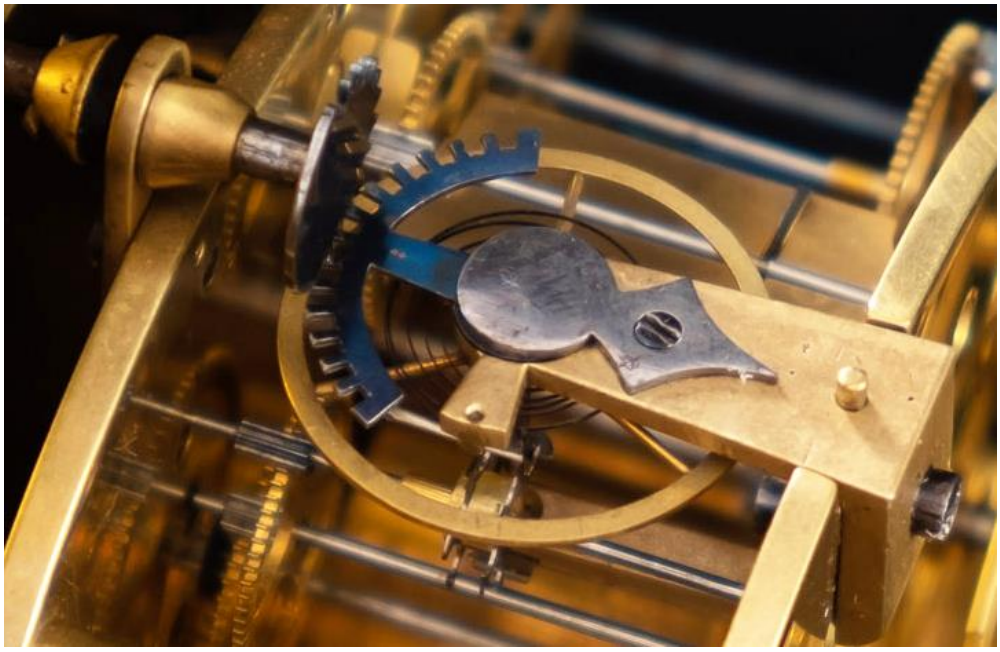
A Selection of Clocks fitted with Paul Garnier's *Chaff-cutter* escapement

Showing the different styles of clock and how each is signed.

Leigh Extence



Jean-Paul Garnier was born in Epinal in the Vosges in 1801. His father died at a young age and so at the age of ten Garnier had to go to work; first as a printers apprentice and then a locksmith. He then moved to Luxeuil to work as a clockmaker before moving to Paris in 1820 to work in the workshops of the well-known maker Lepine. By 1826 he had set up on his own account in Rue Taitbout, immediately making his name with various inventions including a constant-force free escapement with remontoir which he presented to L'Academie des Sciences in 1826. It was at the 1827 Exposition de l'Industrie Nationale that he showed a display of carriage clocks alongside other non-horological inventions including a medical thermometer and in 1829 he again presented to the L'Academie des Sciences, this time being a sphygometer, a device that followed the movement of blood in arteries. It is therefore obvious that Paul Garnier was a man with an inventive mind who put his ideas into practice and although not the inventor of the carriage clock can be considered the man who standardised the making of them and allowing *pendules de voyages* to be accessible to more than just the rich and nobility previously supplied by Breguet.

On the 30th September 1830 Paul Garnier patented, for five years, his *échappement à repos*, the frictional rest escapement more commonly referred to as the *chaff-cutter* escapement, which was fitted to both carriage clocks and *Pendule Portatives* bearing the Garnier name. This escapement was described in the *La Tribune Chronométrique* of 1851 as being a development of similar escapements by Henry Sully and in particular Enderlin. Garnier wrote to the Tribune's editor Pierre Dubois and had his letter, shown below, refuting this suggestion published shortly afterwards. He felt justified in stating this as his chaff-cutter has all the lift on the tooth of the 'scape wheel and not, as in the other two, on the pallet. Garnier sent a drawing with the letter which he described as being an exact reproduction of the way he constructed his escapement.

PRUSSE.

Berlin, L. R. et Lode, Inv. et Fab., Neufchâtel. — Chronomètre nautique, et plan extricatif; nouvelle invention.

Dober, M. Fab., Bade. — Montre à secondes, d'ivoire, à vis d'or et à mouvement en acier ; pesant une demi-once ; autre montre ne pesant que $\frac{1}{4}$ d'once.

Guerlin, P. Fab., Berlin. — Horloges.

Kruger, A. Inv., Bromberg. — Girouette électro-magnétique, etc.

Thiemke, A. F. Fab., Berlin. — Horloge de voyage en cuivre.

CORRESPONDANCE.

Monsieur le Rédacteur en chef,

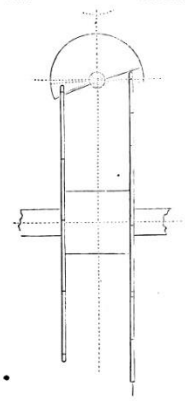
Le numéro 8 de la *Tribune chronométrique* contient un article sur l'échappement à deux roues que j'ai composé en 1829, et que j'emploie dans les pendules dites de voyage depuis cette époque. Quelques erreurs d'appréciation s'étant glissées dans la rédaction de l'article, je prends la liberté de vous adresser la note rectificative suivante, qui rétablira et complétera les faits relatifs à cet échappement.

Si l'on veut bien considérer l'échappement attribué à Tompion, employé en 1726 par Sully dans la construction de sa montre marine, et modifié dix ans après par Enderlin (qui a compliqué l'idée de Sully sans en modifier les principes), on verra qu'il n'est pas exact de faire procéder mon échappement de celui de ces artistes; que la seule analogie qui existe entre eux consiste dans la similitude de position des roues avec l'axe du balancier, et que la manière dont ils fonctionnent ainsi que les principes sur lesquels ils sont construits en diffèrent essentiellement.

Dans ceux-ci les levées sont formées par une épaisseur réservée sur l'axe du balancier, taillée en plans inclinés sur lesquels une roue à rochet ordinaire glisse en déplaçant latéralement la levée d'une quantité égale à la longueur du plan incliné; cette action provoque dans l'axe du balancier et dans celui des roues d'échappement un mouvement anormal qui rend irrégulière la marche des pièces d'horlogerie auxquelles ils sont appliqués en produisant une usure rapide des organes de l'échappement.

L'impulsion est donnée, dans mon échappement, par deux roues dont les dents sont terminées par des plans inclinés sur la circonférence poussant alternativement les lèvres de l'axe d'échappement; les pointes des dents opèrent leur repos sur la partie horizontale de la tranche, ce qui permet au balancier de prendre toute l'amplitude que lui donne la force motrice, pourvu toutefois qu'elle ne dépasse pas la demi-circonférence. Il résulte de cette combinaison une action dont l'effet est direct et parfaitement conforme aux lois de la mécanique.

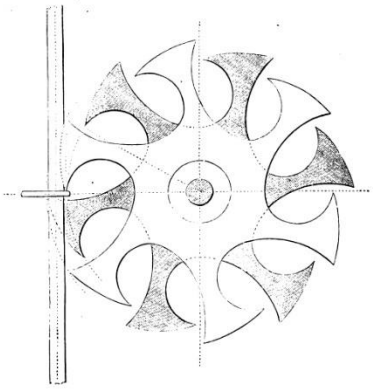
Ce sont les principes sur lesquels est construit l'échappement à cylindre qui m'ont guidé dans la combinaison de celui-ci. L'inclinaison des dents des roues sur leur circonférence est la même que celle des roues du cylindre ; l'ouverture de la tranche de l'axe



d'échappement correspond à l'ouverture du cylindre; et enfin la forme des lèvres de la tranche est encore semblable à celle du cylindre. La seule différence consiste en ce que dans le nouvel échappement le repos a lieu sur le plan horizontal de la tranche et l'effort sur le bout du pivot inférieur de l'axe, tandis que dans celui à cylindre le repos se fait sur une portion cylindrique en pressant les pivots contre les parois des trous.

Je vous suis bien reconnaissant, monsieur le Rédacteur en chef, de la peine que vous avez prise d'observer la marche d'une des nombreuses pendules auxquelles j'ai appliqué cet échappement, mais je vous avoue en toute humilité que mon intention, en le composant, a été seulement d'en faire une chose utile au développement du commerce de l'horlogerie portative et suffisamment bonne pour l'usage civil, plutôt qu'une machine de haute précision.

Le dessin qui accompagne l'article n'étant pas exact, quant à la forme et au nombre des dents des roues d'échappement, je vous en adresse un avec cette note, qui est la reproduction fidèle de la manière dont il est construit chez moi.



Comptant sur votre obligeance, monsieur le Rédacteur, pour l'insertion de cette note dans votre prochain numéro, je vous prie d'en agréer mes remercîments et l'assurance de ma considération distinguée.

Paul GARNIER.

Le 2 septembre 1851.

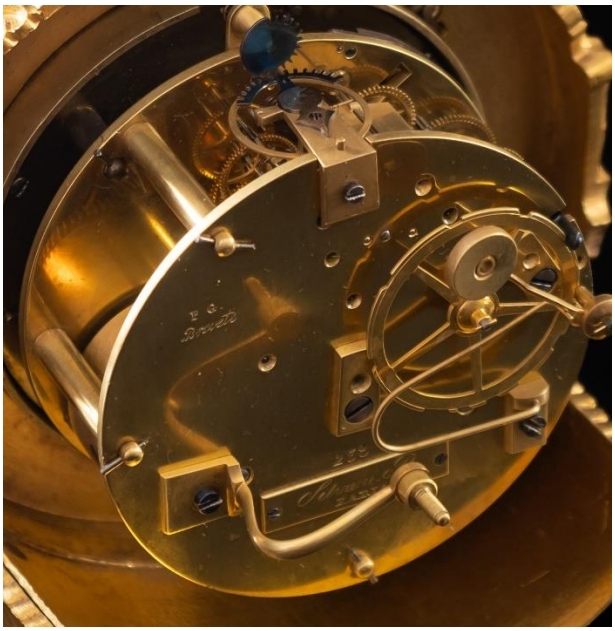
Garnier went on to use the chaff-cutter for most of the early clock movements signed either with his name or with his initialled *breveté* mark, showing a selection at the Paris Exhibition of 1834. But after a few short years he also started to have a platform lever escapement fitted to a number of his clocks, with all those that I have examined being of similar design and obviously from the same supplier. The lever was used sporadically from circa 1834, alongside the use of the chaff-cutter, but was becoming more prevalent by serial number 2613. This coincided with a period when Garnier was supplying carriage clocks to Dent in London to be retailed in their London showrooms. The clocks that I have examined from this period as signed for Dent are nearly always stamped H.L. on the movement front-plate for Holingue Frères, carriage clock makers and *blancs roulants* suppliers and fitted with a lever escapment. A small number of clocks from this period that are still signed for Garnier continue to utilise the chaff-cutter alongside the lever, but by serial number 2904 made circa 1850, even these Garnier signed clocks had the same style of lever escapement with the chaff-cutter now rarely used.

Although he was the patentee and *inventor* of the chaff-cutter, my research suggests that the movements that both the chaff-cutter escapement and later lever platforms were fitted to were made for the Garnier workshops as *blancs roulants* elsewhere; namely the Holingue family workshops in Saint-Nicolas-d'Aliermont. One early carriage clock, serial number 611 is stamped with the name Douillon, being Jean-Baptiste Douillon. He was known to have a workshop not far down the high road from the Holingue workshops and so it can be considered that Douillon most likely used a Holingue *blanc,* or vice-versa. It is known that in this well-known horological town makers would buy-in *blancs roulants* from others should their own supplies run low.

The brothers François and Louis Holingue succeeded their father Jean-Baptiste in the early 1840s and although Garnier number 1855 is the first clock on my database to actually be stamped H.L. on the front-plate, the close resemblance of earlier unstamped Garnier movements would suggest that these former examples also emanated from the Holingue workshops prior to the son's take-over.

I have taken several examples from my collection to examine in this article which aims to illustrate a selection of the differing style of clocks that were fitted with the chaff-cutter, and the way each was stamped and/or signed differently as the decades passed. These show a thread between all with the various markings on the movements, from fully signed by Paul Garnier, the use of the P.G. Breveté mark, the stamp of the maker of his *blancs roulants,* through to the last clock with no markings.

238: An early ormolu *Pendule Portative,* circa 1832.

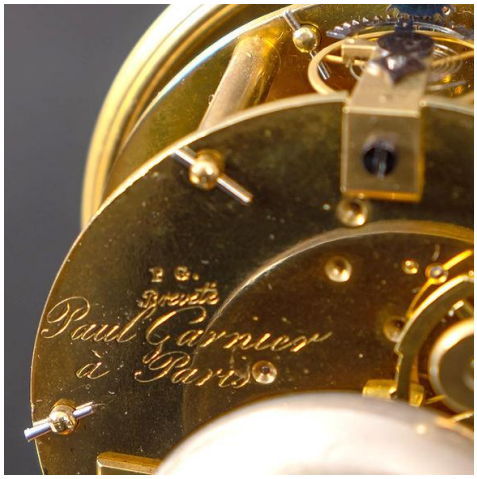


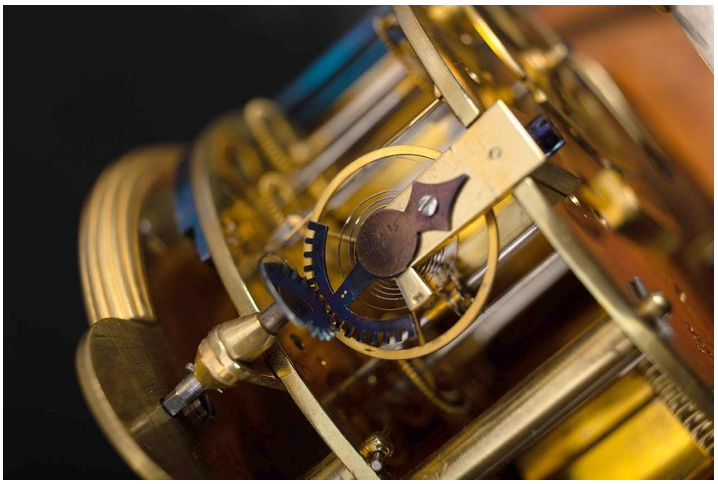
An ormolu *Pendule Portative*, stamped *P.G. Breveté* on the backplate and numbered 238, with no Paul Garnier signature.

The chaff-cutter has the early form of rack-style front regulation set via an arbor above XII o'clock

Both the dial and backplate are engraved for the retailer *Silvani B. Paris*.

284: An Early *Pendules Portative* Exhibition Clock, circa 1833.





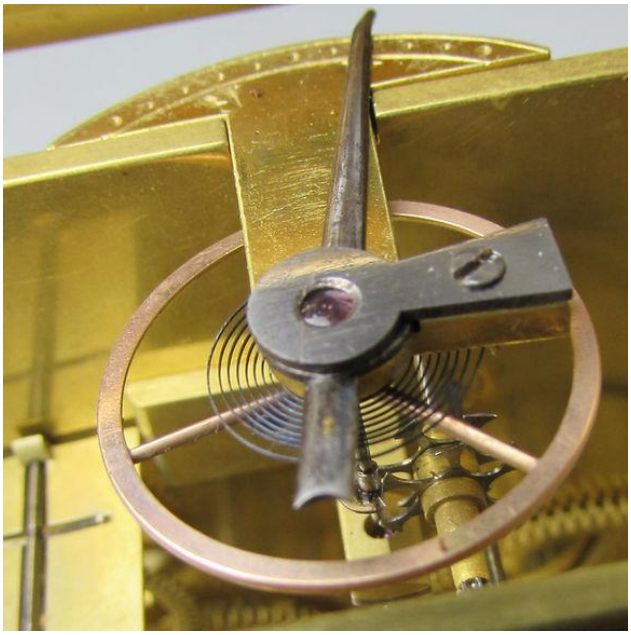
This style of *exhibition* piece was made primarily by Garnier to show the chaff-cutter escapement. The backplate is engraved *Paul Garnier à Paris*, *P.G. Breveté*, and numbered 284 and is still fitted with the earlier form of rack regulation set from a silvered semi-circular dial above XII o'clock.

The silvered dial is also stamped to the rear *P.G. Brevete, 284*, with the brass bezel stamped to the rear 284 (with the 2 being an upside down 5).

The clock is mounted on an inlaid satin-wood scroll-shaped plinth and round base, with the glass dome having typical Garnier brass hooks to the underside and a brass rim, the underside of the base is numbered, in ink, 80751.

For a similar clock numbered 14 see Charles Allix & Peter Bonnert, *Carriage Clocks Their History & Development*, p. 65, fig. 11/36 and for an almost identical inlaid satinwood example numbered 34 see Derek Roberts *Carriage & Other Travelling Clocks,* p. 43, fig. 3-5a.

1052: A Series I Carriage Clock, circa 1837



The backplate is stamped *Paul Garnier, Hgr du Roi, Paris*, *PG Breveté* along with the serial number 1052.

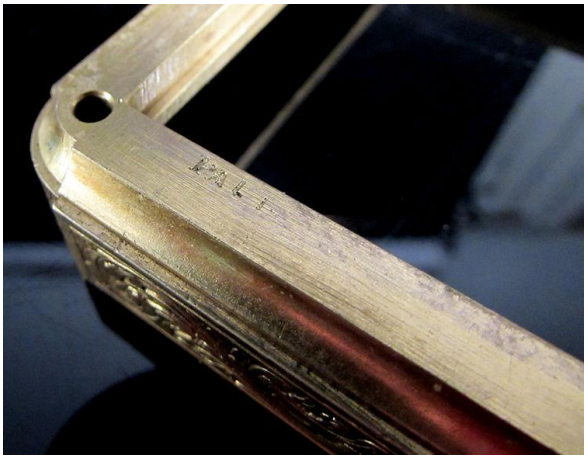
The silvered dial has engine-turned engraved decoration, black Roman numerals, blued steel moon hands and is signed *Paul Garnier, Hgr du Roi, Paris*.

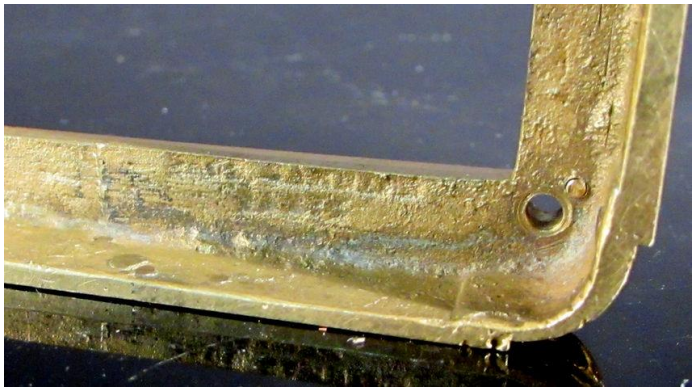
Regulation is now set via a lever to the top of the escapement with a typical Garnier semi-circular index to the rear of the backplate.

The underside of the base is fitted with a typical Garnier wooden block with green covering, used to stabilise the clock prior to feet being fitted on later models.

Although at this period the movement shows no indication of the blanc roulant maker, all stylistic indications are of it being made for Garnier by Jean-Baptiste Holingue.

1719: A Series I Carriage Clock with Interesting 'Hidden' Signature, circa 1842

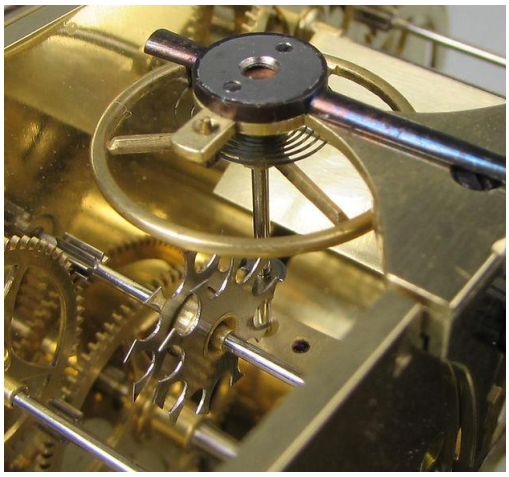


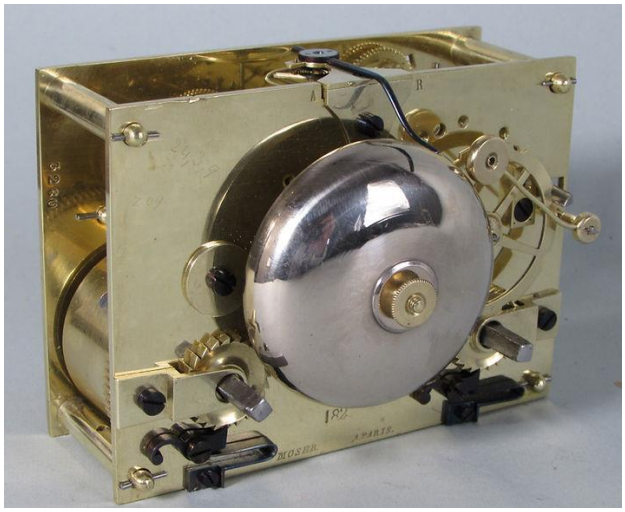


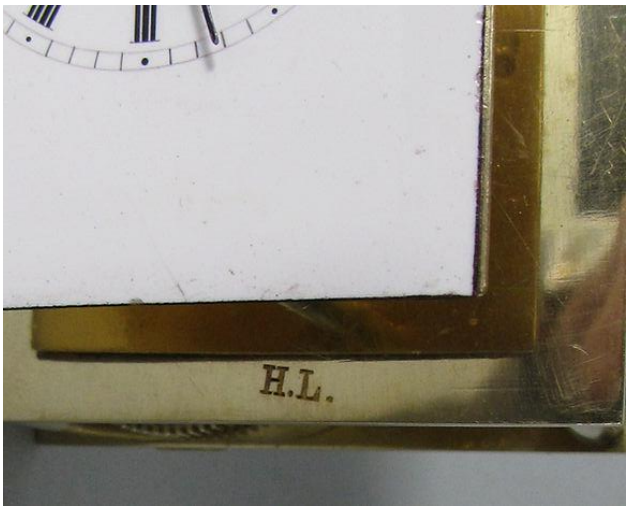
A most interesting clock as although unsigned for Garnier on the dial or movement, the underside of the base is cast numerous times with the name *Paul Garnier, Paris*. This being the only indication of Garnier as the maker on the clock and shows how not all clocks from his workshop are necessarily signed on either movement or dial.

The dial is signed for the retailer *A. Demeur a Bruxells Her de la Cour.*

Holingue Freres, an Inkwell Clock with Chaff-cutter Escapement made 1850







This small inkwell clock ties together various makers of the parts that make up a clock of the period. The rear of the dial, the mainspring and the inside of the movement are all signed by the relevant parties who are instrumental in the manufacture of this clock, along with the retailer's name to the dial and backplate.

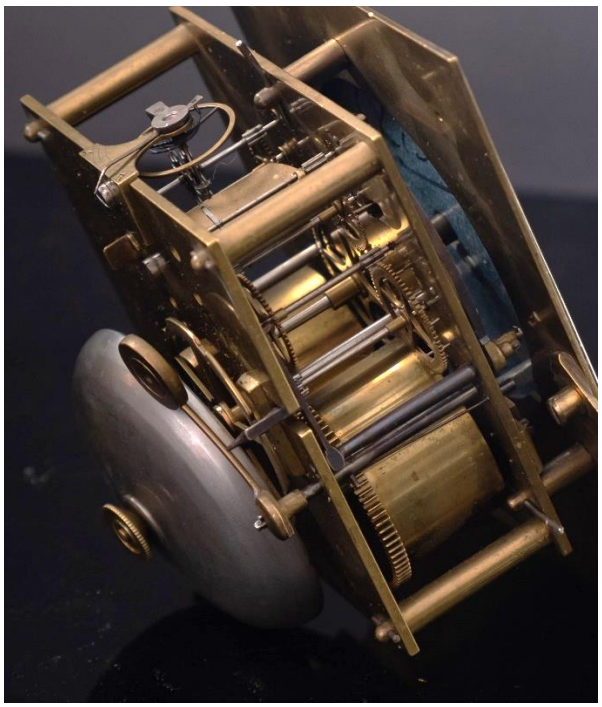
The backplate is signed and numbered *Moser à Paris 182* with the front-plate stamped with the initials and serial number *H.L. 3280*, for Holingue frères. The dated mainspring is scratched with the date and name of the spring maker *Borel jeune Mars 50*.The rear of the dial has the name of the dialmaker *Valat* written in ink.

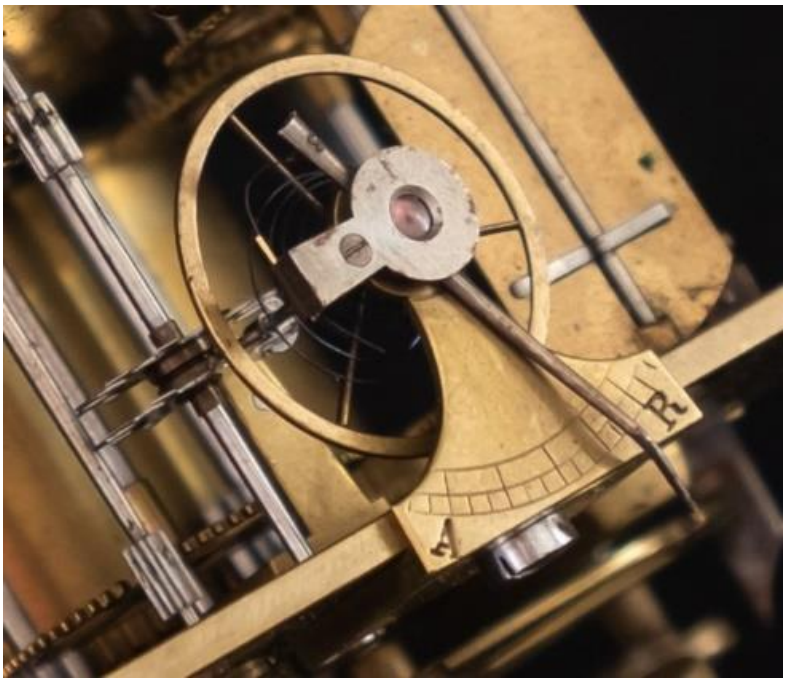
The regulation to the escapement has a later form of brass index with curved sides now fitted inside the top of the backplate.

Georges Moser is first recorded in Paris in 1823 at Grenier St Lazare 18, becoming number 15 in 1825. He then moved to Boulevard du Temple 9 in 1836 moving in 1846 to number 24 and then again in 1850 to number 15.

That the mainspring is scratched for the spring-maker Borel Junior March 1850 is most interesting in relating the various Garnier clocks. A Garnier carriage clock that I own, serial number 1649, has a mainspring with a similar scratched signature and is dated 1840. Names being scratched on the mainsprings of Garnier clocks has been previously written about in an article by Charles Allix, *Paul Garnier Revisited* published in the Spring 1993 edition of Antiquarian Horology, the journal of the Antiquarian Horological Society. Allix describes a spring found in Garnier carriage clock 797, scratched with the inscription *Burel jeune Avril 1836 a Paris, Mt 797*. Allix had obviously misread the Borel name.

A wooden cased *pendule portative* with no markings to the movement, circa 1852





By this period, and with the patent well out-of-date, a small number of clocks fitted with the chaff-cutter are known with no indication of the breveté nor a maker of either the clock or the *blanc roulant*. Although unsigned, the regulation to the escapement has the identical form of brass index with curved sides and fitted to the inside of the backplate as the Holingue/Moser example and can therefore be attributed to the same workshop. This style of wooden-case carriage or mantel clock is known to have been used by Garnier, with signed movements fitted to similar examples described as *wooden pendule portative*.

Rue Taitbout, Paris

The top floors previously the workshops and premises of Paul Garnier