

towards the fire, the said corrugations being more pronounced where the heat is most intense on the sheet. These corrugations in turn draw the top side of staybolt holes away from the staybolts, thus throwing the entire strain of withstanding the pressure of steam above the crown sheet, upon the threads at lower portion of staybolt hole, these threads, also the threads and bats of the staybolts having become greatly softened under the heat to which they have been subjected, are not now able to withstand the pressure above, with the result that the crown sheet pulls away from bolts, and in doing this the threads of the staybolts are invariably stripped about three threads back from bat or point of bolt, showing this portion of the bolt to have held the sheet in position until the metal became too soft, and at this point, if any part of this crown sheet has been over such an intense heat that it has become very soft, it is very liable to elongate to such an extent that it reduces greatly in thickness and eventually ruptures at the softest or thinnest part, causing what is usually called an explosion, all such explosions to my personal knowledge have occurred above where the water line had been at time of explosion, and had water been in the act of being injected into these boilers, I cannot see that it would in any way increase the liability of explosion; also taking into consideration the injection of water into a locomotive boiler, the water enters invariably near the front end of boiler, at a considerable distance from the crown sheet; also well below the allowed level of water under proper conditions, this water enters at a lower temperature than the body of water inside of boiler, with the result that it immediately tries to find its way to the lowest part of boiler and in doing this, allows the hot water to raise gradually up the sides of crown, thus showing that the cold water cannot possibly get near to the crown sheet.

In reviewing the foregoing remarks I wish to be understood that I do not advocate the injection of water into boilers, when water is below crown, but that in all cases of low water my suggestion is "dump the fire every time," and wait the results of boiler cooling naturally.

Mr. Fletcher,—

Mr. Chairman, I am a boiler-maker, not a boiler inspector. I wish to ask Mr. Wickens one question. If Mr. Wickens were chief engineer of a boiler room or engine house where there were a number of engines or boilers, and he came down into the boiler room and found the water low and his pumps going pretty hard to fill the boilers up again, what would you do with the fireman?

Mr. Wickens,—I would fire him.

Mr. Fletcher,—What for?

Mr. Wickens,—I would be afraid of a rupture.