The Adams & Perry Watch Co. and the Early Watch Companies of Lancaster, PA

Part 3 of 3: The Mechanics and More

By George Meyer (DE) and Burt Cifrulak (PA)

The Perry Design and Early Production Models

In this final installment of our story, we investigate some of the mechanics of these companies' watches, including the gear train, setting mechanisms, dials, hands, and patents. Beginning with the original Adams & Perry Watch Manufacturing Co. (A&P) design, Edwin Perry had patented three features included in the ébauche that were incorporated into the first model movements. We believe fewer than 40 of these first models were prepared for completion, with maybe a handful produced, making them exceedingly rare. The old plate design used a larger portion of the pillar plate's material, which had to be removed to accommodate the complicated setting mechanism (Figure 1). When replaced with Moseley's more efficient design (Figure 2), the plates were rendered noncompatible for future production watches. The rachet wheel design was also modified to be more robust and efficient (Figure 3). We never believed Crossman's assessment that these "were thrown into scrap,"[1] and we now have supporting evidence to prove that assumption. It is remarkably interesting to examine the first and second models of the Perry-designed movements that verify the contemporary writings of Crossman. As he wrote in March 1876, "The royalty hereafter to be paid to Mr. Perry shall be $1 for each watch."[2] This reduced amount relates to the fact that only one of Perry's patents, instead of three, would be used in the second model production runs. Very few examples of completed first model watches have ever been examined, and those few in the 30 serial number range were completed by Keystone Watch Co. near the end of its existence. We even have examples of some first model pillar plates, which were never used in completed watches, that are in collections today. We also know, from examining actual watches, that the early first Lancaster Watch Co.-completed movements, designed by C. S. Moseley and W. Todd, were finished and used many of these same parts.

Gear Train

When we examined a variety of watch movements, one of the early points of interest we discovered was a major change of the gear train from the early Perry-designed models (Figure 4). Upon investigation, we learned that the tooth count (Figure 5) was less on the later Lancaster, Moseley-designed watches. We believe this made the gear train more robust and cut costs in manufacturing. After closing in May 1876, the factory did not reopen until September 1877.[3] This long period of time caused much of the watchmaking equipment to become "rusty and out of repair."[4] It was not until Moseley's arrival in January 1878 that these and other positive design changes would get the factory back on track to produce actual products for sale. While no watches were finished, much was getting accomplished.

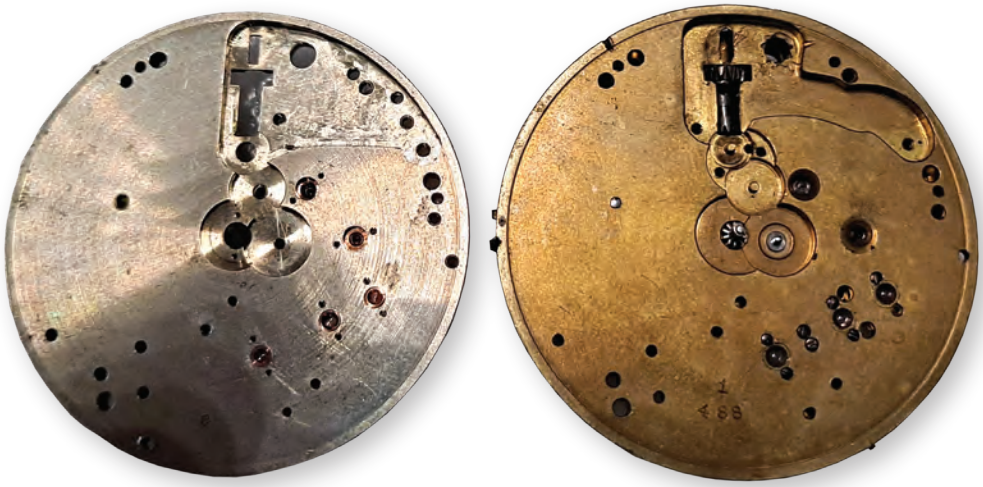


Figure 1. Side-by-side comparison of the first model (left) pillar plate and the second model (right), clearly showing they are specifically designed and machined to accommodate their respective setting mechanisms. We don't believe any of these first model plates were discarded, as they were available to Keystone to use in its series of presentation watches. Some of the first model plates are still found in collections today, never having been used in watch production. PHOTO BY GEORGE MEYER.

Figure 2. Note the difference in first model (left) and second model (right) setting mechanisms. Moseley's design, in the second model, uses fewer parts, requires less material and machining, and in our opinion is more robust. It is clearly superior to the Perry design. PHOTO BY GEORGE MEYER.

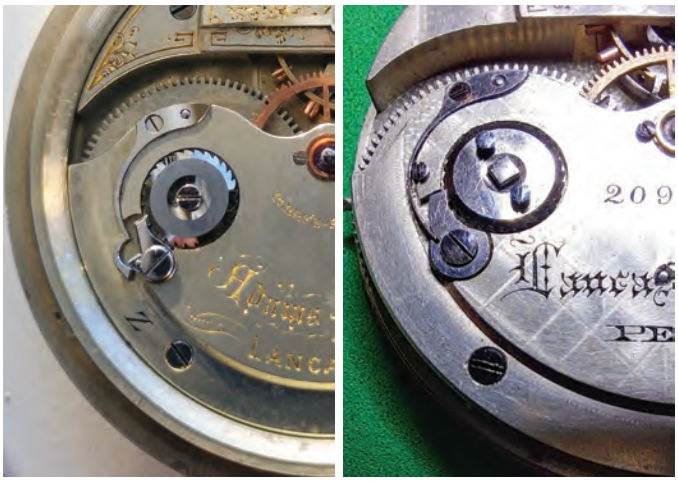


Figure 3. The first model click spring assembly (left) and second model (right). Moseley's click design was a better design: it was easier and simpler to manufacture plus it included a let-down screw. PHOTOS BY GEORGE MEYER.

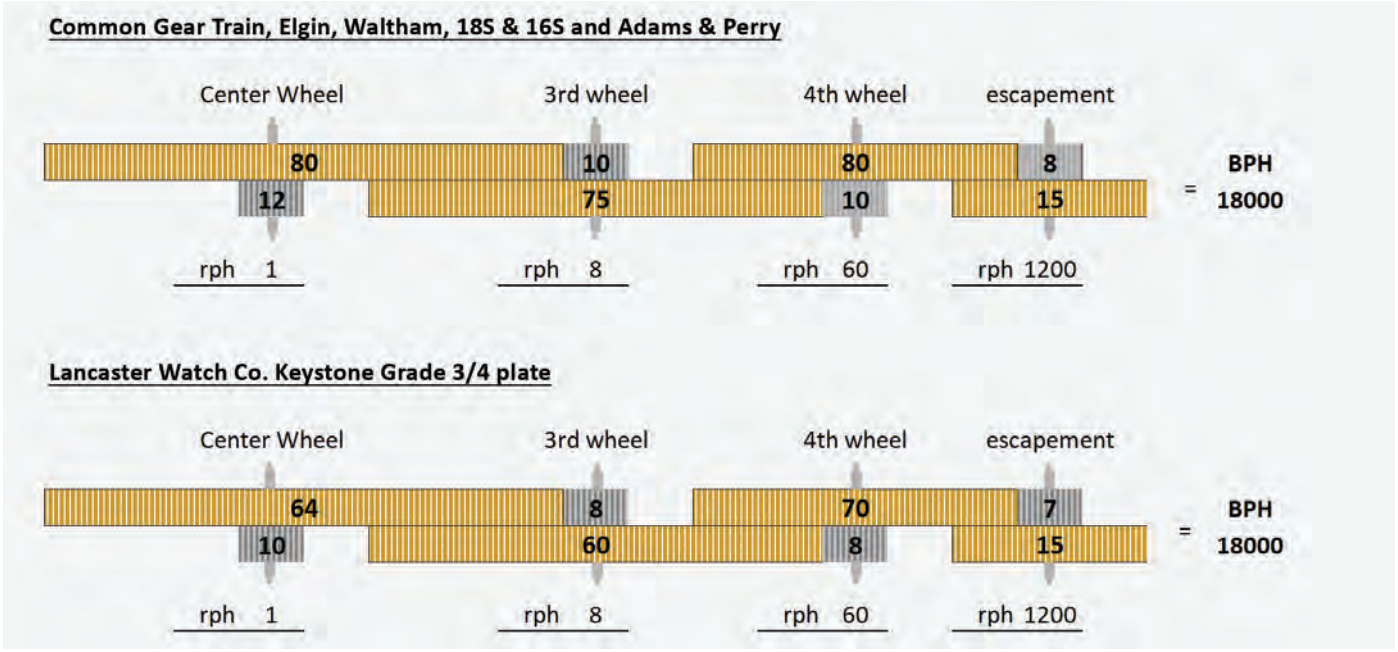


Figure 4. This graphic compares the original Perry-designed train with the newer Moseley/Lancaster train. GRAPHIC BY GEORGE MEYER.

Figure 5. An 80-tooth center wheel from the A&P grades alongside the new 64-tooth center wheel from the Lancaster ébauche, which was easier to make and stronger with heavier gear teeth. PHOTO BY GEORGE MEYER.

Figure 6. Perry-designed setting mechanism from the first A&P ébauche (left) followed the Perry patent. Subsequent first models used a three-piece design. PHOTOS BY GEORGE MEYER.

Wind and Set Mechanisms

The A&P watches were all stem-wind mechanisms. They incorporated a design Perry had patented years earlier when he was working on his prototype watch while living in Boston, MA. There were minor changes to the setting/winding mechanisms between No. 1 and the later production models of these A&P watches. One such change can be seen in Figure 6 and what is illustrated in Figure 7, the Perry patent. One of the parts was made into two separate pieces.

There was another redesign done by the Lancaster Watch Co., likely to make the part easier to manufacture and more reliable (Figure 8). All of these first and second models had winding and setting issues.

The first offerings of the Lancaster Watch Co. were key wind and set. These are quite simple and would have allowed the company to begin to move parts down the line ahead of finishing the design and tooling the stem-wind/stem-set design.

The first stem-wind/stem-set grades from the Lancaster Watch Co. on the Moseley-designed ébauche showed up in the 8,000 range in a Franklin grade. This stem wind uses a rocking bar-style setting mechanism with an interesting tilting rod holding one of the winding wheels (Figure 9). Five of these are recorded in the 8,500 to 8,700 range. Notice the stem retainer screw on the main plate shown on this early stem-wind Franklin (Figure 10). This indicates that it is a stem-wind/stem-set design.

A third series shows up with a modified setting mechanism, changing from a stem wind/stem set to a stem wind/lever set. This updated mechanism used a rocking yoke design, which was much more reliable (Figure 11). This design was used for the remaining production runs.

Plates

While watch plates provide function, they can also be appreciated for their design and beauty. In his patent (Figure 12), Perry[5] describes one of the "S" curves as resembling "Hogarth's line of Beauty" in his design of the upper plate of his watch. This refers to an art term that describes "liveliness and activity and excite the attention of the viewer."[6] The plate also offers a large area for artistic decoration and word engraving. Over the life of these companies, several top plate designs were used, giving the impression of different models. The changes were in shape only while the underlying ébauche remained the same (Figure 13).

Regulators

The A&P watch variants all used a simple pointed regulator, as did the early Lancaster Watch Co. products (Figure 14). The dustproof models required a small appendix added to the regulator to cover the opening for the hairspring stud (Figure 15). The second type of regulator used was an Abraham Bitner-designed "micro-adjusted regulator," which he patented in 1882. This style begins to show up on Lancaster watch products in the January 1, 1884, price list catalog on high-end and other specific movements. The new regulator was also

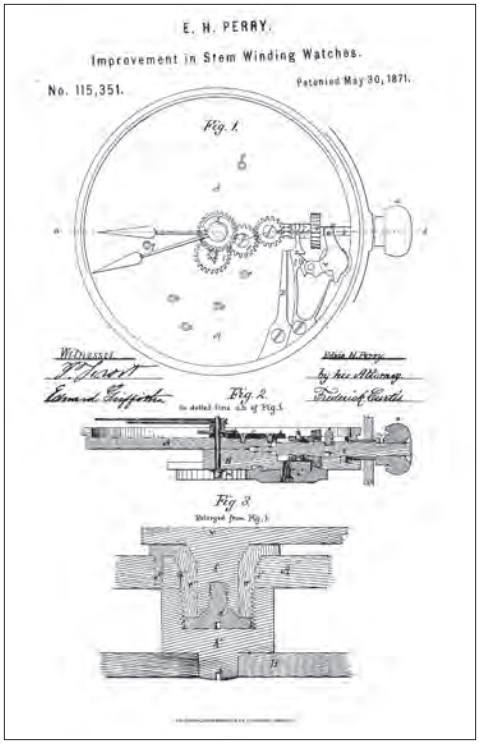


Figure 7. Edwin Perry's patent for the setting mechanism used on the first model A&P.

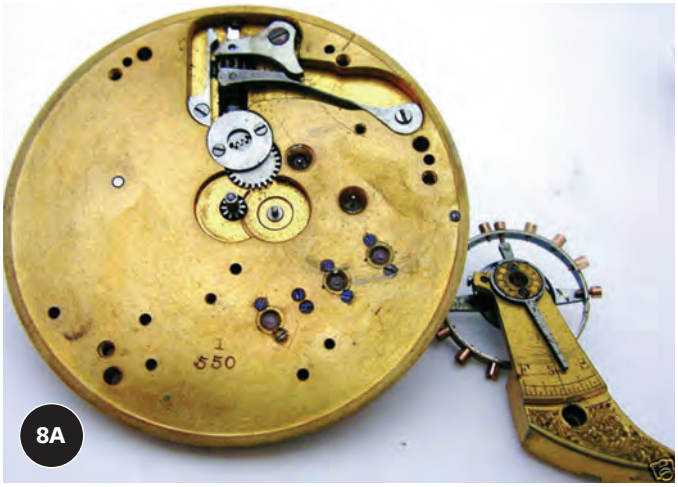
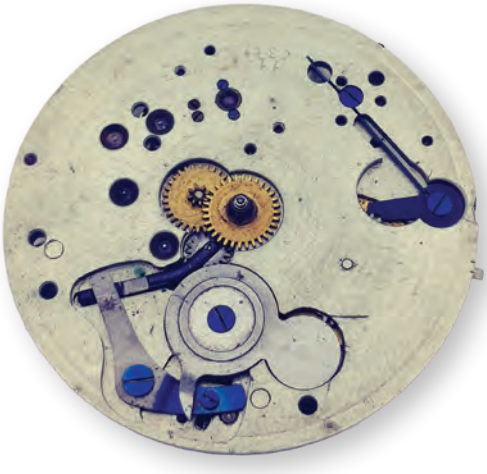


Figure 8. (A) The simplified second model setting mechanisms, designed by Moseley, were less expensive to manufacture and functioned better. PHOTO BY GEORGE MEYER. (B) A replacement parts list from Green Bros., Maiden Lane, NY, Illustrated Price List, 1889.



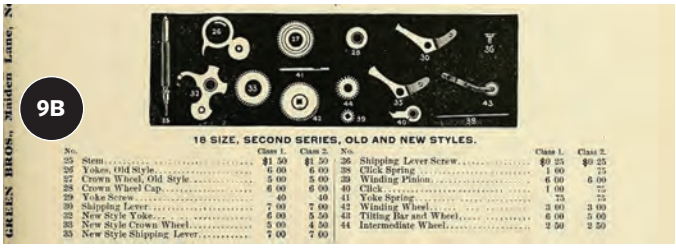


Figure 9. (A) This is the first setting mechanism developed by the Lancaster Watch Co. PHOTO BY GEORGE MEYER. (B) The associated parts list from Green Bros., Maiden Lane, NY, Illustrated Price List, 1889.

Figure 10. The first-grade model with stem set and stem wind can be identified by the stem screw shown at the bottom of the top plate. PHOTO BY GEORGE MEYER.

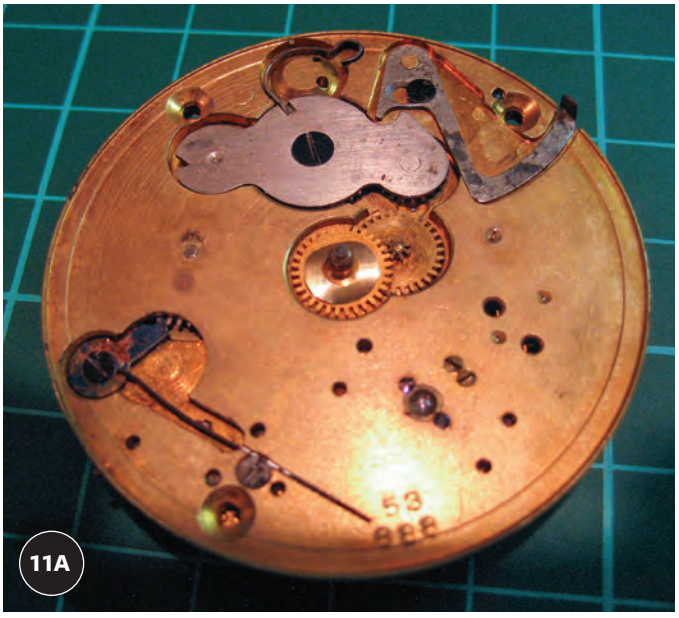
offered on certain mid-priced models for a surcharge of $2.00 but was not available on the lower-end watches. The new patent regulator was also used nearly exclusively on Keystone Watch Co. products beginning at serial number 300,000. We do not believe the actual cost to the company reflected the price of the regulator upgrade, but it was partly to compensate Abraham Bittner, like Perry before him, for his patent invention. At one point in time, Bitner was receiving as much as $800.00 a month, for this and his other patents, from a company that was barely staying afloat.

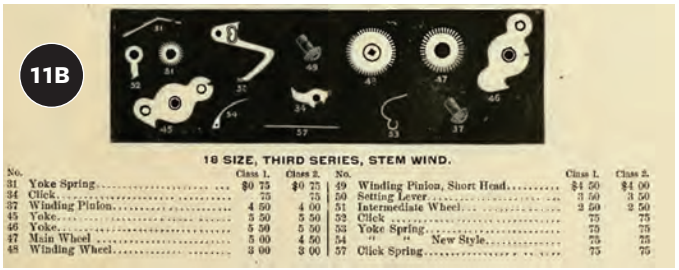
Dials, Hands, and Damaskeening

Dials

The very first watches from A&P and the Lancaster Watch Co. all used a slip-on dial on a 19S main plate, giving the actual size about a 19½. We observed examples of some watches that measured as 18S, which appear to have been altered by the factory and some show lesser-quality aftermarket modification. The original dial design used a plain dial with a steel metal ring (Figure 18). When the dials were later labeled "Lancaster," they were used on the second model A&P grade, and the first runs of the Keystone, Franklin, and Melrose grades used a brass ring. Observations indicated that all the nickel-finished A&P watches were made with the earlier unmarked dials and the earliest gilt models under the (approximate) 15XX serial number. We also discovered that the early unmarked dials were originally made with various patterned dial feet that were removed. We believe this indicates that the first dials used were outsourced, as the dial house at the north end of the building was not completed until the spring of 1879. This is another example that shows how very little that was purchased or made went to waste.

A Keystone Watch Co. exclusive was an attempt by Abraham Bitner to introduce a celluloid dial to reduce cost (Figure 19). Celluloid is a type of "thermoplastic" that was invented in 1856 by Alexander Parks.[7] It was patented in 1869 by John Westly and is a material that is ivory in color and is sometimes referred to as "French Ivory."[8] Unfortunately, it was not a good choice of material for watch dials and deteriorated quickly when exposed to sunlight. Hamilton would have similar failed results years later with melamine. Again, to save money,





No.		Class 1.	Class 2.	No.		Class 1.	Class 2.
31	Yoke Spring	$0 75	$0 75	49	Winding Pinion, Short Head	$4 50	$4 00
34	Click	75	75	50	Setting Lever	3 50	3 50
37	Winding Pinion	4 50	4 00	51	Intermediate Wheel	2 50	2 50
45	Yoke	5 50	5 50	52	Click	75	75
46	Yoke	5 50	5 50	53	Yoke Spring	75	75
47	Main Wheel	5 00	4 50	54	" " New Style	75	75
48	Winding Wheel	3 00	3 00	57	Click Spring	75	75

Figure 11. (A) The second-generation setting mechanism and the first lever-set rocking yoke style setting mechanism. PHOTO BY GEORGE MEYER. (B) The associated parts list from Green Bros., Maiden Lane, NY, Illustrated Price List, 1889.

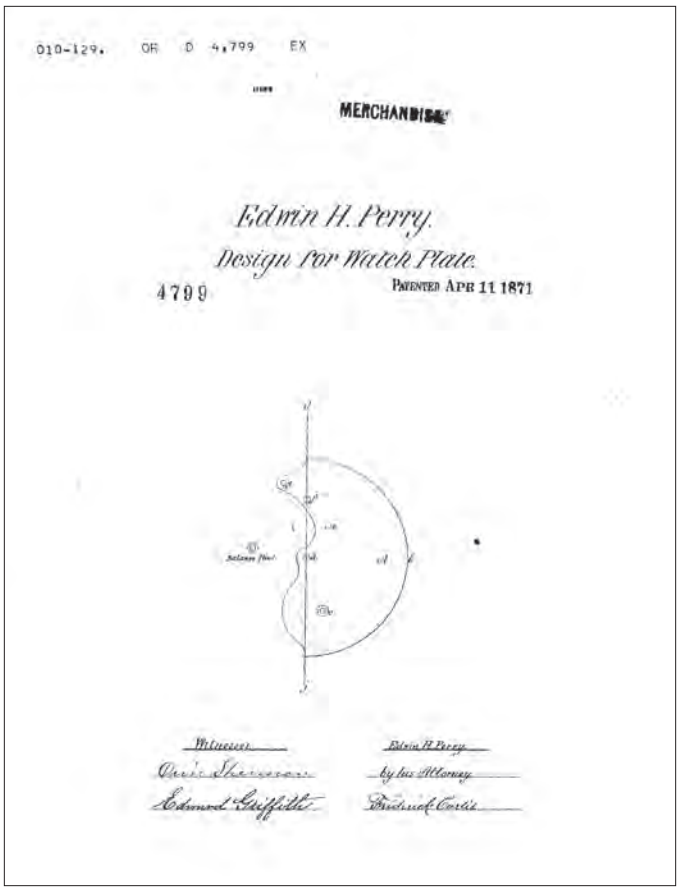


Figure 12. This drawing is the artwork from Perry's top plate patent.

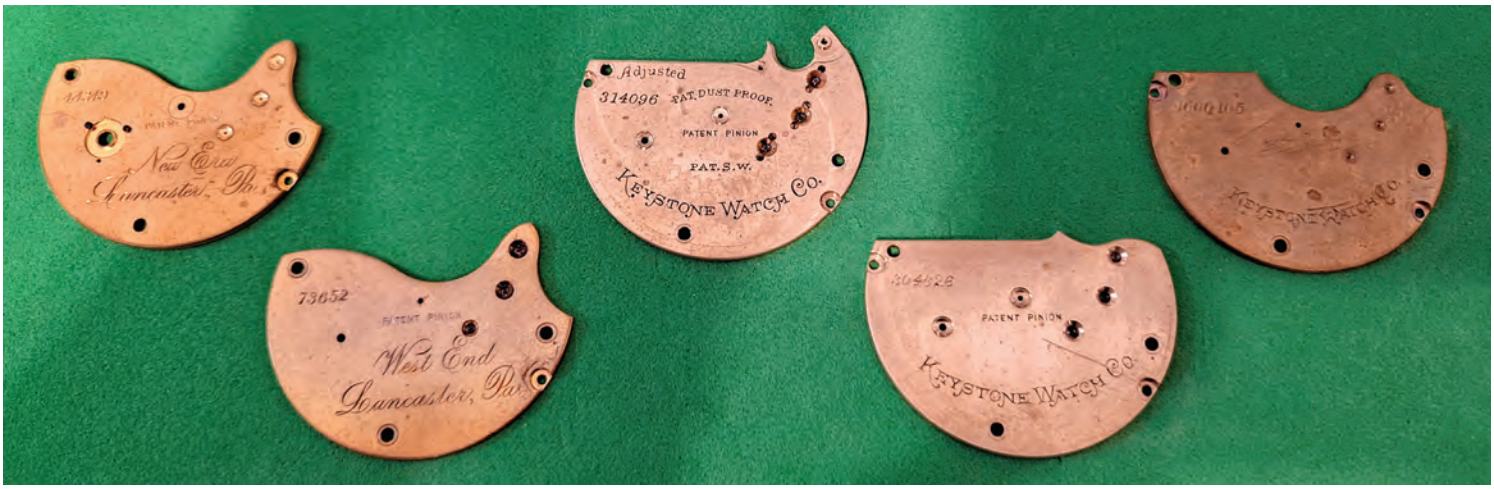


Figure 13. These are top plates used over the life of the ébauche. From left to right, early key wind, a stem-wind/lever-set, dustproof 15-jewel, a top plate made from a dustproof plate without the dustproof feature, and a flat-top shape. PHOTO BY GEORGE MEYER.

Figure 14. Perry's standard regulator for the A&P models 1 and 2 was used throughout production and was only replaced by Bittner's design in the Keystone-manufactured presentation series of watches. PHOTO BY GEORGE MEYER.

Figure 15. This is the dustproof regulator, used in earlier production movements. It incorporates a shield-shaped appendage to cover an opening. PHOTO BY GEORGE MEYER.

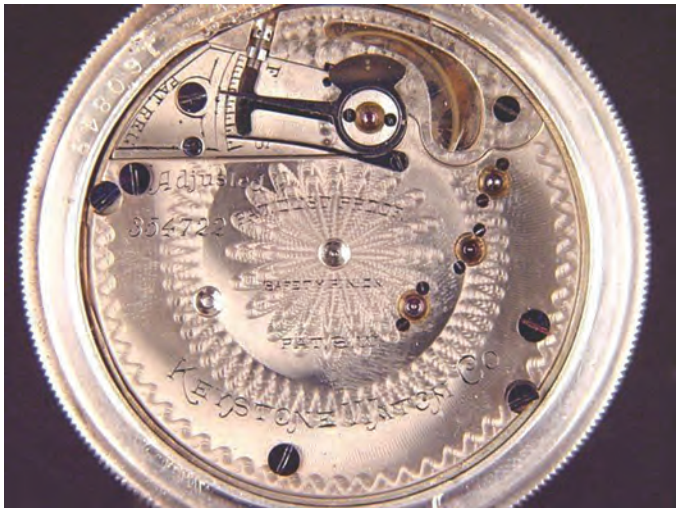
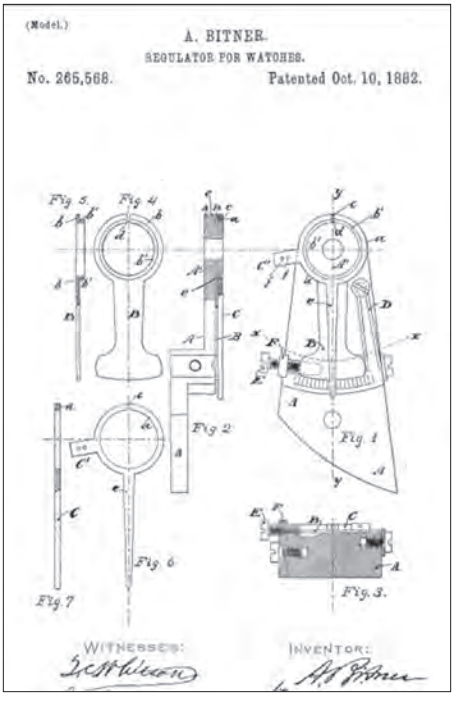


Figure 16. On later models, Bitner's micro adjustment regulator was available on most models for a surcharge of $2.00. PHOTO BY GEORGE MEYER.


(Model.)

A. BITNER.

REGULATOR FOR WATCHES.

No. 265,566. Patented Oct. 10, 1882.

Fig. 5. Fig. 4. Fig. 2. Fig. 1. Fig. 6. Fig. 7. Fig. 3.

WITNESSES: INVENTOR:

Figure 17. Illustration from Bitner's patent for the micro adjustment regulator.

Bitner would also patent and introduce paper dials, which again proved to be not practical or robust and were not popular with sellers or buyers (Figures 20 and 21).

Figure 22 shows an example of a 24-hour version that shows up on a Keystone grade in the 25,000 range. An O'Hara dial (Figure 23) shows up in the same serial number range on a Record grade.

Hands

The thin spade hands were also the standard hands through most of the production. During Keystone production, a special hand was introduced. It is our opinion that this special hand was meant to help expand the brand beyond Lancaster, PA, and attract investors from the Philadelphia area. As Pennsylvania is known as the Keystone State, the watch hands were made to resemble the keystone logo on the hour, minute, and some second hands. These were produced in blued and gold-plated versions, solid and skeleton (Figure 24).

Figure 19. In an effort to reduce costs, celluloid dials showed up later in production and suffered the typical fading and delamination. Hamilton would later experience the same problem with melamine. PHOTOS BY GEORGE MEYER.

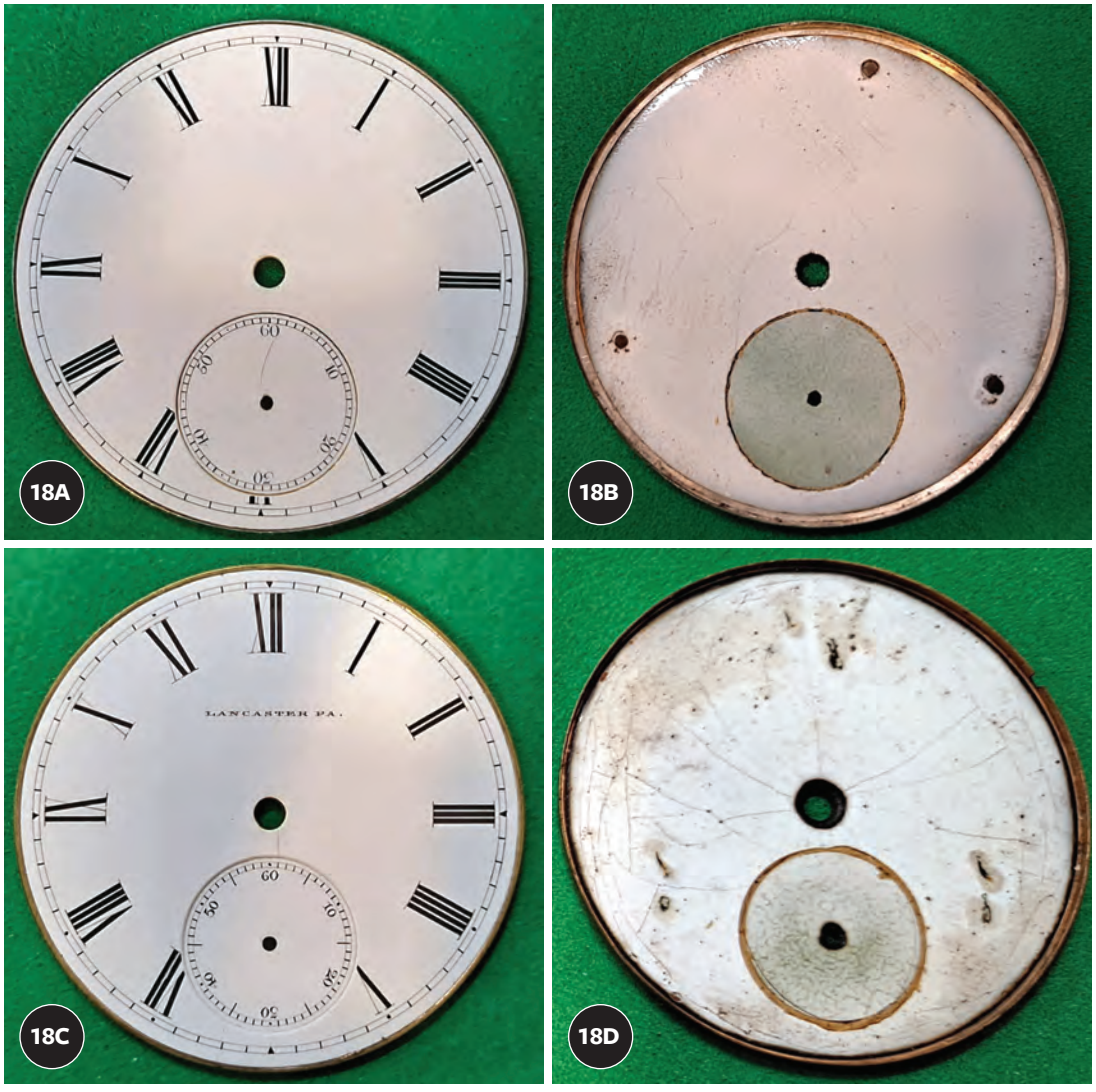


Figure 18. (A), (B) The original "outsourced" plain, steel-rimmed dial for both first and second model A&Ps. Note the cut-off dial feet on these early dials. (C), (D) The later "Lancaster" marked brass rimmed dial could have been made at the factory, as the dial house opened in the spring of 1879. PHOTOS BY GEORGE MEYER.

Figure 20. Group shot of factory dials: (A) Flat, (B) Single sunk, (C) Fake double sunk, (D) Double sunk, (E) Single sunk black, (F) Patented paper dial. PHOTOS BY GEORGE MEYER.

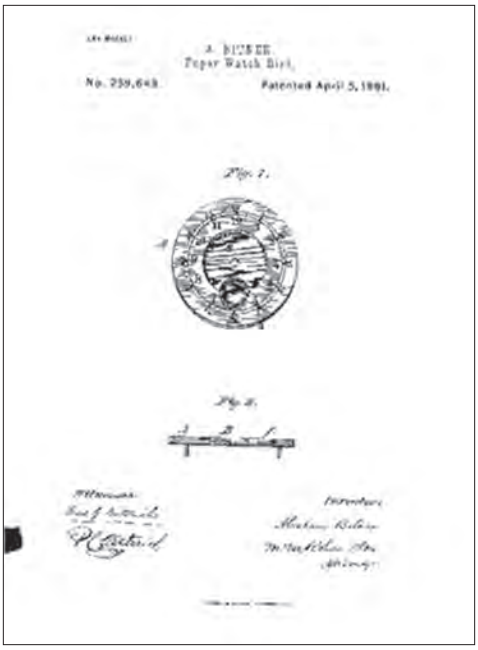


Figure 21. Bitner's paper dial patent was an attempt at cost reduction using a special paper. These dials simply did not hold up.

Damaskeening

The watch plate damaskeening of the Lancaster family of watch companies was wide and varied, and many patterns were used (Figure 25). The attractiveness of a watch movement was often a big selling point with the public, and the various watch companies were anxious to accommodate them.

The Dustproof

Bitner had received two patents relating to dustproofing watch movements. The first patent was for a top plate with an added small second plate to cover the opening over the balance wheel. The second patent was for the swing-out design of the second plate that was used in production (Figure 26A). A big misconception by some collectors about these "dustproof" models was that they were introduced by Keystone Watch Co. Not so, as they were designed and first made by the Lancaster-named watch companies. While many collectors recognize this Keystone model as the dustproof one by the "mica" clear window (Figure 26B), the mica feature

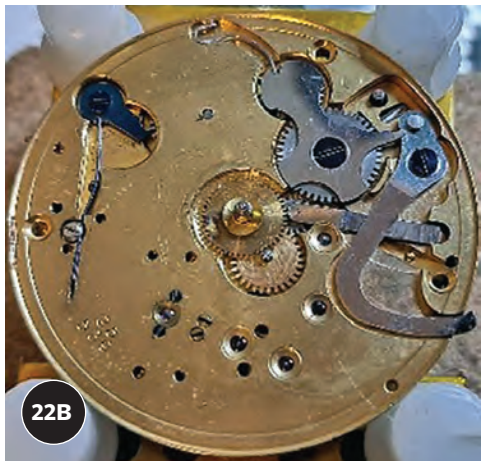


Figure 22. An example of a 24-hour dial (A) and the hour gearing required (B), which converted the watch to time correctly. PHOTOS BY GEORGE MEYER.

Figure 23. An O'Hara dial with the seconds at 3 o'clock on a Record grade movement. PHOTO BY GEORGE MEYER.

Figure 24. Keystone Watch Co.'s keystone-shaped hour and minute hands that were available in both gilt (A) and blued (B) finish and an open skeleton design (shown) or a solid keystone end. PHOTOS BY GEORGE MEYER.

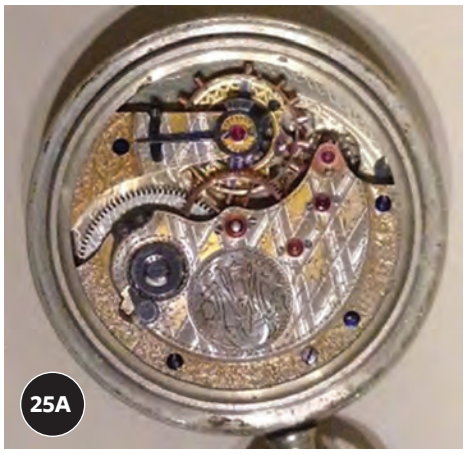


Figure 25. Most products from these companies were plainly finished. The higher grades received modest damaskeening. They did produce some very well-finished examples. Illustrated here are a few of these examples: (A) A watch at the National Watch & Clock Museum. PHOTO BY NOEL POIRIER. (B–G, I) PHOTOS BY GEORGE MEYER. (H, J) From the personal collection of Rhett Lucke.

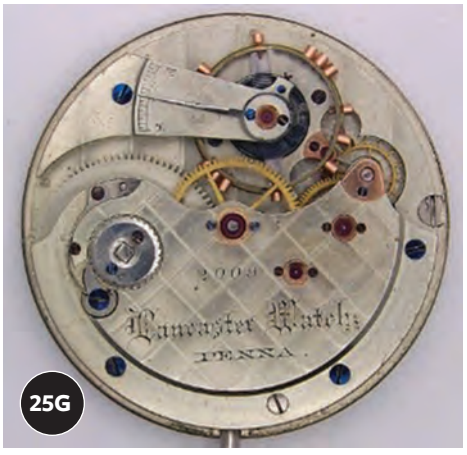


Figure 26. (A) Bitner's patent for the plate (there is no mention of the mica window). (B) The dustproof swing-out plate with the mica window.

is not addressed in any of Bitner's patents for a "Dust Proof Watch" or a "Dust Proof Watch Plate."[9] While the mica window offers a "view" of the balance wheel, the patent addresses the ability to pivot a portion of the top plate to reveal the inner workings of the movement without disassembling the entire movement and to provide a "dust cover" when in the closed position.

Production Information

Production from these Lancaster companies was quite modest. Most of the products made were done so under the Keystone name and were gilt and nickel dustproof grades. Based on the serial number database, the estimates are that the Lancaster companies built about 16,000 watches by 1882, and they made only 6,000 more by 1884. Production then picked up again, and by 1886 they had made roughly 48,000 watch movements. By 1889, the numbers jumped up to 175,000 and by 1889, they had made about 200,000. By careful tallying of the runs in the database, the estimated total production is right around 225,000. The jewel count breakdown is shown in Figure 27.

The Final Days

In the end, while at Keystone in Lancaster, Henry Cain designed what would become the first movements that would be produced by Hamilton (Figure 28).[10] Everything possible was being done to divest the company from Bittner and the Keystone brand, including changing the name back to Lancaster. These new planned movements would help accomplish the restart of watch production with a fresh product and resume the traditional method of selling through jobbers and eliminate watch clubs and so on. However, the money ran out and the factory closed.

Conclusion

One of the most challenging aspects of writing these articles has been either the lack of information or information that is not correct in the historical record. Sometimes reading between the lines and a little bit of detective work was required. In the absence of factory ledgers, production documents, or sales records, exact dates of manufacture and quantity of produced movements can often be very difficult to estimate. However, we believe that the information in this article is as accurate as possible and that the watches we examined support much of what contemporary and modern authors have written about the Lancaster family of watch companies. When combined, this three-part story covers the history and watch movements produced in Lancaster, PA, prior to the opening of Hamilton and provides a good perspective of what happened there. It is our sincere hope that we have given the collecting community even more information to help enjoy and enhance the collectibility of their Lancaster-manufactured pocket watches.

Acknowledgments

Once again, a big thank you to Wayne Crawford for his efforts and work in adding watch information to the A&P/Lancaster database. We thank all of the NAWCC Lancaster watch collectors who have shared information, pictures, and data freely with the collecting community. We also thank our friends Paul Regan, Jim Haney, and Rhett Lucke for their continued support and assistance in reviewing this article. A most sincere thanks to our Managing Editor, Laura Taylor, and her great staff for all their assistance in publishing and laying out our work.

Notes and References

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6. William Hogarth, *The Analysis of Beauty* (London: 1753; repr., Chicago: The Reilly & Lee Co., 1908).
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About the Authors

Burt Cifrulak is a Vietnam veteran and retired police inspector who served 30 years with the Allegheny County Police, Pittsburgh, PA. After retirement he became interested in collecting and studying Hamilton pocket watches and the early family of Lancaster watch manufacturers. He is also a collector of marine chronometers and is a *Bulletin*-published author on the subject. Burt has been a member of the NAWCC since 2007.

George A. Meyer IV is a native of Lancaster, PA. His career led him to assignments in South Korea, Taiwan, and California, and he currently lives in southern Delaware. He is the holder of 73 US and foreign patents relating to heat transfer and electronics cooling. George started collecting wristwatches and pocket watches about 20 years ago, which led him to realize the rich history of watchmaking in his hometown of Lancaster. This interest led him to join the NAWCC and the Early American Watch Club—Chapter 149.

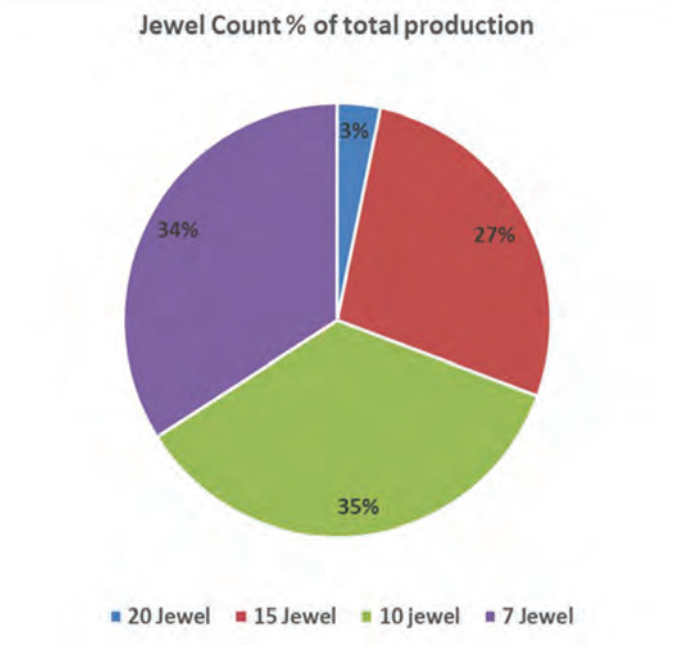

Figure 27. This jewel count pie chart shows the success of the West End model at a 10-jewel count, despite the Lancaster Board of Directors indicating a desire to focus on higher-jeweled watches. Overall, 69% of production was for 10-jewel or lower grades. GRAPHIC BY GEORGE MEYER.

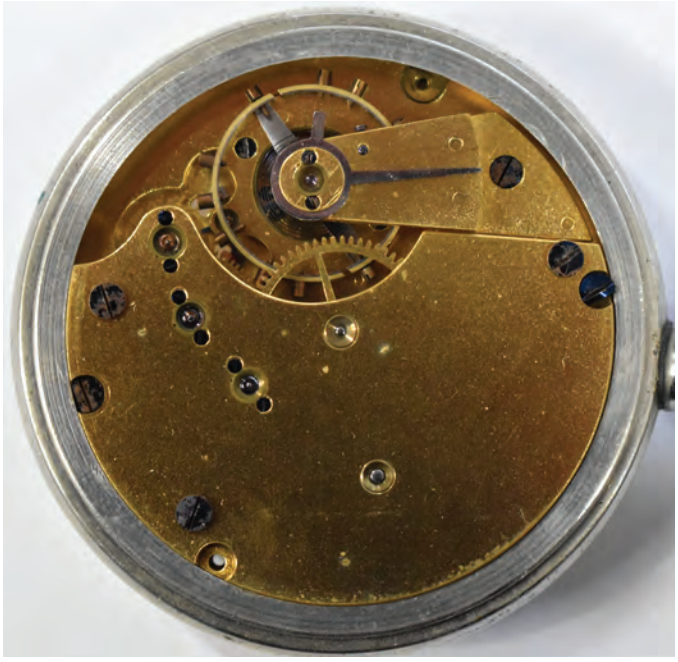

Figure 28. All observed examples from these early Lancaster companies are hunter case designs, with one notable exception—this prototype's open-face design. PHOTO BY TOM RICHARDS.