

# HISTORY OF LOCKS

By Brian Morland



## The Scandinavian Story

There are many factors that dictate the shape and form of a lock, not least the environment that it's to be used in. The northern latitudes environment is challenging for anything mechanical and a class of locks emerged from that part of the world especially to cope with predominantly wet, freezing or harsh conditions but also offering greatly enhanced security.

The earliest was that attributed to Cristopher Polhem, of Sweden. Born in 1661 in the Swedish town of Visby but he was orphaned by the age of eight when he went to live with his uncle in Stockholm. He showed a talent for maths, science and technology and soon set up a workshop where he made such things as clocks, tools and household utility items. He devised an industrial system based on water power driven by a large water wheel; water being an abundance source of power in the Scandinavian countries. His contributions to his country earned him, in 1716, a Knighthood from his King, Charles XII of Sweden.

His padlock though is what interests us here. The lock, instead of using spring loaded tumblers or levers, used rotating spring-less discs. The discs engaged into corresponding slots in each side of the shackle. The correct key, with its multi-faceted bit, entered the lock without any impedance or resistance, and upon rotation in the lock would disengage the discs from the shackle and therefore release the shackle. Is this a double acting principle that predates even Bramah and Barron? Polhem also produced locks incorporating his rotating disc idea into locks for other applications such as house doors.



Christopher Polhem, 1661-1751, prolific Swedish scientist, inventor and industrialist.



Polhem aged about 80 wearing his knighthood medal

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Liebrich originally from Germany founded Star lock Works in Philadelphia, America in 1836. In the US these were often referred to as jail padlocks, which was a common application at the time, they also found favour with the emerging pioneering railroad companies for use on switches (points).

Patents started to appear later in the 19th century including one by J McWilliams in 1871 where the improvements was to do with further refinements as to the ingress of dirt and water and making it more resistant to forced entry. Another patent quickly followed by S Budd in 1872, here the improvement deviated from rotating discs, but also an early attempt at a side bar whilst the padlock externally remained largely Scandinavian both in appearance and in function with the discs locking into slots in the shackle.



A large (60 x 83mm) Scandinavian padlock made by German US immigrant Conrad Liebrich in his Philadelphia Star Lock Works factory.

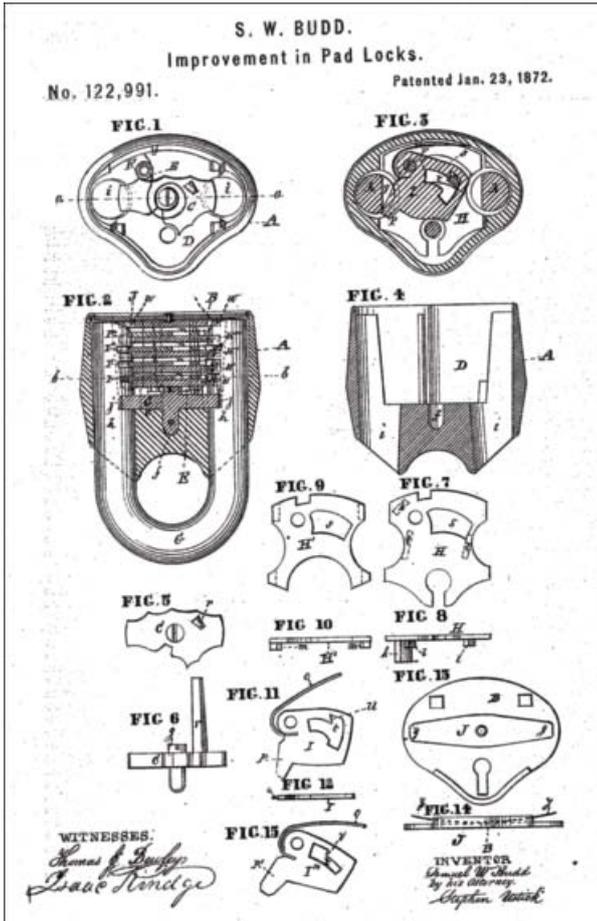


Polhem's Padlock, entirely spring-less and eminently suitable for harsh environments but also greatly improving security at the time.

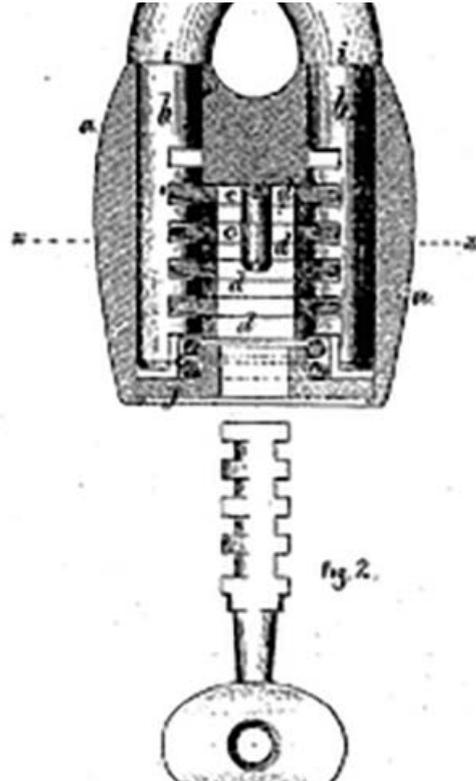
However the next big step forward was some 200 years after Polhem had first invented his lock was in 1907 by Emil Henriksson, of Helsinki Finland, who added an efficient sidebar to the common rotating disc lock and placing the discs in a stack simply separating them with fixed thrust washers to prevent rotational carry-over. The lock went into production a couple of years later and the Abloy company was formed in 1918. The range of lock types was greatly expanded as well and included locks for furniture, doors and safes; all eminently capable of suiting under a master key.

Of course as patents come to the end of their term other companies take up the expired designs, imitation is a compliment to the original inspiration. Abloy though continues to

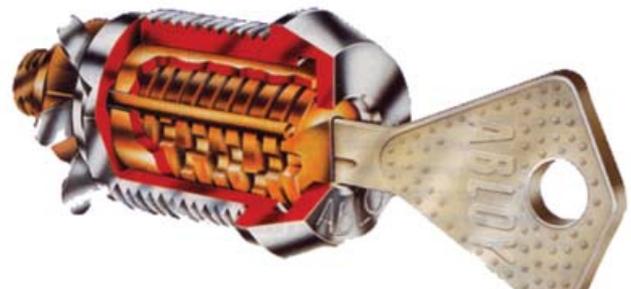
# HISTORY OF LOCKS



Budd's improvement where, although the control levers had springs, we also see an early development of the side bar.



McWilliams improvements of 1871 where the lock was made more resistant to the elements and forced entry.



Sectional view of the Abloy lock, from their catalogue showing the sidebar, also the fixed thrust washers between the discs to prevent rotational carry-over.

improve with interactive imaginative features and ideas.

In the same way the many manufacturers saw potential in Polhems lock, and inventors, such as Henriksson, developed and improved it. Others were inspired to improve the 'springless' idea in other ingenious ways.

The Ava mechanism, Invented by Mr Ansala of Finland, for instance, is where instead of rotating discs, the discs were sliding, the double sided nature of the key precisely controlling the discs. The Ava lock rights were sold to Chubb in 1954; Bill Stanton of their Research and Development department further improving the principle by adding false notches and randomising the fixed position on certain discs, he also brought Vic Liardet's (Chubbs sales manager at the time) idea of high security 'Escort' handcuffs to fruition.



Early Abloy OEM/furniture lock



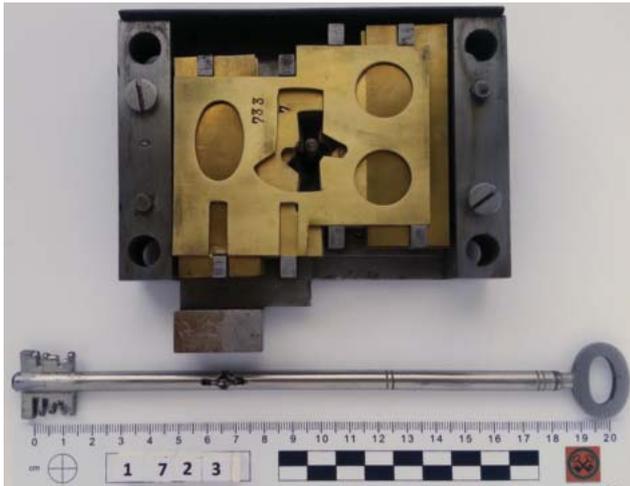
Early Abloy Night latch door lock



Early Abloy Padlock

Another company, inspired by the springless idea was taken to the extreme by safe makers such as S.J. Arnheim with their safe locks.

# HISTORY OF LOCKS



Arnhem's springless 'Colosseum' lock, the levers first move horizontally and then vertically.



Arnhem's Lammellenschloss with its giant (110mm diameter) circular disc like levers, all entirely springless.

Therefore in conclusion an idea that was conceived to provide a solution to the environmental conditions has proved to be and continues to inspire top security designs, whilst still retaining the challenging environmental conditions to this day.

*Brian Morland, curator of the Heritage Collection of Locks and Keys, welcomes comments and corrections on historical aspects of locks and keys. Brian can be contacted by email: [brian@emorlands.com](mailto:brian@emorlands.com)*

## MLA Heritage Room News

### Latest News about the Heritage Room and the items on display at MLA HQ.

By the time you are reading this all the Heritage Room cabinets will be in place and most of the cabinets filled. Work continues to constantly to evolve the exhibits so there is always something new to see. A new feature agreed upon is a small reference library specifically for vintage and historical items. Locks by their very nature are enduring items and Locksmiths are sometimes called upon to cut keys and/or maintain older items; so the reference library together with the exhibits is a good research facility for members.



The entrance to the Heritage room

Special thanks to Richard Humphries (formerly with Ingersoll and Kaba) and Paul Souber of Souber Tools (formerly with the Power Lock Company and Chubb) for donations of vintage items.

Richard presented a special set, one of each model, of Ingersoll 10 lever padlocks; they were prepared for exhibition use in the 1980's, keyed alike on the 'A' keyway and differ from the normal models in that they were highly finished and heavily chrome plated. Richard also donated a Mini Kaba salesman's sample case of key switches that utilised the 'Mini' system. Both these vintage items are currently on display in the Heritage Room.

Paul, whilst he was a rep for Chubb, was amazed to find during one of his visits a pine leaflet dispenser featuring a Chubb 3L91 mortice nightlatch. Although the lock in question was long discontinued the shop still had it on their counter! Paul acquired this item and subsequently donated it to the cause and after a little TLC it's good as new. Paul also donated a definitive Chubb detector mortice deadlock and a nice pair of Chubb high security MK II Escort handcuffs with the AVA mechanism.