Beginner's Guide to Pocket Watches

£8.95 $14.95 €11.45

History and development How watches work Building your own collection Dismantling and cleaning an American pocket watch Dating and valuation

Clocks Magazine Guides № 2

Beginner's Guide to Pocket Watches

by

IAN BEILBY

splat publishing ltd

Published by Splat Publishing Ltd
141b Lower Granton Road
Edinburgh
EH5 1EX

http://www.clocksmagazine.com

Beginner's Guide to Pocket Watches is based on a series of articles which originally appeared in *Clocks Magazine*

ISBN: 978 0 9562732 0 8

2 4 6 8 10 9 7 5 3 1

Printed by Stephens & George, Goat Mill Road, Dowlais, Merthyr Tydfil CF48 3TD

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INTRODUCTION

In this guide we will examine several of the different types of pocket watch likely to be encountered by the average collector at clock fairs, or offered for sale on Internet auction sites. For completeness we have included a watch from the 18th century, but have in the main concentrated on the more readily available watches from the 19th and 20th centuries.

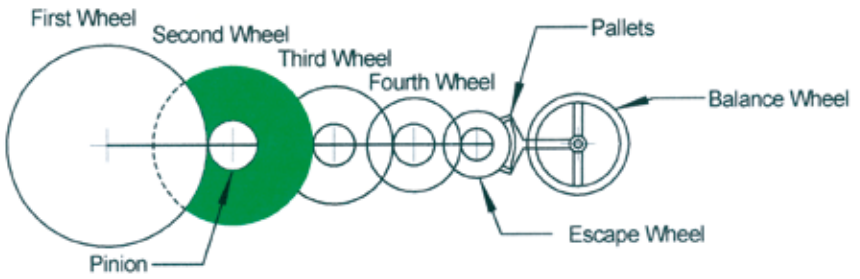
Watchmakers regularly came up with improvements in design intended to improve the reliability and accuracy of their watches. Unlike the cases and dials, which tended to be fairly standard over the years, watch mechanisms, known as 'movements', can vary considerably. Some mechanical features became synonymous with a particular period in the manufacturing process, and it is possible to tell a lot about a watch from the design and layout of the movement alone. Quite often a particular type of movement can add considerably to the value.

The development and historical context of the different types of watches will be discussed as we look at the watches individually. Many collectors of Pocket watches are totally unconcerned with the mechanical aspect of their watches. However for the benefit of those who are, We will now give a brief description of the basic wheel train and the motionwork employed in a typical pocket watch movement.

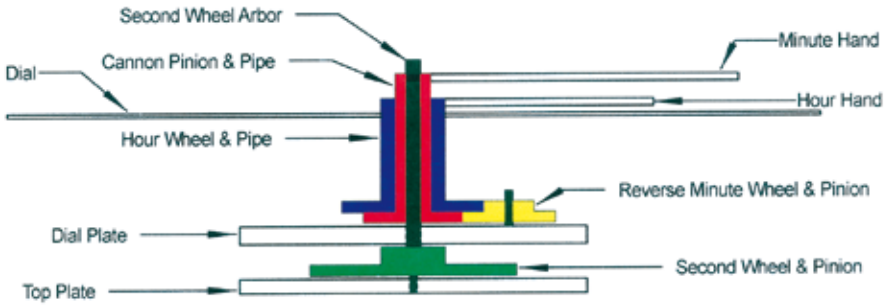
(Note: Readers unfamiliar with some of the terminology, for example—'wheel train' or 'motionwork'—will find the Glossary at the end of the booklet helpful. Simplified line drawings of the wheel train and motionwork have been included here. In order to make the illustration easy to understand the wheel train is drawn showing the wheels and pinions arranged in a straight line, however in practice the wheels of a watch are configured differently in order to fit in the confines of the case. The relationship of the wheels is however exactly the same. The illustration of the motionwork is colour coded in order to help the beginner identify the components.)

In the diagram on the next page, you can see that a series of wheels (large gears) and pinions (small gears) known as the 'wheel train' drives another series of gears called the 'motionwork' which control the hands of the watch. The wheels of the wheel train are cut from brass and the pinions from steel. The gear wheels and pinions run on shafts known as 'arbors' contained between metal plates. On early movements the movement 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 wheel train and ultimately the 'escape wheel' at the far end of the wheel train, which in turn gives power or 'impulse' to the 'pallets' of the escapement and thus to the 'balance wheel'. The pallets are a pair of specially shaped teeth that alternately intercept the teeth of the escape wheel. The balance wheel is not a gear wheel, but a spoked wheel which swings backwards and forwards at a rate controlled by



The gearing of the wheel train and pinions, above, is designed so that the second wheel and pinion (green) rotates 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, below, is therefore separate from the wheel train and situated between the dial plate and 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 12 hours.



a fine spiral balance spring. The balance wheel therefore controls the rate at which the power of the mainspring is released through the escape wheel and hence the timekeeping of the watch. 'Escapement' is a term that 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 earliest watch escapements were verge escapements followed by 'lever' and 'cylinder' escapements. These different escapements and components are discussed in the relevant chapters describing these particular types of watch. Irrespective of the type of escapement fitted to the watch the basic wheel train remained the same. There are of course many other important components incorporated in a watch movement, however these will all be discussed as and when they arise.

Many pocket watches are housed in silver or gold cases. If the cases are English in origin it is possible to tell from the hallmarks 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 the city where the watch was assayed. Also it is often found that the movements or dials of many 19th and early 20th century English pocket watches are inscribed with the name of the maker or retailer. Unfortunately however this is not always the case, especially with a lot of Swiss watches. This is a great pity, as the Swiss produced and exported thousands of pocket watches to England in the late 19th century and many of these watches are keenly collected today.

The Americans also exported vast quantities of pocket watches to England, principally at the end of the 19th 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. It is possible from these serial numbers to accurately date an American watch. The majority of American and Swiss pocket watches were imported and sold by High Street jewellers, whereas English watches were still being hand finished and assembled by the individual watchmaker who would sign the movement and retail the watch. The English watchmakers tended to be very conservative in both movement design and also in their methods of production.

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 English watchmakers affected not only the movements and cases but also the marketing success of the different types of watch.

One of the principal differences in the late 19th century between the English and continental watch movements was in the use of the fusee and chain. In the 18th and 19th 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, becoming less as the spring unwound, severely affecting the timekeeping qualities of the watch. The fusee is a component incorporated into many English clock and watch movements that equalises the power or torque of the mainspring to the movement train as it unwinds.

During the 19th century most British watchmakers were not watchmakers as such, but highly skilled watch finishers, who purchased semi-finished watch components from manufacturers primarily in London, Coventry and Prescot. The watchmaker would perhaps have one or two apprentices or would employ proficient out-workers to finish the majority of the components. Ultimately the 'maker' signed and retailed the finished watch but he did not actually make the watch in the true sense of the word.

Quite often young girls or children 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. Records show that children as young as eight were employed in the making of components for watches.

American and Swiss watchmakers, on the other hand, quickly abandoned this approach to watchmaking, dispensing with the fusee and incorporating the much simpler 'going barrel' to power their movements. By the 1850s their entire production was geared to machine-made watches with interchangeable parts. This method of manufacture not only dramatically cut costs and speeded up production, but the movements could be made smaller and fitted into much less bulky cases. It was the reluctance of English watchmakers to change their methods of production and utilise the going barrel, which