

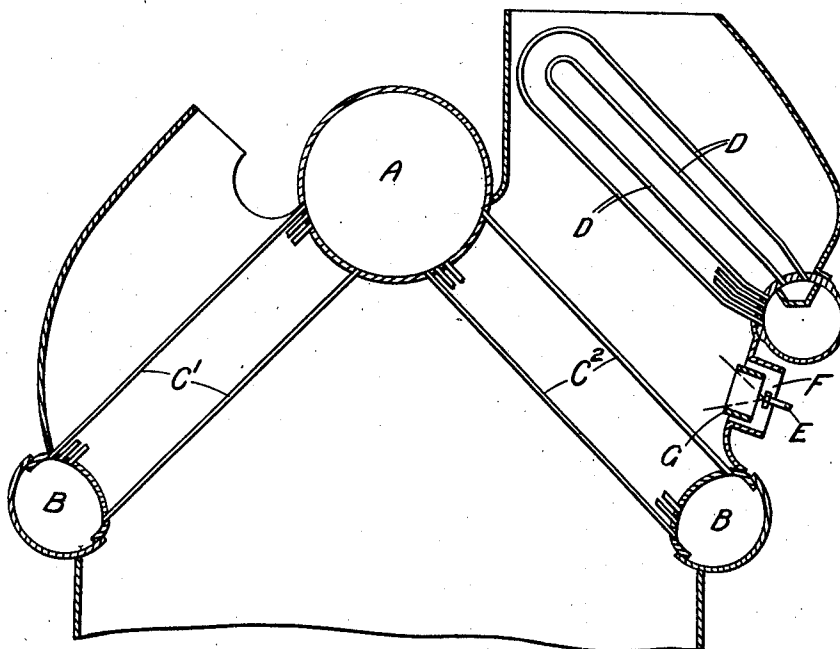
Sept. 15, 1925.

H. E. YARROW

1,554,154

SUPERHEATER OF WATER TUBE BOILERS

Filed Feb. 10, 1920



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UNITED STATES PATENT OFFICE.

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SUPERHEATER OF WATER-TUBE BOILERS.

Application filed February 10, 1920. Serial No. 357,590.

To all whom it may concern:

Be it known that I, HAROLD EDGAR YARROW, a subject of the King of Great Britain, residing in Scotstoun, Scotland, have invented certain new and useful Improvements Relating to Superheaters of Water-Tube Boilers, of which the following is a specification.

The invention relates to superheaters of water tube boilers and more particularly to those of the Yarrow type.

If the superheaters are separately fired there is the danger of their being burnt out when the supply of steam is low; if they are placed between two nests of generating tubes they are not very accessible for repairs or cleaning, and if they are disposed on the side of the nests of water tubes farthest from the source of heat there is not sufficient heat left in the furnace gases to obtain the high degree of superheat now generally required.

According to the invention, the last-named drawback is obviated by the provision of additional oil burners in the space between the generating and superheating tubes.

These burners are directed toward the generating tubes and away from the superheater so that should the additional burners alone be alight at any time sufficient steam will be generated to cool the superheater, and this without resorting to the complication of an additional generating element located beyond the superheater.

In some cases it may be advisable to distribute the oil burners over the length of the boiler so as to distribute the heat evenly over the whole length of the superheater tubes. The small amount of additional brickwork required with this arrangement is fixed to the end plates of the boiler or lies on the inclined plate supporting the air box of the burners. As there is no brickwork lying on the underneath side of either horizontal or

inclined surfaces, should the holding bolts burn away or break the brickwork will remain in position by its own weight.

The accompanying drawing represents diagrammatically an arrangement of superheaters according to the invention.

A is the steam and water drum, B are the water drums C', C² are nests of generating tubes; the superheater tubes are shown at D. E is one of a row of oil sprayers or burners, F an air box surrounding the sprayer, G an air distributor for the oil sprayer. These oil burners are inclined away from the superheater tubes D and are directed towards the generating tubes C² for the purpose stated above.

Although in the example shown the superheater tubes are placed on one side only of the boiler, they may be provided on both sides of the boiler.

Having thus fully described the nature of the said invention and the best manner I know of carrying the same into practical effect, I claim:—

A water tube boiler comprising two upwardly converging sets of steam generating tubes, a main combustion chamber straddled by the said sets of generating tubes, two uptakes beyond the respective sets of generating tubes and divided by a longitudinal partition, a steam superheater in one of the said uptakes located beyond the adjacent set of generating tubes, an auxiliary combustion chamber between the said superheater and generating tubes, and liquid fuel burners discharging into the said auxiliary combustion chamber and each comprising a fuel nozzle, air distributor and air box all concentrically arranged with their common axis directed towards the adjacent set of steam generating tubes substantially as described.

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

HAROLD E. YARROW.