(No Model.)

O. & H. SCHNEIDER.

POWDER GAS BOILER FOR ENGINES.

No. 405,229. Patented June 11, 1889.

Fig. 1.

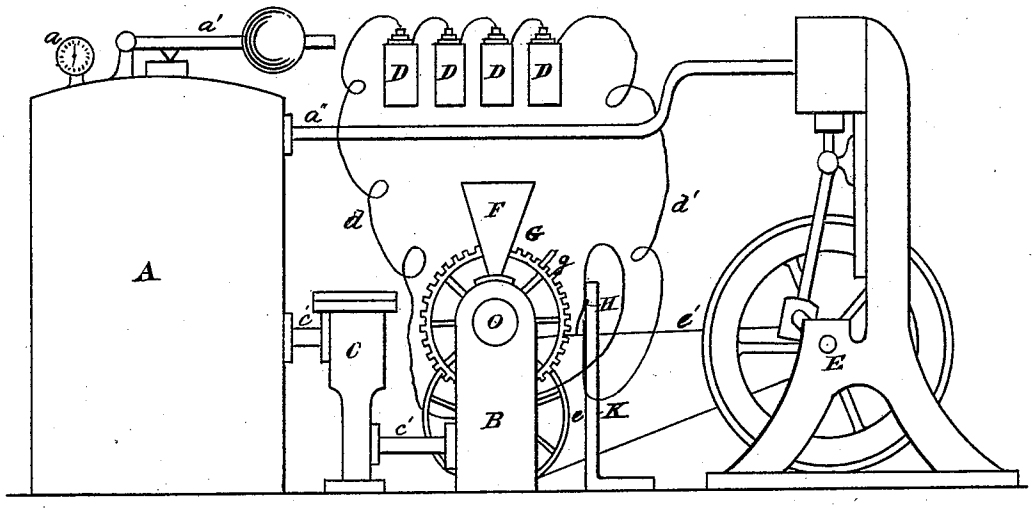
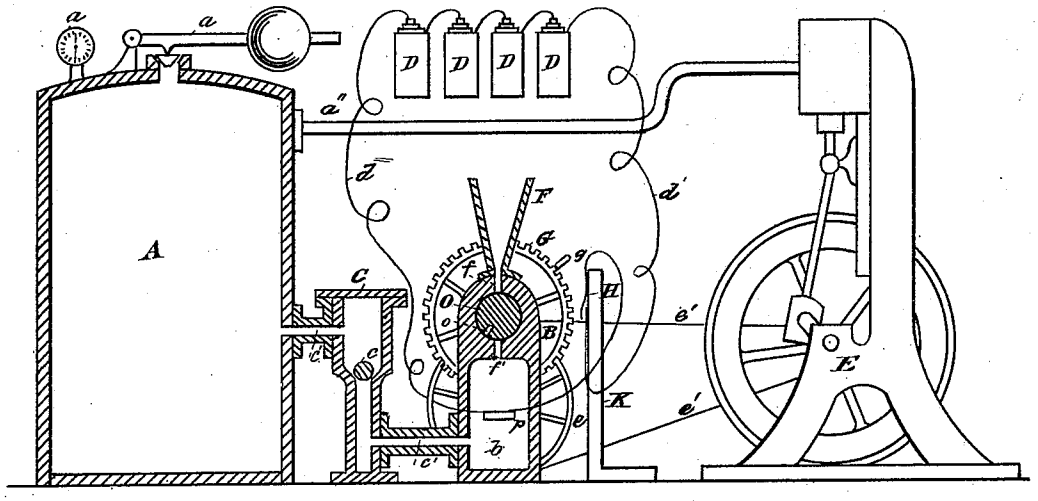


Fig. 2.



WITNESSES.

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UNITED STATES PATENT OFFICE.

OTTO SCHNEIDER, OF LOUISVILLE, KENTUCKY, AND HEINRICH SCHNEIDER, OF OBERSTEIN-ON-THE-NAHE, GERMANY.

POWDER-GAS BOILER FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 405,229, dated June 11, 1889.

Application filed September 7, 1888. Serial No. 284,838. (No model.)

To all whom it may concern:

Be it known that we, OTTO SCHNEIDER, a citizen of the United States, residing at Louisville, Jefferson county, Kentucky, and HEINRICH SCHNEIDER, a subject of the Emperor of Germany, residing at Oberstein-on-the-Nahe, Rhine Province, Germany, have invented certain new and useful Improvements in Powder-Gas Boilers for Engines; and we do hereby 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.

Our invention relates to a powder-gas boiler.

By filling a strong boiler with the gases produced by an explosion of powder a much greater pressure can be obtained than by using steam produced from water. This pressure can be used advantageously to furnish power for engines of vessels, as it will permit the economizing of the large space now used for carrying coal, and leave more room for machinery, for locomotives permitting simpler construction and making higher speed attainable, for flying-machines by securing high power with light weight, and for machinery generally.

The object of our invention is to provide a method of utilizing the force generated by the explosion of powder as a motive power for machinery.

Our invention consists of an apparatus adapted to utilize as motive power the explosive force of gunpowder, having, in combination, a boiler or gas-holder, a feeder or generator connected with the boiler by a valved passage-way, and an electric battery for exploding the powder.

In the accompanying drawings, Figure 1 is a front elevation of our apparatus in connection with an ordinary engine. Fig. 2 is a vertical sectional view of the boiler and feeder with elevation of engine.

Similar letters refer to similar parts throughout the drawings.

A is a strong boiler or gas-holder provided with pressure-gage *a*, safety-valve *a'*, and exit-pipe *a''* to convey gas to the engine to be actuated.

B is a feeder, and it consists of a strong metal casting, solid in its upper part and hollow in its lower part, on top of which is placed a funnel-shaped hopper F. From front to rear, through the solid part of B, is a circular cell or opening, in which fits closely a metal cylinder O, in which is a recess or hole *o*, extending from its perimeter toward its axis. A circular hole or shaft *f* through the casting connects the cell in which O revolves with the lower aperture of the funnel, and a similar shaft *f'* connects the cell with the explosion-chamber *b*, occupying the lower portion of B.

D D D D are cells of a battery, placed as convenient, with the wires *d* and *d'* forming the circuit, and held in such a position by the standard K that the circuit can be closed at the point H by the thumb *g* on the wheel G. The wire *d*, properly insulated, carries the circuit through the walls of B and through the explosion-chamber, having in the circuit, within the explosion-chamber *b* and under the opening of the shaft or hole *f'*, a piece of platinum wire *p*.

G is a spur-wheel, the axle of which is also the axle of cylinder O, which revolves with it, and *g* is a thumb or comb projecting from one side of its circumference. The wheel G may be provided with a crank and handle, so as to be turned by hand, or may be geared with a wheel *e*, so as to be turned by a belt *e'* from an engine E.

C is a valve-chamber connected by pipes *c'* *c'* with the explosion-chamber *b*, and the receiver A, and having in it a reactive valve *c*.

The working of my invention may be described as follows: The powder is placed in the funnel-shaped hopper F. Power is applied to the wheel G, which revolves, carrying the cylinder O with it. When the recess *o* is brought under the aperture of the funnel, powder is passed into it through the shaft *f*, and when it is carried round to the shaft *f'* it is emptied and the powder falls into the chamber *b* and onto the platinum wire *p*, heated by the closing of the circuit at H by the thumb *g*, and is exploded. The gases generated by the explosion force their way through the valve *c*, which is reactive, and closes again after they have passed into the

boiler A, from which they can pass as required through the pipe a'' to the engine to be actuated.

Having thus explained my invention, what I claim as new, and desire to secure by Letters Patent, is—

A powder-gas boiler for engines, consisting of a strong boiler provided with pressure-gage, safety-valve, and exit-pipe, in combination with a feeder or generator consisting of a strong casting with a circular cell through it, a cylinder with a recess in it fitting closely in the cell, an explosion-chamber in the casting below the cell, a valved passage-way connecting the explosion-chamber with the boiler, a funnel on the casting, a shaft or hole through the casting from the pipe of the funnel to the cell, a shaft or opening from the cell to the explosion-chamber, a wheel turning on the same axle as the cylinder and furnished with a projecting thumb to close the electric circuit, and an electric battery to explode the powder, substantially as described, and for the purpose specified.

In testimony whereof we affix our signatures in presence of two witnesses.

OTTO SCHNEIDER.
HEINRICH SCHNEIDER.

Witnesses as to Otto Schneider:
EMILE B. HESS,
ROBERT M. KELLY, Jr.
Witnesses as to H. Schneider:
NICOLAUS STEINMETZ,
ALFRED HEINE.