

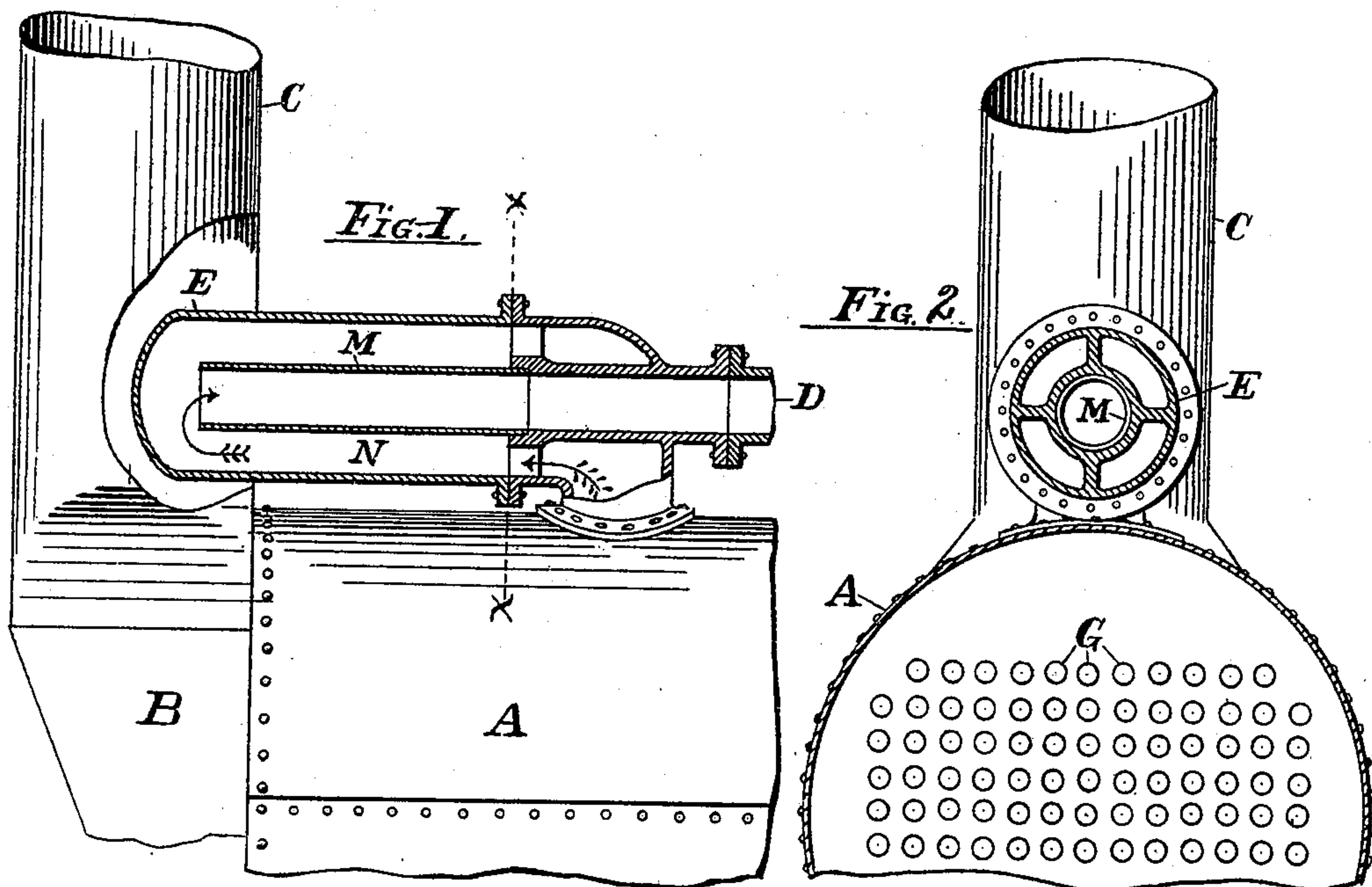
No. 620,290.

Patented Feb. 28, 1899.

P. F. DUNDON.
SUPERHEATING APPARATUS.

(Application filed Dec. 21, 1897.)

(No Model.)



Witnesses

Inventor

By

H. Lockwood Revison,
H. Sanderson

Patrick F. Dundon
[Signature]

J. Richards & Co.
attys.

UNITED STATES PATENT OFFICE.

PATRICK F. DUNDON, OF SAN FRANCISCO, CALIFORNIA.

SUPERHEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 620,290, dated February 28, 1899.

Application filed December 21, 1897. Serial No. 662,857. (No model.)

To all whom it may concern:

Be it known that I, PATRICK F. DUNDON, a citizen of the United States, residing at San Francisco, county of San Francisco, and State of California, have invented certain new and useful Improvements in Superheating Apparatus; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to steam-boilers and to a method of exposing the steam on its passage from the boilers to an engine or for other uses to the heat of the waste gases of combustion at a point near where these gases leave the boiler-flues and at their greatest available temperature.

My improvements consist in a heating-chamber commonly called a "superheater," that projects into the furnace-flue or uptake, with a return-pipe mounted within and preferably concentric in this superheating-chamber, so that the steam from the boiler passes first through the annulus around this return-pipe, gradually rising in temperature, to the hottest portion of the superheating-chamber, then enters and passes back through the return-pipe, which, being surrounded by hot steam, suffers little or no radiation or escape of heat as there is when the steam after superheating is exposed to the external shell of a heating chamber or pipe. The heating period or range of the steam is by this means much increased for a device of a given length or size.

The objects of my invention are to provide a steam heating and drying device having the advantage named before and one that may at the same time perform the office of a steam drum or dome; also, a device applicable to any kind or form of steam-boilers, consumes only heat that would otherwise be wasted, and is of simple and inexpensive construction.

Referring to the drawings, Figure I is a side view, partially in section, of a steam-boiler with my improved steam heating and drying devices arranged exterior to and above the boiler. Fig. II is a view of the rear end of

the same boiler illustrated in Fig. I, the steam drying and heating devices being shown in section.

The reference-numerals apply to like parts throughout.

Referring to the drawings, A is the main shell of a common marine boiler.

B is the breeching, C the chimney-flue, and D a nipple from where the steam passes off to an engine or for other uses.

E is a superheating-chamber or passage-way attached to the top of the boiler A, projecting into the chimney-flue C, as shown in Fig. I, and is there exposed to the hot gases that pass upward from the boiler-flues G into the chimney-flue C.

M is a return-pipe through which the steam flows back from the inner end of the chamber E to the discharge-way D after being dried and heated. The steam passes out into the heating-chamber E, as indicated by the arrows, and as the area of this chamber E is much larger than that of the return-pipe M the movement of the steam in the chamber E is proportionately slow, affording time to absorb heat from the hot gases around this chamber. The steam when thus superheated and dried enters the return-pipe M and flows back rapidly, because of the smaller area of this pipe, without appreciable fall of temperature, because this pipe M is surrounded by steam in the space N and kept as hot as the highest temperature within the boiler. The steam in the pipe M and that which surrounds it in the chamber E being not much different in temperature, and as the flow of the steam in the pipe is rapid, there is no appreciable transfer of heat or loss thereby.

The vessel E is made separable on the line xx , so that the part E can be made of a different material from the portion attached to the top of the boiler. The pipe M is also made detachable, being screwed into a socket in the center, as seen in Fig. I.

Having thus explained the nature and objects of my invention and the manner of applying the same, what I claim as new, and desire to secure by Letters Patent, is—

A superheater for steam-boilers, consisting of a steam passage-way extending out of the

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boiler at the highest point thereof horizon-
tally into the uptake for the waste products
of combustion, said passage-way being closed
at the outer end and having an interior steam-
5 exit way of smaller diameter extending re-
versely through the same, whereby the steam
makes a turn at the point lying in the uptake
and is reheated by the waste gases therein,
and is steam-jacketed on its return course

through the first-named passage-way, sub- 10
stantially as specified.

In testimony whereof I have hereunto af-
fixed my signature in the presence of two wit-
nesses.

PATK. F. DUNDON.

Witnesses:

K. LOCKWOOD NEVINS,

H. SANDERSON.