

The hands of a watch can make or break the look, and as such one may find numerous permutations in their design and appearance. The 180 employees at Fiedler SA have been painstakingly crafting these diminutive components for Patek

Philippe timepieces for more than 50 years. There, beyond the aesthetics, lies a string of complex manufacturing processes that combine high tech and traditional savoir faire. These finished baton hands, left, have a Superluminova® coating

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Sword, arrow, lance, baton, javelin; apple, pear, leaf, fleur-de-lys; dauphine, Louis XV, Louis XVI: the nomenclature of watch hands has a polyglot heritage, borrowing from the vocabulary of weaponry, botany, and French monarchy. These are just three fields among many more – cars (Mercedes), ecclesiastical architecture (cathedral), meteorological phenomena (snowflake), for example – that make their contribution to the lexicon of this most varied of horological components.

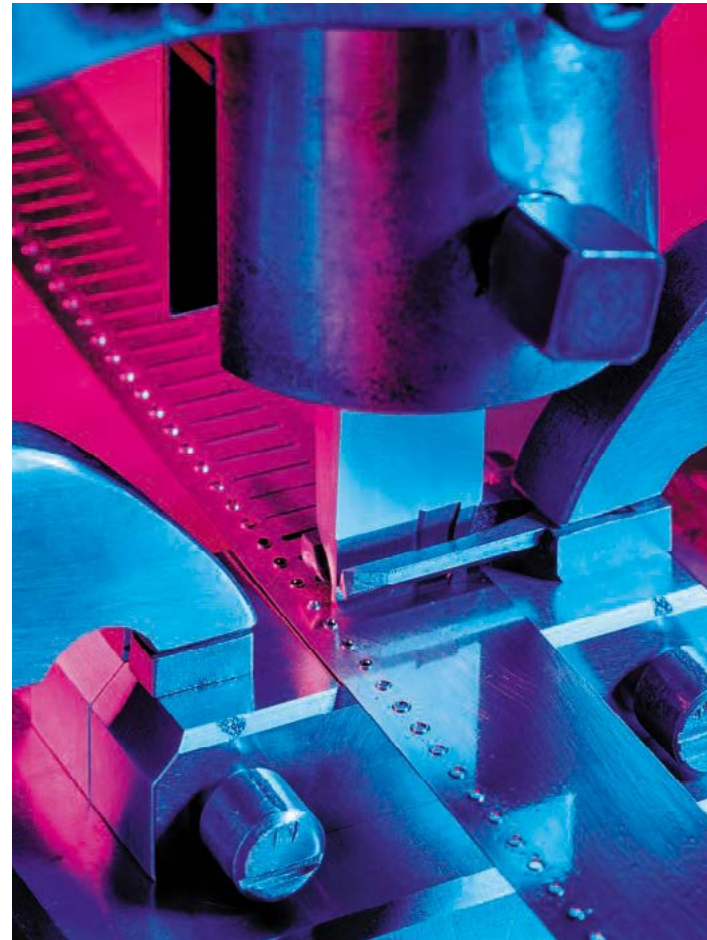
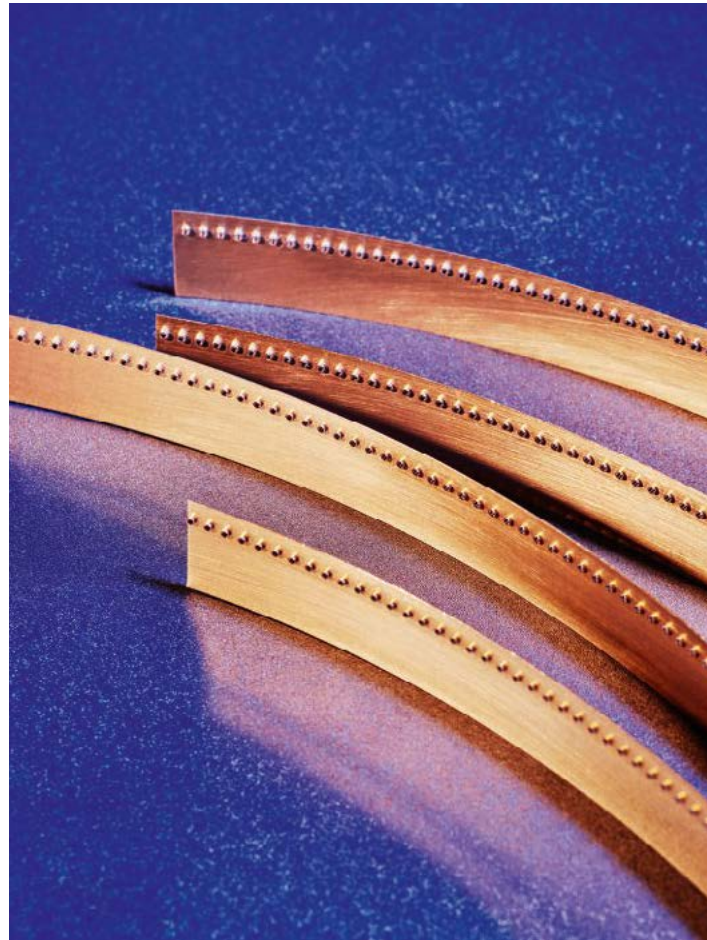
I'd recommend caution, however, before ransacking the medicine cupboard and using the word "syringe" to describe the hands on the Perpetual Calendar REF. 5320G: they are more properly known as *bâton Geos à pointe*. Isabelle Chillier, who is the fourth generation of her family to run the historic Geneva-based hand manufacturer Fiedler SA, is understandably particular on these matters. The large sweep-seconds hand of the 5320G is known as a *grande seconde à contrepoids*, she explains, while the date is indicated by a *feuille à contrepoids*.

The importance of a thing can often be gauged by how completely it is taken for granted (we breathe unthinkingly). With the hands of a watch, we may express an aesthetic opinion, but otherwise their journey around the dial is something that we take for granted. Yet without these tiny slivers of metal, many of a size and weight that make a pine needle seem gargantuan, all of the beautiful finishing, micro-engineering, and cunningly conceived complications are redundant. Wheels, pinions, and springs

would interact, performing their complex, beautiful ballet with no visible effect; time would remain untold.

The constant, silent, visual indication of time was one of the foundations on which the Renaissance and the subsequent Age of Exploration were built; the hands of public clocks regulated the lives of city dwellers until portable timepieces made the hour of the day a personal matter. As timekeeping technology advanced, so did the means to display time. The English clockmaker Daniel Quare introduced the minute hand into regular use in the 1690s, once clocks and watches were precise enough to require one.

Founded in 1848, Fiedler SA may not be as old as the minute hand, but it is the oldest maker of watch hands still in existence in Switzerland, older than many of the brands that it has supplied over generations and only nine years younger than Patek Philippe, for which it has manufactured hands for more than 50 years. Fiedler is among the industrial aristocracy of Swiss horology, and if the manufacturer goes about



its business in a thoroughly understated Genevan manner, that is because it has a quiet confidence and pride in its work that has developed over its long history.

The hand may be small, but the manufacturing culture behind it is substantial: much more than a component, it is the physical manifestation of a discrete culture of horological savoir faire concerned in equal measure with the technical and aesthetic aspects of watchmaking. It has its own language, its own customs, and its own procedures (some hands require between 30 and 40 manufacturing steps). If not a closed world, it is a little-known one that was opened for the Patek Philippe magazine.

Microscopic scale, tiny tolerances, and unforgiving quality control that generates at least as many rejects as it does successes are what define Fiedler's métier. A family-owned and -operated firm rather than part of a large conglomerate, it might furnish its bigger customers with batches of hands counted in the thousands, but it is also happy to work on an order of just 10 hands (though

anything from 60 to 100 hands will need to be made to be sure of having 10 perfect ones). Producing these hands is not a swift process: depending on the intricacy of a design, it can take Fiedler four months of preparation, including the manufacture of bespoke tools, before production begins.

"Much of the complexity of making hands is due to their size. They are tiny and difficult to manipulate," explains Chillier, the firm's managing director. "As the industry becomes more and more developed, we need to be more and more precise in order to produce identical pieces. For example, hands with sanded surfaces are sanded all together, not piece by piece." Acceptance or rejection can hang on "a tiny variation of color or nuance of sanding," she adds.

The making of hands begins with dull metal, often a strip of brass, but gold is commonly used too (in fact, Patek Philippe uses only gold unless another metal is required for technical reasons). A 12-inch strip of metal can yield 100 watch hands, each stamped out by a shaped blade in a process

known as *découpage*, using a machine called a *balancier* that looks like a duck press. Skeletonized or Superluminova® versions require a further pass through the press.

At this early stage in the process, hands are divided into sorts defined by the way in which the *cannon* – the tube that connects the head of the hand to the pinion responsible for moving it around the dial – is formed. The cannon can be stamped on the raw metal strip before *découpage*, either using the standard or complex process. Other hands (requiring a longer tube or one of a narrower dimension) already have a hole into which a separate cannon is later riveted. Patek Philippe hands have cannons created one by one using the complex stamping technique, an operation of surgical precision, necessary due to the requirements of the Patek Philippe Seal, which states that the cannon must have a thicker wall than riveting or standard stamping can create.

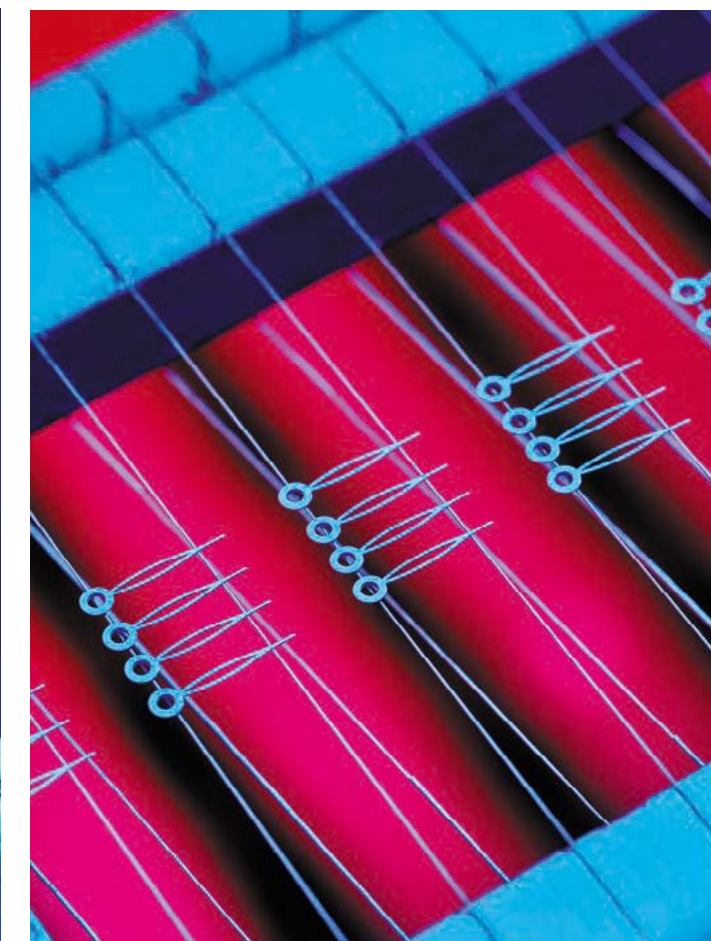
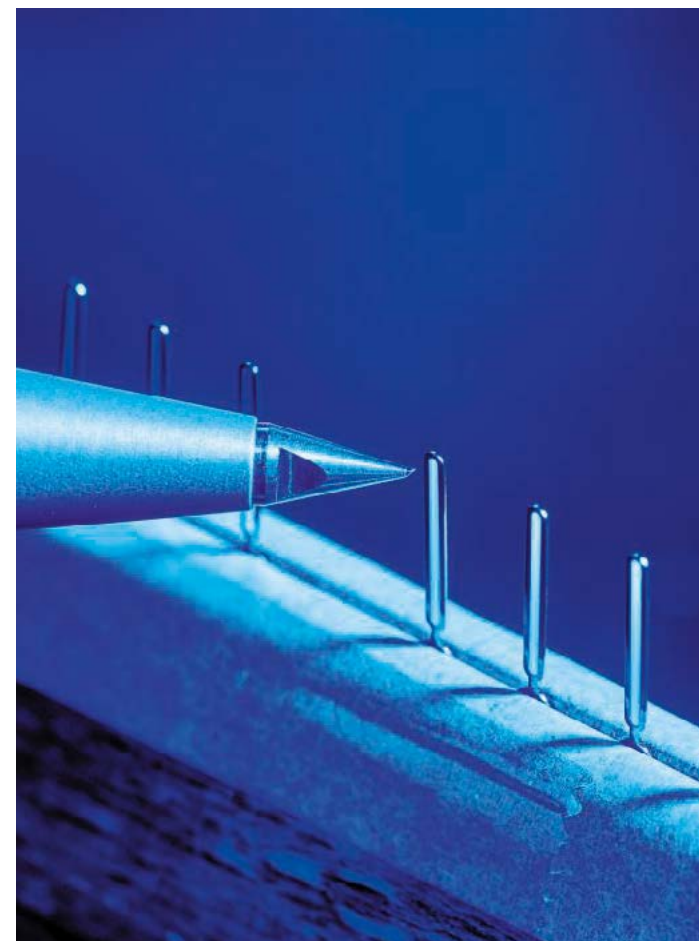
Hands have to meet minute tolerances; they are seated on the cannon pinion of a watch using light pressure and they only

Opposite: watch hands begin with a metal strip that has holes punched into it. These holes are pressed outward to create a lip, which is known as the cannon (left). The strips then pass through another press (with stamps specifically created for every single type of hand)

in a process called *découpage*. The cannon holes are used as a guide for the machine to punch out rows of hands (right). Below: once stamped and diamond-cut, the hands are glued to a support and polished. Many finishes are available such as faceted, curved, smooth, or matte



This page: a striking tool creates a curved profile on certain hands in a process known as *frappe*. Opposite: a Superluminova® solution is applied to hands that require a luminous finish (left), and color is painted on manually (right)



stay in place if the fit is perfect, the weight correct, and the balance between their neck, body, tip, and any counterpoise is finely judged. But they also have an aesthetic function. As well as being so varied in profile as to be referred to as a Bourbon king or a piece of fruit, hands can be flat, *bombé*, or faceted, and they can be brushed or polished. One face of a faceted hand can be brushed while the other is worked in a diamond machine and polished, or a third facet can be included to vary and enhance the play of light.

The most remarkable change takes place during diamond finishing. Hands are placed in concentric circles on a revolving disk over which a diamond tool passes. As this tool performs its transformative magic, the hands appear to glow, as if illuminated from within; no longer metal components, they become tiny incandescent flecks, miniature fireworks, pirouetting on a turntable.

A small number of hands are shaped by a stamping process called *frappe*, in which the force of one metric ton is brought down

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on them. Each hand is first cleaned and minutely inspected under a loupe since the merest mote of dust leaves an impression.

Next, hands are washed, polished, and given their finish, whether painted, galvanized, or treated with Superluminova®. Paint is applied in a fine mist inside a minute paint shop with operating-room standards of air filtration. Then hands are inspected with a loupe. For luminous ones, a fresh batch of glue and light-emitting pigment is mixed each day to create a paste of the appropriate viscosity and adhesiveness.

Even packaging is an art; hands are slid into slotted cards or, in the case of Patek Philippe, individual specially shaped plastic cocoons. This final procedure is performed

as deftly as the preceding operations. The hands are now at their most vulnerable, their finished surfaces susceptible to bruises and scratches from over-enthusiastically wielded tweezers, and their bodies liable to deformation in an instant's distraction.

Rather like Britain's Grand National, notorious for the number of horses that fall at its fences, so the process of making a hand is an assault course where many do not make it to the finish. The forensic expertise of Fiedler's craftspeople testifies to the fact that even in the most commonplace of horological components it is possible to describe the miraculous, Olympic level of detail that renders watchmaking so engrossing and rewarding for the connoisseur. ♦