Oct. 24, 1933. J. C. HOBBS 1,931,544

BAFFLE FOR STEAM AND WATER BOILER DRUMS

Original Filed April 6, 1926

Fig 1.

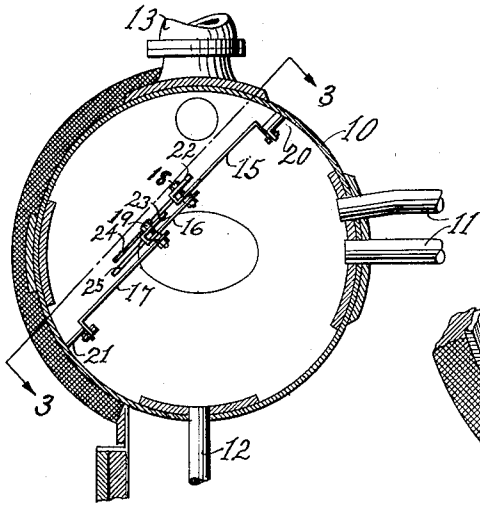


Fig 2.

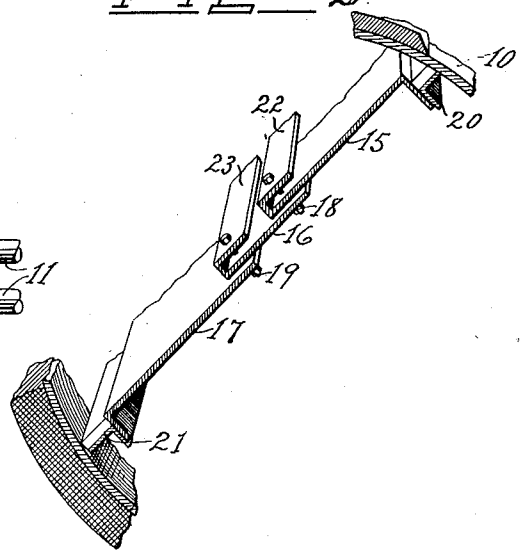


Fig 3.

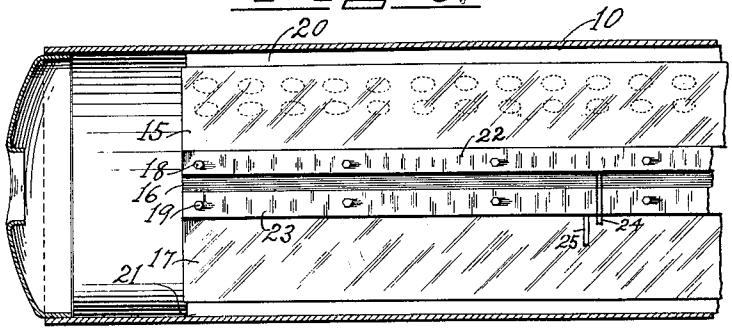
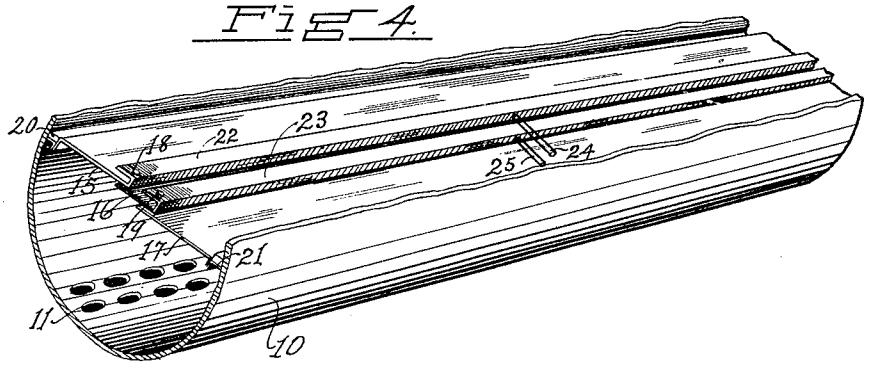


Fig 4.



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1,931,544

BAFFLE FOR STEAM AND WATER BOILER DRUMS

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Application April 6, 1926, Serial No. 100,027
Renewed January 21, 1933

11 Claims. (Cl. 122—491)

This invention relates to a device for separating water from the mixture of steam and water that enters the steam and water drum of a boiler, and will be understood from the description in connection with the accompanying drawing, in which Fig. 1 is a section through a steam and water drum of a boiler showing an embodiment of the invention; Fig. 2 is a perspective view, partly broken away; Fig. 3 is a section along the line 3—3 of Fig. 1 and Fig. 4 is a perspective view of the drum, partly broken away, showing the device installed therein. In the drawing, reference character 10 indicates a steam and water drum, to which are connected the usual steam and water tubes 11, the nipples 12 that lead to the downtake headers (not shown), and a pipe 13 for the dry steam.

The baffle is made up of plates 15, 16 and 17, the plate 15 being connected to the plate 16 by means of bolts 18, and the plate 16 being conected to the plate 17 by means of bolts 19. These plates are so connected by the bolts 18 and 19 that they are substantially parallel to each other, and spaces are left between edges of the plates to permit the passage of steam or steam and water. The upper edge of the plate 15 is connected by means of the web 20 to the inside of the drum above the normal water level therein, and the lower edge of the plate 17 is similarly connected to the inside of the drum below the water level, by means of the web 21. The baffle is installed in the drum, preferably on the other side of the center line thereof from the inlet tubes 11, and also preferably at an angle to the horizontal. The plates and the webs entirely close the space between opposite sides of the drum, except for the spaces between the plates and spaces between the ends of the plates and the ends of the drum when the plates are made shorter than the inside of the drum. The plates 15 and 16 are provided with troughs 22 and 23 on the other side of the plates from the tubes 11 at their lower edges, by bending the metal twice at right-angles, as indicated in the drawing. These troughs extend from one end of the plates to the other, and the plates terminate a short distance from the ends of the drum. The troughs 22 and 23 may be provided with one or more spouts 24 and 25, the spouts 24 being long enough to extend below the water level in the drum 10, and the spouts 25 extending a considerable distance below the trough 23.

The operation is as follows: The mixture of steam and water enters the drum 10 through the inlet pipes 11, and a part of the water immediately settles out and reaches the water space of the drum, while the steam and entrained water strikes the lower face of the plate 15, which causes more of the water to separate and trickle down this plate, while the steam and a part of the water passes through the space between the lower edge of the plate 15 and the upper edge of the plate 16, to the other side of the baffle. The water trickling down the upper side of the plate 16 is caught by the trough 23, and either runs to the end of the trough where it drops into the water in the drum, or passes through the spouts 25 to the same. More water from the steam may collect on the other face of the plate 15, and trickle down into the trough 22 and pass to the ends of the trough and drop into the water, or when spouts 24 are provided, the water will pass through these spouts and join the remainder of the water in the drum. As the lower ends of the spouts 24 extend below the water level in the drum 10, the water that trickles down the upper edge of the plate 15 will not be entrained by steam passing through the space between the plates 15 and 16. Steam carrying entrained water will also pass through the space between the upper edge of the plate 17 and the lower edge of the plate 16, in a manner similar to that already described, and this water will be separated therefrom in a similar way, the spouts 25 extending downwardly to a suffiicent extent to prevent water passing out of these spouts from being again caught up by the steam passing through the space between the plates of the baffle.

I claim:

1. In combination, a boiler drum having steam and water inlet pipes, a baffle disposed across the ends of said pipes and spaced therefrom to define a space into which steam and water from all of said pipes may discharge, said baffle comprising a plurality of substantially parallel plates spaced apart but overlapping one another to permit passage of steam through said baffle with an upper plate overlapping a lower plate on the side of said lower plate remote from the inlet pipes, and said upper plate being provided with a trough adjacent its lower edge.

2. In combination, a boiler drum having steam and water inlet pipes and a steam outlet, a baffle extending across said drum between said inlet pipes and said outlet and forming a chord of said drum, said baffle being inclined to the horizontal and comprising a plurality of overlapping plates having an opening therebetween with an upper plate overlapping a lower plate on

the side of the lower plate remote from said inlet pipes, said upper plate having a trough adjacent its lower edge on the side remote from said inlet pipes.

3. In combination, a boiler drum having steam and water inlet pipes, a steam outlet and a baffle extending across said drum between said inlet pipes and said outlet and inclined to the horizontal, said baffle having an opening therein for the passage of steam therethrough, and a trough on said baffle beneath said opening on the side remote from the inlet pipes.

4. In combination, a boiler drum having steam and water inlet pipes, a steam outlet and baffle extending across said drum between said inlet pipes and said outlet and inclined to the horizontal, said baffle having an opening therein for the passage of steam therethrough, a trough on said baffle beneath said opening on the side remote from the inlet pipes, and a spout leading from said trough beneath the normal water level in said drum.

5. In combination, a boiler drum having steam and water inlet pipes, a baffle disposed across the ends of said pipes and spaced therefrom to define a space into which steam and water from all of said pipes may discharge, said baffle comprising a plurality of substantially parallel plates spaced apart but overlapping one another to permit passage of steam through said baffle with an upper plate overlapping a lower plate on the side of said lower plate remote from the inlet pipes, said upper plate being provided with a trough adjacent its lower edge, and a spout leading from said trough beneath the normal water level in said drum.

6. In combination, a boiler drum having steam and water inlet pipes, a baffle disposed across the ends of said pipes and spaced therefrom to define a space into which steam and water from all of said pipes may discharge, said baffle comprising a plurality of substantially parallel plates spaced apart but overlapping one another to permit passage of steam through said baffle, with an upper plate overlapping a lower plate on the side of said lower plate remote from the inlet pipes, and a trough disposed on said lower plate beneath the lower edge of the upper plate and on the side remote from the inlet pipes.

7. In combination, a boiler drum having steam and water inlet pipes, a baffle disposed across the ends of said pipes and spaced therefrom to define a space into which steam and water from all of said pipes may discharge, said baffle comprising a plurality of substantially parallel plates spaced apart but overlapping one another to permit passage of steam through said baffle, with an upper plate overlapping a lower plate on the side of said lower plate remote from the inlet pipes, a trough disposed on said lower plate beneath the lower edge of the upper plate and on the side remote from the inlet pipes, and a second trough adjacent the lower edge of said upper plate and on the side remote from the inlet pipes.

8. In a boiler, a drum having steam and water spaces, inlet pipes arranged to discharge steam and water mixture into said steam space, a steam outlet, a baffle extending across the drum and into the steam and water spaces thereof, said baffle being disposed between the inlet and the outlet and dividing the drum into two chambers of unequal size, with the larger chamber receiving the steam and water from said pipes, means sealing the lower part of the baffle to the drum, and means forming a passage for steam through the upper part of the baffle within said steam space.

9. In a boiler, a drum having steam and water spaces, inlet pipes arranged to discharge steam and water mixture into said steam space, a steam outlet, a baffle extending across the drum and into the steam and water spaces thereof, said baffle being disposed between the inlet and the outlet and dividing the drum into two chambers of unequal size, with the larger chamber receiving the steam and water from said pipes, means sealing the lower part of the baffle to the drum, and means forming a passage for steam through the upper part of the baffle within said steam space, said pipes discharging steam and water approximately horizontally into the drum, and said baffle being inclined to the horizontal, with the lower part of the baffle further from the inlet pipes than the upper part.

10. In a boiler, a drum having steam and water spaces, inlet pipes arranged to discharge steam and water mixture into said steam space, a steam outlet, a baffle extending across the drum and into the steam and water spaces thereof, said baffle being disposed between the inlet and the outlet and dividing the drum into two chambers of unequal size, with the larger chamber receiving the steam and water from said pipes, means sealing the lower part of the baffle to the drum, said pipes discharging steam and water approximately horizontally into the drum, and said baffle being inclined to the horizontal with the lower part of the baffle further from the inlet pipes than the upper part, the baffle being formed of overlapping plates, with an upper plate overlapping a lower plate on the side of the lower plate remote from the inlet pipes.

11. In a boiler, a steam and water drum having steam and water inlet pipes discharging into the steam space of the drum in a generally horizontal direction, a steam outlet from said drum, downcomer connections leading from the lower part of the drum, a baffle extending across the drum between said inlet pipes and said outlet and into the steam and water spaces thereof, said baffle being inclined to the horizontal, with the top of the baffle nearer the inlet pipe than the bottom, means sealing the bottom of the baffle to the drum on the side of the downcomer connections remote from the inlet pipes, and means forming a passage for steam through said baffle.

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