

The evolution of Chubb locks, by Mike Fincher Introduction

As most people know the Chubb lock company was founded in 1818 by Jeremiah Chubb and his brother, Charles and quickly progressed to become one of the foremost high security lockmakers in England, so that by 1883 they had made over one million locks! In the early days Chubb only made locks and it was not until 1835 that they started to make safes.

Chubb are unique among English lockmakers because, after their early period of lockmaking, they did not follow a continuous line of development of their locks and felt free to drop their early successes like the use of the *Detector*, when size and space would have compromised their excursion into making gunpowder proof locks.

They also felt free to adopt the ideas and inventions of other lock makers once their patents had expired and to incorporate them into their own locks.

The evolution of Chubb locks will be dealt with in a three part article. Firstly *Chubb, the Early Days (1818-1833)* then *Chubb, the Middle Period (1833--1874)*, and finally *Chubb the Latter Days (1874-1940)*. In order to avoid any criticism that I have omitted certain Chubb locks, I justify those that are included as being “Main stream” locks and **not** “Specials”.

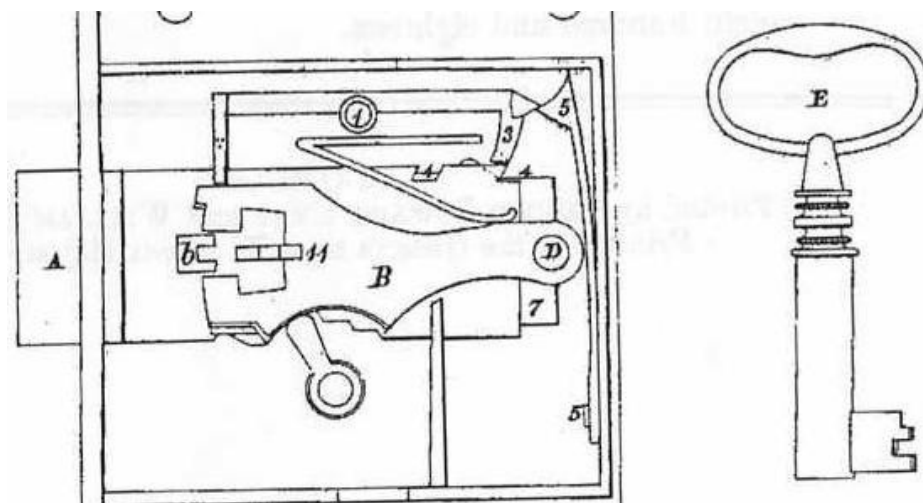
Part 1. Chubb locks, the Early Days

Chubb's first lock patent for a Detector lock was taken out during the reign of King George the Third in 1818 by Jeremiah Chubb, who at that time lived and worked with his brother Charles in Portsea, near Southampton. This first Chubb Detector lock, as described in the patent, was somewhat different from later versions. Its early form of levers, in those days described as *Tumblers*, were in effect open ended levers, in that the characteristic “H” shape of the bolt stump pockets, or racking, was only half of the usual “H” (See the patent drawings Figs. 1, 2, and 3). So it was not even comparable to Barron's alternative tumblers described in his patent.

The main difference between this lock and later versions is that two different pattern keys were required to operate the lock. One key was for everyday use and a special *Regulating Key* was needed to re-set the lock if it became detected. The regulating key operated on a special steel plate, placed either directly above or below the main bolt tail and moving together with it.

Patent No. 4210 of 3rd February 1818. [Note. As no locks are available to illustrate this Chubb's first Detector lock, the Patent Drawings will be used for that purpose].

Figure 1 below shows the lock, with the key (E), turned to the position where the levers have been raised to the correct opening height, so that the bolt stump “b” can pass through the gating in the levers:



Note the early form of the *See-Saw detector* and the fact that the comb spring is applied **above** the levers.

Figure 2 (below, left) shows the same lock when the detector has swung into action due to over-lifting a lever with a pick or false key. The lock has now become *dead-locked* by virtue of the hook end of the

detector "3" engaging in the notch "4" in the bolt tail

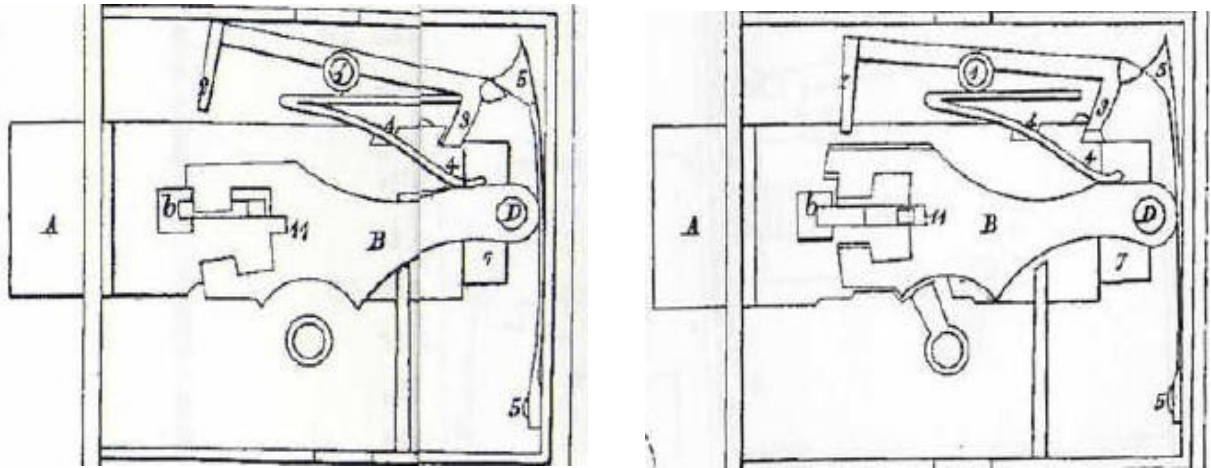
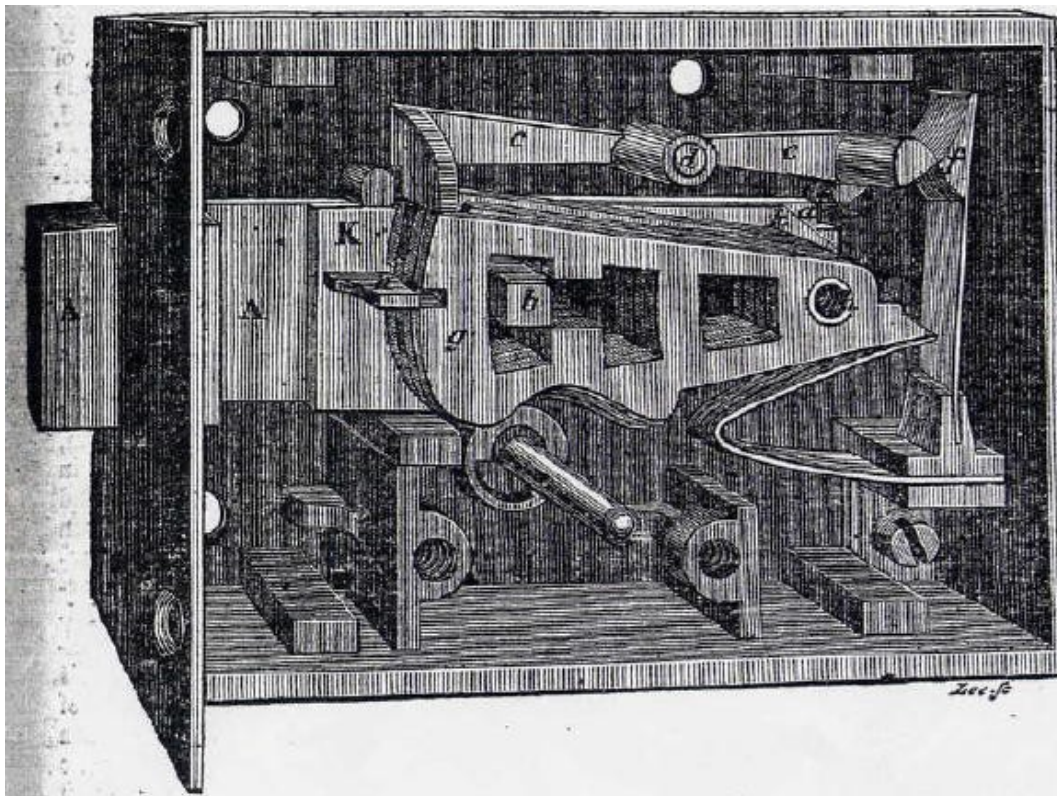


Figure 3 (above right) shows the lock with the detector about to be released, or re-set with the special *Regulating Key*. The inclined plane on the *Regulating Plate* "7" is about to lift the hook of the detector "3" out of the notch "4" on the bolt.

After a period of 5 years a new version of the Chubb detector lock was to emerge in 1824 and became known as "**Chubbs Improved Patent**", Jeremiah Chubb's brother Charles being the patentee. An early version of this lock was described in the *Mechanics Magazine* of November 22nd 1823 (No. 13). Looking at the very clear engraving of this lock below, we see at once that several important changes have taken place.



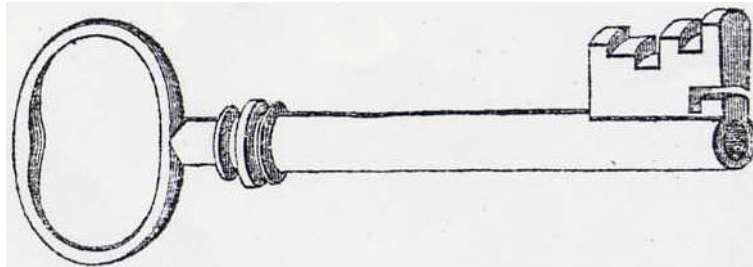
The most obvious is that the form of the levers now represents the definitive design of Chubb levers. The comb spring, now combined with the detector spring, is set **below** the levers and mounted on one supporting pedestal. A simple ward surrounds the drill pin, to add to the security and another very definite change is that the notches cut into the levers, to allow the detector to be re-set, or regulated, are placed in front of the levers "g".

One major advantage of this lock over the first one, is that the **same** key is used to operate it from day to day and to regulate, or re-set it, should it become detected.

The engraving shows the lock with the levers raised to the correct heights as lifted by the different step

heights on the key, so that the bolt stump “b” is ready to pass through the gating in the levers “g”. Had the lock become detected, the same key would now be turned as if to unlock the lock. This would cause the secondary bolt stump “k” to enter the lined up slots in front of the levers and move the *Detector Plate* “K” backwards. So causing the inclined plane at its far end to raise the hook of the detector out of the notch “a” on the main bolt tail, and to rise above the point of the detector spring “f” and resume its normal re-set position.

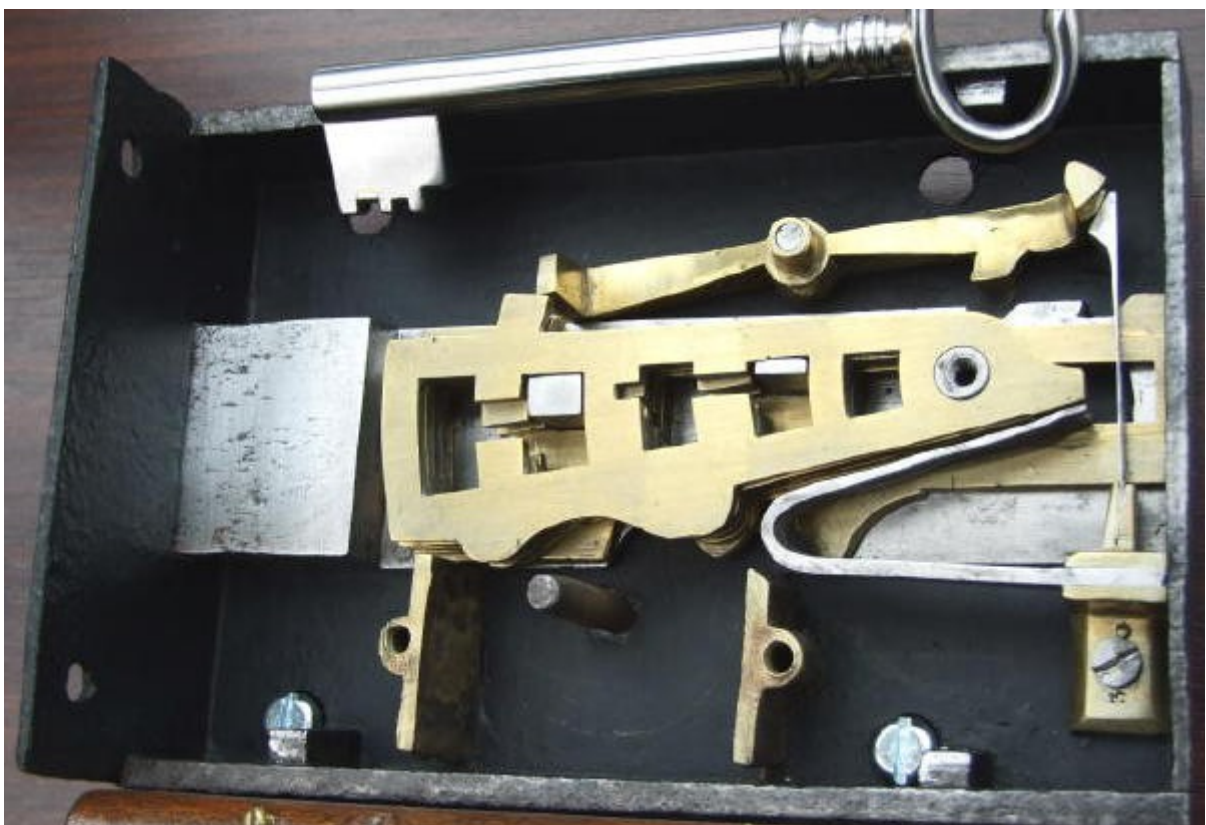
Note the *wire bow* type of key in use at this period as shown below, and that Chubb considered that four levers were all that was needed for security.



This lock is clearly a hybrid design between the lock of 1818 and the definitive version of *Chubb's Improved Patent* as described in its Patent.

Patent No. 4972 of 15th June 1824. Chubb's Improved Patent

We are now able to show an actual lock that exactly corresponds to this patent specification, (No 5596, dating to January 1827 - Size: 7.1” x 5”):

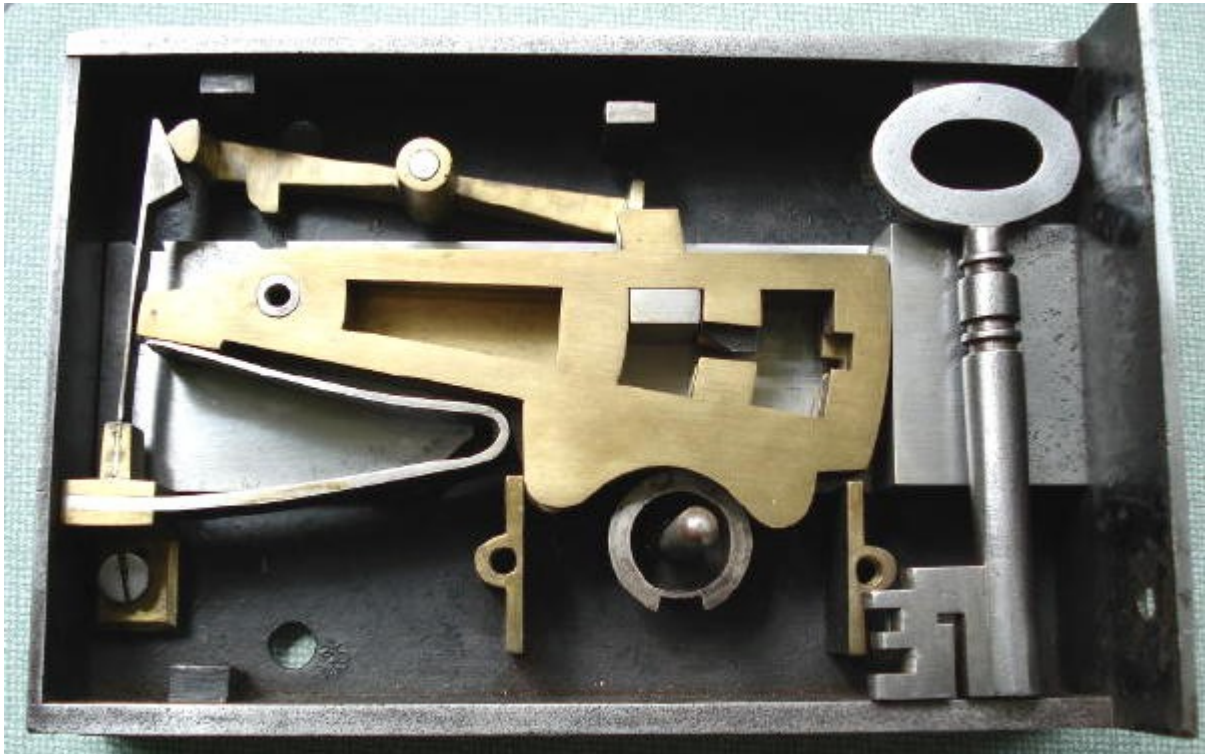


What strikes one at once looking at this lock is that it now has two sets of “H” shaped lever pockets and gating. The reason for this is because, sometimes manufacturers who bought the original detector locks, did not allow sufficient depth holes for the lock bolt to shoot into. If the lock then became detected it was impossible to regulate or re-set it as no forward movement of its bolt was possible, and a “Lock out” was the result.

The design of the lock under examination allows the key to re-set the lock, in such a way that when the key is turned in a forward direction, the main bolt and bolt stump do not move and only the Regulating

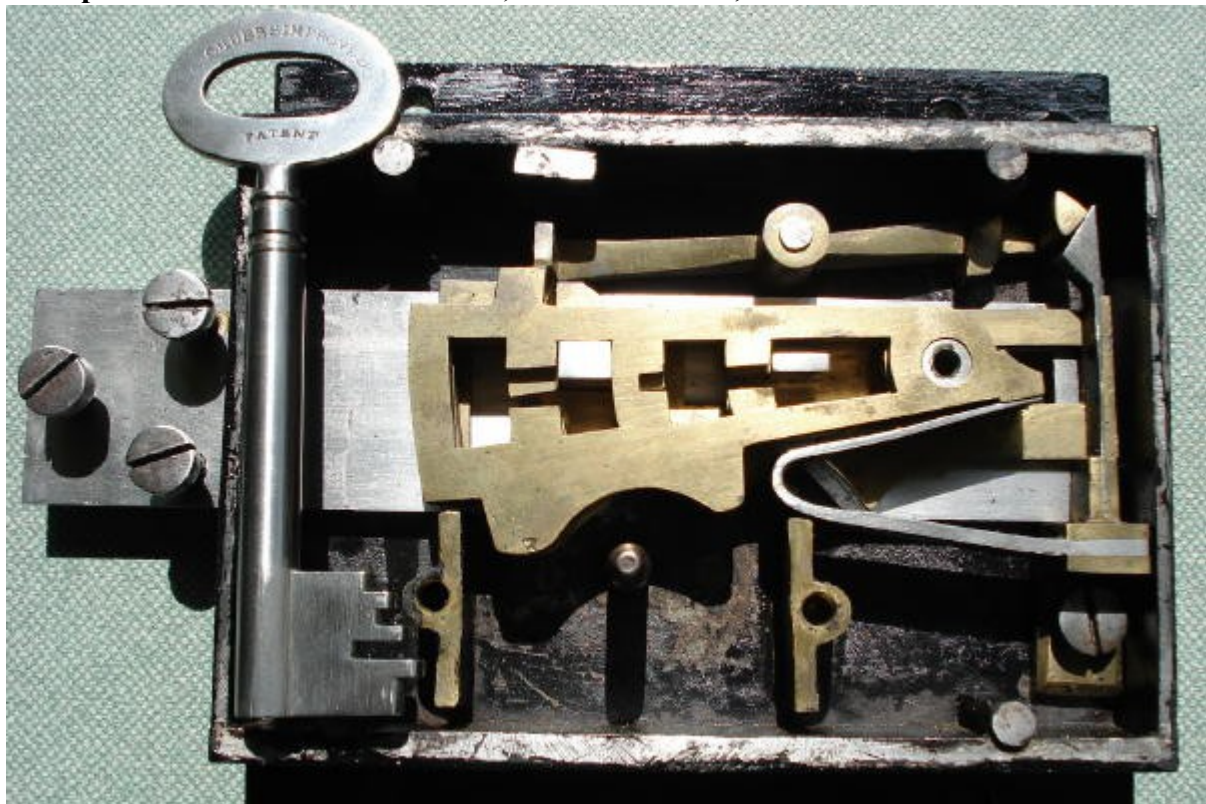
Plate with its own small bolt stump moves into the special notches to thus re-set the detector.

For use on warehouses etc, an even simpler version of *Chubbs Improved Patent* was made. Lock No. 23,696 below is a good example of this (Size: 8" x 5" x 1"):



Although the simple ward round the drill pin has been retained, the use of a second bolt stump and Regulating Plate has been done away with and the lock is re-set using its own key, making use of the inclined plane on each of the two notches on the bolt tail to lift the detector hook from its detected state. This lock has 5 levers - 4 brass and one blued steel. The reason for this is to overcome loss of security in case of fire, where the brass levers could easily melt and disappear, but the steel one would remain.

Chubb Improved Patent safe lock No. 27,947 shown below, size 6" x 4.5" x 1.1" would have been

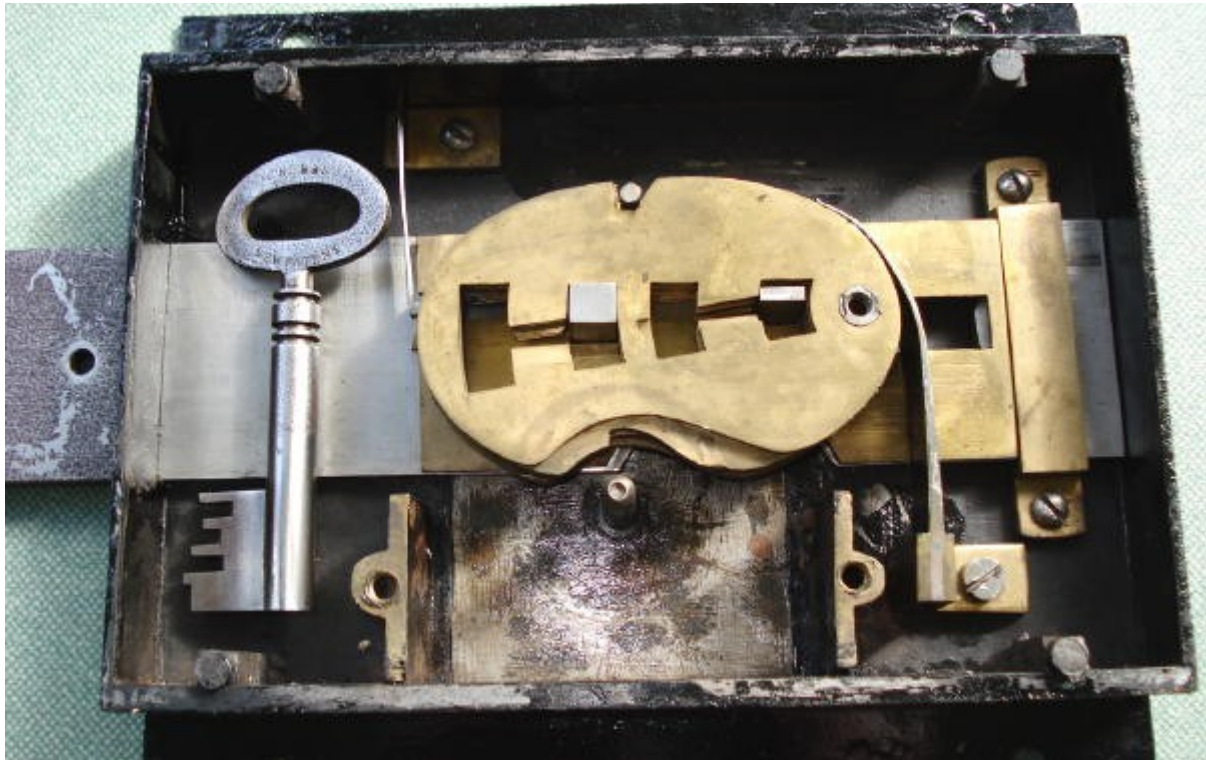


made about 1838-39 and we see that now six levers are used rather than the four of the early Chubb locks. The use of the ward has been dropped and again the lock corresponds closely with the 1824 patent. As in all these early Chubb locks, the levers all have unequal height bellies, so that the lifts bear a close relationship to the height of the steps on the key bit.

In these early days the lock bolt was directly coupled to the safe bolts and the bolt on this type of lock was called a *Draw Bolt*.

Chubb “New Patent” Safe lock No 112,638.

We now come to the most radical change so far with these early Chubb locks. By this I mean the temporary abandonment of the early design Chubb levers for a most unusual elliptical, or Kidney shaped lever. The patent for this design lock is No. 6527 of 1833, and for the first time this patent involves an employee as patentee, in addition to a member of the Chubb family. This was Ebenezer Hunter who was to be involved in several Chubb patents.



Chubb's New Patent Safe Lock No. 112,638. Size 8" x7" x 1.1"

The stated objective of this patent was the reduction of space and the simplification of the detector mechanism, but one cannot help wondering if the primary objective was to make Chubb Detector locks more cheaply and profitably! In the patent drawings, simple levers are shown as round discs, just like coins, with the “H” shaped pockets cut into them, again one wonders if such very simple levers were ever put into production? They would have been very easy to produce by stamping out with a fly press.

However, if we look at the photo of Chubb safe lock No. 112,638 (above) we can see that what emerges as the definitive lever type was the kidney shaped levers. The new version of the Detector was achieved by making a projection, or nose, at the end of the lever opposite to its pivot. A hook at the end of a long straight spring rested just above this projection, so that if this lever was lifted too high by a pick or false key, it would become literally hooked up and the lock could not be opened in the usual way by its correct key.

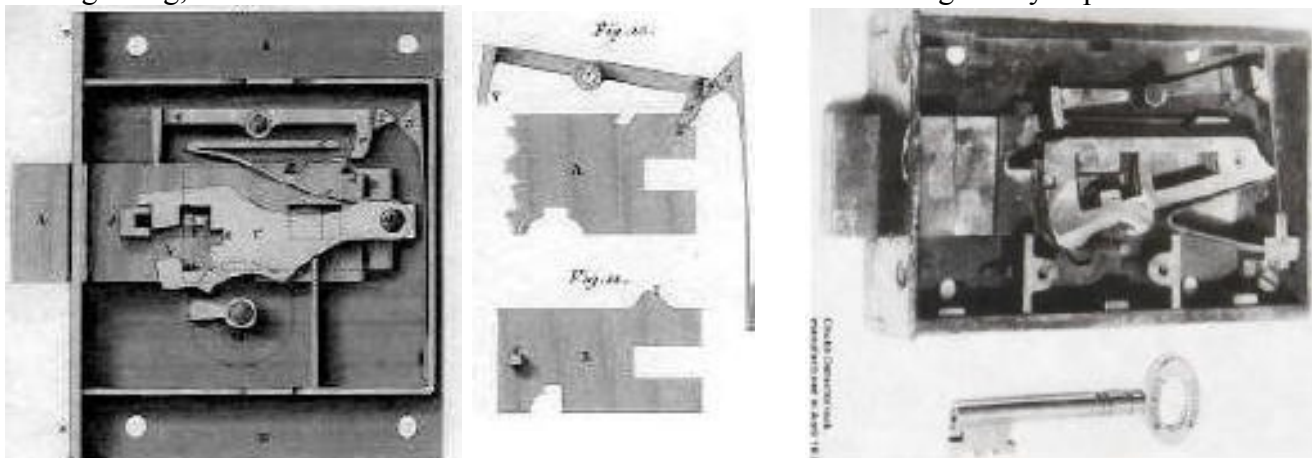
The way that the over-lift of any of the other levers was coupled with this special lever was as follows. The lever with the special nose, or projection on it also has a pin set at right angles to the plane of the lever and this pin rests in suitably cut notches in all the other levers. These notches are all cut to different depths, so that, if anyone of these levers is lifted too high, it will convey this mechanical over-lift to the special lever and cause the detector to come into action.

Once the lock has become detected, it can only be released, as in former versions of Chubb's Detector by turning the key as if one were trying to lock it further. This moves the brass plate located just above the bolt tail, so that it engages a projection on the Detector spring and by forward motion unhooks this, thus allowing the lever to fall back to its normal resting position.

Another major difference between this lock and previous Chubb designs is the change in the lever springs, gone are the original "Hair-pin" shaped springs and in their place are curved comb springs, where the spring rises straight up towards the levers and then the individual tines curve around the ends of the levers.

To sum up, we have now covered the first 25 years of Chubb lock production and seen the prototype Chubb Detector develop into a much more sophisticated type. Though Chubb expresses the desirability of making the lever bellies lie all in one plane (so that no clue is given as to the step heights on the key), also an idea was suggested to prevent any chance of being able to re-set the Detector by poking a watch spring between the levers, these ideas were never put into practice at this period of time.

Editor's Note. As Mike mentioned, no Chubb locks are seemingly now extant in respect of their original 1818 Patent and the "Hybrid" pre-1824 Improved Patent. However for the 1818 patent lock an old engraving, on the left below was included in a volume of the Edinburgh Encyclopedia dated 1819.



The centre engraving shows on the top how the 'See Saw' detector moves into the notch on the bolt tail when the lock is detected; below that is the 1818 Patent *Regulating Plate* referred to in the above article

The right hand photo (reproduced by courtesy of "Keyways", the Master Locksmith Association's journal) provides a picture of the "Hybrid" pre-1824 Improved Patent lock to confirm that it was actually made. A note on the photograph says it was "Manufactured in 1820". Clearly then Chubb had found an early need to redesign their original lock, particularly to provide for the use of a single key. This photograph was taken around the early 1980s when the lock was in the possession of the Chubb company, but its present whereabouts is unknown.

Editors Note – since this was written in Lock Collector magazine issue 17 (October 2007) the below 'Hybrid' lock N°.1153 has been found. Please e-mail tony5000@virginmedia.com (who writes the Lock Collector) if any earlier Chubb N°d. locks are found

