

G. M. L. MOORE-IRVINE.
 STEAM GENERATOR.
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961,516.

Patented June 14, 1910.

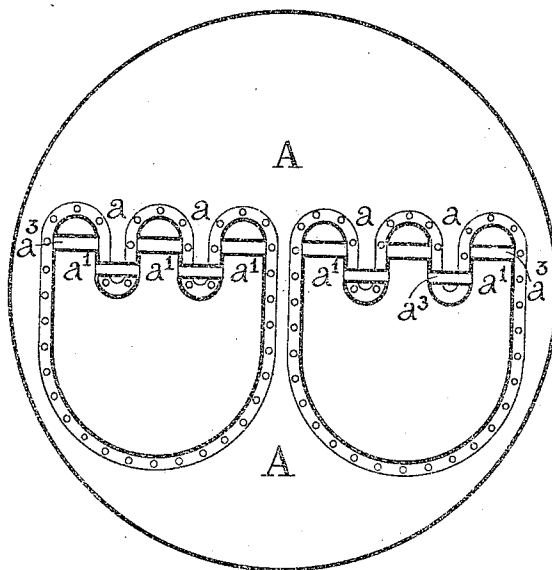


Fig. 1.

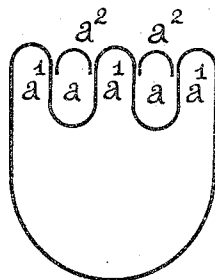


Fig. 2.

WITNESSES.

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INVENTOR.

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UNITED STATES PATENT OFFICE.

GEORGE M. L. MOORE-IRVINE, OF NEWRY, IRELAND.

STEAM-GENERATOR.

961,516.

Specification of Letters Patent. Patented June 14, 1910.

Application filed March 1, 1909. Serial No. 480,699.

To all whom it may concern:

Be it known that I, GEORGE MATTHEWS LINDSAY MOORE-IRVINE, a British subject, residing at Newry, county of Down, Ireland, have invented certain new and useful Improvements in Steam-Generators, of which the following is a specification.

This invention relates to improvements in steam generators of the various known types such as Cornish, Lancashire, marine or locomotive, and is designed to provide a more efficient and economical steam producer and one less liable to collapse.

The invention consists essentially in constructing the flues with vertical parallel sides and the crown of the furnace and the top of the flues with one or more channels or troughs also with vertical parallel sides, running longitudinally of the furnace forming a series of parallel channels to present a greater heating surface to the fire and heated gases.

The invention will be fully described with reference to the accompanying drawings forming part of the specification in which as an example the invention is shown applied to an ordinary Lancashire boiler.

Figure 1 is a sectional elevation of Lancashire boiler showing my improved construction of flues; Fig. 2, transverse section of flue showing a modified construction of flue.

The boiler A may be of any ordinary construction. The flues are constructed with parallel vertical sides and curved base and the furnace crown is made with one, two or more channels or troughs a of U section with vertical parallel sides open to the water space of the boiler and depending toward the fire and heated gases and a corresponding number of channels or troughs a' of corresponding shape projecting upward into the water space and open to the fire to receive the heated gases which thus play around the interior of the channels a' and the exterior of the channels a which present a greatly increased heating surface to the fire. These channels are formed integral with the boiler flues and run longitudinally from end to end thereof. The longitudinal channels a open to the water space may be

inclosed to form either steam or separate water spaces by plates a^2 as in Fig. 2. The longitudinal channels a and a' may be fitted with tubular stays a^3 either fire or water tubes or both as in Fig. 1 which are placed transversely of the direction of the flow of the heated gases. In order to give extra strength to the flat vertical parallel sides of the flues, ordinary conical or parallel or cross tubes may be fitted in the flues or in the alternative and preferably the flat sides of the flues may be stayed to each other in the center, and to the outer shell of the boiler at their outer sides by ordinary fire box, combustion chamber or water space stays.

What I claim as my invention and desire to protect by Letters Patent is:—

1. In a steam boiler, the combination with the outer shell, of a flue therein provided on its upper surface with a plurality of longitudinally disposed channels, certain of said channels projecting outwardly into the water space and certain of said channels projecting inwardly into the fire space of the flue, and stay tubes transversely disposed in said channels, certain of said tubes being arranged to open into the water space and other of said tubes opening into the fire space.

2. In a steam boiler, the combination with the boiler shell, of a flue therein provided with a plurality of longitudinally disposed channels, certain of said channels projecting outwardly into the water space and certain of said channels projecting inwardly into the fire space of the flue, tubes transversely arranged across the inwardly projecting channels and opening into the flue, and tubes transversely arranged across the outwardly projecting channels and opening into the water space, said last mentioned tubes being disposed outwardly from and with respect to said first mentioned tubes.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

GEO. M. L. MOORE-IRVINE.

Witnesses:

J. OWDEN O'BRIEN,
EDWARD A. GEOGHEGAN.