

Patterson was very kind in placing at my disposal every means for getting up this paper, and Mr. Larmour has been very kind in getting up these fine drawings.

Portable Pneumatic tools comprise some of the most important time and labor saving devices that have been introduced into the different mechanical and engineering trades during the last twenty-five years, they are efficient and ingenious, showing the result of careful study and much experimenting, and are strictly of a high-class workmanship. The pneumatic tools on the market to-day are far superior to what they were a few years ago, both in durability, efficiency and simplicity, which means that the tools will give longer service and less cost for maintenance.

Their introduction into the structural steel and ship-building trades has been the means of making a great saving in labor and time, and it is safe to say that these trades have simply been revolutionized by the introduction of pneumatic tools and they have not yet reached their limit of usefulness.

One important factor is the minimum loss of power, also its flexibility. The air can be carried almost any distance with a small loss, which is caused by friction only. There is also the convenience in handling and cleanliness.

The railroad shop has undoubtedly brought forward many new uses for the pneumatic tool, not only using hammers and motors most extensively, but have introduced many other appliances such as staybolt breakers, staybolt nippers, pneumatic hoists, presses, tube welders, tube expanders, tube piecers, turntable motors, valve setting motors, jacks, drop pit jacks, test pumps, white-washing machines, portable forges, frame heaters, dolly bars, sand shakers and other tools, and their introduction has always resulted in cutting down the cost of production.

Pneumatic tools have superseded all hand work in boiler-making, such as rivetting, drilling, tapping, reaming, screwing in staybolts, cutting them off and rivetting same, chipping, caulking, expanding and beading tubes. The superiority of machine driven rivets over hand is too well known to question. The machine driven rivet fills the hole completely and forms a better and stronger head, besides drawing plates together more closely, and require less caulking to make the seams tight. Practical boilermakers know that when they are using the long stroke hammer for putting in rivets, that they always have to order their rivets slightly longer than if they were doing hand rivetting.

On the locomotive, we would be at a loss to know how to get along if we did not have these tools for drilling, tapping, reaming, chipping, driving portable cylinder boring machine, valve facing machine, valve setting machines, etc.