

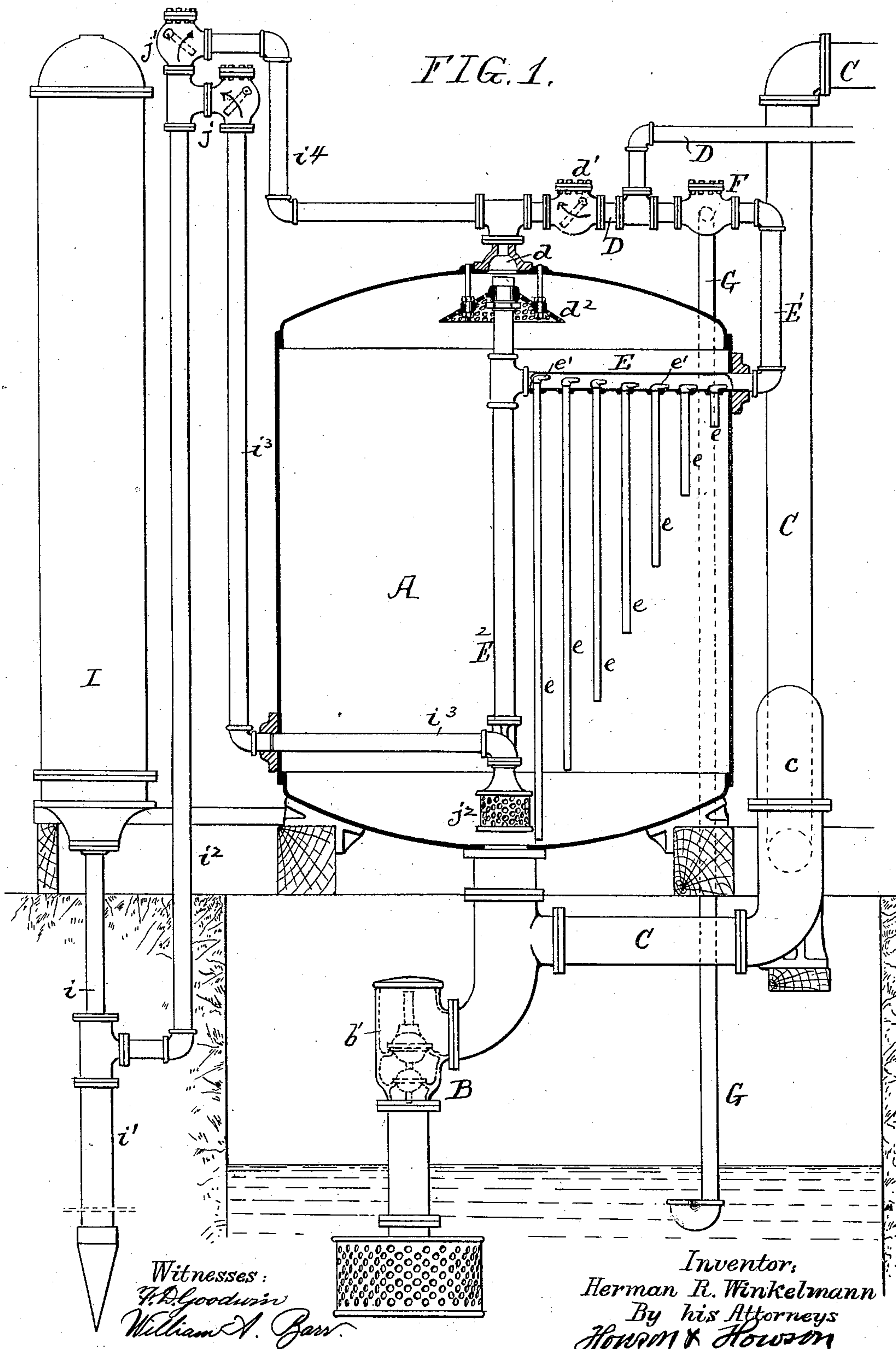
(No Model.)

2 Sheets—Sheet 1..

H. R. WINKELMANN.  
STEAM VACUUM WATER ELEVATOR.

No. 507,342.

Patented Oct. 24, 1893.



(No Model.)

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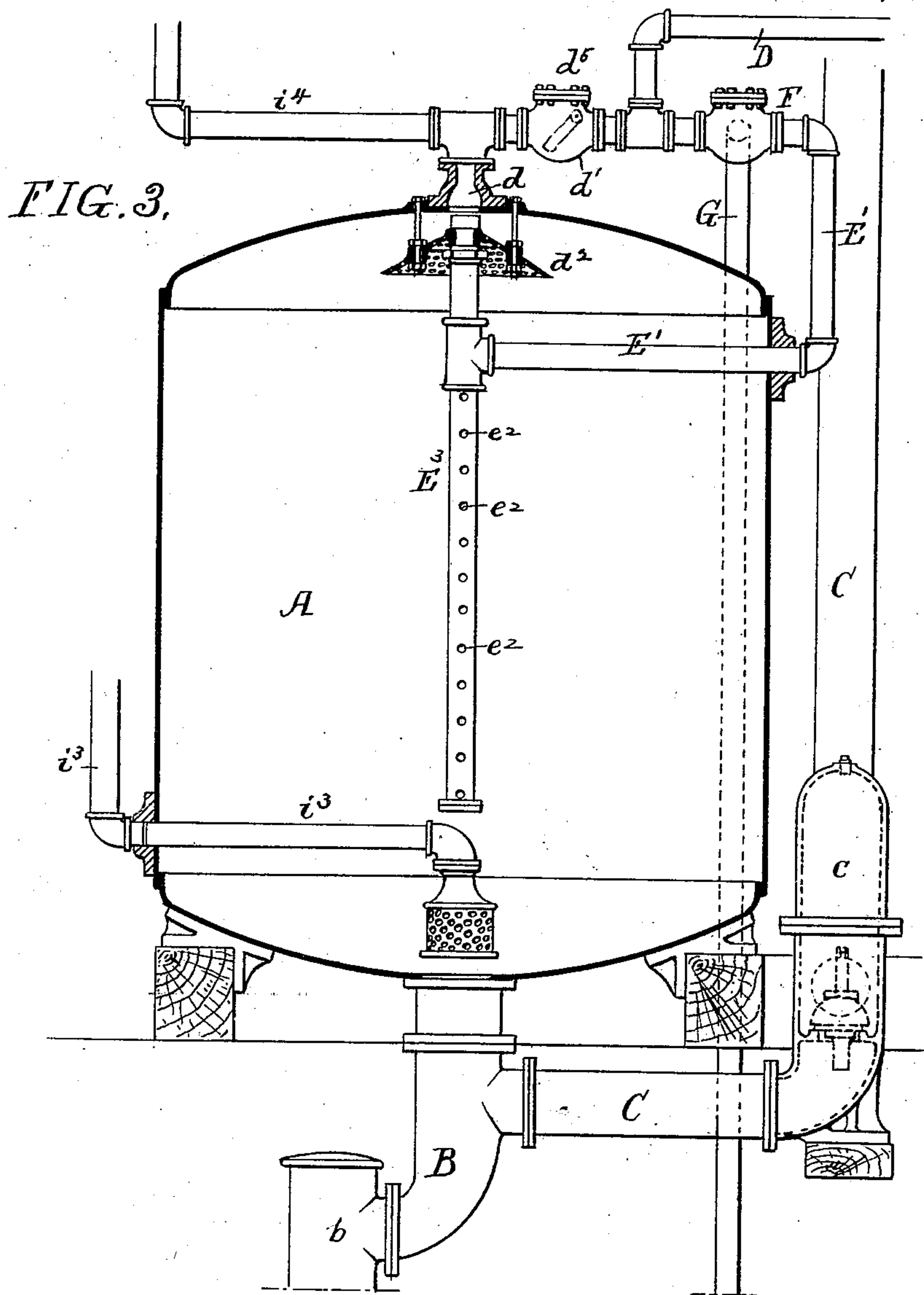
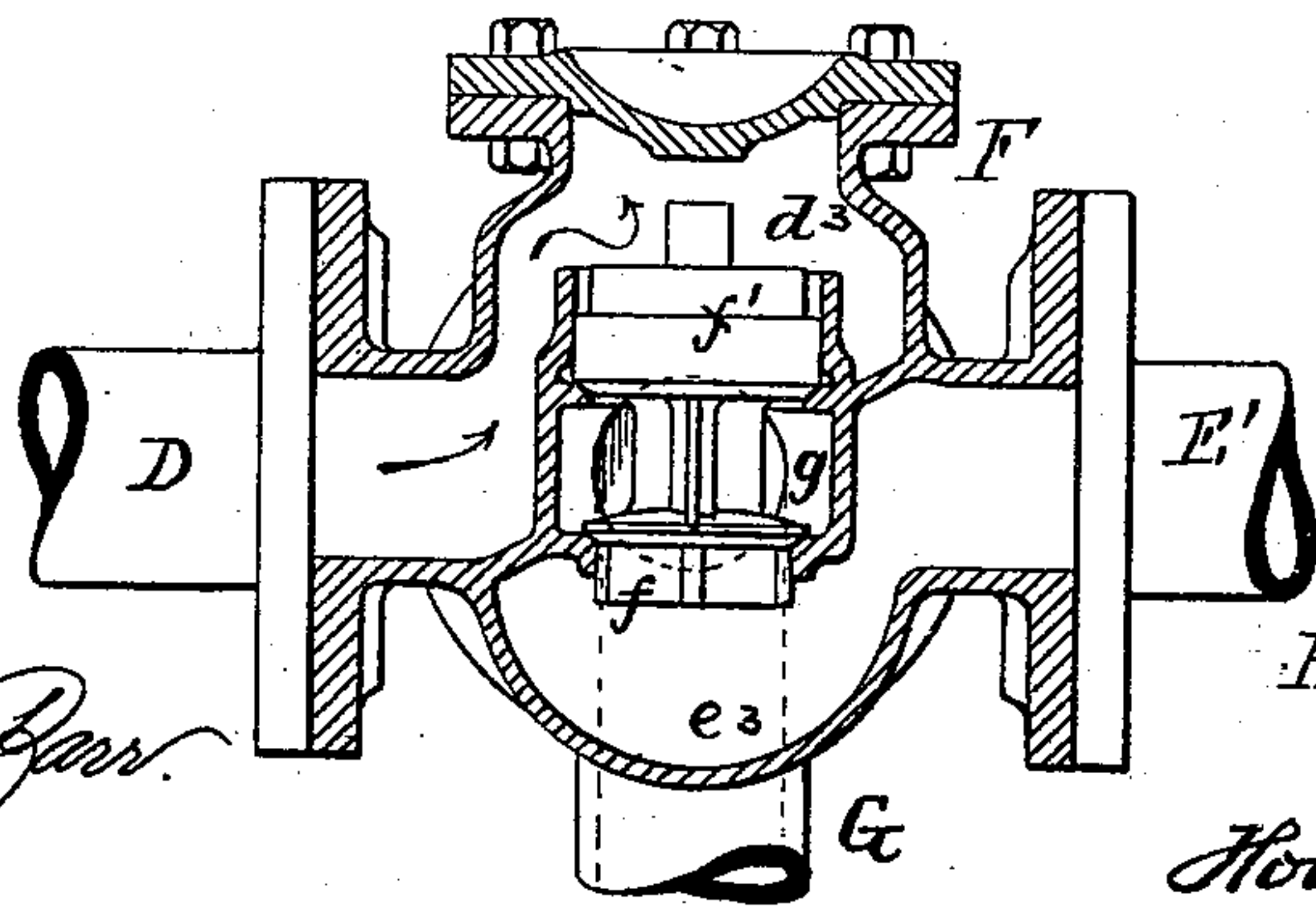


FIG. 2.



*Witnesses:*

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*By his Attorneys*

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# UNITED STATES PATENT OFFICE.

HERMAN R. WINKELMANN, OF PHILADELPHIA, PENNSYLVANIA.

## STEAM VACUUM WATER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 507,342, dated October 24, 1893.

Application filed May 22, 1893. Serial No. 475,102. (No model.)

*To all whom it may concern:*

Be it known that I, HERMAN R. WINKELMANN, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented  
5 Improvements in Steam Vacuum Water-Elevators, of which the following is a specification.

The object of my invention is to allow steam to exhaust from a steam vacuum water tank  
10 after the supply of steam has been cut off. This object I attain in the following manner, reference being had to the accompanying drawings, in which:—

Figure 1, is a view in elevation of a steam vacuum water elevator, the tank being in section. Fig. 2, is a sectional view of the steam actuated valve; and Fig. 3 is a view illustrating a modification of the invention.

Referring to Fig. 1, A is the tank, and B is the inlet pipe provided with a suitable valve *b*. The pipe extends into the well in the present instance. C is the outlet pipe also provided with a check valve *c*. D is the steam inlet pipe connected to the vacuum tank A at *d*. In  
25 this pipe is a check valve *d'* to prevent the water from the spray reservoir entering the steam pipe.

E is the exhaust manifold within the vacuum tank and connected with the pipe E' which is in turn connected to the steam actuated valve F, shown clearly in Fig. 2. The exhaust pipe G is also connected to this valve and extends into the well below the water line as shown in Fig. 1.

35 The live steam pipe D is also connected to the valve F in such a manner that the live steam will enter the chamber *d*<sup>3</sup> of the valve structure above the portion *f'* of the valve proper and will keep the valve to its seat, preventing the escape of steam through the exhaust pipe G and manifold, as the area of the valve *f* exposed to the action of steam in the portion *e*<sup>3</sup> of the valve case is less than the area of the portion *f'* of the valve exposed to the action of steam in the chamber *d*<sup>3</sup>.  
45

The manifold E is supported partly by the shell of the tank A and partly by a central standard E<sup>2</sup>, which rests in the present instance, upon the spray tube *i*<sup>3</sup>; the perforated  
50 deflector *d*<sup>3</sup> is also connected to the standard

and to the dome of the tank, so that the connected parts within the tank are rigid. Depending from the manifold E are a series of pipes of different lengths. These pipes terminate in nozzles *e'* within the manifold. By this  
55 arrangement the steam will exhaust from the different levels of the tank and will carry with it any air that may have gained access to the interior of the vacuum tank.

I is the spray reservoir connected to the tank  
60 by the pipes *i*, *i'*, *i*<sup>2</sup>, *i*<sup>3</sup> and *i*<sup>4</sup>; water enters the reservoir through the pipe *i*<sup>3</sup> and is discharged from the reservoir into the tank through the pipe *i*<sup>4</sup>. Suitable check valves *j* and *j'* are arranged within the pipe to prop-  
65 erly direct the water.

In Fig. 3, I have shown a modification of my invention. In this instance I dispense with the manifold and series of depending pipes and utilize the standard making it in the  
70 form of a perforated tube A<sup>3</sup> connected to the pipe E', the perforations *e*<sup>2</sup> in the pipe being at different levels as clearly shown in the drawings. In this instance the tube E<sup>3</sup> is not supported by the pipe *i*<sup>3</sup>.  
75

The operation is as follows:—If for instance the tank is used for supplying locomotive tenders with water it is preferably placed close to the track and the steam pipe is so arranged that it will receive steam from the  
80 locomotive. The tank is charged with water and the steam from the locomotive is turned into the pipe D and enters the tank A forcing the water from the tank through the discharge pipe C into the tender tank and it also  
85 forces the water through the pipe *i*<sup>3</sup> into the spray reservoir I. When the tank is emptied, the steam supply is cut off and as the live steam closed the valve *f* in the casing F steam could not escape from the tank but the mo-  
90 ment the steam is cut off the valve *f* is raised off its seat by the steam passing through the pipe E' from the manifold and its pipes and allow it to escape through the exhaust pipe G. In the meantime, however, the water  
95 from the spray reservoir enters the tank and condenses a certain proportion of the steam forming a partial vacuum in the tank sufficient to draw water from the well through the inlet pipe B and recharge the tank with  
100



water; the surplus steam passing away from the tank through the discharge pipe E' and exhaust G.

5 The exhaust pipe G extends below the water line of the well. Thus air is prevented from entering the tank through this discharge pipe.

I claim as my invention—

10 1. The combination of the vacuum tank, the steam inlet therefor, a check valve in said steam inlet pipe, a steam exhaust pipe communicating with the tank, and a steam actuated valve closing said pipe when steam is  
15 turned into the supply pipe, said valve allowing the steam to escape through the steam exhaust pipe when the live steam is cut off, substantially as described.

20 2. The combination of the tank, the steam supply pipe therefor, a check valve in said pipe, a steam exhaust pipe communicating with the tank, a water seal therefor, and a steam operated valve acted upon by the live steam in the supply pipe, and adapted to  
25 close the exhaust pipe when live steam is turned into the tank, but when the said live steam is disconnected allowing the valve to open by the pressure of steam in the tank, in order to permit the said steam to escape through the exhaust pipe, the check valve in  
30 the supply pipe preventing the exhaust of steam through said pipe, substantially as described.

3. The combination of the tank, the steam supply pipe therefor, an exhaust pipe entering the tank, a valve closing said pipe while  
35 steam is entering the tank, and a series of outlets connected with said pipe, arranged at different levels in the tank, substantially as described.

4. The combination of the tank, the steam supply pipe therefor, the steam exhaust pipe, a valve closing said pipe when steam is entering the tank, a manifold connected with the  
40 exhaust pipe, and a series of pipes depending from the said manifold, said pipes being of different lengths, and open to receive steam  
45 from the tank, when the steam supply is cut off, substantially as described.

5. The combination of the tank, the water inlet and discharge therefor, the spray reservoir, the tubes connecting the spray reservoir  
50 with the tank, a steam inlet pipe for the tank, a steam discharge pipe therefor, a manifold connected to said discharge pipe, and a standard for supporting said manifold, said standard  
55 being in turn supported by the spray tube, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERMAN R. WINKELMANN.

Witnesses:

H. F. REARDON,

FRANK E. BECHTOLD.