

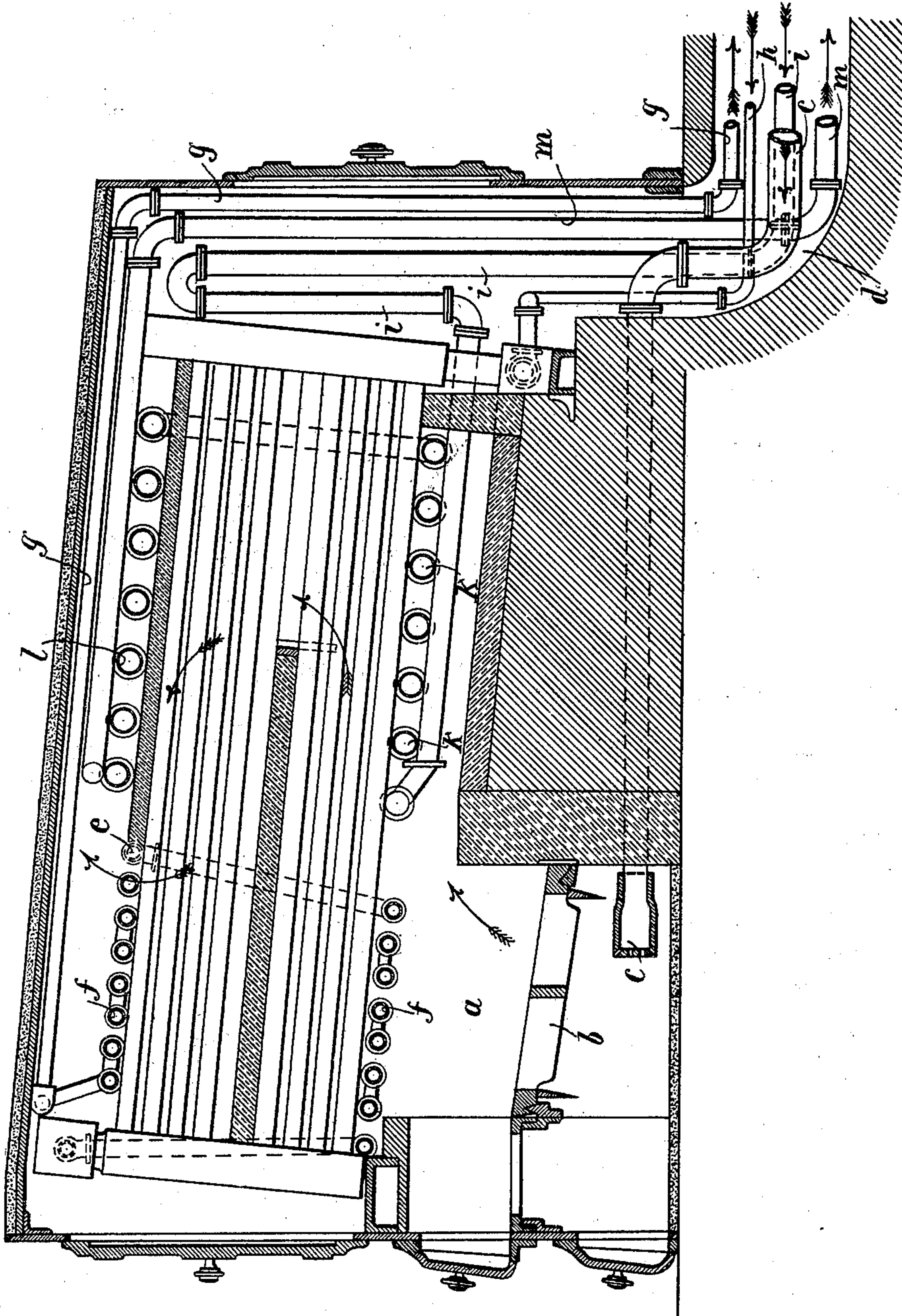
No. 666,181.

Patented Jan. 15, 1901.

H. A. BUCK.
BOILER FURNACE.

(Application filed Sept. 11, 1900.)

(No Model.)



Witnesses:

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UNITED STATES PATENT OFFICE.

HENRY ALONZO BUCK, OF STAFFORD, CONNECTICUT.

BOILER-FURNACE.

SPECIFICATION forming part of Letters Patent No. 666,181, dated January 15, 1901.

Application filed September 11, 1900. Serial No. 29,675. (No model.)

To all whom it may concern:

Be it known that I, HENRY ALONZO BUCK, engineer, a citizen of the United States of America, residing at West Stafford, Connecticut, have invented new and useful Improvements in Boiler-Furnaces for Compound Engines, of which the following is a specification.

My invention relates to boiler-furnaces for compound engines, and its essential feature is that besides the ordinary pipe arrangements of steam-boilers it is provided with a special tubular device connected with the receiver of the compound engine in such a manner that the steam arriving from the high-pressure cylinder is passed back again to the generator with a view of being reheated.

The invention is represented in the accompanying drawing, which is a section through a boiler.

a is the fire-box of the steam-generator; *b*, the fire-grate; *c*, the air-supply pipe; *d*, the discharge-passage for the fire-gases; *g*, the supply-pipe of the high-pressure steam or of the hot water, which may be converted into steam of the required pressure before entering the high-pressure cylinder.

The discharge from the boiler is effected at *e* and the steam or the hot water may be still further dried or heated, respectively, by passing it through a tubular arrangement *f*. The pipe *g*, taking the steam or hot water to the high-pressure cylinder, passes through the passage *d*, which is continued close up to the engine in such a manner that all loss of heat is avoided.

According to the present invention the steam passing out from the high-pressure cylinder passes through the pipe *i*, which is also placed in the said passage *d* and terminates at the rear part of the boiler with which it communicates. From here this steam passes through a serpentine pipe *k*, arranged close behind the fire-box, and hence through another serpentine pipe arranged on the top of the boiler, and finally through a pipe *m* to the low-pressure cylinder. This pipe *m*, like the pipe *i*, is also situated in the passage *d*, so that any loss of heat is not only avoided, but, on the contrary, heat is added.

It should be specially remarked here that the steam-pipe *i*, through which the steam

leaving the high-pressure cylinder passes, is first passed through the lower draft-conduit of the fire-box—*i. e.*, into the place where the temperature is highest around the boiler—and only afterward into a boiler zone through which the fire-gases pass after having been already deprived of the greater part of their heat.

I claim—

1. In a boiler-furnace for compound engines the combination with a passage *d* conducting the gases of combustion to the engine of a pipe such as *i* placed within the passage *d* and conducting the steam from the high-pressure cylinder to a chamber or serpentine pipe *k* inside the furnace and a pipe *m* also within the passage *d* and conducting the steam from said serpentine pipe to the low-pressure cylinder substantially as described.

2. In a boiler-furnace for compound engines the combination with a passage *d* conducting the gases of combustion to the engine of a pipe such as *i* placed within the passage *d* and conducting the steam from the high-pressure cylinder to a chamber or serpentine pipe *k* inside the furnace and a pipe *m* also within the passage *d* and conducting the steam from said serpentine pipe to the low-pressure cylinder and a pipe such as *c* surrounded by the passage *d* and conducting the incoming air to the fire-grate substantially as described.

3. In a boiler-furnace for compound engines the combination with a passage *d* conducting the gases of combustion to the engine of a pipe such as *i* placed within the passage *d* and conducting the steam from the high-pressure cylinder to a chamber or serpentine pipe *k* inside the furnace and a pipe *m* also within the passage *d* and conducting the steam from said serpentine pipe to the low-pressure cylinder and a pipe such as *c* surrounded by the passage *d* and conducting the incoming air to the fire-grate, and a pipe *g* conducting the hot water or the steam from the boiler and arranged within the passage *d* substantially as described.

4. In a boiler-furnace for compound engines the combination with a passage *d* conducting the gases of combustion to the engine of a pipe such as *i* placed within the

passage *d* and conducting the steam from the high-pressure cylinder to a chamber or serpentine pipe *k* inside the furnace and a pipe *m* also within the passage *d* and conducting
5 the steam from said serpentine pipe to the low-pressure cylinder and a pipe such as *c* surrounded by the passage *d* and conducting the incoming air to the fire-grate and a pipe *g* for the hot water or steam and a pipe *h* for
10 the water-supply both pipes *g* and *h* being

placed within the passage *d* substantially as described.

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

HENRY ALONZO BUCK.

Witnesses:

WOLDEMAR HAUPT,
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