(No Model.)

# F. E. COREY.

## AIR COMPRESSING ENGINE.

No. 311,106. Patented Jan. 20, 1885.

Fig. 1.

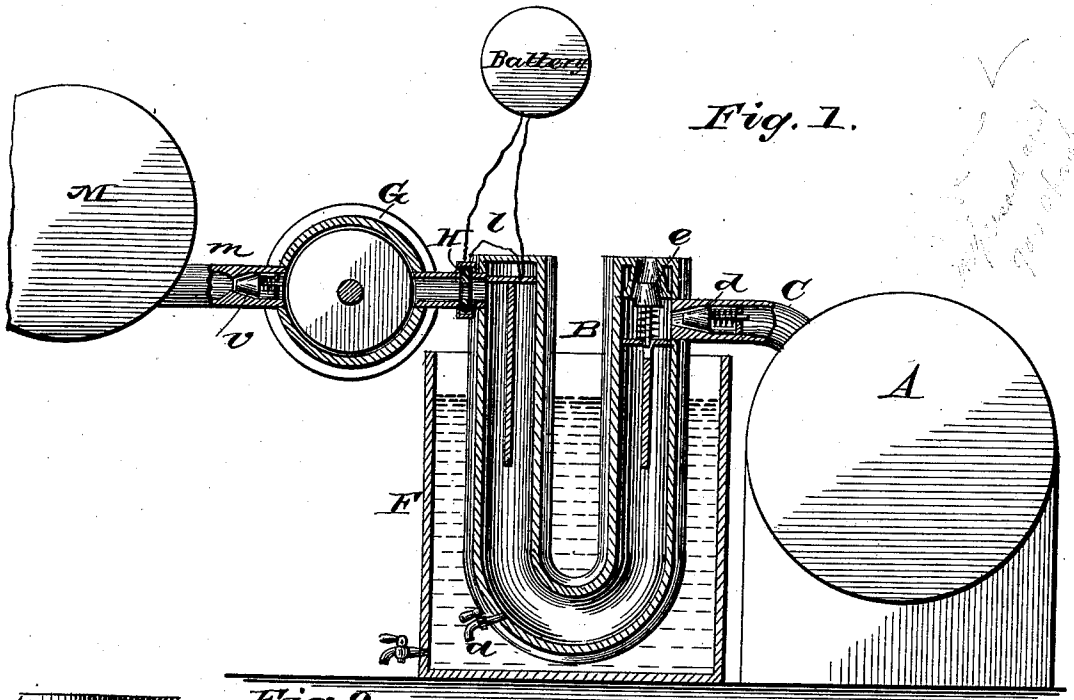



Fig. 2.

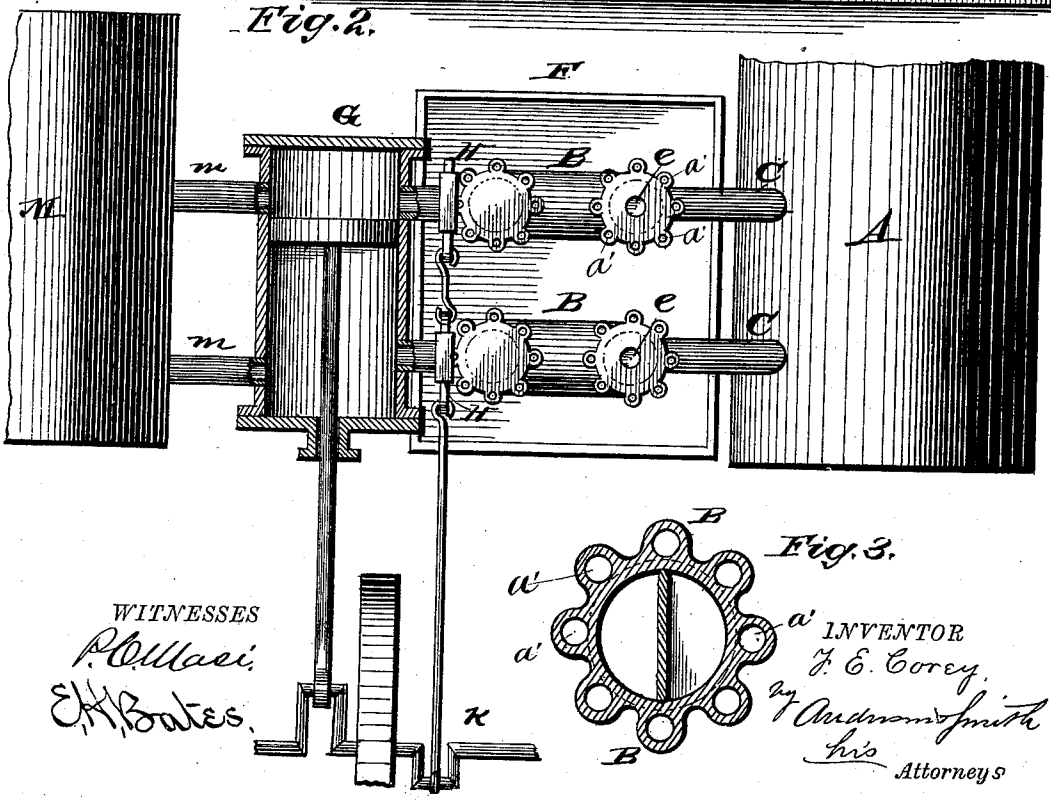



Fig. 3.




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# UNITED STATES PATENT OFFICE.

FRANCIS E. COREY, OF WESTBOROUGH, MASSACHUSETTS.

## AIR-COMPRESSING ENGINE.

SPECIFICATION forming part of Letters Patent No. 311,106, dated January 20, 1885.

Application filed May 3, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCIS E. COREY, a citizen of the United States, residing at Westborough, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Air-Compressing Engines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a vertical sectional view of my device. Fig. 2 is a plan view of the same, and Fig. 3 is a transverse sectional view of the part B.

The object of this invention is to provide means whereby the force generated by the explosion of gases is utilized to compress air for motor and other purposes; and the invention consists in the construction and novel arrangement of devices, as hereinafter set forth, and pointed out in the appended claims.

In the accompanying drawings, the letter A designates a compressed-air and gas chamber, in juxtaposition to which are placed two U-shaped chambers, B, which are constructed of strong heavy castings. One extremity of each chamber or generator B is connected to the chamber A by a strong tube, C, which is provided with a valve, *d*, which opens only in the direction of the said chamber; also, in the same end of each generator B is placed or arranged a spring-valve, *e*, which opens inwardly or into the chamber. The generator is provided with chambers *a* for the circulation of water, and its body is submerged in a tank, F, of water. The object of the valve-openings *e* is to allow air to enter the U-shaped vessels after each explosion. Near the other extremity of the U-shaped generator is placed a double-acting pump, G, of proportionate size, which is connected by a pipe with each generator, and is provided with a cut-off, H, which is operated by an eccentric, *k*, to close or open the ways between the pump and the U-shaped generators. The pump is operated by steam-engine or other motive power, and by each stroke forces gas into the generators, first into one and then into the other. After each stroke the eccentric closes the cut-off valve, and at the same time completes an electric circuit at *l* to pass a spark, by which the gas in the generator is exploded. This takes place alternately in the generators, the air being forced into the vessel A in a state of compression. The compressed air thus stored in the vessel can be utilized to move an air-engine for such purposes as may be desired.

M represents the reservoir of hydrogen gas, which is employed in connection with the pump and generators to provide, when mixed with air, which is let into the said vessel at the valve-ports *e*, an explosive compound. The tube *m*, leading from the gas-reservoir to the pump, is provided with a valve, *v*, which opens toward the pump, as shown.

The number of U-shaped generators need not be limited to two, and any strong vessel may be employed to store the compressed air. In some cases it may be desirable to use a piston in that arm of the generator B which communicates directly with the storing-vessel. The bottom of the generator should be provided with a faucet, as at *a*, to draw off the water when necessary.

Having described this invention, what I claim, and desire to secure by Letters Patent, is—

1. The U-shaped generator B, having at one end a cut-off valve and electric connection, and at the other an air-valve and passage to a storing-vessel, provided with a valve opening only in the direction of said storage-vessel, means for supplying air to the generator, and means for receiving the compressed air expelled therefrom, substantially as specified.

2. The combination, with the U-shaped explosion-vessels B and the storage-vessel A, of the gas-reservoir, the pump communicating with said reservoir and with said generators, the cut-off valves, and electric circuit connections operated by eccentric, the air-valves, and the valves in the passages leading from the generators to the storage-vessel, substantially as specified.

3. The combination, with the gas-reservoir and the reservoir or holder for compressed air, of an intermediate pump, and U-shaped generators, each communicating by one branch with the pump and by the other branch with the holder, and each having a cut-off, and electric-circuit maker operated by eccentric, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

FRANCIS E. COREY.

Witnesses:
W. TROWBRIDGE FORBES,
HENDERSON ROSS.