

# ENGLISH FURNITURE LOCKS

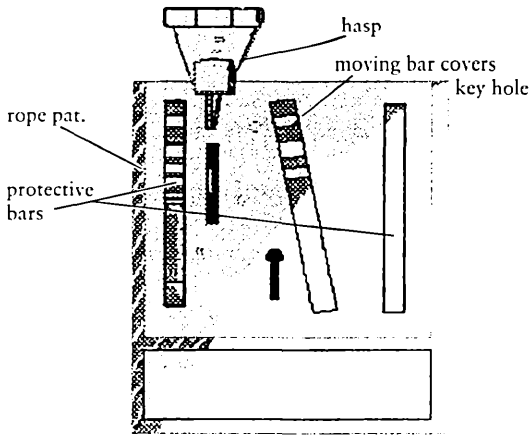
J. A. Berry

The history of the early English furniture lock follows that of the furniture to which it was attached. Furniture from the twelfth to the fifteenth century is scarce but the most abundant remaining example of mediaeval furniture available today is the chest, which was used by the households to lock away valuable plate and fabrics after ceremonial or formal occasions. The households of the time travelled to supervise functions and administer estates widely separated in distance, taking with them their possessions secured within chests. The chests were kept locked when not in use to protect their contents against interference from servants, and visitors taking advantage of the common household policy of open access practised at the time.

One of the reasons that chests survived in such large numbers is because they were deposited in churches for safekeeping.<sup>1</sup> Church officers habitually used chests to store ecclesiastical valuables and rarely discarded their furnishings on grounds of style or fashion. Many mediaeval chests have iron strengthening bars around them and two or more locks with movements sunk into the wood. The hinged hasp, when located in the lock plate, was protected from being forced by vertical iron bars attached either side (figure 1). It was common for chests to be bound in iron straps and fitted with a number of locks. The iron straps were for extra strength and the multiple locks existed to facilitate additional security in as much as there was one key holder for each lock. An alternative method used was to seal the chest to indicate the last person with access.

The multiple key holder system led to the need to force open one of the locks in the inevitable event of a lost key. This meant there was a continuing need to replace damaged locks, the result of which is evident today in pieces where replacement locks do not match the originals. During the first half of the seventeenth century elaborate shaped lock plates were produced by blacksmiths. Common amongst the designs was the semi-armorial shape, that frequently included stopped chamfers around the edges and surmounted by a crown. The locks of the time were relatively simple devices but few early examples survive. However, a good example of original locks of the period (c. 1500) can be seen at York Minster fixed to the armoires in the Zouche Chapel. These are typical of pre-1500 period with slightly concave edges to the square lock plates. Some examples of locks from this period have the addition of projecting trefoil corners. The locks on the late thirteenth-century armoire at Chester Cathedral have small oval escutcheon plates and are no more than key operated bolts. After chests, armoires are the most prominent survivor of the period, although in far fewer numbers. The armoire was used for a similar function as the chest, although occasionally they were used for the storage of food and were either a fixture built into the fabric of the building or free standing.

It was in the sixteenth and seventeenth centuries that some of the finest lock manufacturing took place in England and examples found on chests of that period



1. Wrought iron chest lock, fourteenth or fifteenth century

include some with a revolving barrel and tumbler. It was during the Elizabethan period that keys and escutcheons were pierced and crafted to a high standard, particular attention being placed on the key bow. During this time, the locksmith gained precedence over the blacksmith. By the seventeenth century the development of industrial centres caused concentration of locksmiths in specific areas.

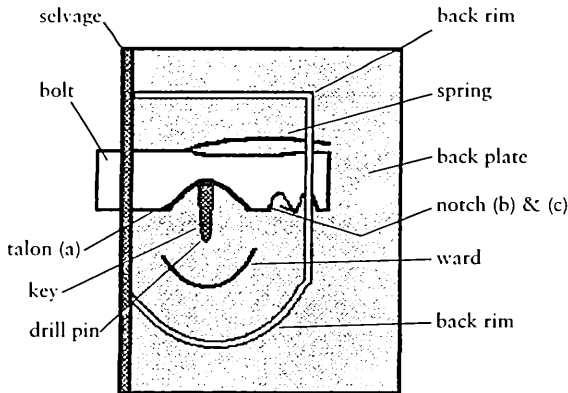
The greatest concentration in England was in the Wolverhampton area, and in particular, the small town of Willenhall, which was the greatest provider of locks in the country from the middle of the seventeenth century. The Wolverhampton area saw many small towns involved in the lock industry, turning out locks or keys for the growing trade. The area produced a great variety of types, padlocks, house locks, and furniture locks. The manufacture of cabinet locks was concentrated around the hamlets of Short Heath and New Invention in the district of Willenhall, and accounted for twenty four per cent of the lock trade by 1835.<sup>2</sup> Furniture lock manufacturing was the third biggest group after padlocks and rim-locks. Although some goods for special orders were complex and inventive, the vast majority were simple and made by small one man businesses with workshops attached to the rear of the house, the proprietor employing a labourer or perhaps a couple of apprentices. The locks were made from sheet wrought iron purchased as bar or rod and hammered out into workable sheet form by the apprentice each evening for the following day's work. The tools used were simple, and included files, punches, anvils and hammers. Various towns engaged in the trade produced locks of different qualities, the competition was fierce, and in consequence prices were low. There was a popular local legend that if a Willenhall worker dropped a lock he was working on, it was quicker to leave it where it lay and make another, than pick it up. The humour of the people illustrates the harsh trading conditions prevailing at the time. One manufacturer was taunted that some local padlocks only locked once; he retorted, 'At two pence each it would be a shame if they did lock twice'.<sup>3</sup>

The concentration of industry in the Wolverhampton area was in part based on the availability of charcoal wood. By 1686 the local supply from Cannock Forest had been devastated by the demand. There was in the Wolverhampton area abundant supply of

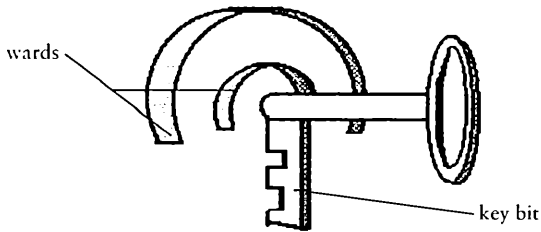
coal and iron conveniently close by. The coal was, on the expiry of suitable supply of timber, used to feed the iron furnaces. Good quality iron was smelted from charcoal (*charcoal iron*) and the very best quality was produced from iron swarf and used in the production of keys. It was not until 1870 that keys were processed in malleable iron, cast after annealing to free it of almost all its carbon content, to become virtually the same as traditional wrought iron.<sup>4</sup> Until early in the nineteenth century there was no mechanisation afforded in the production of keys and locks. The fly press was first introduced, followed by key stamping machines. It was not until the end of the First World War that industrial methods of machine manufacture became common. Until then cabinet locks were produced by forging, pressing and filing the materials of iron and brass, although some brass parts were cast. Iron chests were not prevalent in England until the nineteenth century although there were many elaborate examples manufactured on the continent of Europe. These had simple plain locks protected by wards and were complicated only by the number of bolts included in the mechanism. A fine example with its original keys and locks can be found at Townley Hall, Lancashire. This German iron chest has numerous bolts and is protected by a few wards which can clearly be seen acting on the key when the top is open. The interior lock, fitted to the till or hanging box below the lid, has no wards whatsoever, and its elaborate key with its bit bearing many clefts for the non-existent wards, as with the previously described armoire at Chester, is no more than a lever to push the bolt.

### *The Warded Lock*

Locks used on English furniture prior to 1778 were of the warded type. They were either rim, flush or mortise fitting. The rim lock fitted over the rim of a door with the body of the lock standing proud of the timber. The body of the flush fitting lock was concealed by being cut into the timber. The mortise lock was mortised into the timber, only its flush fitting selvage being visible. The principle of the warded lock is to lay obstacles in the way of any instrument inserted into the keyhole and to protect the bolt from being thrown. These obstacles are known as wards and are attached to the lock plate within the sweep of the key bit, or simply the keyhole itself can act as a ward. Warded locks date from at least Roman times and were in general use until largely superseded during the Industrial Revolution. They vary in complexity from the single thin circle or semicircle of iron or copper riveted to the lock plate, to the solid brass star, anchor, or letter shaped wards which were much favoured, particularly by the French locksmiths who were known for their craftsmanship in manufacture and beautifully fashioned keys. Non ferrous metal was preferred for making wards because iron had a tendency to rust in certain conditions. However, people at the time put great faith in a much indented and notched key bit, indicating numerous complex wards inside the lock. There were no guarantees of course that all of the notches on the key corresponded with a ward within the lock, or that any number of wards necessarily made a secure lock. The reality was that any aspiring thief with a rudiment of knowledge could insert into the lock a blank key with wax smeared on the bit, and obtain an impression of the wards within. This would enable him to cut the key bit around the indicated wards, thus making a skeleton key. Alternatively a piece of bent



2. Back spring lock



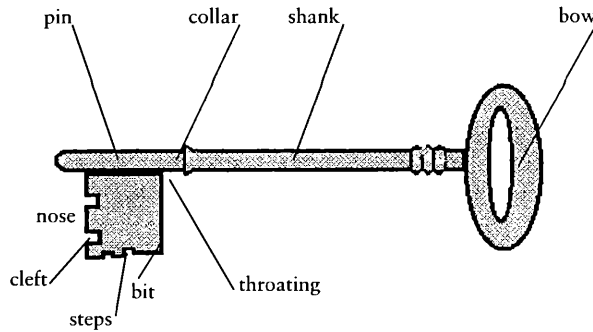
3. Warded lock

wire or pick lock would suffice. Fortunately the picking of locks was not in fashion until the mid-nineteenth century when an epidemic of this type of crime caused the enacting of laws making it an offence to be found in possession of a pick lock.

### *The Back Spring Lock*

Most furniture warded locks were known as back spring locks; earlier types consisted of the part of the bolt furthest away from the keyhole having a sliver of iron split partly away from the base towards the selvage, this protruding sliver was then tempered (so much as wrought iron was able, although a passable spring can be produced from this material sufficient for the purpose). The other side of the bolt facing the keyhole had three indentations; (a) a semicircle known as the *talon* to take the sweep of the key, and (b) (c) two smaller notches which limited its forward and backward movement by engaging under pressure of the spring in an iron back rim which encircles the central pin and is riveted to the lock plate. The head of the bolt passes through the tight fitting aperture in the selvage. The bolt aperture in the back rim is large enough to allow the bolt spring it is compressing to contract and expand when the key forces the bolt upwards as it traverses the talon (figure 2).

The keys for such locks were hollow at the point to allow them to fit over the central pin, which was riveted to the lock plate. This hollow part of the key, known as the *pipe* acts as an additional ward, as neither the pipe or the pin were standard in their dimensions (figure 3).



4. Tumbler lock key.

### *The Tumbler Lock*

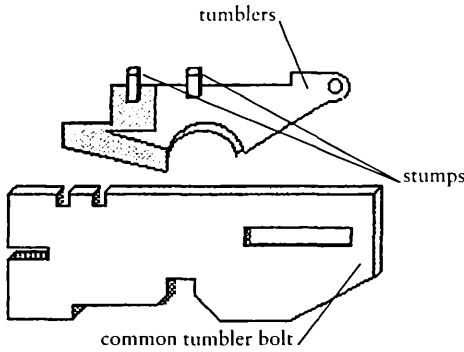
A similar lock, which incorporates a tumbler that was intended to supplement the security of the wards, was commonly used in furniture. The tumbler has a stud which engages in notches cut into the bolt to limit its movement back and forth (as did the previous mentioned back rim). The tumbler is pivoted on a pin, riveted to the lock plate and tensioned by a spring. It lies across the bolt with a curved recess aligned with the bolt talon. As the key sweeps around the talon a step in the bit lifts the tumbler sufficiently to free the stud from its notch in the bolt. It is the fine adjustment required in cutting the step in the key bit that adds to the security of the lock (figure 4).

It is not known when the first tumblers were used, or by whom, or where they were first made. They were certainly used in England in the sixteenth century and frequently found in good quality French locks of that period. In general terms the more tumblers a lock has the more secure it is. There are many variations on the tumbler system, although the principle is the same in all.

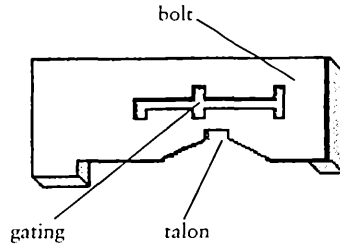
### *The Double Action Lock*

In October 1778 a lock maker Robert Barron patented an improvement on the single tumbler lock. His lock incorporated two tumblers in a warded lock. His specification claims: 'the gating or racking allows a stump on the tumbler to pass through the bolt, or an opening in the tumbler to allow a stump on the bolt to pass through.' These were known as 'double action' locks in that the tumblers slot into the bolt and there are two tumblers (figure 5).

The improvement Barron made was that each tumbler had to be lifted to an exact height to traverse the gating in the bolt (figure 6), too high and the stump lodges in the upper notch, too low and it catches in the lower notch. Steps cut in the key bit locate on the belly of the lever lifting it to the requisite height, that height varying according to the cut of the lever. Each lever was identical except for the cut of its belly which varied giving the variety of combinations required. The Barron lock was a great improvement on the common tumbler lock.



5. Double action lock



6. Bolt gating in a double action lock

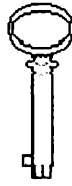
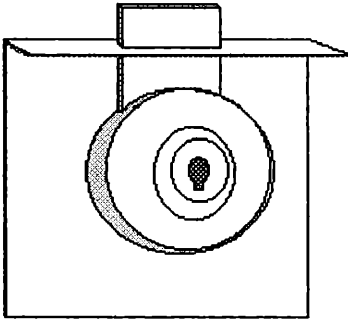
### *The Bramah Lock*

In 1784 an unusually shaped furniture lock was introduced to the market by Joseph Bramah. The Bramah lock is distinctive by its protruding round brass integral escutcheon face and peculiar small key. Its introduction was an important development in lock manufacturing at the time (figure 7).

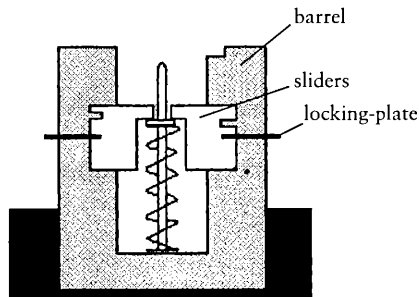
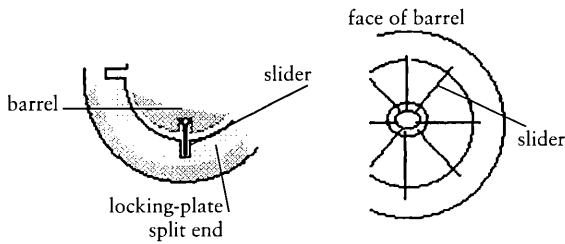
The action of the key requires it to be pressed in its receiving aperture against the resistance of a spring thus aligning tumblers (or sliders) set within its barrel with cut-outs in a metal locking plate embedded around the barrel. The alignment of cut-outs in the sliders and locking-plate allows the barrel to rotate shooting the bolt by rotating a cam attached to the bottom of the barrel (figure 8).

Each slider has a split end which acts a tensioner against the groove in which it is set within the barrel. The key is indented to various depths around its pipe, the indents fitting over the head (or nibs) of the sliders, thus when the key is pressed down against the central spring, the sliders traverse down their grooves so far as the indents in the key permit, at which point notches in the sliders coincide with those in the locking plate and the key rotates the barrel by means of a small bit which locates into the barrel of the lock when the key is fully inserted. It is interesting to note that the key for the Bramah lock was cut first and the lock adjusted to fit the format of the key. This was done by blank or un-notched sliders, pre-blackened, being pressed by the key down their grooves to the full extent, the locking plate scratching the sliders as they pass, indicating where the notches should be cut in the sliders. This method is the reverse of that used on the Barron type lock where the key is cut to match the lock. The Bramah lock was considered a high quality secure lock but was comparatively expensive. In consequence it can be seen mixed with other less expensive locks on the same piece of furniture, the Bramah lock being reserved for the more important door or cupboard. Bramah relied on specially designed machines, which he produced in his own work shops to cut the grooves in the brass barrels and the notches in the sliders, locking plates and keys. This work was carried out with great precision using micrometer screw adjusters attached to the machines.

The machines, which were the source of the lock's success, were constructed by Mr Bramah's top locksmith and kept in a secret workshop to avoid industrial espionage by



7. Bramah lock



8. Bramah lock action

competitors. In 1817 false short notches were introduced to the sliders to counter the picking of the lock. At the same time the notches in the circular steel locking plate were widened at the mouth to give the false indication that the slider had engaged correctly.

Because of the success of the Bramah lock there were many inferior imitations introduced into furniture, some falsely bearing the Bramah name. Although these counterfeit locks superficially appear the same, without Bramah's 'secret' manufacturing machines they were no more than bolts activated by a Bramah type key. There were other similar looking locks legitimately produced by other manufacturers such as a desk lock produced by a man called Turner in 1798. This had a similar round face escutcheon, as in the Bramah lock, however, the workings were completely different. They consisted of two barrels within one another, the inner barrel working on the levers at right angles to the barrels. The beauty of this lock was that the bolts did not protrude beyond the selvage as in other desk locks, giving the lock its name, 'The flush

bolt lock'. Over the following century or more, lock mechanisms were adapted and changed to incorporate additional security measures, which of course were mainly confined to locks used for greater things than that of furniture.

## GLOSSARY OF TERMS

Back plate	Main support plate of lock bearing working parts
Back rim	Rim of a lock between back plate and the cap
Bit	Blade of key projecting from shank (also 'beard')
Bolt	Part of the lock that shoots into the socket or door staple
Bow	Key handle
Cap	Cover for lock's working parts
Cleft	Step cut into the bit of a key
Double action	Term given to Barron type locks with two tumblers
Drill pin	Pin fixed to lock plate on which a pipe key turns
Escutcheon	Keyhole surround
Espagnolette bolt	Bolts running the full length of a door operated centrally
Fore-end	The angle of a lock where the bolt passes through
Gating	Aperture in bolt or tumbler through which the stump passes
Lock pick	Apparatus for picking locks
Master key	A key that fits a number of locks in a series
Nose	The front of a key bit
Notches	Indentations in a key bit to fit wards within the lock
Pipe key	Key with drilled out shank to fit over a lock pin
Selvage	Part of the lock from which the bolt emerges
Shank	Body of the key between the bow and the bit
Skeleton key	A key with the bit so cut to avoid the wards of a lock
Slider	A metal lever used in Bramah locks
Steps	Indentations on key bit to lift tumblers
Stud	A post attached to a lever that acts within the gating
Talon	Hollow belly of a bolt in which the key bit traverses
Throating	Area of key between the bit and collar
Tumbler	A sprung lever which engages the stud of a bolt
Wards	Fixed obstructions within a lock of various shapes

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