Pewter Spoon - 15th Century, England

Materials Used

Soapstone
Lead-free Pewter

Tools Used

Wood carving tools
Saw, Chisel, Hammer
Jeweler's tools
Modeling clay
Sanding board
Dremel rotary tool
Electric Hot-Pot

Introduction

This is my first attempt at a soapstone mold for pewter spoons. The goal of this mold was to produce a usable spoon mold that has interchangeable mold sections for different spoon knops (finials). This was modeled after many typical mid to late medieval English spoons such as that in Figure 1.

Figure 1 – c15th century English Spoon; pewter; the shank ending in a diamond point; maker's mark in the bowl. (British Museum, MCM3563)

Summary

Mid to late medieval English spoons typically shared similar characteristics: fig-shaped bowl and a hexagonal handle (seen in Figure 1). The knop, or finial, of the spoon varied greatly by time and area. The typical pewter mix found at this time was 97% tin, 1.65% lead and 1.42% copper. These spoons may have been made in a variety of mold types but evidence exists stone molds being used.

Creating a usable mold for the spoon dish was going to be tricky and I only wanted to do it once. I resolved to make a multi-useful mold that had an interchangable section to allow for different knops. For this project, I used soaptone to create a registered 4-part mold. I worked the mold with a large variety of tools, including dremel, wood working and jewelers tools and sandpaper. I used an electric melting pot to cast lead-free (98% tin, .5% copper and 1.5% bismuth) pewter I had considerable difficulty in getting the dish to fully fill as well as with some weak spots in the handles. I will be continuing to refine this mold!

Pewter Spoon History and Characteristics

Base metal, or pewter, spoons have been produced in England throughout much of our period; finds date easily back to the 13th century. Most of the finds from the 14th through the 17th century conform to the same style: fig shaped bowl with a hexagonal stem. (Price, 7) There are certainly variations on that style in size, metal type and decoration. For more examples of medieval English spoons, see Appendix B.

The main variation seen on spoons throughout history is in the knop, the term for the spoons decorative tip. There are many examples of acorn, ball and diamond-shaped knops as well as more fanciful knops like people (maidens, monks, heads) and even creatures. (Price) Many spoons also show a touchmark or maker's mark, typically at the top of the bowl, recording the pewterer (or silversmith) that made the spoon.

The length of the stem can vary quite a bit as well. This ranges from long stems (2-3 times the length of the bowl) to shorter ones closer to a single bowl length, such as in Figure 2.

Figure 2 – 15th-16th century English spoon; pewter; flat bowl, damaged; handle ending in an unrecognisable knop, perhaps a horned grotesque head. (British Museum, MCT1413)

Materials

The composition of pewter in this time period varied quite a bit on area and application. Items are found with very high lead content, referred to as 'lay metal'. 'Fine metal' referred to a tin/copper alloy that England was famed for and exported heavily. Spoon alloys vary broadly but an example alloy is 97% tin, 1.65% lead and 1.42% copper. (Price, 11)

Materials used for casting molds included wood, baked clay, cuttlefish bone and stone (Figure A.3). While many types of stone were used, a close-grained stone like soapstone, or steatite, worked very well. (Spencer, 9) Soapstone quarry locations in Europe included Norway, Germany, Italy and Greece.

Manufacture

Spoon molds may have been made from several different materials but we have example mold fragments of a 15th century English stone mold. (Figure 3)

No significant records have been found detailing the tools used to carve stone molds, however we do have records that pewterers may have been recruited from jewelers so likely typical tools would have been used. Records have been found of pewterers with hammers, chisels and rasps but this is likely for finishing work, not the main carving. (Homer, 72)

Figure 3 – c. 15th century English fragment of a stone spoon mold. (Homer, 66)

My Materials and Tools

Pewter Alloy

Most pewter alloys in the Middle Ages used did contain some lead, though the 'Fine Metal' used by the London Pewterers Guild did not contain any significant lead. I do not care to use lead in my pewter for all the obvious brain liquefying reasons. The pewter that I am using closely matches that used for a bell in Canterbury; 98% tin, .50% copper and 1.5% bismuth and it has a melting point of about 475ºF.

Soapstone Molds

I use Brazilian soapstone for my molds as it is very easy to carve, holds intricate detail and will last through hundreds of castings. I don't have access to any European soapstone but this soapstone has the same qualities. Appendix A has more information on casting in 2 and 3 piece molds.

Carving Tools

I typically hand carve the mold using woodworking and stone carving tools as well as a selection of small jeweler's bits that I used with my hand drill. For this spoon mold, however, I also included saws, dremels, hammer/chisels and other small hand tools. I used modeling clay as well as some carbon paper to help me match up the convex and concave sides.

For smoothing the mold, I had to create a sanding board with a hole inside to allow for sanding around the convex piece. (Figure 4)

Figure 4 – Sanding board with cutout for convex piece.

Casting Tools

In medieval times, the casting would be done from a crucible heated up in a forge of some sort. For safety and cleanliness, and lack of an apprentice to tend the fire, I used an electric hot-pot for this process.

Challenges

For this spoon mold, I had to start by creating the main convex (protruding) mold piece and this was quite tricky. I started with a thicker soapstone piece and carved away everything that wasn't the convex bowl. using saws, dremels, hammer/chisels and small hand tools. The key goal of this was to make everything around the bowl *flat* so that it could be matched up to the opposite mold piece and not allow for significant flashing or metal loss. To accomplish this, I took a flat board and affixed some thick sand paper (actually a cutting from a belt sander belt because I really need to restock my sand paper!) I then cut a hole in the center of the board/paper larger than the spoon bowl so that I could fit the board around the spoon bowl and sand everything else, leaving the bowl untouched. (Figures C.1 and C.2 in Appendix C)

Once I was happy with the shape of the convex bowl, I had to transfer this shape to the other flat side to carve the concave bowl. I did this with a combination of clay, sharpies, carbon paper and possibly voodoo (I was using whatever I had at hand… this was quite an experiment!) I then carved the matching concave bowl and continually checked it against the first side, largely using carbon paper, to check for the fit. (This process took me months because I was afraid to rush it and ruin the spoon!) (Figure C.3 in Appendix C)

During pouring, I had quite a few problems getting the bowl to fully form, creating quite a few "diet spoons". (Figure C.5 in Appendix C) To combat this, I used a significant amount of talc powder (soapstone dust, also known as baby powder) on the surface to break up surface tension and allow the mold to fill. I also had to put in two internal air vents to allow air trapped inside the bowl to escape (Figure C.7 in Appendix C). I found that pouring in fast (dumping) helped to decrease the air bubbles.

Air venting is often a trick with complex or large molds as the interior of the mold will not allow air to escape once the outer edge is poured. For added air venting, I drilled several very small holes from the interior of the through the bottom of the mold and met this with a hole to the side of the mold and then stuffed it with straw to keep any stray pewter inside the mold. This type of process can be seen as pockmarks on many extant badges and can be seen from the holes in the interior and side of the mold in Figure 5.

Figure 5 – Mold showing inner air vent hole that vents to larger side hole. Also show many air vent channels. Location: Magdeburg Date: before 1284 (Berger, 43)

The last major issue is a consistent weak spot in the stem (see Figures C.4 and C.8 in Appendix C) between .25 and 1 cm from the top of the stem. This weak spot is due to the pewter contracting as it cools. Ideally, the weak spot is located at the sprue as it enters the mold (the thinnest spot of the mold) but it is in the stem instead. I believe that this is due to the join between the main spoon and knop molds allowing enough decrease in pressure for the weak spot to develop. It is not present 100% of the time but needs to be fixed!

Next Steps

This is the first success of this project but I intend to continue under the weak spot issue is solved. I will widen the top of the step out a bit to help prevent that contraction there.

Once the spoon is pouring well, I will move on to more elaborate knops to help make this project useful for largess, fundraisers or even site tokens.

The last item that still needs addressing is my makers mark. Since I have no official guild to register a mark with, I am in the process of registering a badge with the SCA College of Heralds to use for this purpose. Figure 6 shows my badge design and Figure 7 shows examples of marks of the time.

Figure 6 – Badge currently in commenting: Argent, a tree eradicated proper between a capital letter G and a capital letter A sable.

Figure 7 – Examples of 14th-16th century spoon marks (Price, 23)

References

Berger, Daniel. Herstellungstechnik hoch- und spätmittelalterlicher Kleinobjekte aus Zinn (Production processes of small pewter objects in the High and Late Middle Ages). (http://www.academia.edu/1261389/Herstellungstechnik_hoch-_und_spatmittelalterlicher_Kleinobjekte_aus_Zinn_Production_processes_of_small_pewter_objects_in_the_High_and_Late_Middle_Ages_ >

British Museum Collection Database. "MCT1391" www.britishmuseum.org/collection, British Museum. Online. Accessed 4/20/2017.

British Museum Collection Database. "MCM3563" www.britishmuseum.org/collection, British Museum. Online. Accessed 4/20/2017.

British Museum Collection Database. "MCT1413" www.britishmuseum.org/collection, British Museum. Online. Accessed 4/20/2017.

Homer, Ronald F. 'Tin, Lead and Pewter.' in Blair, John. Ramsay, Nigel. English medieval industries: craftsmen, techniques, products. The Hambledon Press, London. 1991.

Koldeweij, Jos. Geloof & Geluk Sieraad en devotie in middeleeuws Vlaanderen. Arnhem, Terra Lannoo, 2006.

Museum of London Collection Database. "74.332" collections.museumoflondon.org.uk, Museum of London. Online. Accessed 4/20/2017.

Price, FG Hilton. Old Base Metal Spoons: A guide to antique pewter cutlery and its marks. JM Classic Editions. 2007. ISBN: 978-1-905217-67-0.

Spencer, Brian. Pilgrim Souvenirs and Secular Badges (Medieval Finds from Excavations in London) TSO. c1998. ISBN: 0112905749.

Wolf, Michele. "Intermediate Pewter Casting in Soapstone. Beyond a Simple Site Token." 2009. 10 Jan. 2010. <http://myweb.cableone.net/amefinch/Giliana/Intermediate_Pewter_Casting_in_Soapstone.pdf>

Appendix A – Casting in Soapstone

To create pieces with designs/elements on multiple sides, the blocks of soapstone must first be registered together, so that they fit together the same way each time. Figures A.1 and A.2 show examples of mold registration. A two part mold can be used for flat items with details on one or two sides. A three part mold is used for items that have details on several sides or would be tricky to pour based on open work.

The shape needed must be carved into the soapstone and then any designs are carved into the stone. The picture must be carved in reverse, both left to right as well as depth-wise.

Once the shape and design are carved, a sprue (or funnel) is added to channel the molten pewter into the mold and add weight to press the metal into the design.

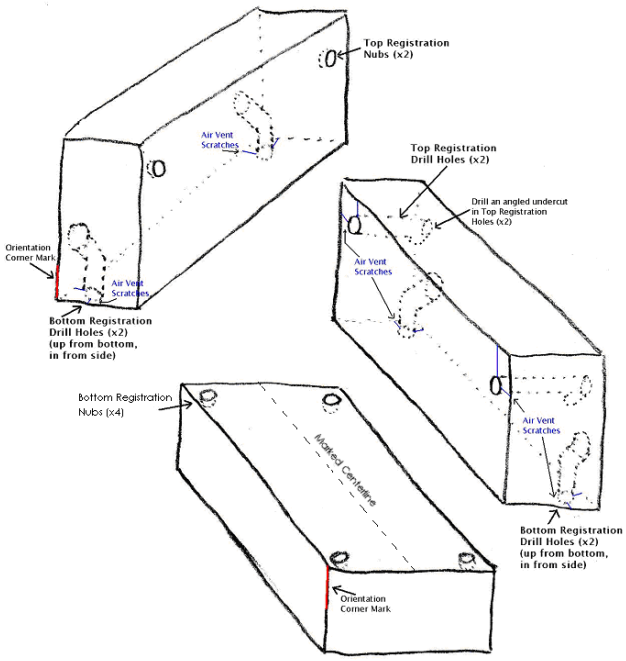

Figure A.1 - Diagram of Three-Part Mold Registration (Wolf, 3)

The pewter is melted and poured into the sprue. Once the metal is cooled, the piece is removed and the sprue clipped off and remelted.

The piece can be finished using files or a grinder as needed.

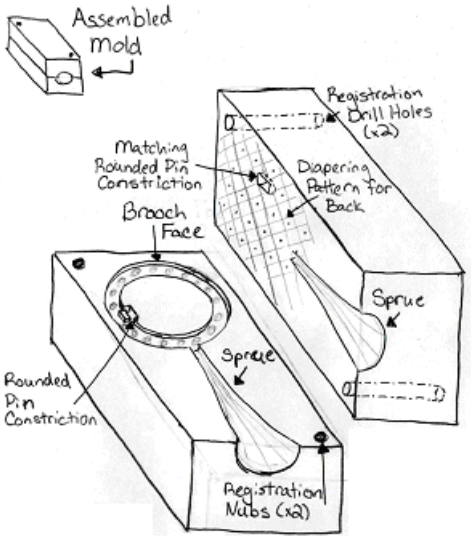

Figure A.2 - Diagram of Two-Part Mold Registration (Wolf, 3)

Figure A.3 – 15th century soapstone mold (Koldeweij, 147)

Appendix B – Survey of Medieval Spoons

Figure B.1 – c1500 English pewter spoons (British Museum, MCT1391)

Figure B.2 – c15th century English Spoon; pewter; the shank ending in a diamond point; maker's mark in the bowl. (British Museum, MCM3563)

Figure B.3 – 1490 London silver spoon with a fig-shaped bowl, hexagonal stem and diamond knop. (Museum of London, 74.332)

Figure B.4 – 15th-16th century English spoon; pewter; flat bowl, damaged; handle ending in an unrecognisable knop, perhaps a horned grotesque head. (British Museum, MCT1413)

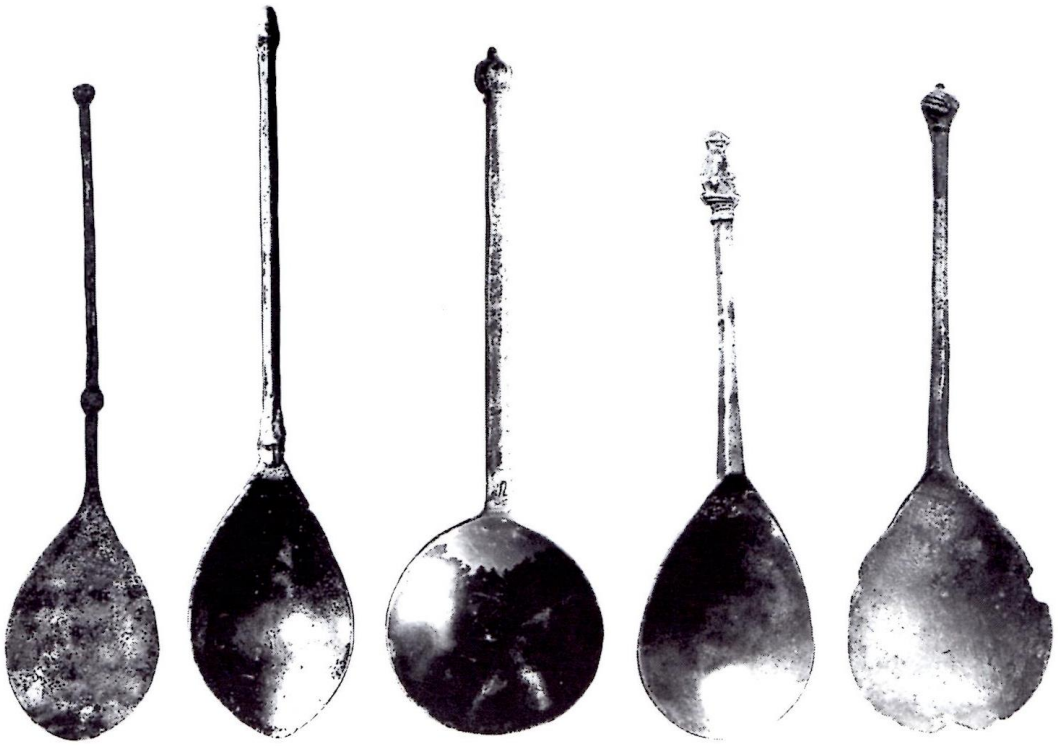

Fig. 28 Five pewter spoons. *Left to right*: *c.* 1300; *c.*1300; 14th century; 15th/16th century; 15th/16th century. Not to uniform scale, *c.* 150-165 mm.

Figure B.5 – Collection of English pewter spoons (Homer, 74)

Figure B.6 – c. 15th century English fragment of a stone spoon mold. (Homer, 66)

Appendix C – Progress of a Spoon

In case the reader is interested in the visual progress of the tortures of spoon mold creation.

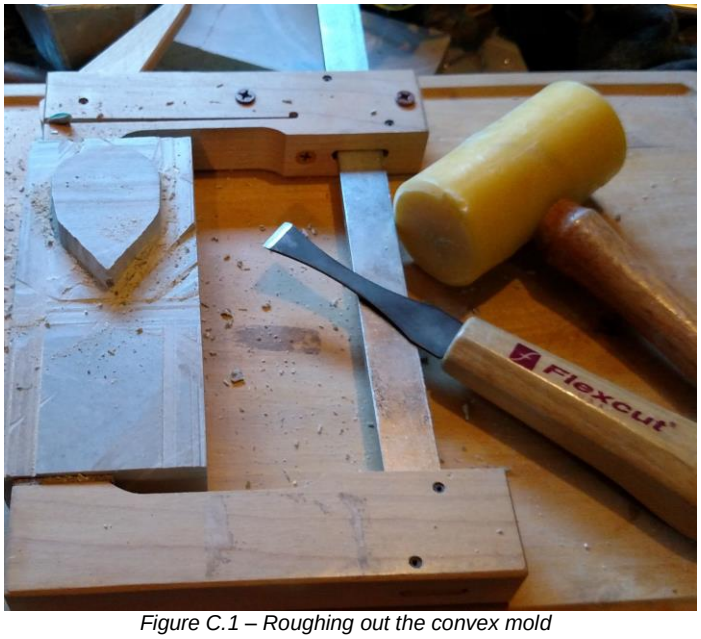

Figure C.1 – Roughing out the convex mold

Figure C.2 – Sanding the base of the convex mold

Figure C.3 – Roughing out the concave mold

Figure C.4 – Example of weak spot near top of stem

Figure C.5 – Progress of filling in bowl of spoon. These spoons would be quite effective "diet spoons", allowing for little actual food to be eaten.

Figure C.6 – Spoon mold, including original throwaway knop

Figure C.8 – Simple knop with continuing weak spot issue.

Figure C.7 – Spoon mold with simple knop mold top and completed spoon. Note two air venting holes in concave side.

Figure C.8 – Finished spoon front and back