

# The story behind PATENT SURETY ROLLER stamped on carriage clocks

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*During the last quarter of the nineteenth century a number of carriage clocks appeared with the words PATENT SURETY ROLLER within an oval stamped on the backplate. To many, this phrase was something of a mystery and an explanation of it was hard to find. Sometimes a few letters in this stamp were damaged, causing further confusion. This article attempts to explain the device defined by this phrase — its invention, its purpose, how it functions as part of the clock movement, and the extent of its presence in the marketplace.*



Figs 1a and b. 5-minute repeater signed on the dial 'Parkinson and Frodsham, 4, Change Alley, London'.

## Introduction

Discussions over the recent years with collectors and repairers of carriage clocks have revealed puzzlement and curiosity about what the phrase PATENT SURETY ROLLER signifies that appears inscribed in an oval on the backplate of many carriage clocks. Many of these clocks also contain initials (typically G.L, also in an oval), and a number on the

backplate, typically the movement number. Some also contain the name or mark of a clockmaker, retailer, or someone in the trade, either on the backplate or on the dial. One such clock is shown in Figs 1a and 1b, and a close-up of the backplate in Fig. 2.

Before delving into details about the phrase in the oval, let us first provide some indication of the number of these clocks that exist. While

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Fig. 2. Close-up of backplate of the clock in Figs 1a and 1b showing the three items of interest – PATENT SURETY ROLLER, the initials G.L, and the movement number, which on this clock is 1210.

I have no definitive data, I did a search of auction catalogues in my library, along with an extensive browsing of websites representing clock dealers and auction services, as well as books and other publications describing and picturing carriage clocks. Table 1 (printed at the end of the article) summarizes my findings. These sources typically showed the front of the clock but not always the backplate, simply stating that this phrase was present. In those cases the initials G.L and the clock number were not visible either, though their presence was often stated in the description.

### **What is PATENT SURETY ROLLER?**

This phrase (hereafter PSR) describes a mechanical device designed to ensure the accuracy of the strikework in a carriage clock. It addresses a problem occurring when the clock is being carried and experiences a bump causing the star wheel to shift and resulting in

the clock striking incorrectly. To lessen this danger, the spring-operated lever (often called the jumper) that allows the star wheel to advance had to be made unduly strong, to the detriment of the going part which has to lift this spring every hour. The PSR device that overcomes this problem and ensures that the striking mechanism can strike only the correct number of hours was described as follows:

It consists of a short cylinder or roller, with a crescent-shaped piece taken out, fixed upon the set-hand wheel, which is furnished with the same number of teeth as the canon pinion. The missing part of the circle allows the star to be shifted, and by the time the shifting pin leaves the circle of the star, the cylindrical-shaped portion enters between two teeth of the latter, and keeps it locked till it is shifted again by the canon pinion.<sup>1</sup>

1. 'Improvement in Carriage Clocks, to prevent Accidental Shifting of the Star Wheel', *Horological Journal*, March 1880, 94.

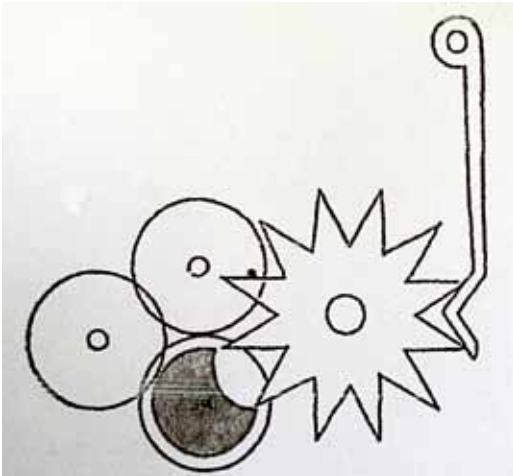


Fig. 3. Drawing of the basic workings of the PSR. (*Horological Journal*, March 1880, p. 94).

A diagram accompanying the quoted article appears in Figure 3. This mechanism was invented by Moritz Immisch, whose brevet for it was issued in 1879 as reported in *Revue Chronométrique* (Fig. 4). More about him later in this article.

A patent was subsequently secured by Messrs Gay, Lamaille, and Company of Paris and London, according to the same article in the *Horological Journal*. It is this patent that is the P in PSR. Additional comments from that source provided further detail to add to our understanding of this device:

It will be seen that this arrangement, while perfectly secure, produces no friction whatever, but rather lessens it, as it permits a click spring<sup>2</sup> to be used of only just sufficient strength to keep the click in position. It has been already pointed out that under the ordinary conditions this strength has to be exceeded to provide against jerks. Another advantage is, that

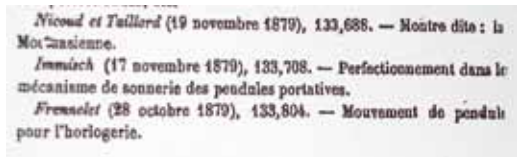


Fig. 4. Report of brevet issued to Moritz Immisch for his invention that became the PSR (*Revue Chronométrique*, vol. 11, 1880, p. 40).

being a fixture, it cannot be removed by any ignorant workman into whose hands this clock may chance to fall.

### A PSR example

What does the PSR look like in clocks such as those listed in Table 1? It is found within the striking mechanism, typically on the outside of the front plate under the dial. Clock number 1210 (Figs 1 and 2) provides the example to illustrate an actual PSR. Fig. 5 shows the outside front plate of this clock and Fig. 6 provides a close-up of the PSR device on that front plate. Note the similarity between the drawing in Fig. 3 and the components shown in these photos. The PSR is just below the centre arbor. It contains a raised 'lip' around its edge at the base of the teeth. A section of this lip is cut away (in Fig. 6 this section is between what would be positions 3 and 6 on a clock dial). This lip with its cutout portion is analogous to the crescent-shaped cutout in Fig. 3. As pictured, this cutout section in the lip is in the proximity of the star wheel just before the hour when the pin on the cannon pinion will rotate counter-clockwise and engage and advance the star wheel. In essence the cutout is controlling when the star wheel can rotate, which is the fundamental purpose of the PSR. To the left of the PSR and below and to the left of the center shaft is the minute wheel, which rotates once per hour, moving the PSR and the hour hand.<sup>3</sup>

2. The term 'click spring' in this early quote was used to describe the spring-operated lever, more typically called the jumper today. Laurie Penman, *The Carriage Clock* (London: NAG Press, 2005), pp. 202 ff describes how the jumper governs the rotation of the star wheel and snail, and thus controlling the striking of the correct hour.

3. A drawing nearly identical to the arrangement pictured in Fig. 6 is found in Donald de Carle, *Practical Clock Repairing*, London: N.A.G. Press, 3rd edn, 1969), p. 177. The term 'hoop wheel' is used there to describe a mechanism similar to the PSR in the drawing and accompanying description of its function, which is 'to prevent the star wheel being jumped backward or forward should the clock receive a shock'. The term 'hoop wheel' is also found and described in Eric Smith, *Striking and Chiming Clocks* (Newton Abbot: David & Charles, 2nd edn, 1995), pp. 14–15 and 20–22.



Fig. 5. Outside front plate of clock 1210.

### Variations in the PSR mark

Some confusion might exist about this device because of the spelling of the words visible in

its mark on some clocks. A few sources have commented that the makers created only one die or stamp made to imprint the mark on its



Fig. 6. Close-up of PSR and related components in clock 1210.

clock backplates, and this became damaged but continued to be used and was not repaired or replaced.<sup>4</sup> A close look at the mark shown in Fig. 2 shows that in the word ROLLER the first R appears to be a P, and the E looks like an F. Hence the word becomes POLLFR and might be misunderstood or assumed to be a term in an unfamiliar language rather than English. Fig. 7 shows a different example, found on clock number 1993 in Table 1. Here the U in SURETY has lost part of its left side and appears to be a J, while the O in Roller seems to be more like a C. Perhaps the most frequently found errors are POLLER and SJRETY but other little nicks occur as well including the complete loss of a letter. For instance, the description of clock 3662 in its auction listing was 'Patent SJRETY POLLF'. In particular, confusion can occur when the PSR mark is mistaken for the clockmaker mark or name. This can translate into puzzling descriptions in auction catalogues or sale listings. For example, clock 932 in Table 1 was described in its auction listing as follows: 'French Brass Four Pane Porcelain Mounted Carriage Clock by SJ Retypoller'. The



Fig. 7. An example of a damaged PSR stamp.

mechanism became the maker in this instance.

### The inventor Moritz Immisch

Immisch was born in March 1838 in Germany.<sup>5</sup> His full name was Karl Moritz Immisch, and his father and his younger brother were watchmakers. In about 1860 he moved to London and in 1863 he worked as a foreman in the firm LeRoy & Fils on Regent Street. He became a Council Member of the British Horological Institute and wrote an essay on the balance spring which was awarded the Institute's Baroness Burdett Coutts prize and published in the *Horological Journal* in April 1873. His invention of the device to become known as the PSR occurred in 1879. He continued to produce inventions, including those in such fields as thermometers and electric motors. In 1882 he established a small company 'Messrs M. Immisch & Company' involving improved designs in electric vehicles and motors for pumping and launching as well as electrical charging stations along the River Thames. His interests led to the development of a series of companies focusing on electrical equipment and processes. In 1901 he retired from the Acme Immisch Electric Works Company after suffering health problems and died in September 1903 in London.

### The clockmakers Gay and Lamaille

Information is scarce on the two clockmakers associated with the PSR. Gay, whose name

4. These comments were found in two websites displaying PSR clocks: *antiqueshunt* with clock number 3642 and *worthpoint* with clock number 1365.

5. Further information on Moritz Immisch can be found in *Grace's Guide to British Industrial History* and *Wikipedia*.

sometimes appears as Gay(e), is listed in standard reference books with the first name Emile.<sup>6</sup> His address in 1861 was listed as 20 Red Lion Square, London.<sup>7</sup> He became associated with a clockmaker named Vicarino and together they opened a workshop in Paris at 5 rue Beranger.<sup>8</sup> Gay became a member of a group called the *Chambre Syndicale de l'Horlogerie de Paris* which was composed of prominent horologists in Paris who met regularly and published a journal, *Revue Chronométrique*, documenting their activities. The pages of this journal contained many reports of Gay's activities during 1874-1877 in attending meetings as well as participation by Gay, Vicarino *et Comp.* in sponsoring awards and recognition for apprentices and workers employed by those horologists.<sup>9</sup>

Lamaille, whose first name was Georges, is typically listed in reference books only by last name and in conjunction with Gay.<sup>10</sup> The Gay-Lamaille association began sometime in 1877-78, replacing that of Gay and Vicarino. Some apprentices and workers receiving awards through the *Chambre Syndicale* were identified as being in the service of Gay, Lamaille *et Comp.*, confirming that this new association of the two clockmakers had formed.<sup>11</sup> Gay, Lamaille Co. was subsequently affirmed as a member of the *Chambre Syndicale de l'Horlogerie de Paris*.<sup>12</sup> During this period they were located at 20 Red Lion Square, but later their London address was given as 13 Charterhouse Street.<sup>13</sup>

Gay, Lamaille and Company acquired the

patent in 1880 that became the PSR. Table 1 lists a number of clocks containing this mechanism as evidenced by the PSR stamp on the backplate, along with the movement number and, when available and disclosed by the source, the initials G.L. This listing presents clocks numbered from 194 to 5887, and if we assume that these clocks were numbered sequentially this number list might suggest that more than five thousand clocks were made incorporating the PSR. But G.L. also made clocks that did not contain the PSR stamp, including both timepieces and striking clocks, and a list of those that were found during my search for PSR clocks appears in Table 2. Again, the details of each clock are the best available based on the information given in the listing or description of that clock. Of those with movement numbers reported, the range is from 235 to 4324. But even with this information we really do not know how many movements made by G.L. contained the PSR or even how many movements G.L. made in total. It is possible that some clocks without the PSR stamp on the backplate really did contain that mechanism (for example, clock 1380). And of course it is possible that some clocks with the PSR stamp were marked incorrectly and did not contain the mechanism.

A look at both tables also suggests that G.L. made and supplied movements for others, already known as fine clockmakers, including Dent, Frodsham, and Parkinson & Frodsham. Their name on a dial was more likely to signify them as a retailer, however, rather than the

6. For example, see Brian Loomes, *Watchmakers and Clockmakers of the World, Complete 21st Century Edition* (London: NAG Press, 1988), p. 296.

7. *Britten's Old Clocks and Watches and Their Makers* (London: Bloomsbury Books, 9th edn, 1982), p. 454.

8. *Revue Chronométrique*, vol. 8 (1874-75), 246.

9. *Revue Chronométrique*, many pages in vols 8 and 9.

10. The only source found for Lamaille's first name is a single mention in *Revue Chronométrique*, vol. 9 (1876-77), 323, of a donation by Geo Lamaille to the fund for the school of horology. See the article in footnote 13 for an additional reference identifying the full name of Georges Lamaille.

11. *Revue Chronométrique*, vol. 9 (1876-77), 251, and vol. 10 (1878), 79

12. *Revue Chronométrique*, vol. 11 (1880), 134.

13. An on-line search for 'E. Gay Lamaille' in [discovery.nationalarchives.gov.uk](http://discovery.nationalarchives.gov.uk) finds three design registrations for 21 January and 22 February 1878 with the company address 20 Red Lion Square, London, and one for 11 July 1882 with the company address 13 Charterhouse Street, London. Further activities of this partnership and its members individually are found in Phil Gurney, 'E Gay Lamaille & Co Carriage Clock', *Australian Antiquarian Horological Society Newsletter*, vol. 42, no. 4, December 2015, 24-28.

maker of these items. Other names in these tables involve well-known trade suppliers, a category that includes G.L as well. In fact, G.L appears to have offered relatively few clocks identified with only its own mark or name. A final point of interest involves the mark itself. While most are G.L there are occasional variations including G.L.C and E.G.L. Reasons for these variations are not known.

It seems likely that the use of the PATENT SURETY ROLLER identification stamp did not extend past the working life of G.L. and Company. Of course, the patent itself eventually expired. But the use of the mechanism or something similar might have been continued by subsequent clockmakers if it provided an attractive advantage. Perhaps, however, its customer appeal was not sufficient to justify its added manufacturing cost that would affect its affordability in the marketplace. But it is part of horological history and its story and the work of those

associated with its invention and application have all been interesting to pursue. Comments from readers are most welcome.

### Acknowledgements

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**Table 1. Some carriage clocks that include the PATENT SURETY ROLLER device and its stamp on the backplate.**

Clock number	Stamp of G.L	Movement	Other name or mark	Source
194	yes	strike & repeat		Leigh Extence
424	yes	strike & repeat		Lot 172, Christie's November 1998, Antelis Collection
499	---	strike & repeat	L. Simmonnet	Lot 156, Christie's November 1998, Antelis Collection
575	---	strike & repeat	Hall & Company	Lot 249, 19 April 2011 Woolley & Wallis
580	yes	5 minute repeater		Lot 657, Bearnese, Hampton & Littlewood, 8 October 2009
690	---	5 minute repeater		Allix book, p. 198
708	yes	strike & repeat		Lot 637, 19 Sept. 2015, Cheffins
795	---	strike & repeat	Edwards & Sons	Lot 804, Denhams 21 December 2016
805	---	strike		Lot 128, Christie's November 1998, Antelis Collection
932	---	strike & repeat		Lot 2353, Lawrences, 20 January 2017
1011	---	strike & repeat	Collingwood & Co.	Lot 42, Christie's November 1998, Antelis Collection
1096	yes (E.G.L)	strike & repeat	Primavesi Brothers	eBay, February 2014
1210	yes	5 minute repeater (see Figs 1 and 2)	Parkinson & Frodsham	Lot 109, June 2008 Jones & Horan

**Table 1 continued**

Clock number	Stamp of G.L	Movement	Other name or mark	Source
1274	yes	strike & repeat		Lot 11, Christie's London King Street 11 July 2003
1365	---	strike & repeat	Examined by Dent	eBay UK 3/2012, Gutlin
1380*	yes	strike & repeat		Leigh Extence
1486	---	strike & repeat	Lund & Blockley	Lot 16, Christie's London King Street 1 July 2005
1530	---	strike	Charles Delletrez	Hampton & Littlewood Auctioneers, Exeter
1711	yes	strike & repeat		Lot 537, 25 May 2016 Matthew Barton
1813	---	strike & repeat		Lot 33, Christie's London, 20 Feb. 2008
1886	yes	strike & repeat	Dent, to the Queen	Lot 1238, 27 Oct. 2016, Gardiner Houlgate
1928	yes	grande sonnerie	Dent, 33 Cockspur	Lot 114, 8 July 2015 Bonhams, London
1993	yes (G.L.C)	5 minute repeater	H.W.Bedford	#31701c, Derek Roberts Antiques
1994	yes (G.L.C)	5 minute repeater	Examined by Barraud & Lunds	Lot 1317, Tennants 16 November 2012
2138	yes	strike & repeat	Dent London	Lot 559, Peter Wilson 27 April 2016
2185	yes	strike & repeat		Leigh Extence
2461	yes	strike & repeat		Lot 901, Anderson and Garland, 16 September 2014
2919	---	5 minute repeater	Examined by Lund & Blockley	Lot 825, 27 May 2011 Gardiner Houlgate
3004	---	strike & repeat		Lot 519, Crow's Auction Gallery, 10 June 2015
3183	---	strike & repeat	Brockbank, Atkins & Moore	Lot 854, Sloans & Kenyon, 12 February 2017
3530	---	strike & repeat	Examined by Dent, London	Leigh Extence
3587	---	strike & repeat		Lot 295, Bonhams Knightsbridge, 2 March 2010
3642	yes	strike & repeat		antiqueshunt.co.uk
3662	---	strike & repeat		Lot 926, Rosebergs London, 9 Sept. 2015
3718	---	strike & repeat	L.F. (for Louis Fernier) stamp between the plates	Leigh Extence
3730	---	strike & repeat	indistinct retailer name and 'Paris'	#426432, Kembery Antique Clocks Ltd
3767	---	strike & repeat		Leigh Extence



**Table 1 continued**

Clock number	Stamp of G.L	Movement	Other name or mark	Source
4624	yes	5 minute repeater	indistinct retailer name and 'London'	#177888, Carlton Clocks
5279	---	strike & repeat	L.F. (for Louis Fernier) stamp between the plates	Lot 162, Plymouth Auction Rooms, 30 November 2011
5579	---	strike & repeat		Lot 161, Plymouth Auction Rooms, 30 November 2011
5887	yes	petite sonnerie		Lot 583, January 11, 2017, Bill Hood & Sons
Not given	---	5 minute repeater	Charles Frodsham à Paris	Lot 416, 6 June 2013 Bonhams Chester

\*This clock contains the PSR device but does not have the PSR stamp on the backplate.

Note: If the stamp of G.L. is not indicated, it is possible that the source simply did not report it.

**Table 2. Some carriage clocks with the G.L stamp but not the PATENT SURETY ROLLER or its stamp**

Clock number	Stamp of G.L	Movement	Other name or mark	Source
235	yes	strike & repeat	Hardy Bros. Sydney	Lot 524, Sotheby's Australia, 25 Oct. 2010
236	yes	strike & repeat		Woolley & Wallis, 24 July 2013
578	yes	grande sonnerie		Antique Clock Co. UK website
1098	yes	strike & repeat		Lot 21, Christie's South Kensington 27 March 2002
1100	yes	miniature time only		Lot 186, Christie's London, King Street, 20 September 2012
1220	yes	strike & repeat		Derek Roberts book, page 178
1264	yes	grande sonnerie	Eardley B. Norton, Paris	Lot 15, Christie's South Kensington, 3 July 1997
1333	yes	strike & repeat	Bigelow Kennard & Co.	No. 23, <i>Beautiful Carriage Clocks</i> , Oscar T. Lang exhibition catalogue
1389	yes	strike & repeat		Lot 444, Bonhams 25 February 2014
1825	yes (G.L.C)	strike & repeat		Lot 5, Sotheby's London, 29 September 2005
2208	yes	5 minute repeater	Theodore B. Starr	No. 22, <i>A Century of Fine Carriage Clocks</i> , Joseph Fanelli
3250	E.G.Lamaille stated in description	strike & repeat	Dent, 61 Strand, London	Lot 1121, Canterbury, 3 December 2014
3864	yes (E.G.L)	strike & repeat		Lot 815, Bearnas, Hampton & Littlewood, 22 January 2014
4324	yes (E.G.L)	quarter repeater		Antiquorum, 12 April 1997
Not given	yes	miniature time only		Lot 31, Christie's New York, 30 October 1996
Not given	yes	grande sonnerie		No. 28, <i>A Century of Fine Carriage Clocks</i> , Joseph Fanelli