PIPING CONNECTIONS

Hartford Return Connection

The Hartford return connection illustrated in Fig. 7 and in other piping layouts in this chapter is recognized as safer and preferable to the use of check valves. In using this connection, the wet return connects through the shortest possible horizontal pipe 2 in. below the normal boiler water line into the pipe which joins the boiler outlet and boiler inlet on the boiler side of the stop valves. By this arrangement, if a careless operator should close the boiler outlet valve and should forget to close the boiler inlet valve, no water below the level of the inlet connection to the loop could leave the boiler.

Connections to Mains

Fig. 8 shows two methods of taking off branches from mains on one-pipe systems. They apply equally well, however, to other systems of

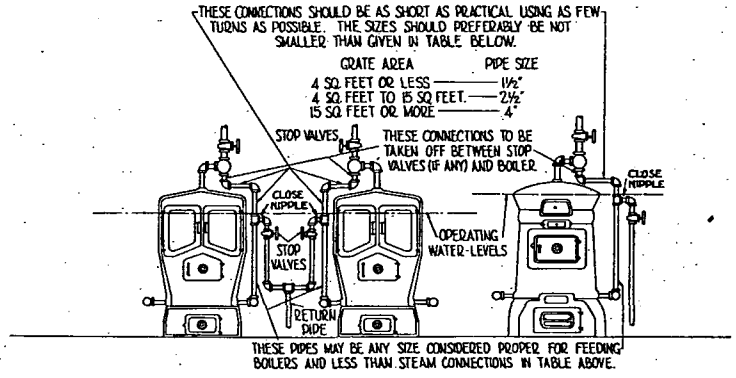


FIG. 7. CONNECTING TWO BOILERS USING THE HARTFORD RETURN CONNECTION

up-feed piping. On one-pipe plants the branches are always made one pipe-size larger than the risers or the radiator connections which they serve. The method of carrying a main past an obstructing beam shown in Fig. 9 may be used advisedly with any system of piping.

Fig. 10 shows a detail of piping at the end of a single-pipe main or at any point where it becomes desirable to rise for a fresh start at a higher level, the steam rising off the top of the main and the water draining down to the wet return below the boiler water line. If the detail shown in Fig. 10 is used at the end of the main, an air valve must be installed above the water line.

Where it is desired to reduce the size of a supply main, an eccentric fitting always must be used, as shown in Fig. 11, or a reducing elbow must be installed, as in Fig. 12, so that perfect drainage is accomplished. These details also apply to any other system of steam piping.

A handy rule for cutting the proper length of offset pipe is illustrated in Fig. 13.

Piping Connections for Vapor and Vacuum Systems

In Figs. 14 to 19, inclusive, are illustrated some of the piping details which are recommended in connection with vapor and vacuum heating. Figs. 14 and 18 show methods of draining and venting the ends of supply mains where a return below the boiler water line is used. Fig. 19 shows the same detail where the return main is above the water line. Fig. 15 shows the method of draining the ends of long branches from supply

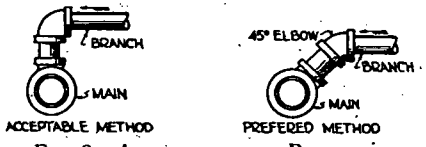


FIG. 8. ACCEPTABLE AND PREFERRED METHODS OF TAKING BRANCH FROM MAIN

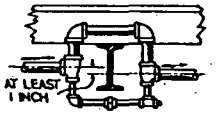


FIG. 9. LOOPING MAIN AROUND BEAM

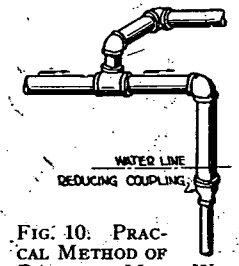


FIG. 10. PRACTICAL METHOD OF DRIPPING MAIN WHERE IT RISES TO HIGHER LEVEL

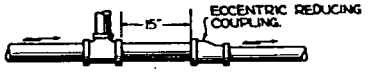


FIG. 11. PRACTICAL METHOD OF REDUCING SIZE OF MAIN

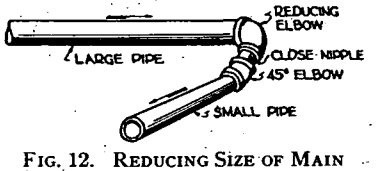
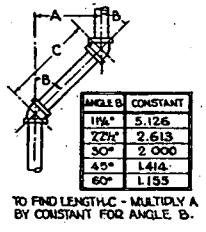


FIG. 12. REDUCING SIZE OF MAIN AT SWING CONNECTION



ANGLE B	CONSTANT
11¼°	5.126
22½°	2.613
30°	2.000
45°	1.414
60°	1.155

FIG. 13. CONSTANTS FOR DETERMINING PROPER LENGTH OF OFFSET PIPE

mains to risers or to remote radiators. Fig. 16 shows a sediment chamber which will catch debris in any vapor or vacuum system, this being cleaned occasionally, preventing the foreign matter from stopping up or injuring the traps or other mechanisms. Fig. 17 illustrates an approved method for carrying a return main which runs near the floor, past a door. The air in the upper part of the main rises freely over the door, while the water passes in the trench under the door.

Figs. 20 and 21 illustrate approved details of the return pipes leading to vacuum pumps where there must be lifts from low-lying mains up to the pump. These lifts should be avoided wherever possible.