Cautionary Tale: Safety

In order to refresh my thoughts about safety, I decided to go for a walk in the National Park very close to where I live. As I set out over the snowy and frozen ground towards a rock formation at the top of the hill called “Cakes of Bread” I realised that I was not wearing a “High vis” jacket, did not have a map, compass or “satnav” device with me nor any emergency rations. It was very slippery underfoot so I was breaking all the rules of fell walking, which was not a good start for a cautionary tale on safety, so the moral of my tale comes first this time; Follow my advice on spring safety, which follows, but not my example.

Despite my safety infringements I survived my twelve mile walk, and arrived home exhilarated by the views and with a few ideas in mind. The first thought was that I have written 50 cautionary tales, and one could think that each of them contained advice about how to stay safe in the spring industry by avoiding pitfalls that IST become aware of in the normal course of their business. Indeed the concept of cautionary tales is one that I plagiarized from Hillaire Belloc, an English author who invented the concept, and wrote his tales in comical rhyming verse, a typical one being – “And always keep a-hold of nurse, For fear of finding something worse”. My tale will not be in verse, but it has a typical literary beginning.

Once upon a time the author was in a country where health and safety are not top priorities, and safety inspections are unknown. I was watching the coiling of springs on a coiler of Japanese origin, and when the wire ran out the next coil was fetched and was threaded up. The setter had not used the guard so far – it looked as if it may never have been used – and was surprised that I insisted on its use having watched production for some time without raising this matter. Reluctantly the setter did as I bade, but didn’t immediately ask why. *I* had noticed that the reduction in area given on the certificate for this coil of wire was below the usual minimum for this grade of wire – 28% compared with 35% minimum. Some might have refused to use this wire, but I was content that if it survived the coiling process the springs would be satisfactory. The first two springs coiled OK and the setter again said the guard was not necessary, but I continued to insist on its use, and rightly so, because the third spring broke and a piece of it hit the guard, which did its job – saved the operator and myself from serious injury. The setter then asked how I knew there was a risk, and inspected the tools on his coiler, which, surprisingly, were undamaged and threaded up the wire and continued to use it without further mishap! Perhaps I was the nurse in Belloc’s tale. I noticed that he was still using the guard when I next visited the factory two years later, but that none of his fellow setters did.

Safety on the shop floor is one thing, but many springs have safety critical applications. The safety relief valve is the most obvious one. Relief valves used to be heavy weights that would lift if the pressure inside a vessel exceeded the set value, but English railway engineer John Ramsbottom observed that these could be tampered with by adding extra weights or locking them down to get a bit more performance on steam trains. Realising the safety risk, in 1856 he invented the tamper-proof device shown in figure 1. This remains an important market for springs today.

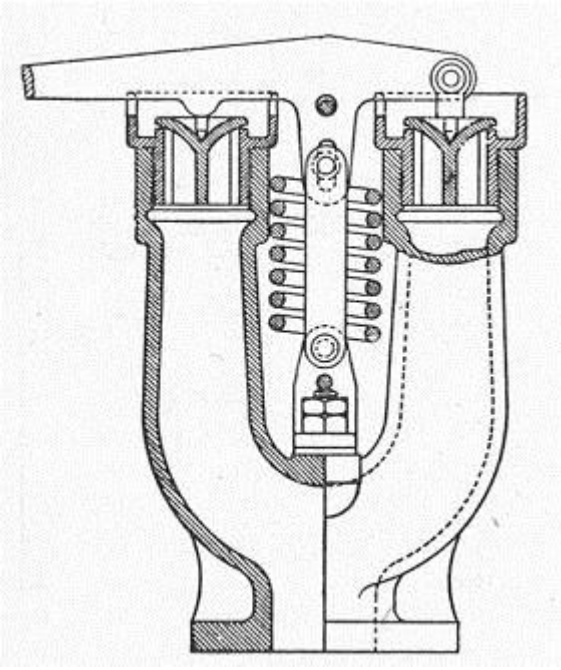

Figure 1 Ramsbottom's tamper-proof safety relief valve for railway steam engines

The second moral of this cautionary tale is to stay safe while manufacturing components that will keep others safe.

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Readers are encouraged to contact him with comments about this cautionary tale, and with subjects that they would like to be addressed in future tales - e-mail m.hayes@springexpert.co.uk