COLLECTABLE POCKET WATCHES 1750-1920

Ian Beilby

Clocks Magazine Beginner's Guide Series № 5

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CONTENTS

Clocks Magazine Beginner's Guide series

No. 1. Clock Repair, A Beginner's Guide
No. 2. Beginner's Guide to Pocket Watches
No. 3. American Clocks, An Introduction
No. 4. What's it Worth, Price Guide to Clocks 2014
No. 5. Collectable Pocket Watches, 1750-1920

Introduction

In this short guide to pocket watches from 1750 to 1920 I will take a look at some of the different types of pocket watch that may be encountered by the average collector. Some of the watches I will describe are in very good condition and have been kept in private collections for many years; others are shown as found, in the sort of condition you would expect to find them after many years of general use.

I have chosen this particular period quite deliberately. Not only are watches from the 1750s onward much more prevalent than earlier watches and hence more available and affordable, but also from this date onwards substantial developments were made not only in movement and case design, but also in the public's perception of watches as well as their use and role in society.

The introduction of the wristwatch in the early part of the twentieth century effectively heralded the demise of the pocket watch, production of which by the 1920s had fallen dramatically.

Interestingly, the first pocket watches that are known about were not made in Britain but in Nuremberg in Bavaria and were not called pocket watches but 'clock-watches' or, amusingly, 'Nuremberg eggs' because they were quite large and oval in shape.

In the sixteenth century and the early part of the seventeenth century pocket watches were not only very expensive but also highly unreliable. They required winding every six hours and would lose or gain up to as much as an hour or more in a six hour period. They were worn more as a decorative status symbol in order to show off your wealth than as practical timepieces.

Also in the sixteenth and early seventeenth centuries men didn't wear waistcoats and it wasn't until the Restoration, during reign of Charles II, that the waistcoat with pockets was introduced and watches inserted into the waistcoat pocket started to be called pocket watches.

Up to the middle of the eighteenth century pocket watches were very expensive and generally speaking only the very wealthy could afford them, or indeed had any need for them. Despite various developments during the eighteenth century, the vast majority of movements were made with verge escapements and were not the best of timekeepers. However, they were reliable and considered adequate for the needs of the time.

Crucially, owing to the influence of the Industrial Revolution in the first quarter of the eighteenth century, the wealth of the nation and perhaps more importantly the distribution of wealth increased dramatically. This in turn had a marked effect on the manufacture and ownership of pocket watches. By the 1750s the consumer market for watches had expanded substantially, leading to an increased desire by the public to own watches and for the watchmaker to produce more accurate, fashionable and affordable watches.

The object then is to try and enlighten the collector or would-be collector regarding not only the outward design and style of some of the watches from this period, but also the

easily defined mechanical differences and attributes of the different watches.

I want to try and keep the text as free of as much technical jargon as I can, however a certain amount of technical detail is necessary as the development of the pocket watch was naturally influenced by improvements in manufacture in the search for improved timekeeping. I will therefore now include a brief description of the mechanism of a typical pocket watch, the 'movement'.

Watchmakers were frequently coming up with improvements in design, incorporating different features intended to improve both the reliability and accuracy of their watches. Over the years some mechanical features became synonymous with a particular period and so it is possible to tell a lot about a watch from the design and layout of the movement alone. Indeed, quite often a particular type of movement can add considerably to the value of a watch.

Readers unfamiliar with some of the terminology should find the Glossary on page 82 useful, but for the moment an understanding of a few simple terms should be enough. The *wheel train* is a series of gears which takes the power of the spring to the *escapement*, which in turn allows the clock to keep time by letting the power be released at regular intervals. The *motionwork* is a separate series of gears which transmits power from the wheel train to the hands.

The simplified drawings opposite should help to make the process clear. In order to make the illustration easy to understand the wheel train is drawn showing the wheels and pinions placed in line; however, in practice the wheels are configured differently in order to fit into the confines of the watch case. The relationship of the wheels is however exactly the same. The motionwork illustration is colour coded in order to help the beginner identify the components.

Each axle or *arbor* of the wheel train carries a large gear, known as a *wheel*, and a small gear, known as a *pinion*. They are pivoted between two *plates*. The wheels are cut from brass and the pinions from steel. A wheel generally consists of more than twenty teeth and a pinion of fewer than twenty, typically between six and twelve. On early movements the plates consist of a dial plate and a single top plate. Although referred to as the top plate, custom has it that the plate at the back of the watch (farthest from the dial) is called the top plate and the plate under the dial is called the dial plate.

On later watches, a series of individually removable plates referred to as *bridges* and *cocks* were used as opposed to a single top plate. A *mainspring*, which is a spiral spring contained in a barrel, is used to drive all pocket watches.

The mainspring powers the first wheel of the train and through the wheel train impulses the pallets of the escapement and the balance wheel. The pallets are a pair of specially shaped teeth that alternately intercept with the teeth of the escape wheel. The balance wheel is not a gear wheel, but an oscillating spoked wheel fitted to the balance staff or balance arbor. The balance wheel oscillates or swings backwards and forwards at a rate controlled by a fine spiral balance spring attached to it. The balance wheel controls the rate at which the power of the mainspring is released through the escape wheel and hence the timekeeping of the watch.

The *escapement* refers to the combination of the escape wheel, pallets and balance wheel. Escapements changed over the years in the quest for better timekeeping and incorporated differently designed components in the process. The three principal escapements employed in pocket watches were the verge, cylinder and lever escapements. There were others, but the following were the three principal escapements

used in pocket watches and are the three most commonly encountered.

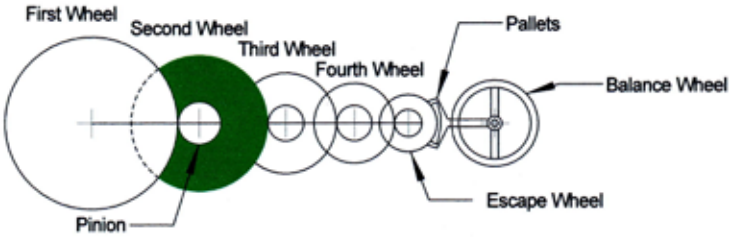
The verge was the first escapement to be used and continued to be made in Britain until around the 1860s. It was not a good escapement regarding timekeeping, however it was robust, easy to make and more importantly easy to repair, and so was a great favourite with watchmakers.

The cylinder escapement was invented by Thomas Tompion and developed by George Graham who introduced it in the 1720s. It was much more accurate than the verge escapement but much harder to make, very fragile and difficult to repair. It was usually only used by the best London watchmakers and as it was easily damaged was not used extensively in pocket watches.

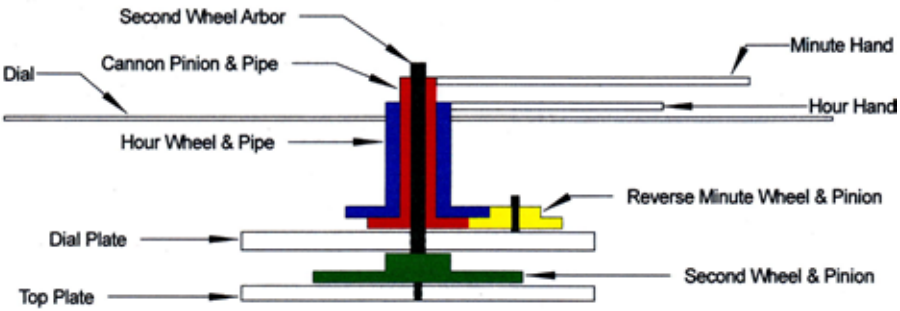
The lever escapement was invented by Thomas Mudge in the 1750s, however it wasn't perfected and in common use until the first quarter of the nineteenth century. It was a very accurate escapement relatively easy to make and repair and eventually superseded the verge escapement in the 1840s-50s.

Irrespective of the type of escapement fitted to the watch the basic wheel train remained the same.

Referring to the diagrams of the wheel train and motionwork, the gearing of the wheel train and pinions is designed so that the second wheel and pinion (green) rotates



Wheel Train (not to scale)



Motion Work (not to scale)

clockwise once every hour. The second wheel arbor is extended above the dial plate and the cannon pinion and pipe (red) is located on this arbor. The cannon pinion is made a tight positive fit on the second wheel arbor and forms part of the motionwork that drives the hour and minute hands of the watch. The motionwork is therefore separate from the wheel train and situated above the dial plate and below the dial. The minute hand is attached to the cannon pinion pipe that along with the second wheel rotates once every hour. The hour hand is attached to the hour wheel pipe (blue). The cannon pinion drives the hour wheel via the reverse minute wheel and pinion (yellow). The gearing between the cannon pinion, reverse wheel pinion and hour wheel provides for a 12:1 reduction and also ensures that the hour hand rotates concentrically with the minute hand once every twelve hours.

The description given above is the basic operating procedure employed in most pocket watches. There are of course many other important components incorporated in a watch movement. These will all be discussed later, as and when they arise.

Pocket watch enthusiasts are a little better off than clock collectors, in that a lot of pocket watches are housed in silver or gold cases. If the cases are British in origin it is possible to tell from the hallmarks stamped on the case quite a bit about the watch. The hallmarks usually give us the date of manufacture, the initials of the silversmith who made the case and also the city where the watch was assayed.

Also, it is often found that the movements or dials of nineteenth and early twentieth century British pocket watches are inscribed with the name of the maker or retailer. Unfortunately this is not always the case, especially with a lot of Swiss lever and cylinder watches. This is a great pity, as the Swiss produced and exported thousands of pocket watches to Britain in the late nineteenth century and many of these watches are keenly collected today.

The Americans also exported vast quantities of lever pocket watches to Britain, principally at the end of the nineteenth century. With American watches we are much more fortunate. The majority of the leading American watch manufacturers developed an interesting habit of naming their watch movements as well as keeping records of the serial numbers of their watches. From these serial numbers it is possible to date an American watch and gather much interesting information regarding the size of movement, number of jewels, production runs and the total number of particular movements that were made.

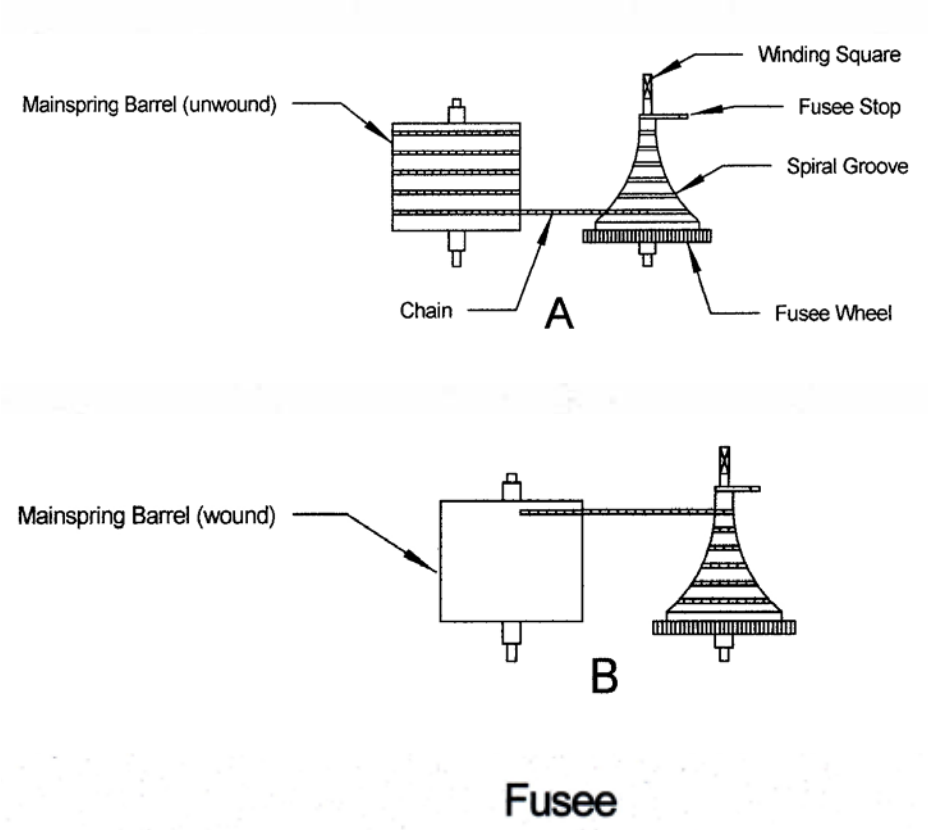
As we look at the different types of watch, you will see how over the years the different production methods and components employed by the Swiss, American and British watchmakers affected not only the movements and cases but also the marketing success of the different types of watch.

The British watchmakers tended to be very conservative in both movement design and also in their methods of production. One of the principal differences in the late nineteenth century between the British, American and continental watches was in the use of the fusee and chain. In the eighteenth and early nineteenth centuries mainsprings were made from steel which was not reliable in providing an even motive force. The spring would deliver a lot of power when first wound up and varying amounts thereafter, severely affecting the timekeeping qualities of the watch.

The *fusee* is a component incorporated into many British clock and watch movements that equalises the power or torque of the mainspring to the movement train.

The diagram shows that the fusee is conical in shape and incorporates a spiral groove

to accommodate the fusee chain. The fusee wheel is attached to the fusee, which, in a fusee watch, is the first wheel in the watch train. The mainspring on a fusee watch is contained in a separate barrel. The outer end of the mainspring is attached to the inner



wall of the barrel and the inner end of the spring hooks around the barrel arbor. The barrel arbor does not rotate and is held in place by a click and pawl. Whilst being wound the barrel rotates around the barrel arbor. Hooks at both ends of the fusee chain attach the chain to the barrel and fusee.

With the mainspring inert—in its unwound state—the fusee chain is completely wound around the outer diameter of the barrel and the other end of the chain attached to the large diameter of the fusee (A). In order to wind the mainspring a key is placed on the winding square of the fusee. As the fusee is wound the chain is transferred from the barrel to the fusee, running in the spiral groove of the fusee. A fusee stop is fitted to the fusee arbor, which in conjunction with a fusee stop lever prevents overwinding.

When the mainspring is fully wound all the chain will have been transferred to the fusee.

In its wound-up state (B) the full force of the mainspring is applied via the chain to the smallest diameter of the fusee. As the watch runs, and the mainspring unwinds, the

chain gradually transfers back to the unwinding barrel and the torque of the mainspring is transmitted to the progressively larger diameter of the fusee. The gradually changing diameter of the fusee compensates for the unequal force of the mainspring (torque x diameter) and provides for a constant and even transmission of power to the wheel train in the process.

In Britain during the eighteenth and nineteenth centuries most 'watchmakers' were not watchmakers as such, but were in fact very skilled watch finishers and retailers. It is thought that the vast majority of watchmakers purchased semi-finished watch movements or components from manufacturers primarily in London, Coventry and Prescot in Lancashire.

The watchmaker would perhaps have one or two apprentices or would employ proficient outworkers to finish the majority of the components. Quite often young boys or women were employed by the watchmaker to assemble and finish the watches. Their delicate fingers and keen eyesight were considered a distinct advantage when working with small components.

Historical social records show that children as young as eight were employed in the making of fusee chains for watchmakers. Ultimately the 'maker' signed and retailed the finished watch but he did not actually make the whole watch in the true sense of the word. Not all finished movements are to be found signed by the retailer, but the vast majority were. This made sense for two reasons. Firstly it was a form of advertising and also, should the watch require attention whilst new, there was no doubting from whom the watch had been purchased.

From the middle of the nineteenth century there was great competition in Britain from the American and Swiss watchmakers who started to export watches to Britain in vast quantities.

Both the American and Swiss watchmakers very quickly abandoned the individual hand-finished approach to watchmaking and dispensed with the fusee. They eventually incorporated the *going barrel* into all their watch movements. The going barrel not only contained the mainspring but also had wheel teeth cut into the periphery of the barrel. By utilising the going barrel as opposed to the fusee the watch movements could be made slimmer and hence fitted into much less bulky cases. By the 1850s their entire production was geared to machine-made watches with interchangeable parts. This method of manufacture dramatically cut costs and speeded up production. It was the reluctance of the British watchmakers to change both their methods of production and their non-acceptance of the going barrel which ultimately led to the decline and eventual collapse of the British watchmaking industry.

British makers did not adopt the going barrel until the 1890s, by which time they had lost most of their market share in the sale of watches.

ACKNOWLEDGEMENT

I would like to sincerely thank Johnny Waschmann of antique-watch.com for permission to include the image in figure 41 and Peter Hall of cogsandpieces.com for permission to use the images in figures 15 to 18. I would also like to thank the numerous collectors and friends who have allowed me to photograph their watches and include them in this book and who wish to remain anonymous

CHAPTER 1
The Eighteenth Century Verge Watch


Figure 1.

In this chapter we are going to take a close look at two English verge pair-cased watches made during the last half of the eighteenth century. Both are very typical of their type and exhibit standard features collectors should encounter and become familiar with when looking at similar watches by different makers from the period.

The first watch is a silver eighteenth century pair-cased verge watch signed by John Terry of York. The dial, case and movement are very typical of a standard mid-eighteenth century verge pocket watch being sold throughout the country at this period.

The verge watch takes its name from one of the main components employed in the escapement of the movement. The actual verge is an arbor with a pair of pallets or flags. This arbor is attached to the balance wheel; on most watches this arbor is generally termed the balance staff. The pallets on the verge arbor alternately intercept the teeth of the escape wheel.

The escape wheel on a verge watch is referred to as the crown wheel because of the shape of the teeth; they are upright rather than radial and are cut in the rim of the wheel. The small crown wheel is set at right angles to the rest of the wheel train. A pinion on the crown wheel arbor meshes with a contrate wheel. The contrate wheel, like the crown wheel, has upright teeth cut in the rim of the wheel.

An English verge watch always employs a fusee and chain. Early verge movements were always full-plate movements with all the wheelwork between the plates. Later verge watches incorporate separate bridges for the easy removal of the mainspring barrel and other wheels.

On early verge movements the balance cock was quite large and highly chased and pierced, partly for decoration and partly to protect the large steel balance wheel. With later movements the balance cock is solid, smaller and less embellished; as a result the balance wheel is more exposed. When viewed from the side of the movement, the contrate wheel with its upright teeth is the most recognisable feature of a verge movement.