

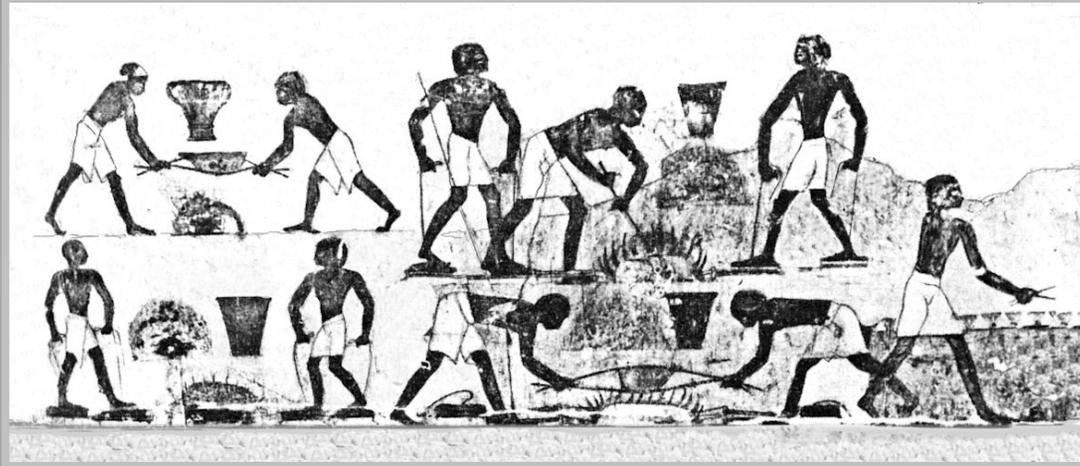


# Casting Craft

200 - 1850

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# Ca. 1475 before Christ: Egyptian Metal Founder



This two pictures show,  
according to historians:

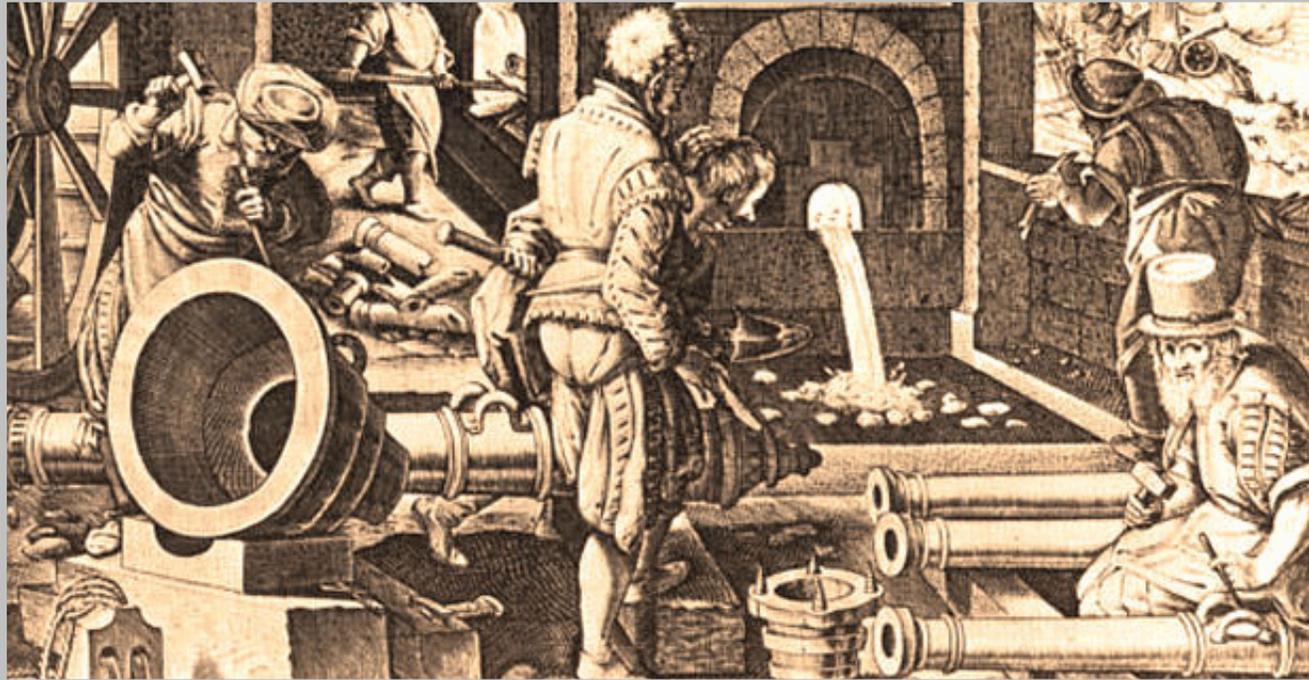
Upper Figure:  
Melting of bronze on a fire  
using a below



Lower Figure:  
Casting the molten metal into  
a mold

Grave of Rekhmara at Teben, ca. 1475 before Christ

# Ca. 1500: Cannon Foundry

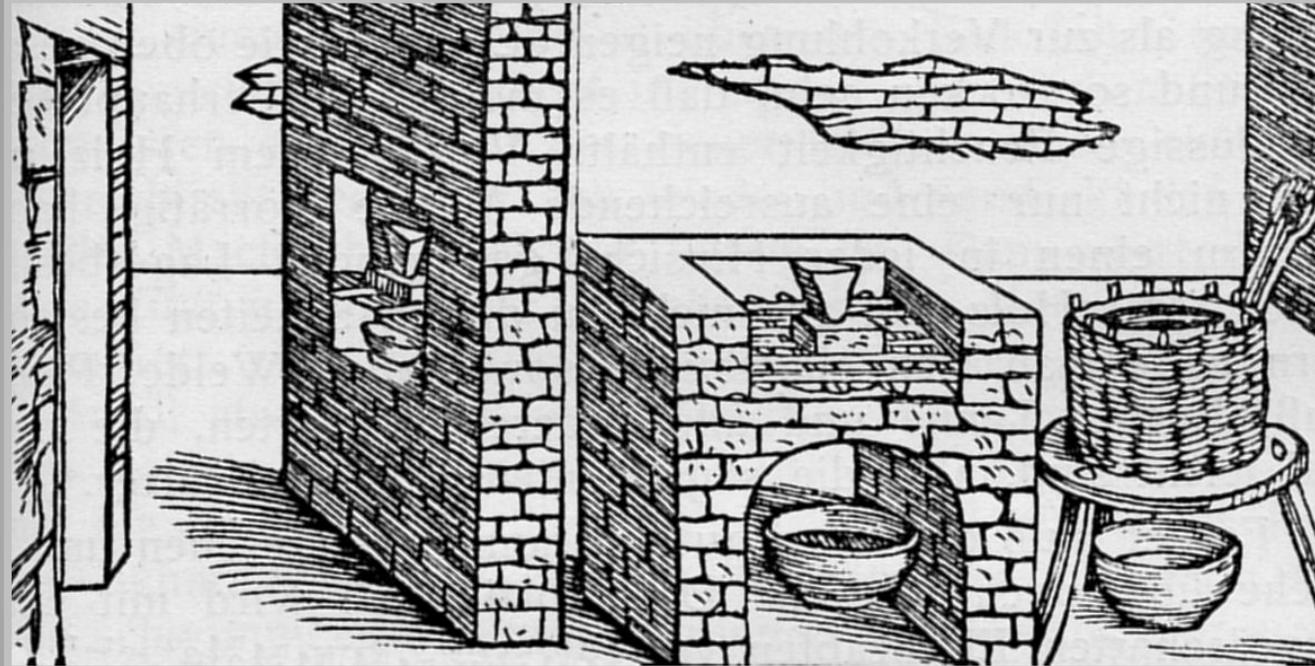


Unknown Artist, ca. 1500

Tapping the furnace. The molten Bronze flows into the sprue hole

A engraver decorates a mortar barrel

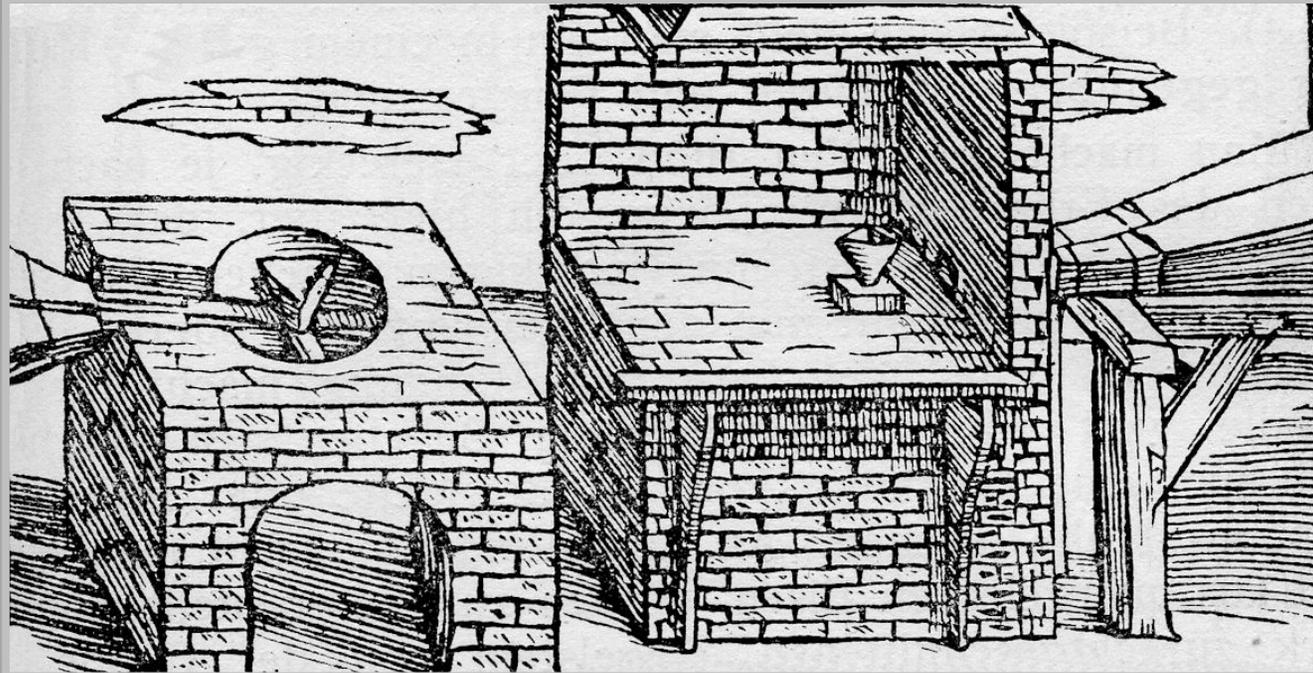
# Ca. 1520: Melting



Biringuccio, Pyrotechni, Venice, 1540

The foundry with its furnace was placed in the countryside such, that the wind could enter the opening of the furnace. The wind blows into the embers and the temperature is being increased. The crucible is shown standing on a fireproof brick. The coal and the embers however are not shown in the figure.

# Ca 1530: Casting with Crucible and Bellow



Biringuccio, Pyrotechni, Venice, 1540

The crucible is standing on a fire resistant brick. Charcoal is being placed around the crucible and is being lighted. The bellow blows air into the embers in order to increase its temperature. Coal and the embers again are not shown in the figure.

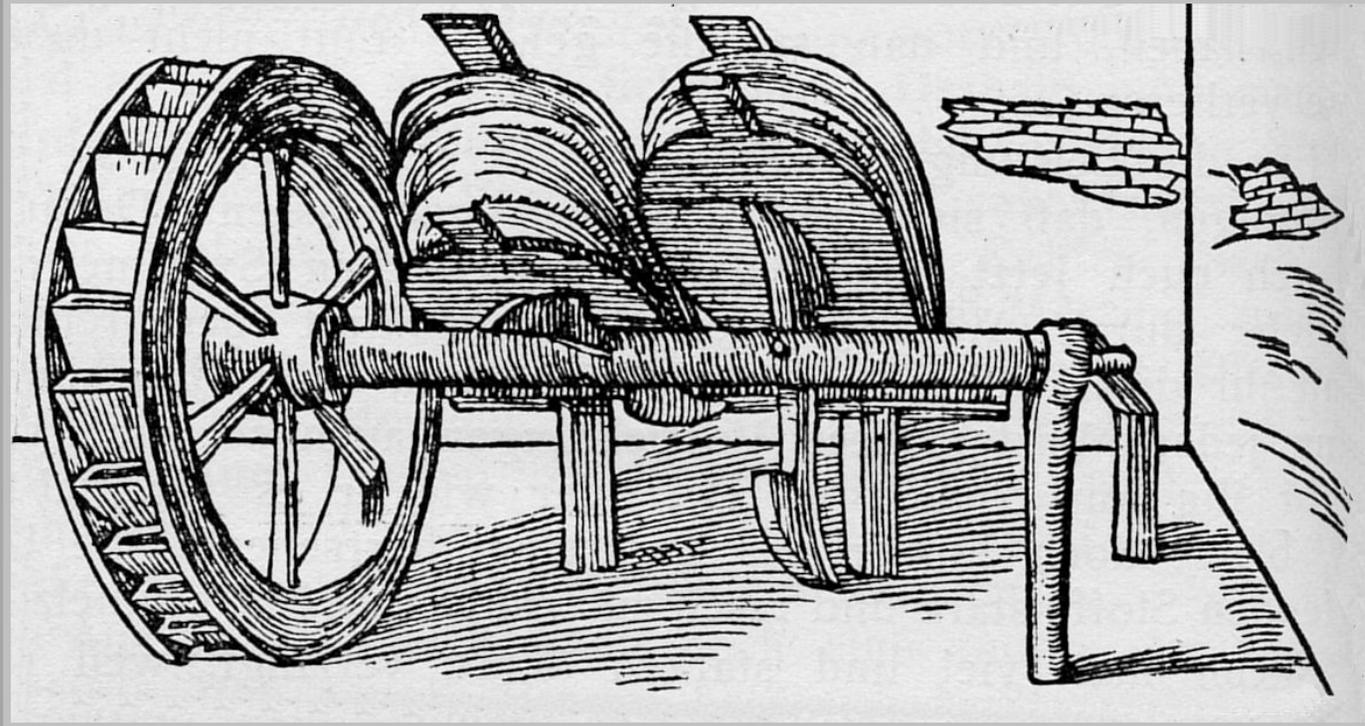
# Ca. 1530: Operation of the Bellow by Jumping



Biringuccio, Pyrotechni, Venice, 1540

The assistant pulls the rope upwards and then jumps alternately on one and then the other bellows.

# Ca. 1540: Operation of the Bellows with a Water Wheel



Biringuccio, Pyrotechni, Venice, 1540

A water wheel is turning a shaft. The cams on the shaft are lifting the bellows

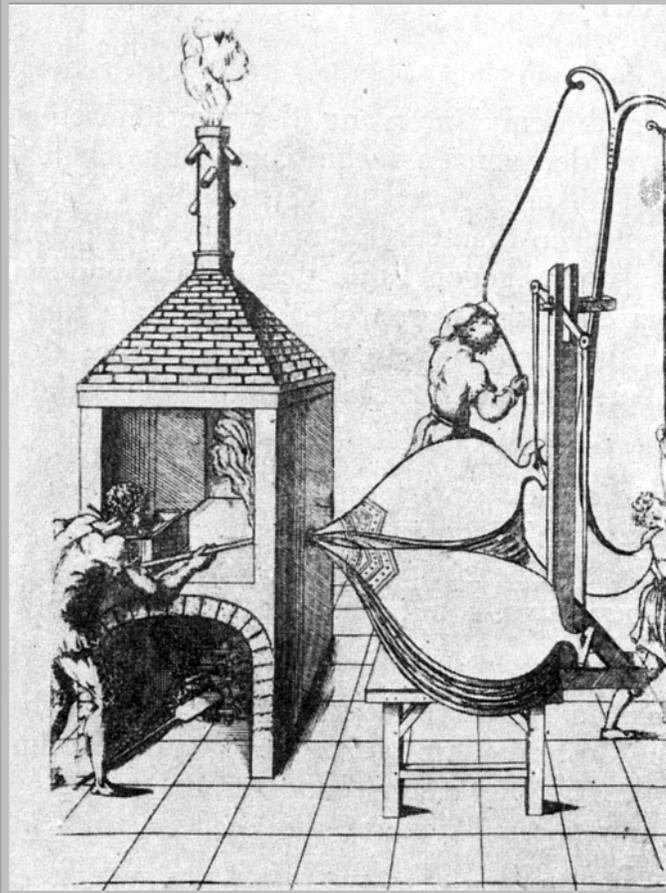
# Ca. 1550: Large Cannon Foundry



Unknown artist, ca. 1550, Admiralty Library, London

Assistance are skimming the molten bronze in the furnace. On the left a couple of workers are cleaning the casted cannon barrels. On the right two persons are feeding the furnace with bronze ingots.

# Ca. 1570: Small Casting Furnace



The founder checks the condition of the melting

Superfluous carbon is being removed by adding oxygen with two bellows

J. Besson, *Theatrum Instrumentarium et machinarum*, Lugduni, 1578

# Ca. 1600: Bronze Founder

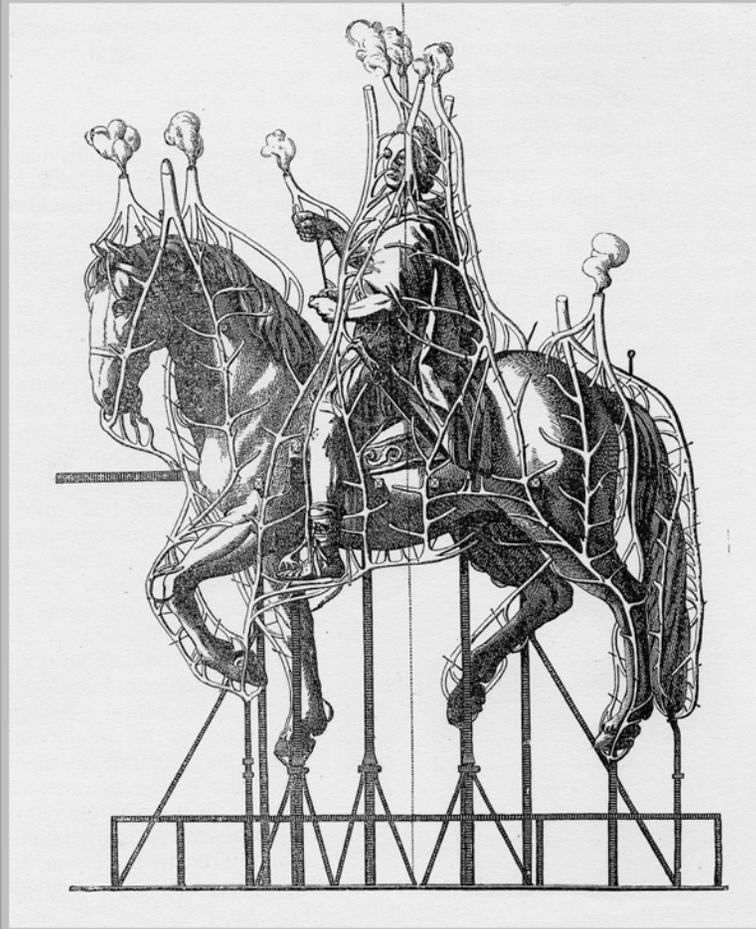


Unknown artist, Wood Cut, ca. 1570

Components made by sand casting:

Bells, cannon barrels, mortars, vessels and beaters.

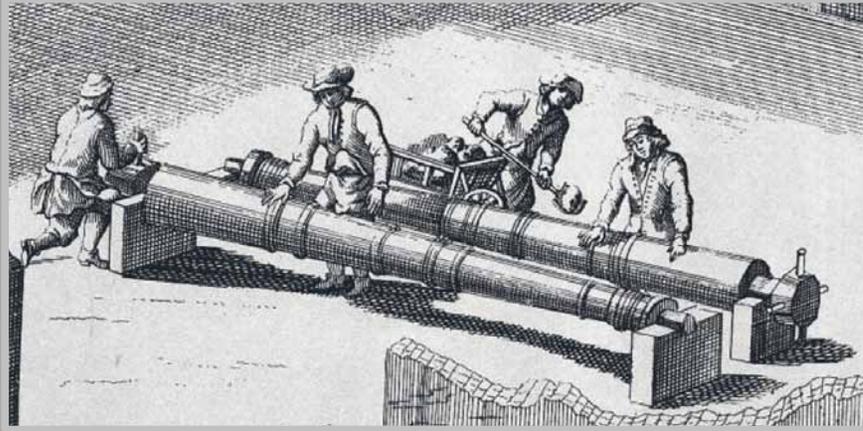
# Ca. 1740: Bronze Statue Ludwig XV



The Drawing made by Bouchardon shows the mold and its sprue-holes and vents of the horseman Ludwig XV.

E. Bouchardon, ca. 1740

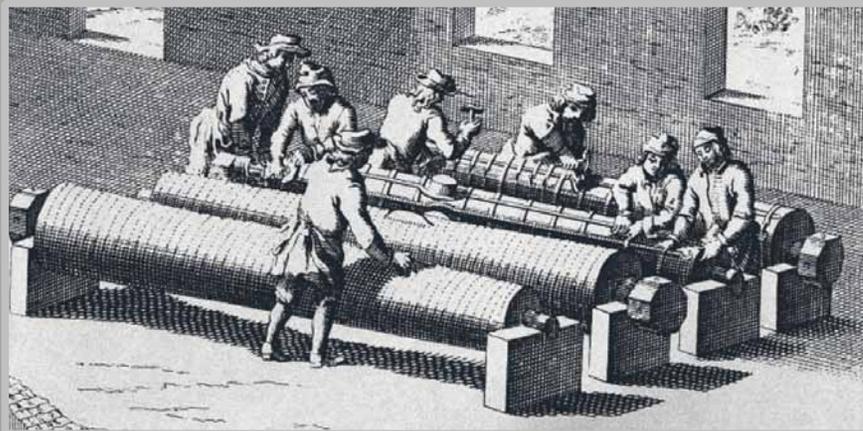
# Ca. 1780: Making of Mold Core



Workmen are winding thick rope onto the core, which will serve as a foundation for modeling the clay.

A model in clay of the cannon to be cast is built up on the rope winding of the core.

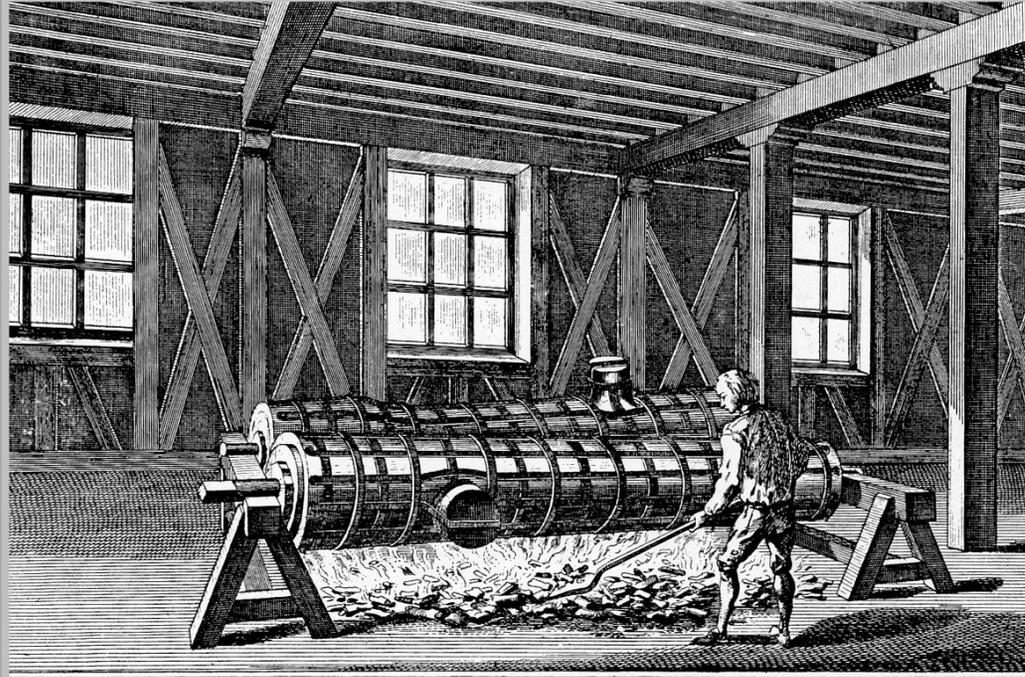
Trunnions are affixed and the embellishment of the cannon imprinted by wooden blocks.



Next the model is covered with a greasy mixture of oil and tallow so that it can be slipped out of the mold which will be formed around it. The mold itself is built up of a different clay and is girdled with iron bands so that in the process of casting it will hold its shape.

St. Remy, Manuskript, ca. 1780

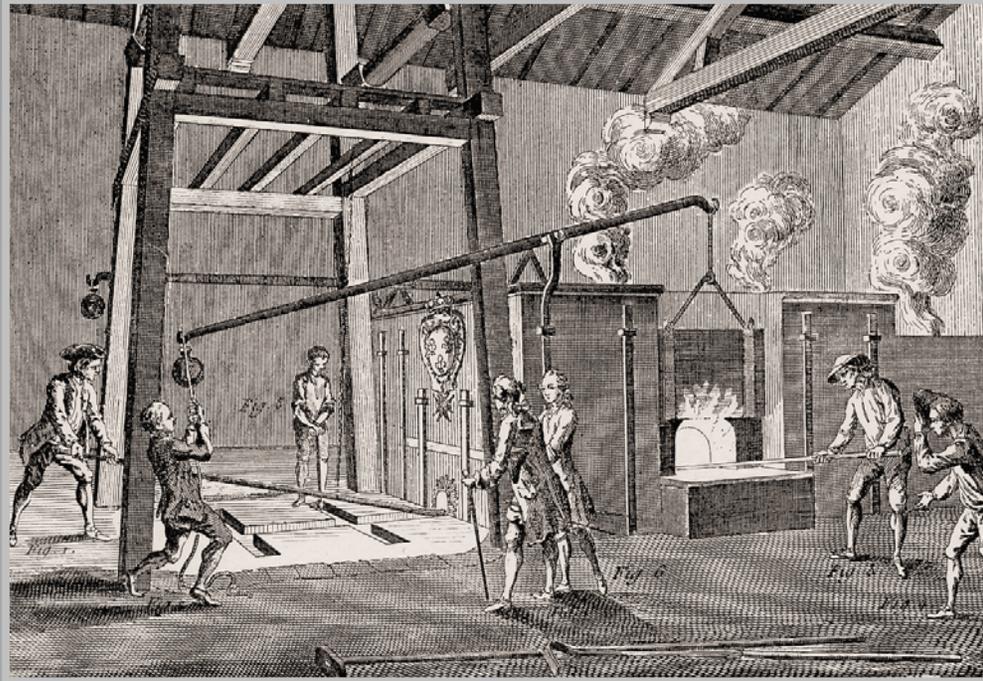
# Ca. 1780: Drying the Mold



Charles Ffoulkes, *The Gen Founder of England*, Cambridge, 1937

A fire is built right on the workshop floor under the mold to dry the clay. Though shown only once, this operation has to be repeated a number of times, for both model and mold are built up of layers of clay, each of which has to be dried before the next can be applied.

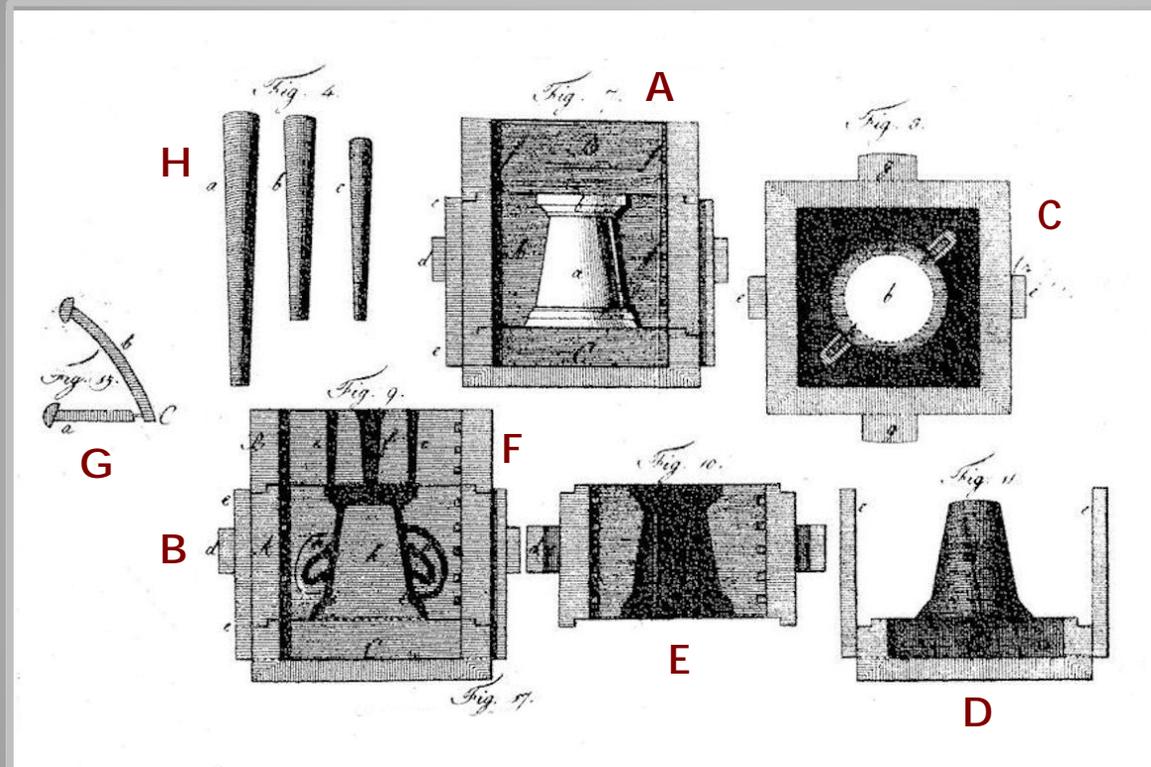
# Ca. 1780: Casting the Cannon Barrel



Charles Ffoulkes, *The Gen Founder of England*, Cambridge, 1937

Bronze gun metal is melted in the foundry furnace. Impurities are skimmed off by the puddler directed by another workman whose attention is fixed upon the melt. Two cannon molds are fixed in place in a pit below the foundry floor. When the furnace is tapped by the master founder, the molten iron surges out into channels which communicate at the end of each lateral transverse with an opening in the mold. Molds are filled one at a time, and the workman stops the opening of the one nearer the furnace until the casting of the further one is complete.

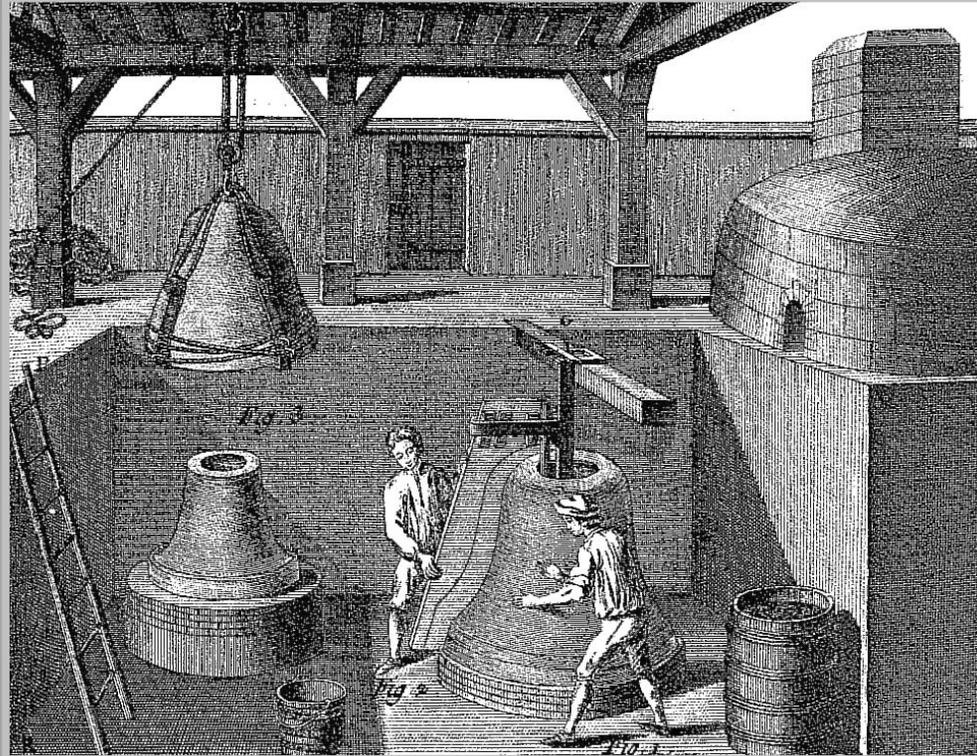
# Ca. 1803: Mold for Chemical Vessel



- A Mold with vessel
- B Cross section of mold
- C Cross section of center part
- D Main core
- E Mold center part
- F Mold top with sprue
- G Handles made in wax
- H Sprue and riser

Arnold Vogt, *Aus einem Guss*, Leipzig, 1899

# Ca. 1890: casting of a Bell



Arnold Vogt, Aus einem Guss, Leipzig, 1899

The alloy, 75% copper and 25% tin, is fused in a bee-hive furnace at the upper right. The floor is cut away along the lines P and G to let us see down into the casting pit, where the outer mold is suspended on a pulley. It can be lowered to fit over the inside form like a hat. The bell will be poured in the space left between the two molds. The workmen ready a mold to receive its charge of molten bell metal.

**End**