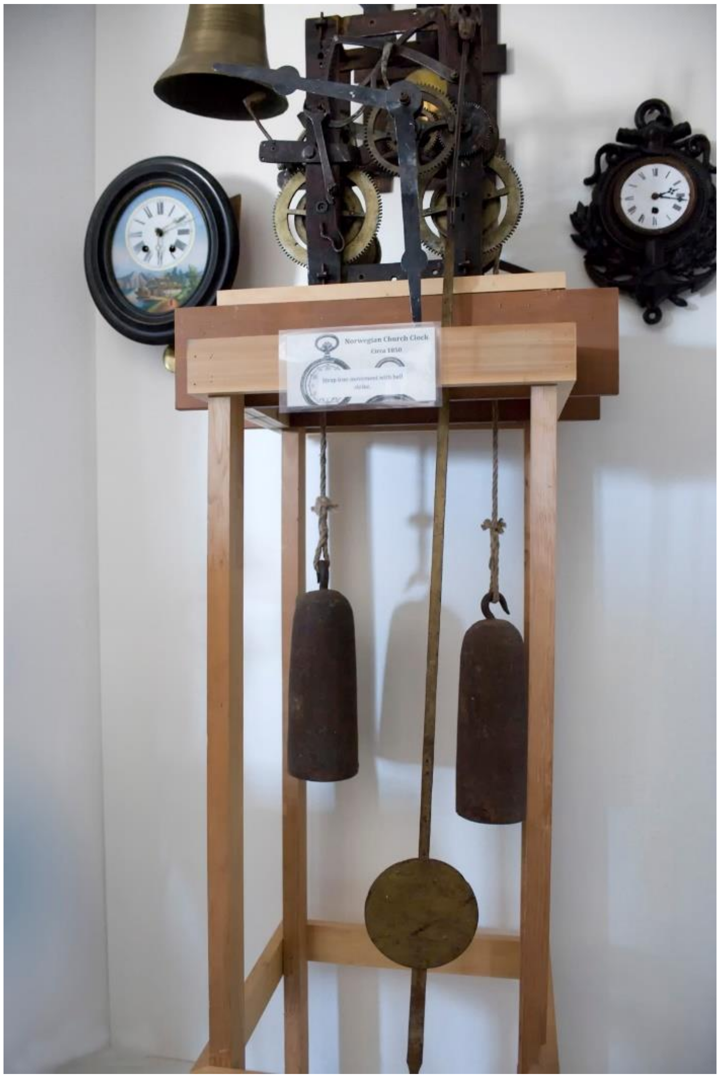
GINORMOUS TO POCKETSIZE AT
THE WEST COAST CLOCK & WATCH MUSEUM
- Ed Pasahow



The rich and varied collection can overwhelm visitors to the WCCWM. One way to gain a perspective of the many timekeeping devices is to examine the ambit of the displays from largest to smallest. Topping the collection in size and weight are the tower clocks. Even the largest pocket watches at the other end of the spectrum seem dainty in comparison.

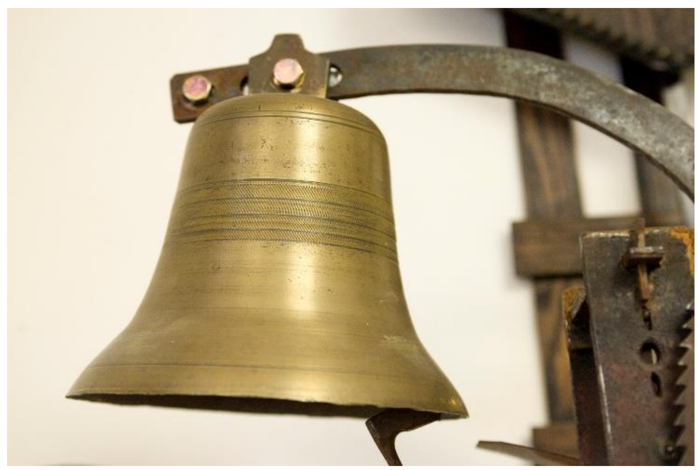
Tower clocks were often the first timekeepers used by citizens of a community. The cost of producing clocks in the Middle Ages deterred people from buying one for their homes, but as the need for knowing the time for commercial and personal purposes grew, towns and cities would pool resources to install a clock in a church steeple or clock tower. Early tower clocks, typically powered by the pull of gravity on heavy weights, resided in tall structures to allow ample distance for the weights to fall. For example, the clock popularly known as "Big Ben" resides in the Westminster Palace tower, which is 316 feet tall. Even with this height, the going train, which controls the time, must be wound three times a week.

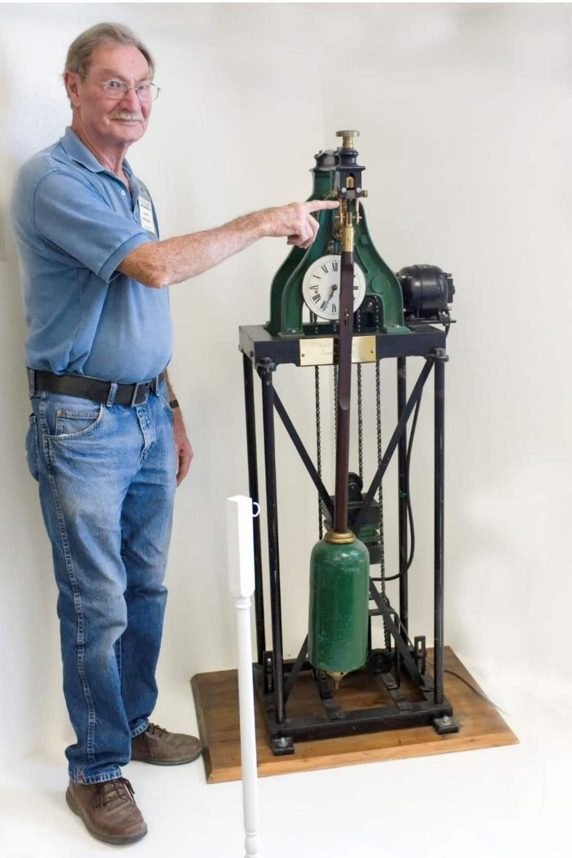
The first tower clock on display in our museum is a Norwegian clock built around 1850. Originally installed in a church, it strikes the hour on a bell in addition to driving the hour and minute hands. Limited metallurgy technology of the day dictated the shape of the iron elements that form the frame. This type of frame is called a side-by-side birdcage. Wrought iron cage-like straps support the clock movement consisting of two main gear trains. On the right is the going train for telling the time and on the left is the strike train for ringing the bell. The trains are positioned side by side. The framing elements are just flat iron straps held together with pins at the joints. This type of clock construction, developed around 1670, was used until metal foundries learned to make cast iron.

The clock movement is mounted on a wooden frame for museum display. The weights hanging below power the clock—the one on the right for the going train and the one on the left for the strike train. The other hanging element is the pendulum, which maintains a regular beat for the clock.

In 1602, Galileo observed the swinging of a chandelier in the Pisa cathedral. He noted that the length of time required to move from the left swing to the right swing (called the period) was largely independent of the width of the swing and only depended on the length of the pendulum. This property is used in clocks to keep the interval between the tick-tocks uniform. The pendulum regulates energy to the going train by permitting the escapement to release only one tooth of the escape wheel at a time (at the extreme points of the pendulum swing). As the tooth releases, it also gives the pendulum a nudge, which keeps the pendulum swinging.

The controlling mechanism used in this clock is a recoil escapement. As the tooth on the escape wheel releases, the escape wheel is moved backward or "recoils." The recoil escapement has the advantages of being cheap to build, reliable in operation, and easy to maintain. The disadvantage is that timekeeping accuracy may suffer from the large amount of friction generated. Even so, typical accuracy is within two minutes a week.

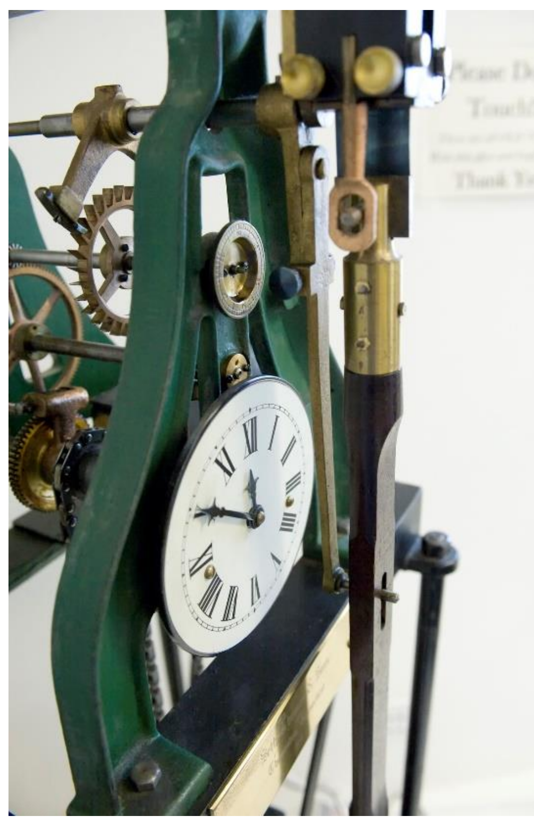




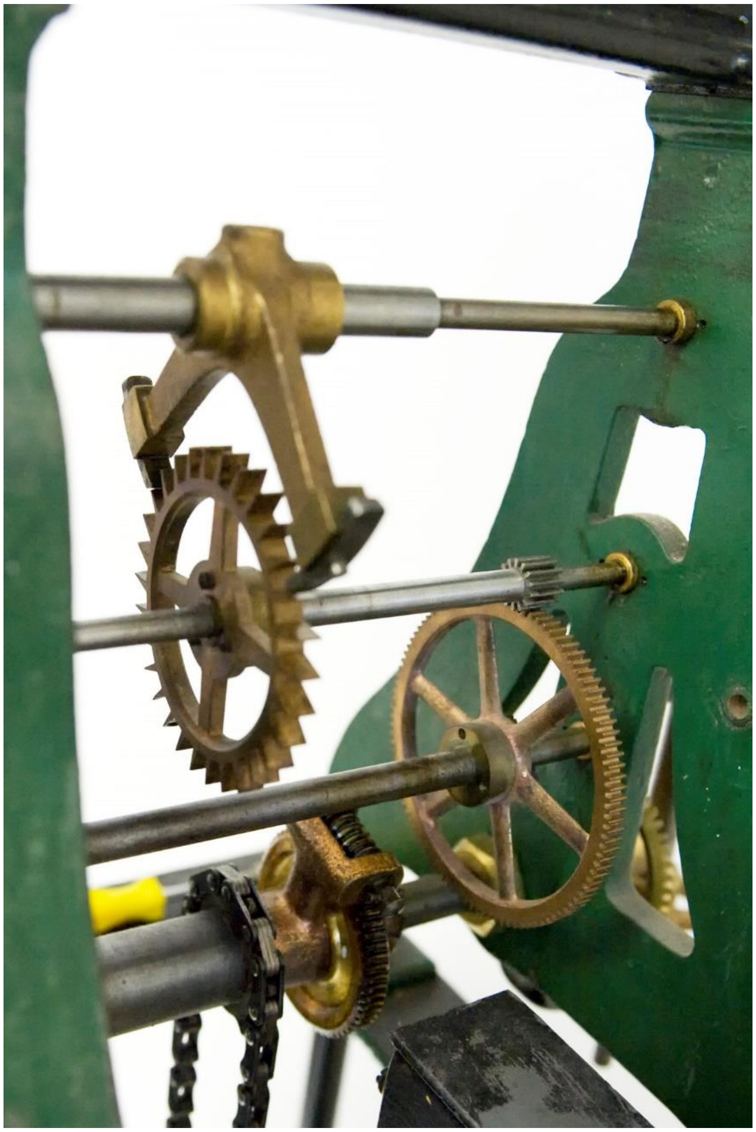
The Seth Thomas tower clock is a more modern implementation of this type of clock. Our clock is dated 1928 and was built by Seth Thomas & Sons of Thomaston, CT. Seth Thomas, the founder, was an early American clock maker who learned his trade from Eli Terry, known for being one of the first American manufacturers of wooden movement clocks. Thomas established his own clock factory in 1817, but he did not incorporate as the Seth Thomas Clock Co. until 1853 when he was 67. He then continued to run the company for five more years before turning it over to Aaron, his youngest son.

The company began manufacturing tower clock in 1872. One of their largest clocks was installed at Independence Hall in Philadelphia, PA in 1876. The company stopped manufacturing tower clocks in 1929, but enough inventory existed to permit them to install their last tower clock in Lebanon, CT in 1942. Throughout tower clock production, Seth Thomas won a number of international awards based on the quality of its productions.

Considerable improvements in metallurgy and clock design were available when the Seth Thomas clock was made. Precision iron casting and machining permitted the entire frame to be produced in a compact frame and spacer design. The relatively small size of the clock mechanism can be judged in comparison to WCCWM docent John Ginzler’s height in the photo. The movement, with the frame bed, is 57 inches tall and 28 inches wide. Seth Thomas called this model No. 5. The pendulum is 4 feet long and the ball at the end weighs 75 pounds. In its shipping crate at the factory, the entire assembly weighed 500 pounds.

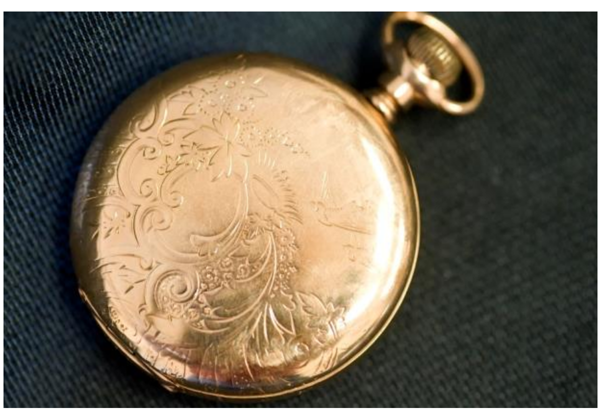


After widespread availability of electric power, Seth Thomas could sell tower clocks that automatically wound the weights. This feature eliminated the need for massive weights and long drops, along with the drudgery of winding the clock manually. The museum clocks weights are to the rear of the frame bed and look like the components from a Nautilus weight machine at a gym. Seth Thomas stated in the catalog, “This type has all the advantages

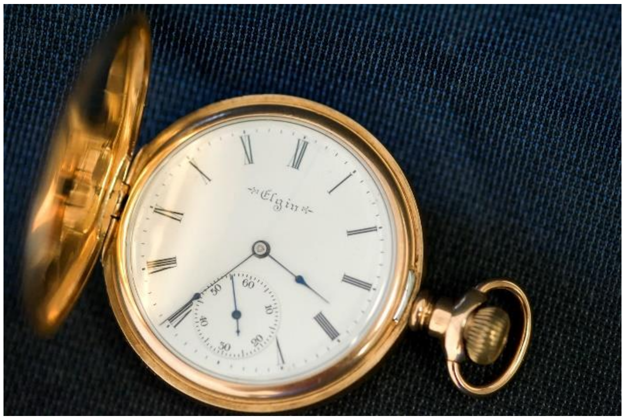


of the purely electric clock but at the same time depends on the motive power of the force of gravity, the most constant power known." The power of the clock movement was transferred to the hands on from one to four dials by long rods attached to the top of the clock (not included on our museum clock). The dials were usually installed in the tower one story above the clock movement. This clock can drive either one dial, up to 8 feet in diameter, or four dials, each up to 5 ½ feet in diameter.

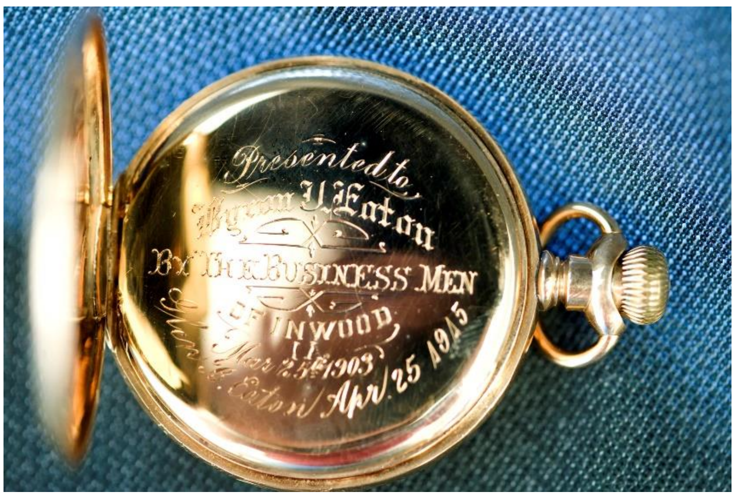
This clock movement also uses a higher quality escapement than the Norwegian clock. Here, the clock is equipped with a deadbeat escapement. When the pendulum reaches the end of its swing, one of the anchor-shaped pallets release a single escape wheel tooth. The escape wheel advances then stops "dead" without any recoil. The deadbeat escapement requires precision machining of the pallets. The improved action can increase the timing accuracy to about one second daily. The main drawback is that if the clock is allowed to run down, the sharp edge of the pallet may damage the escape wheel.



Now let's focus our attention on a timepiece at the smallest end of the size spectrum. A 14Kt gold hunter case encloses this Elgin pocket watch. Hunter cases provided a metal cover over the dial; however, reading the time required the user to release a catch to reveal the dial. The heavily engraved watchcase depicts floral patterns and birds in flight on the front and back. Only the best watch grades were equipped with gold cases of this quality.



The Elgin National Watch Co. manufactured timepieces at its Elgin, IL complex for nearly a century. Founded in 1864, the factory became the largest watchmaker in the world for most of that time. Seven artisans from the Waltham Watch Co. in Massachusetts were convinced to switch allegiance and enabled Elgin to start production in 1867. The company remained in business until 1964 after producing half of the total pocket watches made in the US (excluding the cheap "dollar watches).



The dial is made of porcelain with roman numerals designating the hours. The outer circle, called the minute chapter ring, marks off each minute. This chapter ring, together with the clearly ruled seconds register at the 6 o'clock position, makes it easy for the user precisely to read the time. Opening the rear case cover reveals the dust cover, which helps keep foreign matter away from the movement. The dust cover also provides a perfect place for an elaborate inscription. The inscription reads, "Presented to Byron J. Eaton By The Business Men of Inwood, IA, Mar 25th 1903." Underneath the first inscription in slightly different font is, "Glen B. Eaton, Apr. 25 1915." Presumably, Byron passed the watch on to his son Glen twelve years after receiving it.

Raising the dust cover shows the magnificently decorated movement. This is a 17-jewel movement equipped with a safety pinon. A pinion is a small gear attached to the same watch shaft as a larger wheel. The safety pinion is designed to unscrew if the watch mainspring breaks, preventing the going train gears from stripping from the mainspring's sudden release of energy. The watch serial number indicates production between 1901 and

1902. The “Adjusted” notation refers to efforts made during the testing process to decrease or eliminate temperature, positional or beat errors. The user can further adjust the rate of the beat by moving the pointer toward the Fast or Slow positions as appropriate. The elaborate ornamental machining, called Damascene, was a special feature of the most expensive watches. This certainly is a watch the owner would proudly own and display each time the case is opened to read the time.

These are only three examples from the museum collection. By sure to drop by to view these and much more. Docents are always available to explain the nature and operation of the clocks and watches on display. An interactive computer display provides more details for many of the items in the museum. Furthermore, when you examine the tower clocks, you need not fear bats in the belfry.

I wish to thank WCCWM docent John Ginzler for his knowledgeable assistance in preparing this article.