

The first transparent watch

Juan F. Déniz*

In the year 1888 a timepiece saw the light of day whose distinguishing feature – transparency – had not been seen before in watches. Through contemporary press reviews and exhibitions it can be ascertained what impact it had on the fin de siècle context. The third part of this article focuses on the technical-aesthetic qualities of the model to gain a complete overview in order to determine its relative importance in the history of watchmaking.

This year is the 130th anniversary (Fig. 1) of the first clear face watch with no perceptible movement. The puzzling artefact, whose hands seem to levitate in mid-air, belongs to a group of see-through mystery timepieces patented in nineteenth-century France.¹

The instrument in question, named with the French generic term *montre mystérieuse* (mystery watch), was devised by Hugues Rime, but marketed by Armand Schwob et Frère (not to be confused with Schwob Frères, they are unrelated) after Rime had officially assigned them his patent of invention in July 1888.² This short-lived company, established in France on 28 November 1881 by two brothers from Hégenheim, Armand and Abraham Schwob, with headquarters and shop at 19, Boulevard Bonne-Nouvelle, Paris, was active in the watch business as well as in the pelts trade. Although they advertised that they had a factory at 14, Rue Léopold-Robert, La Chaux-de-Fonds (Switzerland) (Fig. 2), in fact it was only an office or branch (there was another one in Argentina's capital city), they never owned such a facility. In 1892 the business went bankrupt; by the end of March the associated brothers suspended their

M. Hugues Rime, un Annécien, représentant une des plus importantes maisons d'horlogerie de Paris, a pris un brevet d'invention pour une montre dite *mystérieuse* dont il est l'inventeur.

Nous en avons pu examiner à loisir un specimen. Rien jusqu'à présent n'a été fait dans ce genre. On ne voit qu'un simple cristal transparent formant couvercle et boîte, mais de rouages, aucun. Ces derniers sont entièrement contenus dans une rainure au dessous du remontoir.

Cette petite merveille de mécanisme figurera à l'exposition de 1889. Nul doute qu'elle attirera sur notre jeune compatriote les éloges bien mérités du monde compétent.

Fig. 1. The earliest mention of the model as a finished product was found in a Saturday local paper, *L'Indicateur de la Savoie*, 477 (15 September 1888), p. 2: '[...] We have been able to examine at leisure one specimen. Nothing so far has been done in this genre. [...] This small mechanical marvel will be shown at the 1889 Exposition [Universelle]. No doubt it will bring our young compatriot the well deserved praises from competent people.'

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1. As predecessors, we can mention clocks by Louis-Sébastien Lenormand, Philippe-Auguste Duclous and André Peschot (1819), Jean-Eugène Robert-Houdin (1836), Numa Conte (1837), Jean-Eugène Jesson (1841), Henri Robert (1873 & 1874), Eugène-Hilaire Rosset (1874 & 1875), Antoine-Henri Lahmeyer and Charles-Auguste-Albert Franchette (1874), Auguste Cadot (1876), Louis-Théodore-Donnadieu Theodore (1877) and Henri Cunge (1887). Patent dossiers, except Robert-Houdin's who did not register his system, can be consulted at the archives of the Institut national de la propriété industrielle (INPI). My thanks to Steeve Gallizia and Émilie Gesset for providing some data.

2. *Bulletin officiel de la propriété industrielle et commerciale*, 252 (22 November 1888), p. 582.

MANUFACTURE d'Horlogerie en tous genres & pour tous Pays.

ARMAND SCHWOB & FRÈRE

PARIS, 19, Boulevard Bonne-Nouvelle.

FABRIQUE à Chaux-de-Fonds (Suisse), 14, rue Léopold-Robert.

COMMISSION. **MONTRES** EXPORTATION.

OR, ARGENT, NICKEL ET ACIER EN TOUS GENRES.

SPECIALITÉ DE MONTRES COMPLIQUÉES,
CHRONOMÈTRES, CHRONOGRAPHES, TOURBILLONS, RÉPÉTITIONS
ET PIÈCES DE PRÉCISION.

INVENTEURS de la Montre **OBSERVATEUR** et de la plus récente nouveauté
du jour : la Montre dite **MYSTÉRIEUSE**, marchant sans mouvement apparent.

**BOITES A MUSIQUE & MONTRES FANTAISIE
ET TOUS GENRES.**

Fig. 2. As a promotional tool, this 1889 advertisement claims: 'INVENTORS [...] of today's ultimate novelty: the so-called MYSTERY Watch, running with no apparent movement.' From: L. Danel, *Catalogue général officiel (Exposition universelle internationale de 1889 à Paris)* vol. III (Lille: L. Danel, 1889), n.p.

payments and addressed themselves to the Commercial Court of the Seine to obtain judicial liquidation.³

On 29 January 1883, Armand Schwob et Frère was registered in the commercial register of La Chaux-de-Fonds with the business activity of *fabrication d'horlogerie* (watch manufacturing).⁴ Again, the same untrue statement as in France.

Throughout its brief history the French enterprise trademarked sixteen brand names in Switzerland, they are in chronological order by registration date:⁵

1. New Time Keeper (29 March 1883)
2. Mortimore Watch Co. (7 November 1884)
3. Marly Watch Co. (7 November 1884)
4. Page Brothers Liverpool (13 November 1884)
5. Kent Brothers Liverpool (13 November 1884)
6. Draper Watch Co. (23 January 1885)
7. A S & F Macolin Watch Co. (19 April 1886)
8. A S & F Argentino (25 June 1886)
9. Minting (19 July 1886)
10. A S & F Seguridad (24 May 1887)
11. A S & F Cadenas (24 December 1888)

3. 'Faillite Schwob et frère contre liquidation judiciaire Schwob et frère', *Journal des tribunaux. Revue de jurisprudence*, 16-18 (20 April 1895), pp. 253-254 and pp. 261-271.

4. *Schweizerisches Handelsamtsblatt*, 17, part 2 (10 February 1883), p. 126.

5. *Schweizerisches Handelsamtsblatt* 14, part 1 (5 April 1883), p. 132; 91 (13 November 1884), p. 775; 93 (20 November 1884), p. 790; 12 (27 January 1885), p. 70; 41 (29 April 1886), p. 293; 64 (3 July 1886), p. 448; 71 (24 July 1886), p. 496; 55 (28 May 1887), p. 421; 140 (29 December 1888), p. 1020; 64 (1 May 1890), p. 354; 111 (13 May 1891), p. 454; 196 (5 October 1891), p. 794.

12. La Marionnette (26 April 1890)
13. A S & F Trade Mark (8 May 1891)
14. Pandora (1 October 1891)
15. Amazone (1 October 1891)
16. Cérès (1 October 1891)

Some names used between 1883 and July 1885 were 'Pateck', 'Pateck et Cie, Genève' or 'Pateck et Co', and for this reason Patek Philippe & Co. took them to court. The story goes as follows. On 9 July 1885 at the Antwerp World Fair, when the horological jury came to inspect the vitrine of Armand Schwob et Frère at the Swiss section, they discovered at least one watch bearing the inscription 'Pateck et Cie, Genève'. Adrien Philippe, one of the cofounders of Patek Philippe & Co., was a member of this jury, in consequence the Genevan house issued a lawsuit on 26 April 1886 in the Civil Court of La Chaux-de-Fonds. Eventually on 13 February 1891, after both parties appealed the verdict of the Cantonal Court of Neuchâtel, the Federal Supreme Court of Switzerland maintained the sum of 15.000 fr. as damages-interests to be paid by Armand Schwob et Frère to Patek Philippe & Co., and partially admitted the appeal of the plaintiff; giving permission to publish in two Swiss and two foreign publications, of Patek Philippe's choice, an excerpt of the Federal court judgment.⁶

On the other hand, the Parisian firm won several distinctions at various exhibitions: an honorable mention at the 1883 Amsterdam International Colonial and Export Exhibition,⁷ a silver medal both at the 1883-84 Nice Exposition Internationale⁸ and the Exposition des arts industriels au Louvre,⁹ a vermeil medal at the 1885 Paris Exposition du travail,¹⁰ a gold medal¹¹ at the 1888 Barcelona Exposición Universal for the *perfección de sus productos*¹² and a bronze medal at the 1889 Paris Exposition Universelle for a *montre fantaisie*.¹³

As for Hugues Rime, he was born in Annecy-le-Vieux (Upper Savoy, France) on 16 January 1856 and married in Paris on 4 April 1895.¹⁴ In 1888 he already worked as a representative for Armand Schwob et Frère.¹⁵ Just a few years later, he formed in 1891 his own partnership called H. Rime et Cie with a watch and jewellery shop named 'Aux Nouveautés' with address at 18, Boulevard des Italiens, Paris (Fig. 3),¹⁶ where the mystery watch was retailed.¹⁷ At least from 1895, he appears as H. Rime, horologist, now at 42, Boulevard Bonne-Nouvelle, Paris,¹⁸ where he still remained over a decade later with the activity of *horlogerie en gros* (wholesale horology).¹⁹

The Frenchman was awarded a silver medal for both the mystery watch and a minuscule

6. 'Patek, Philippe et Cie contre Armand Schwob et frère', *Journal des tribunaux. Revue de jurisprudence*, 13 (28 March 1891), pp. 194-197.

7. *Schweizerisches Handelsamtsblatt*, 43, part 1 (25 October 1883), p. 425.

8. *Revue chronométrique*, 338 (November 1884), p. 178

9. *Revue chronométrique*, 338 (November 1884), p. 179.

10. *Revue chronométrique*, 352 (January 1886), p. 6.

11. *La Exposición. Órgano Oficial*, 72-75 (April-December 1888), p. 38.

12. My thanks to Eduard Farré Olivé for going to the Archivo Municipal Contemporáneo de Barcelona to find out the reason of the award.

13. My thanks to Geneviève Profit of the Archives nationales de France for the datum. A *montre fantaisie* is a French generic term also employed to describe imaginative pendant or pocket watches in the shape of animals, musical instruments, flowers, fruits, etc.

14. Unfortunately no photo of Hugues Rime could be found, nor was the date of his death found in the Archives de Paris online and the Annecy-le-Vieux town hall archives.

15. 'Chronique locale. Haute-Savoie', *L'Indicateur de la Savoie*, 477 (15 September 1888), p. 2.

16. 'Formations de sociétés', *Le Radical*, 175 (24 June 1891), p. 4.

17. 'Aux Nouveautés. 18, boulevard des Italiens', *Revue illustrée*, 147 (15 January 1892), p. 2.

18. *Annuaire-almanach du commerce, de l'industrie, de la magistrature et de l'administration*, part 1 (1896), p. 727.

19. *Revue chronométrique*, 594 (March 1906), p. 43.

Country	Patent number	Filing date	Applicant
1. France ²⁴	190092	19 April 1888	Hugues Rime
2. Austria-Hungary ²⁵	39/58	28 June 1888	Armand Schwob & Frère
3. Germany ²⁶	45408	29 June 1888	Idem
4. Spain ²⁷	8451	4 July 1888	Idem
5. United Kingdom ²⁸	9865	6 July 1888	H. Rime / A. Schwob & Frère
6. Canada ²⁹	31657	30 July 1888	Idem
7. United States ³⁰	402972 Specification appended at the end of this article.	25 August 1888	Idem
8. Switzerland ³¹	151	3 December 1888	Armand Schwob & Frère

watch²⁰ (Fig. 3) at the 1892 Ancey Exposition Industrielle.²¹ For the latter he also received a gold medal at the Exposition de la Mode that took place at the Parisian Champ de Mars in 1896.²² Finally, at the 1900 Paris Exposition Universelle he was given an honorable mention (horology, class 96).²³

1888–89: International patents, reviews and a royal recipient

Rime's invention was patented in eight nations, as reflected in the table above, which is arranged in chronological order by date of application.

20. Patent 219601, 22 February 1892, for a so-called *montre-bouton à cadran minuscule* (button-watch with a minuscule dial). *Bulletin des lois de la République française*, 1549 (24 September 1892), p. 985. The object had a radius of only 4 mm, as stated in 'Une merveilleuse découverte', *L'Indicateur de la Savoie*, 672 (11 June 1892), p. 1.

21. 'Exposition industrielle. Liste des prix', *L'Indicateur de la Savoie (Supplément à l'Indicateur de la Savoie)*, 675 (2 July 1892), p. 6.

22. Ernest de Latouche, 'Au Champ-de-Mars. L'Exposition de la Mode', *Le Journal quotidien, littéraire, artistique et politique*, 1401 (29 July 1896), p. 2.

23. *Liste des récompenses. Exposition universelle de 1900 à Paris* (Paris, 1901), p. 1095.

24. *Bulletin officiel de la propriété industrielle et commerciale*, vol. 8, part 2 (1888), p. 71.

25. *Katalog der von dem kaiserl. königl. Privilegien-Archive registrierten Erfindungs-Privilegien. Für das Jahr 1889* (1890), p. 591. My thanks to Wilhelm Korinek for providing information.

26. *Patentblatt*, 41 (10 October 1888), p. 377. In this bulletin appears 30 June (the day following the application date), when the duration of protection began. My thanks to Evelyn Benke for the clarification.

27. *Boletín Oficial de la Propiedad Intelectual é Industrial*, 49 (1 September 1888), p. 14.


28. *The Official Journal of the Patent Office*, 445 (14 July 1888), p. 64. My thanks to Ziaad Khan for giving information.

29. Date taken from the drawing sheets of the patent file, since in *The Canadian Patent Office Record*, vol. 17, 6 (June 1889), p. 259, is only the publication date 24 June 1889.

30. *The Official Gazette of the United States Patent Office*, vol. 47, 6 (7 May 1889), p. 779.

31. *Schweizerisches Handelsamtsblatt*, 139 (27 December 1888), p. 1015.

Aux Nouveautés H. RIME et C^{ie}
18, boulevard des Italiens, PARIS



LE charmant Bijou que nous reproduisons ci-contre est appelé au plus grand succès par les services qu'il peut rendre.

La Montre minuscule se place à la boutonnière d'un gant ou d'une manchette, dans un Eventail ou un Bijou quelconque, tel que Bracelet, Châtelaine, etc.

Les reproductions sont grandeur nature;
C'est une invention nouvelle des plus pratiques, — notamment pour les visites ou les courses.

Malgré sa petite dimension et les difficultés de construction, la marche de cette Montre est d'une régularité parfaite et d'un prix très abordable.




Fig. 3. Advertisement promoting the *montre minuscule* (4 mm radius) published in *La Grande Dame. Revue mondaine cosmopolite (Supplément à La Grande Dame)*, 1 (January 1893), p. 5.

As with almost any horological novelty, the watch received mixed reviews, like the following ones expressing two opposite points of view.

In his partial study of the horological pieces exhibited at the 1889 Paris World Fair (Fig. 4), where the *montre mystérieuse* was displayed (and – ironically – later mysteriously stolen³²), Denis Roussialle, president of the Chambre syndicale des horlogers de Lyon, did not consider it an innovation or breakthrough, consequently he did not write an in-depth report on it:

And the *montre mystérieuse* by Armand Schwob et Frère, which does not hide any

mystery, system of the mystery clock [Houdin's rotating glass disk with toothed edge], well-known, applied to the watch. The centre of the glass dial is below the centre of the case, leaving in its upper part a free space in the form of a crescent where it is placed an eleven lignes [1 ligne = 2.2558 mm] movement, arranged lengthways, which puts into rotation a very thin mica or glass disk [...]. It is a transparent watch in which nothing but the two hands are seen, giving the time when the said watch wants to work well. In one word, it is just a winding toy; setting of the time is done with the finger. Its price is 65 francs, or 60, if you have the courage to take a dozen.³³ (Translated from the French)

32. 'The French horology collective possesses [...] a display case where it exhibits a certain number of its most beautiful products. Yesterday, it was noticed that a watch of great value, called mystery watch due to the very special arrangement of its movement, had disappeared from the display case without the lock of it being forced' (translated from the French). 'Chronique de l'Exposition. Nouvelles diverses', *Le Temps* (Paris), 10405 (1 November 1889), p. 2.

33. D. Roussialle, *Quelques études sur l'horlogerie à l'Exposition universelle de Paris 1889* (Lyon, 1890), p. 51.



Fig. 4. Monumental entrance gate to the gallery devoted to horology (class 26) at the Palais des Expositions diverses. Photograph: Glucq, *L'album de l'Exposition 1889* (Paris, 1889), n.p.

In contrast, the second critique is a detailed description of the crystalline object itself and a summary of some nineteenth-century French see-through dial clock systems. The

article, authored by the editor, journalist and writer Henri de Parville (pseudonym of François Henri Peudefer), was included, among other publications, in *La Nature*,³⁴ a

34. Henri de Parville, 'Montre mystérieuse à cadran transparent', *La Nature*, 840 (6 July 1889), pp. 95–96. Previously published in *Journal des débats politiques et littéraires*, (18 April 1889), p. 2.

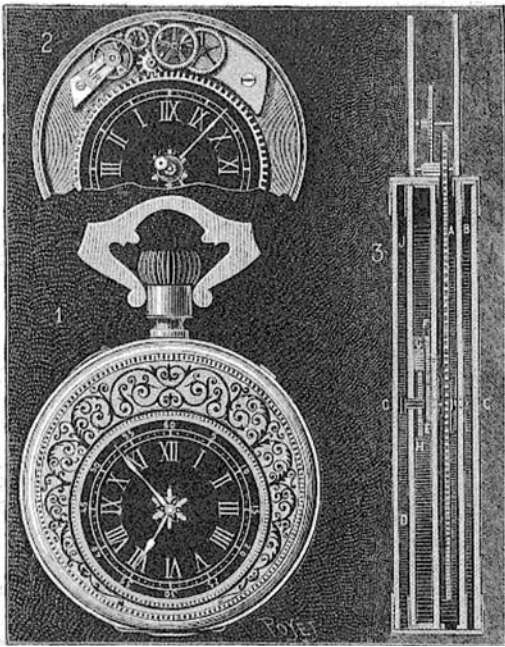


Fig. 5. Diagram.

1. Perspective view of the watch.
 2. Details of the mechanism.
 3. Longitudinal section on a larger scale.
- C C, the front and back glass of the case.
J, the dial.
D, space in which move the hour and minute hands.
E H G, the three wheels forming the dial train.
A, glass disk with toothed metallic rim communicating with the movement.
F B, two glass disks serving as a support to A.

French weekly journal aimed at the popularization of science:

The Messrs. Schwob have just brought out quite a singular watch [...]. It is, so to speak, a [mystery] pocket “clock” [Fig. 5]. A glass dial is set into a bezel in a silver rim, and two hands move, as if by magic, over the transparent glass without the least apparent transmission of motion (1). The view through the glass is unobstructed, and a person can read his newspaper through the dial. What is the key to the enigma? Let us open the watch. Behind the [frontal glass lid], C (3), we find [the dial], J [...]. The axis of the hands traverses [four disks, J F A B] [...], and rests on one side on the center of

the dial, and, on the other, on the center of the glass [B]. It is not difficult to see that the hands revolve, because the median disk itself revolves [A]. But whence does it derive its motion? At the upper part of the watch, near the stem, the case forms a crescent (2), and in this, notwithstanding the reduced space, it has been possible to find room for an entire ordinary watch movement. Now, the movable median disk is provided, at its circumference, with a toothed metallic ring. The teeth of this engage with those of a pinion of the movement concealed in the crescent. Of course, we do not see the toothed circumference of the disk concealed behind the prolonged horns of the crescent; and we do not even suspect the existence of the central glass disk, the motions of which take place unperceived. So that a person who is ignorant of the artifice that we have just pointed out does not understand how the hands can move over the dial. The minute hand causes the direct revolution of the hour hand by means of microscopic gearings concealed under the interior support of the hands. This entire combination is well conceived, and, in ingenuity, surpasses the old [mystery] clocks. The escapement is of the remontoir kind, and the watch runs thirty-two hours without stopping.³⁵ [...]

Amongst the millions of visitors to the 1889 Paris World Fair was the Shah of Persia (Fig. 6), who was presented with a specimen of the impossible object. The daily newspaper *Le Figaro* reported:

Also on Wednesday [7 August 1889], Messrs. Armand Schwob and brother, watch makers, offered the Shah a magnificent specimen of the “*montre mystérieuse*” [...]. This watch is composed of a glass dial set in a gold rim, on which two hands operate and one is unable to notice the least trace of movement. Nāṣer al-Dīn was very much intrigued by this admirable jewel, which he accepted with great pleasure. Let’s say, for those who want the key to the enigma, that, either at

35. English translation of Parville’s article excerpted from: ‘The Mysterious Watch’, *Scientific American Supplement*, vol. 28, 718 (5 October 1889), pp. 11475–11476.



Fig. 6. Signed portrait of the Shah of Persia by Walery, photographer to the Queen. Published by Sampson Low & Co. in August 1889.
© National Portrait Gallery, London.

the class 26 [classification number given to horology at the World Fair], or at the factory [actually a shop] at 19, Boulevard Bonne-Nouvelle, they will get an explanation of the mechanism that makes this watch to run, which is as simple as it is ingenious.³⁶ (Translated from the French)

For his creation, the Persian monarch made Hugues Rime a Knight of the Order of the Lion and the Sun, whereas Schwob, as the putative maker, was made an Officer of the very same order.³⁷

The model in detail

It is interesting to note that despite being a



Fig. 7. SN 85 (private collection). Back of a gold example showing Arabic numerals, outer five-minute indications, vegetal motifs, an elaborate cartouche and oval bow. Courtesy: Auktionen Dr. Crott. The pumpkin crown's top bears the inscription in circle 'H . R BREVETE' (Hugues Rime Patented), while in some others this inscription is engraved in one of the movement's plates. In other crowns is seen a five-pointed star surrounded by the initials 'A S / F' with the ampersand '&' in its centre.

serially produced model – although not mass-produced – no two are alike. They differ either in the neck, bow, crown or latch button forms, dust cover patterns (hammered finish, foliage/floral motifs and five-pointed stars), cartouche shape, hands colour or style, Roman and/or Arabic numerals, the decorative element painted at the centre of the face, cases in gold (Fig. 7), silver-gilt (Fig. 8), silver (Figs 9-11) or black oxidised steel, etc. This is an indication that each pocket watch would have been individually crafted. Because Armand Schwob et Frère never was a *manufacture d'horlogerie*,

36. Georges Grison, 'Courrier de l'Exposition', *Le Figaro*, 221 (9 August 1889), p. 2.

37. 'Chronique locale. Haute-Savoie', *L'Indicateur de la Savoie*, 526 (24 August 1889), p. 2.

38. 'Patek, Philippe et Cie contre Armand Schwob et frère' (n. 6), p. 194; the French text is 'La maison défenderesse [...] fait surtout établir des montres chez plusieurs autres fabricants, pour les revendre ensuite'.



Fig. 8. SN 4228 (private collection). Front image of a silver-gilt case presenting a hammered dust cover (one of the most common ones), onion crown and round bow. Roman numerals dial lacking Arabic five-minute indications. Courtesy: Pieces of Time.



Fig. 9. SN 554 (private collection). Back view. Courtesy: Pieces of Time.

it is unknown who was the real maker. According to one source,³⁸ they got their products from several unspecified makers; presumably the timepieces were made in Switzerland.

By way of example, we here present further details of a watch in a silver case (SN 554, private collection), the most usual version:

- Movement (Fig. 11): Frosted gilt brass, cylinder escapement, three-arm gilt non-compensated balance with blued steel

Fig. 10. SN 554 (private collection). Front view. Courtesy: Pieces of Time. Due to its peculiar configuration, the model features two (eccentric opening) cuvettes rather than one behind, as usual. The flowering creeper was artistically engraved by means of the *tapisserie* technique. This is similar to guilloché, but executed with a mechanical copying machine that reproduces a given pattern in the workpiece, with a scaling factor. My thanks to Yann von Kaenel, engineer-turner at Décors Guillochés, for this information.





Fig. 11. SN 554 (private collection). A novel design in watchmaking back in the day, the unusual calibre incorporates a glass disk as a working part. Courtesy: Pieces of Time.

hairspring, 10 jewels, polished steel index regulator, keyless with going barrel, crown turning only in one direction, manual time setting.

- Dial: Eccentric with golden radial Roman numerals, outer minute track and starburst printed on glass. Steel blued spade hands.

- Case: Polished double hunter slightly convex glazed on both sides, plain silver case with hinged front and back. Two sterling cuvettes, the anterior fixed. Provided with a push button in the band at 1 to release frontal lid. Silver neck and bow.

- Date: Circa 1889.

- Dimensions: 54 mm diameter x 18 mm deep.

- Description: Stem-wind Swiss pocket watch fitted with a round calibre numbered '554' on reverse (Fig. 11). The piece has six superimposed circular glasses in total, one of them moveable. The starburst at the dial centre, besides an ornamental purpose, serves to dissimulate a partly projecting toothed wheel, here at 12 position, of the tiny gear train. Both visible dust covers or cuvettes, which in turn function as decorative frames enhancing the glazed apertures, are embellished with morning glories and one cartouche each; the rear is in blank (Fig. 9),

whilst the opposite contains the inscription in diverse fonts hand etched with a burin (Fig. 10): 'A. S. & F./Mystérieuse/Breveté S.G.D.G.' (Sans Garantie Du Gouvernement = Without Government Warranty). Back cover has stamped on its internal side '554', matching that of the movement serial number (in other specimens these do not coincide). Not this unit, but a few others have the cartouche engraved '22. VI. 88', thus commemorating the granting day of the French patent.

As an item of historical horological value, the first transparent watch is preserved in various museum collections, examples include in alphabetical order (digit indicates movement serial number):

- British Museum, 2598 (missing case and minute hand)
- Deutsches Uhrenmuseum, 2147 and 2624
- Musée d'art et d'histoire de Neuchâtel (MAHN), 4318

- Musée international d'horlogerie (MIH), 2072, 3191 and 3412
- National Watch & Clock Museum (NWCM), 2495.

The total number of units completed remains unknown, nevertheless keeping in mind it was in production less than four years and not on an industrial scale, several thousand seems unlikely.

Rime's brainchild was available during a limited period of time, but the fascination and interest for clear watches has endured until the present day. In the past twentieth and current century certain brands have introduced their own models; whether mechanical, quartz or digital, whether a pendant, pocket or wrist version, whether or not patented; such as Cartier, Omega, Vacheron Constantin, Quinting, Konstantin Chaykin, Tokyoflash Japan and Ali&Co Genève.

Appendix

On the following three pages is reproduced the specification of the patent filed in the USA on 25 August 1888. Note the misspelling of the surname Schwob as Schwab.

UNITED STATES PATENT OFFICE.

HUGUES RIME, OF PARIS, FRANCE, ASSIGNOR TO THE SOCIÉTÉ ARMAND
SCHWAB ET FRÈRE, OF SAME PLACE.

TIME-PIECE.

SPECIFICATION forming part of Letters Patent No. 402,972, dated May 7, 1889.

Application filed August 25, 1888. Serial No. 283,758. (No model.) Patented in France April 19, 1888, No. 190,092.

To all whom it may concern:

Be it known that I, HUGUES RIME, of Paris, France, have invented certain new and useful Improvements in Watches, (for which I have obtained Letters Patent in France, No. 190,092, dated April 19, 1888,) of which the following is a specification.

My invention has for its object a watch which I call "mysterious," because its movement is invisible and because the body of the watch is exclusively composed of transparent glasses, between which are arranged the hands, which, as in ordinary watches, indicate the hours and minutes.

The fundamental organ of my watch consists in a transparent circular glass which turns between the usual glasses under the action of a watch mechanism located in the pendant of the watch or altogether in some other place exterior to the watch-frame. The central glass makes a complete rotation in one hour, and its arbor carries the minute-hand. A very small train of gear-wheels hidden behind the central portions of the hands conveys motion from the axis of the minute-hand to the arbor of the hour-hand.

Having thus disclosed the principle of the construction of my mysterious watch, I will now describe it, referring to the annexed drawings, in which—

Figure 1 is a view of the rear of the watch, the exterior glass and the plate which closes the watch mechanism in the pendant being open. Fig. 2 is a side view of the same. Figs. 3 and 4 are front and sectional views, respectively, on a larger scale, of the watch mechanism; and Fig. 5 is a view showing a different location of the watch mechanism.

The driving or operating movement X of the watch presents no special novelty in its construction except that it is of such size as will permit it to be placed in the pendant F. A hinged plate, *a*, constitutes the cover of the box which incloses the movement.

The power from the movement is transmitted by a large intermediate wheel, E, which, as usual, completes a revolution in one hour. Its movement is transmitted to the wheel B by the intermediate pinion, *b*, which

meshes with the large intermediate wheel, E, and by the wheel A, which meshes with wheel B. The number of teeth on these wheels and pinions are so arranged that the wheel B makes a revolution in one hour. This wheel B is composed of a circular transparent glass, and carries on its periphery a metallic ring, *c*, in which are formed the intermeshing teeth. This metallic ring is concealed by the watch-rim. The arbor of the glass wheel carries the minute-hand *d*, and the concentric arbor or sleeve of the hour-hand is rotated through the train of gear *f*, *g*, *h*, and *i*, in the usual manner, which train has no other peculiarity except that it is of such small size as to be concealed behind the centers of the hands. This mechanism is mounted between the transparent glasses *d d*, and the lids of the watch-body are also of glass, so that a transparent watch is formed, through which the hands may be seen apparently turning without operating mechanism.

The operating mechanism can be placed in any other position on the exterior of the watch-case—for example, at the bottom, as shown in Fig. 5, or on the side.

I do not limit myself to the particular features of construction of my watch, since I may modify them in many ways without departing from my invention, and I reserve the right of making mysterious watches of all dimensions, of any convenient materials, and of all varieties.

I can especially modify the means for communicating motion to the interior rotating glass wheel by utilizing any exterior motor communicating therewith by any other means of transmitting motion, such as a chain or endless cord.

I claim as my invention—

1. A watch having the body or case composed of transparent materials, the hands of said watch and the operating movement thereof exterior to the watch body or case, in combination with a transparent wheel communicating motion from said operating movement to said hands, substantially as set forth.

2. A watch having its body or case com-

posed of transparent materials, the hands of said watch and the operating movement thereof exterior to the watch body or case, in combination with a transparent wheel concentric with said hands and communicating motion from said operating movement to said hands, substantially as set forth.

3. A watch having its body or case composed of transparent materials, the hour and minute hands of said watch and the operating movement thereof exterior to the watch body or case, in combination with a transparent wheel concentric with the hands of said watch, said wheel being rotated by said operating movement and said minute-hand rotating with said transparent wheel, and a train of gear concealed behind the central portions of the hour and minute hands, which transmits motion from said minute-hand to said hour-hand, substantially as set forth.

4. A watch having its body or case composed of transparent materials, the hour and minute hands of said watch and an operating

movement concealed in the pendant of the watch, in combination with a transparent wheel communicating motion from said operating movement to said hands, substantially as set forth.

5. A watch having its body or case composed of transparent materials, the hands of said watch and the operating movement thereof exterior to the watch, in combination with a transparent wheel concentric with said hands and operating the same, and a toothed ring on the periphery of said wheel, which is concealed by the rim of the watch and which meshes with said operating movement, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

HUGUES RIME.

Witnesses:

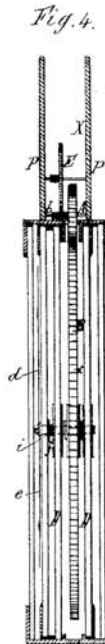
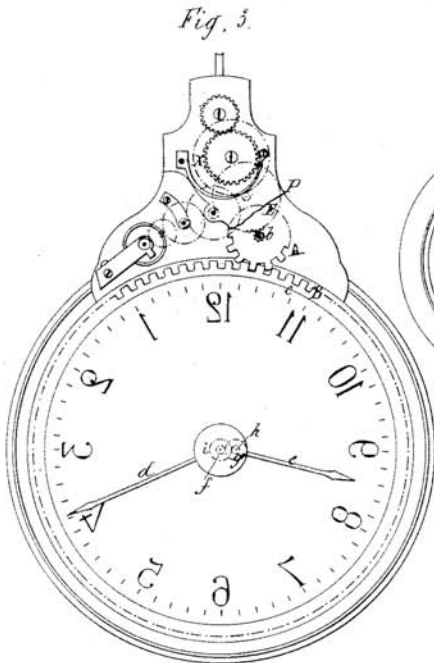
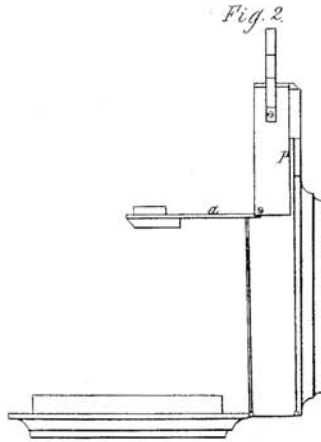
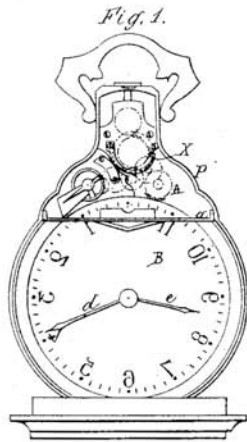
ROBT. M. HOOPER,
AMAND RITTER.

(No Model.)

H. RIME.
TIME PIECE.

No. 402,972.

Patented May 7, 1889.



WITNESSES:

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