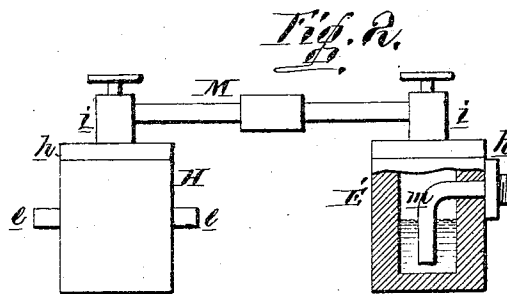
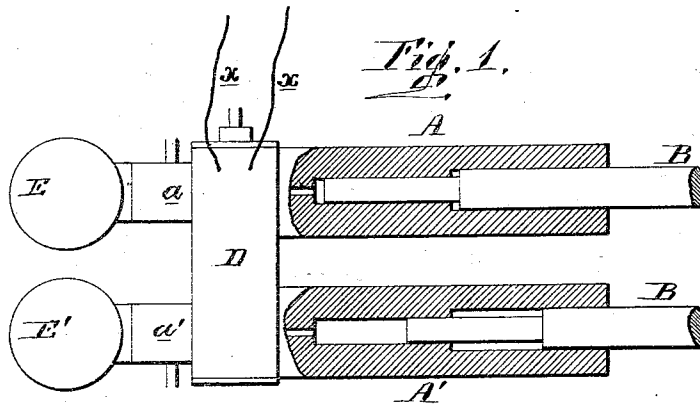


C. C. WOLCOTT.

Generating and Applying Motive Power.

No. 153,510.

Patented July 28, 1874.



Witnesses
Charles F. Foster
W. E. Evans

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CHRISTOPHER C. WOLCOTT, OF WASHINGTON, D. C., ASSIGNOR TO HIMSELF
AND WILLIAM W. W. WOOD, OF SAME PLACE.

IMPROVEMENT IN GENERATING AND APPLYING MOTIVE POWERS.

Specification forming part of Letters Patent No. **153,510**, dated July 23, 1874; application filed
July 14, 1874.

To all whom it may concern:

Be it known that I, CHRISTOPHER C. WOLCOTT, of Washington, District of Columbia, have invented an Improvement in Generating and Applying Motive Power, of which the following is a specification:

My invention is based on the fact, determined by practical tests, that carbonic-acid gas, when introduced in a liquid state in a closed vessel, and there subjected to heat by the aid of hydrogen, which is introduced at the same time as the carbonic-acid gas, the result will be the evolution of great heat and a gas of such great expansibility and energy that it can be economically and most effectually employed as a medium for applying motive power.

The diagram, Figure 1 of the accompanying drawing, illustrates one mode of applying the motive-power gas, A and A' being two cylinders of a strength sufficient to withstand the excessive pressure to which they must be subjected, and each cylinder having a tightly-packed rod, one end of which constitutes the piston to be acted on by the gas, the other end being connected to a crank on a shaft, in the same manner as the piston-rod of an ordinary steam-engine. The two cranks for the two cylinders project in line with each other, but in contrary directions from the shaft, the gas acting on the rear ends only of the rods B B. At the rear of the two cylinders is a chest, D, containing a valve. This valve is so constructed and operated from the crank-shaft, and is arranged in respect to suitable ports in such a manner, as to admit the gas to one cylinder while it is being exhausted from the other, thereby imparting to the piston-rods the desired reciprocating motion in contrary directions, and to the crank-shaft the desired rotating motion. The chest D has two branches, *a* and *a'*, to the former of which is secured a vessel, E, containing hydrogen gas under pressure, and to the branch *a'* is attached a vessel, E', containing carbonic-acid gas in a liquid state and under pressure. Each of the branches *a* and *a'* has a small valve, the two valves being so operated by the engine as to quickly open and close the passages between the vessels E

and E' and the chest D, and thus admit a portion of the contents of the two vessels to the chest D whenever each of the piston-rods reaches the limit of its rearward movement.

As the most economical and available means of imparting the desired heat to the combined elements admitted to the chest, I introduce into the latter the two wires *x x* from an induction-coil. The instant the two elements are introduced into the chest and are ignited the hydrogen gas combines with the atoms of oxygen derived from the carbonic acid, thus producing water, carbonic oxide, and carbonic-acid gas, the two former elements being in very minute proportions, while the carbonic-acid gas, under the heat thus developed by the burning of the hydrogen with the oxygen, is the above-mentioned motive-power gas, of great energy and expansibility.

It may be well to here briefly explain a mode, which I have successfully carried into effect, of generating the two elements above referred to.

In Fig. 2, H represents a vessel of great strength, and is provided with trunnions *e*, so that it can be readily tilted, the vessel being furnished with a detachable cap, *h*, having a chest, *i*, containing a valve or cock, by operating which the gas generated in the vessel can be allowed to pass into and through the pipe M. The gas is generated in the vessel H by depositing in the latter carbonate of lime and sulphuric acid, which is contained in a bottle within the vessel, and which, by tilting the latter, is mixed with the carbonate of lime. At the proper time the gas from the vessel H is permitted to pass through the pipe M into the vessel E', where it assumes a liquid form, this vessel E containing a pipe, *m*, extending downward into the liquid and communicating with the vessel's outlet. When the vessel has received a sufficient quantity of carbonic-acid gas in a liquid state, it is uncoupled from the pipe M and connected to the branch *a'* of the chest D, as shown in Fig. 1. The vessel E may then be attached to the pipe M, and may receive a supply of hydrogen gas, generated in the vessel H by the action of dilute sulphuric acid on iron turnings,

or by any other well-known means. The vessel is then uncoupled from the pipe M and connected to the branch *a* of the chest D.

It should be understood that I neither claim nor confine myself to this mode of generating the gases, as other plans and appliances equally efficient may be adopted.

In addition to the two elements above described, chlorine gas may be used in a separate vessel and introduced with the other elements into the chest D, the result of these combined elements, when subjected to the action of an electric spark, being hydrochloric acid, water, and carbonic-acid gas.

It will be understood that the mechanism for applying the motive-power gas may be varied without departing from my invention, the mechanism illustrated in the diagram, Fig. 1, being given as a mere example of one of the many modes of such application.

I claim as my invention—

1. A motive-power gas, consisting of car-

bonic-acid and hydrogen gas, ignited by an electric spark.

2. The mode herein described of generating a motive-power gas—that is to say, subjecting carbonic-acid gas and hydrogen gas to the action of a current of electricity in a closed vessel, substantially as described.

3. A motive-power engine, in which a chest for receiving carbonic-acid gas in a liquid state, and hydrogen gas with or without chlorine, is combined with valves for admitting these elements to, and excluding them from, the valve-chest of the engine, and with wires that conduct an electric spark into the said chest, all substantially as specified.

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

CHRISTOPHER C. WOLCOTT.

Witnesses:

CHARLES E. FOSTER,
W. E. EVANS.