam chamber separated from a water chamber 6 by a bridge 7.

8 is a steam nozzle of conventional form, screwed into bridge 7, an annular flange 9 of steam nozzle 8, forming a tight seat thereon. Upper end of steam nozzle 8 is adapted to receive a disk 10 of a suitable operating valve 11, adapted to reciprocate in line of the axis of steam nozzle 8. Cap 12 of operating valve 11 is screwed into the upper end of casing 1. Into the lower end of water chamber 6 and in alinement with steam nozzle 8 is screwed a delivery nozzle 13. The exterior lower end of nozzle 13 is provided with corrugations 14 to allow a hose 15 to slip over and be clamped thereto by means of a suitable clamp 16.

17 is a vent hole communicating with the interior part of the nozzle 13.

18 is a discharge nozzle, secured to the end of the hose 15 by wiring or any other suitable means to prevent its slipping out of the same.

In a thickened and apertured part of the lower wall of the water chamber 6 is formed a valve seat 19 adapted to receive a loaded check 20. Upper end 21 of check 20 is adapted to slidably engage the interior of a cap 22 which is screwed into the upper wall of water chamber 6, opposite and in the same axis of an aperture 23 controlled by said check 20. Vents 24 and 25 are provided in check 20 to prevent the formation of an air cushion in the upper interior portion of the cap 22. Shoulder 26 abutting against the lower end 27 of cap 22 limits the upward movement of said check 20. In the upper part of water chamber 6 is arranged, about midway between the axis of the operating valve 11 and the cap 22 a thickened portion 28, provided with a hole 29, adapted to receive a bolt or other means, to secure the apparatus to a suitable support. Casing 1 is provided with a tubular extension 30 below said aperture 23, externally screw threaded, to receive a coupling nut 31 and pipe sleeve 32, adapted to connect with a water supply pipe.

When intended to be used for coal sprinkling purposes, the apparatus is generally mounted to the backhead of the boiler by means of a bolt passing through hole 29. The steam pipe is connected directly to the boiler, and the water pipe is generally connected to the water supply pipe of the injector.

The operation of my device is as follows: As soon as the operating valve 11 is opened, steam is admitted through the nozzle 8 into the delivery nozzle 13. This creates a vacuum in the water chamber 6 which, in conjunction with the atmospheric pressure on the water in the tender, lifts the check 20 and forces the water into the water chamber 6, whence it is drawn into the delivery nozzle 13 and, by the force of the steam, ejected through hose 15 and discharge nozzle 18 into the atmosphere to whatever point the latter nozzle is directed to. The check valve 20 is loaded or made of sufficient weight to resist the lifting tendency of the water, when the instrument is placed below the highest level of the water in the tender or other source of water supply. By this means the aperture 23 is sealed and waste of water prevented at the discharge end of the apparatus. Vent hole 17 is an essential feature.

as it prevents the establishing of a siphon when, as often the case, the discharge end of the hose is at a point lower than the highest level of the water in the supply tank and the apparatus itself located above it. This vent furthermore allows the hose to drain automatically of water which is very desirable, particularly in cold climates where water remaining in the hose would freeze and prevent the instrument from instantly being put in operation.

What I claim as new is:

1. In a jet pump apparatus, a discharge nozzle having a port extending crosswise through same, connecting the interior of said nozzle directly with the atmosphere at all times.
2. In a jet pump apparatus, a discharge nozzle having a port extending crosswise through same, connecting the interior of the nozzle directly with the atmosphere at all times, and means for connecting a hose to one outlet end of said nozzle.
3. In a jet pump apparatus, with steam and water supply connections thereto, a discharge nozzle having a port extending crosswise through same, connecting the interior of said nozzle with the atmosphere, and a loaded check adapted to normally close said water supply connection against the ingress of water.
4. In a jet pump apparatus, steam and water supply connections thereto, means controlling the steam supply, a discharge nozzle having a port extending crosswise through same, connecting the interior of said nozzle with the atmosphere, and a loaded check adapted to normally close said

water supply connection against the ingress of water.

5. In a jet pump apparatus provided with steam and water supply connections, in combination, a valve controlling the steam supply, a steam nozzle, a discharge nozzle in alinement with each other, said discharge nozzle having a port extending crosswise through same, connecting the interior of said nozzle with the atmosphere, and a loaded check adapted to normally close said water supply connection against the ingress of water.

6. A jet pump apparatus comprising a casing having an upper and a lower chamber, a steam supply connection to the upper chamber and a water supply connection to the lower chamber, a steam nozzle in the wall separating said chambers, a discharge nozzle in alinement with said steam nozzle and in communication with said lower chamber, said discharge nozzle having a port extending crosswise through same connecting its interior with the atmosphere, a valve controlling the admission of steam to said steam nozzle adapted to reciprocate in line of the axis of said steam nozzle, and a loaded check adapted to seat on the lower wall of said lower chamber and to normally close said water supply connection against the ingress of water.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

LEOPOLD KASSANDER.

Witnesses:

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