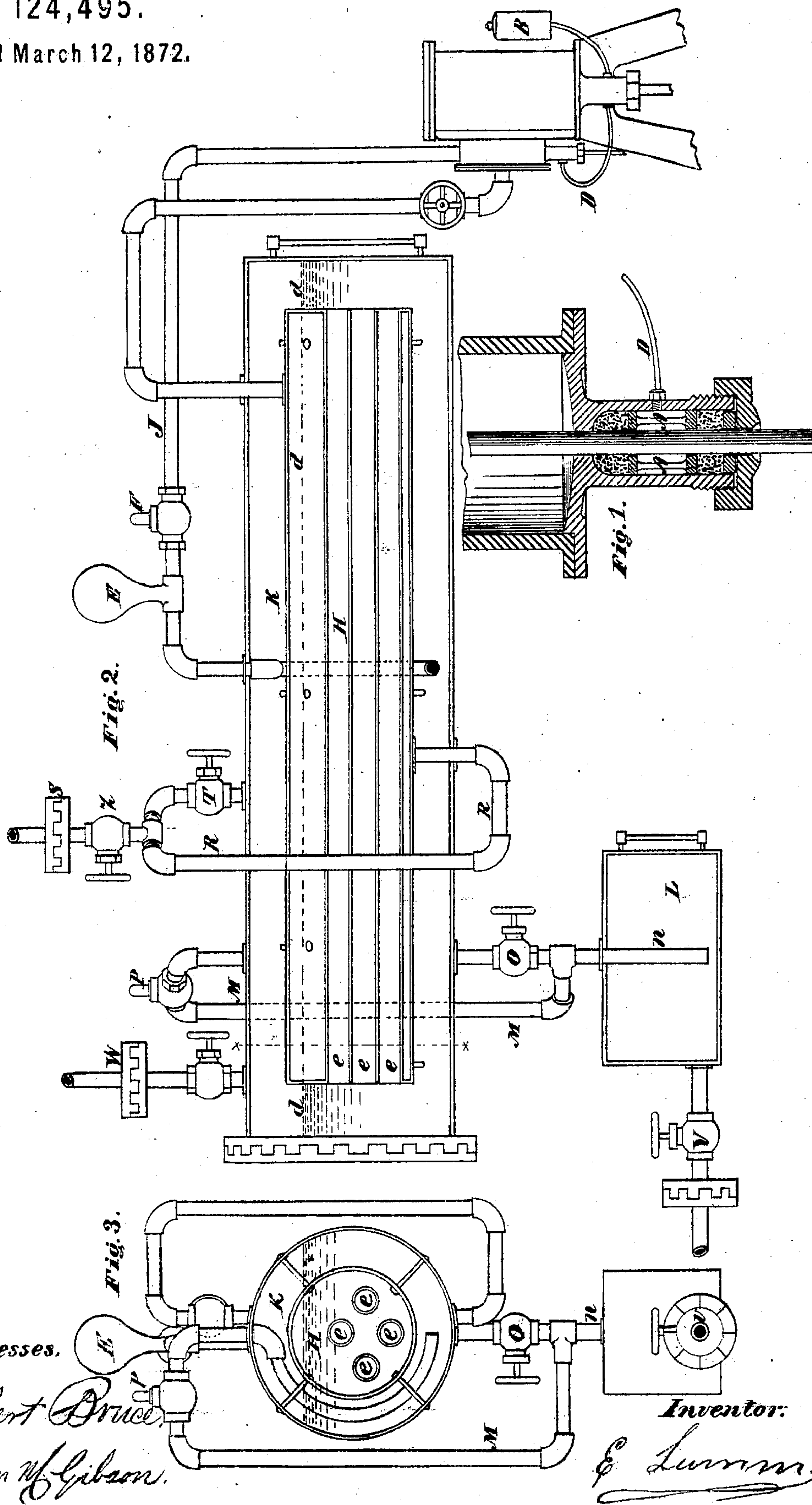


EMILE LAMM. Improvement in Ammoniacal Gas Engine.

No. 124,495.

Patented March 12, 1872.



Witnesses.

Robert Bruce,
John W. Gibson.

Inventor:

E. Lamm.

UNITED STATES PATENT OFFICE.

EMILE LAMM, OF NEW ORLEANS, LOUISIANA.

IMPROVEMENT IN AMMONIA-GAS ENGINES.

Specification forming part of Letters Patent No. 124,495, dated March 12, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, EMILE LAMM, of the city of New Orleans, parish of Orleans and State of Louisiana, have invented an Improved Ammoniacal Gas-Engine; and I do hereby declare that the following is a full and exact description of the same.

Object of my Invention.

The first part of my invention relates to the placing of two disks of iron a small distance apart within the packing-boxes, and surrounding the piston-rod and valve-stem, of a steam-engine, so as to form a hollow in the center of the packing-boxes, which hollow is made to contain a lubricating-fluid constantly supplied from a small reservoir, in order to be able to work ammoniacal gas instead of steam in the engine without loss of the gas. The second part of my invention relates to a horizontal boiler instead of a perpendicular, as shown in my invention of an ammoniacal engine patented July 19, 1870, No. 105,581. The third part of my invention relates to an air-chamber, in combination with the exhaust-pipe of the engine, so as to relieve all back action against the valve of the engine at the instant the exhaust takes place at the end of each stroke, which, if the air-chamber was not added to the exhaust-pipe, would throw the valve of the engine off its seat. The fourth part of my invention relates to a tube, in combination with the reservoir of liquefied gas and the tank containing the weak solution which reabsorbs the exhaust-gas. It is connected in such a manner, both with the tank and reservoir, as to exert, when desired, the same pressure on top of the liquid in the tank as in the reservoir containing the liquid from which the motive power is derived. Its object is to discharge rapidly, at the end of an operation, the saturated solution in the tank, while it also serves to charge the inner boiler or reservoir with liquid-gas at the beginning of an operation. The fifth part of my invention relates to an overflow-tank, in combination with the principal tank of the engine, which contains the water of reabsorption for the gas coming from the exhaust. This overflow-tank is for the purpose of relieving any back pressure on the

engine from the gas passing unabsorbed in the first tank, this gas being taken up by the second or overflow-tank.

I will now, by proper reference to the drawing, describe my invention.

The first figure is a transverse cut of the piston-rod and packing-box. The second figure is a transverse section of the whole machine. The third figure is a cross-section.

A in Fig. 1 is two disks of iron with a hole in their center, to allow the piston-rod and valve-stem to glide through. These two disks are joined into one by three small columns. There is gum-packing above and below the ring, and in the space between the two disks there is a constant flow of oil around the piston-rod and valve-stem from a small reservoir of oil shown next to the engine in Fig. 2, and lettered B. H, in Fig. 2, is a reservoir of liquefied ammoniacal gas, which is constructed like a common tubular boiler without a fire-box. It is immersed in tank K, containing a weak solution of aqua ammonia, which reabsorbs the exhaust-gas of the engine. E is an air-chamber fixed upon the exhaust-pipe J immediately after the check-valve F. This air-chamber provides against too great a concussion of the gas against the valve of the engine at the instant the exhaust takes place, thereby rendering the engine much more efficient. R is a tube having an internal connection with reservoir H, and a like connection with tank K. This internal connection with tank K from reservoir H can be cut off at will by means of the throttle-valve T. This same tube then opens outward through another throttle-valve, Z. This tube answers the double purpose of introducing the charge of liquefied gas at the beginning of an operation in reservoir H by means of the connection S, and of hurrying the discharge of the saturated solution in tank K at the end of an operation by the pressure of gas, which can be produced at will on top of the liquid in tank K from the reservoir H by opening the throttle-valve T. The connection W serves to introduce the charge of reabsorbing water into K, in which the exhaust-pipe of the engine dips. L is an overflow-tank, which, during the working of the engine, is two-thirds filled with the same liquid as in tank K, which it gets from it by opening throttle-valve O in pipe n, which pipe dips down to

the bottom of the overflow-tank L. When throttle-valve O is closed, the connecting-pipe M and N form but one pipe, the end M communicating internally with the top of tank K in an elbow. In the end of pipe M is seen a check-valve, P. If there is a greater pressure of gas on the top of the reabsorbing solution in K than in L it becomes equalized instantly with the pressure in L by lifting the check-valve P, and the escaping gas through pipe M N is reabsorbed in the water at the bottom of overflow-tank L. The coupling-pipe and throttle-valve V serve to discharge the saturated solution of aqua ammonia at the end of an operation.

I will now describe the working of my improved engine. It can easily be seen that the tubular reservoir H and tank K are equivalent in their combinations to the same arrangement in my patent for an ammoniacal gas-engine, dated July 19, 1870, No. 105,581—viz., the reservoir or boiler being in a like manner immersed in the water of reabsorption, the only difference in the above-described boiler is, first, that it is placed horizontally, while in my first patent it is placed in a perpendicular position; second, the liquid from which the

motive power is derived is placed around the tubes in the reservoir instead of inside of them as in my first patent; the latter I consider an improvement, for there is less priming, and, further, a greater surface of evaporation. As I have explained already the action of both the air-chamber in the exhaust-pipe of the engine and of the overflow-tank, as well as that of tube R, it is only necessary to refer to my first patent for an ammoniacal gas-engine to understand more fully the working of this one, which works in precisely the same manner as the first.

Now, what I claim as new in this, and wish to secure by Letters Patent, is—

1. The packing-boxes, as described, in combination with reservoir of lubricating liquid B.
2. The air-chamber E in the exhaust J, for the purpose set forth and specified.
3. The tube R, for the purpose set forth and specified.
4. The overflow-tank L, in combination with tank K, for the purpose set forth and specified.

EMILE LAMM.

Witnesses:

ROBERT BRUCE,
JOHN M. GIBSON.