A TRIO OF FRENC

3. Cherubs and roses

PART 3 of 3

The third clock in this mini-series on early French clocks looks more like a lantern clock than the previous two, having a front fret, bell frame and decorative finials, **figure 1**—all made of iron—yet there are still many difference between it and an English brass lantern clock. Despite not having a hanging hoop or spikes it appears to be a stand-alone clock, not intended to be fitted in a tall case (as were many French so-called 'lantern clocks', especially from Normandy). It probably would have sat on a wall bracket made of either wood or wrought iron.

The painted iron dial, 6½in (165mm) tall and 5½in (140mm) wide, sits between the plates of the posted-frame movement, with a small lug fitting into a hole in the bottom plate and held with two taper pins at the top in the English manner. The white chapter ring, with small crosses to mark the half-hours, is painted on a bright blueish-green ground. While the centre is plain, cherubs or putti occupy the top corners, **figure 2**, each holding on to a central rose with roses in the lower corners, **figure 3**.

These chubby winged infants (usually boys) have no identifiable attributes and may be associated variously with love (romantic or erotic), heaven, peace prosperity, mirth and leisure. They were often included in Greek and Roman art and were revived in the baroque era, when they were used, as here, purely as decoration without any particular religious or secular significance. These 'flying babies' are said to be one of the oddest elements in western art and in a disembodied form they often appear as winged cherub heads, such as the spandrels on the dials of early longcase clocks.

As mentioned in the first article in this series, it can be difficult to determine how a joint was made if it appears to be almost perfect, and the same is true in the case of the construction of the frame of this movement. Unlike the first two clocks, which used screwed nuts, and lantern clocks, which have screwed finials and feet, and can be dismantled, this one cannot be taken apart. The

Figure 1. Iron clock with a painted dial.

CH IRON CLOCKS

from Northern France

by John Robey, UK

Figure 2. Cherubs in the top corners of the dial.

Figure 3. Roses in the lower corners.

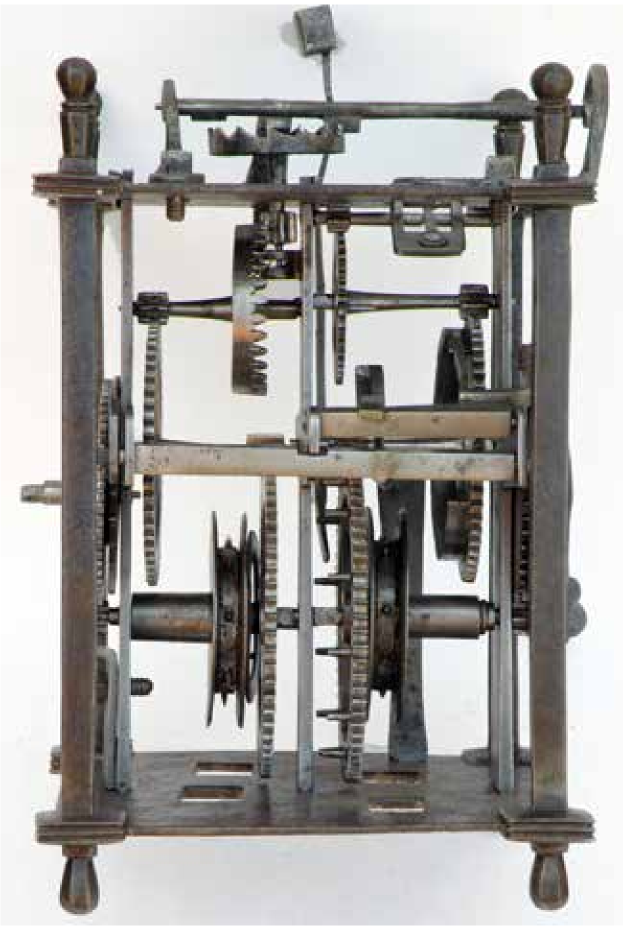
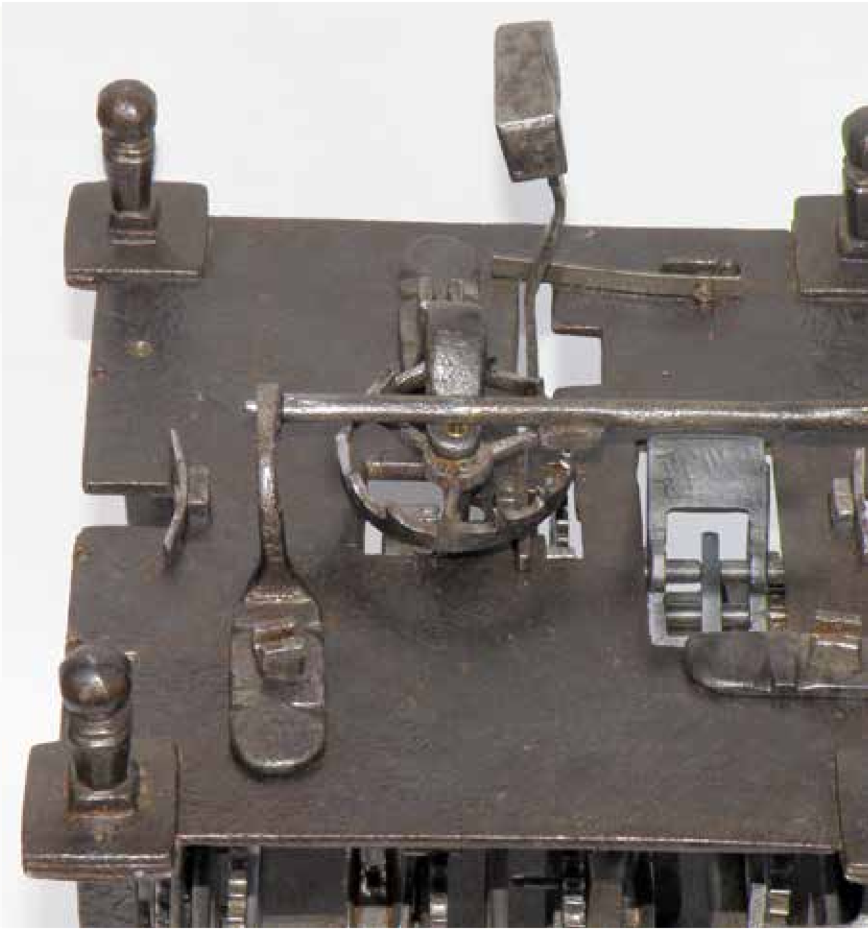
method appears to be as follows: the corner pillars, made from 3/8in (9.5mm) square wrought-iron bar, had their ends forged to form octagonal finials and then square bosses, each with a square hole, were forced on to the bars. There are no signs of brazing. The corners of the plates were then fitted into horizontal slots in the bosses and each riveted in place, **figure 4**, in an identical manner to that used on lantern clocks from the Bristol area with one-piece cast-brass pillars.

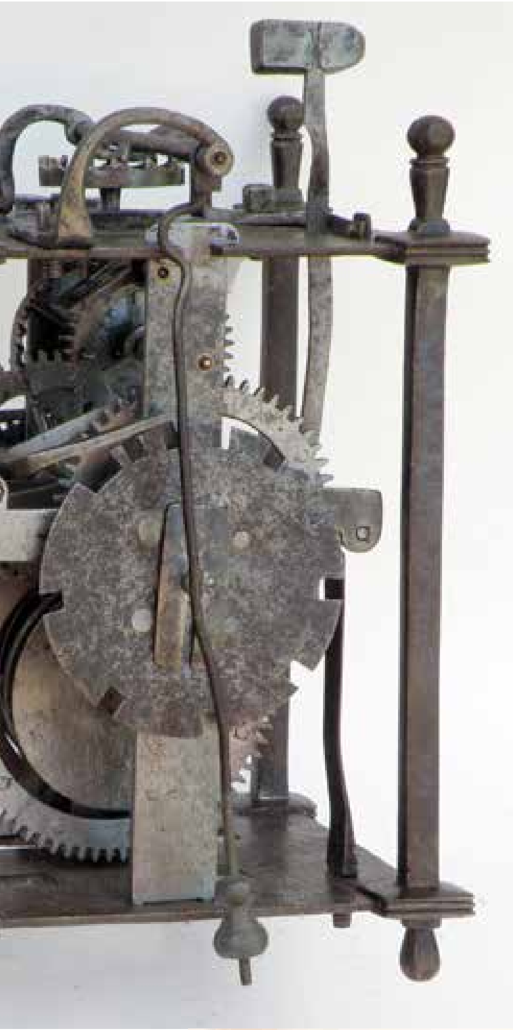
The bold iron fret, **figure 5**, has none of the delicate tracery of the cast-brass frets seen on English lantern clocks, nor the even more delicate ones often found on later French brass lantern clocks. The design is a stylised fleur-de-lis with a C-scroll at each side, but thankfully it escaped the scrutiny of the fanatics of the French Revolution and did not have to be defaced like the bell on the clock discussed last month. This type of iron fret has not been seen on any other clock (so far!), nor has this design of sturdy iron hand. There are no side frets, doors or a rear cover, nor any sign that they have ever been fitted.

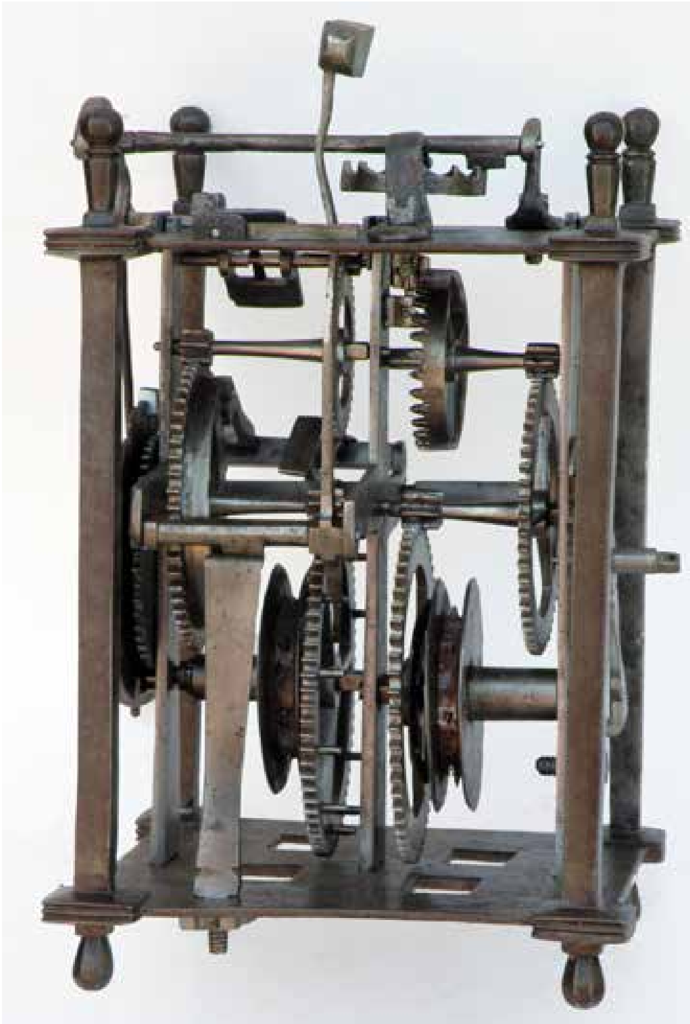
Having described the outer parts of the clock we now turn our attention to its inner workings—the movement, **figures 6-10**, which is 6in (153mm) square with the corner pillars, including feet and finials, being 9in (228mm) tall. At first glance the general layout of the movement appears fairly conventional, until we look at the movement bars, **figure 11**. French lantern and other posted-frame clocks can be divided into two basic types: those where the arbors of the strikework and the hammer pivot between the corner pillars, and those that pivot between horizontal extensions of the front and rear bars. The first group have straight movement bars, the second group have cruciform front and rear bars with a straight central bar. English lantern and other posted-frame clocks, with only a few exceptions, are of the second type with cruciform bars. Some French lantern clocks use this system, mainly those made of brass rather than those with iron frames, but of course not all clockmakers followed









Left to right

Figure 4. Close-up of a top corner of the frame.

Figure 5. The forged iron fret and single hand.

Figure 6. The all-iron movement from the front.

Figure 7. Rear of the movement with the replaced iron countwheel.

Figure 8. Movement from the left, note the short hammer arbor.

Left to right

Figure 9. Movement from the right showing the long locking arbor and the short warning arbor.

Figure 10. Top view showing the verge escapement.

Figure 11. The very unusual movement bars.

the ‘rules’.

This clock uses a very unusual variant of the English arrangement that has not been seen before, but other examples may exist. The central and rear bars are cruciform, while the front one has an arm only on the right. This means that the hammer arbor is only half the normal length and pivots on the left between the central and rear arms, the half-length arbor with the locking and countwheel detents pivots between the right-hand arms of the centre and rear bars. The lifting piece and the warning detent are on a long arbor that pivots between the right-hand front and rear arms, **figures 8** to **9**.

Like the clock in last month’s article, all the wheels in both trains of this clock have just three crossings and separate rims, while the ‘flat’ wheels (that is, all except the contrate and crown wheels) on both trains have dots on the teeth, **figure 12**. This shows that they were marked out using a dividing plate and then slit by hand before being rounded up to give smooth meshing with the pinions. The crossings of the contrate and crown wheels have a rounded cross-section, **figures 13** and **14**. Each wheel and its pinion have marks to indicate correct meshing, not only on the striking train to ensure that locking, warning and the hammer tail are correctly set-up, but also on the going train. This is commonly found on iron wheels and this is to ensure that the wheels and pinions are assembled so that they mesh together in the same positions that the clockmaker decided gave smoothest running when rounding the teeth and pinions.

Since the escapement is a verge there are four wheels in the going train, **figure 15**. The counts give a pendulum that has a beat of just over half a second:

escapewheel	13 — 8
contrate wheel	30 — 6
second wheel	54 — 6
greatwheel	60 — 6
hour wheel	54

The ironwork of the escapement is shown in **figure 16**. This includes the verge and pendulum, the curved cocks

Figure 12. Marking-out dots on the teeth of the going great wheel. Note the forged join between the crossing and the rim.

Figure 13. Shaped rims and crossings of the contrate wheel.

Figure 14. Shaped rims and crossings of the crownwheel.

for the front and rear pivots of the verge, the cock for the top pivot of the crownwheel and a support for the front of the hour-hand arbor. Many 30-hour clocks with iron dials, including most British ones, pivot the hand arbors on a post, while those with brass dials, especially from Britain but rarely on Continental clocks, support the arbor of the hour hand in the centre hole of the dial itself. On this clock there is a decoratively-shaped iron bracket screwed to the front movement bar that provides support, not the dial itself nor a post. Some Normandy iron-framed lantern clocks have an additional movement bar just behind the dial for exactly the same purpose and the dial is screwed to it as well.

The wheels of the striking train, **figure 17**, are constructed in exactly the same way as the going train, the counts being:

fly	6
warn wheel	40 — 6
hoop wheel	54 — 6
greatwheel	72 — 6
(12 hammer pins)	
countwheel	45

The levers and detents of the strike-work are shown in **figure 18** and the half-length arbors for the hammer and the locking detent, made possible by the very unusual arms on the central movement bar, can be seen. The hammer is of the type found on English 30-hour clocks, with the spring held with a decorative nut underneath the bottom plate. However, instead of the usual L-shaped stop there is a horizontal counter spring on the top plate, a method used on some English lantern clocks, especially from the West Country.

The starwheel or ratch for letting off the strike (included in **figure 15**) has 24 points rather than the more usual 12, indicating that not only does the clock strike every hour, but it sounds the half-hours as well. As received the countwheel was made of copper, which was clearly a later modification. I wondered why it had been necessary to change the countwheel, as they do not wear out and even if the narrow raised section at two o'clock had

Figure 15. The going train. Note the starwheel with 24 points for the hour and half-hour strikes.

Figure 16. The verge and pendulum, together with its cocks and the crownwheel top cock, also the support for the hand arbor.

Figure 17. The striking train.

Figure 18. The hammer on a short arbor, hammer spring and nut, lifting piece, warning piece on a long arbor and the link, locking and countwheel detents on a short arbor.

Figure 19. First stage in making a replacement fly.

Figure 20. The fly takes shape.

broken off it is a relatively simple job to repair it. Replacing the countwheel with a more appropriate one cut from a scrap Birmingham iron dial eventually revealed the most likely reason why it had been replaced.

A countwheel for controlling the hours has 1 + 2 + 3 + … + 12 = 78 divisions, but if the half-hours are included there has to be 1 + 1 + 2 + 1 + 3 + 1 + … + 12 + 1 = 90 divisions, with suitable modifications to the wheel counts. The new countwheel was carefully marked out into 90 parts, but instead of each notch being being just one division wide it was of double width to take into account the extra strike at the half-hours. This was riveted to its gear wheel, but it was soon found that the detent was not falling into the slots correctly. When this occurs it can often be remedied by simply repositioning the pinion of report on its square, but no matter which position was tried and where the pinion meshed with the wheel, striking inevitably went out of sequence. In desperation the notches were widened or stretched as appropriate, but the problem persisted. Usually this involved different notches as it was not easy to re-engage the wheel and pinion in exactly the same position every time. Was the wheel train incorrect? Most unlikely, and though mistakes do occur and pinions do get swapped over on to the wrong square, the counts did give the correct 90 divisions.

At this stage the replacement countwheel had ended up in a sorry state, so another one was made, this time paying extra special care to get the divisions as accurate as possible. But the results were no better, so I did what should have been done much sooner and inspected the teeth of the countwheel gear. While they were fairly evenly divided the same could not be said of their width and height, giving rise to uneven rotation of the countwheel. Adding half-hour striking means that the drive to the countwheel has to be more precise than with only the hours strike, so while the variations in the teeth might have been accommodated in an hour-striking clock adding the extra strikes meant that the workmanship was not up to the task in hand..

The countwheel could have been taken off and the teeth on the gear reshaped, but this would probably have affected the depthing with the pinion, which then might have needed replacing. Instead it was decided to leave well alone and not run the striking train. I suspect that a previous owner had also tried to solve the same problem by replacing the countwheel with a poor one, but made of copper.

The only other item of concern was

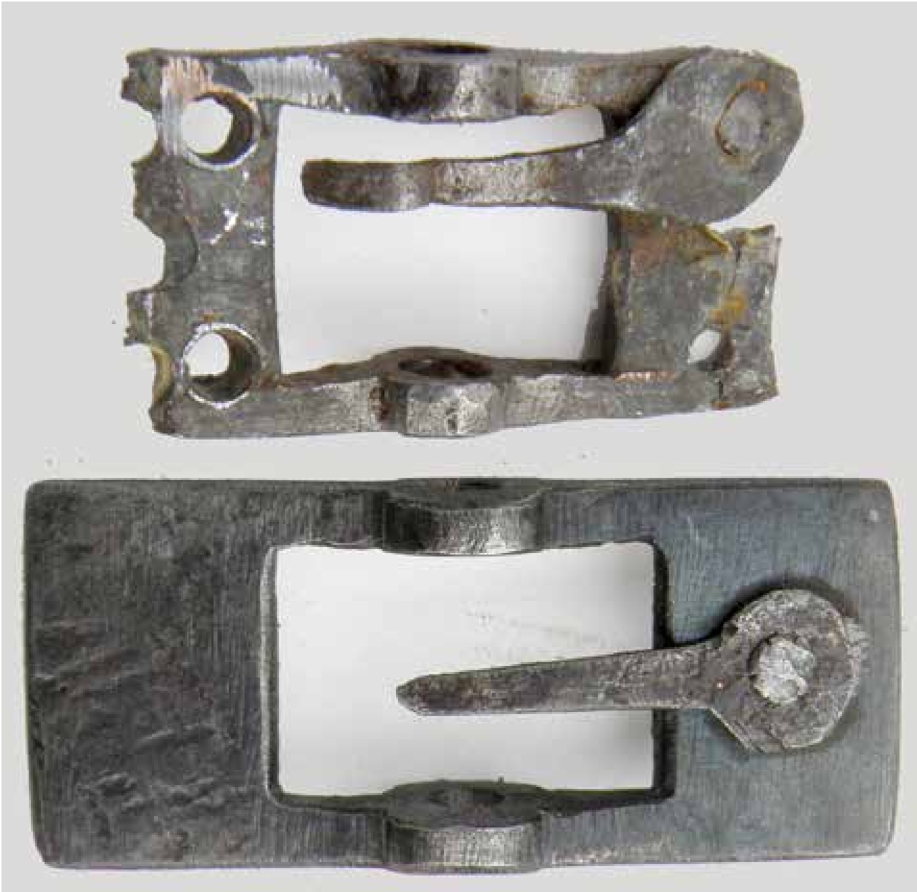


Figure 21. The damaged fly (top) and its replacement (bottom).

the fly, which had two lumps of lead riveted to it to slow it down, either because the friction spring was not holding it on to the arbor, or in a misguided and vain attempt to solve the countwheel problem. Perhaps it was thought that if striking was slower there would be a better chance of the detent dropping into the correct notch. Removing the lumps of lead left a sorry piece of iron with holes and parts broken off.

It was decided to make a new one and though the original would have been largely forged from wrought iron, this would have tested my skills to the limit, so it was made with a milling machine and files rather than a forge and hammer. A component like this is very awkward to hold so it was made from an over-long mild steel bar of rectangular cross-section. This enabled it to be clamped at each end directly to the table of the milling machine. Two wide slots were milled across the centre and then a central strip was cut slightly lower. This was repeated on the other side, making sure that the raised sections where the arbor passed through lined up, **figure 19**. The central aperture was then cut out, the holes for the arbor drilled, **figure 20**, and then the ends used for clamping sawn off, leaving the embryonic fly over-long. After filing to shape it was reduced in length until it just cleared the aperture in the top plate. A friction 'spring' was filed from mild steel, hammer hardened (there is no need to use hardened and tempered spring steel) and riveted in place. After chemically patinating the final result was a good copy of the original, **figure 21**. As an historical record the original damaged fly was retained and tied to a rear finial.

The only brass parts on this clock are the bushes—and they are later repairs—so the clockmaker who crafted this clock was certainly skilled in working iron. He was unaccustomed to using brass and there may not even have been a local founder who could cast parts for him. Unfortunately, he is likely to remain anonymous and his identity will probably never to be discovered. A collector in Belgium has said that this clock is from the province of Hainaut, which was originally in France, but it is now divided between southwest Belgium and northern France. French Hainaut is one of two areas that form the département du Nord in the region of Nord-Pas-de-Calais. However, no further details of clocks from that region have been provided, so at present this suggestion for its origin remains unproven.

Even if the exact region where it was made cannot be confirmed it remains an interesting example of a country-made clock that is broadly based on an English design, but made of different materials, using different skills and having some technical features that set it apart from a posted-frame clock made in rural England. It is quite remarkable after the widespread destruction of two world wars that devastated northern France and Belgium that any clocks from there survive to this day.