The Locksmith

Excerpted from “The Smithy: Blacksmith, Nailsmith, Locksmith, Tinsmith and Gunsmith”

From the Collections at Historic Bethlehem [PA]

Despite the occupational title, Bethlehem locksmiths were often masters of several different, yet allied trades. As such, they were probably the most skilled of all the metalsmiths. Indeed, there was considerable overlapping in the metal trades in the 18th century, not only in Bethlehem, but also throughout the colonial world. Locksmithing required the use of forge and anvil. While good blacksmiths could make padlocks and simple rim locks, the locksmith also required the knowledge of lathe turning, spring tempering, rivet and screw making, precise fitting and hole punching.

In the Bethlehem account books between 1756 and 1762, the trade is often referred to as the "locksmith and gunstock maker." Anton Schmidt and his son Anton were not only locksmiths, but also accomplished blacksmiths, tinsmiths, and plumbers (those who work in sheet lead). The locksmith worked in tin plate, sheet iron, brass, steel, pewter, copper, lead, and wood and made and repaired not only locks and keys, but also saddle mountings, small tools, hinges, screws, and gunstocks. Although the Moravians were pacifists, they saw nothing immoral in the production or the repair of firearms. During the French and Indian War (1755-1763), for example, the locksmith repaired dozens of muskets, swords, and other military equipment for the Pennsylvania Provincial troops.

In Bethlehem's account books, the wide range of work accomplished by the locksmith is evident from the following excerpts:

May 19, 1765	Chars. Folck for mending 2 rifles	£ – 4.9 –*
June 30, 1756	Sebastian Graf for a Lock & iron and iron Bands about a chest for his daughter	£ –.8. –
January 31, 1757	Oil Mill for mending a shovel	£ –.1. –
February 24, 1757	For lock and hinges on a box	£– .8.–
March 22, 1757	For Tin work & 6 screws on the Coffin	£1.10.–
March 3 1, 1757	For saddle mountings	£ –.4.–
May 31, 1757	Dyer for an Iron Ring on a Kettle	£ –.1.6
July 30, 1757	Potter for incompasing with Brass and graving out a mould for stoves	£ –.4. –
May 31, 1758	Joyner for Locks, Hinges, Screws &c.	£ –.16.6
September 18, 1758	John Lischer Dr. to Locksmith for stocking & repairing a Rifle	£1.5. –
May 31, 1759	For mending a Coffee mill	£ –.1.6

July 3 1, 1760	Pewterer for mending a Spoon mould	£ –.2. –
August 30, 1760	For mending a saw	£ –.2. –
October 30, 1760	Sope Boiler for an Iron Ladle	£ –.5. –
July 31, 1761	Tanner for mending a Chafing dish	£ –.2. –
	*prices are given in pounds (£), shillings (s), and pence (d) in the form £.s.d	

One of the most interesting groups of entries, however, is that of the production of "pipe heads." Thousands of clay tobacco "pipe heads" were produced by the locksmith between 1756 and 1762. Apparently because of his ability to acquire and/or make molds, the locksmith and not the potter made clay pipes in Bethlehem. The pipes were fired by the potter and then transferred to the Strangers' Store for resale.

With the heavy schedule of building in early Bethlehem, it is easy to understand why the skills of a locksmith were so necessary. The success of the locksmith probably depended on two aspects of the lock-its appearance and the complexity of its mechanism. Because most of the locks were enclosed in a case that was mounted on the exterior of the door, it was incumbent on the locksmith to make his product attractive. Most of these cases had pleasing rectangular shapes and were made of sheet iron, while the cases for richly furnished houses were made of brass.

The knobs were generally made of brass and were either round or egg-shaped. There were usually two escutcheons on the outside of the door, one for the knob and the other for the keyhole. The earliest knobs were made of three pieces of brass. The round or egg-shaped portion was made of two halves soldered together: a back bar with a square hole in it was attached to one side so that the knob could shift the latch-bolt. Later, brass knobs seem to have been stamped from one piece of metal, to which the back bar was attached in the usual manner.

It has been pointed out that the work of the locksmith required ingenuity and accuracy. The cases were usually fitted with a precision that suggests machine production. The front plate and the rim, or edge, of the lock were joined with small rivets, which were so perfectly fitted and turned with a hammer that their location is often difficult to detect. The various bolts were probably rough-forged and then filed to their final form. The bolts on fine locks were sometimes draw filed and polished before they were finally fitted within the case.

The ingenuity of the locksmith was challenged in the arranging of the impediments, or wards, within the lock case. These circular fins, attached to one or two plates of the lock, were placed concentrically with the keyhole and created the need for the various slots, called steps, in the bit of the key. Their value from a practical point of view was greatly overrated, for a clever "lock-picker" could take a key with a blank bit, cover the bit with wax, and quickly get the impression of the wards on the key. With the imprint of the wards on the bit, he could quickly file or saw them and open the lock. It was also possible to fabricate a key with a narrow bit with a wide end, which would miss all of the

wards, but still throw the lockbolt in the usual manner. These keys were usually long and thin and were called "skeleton" keys.

It is evident that the art of key making was just as important as the manufacture of locks. The usual door key consisted of three parts, the bit, bow, and stem. Keys were roughly forged to the approximate shape and then the lathe worker and the filer took over the work. By piercing the bow and bending it at a right angle, the stem of the key could be placed on a lathe and given a round form. Any round ornamentation on the stem was also put on at this time. The apertures in the bow and bit were formed by punching, sawing, or filing, or a combination of all three processes. A key had to be made of good metal to withstand the constant pressure on the bolt, which was difficult to move at times. The best keys were made of mild steel which was soft while it was being made, but was later case-hardened. This procedure allowed the outer surface of the key to be hard and withstand much wear while the inner portion of the key was soft enough to twist before it would break. These keys were called "steel" keys.

The most common type of door lock used in America is called a rim lock. The case and keeper were made of brass or sheet iron, and were attached to the surface of doors by nails or wood screws with round or oval heads. Most of the rim locks used on outside doors were of the three-bolt type. There was a spring latch-bolt that moved horizontally with the knob. (A well known variation of this type was the English "Carpenter" lock in which the latch-bolt moved vertically instead of horizontally). The main bolt was moved with a key. When the bolt was thrown forward, the door was locked; when it was thrown backward, the door was unlocked. A spring was sometimes added to the main bolt assembly to complicate further the opening of the lock by a person who did not have the correct key. A night bolt was frequently located on the bottom edge of rim locks; it could be operated only by hand on the inside of the door. Some locks have only a main bolt and a latch-bolt, while other have only a main bolt. The latter types were usually used on inside doors.

At least one special type of rim lock was used in Pennsylvania where German rather than English traditions were followed in lock making. This lock differs from the rim locks previously described in that the latch-bolt is moved by levers instead of knobs. They are of the three, two, and one bolt types, and have a part called a striker instead of a keeper. They are made completely of iron, with only a very few exceptions.

A variation of the "Dutch" or "German" rim lock is an early latch-lock, which is attached to only one plate mounted on the surface of the door. The latch is moved by levers or knobs on the inside and outside of the door. The unique feature of this lock is that the lever on the outside of the door is attached or detached by twisting it "off" or "on." The door is locked by twisting the lever off and placing it in the owner's pocket or under the door mat. This latter procedure seems to have been a universal custom and proof of the statement that "locks are only for honest people."

Another type of lock used throughout the period when locks were made by hand was the stock lock. It is said that it was called a "stock lock" because the case was made of

wood and the mechanism was made of metal. The case was usually made of oak wood and the metal parts of iron; however, some of the more expensive models had brass bolts and key holes were bushed with brass fittings. The outer surfaces of the case were also fitted with brass inlays to make them more attractive.

A special type of stock lock was called the Bambury lock. The mechanism of the common stock lock was made completely of metal and mechanism was inletted into the wood. The mechanism of the Bambury type was attached to the case of wood, a procedure which was less costly and less durable.

Throughout the period of handmade locks a great many variations of door locks were made, as well as many lesser locks, such as the well-known padlock. The most frequently used padlock in America seems to be the one, found principally in Pennsylvania, which is shaped like a question mark with a bar across the opening. Very few signed locks of this type have survived; none have been identified as the product of an American craftsman. It seems logical to assume that most of these locks were made in Germany and that a small number were made in Pennsylvania.

Up to the 18th century, lockmaking principles had not changed in three hundred years or more. The nineteenth century, however, is frequently referred to as a period of great inventiveness in America in which locksmithing certainly must be included as one of the major activities of the time. During the middle of that century a period known as the "Great Lock Controversy" occurred, in which every locksmith seems to be engaged in picking his competitor's locks. An American named Hobbs bragged that he could pick any lock and made good his boast by opening all the locks made in England and exhibited at the Crystal Palace in London in 1851.

Linus Yale, Sr. was one of the first men to make real progress in producing a lock that could not be "picked." His son, Linus, Jr., improved on his father's innovations by producing machine-made locks around 1840. In 1861 and 1865 he took out patents on what is now called the Yale cylinder lock. The Yales were joined by other lock manufacturers and today the modern cylinder lock with its tumblers and fitted key seems to be about as good as a lock needs to be. (From: Henry J. Kauffamn, Metalworking Trades in Early America, 1995.)

Research has not been done on the kinds of locks produced by Bethlehem's locksmiths. However, Bethlehem's locksmiths managed to survive well into the 19th century, largely by adapting and diversifying their businesses. Ernst Gehbe tried a stove business for a while. Joseph Micksch probably went the farthest in attempting to diversify his business when he tried to open an oyster shop in 1824. Eventually, however, the locksmiths succumbed to the era of improved transportation, specialization, and standardization.