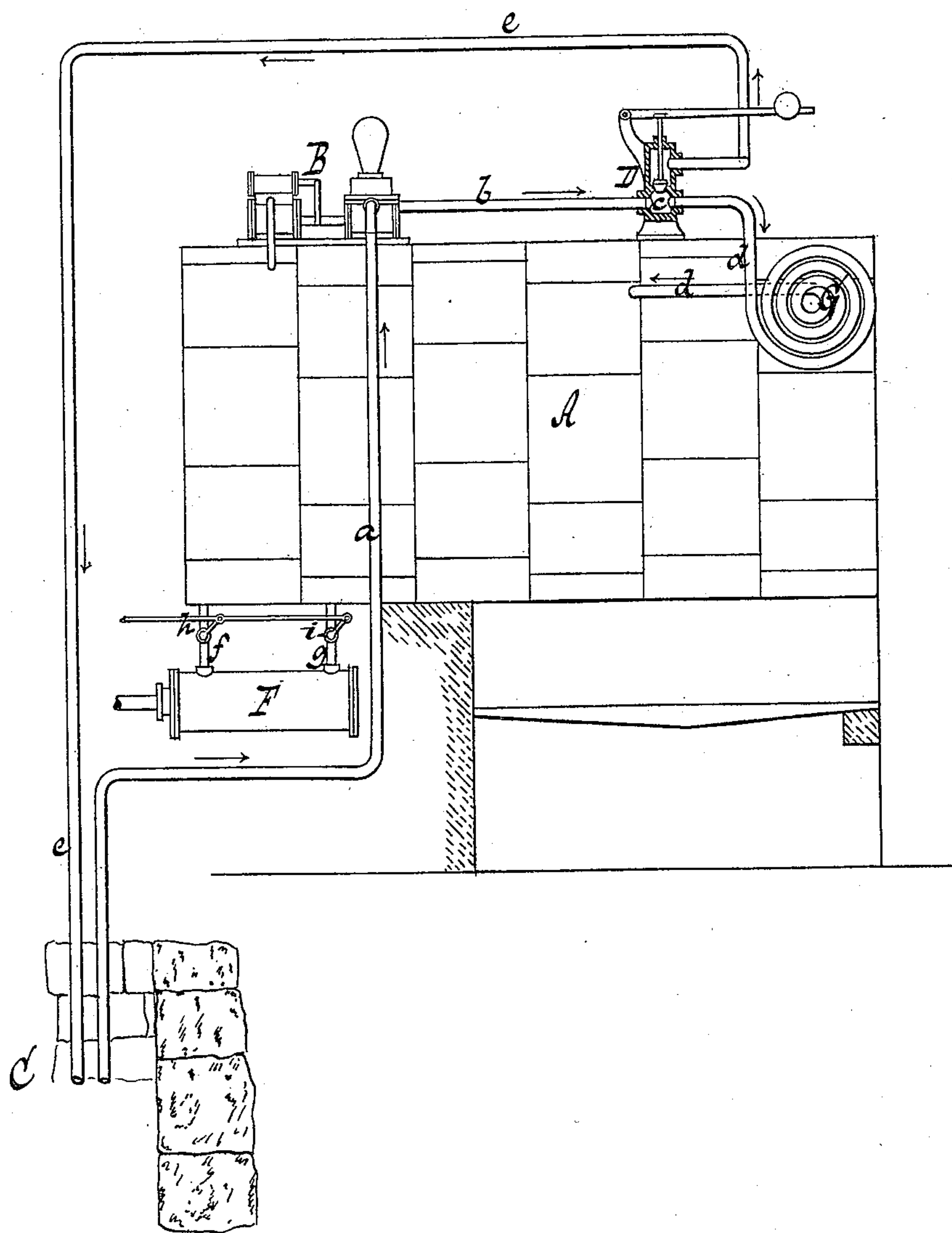


(No Model.)

O. F. BURTON.  
STEAM GENERATOR.

No. 253,000.

Patented Jan. 31, 1882.



Witnesses  
*Otto Stufeland*  
*William Miller*

Inventor  
Oscar F. Burton.  
by *Van Santvoord & Lauff*  
his attys.

# UNITED STATES PATENT OFFICE.

OSCAR F. BURTON, OF BROOKLYN, NEW YORK.

## STEAM-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 253,000, dated January 31, 1882.

Application filed July 9, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, OSCAR F. BURTON, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Steam-Generators, of which the following is a specification.

The object of this invention is to reduce the danger of explosions which frequently occur in steam-boilers when the water is heated to a high degree and the steam-pressure acting on it is suddenly reduced, so that a large body of water will instantaneously flash into steam.

This invention consists in the combination, with a steam-boiler, of a feed-pipe connected thereto at or near its top, an overflow-pipe emanating from its top, and one or more discharge-pipes extending from its bottom part and connected to a steam-cylinder, so that the boiler is all the time kept full of water clear up to its top, and when the water has been heated steam forms only as the heated water is permitted to escape from its discharge-pipe or pipes.

The invention consists, further, in the combination, with a steam-boiler, of a feed-pump, a feed-pipe extending from the pump to the top of the boiler, a safety-valve inclosed in a chamber which connects below the valve with the feed-pipe and with the boiler, and a waste-pipe emanating from the valve-chamber above the valve.

The drawing represents a side view of my steam-generator.

In this drawing, the letter A designates a steam-boiler of any suitable construction. With this boiler is connected a feed-pump B, which draws its water from a well, C, through a pipe, *a*, and forces its water out through the pipe *b*. This pipe terminates in the chamber *c* of a safety-valve, D, below the valve, and from this chamber extends a pipe, *d*, into the top of the boiler A. The pipe *d* is connected to or formed into a coil, G, the object of which will be presently explained. From the valve-chamber *c*, above the valve, extends the waste-pipe *e*, which leads back into the well. From the bottom part of the boiler extend two discharge-pipes, *f g*, which connect with the opposite ends of a steam-cylinder, F, and which are provided with suitable valves, *h i*,

adapted to be operated automatically from the piston-rod or crank-shaft in the same manner as the slide-valve or steam-valves of an ordinary steam-engine.

The boiler is filled with water clear up to its top, the fire is started, and after the temperature of the water has been raised above 212°—say to 230° to 300°—the valves *h i* are alternately opened. As the heated water escapes into the steam-cylinder it expands at once into steam, and the steam piston is caused to move backward and forward. At the same time the feed-pump is set in motion and a regular supply of water is forced into the boiler, so that the same is always kept full. If the feed-pump throws in more water than is required, the safety-valve D opens and the surplus water escapes through the waste-pipe *e* back into the well. By the coil G a certain elasticity is imparted to the feed-pipe, so that sudden shocks are avoided. By these means a uniform pressure of water can be maintained in the boiler, and the boiler is always kept full of water clear up to its top, so that in the boiler itself no steam can form. If the boiler is full, the surplus water passes back into the well and the heated water will expand into steam only when it is allowed to escape from the boiler into the steam cylinder of the engine or of the pump.

From the foregoing description it will be evident that no steam is permitted to form in the boiler, and the pressure to which the body of water is exposed cannot be suddenly reduced, and the danger that a large quantity of water will instantly flash into steam is avoided.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a steam-boiler, of a feed-pipe connected thereto at or near its top, an overflow or waste pipe emanating from its top, and one or more discharge-pipes extending from its bottom part and connected to a steam-cylinder, substantially as shown and described.

2. The combination, substantially as hereinbefore described, of the steam-boiler, the feed-pump, the feed-pipe extending from the pump to the top of the boiler, the safety-valve inclosed in a chamber which connects below the

valve with the feed-pipe and with the boiler, and the waste-pipe emanating from the valve-chamber above the valve.

5 3. The combination, substantially as herein-  
before described, of the steam-boiler, the feed-  
pump, the feed-pipe extending from the pump  
to the top of the boiler, the coil G, the safety-  
valve inclosed in a chamber which connects  
below the valve with the feed-pipe and with

the boiler, and the waste-pipe emanating from 10  
the valve-chamber above the valve.

In testimony whereof I have hereunto set my  
hand and seal in the presence of two subscrib-  
ing witnesses.

O. F. BURTON. [L. S.]

Witnesses:

W. HAUFF,

WILLIAM MILLER.