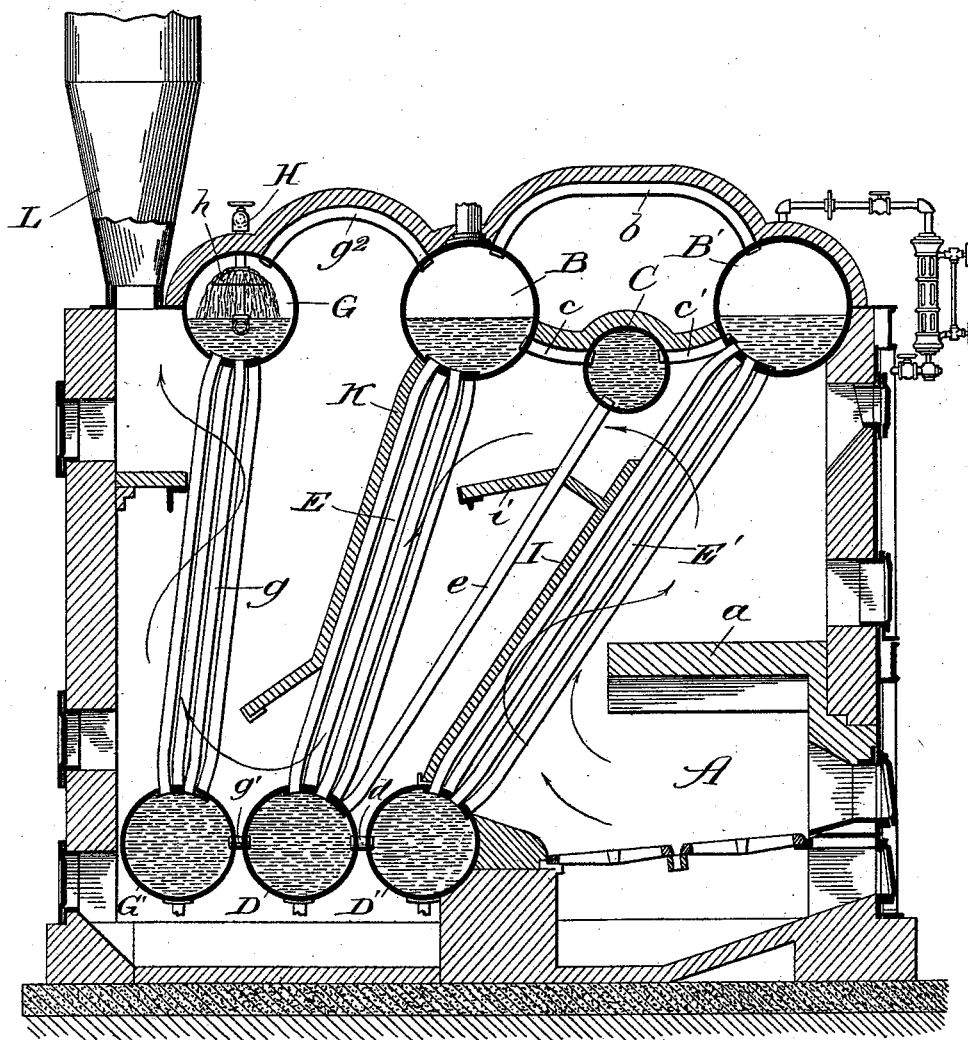


(No Model.)

J. E. SCHLIEPER.  
STEAM BOILER.

No. 526,947.

Patented Oct. 2, 1894.



Witnesses:  
Chas. E. Gaylord.  
Lute J. Alter.

Inventor:  
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Attys. —

# UNITED STATES PATENT OFFICE.

JOHN E. SCHLIEPER, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO THE  
STIRLING COMPANY, OF CHICAGO, ILLINOIS.

## STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 526,947, dated October 2, 1894.

Application filed June 28, 1894. Serial No. 516,010. (No model.)

### *To all whom it may concern:*

Be it known that I, JOHN E. SCHLIEPER, of  
Pittsburg, Pennsylvania, have invented a new  
and useful Improvement in Steam-Boilers, of  
5 which the following is a specification.

The object of my invention is to improve  
the Stirling boiler; and the invention consists  
in the features and combinations hereinafter  
described and claimed.

10 The accompanying drawing represents a  
vertical section taken through the fire box  
from front to rear of my improved boiler.

In constructing my improved boiler, I pro-  
vide a fuel chamber, A, of any desired form  
15 and size, preferably covering it with an arch,  
a, which also acts to deflect the heated gases  
and products of combustion into the furnace  
chamber, or boiler proper, for the purpose of  
raising the temperature and generating steam  
20 therein.

Arranged in the upper part of the boiler  
are two large steam and water drums, B B',  
which have steam communication by means  
of the pipe, b, and water communication  
25 through a secondary water drum, C, by means  
of the pipes, c c'—these connecting pipes be-  
ing direct or circuitous as desired. The sec-  
ondary water drum, which may be of any de-  
sired size, is preferably placed at a lower level  
30 than the main steam and water drums, so as  
to reduce the water level therein and thus  
prevent priming or foaming. It also provides  
additional heating surface and aids in regu-  
lating the circulation.

35 Arranged in the lower part of the boiler are  
two mud drums, D D', having water com-  
munication with each other by means of the  
pipe, d, which may be direct or circuitous as  
desired. The rear elevated steam and water  
40 drum, B, is connected with the lower mud  
drum, D, by means of a bank of tubes, E, and  
the front elevated steam and water drum, B',  
is connected with the front lower mud drum,  
D', by means of a bank of tubes, E', while the  
45 secondary elevated water drum is connected  
with one of the lower mud drums, preferably  
the middle one, by means of a series of  
tubes, e.

50 The feed water is introduced through an  
elevated feed water drum, G, which is con-  
nected with a rear lower mud drum, G', by

means of a bank of tubes, g, so that water may  
pass from the elevated feed drum into the  
rear lower mud drum. This rear mud drum  
has communication with the forward mud 55  
drum or drums by means of a tube or series  
of tubes, g', this communication being direct  
or circuitous as desired. The elevated feed  
water drum also has steam communication  
with the forward elevated steam and water 60  
drums, by means of a tube or tubes, g<sup>2</sup>, which  
furnish an outlet for steam generated therein  
and in the rear bank of tubes. Water is sup-  
plied to the elevated feed water drum, from  
any suitable source of water supply, by means 65  
of a supply pipe, H, which may be provided  
with a disk, h, inside the drum, for the pur-  
pose of separating the water and conducting  
it to the sides of the drum.

The front bank of tubes may be provided 70  
with a baffle plate, I, for the purpose of guid-  
ing the heated gases and products of combus-  
tion up through the tubes, until it contacts  
both the elevated water and steam drums and  
the secondary water drum. This front baffle 75  
plate may have an extended portion, i, to di-  
rect the heated gases around the tubes ex-  
tending down from the secondary drum as  
they pass to the second bank of tubes, behind  
which is arranged another deflecting plate, K, 80  
which extends down almost to the lower mud  
drum, so as to deflect or guide the heated  
gases or products of combustion down through  
such bank of tubes until they contact the  
lower mud drums, after which they may pass 85  
up through the rear bank of tubes, and out  
through the chimney or stack, L.

In operation, the water enters the upper  
feed drum and passes down into the rear mud  
drum, being slightly warmed or heated in its 90  
passage, so that a portion of its sediment may  
be precipitated before it passes into general  
circulation. The water then passes on into  
the forward mud drum or drums, up into the  
elevated drums, across from one drum to an- 95  
other, down again to the mud drums, and so  
on continuously—allowance being of course  
made for evaporation. During this general  
circulation, the secondary drum, being so ar-  
ranged that a large part of the water passes 100  
through it, performs the functions above  
stated—reduces the water level, aids in regu-

lating the circulation and in preventing foaming or priming, and increases the heating surface.

These secondary elevated drum being capable of use in other positions and relations, it will of course be understood that I do not intend to limit myself to its use in the particular combination described. On the contrary, I contemplate using it in any position or combination in which it may be found applicable; and, generally, I contemplate changing form and construction and omitting parts or using equivalents, as circumstances may suggest or render expedient.

I claim—

1. In a water tube boiler, a secondary drum having water communication with elevated steam and water drums and a lower mud drum, substantially as described.
2. In a water tube boiler, the combination of two elevated steam and water drums having communication with each other, a secondary drum arranged at a lower level than the elevated steam and water drums and having

water communication therewith, a lower mud drum or drums having water communication with the elevated steam and water drums, and means for supplying and feeding water into the lower mud drum or drums, substantially as described.

3. In a water tube boiler, the combination of two elevated steam and water drums having communication with each other, a secondary drum placed at a lower level than the elevated steam and water drums and having water communication therewith, an elevated feed water drum, a front lower mud drum or drums having water communication with the elevated steam and water drums, and a rear lower mud drum having water communication with the elevated feed drum and with the front mud drum or drums, substantially as described.

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Witnesses:

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