

# THE ROTHSCHILD-PETERSON PATENT MODEL MUSEUM

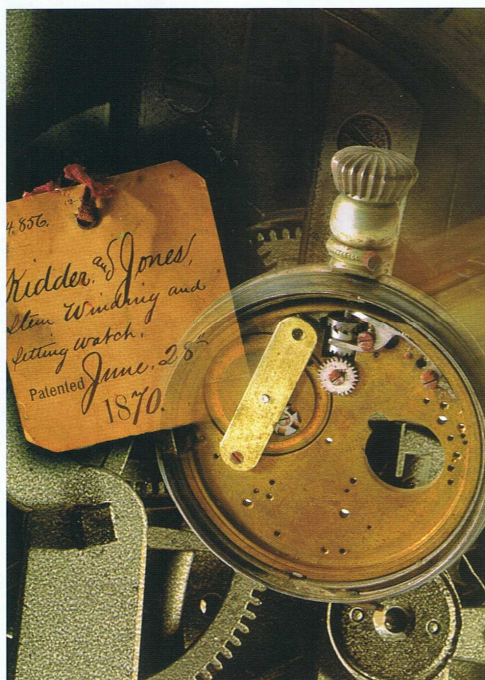
By Steve Lundin

**PATENTS** grant an inventor the right to exclude others from producing or exploiting the inventor's discovery or invention for a limited period of time. In the United States in 1790, patent laws were enacted by Congress under its Constitutional grant of authority to protect the discoveries of inventors. In order to qualify for a patent, an invention must be novel, useful, and not of an obvious nature.

Marking some of the most significant events in technological history, the Rothschild-Peterson Patent Model Museum in Cazenovia, New York is the largest privately-owned collection of United States patent models in the world. Open by appointment only, the museum, an extension of owner Alan Rothschild's Cazenovia Lake home, is a virtual three-dimensional tour through inventive history, containing some of the products that have formed the very foundations of modern timekeeping.

Rothschild's vast private collection, which spans America's Industrial Revolution, contains inventions and patents of famous watchmakers who

have shaped the face of today's multi-billion dollar international watch industry. Thirty of his 4,000 patent models involve fundamental watch components. Recorded between 1859 and 1885, these patents were filed primarily by American inventors, with a few notable exceptions coming from Switzerland. This period indicates the rapid penetration of the pocket watch in the consumer marketplace, fueled by an interest in Swiss watchmaking that in turn sparked an American effort in horological technology. The plethora of inventions coming out in such a short period of time reflects both the inventors' interests and the government bureaucracy of the period. "Today the patent



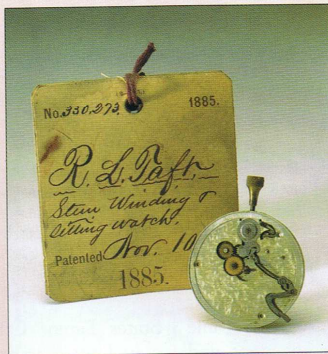
Charles L. Kidder and International Watch Company (IWC) founder, Florentine A. Jones' "Improvement in Stem-Winding and Hand-Setting Watch" was patented on June 28, 1870. The object of their invention was to produce a more convenient, and at the same time, ornamental means of connecting and disconnecting the hand-setting mechanism of a watch with the system of gear-wheels connecting with the cannon-pinion and hands, without impairing the strength and durability of the different parts. The nature of their invention consists in the employment of a ring or annulus fitted to the pendant of a watch-case, in such a manner as to move freely. This ring has a screw passing its rim, and through a slot in the pendant, the point of this screw travels in cam-groove of a cylinder or connecting-rod within the pendant, so that, by a movement of the ring the cam-cylinder is raised or lowered, thus connecting or disconnecting the hand-setting mechanism of the watch with the cannon-pinion, while the mechanism is actuated or the watch wound by the spindle through the pendant.

They also employed a cylinder, to which the ring is fixed by pins, so that, when the ring is turned upon the pendant, the cylinder within is turned, and by its cam end acting upon a lever-spring, engages or disengages the proper wheels for setting the hands or winding the watch.

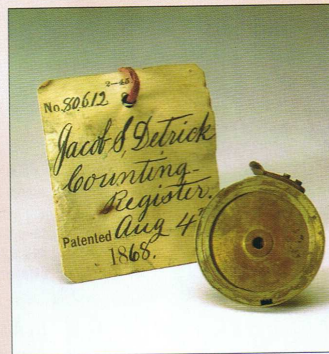




George Gondelfinger and Jean Lous Bichet's mechanism for the "Improvement in Winding and Setting Watches" was patented on April 18, 1865. By doing away with any sort of fourth wheel, the gearing is relieved of all the frequent difficulties and imperfections. The shaft is provided at its end with a pinion and acts on the wheel in such a manner as to impart to it a rotating movement which it communicates to the wheel on the shaft of the barrel in four revolutions from wheel to wheel, imparting to the spring its tension, and thus the motor of the watch movement is regenerated by means of the shaft provided with the pinion. When the spring is wound up to its utmost tension, the stop is made automatically and the operator may turn the shaft indefinitely without being able to cause any damage.



A mechanism for "Stem Winding and Setting Watch" was patented on November 10, 1885 by Ryland L. Taft, of Springfield, Illinois, Assignor to the Illinois Watch Company. This invention has relation to stem winding and setting watches; and it consists in the constructions and novel arrangement of devices. In a stem winding and setting movement, the spring, pivoted at or near one end and forked near the pivot, works in combination with a setting lever or device adapted to move the spring. Furthermore, the combination of the yoke, having the recess, the pivoted spring-lever, the vibrating lever and a setting-lever are all arranged and adapted to operate and facilitate the stem winding and setting of watches.



Jacob S. Detrick's system for the "Improvement in Counting-Registers" was patented on August 4, 1868. The object of his invention was to provide a neat and convenient pocket-instrument, by which the velocity of shafting can be accurately determined. The end is depressed and the connecting-spindle placed in its socket, and brought down into gear with the two wheels, they having previously been set so that the 100 on the ring is at the arrow on the rim and at the arrow on the central part of the face. The parts being held in this position by the thumb or finger, the head is applied to the center of the shaft whose velocity is to be ascertained, and held so firmly against it that the motion of the shaft will be communicated to the connecting-spindle. One-hundred revolutions of the latter will then turn the wheels through the space occupied by one hundred cogs on each, giving one wheel a full revolution and the other a whole revolution minus the cog. The arrow on the plate will then be distant from 100 on the ring just one degree, indicating one hundred revolutions of the shaft. Every subsequent one hundred revolutions of the shaft will separate the arrow from 100 one degree farther, until it passes through the whole one hundred degrees, indicating ten thousand revolutions of the shaft. If it is desired that the arrow shall move forward, or to the right, from 100 on the ring, one wheel must have one hundred cogs, the other having one hundred and one.

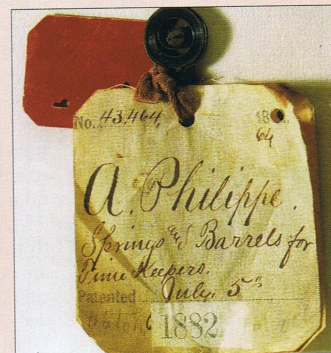


A mechanism for the "Improvement in Watch-Plates" was patented by Ferdinand Adolf Lange on March 23, 1875. His improvement relates to the construction of the top plate, and in the arrangement and combination therewith of the barrel or case containing the mainspring, in such a manner that when occasion requires, as for repairing or cleaning the mainspring barrel and arbor, can be readily removed from the watch without taking off the top plate or disturbing the other parts of the watch, and also in turn to be readily replaced; and it consists more particularly in cutting a slot from the outer edge of the top plate to the hole or aperture in which the arbor or spindle revolves, and in so attaching to said arbor or spindle a plate, that the arbor can be secured thereby in its proper position in and to the top plate of the watch; or, on releasing said plate from its position, the spindle or arbor can be readily removed from the watch, together with the barrel containing the main spring.



An "Improvement in Attaching Hair-Springs to Watch Balances" was patented by Jacob Shaw of Shelby, Ohio on January 28, 1873. This invention relates to an improved manner of attaching hair-springs to balance-wheel staff in watches whereby the tension of the spring may be regulated. The old method of passing the end of the spring through a hole in a stud and securing it with a pin inserted in the same hole and in line with the spring is attended with difficulty in retaining the spring in proper place or position.

His improvement is as follows: On the upper end of the balance-staff and lying on the arms of the balance, he put a plate having a raised tube which fits friction-tight on the shaft, and on the outside of said tube is cut a screw-thread. On the plate lies about three-fourths of the inner coil of the spring, above which is placed a nut that screws onto the tube and clamps the spring between it and the plate. The tube may be turned on the staff without unscrewing the nut for adjusting the spring.



Dated July 5, 1864, Adrien Philippe's patented invention "Improvement in Springs and Barrels for Timekeepers" negated the need for the mechanism known as the "fixed stop". By dispensing with the hooking of the spring to the barrel, all chance of accident is avoided because beyond the limit of its tension, the spring may turn indefinitely in the barrel without injury to the watch. When the spring is fully wound, a projection falls into one of the channels and produces a slight click, sensible to the ear and to the touch. Thus the person winding is advised that the watch is fully wound.



## ORIGINS



George Hunter of Illinois patented his "Improvement in Dust-Caps for Watches" on June 12, 1877. In order to enable a solid dust ring or band to be employed to form a dust-tight joint, his invention consists, principally, in combining with the barrel-recess of the top plate of a watch a barrel-bridge, which extends across the outer side of the recess, and is provided with a lip that encloses the outer edge of same, and has its lower edge flush with the lower side of said top plate. It consists further in combining with a recessed top plate a barrel-bridge and a pillar-plate, constructed and combined as described, a dust-band formed in one piece, and arranged to enclose the space between the contiguous edges of said part.

process can take years; a century ago it took months. Inventions came to the table more quickly back then," says Rothschild.

Notable watchmaking patent models include Adrien Philippe's (the Philippe in Patek Philippe) "Improvement in Springs and Barrels for Timekeepers" patented in 1864, which negated the need for the mechanism known as the "fixed stop"; Charles L. Kidder and International Watch Company (IWC) founder Florentine A. Jones' "Improvement in Stem Winding and Hand-Setting Watch," patented

in 1870, which became a more convenient, and at the same time, ornamental means of connecting and disconnecting the hand-setting mechanism of a watch

without impairing the strength and durability of the different parts; and Eugene J. Pacaud's "Improvement in Stem Winding and Setting Watches," patented in 1873, which also improved the construction and operation of devices used for connecting and disconnecting the hand-setting mechanism.

Beyond watch mechanisms, Mr. Rothschild's collection holds such unique treasures as a door-closing device, invented in 1874; a bootjack-burglar alarm, registered in 1858, that was used to remove boots and doubled as a traveling alarm and a steamboat paddle wheel from 1837.

And how did Mr. Rothschild amass such an extraordinary collection? "With drive and dedication," he explains. Until 1880 the United

States Patent Office required inventors to submit a scale model with their patent applications. The models were displayed for public viewing until 1876, when their sheer number exceeded the capacity of the office's space. The government sent many of the models to their personal history warehouse, the Smithsonian, allowing the rest to be auctioned to the public in 1925. The winning bidder on the collection was Sir Henry Wellcome, founder of Britain's Glaxo-Wellcome pharmaceutical company. Upon his death, Mr. Wellcome's collection was sold, and then re-sold, eventually ending up in the hands of a one Mr. Cliff Peterson, a prominent Aerospace engineer who promptly donated many of the models to a foundation that broke up and sold the pieces individually. This left one final chunk of the original collection intact. It was this collection that Mr. Rothschild eventually obtained to form the core of his own museum's collec-

tion. In recent years, he has added other collections, including all 82 models comprising a patent museum in Fort Smith, Arkansas.

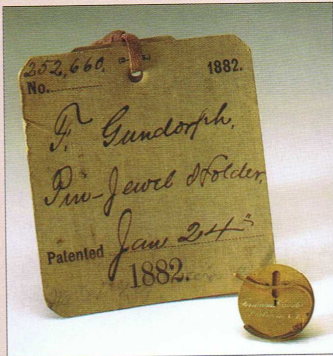
In the near future, Rothschild plans to establish a national Patent Model Museum in Syracuse that includes an Invention Center with workshops, conventions and educational programs. He hopes to link the Invention Center with Onondaga Community College, Syracuse University and area schools, in order to help would-be inventors to navigate the patent process and spur creative thinking through special programs in elementary schools.

For watchmaking enthusiasts, the opportunity to get up close and personal with models like Adrien Philippe's "winding and setting watches," to actually inspect the hand-tooled gears, wrought upon the master's own table, is akin to looking at the Holy Grail. The Rothschild-Peterson Patent Model Museum is truly a time portal into the past and a unique glimpse of the technological revolution that has made accurate timekeeping an indispensable element of modern life. [www.patentmodel.org](http://www.patentmodel.org) ○

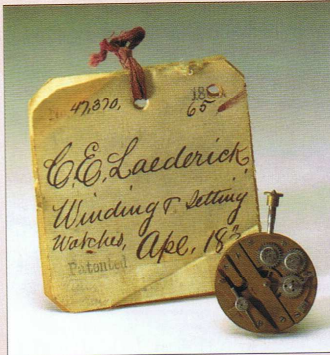


Charles R. Bacon and Leuthold C. Brown invented a mechanism for the "Improvement in Safety Center-Pinions for Watches", which was patented on August 17, 1875. Their invention relates to an improved safety center-pinion for watches; and it consists of a center-wheel with detachable pinion, having projecting teeth, that enclose a spring secured by a pin at one end to a perforation of the center-wheel, while the opposite free end of the spring binds pinion and center-wheel to revolve in the usual manner, while it turns freely without the center-wheel in opposite direction.





Ferdinand Gundorph of Portland, Oregon invented a "Pin-Jewel Holder" that was patented on January 24, 1882. The nature of the object of his invention was to secure a means of setting a ruby-pin in a balance-disk in a more perfect manner than already was, so that the said pin shall be parallel to the axis of the balance-shaft, and the plane face of some perfectly tangent to the circle of oscillation of the balance. In setting a ruby-pin in the ordinary manner, it was difficult to keep the parts true and square; but by his new device it is possible to set the pin true at all times and with certainty.



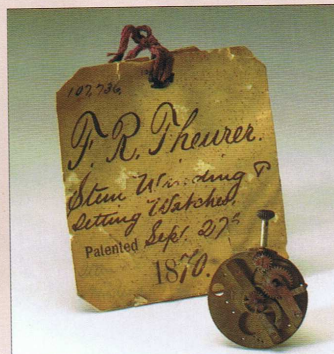
The invention for the "Improvement in Winding and Setting Watches" was patented by Charles Eugene Laederich on April 18, 1865. A modification of his improved remontoir arrangement consists in having the parts for the winding up of the watch situated on one side of the pillar plate and those for the setting of the hands on the opposite sides of the plate. Each of his improvements allows the passing directly from the winding up of the watch to the setting of the hands by means of the spindle, the pinion of which being alternately set in gear with the wheel, and the wheel thus causes the said pinion to act, as it were, as a double pinion, the same being of sufficient length for allowing one part or end of its indentations to be set in gear with the wheel and afterward the opposite end with the wheel. The middle part of this pinion consequently remains cylindrical or smooth, the entire thus forming, as it were, two pinions, connected together lengthwise by the cylindrical part.



An invention for the "Improvement in Watches" was patented by Eugene J. Pacaud of Switzerland on October 11, 1875. His invention relates to certain new and useful improvements in stem-winding and stem-setting watches, having for their principal object the simplifying and perfecting of the mechanism by which the "Breguet ratchet" of stem-winding watches is shifted to allow the setting of the hands. His invention consists mainly in the means employed for attaching an angle-lever, which acts on the spring-arm of the Breguet ratchet to a watch-case.



A mechanism for the "Improvement in Safety Center-Pinions for Watches" was patented by George W. Dickinson of Ohio on March 25, 1879. A frequent accident to which all watches were liable was the breaking of the mainspring, which can readily be replaced by a new spring at small expense; but the sudden recoil of the main wheel and barrel, which are ponderous, compared with the smaller parts of the train, generally impacts with such force upon the more delicate parts of the movement as to break or otherwise injure them, such injuries often being difficult and costly to repair, and occasionally result in impairing the quality of the watch as a timekeeper. The object of Dickinson's invention was to remove such danger altogether, which he accomplished by mounting the pinion on a journal formed on its arbor, on which it is entirely free to turn either forward or backward between collars or end bearings, that keep it at all times properly in gear with the main wheel. He then attached a short arm by a pivot or spring-hinge to the center-wheel or to its arbor, and arranged the arm so that it will stand in the proper position for the teeth of the pinion to abut against when it turns forward to drive the train, the arm moving aside to allow the pinion to turn backward without obstruction, and without transmitting its motion to the rest of the train.



Fritz Robert Theurer, of La Chaux de Fonds, Switzerland, invented a new and useful "Improvement in Stem-Winding and Setting Attachments for Watches" which was patented on September 27, 1870. This invention relates to improvements in attachments to watches, for winding and setting them by turning the stem. With this invention, the wheel will always be turned by the turning of the stem, and when the wheel is subject to the action of the spring, it will be forced outward, so that the notched flange will engage the teeth of the ratchet-wheel, which will be turned by it, and will turn the chain-drum to wind it; but if the bar is pressed inward by the thumb placed on the end of the arm or stud, the wheel will engage with the center wheel for adjusting the time.



George E. Hart, of Waterbury, Connecticut, Assignor to the Waterbury Watch Company invented a "Watch-Plate" which was patented on February 5, 1884. In the construction of watches, it had been customary to form the bottom or pillar plate from a solid piece of metal, which was first turned to thickness and diameter and recessed from opposite sides for the various pinions, wheels, click, click-spring, etc, each recess requiring the separate chucking of the plate, and rendering necessary as many distinct operations as there were recesses. To obviate such an amount of manipulation and to correspondingly lessen the expense of the completed plate was the design of his invention, which consists, principally, as an article of manufacture, in a watch-plate constructed of two sections separately formed, pierced, and recessed, and then secured together by screw end pillars. It consists further in a watch-plate composed of two separate plates superimposed one upon the other, and united together so as to form one plate. It consists further in a watch-plate composed of two separately-formed full sections, which are united by means of the pillars. It consists finally as in improvement in the setting of jewels, in a watch-plate composed of two separately-formed full plates which are superimposed one upon the other and fastened together, and with their contiguous faces recessed to receive and contain the jewels.