

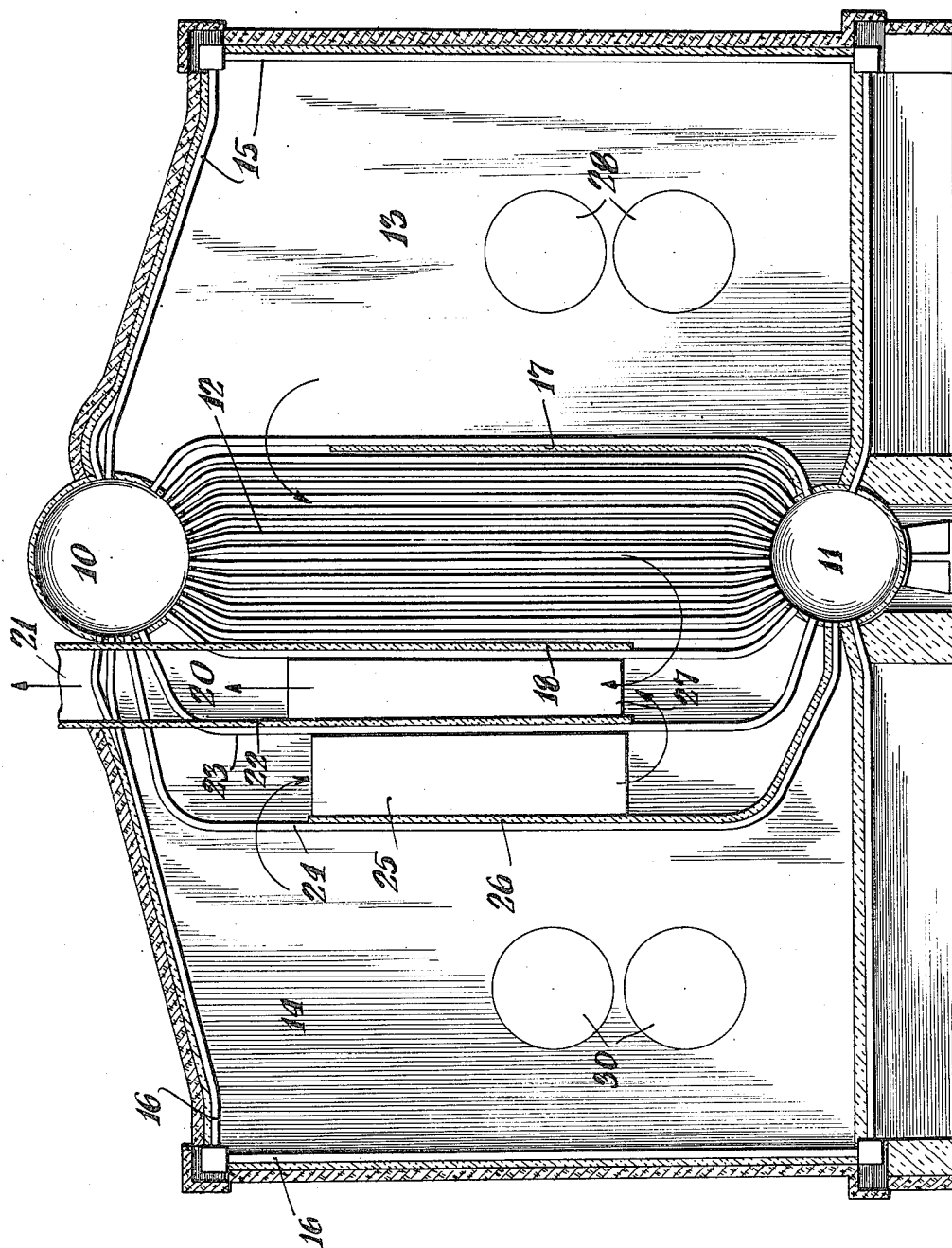
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SUPERHEATER BOILER

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SUPERHEATER BOILER

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5 Claims. (Cl. 122-485)

The present invention relates to boilers and particularly to boilers provided with superheaters.

A feature of the present invention is an improved boiler and superheater construction permitting regulation of the temperature of superheated steam independently of changes in the rate of firing to generate varying quantities of steam as the load on the boiler fluctuates.

A second feature resides in a construction which affords full protection to the superheater when the boiler is being fired up.

Other features and advantages of the invention will become apparent upon consideration of the following description and appended claims when read in conjunction with the accompanying drawing in which the single figure is a diagrammatic elevational view of an illustrative embodiment of the invention.

In the boiler shown in the drawing the steam and water drum 10 is disposed above and connected to the lower or water drum 11 by a generating bank 12 comprising rows of tubes. The exterior walls of the boiler setting are arranged to form separate furnace chambers 13 and 14 at each side of the drums 10, 11, that is, at opposite sides of the generating bank 12. Other generating tubes 15, 16 are disposed on the roof and outer side walls of the furnace chambers 13, 14. Baffles 17, 18 extending upwardly from the water drum 11 and downwardly from the steam drum 10 part-way along the outermost rows of tubes in the bank 12 direct gases from the furnace chamber 13 over the tubes of the generating bank to an up-pass 20 leading to the boiler off-take 21, the outer wall of up-pass 20 being formed by a baffle 22 extending downwardly from the roof of the furnace chamber 14.

Two rows of tubes 23, 24 connected at their ends to the drums 10, 11 have intermediate portions thereof offset towards the furnace chamber 14 and disposed in spaced rows between which are located the heat-absorbing elements of a superheater 25. A baffle 26 extending upwardly part-way along the row of tubes 24 together with the baffle 22 forms a gas pass for directing gases from the furnace chamber 14 across the superheater 25 to the up-pass 20 and the boiler off-take 21. An economizer 27 is located in the up-pass 20 and is heated by gases flowing across the generating bank 12 from chamber 13 and across the superheater 25 from chamber 14.

Individual firing means 28 and 30 are provided for the furnace chambers 13 and 14, respectively, and with the arrangement of heating surfaces

shown in the drawing the temperature of superheated steam may be regulated by varying the rate of fuel supply to the burners 30 for chamber 14 independently of the amount of fuel that is supplied to the burners 28 for chamber 13 in order to generate the varying quantities of steam that may be required as the load upon the boiler fluctuates. It will also be seen that when firing up the boiler it is necessary to employ only the burners 28 for the furnace chamber 13 and the gases passing over the generating bank 12 do not affect the superheater 25 which consequently is fully protected at this time.

Although an illustrative embodiment of the invention has been shown and described in detail, it is to be understood that various changes and rearrangements may be made without departing from the invention so long as separate firing means are provided within the boiler setting for the generating elements and for the superheater.

What I claim is:

1. In a water tube boiler having upper and lower drums interconnected by a substantially vertical bank of generating tubes; means defining separate furnace chambers at opposite sides of said bank; a gas off-take; means directing gases from one of said chambers over said bank of generating tubes to said off-take; generating tubes connected at their opposite ends to said drums and having portions intermediate their ends offset laterally from said bank toward said other furnace chamber and disposed in spaced rows; a superheater having its heat absorbing elements disposed in the space between said rows of tube portions; means for directing gases from said other furnace chamber through said space and over said superheater elements to said off-take; and fuel feeding means individual to said chambers.

2. In a water tube boiler having a pair of superposed drums interconnected by a substantially vertical bank of generating tubes; means defining separate furnace chambers at opposite sides of said bank; a gas off-take so arranged that gases flowing thereto pass over said bank from one of said chambers; spaced rows of tubes bent near their ends to connect with said drums and having intermediate portions offset laterally from said bank toward the other of said chambers and arranged in rows spaced sufficiently to provide room for a superheater; a superheater having its heat absorbing elements disposed in the space between the rows formed by said offset tube portions; means directing gases from said other chamber over said superheater elements to said

offtake; and fuel feeding means individual to said chambers.

3. In a water tube boiler having parallel upper and lower drums interconnected by generating tubes, and a furnace chamber located at one side of said drums; means defining another furnace chamber at the other side of said drums; an offtake for said other chamber; a superheater having its heat absorbing elements disposed in the path of gases from said other chamber; a row of tubes connected to said drums and having C-shaped portions offset toward said other chamber to embrace said superheater elements, parts of said tube portions being arranged to permit the flow of gases from said other chamber across said superheater to said offtake; and fuel feeding means individual to said chambers.

4. In a water tube boiler having upper and lower drums interconnected by a substantially vertical bank of generating tubes, means defining separate furnace chambers at opposite sides of said bank; fuel feeding means individual to said chambers; other generating tubes connected to said drums and disposed on the walls of said chambers to be heated by gases produced therein; a gas offtake; means directing gases from one of said chambers over said bank of generating tubes

to said offtake; means defining a gas pass from the other of said chambers to said offtake; and a superheater having the heat absorbing elements thereof disposed in said gas pass to be heated by gases flowing from said other chamber to said offtake.

5. In a water tube boiler having upper and lower drums interconnected by a substantially vertical bank of generating tubes; means defining separate furnace chambers at opposite sides of said bank; fuel feeding means individual to said chambers; other generating tubes connected to said drums and disposed on the walls of said chambers to be heated by gases produced therein; a gas offtake; means directing gases from one of said chambers over said bank of generating tubes to said offtake; means defining a gas pass from the other of said chambers to said offtake; and a superheater having the heat absorbing elements thereof disposed in said gas pass to be heated by gases flowing from said other chamber to said offtake; and other generating tubes connected to said drums and having portions offset from said bank toward said other chamber and disposed in spaced rows between which said superheater elements are located.

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