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# STEAM BOILERS

TERRELL CROFT, EDITOR

CONSULTING ENGINEER. DIRECTING ENGINEER, TERRELL CROFT ENGINEERING COMPANY.  
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## STEAM BOILERS

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### CONTRIBUTORS

The following have contributed manuscript or data or  
have otherwise assisted in the preparation of this work:

I. O. ROYSE                      A. J. DIXON  
I. V. LEBOW                      E. R. POWELL  
Terrell Croft Engineering Company

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NOTE.—An arrangement of flat surfaces which performs the function of a dry-pipe is shown in Fig. 313. Reversal of the steam-flow around the lip of the inverted disc causes precipitation of the entrained moisture

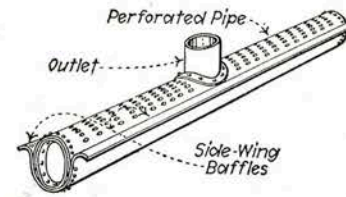


FIG. 312.—Perforated dry-pipe with side wing baffles.

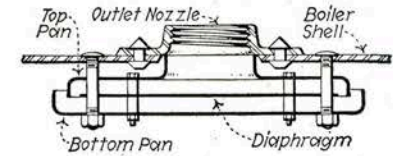


FIG. 313.—Baffle-plate steam-separating device.

in the pan beneath. From the pan it flows back to the water space of the boiler. A dry-pan is shown in Fig. 67. The space for inflow of steam between the top of the pan and the boiler shell is about 0.5 in. deep. Dry-pipes or pans, interior separators, and the like may be made of cast iron, wrought iron, steel, copper or brass. A galvanic action may result from the use of copper or brass. This is objectionable.

**370. A Dry-pipe Should Be Of Ample Length** (Fig. 312).—This is advantageous

in preventing priming which might otherwise result from forced firing. Priming might attend forced firing by reason of the violent boiling of the water directly beneath the outlet nozzle. A dry-pipe extending the full length of the boiler shell, virtually distributes the area of outlet along this distance. It thereby obviates crowding of the escaping steam bubbles directly beneath the outlet nozzle.

**371. The combined areas of the perforations or slots in dry-pipes should be equal to about twice the area of the orifice in the outlet nozzle.**

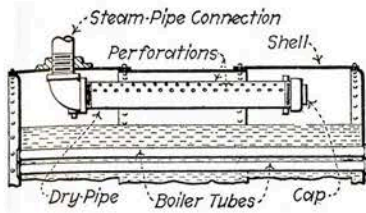


FIG. 310.

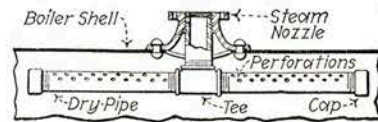


FIG. 311.

FIG. 310.—Dry pipe in horizontal return-tubular boiler. (The dry pipe shown is not drawn to scale. Its size is somewhat exaggerated to better show constructional details. The aggregate area of the holes for steam entrance into the dry pipe, should be at least equal to the area of the steam connection to the boiler. Several 1/2-in. holes should be bored in the bottom of each dry pipe, near its ends, to provide drainage.)

FIG. 311.—A double-ended dry pipe.

**369. A dry-pipe** (Figs. 310, 311, 312) is a perforated or slotted pipe attached to the interior orifice of the steam-outlet nozzle of a boiler. Its function is to intercept water which is entrained with the liberated steam bubbles. The entrained water is thus prevented from passing with the steam through the outlet nozzle. It flows from the dry-pipe through drain holes back to the water space of the boiler.

NOTE.—An arrangement of flat surfaces which performs the function of a dry-pipe is shown in Fig. 313. Reversal of the steam-flow around the lip of the inverted disc causes precipitation of the entrained moisture

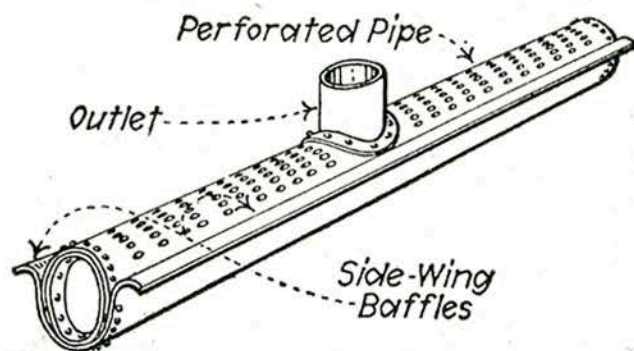


FIG. 312.—Perforated dry-pipe with side wing baffles.

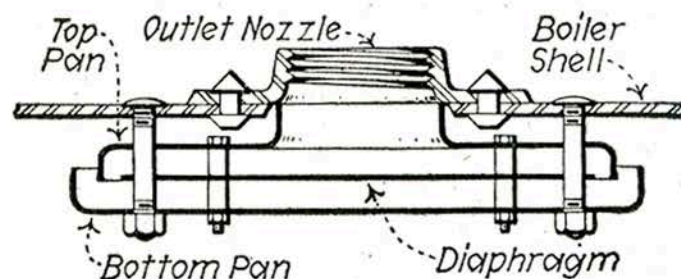


FIG. 313.—Baffle-plate steam-separating device.

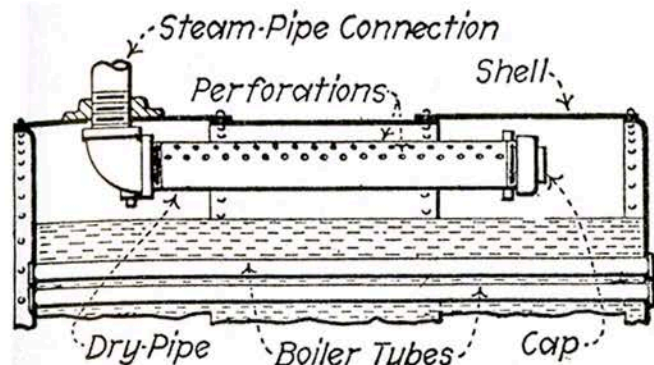


FIG. 310.

FIG. 310.—Dry pipe in horizontal return-tubular boiler. (The dry pipe shown is not drawn to scale. Its size is somewhat exaggerated to better show constructional details. The aggregate area of the holes for steam entrance into the dry pipe, should be at least equal to the area of the steam connection to the boiler. Several  $\frac{1}{2}$ -in. holes should be bored in the bottom of each dry pipe, near its ends, to provide drainage.)

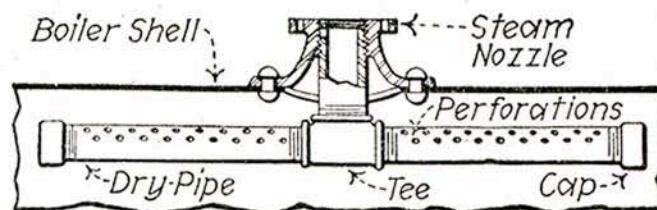


FIG. 311.

FIG. 311.—A double-ended dry pipe.