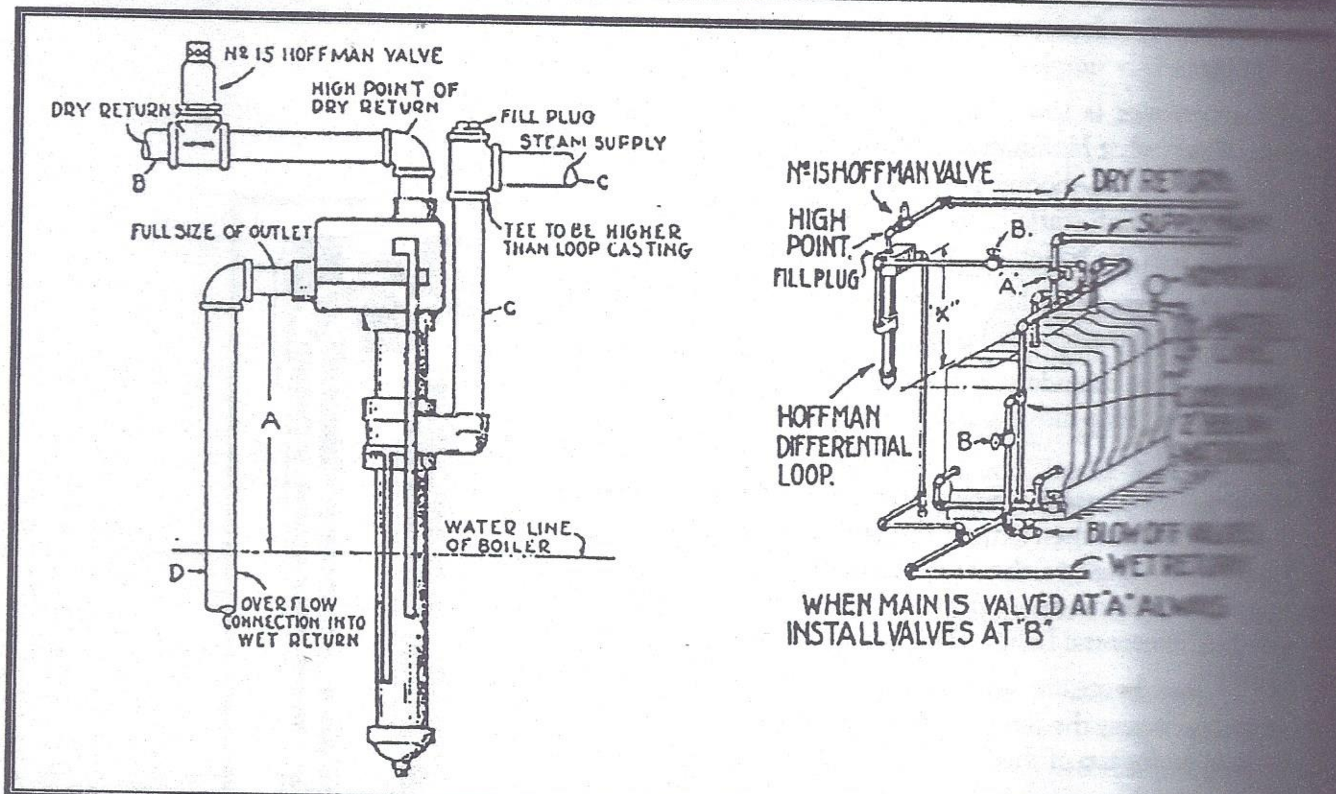



(*figure 9*)

Now remember, this piping is on the outlet [illegible] ator traps—the part of the system that normally [illegible] any steam pressure in it. What the Loop has [illegible] steam into the dry return is to turn, [illegible] Dimension back into an "A" Dimension!

Isn't that great! Now the steam pressure [illegible] equals the steam pressure in the boiler. But in [illegible] have that 18-inch static height in the return. [illegible] equal to 10 ounces of boiler pressure. Combine [illegible] and suddenly we have enough to overcome the [illegible]

The condensate slides back into the boiler.

Naturally, as the pressures equalize and [illegible] returns, water will once again cover the inner [illegible] the steam to the dry return. At that point, the [illegible] Texan's six-gun," just sits and waits until it's once [illegible]

Hoffman made another version of the Loop. [illegible] pipe and instead of two, but it does the same thing.

It looked like this. (*figure 9*)

A metal collar seals the upper part of the [illegible] lower part. You connect the steam line to the [illegible] side of the pipe. As pressure builds, the water [illegible] drops. The excess water goes through the [illegible] partially fills the cast-iron box (without blocking [illegible]

As soon as the water line dips below the [illegible] tube, steam shoots up into the dry return and [illegible] sure the returning condensate needs to get back [illegible] *seen those, you know. It a goes in the boiler room, and it ahhhh... You hook it up like... Oh, you know!"*

But I didn't.

Once, I found a description in a 1930 Hoffman Specialty book that said, "*Much the same can be said about the Differential Loop as used to be said about carrying a gun in Texas. 'You don't need it often, but when you do need it, you need it bad!'*"

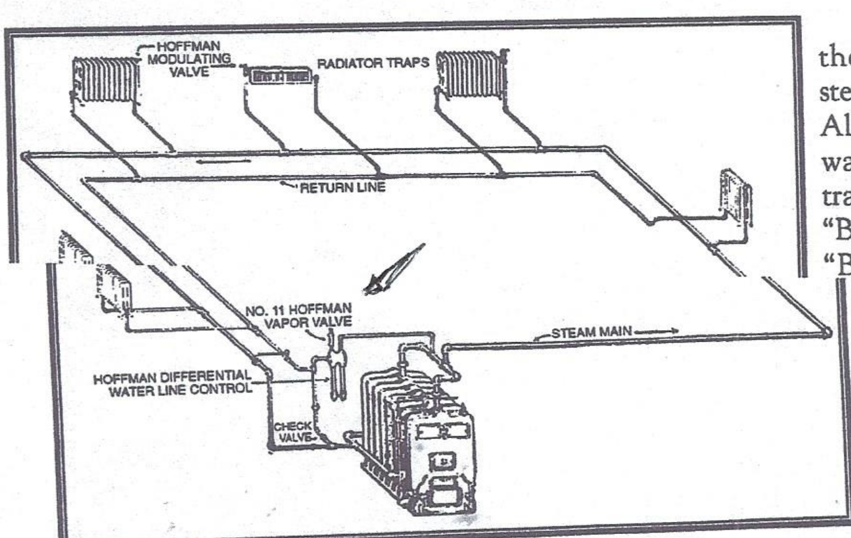
Gosh! That clear-as-mud explanation didn't make me feel any more comfortable. Especially coming from the manufacturer and all.

Anyway, I finally figured this thing out thanks to a conversation I had with a dead guy named Charles A. Fuller. Charlie spoke to me late one winter's night as I curled up with his [illegible] book, *Designing Heating and Ventilation Systems*. Charlie was a magnificent explainer; he had a common touch. What he told me, once again and in a roundabout way, was that high pressure goes to low pressure...always.

You see, when this other dead fellow, Professor Mapes, invented the radiator steam trap back in 1903 everything in the heating industry changed. That's because steam traps prevent steam pressure from reaching through to the return lines. And if there's no steam pressure in the return lines, the returning condensate won't return. Steam traps turn "A" Dimensions into "B" Dimensions. You know that already.

It's a simple concept. If the boiler is under two psig pressure, you need some pressure higher than two psig to enter it. That's because high pressure goes to low pressure...always.

In a one-pipe steam system, we use the left-over steam pressure at the end of the main and add another pound to it by letting the returns stack up about 28 inches (the "A" Dimension). That usually overcomes the pressure in the boiler and allows the condensate to slide into the boiler.




*(figure 7)*

But once we add those steam traps to the two-pipe vapor system, we stop the steam from reaching through to the returns. All we're left with is the static weight of the water in the vertical space between the traps and the boiler water line. That's the "B" Dimension and we need 30 inches of "B" for every pound of pressure in the boiler. Without it, the water [illegible] the boiler, fills the steam main, [illegible] Float Trap/Air Eliminator, [illegible] take-offs to the radiators, and [illegible] water problem in the boiler.

So The Hoffman Specialty [illegible] seeing a golden opportunity, [illegible] Differential Loop and I'll tell you, once Charlie Fuller [illegible]