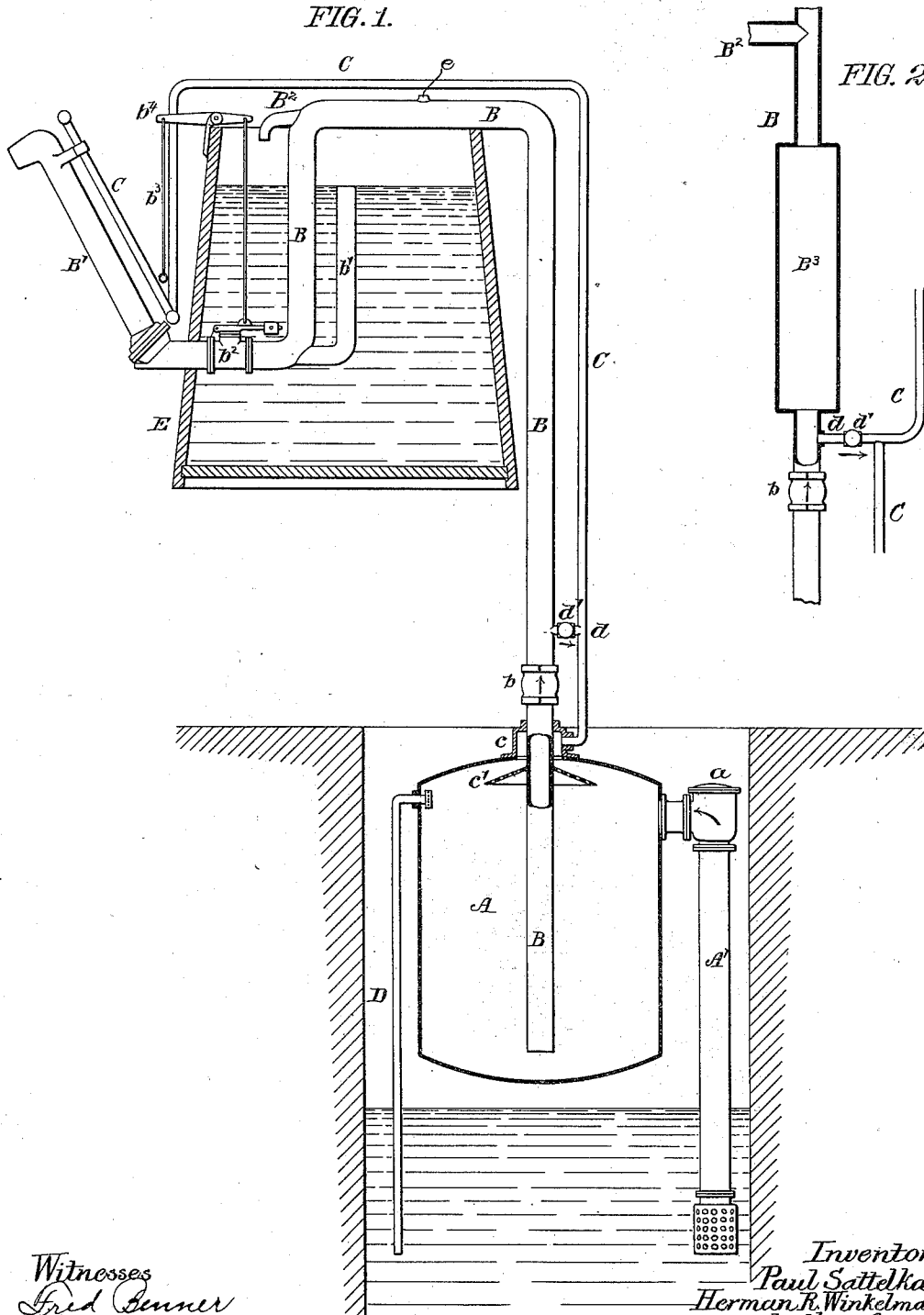


(No Model.)

P. SATTELKAU & H. R. WINKELMANN.
STEAM VACUUM WATER ELEVATOR.

No. 545,822.

Patented Sept. 3, 1895.



Witnesses
Fred Gunner
Rehlicher.

Inventors:
Paul Sattelkau
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UNITED STATES PATENT OFFICE.

PAUL SATTELKAU, OF BROOKLYN, AND HERMAN R. WINKELMANN, OF NEW YORK, N. Y., ASSIGNORS TO THE AUTOMATIC WATER TANK COMPANY, OF JERSEY CITY, NEW JERSEY.

STEAM-VACUUM WATER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 545,822, dated September 3, 1895.

Application filed August 15, 1894. Serial No. 520,402. (No model.)

To all whom it may concern:

Be it known that we, PAUL SATTELKAU, residing at Brooklyn, and HERMAN R. WINKELMANN, residing at New York, State of New York, citizens of the United States, have invented certain Improvements in Steam-Vacuum Water-Elevators, of which the following is a specification.

The object of our invention is to construct an automatic water-elevator in which the vacuum-tank will be charged with water only to a certain level, leaving a body of air above the water, as fully described hereinafter, so as to enable the steam to act immediately and discharge the contents of the vacuum-tank.

In the accompanying drawings, Figure 1 is a sectional elevation of our improved steam-vacuum water-elevator, and Fig. 2 is a view of a modification of part of the device.

A is the vacuum-tank, in the present instance within the well, and A' is the supply-pipe of the tank, extending below the water-line of the well. In this pipe is a suitable check-valve *a*.

E is a storage-reservoir mounted, preferably, in close proximity to the track, so that water can flow by gravity from the reservoir into the tender-tank of a locomotive.

B is the discharge-pipe from the vacuum-tank, and extends in the present instance to a point near the bottom of the tank, and is provided with a check-valve *b*, situated above the tank. This discharge-pipe B extends to a point near the track, and has a pivoted goose-neck B', which can be turned down into position directly above the opening of the tender-tank when desired. This discharge-pipe B preferably extends through the storage-reservoir E, and has a valve *b*² at a point near the bottom of the storage-reservoir, which is operated by a hand-pull *b*³ on the outside of the reservoir, so that on opening the valve water will flow by gravity from the reservoir into the tender-tank when the goose-neck is lowered. The pipe B has a discharge-nozzle B², which extends over the storage-reservoir, so that when water is discharged from the vacuum-tank through the pipe B a certain proportion of the water will flow into the reservoir and the balance will be discharged

through the goose-neck. In the upper portion of the pipe B is an air-vent *e*, so as to break the siphon.

b' is an overflow-pipe for the reservoir, which enters the discharge-pipe B, preferably near its outlet, so that water in the reservoir will always remain at a given level.

C is the steam-supply pipe, communicating at one end with a dome *c* above the vacuum-tank A and communicating with a coupling-section C', carried in the present instance by the goose-neck B', and which can be readily coupled to the steam-pipe on the tender of the locomotive.

c' is a spreader, mounted on the discharge-pipe B within the vacuum-tank directly under the dome *c*, so that when steam enters the dome it will be separated.

D is an overflow-pipe for the vacuum-tank, coupled to the tank some distance below the top and preferably extending to a point below the water-line of the well. The object of this pipe is to draw off sufficient water from the tank to allow a certain amount of air to accumulate in the upper portion of the tank, so that when the steam is admitted to the tank it will quickly expand and immediately act upon the whole surface of the water, discharging it immediately. The pipe is of such a diameter as to not affect the proper action of the steam.

The operation of the apparatus is as follows: The locomotive, with tender attached, is provided with a steam-supply pipe, which is coupled to the pivoted section C' of the steam-pipe C when the goose-neck is turned down into position, and as soon as steam is admitted to the pipe the water in the vacuum-tank is forced out of the tank by the steam through the discharge-pipe B and goose-neck into the tender-tank, a certain proportion of the water flowing into the reservoir in order to keep the reservoir always supplied with water, so that it can be used in cases of emergency. As soon as the steam is turned off, a portion of the pipe B becomes a spray-water reservoir, and the water therein flows back into the vacuum-tank through the valved passage *d*, forming a communication between the pipe B and the steam-pipe C. Air enters the pipe B through the air-vent *e*. The passage *d* has a check-valve

d' to check the flow of steam therethrough, but will allow the flow of water from the discharge-pipe into the steam-pipe. The water as it flows into the vacuum-tank which is charged with steam quickly condenses the steam, forming a partial vacuum, and water will flow from the well through the inlet-pipe A' and charge the vacuum-tank immediately, and as the water will continue to flow from the discharge-pipe B into the vacuum-tank until it is emptied, the tank in many instances will be charged with water above the overflow-point. Consequently the water will discharge through the overflow-pipe D until the proper level is reached.

In Fig. 2 we have shown an enlargement B² in the form of a spray-reservoir of the pipe B. This enlargement is used when the area of the pipe is not sufficient to contain the water necessary for the proper operation of the apparatus.

We claim as our invention—

1. The combination in a steam vacuum water elevator, of the vacuum tank having an air vent, the water inlet passage, the discharge pipe, the steam pipe, spray water reservoir, an overflow pipe for the vacuum tank, whereby the water in the tank is kept at a proper level, leaving an air space for the steam to expand, substantially as described.

2. The combination in a vacuum tank, of the outlet pipe opening into the tank near the bottom, a steam pipe connected to the tank near the top, a check valve in the discharge pipe, a valved passage communicating with the discharge pipe and a steam pipe and an air vent in the discharge pipe, said vacuum tank having an overflow opening, substantially as described.

3. The combination in a vacuum water elevator, of the vacuum tank, inlet pipe therefor, an overflow pipe, discharge pipe extending from the vacuum tank and terminating in a goose neck and having a nozzle, an air vent for said discharge pipe, a storage reservoir into which the nozzle discharges thus allowing a portion of the discharged water to flow into the reservoir, a steam pipe coupled to the vacuum tank, a passage forming a communication between the discharge pipe and steam pipe, a valve in said passage, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

PAUL SATTELKAU.

HERMAN R. WINKELMANN.

Witnesses:

WM. H. MORALES,

HUBERT HOWSON.