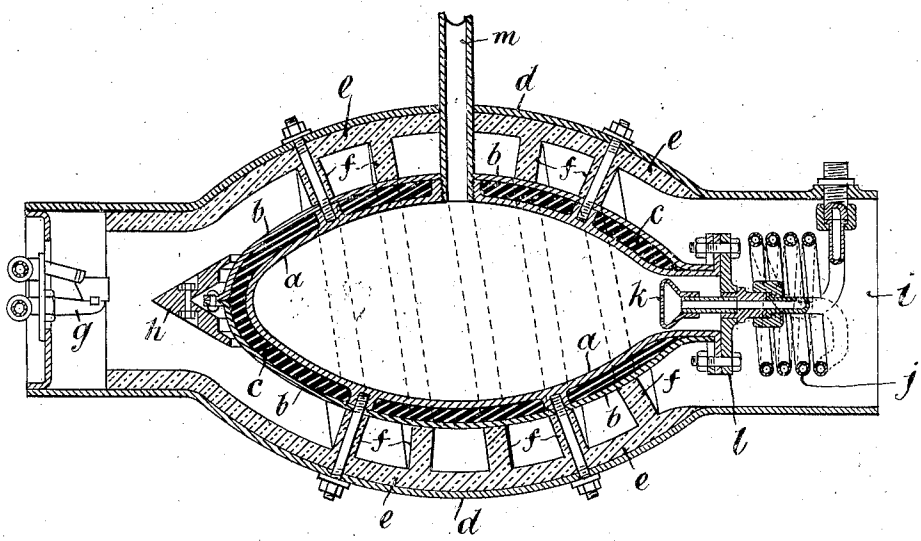
Nov. 27, 1923. 1,475,589

B. J. N. MARDEN

STEAM GENERATOR

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UNITED STATES PATENT OFFICE.

BASIL JOCK NEWTON MARDEN, OF LISS, ENGLAND.

STEAM GENERATOR.

Application filed May 1, 1923. Serial No. 635,824.

To all whom it may concern:

Be it known that I, BASIL JOCK NEWTON MARDEN, a subject of the King of Great Britain, residing at Stodham Park, Liss, in the county of Hants, England, have invented new and useful Improvements in Steam Generators, of which the following is a specification.

This invention relates to steam generators of the flash or semi-flash types, in which energy is stored in the form of heat in the walls of the generator when the power demand decreases below the normal output of the generator. The object of the invention is to provide a steam boiler of the above kind in which the heat-storing walls are not liable to distortion and which promote uniformity of distribution of the heat, thus permitting the source of heat, such as a burner to remain undiminished in spite of diminution in the demand for steam.

For this purpose, according to the invention, the walls of a boiler are made double or hollow and the space between the double walls is occupied by a substance or metal fusible without volatilization at a temperature above that corresponding to the normal working pressure of the boiler.

A suitable metal is lead.

With a flash boiler having lead-filled double walls, on the demand for steam diminishing whilst the flame of the burner remains on, the temperature will eventually rise to the melting point of lead. The lead filling then fusing not only will store the heat in the form of latent as well as appreciable heat, but becoming fluid will distribute the heat by convection as well as conduction, all without distortion of the relatively thin non-fusing metal double walls of the boiler.

A representative boiler according to the invention is shown in vertical section on the accompanying drawing, in which:—

a is an inner shell of ovoid form of steel surrounded by and separated from an enclosing ovoid outer steel shell *b*, the two constituting a hollow wall of a boiler.

The space between the two steel shells *a b* is occupied by lead *c*.

d is an enclosing metal casing lined with firebrick *e* and spaced apart from the outer shell *b*. The space between the outer shell *b* of the boiler and the firebrick lining *e* of the boiler casing *d* is divided by a helical firebrick partition *f* providing a helical flue space from one end to the other around the boiler.

At one end of the boiler and casing an oil burner *g* is provided, the flame from which is directed against a divergent firebrick baffle *h*. The baffle is arranged to protect the end of the outer shell and to spread the flame and products of combustion and cause the same to envelope the adjacent end portion of the said outer shell. At the other end of the boiler and casing a flue outlet *i* is provided, in which is located a coil *j* wherein feed water, introduced into the inner shell *a* of the boiler by a spray nozzle *k*, becomes preheated.

The feed water pipe coil *j* enters the inner shell through an opening in the latter closed by a cover *l*.

m is the steam outlet leading to an engine.

The steam outlet is shown at one side of the boiler, but it may be arranged at any other desired point.

I claim:

1. In a boiler, an ovoid inner shell, an ovoid outer shell enclosing and spaced from the inner shell, a filling ocupying the space between the shells and fusible without volatilization at a temperature above that corresponding to the normal working pressure of the boiler, a substantially ovoid casing enclosing said outer shell and spaced therefrom, a helical partition spacing the casing from the outer shell and forming a helical flue space around the latter, a divergent baffle at one end of said outer shell and a burner in said casing directed against the baffle, said baffle being arranged to form a shield for the end of the outer shell and to spread the flame and products of combustion and cause the same to envelope the adjacent end portion of the outer shell.

2. In a boiler, an ovoid inner shell, an ovoid outer shell enclosing and spaced from the inner shell, a filling occupying the space between the shells and fusible without volatilization at a temperature above that corresponding to the normal working pressure of the boiler, a substantially ovoid casing enclosing said outer shell and spaced therefrom, a helical partition spacing the casing from the outer shell and forming a helical flue space around the latter, a diver-

gent baffle at one end of said outer shell and a burner in said casing directed against the baffle, said baffle being arranged to form a shield for the end of the outer shell and to spread the flame and products of combustion and cause the same to envelope the adjacent end portion of the outer shell, a spray nozzle discharging into the opposite end of the inner shell and a steam outlet leading from the inner shell.

In testimony whereof I have signed my name to this specification.

BASIL JOCK NEWTON MARDEN.