Blacksmithing Using a Tilt Hammer in a 19th Century German Wrought Iron or Steel Works

Photographs of Models Displayed in the Deutsche Technical Museum in Munich

Introduction

This delightful set of models show a blacksmith and his young mate, more than likely a son, using a tilt hammer to forge the kind of tools that would be needed in the manufacture of wrought iron or steel.



The blacksmith's own tools are fixed on one wall of the "shop", which he would have made himself, but a more important job would have been making the tools required by the men making wrought iron and steel. For the former, the main tools would have been the rods needed to stir up the molten mass of pig iron in the wrought iron puddling furnace, and the tongs needed to help lift and pull the balls of wrought iron out of the furnace. For steel making the main tools would have been the shovels for throwing lime and dolomite into the hearth between bouts of steel making, to keep it in good condition. Rabblers would be needed to help smooth out the layers of lime. These are long rods about 3cm in diameter and about 3 metres long, with a thick wooden square baulk of wood, about 30 cm by 30 cm at the furnace end.

The blacksmith is using a tilt hammer, to take over the hard work of hammering. It looks like, in this instance, that he is making some kind of knife. That is the long white hot piece of metal. I understand that the tilt hammer would be beating down on the piece around about once a second.



In this picture, we see the blacksmith from the back, and the tilt hammer more clearly. It seems to be hinged about half way along its length. There would be a wheel with cams at the the far end of the hammer that would push the tilt hammer downwards at that end. This would lift the blacksmiths end of the hammer up. Once the cam had passed the tilt hammer would fall back.

Notice the weight of the hand hammers on the floor.



Here we see the young boy heating the pieces of iron in a small furnace. It is not clear how the fuel (probably coke) was added, but the first picture in this set, show what seems to be a door on the side of the furnace. Notice that apart from a leather apron, the boy has not protection.

There is a blacksmith's anvil that would be used for more complex jobs. The tools on the wall can be seen more clearly in this picture.

