Mayhew's hoop-and-spike clock

Figure 1. The small Mayhew dial, only 7in wide.

by **John Robey**, UK

After my article about a small posted-frame clock by Charles Skedge of Norwich appeared in the August 2020 issue of *Clocks*, a reader contacted me regarding a 30-hour clock made about 1710 by Henry Mayhew of Parham, a small village seven miles north of Woodbrige in East Suffolk. It had been cleaned by the owner and ran very well, but striking was causing problems and he asked me to determine what was going wrong and get the clock working correctly. He had polished the pivots and inserted some new bushes, all to a good standard, but it turned out that there was not just one but three problems that were preventing correct striking.

The striking-work of any clock is usually more complex than timekeeping and can be confusing at first, whether a countwheel or a rack-and-snail is used to count the correct number of strikes. The wheels of the striking train have to be meshed correctly so that the hammer is not being lifted when the striking sequence finishes, and when the train is unlocked to start the strike there has to be sufficient 'run to warn'. This is the rotation of the warning wheel so that the warning pin drops correctly on to the warning flag. This is often said to be half a turn, but it can vary quite widely. There are some striking systems where there is a run to warn of only a couple of teeth, but if there is too much run to warn the hammer might start to lift too soon. In addition, the locking and warning detents have to be lifted so that the warning detent is in the correct position to catch the warning pin when the

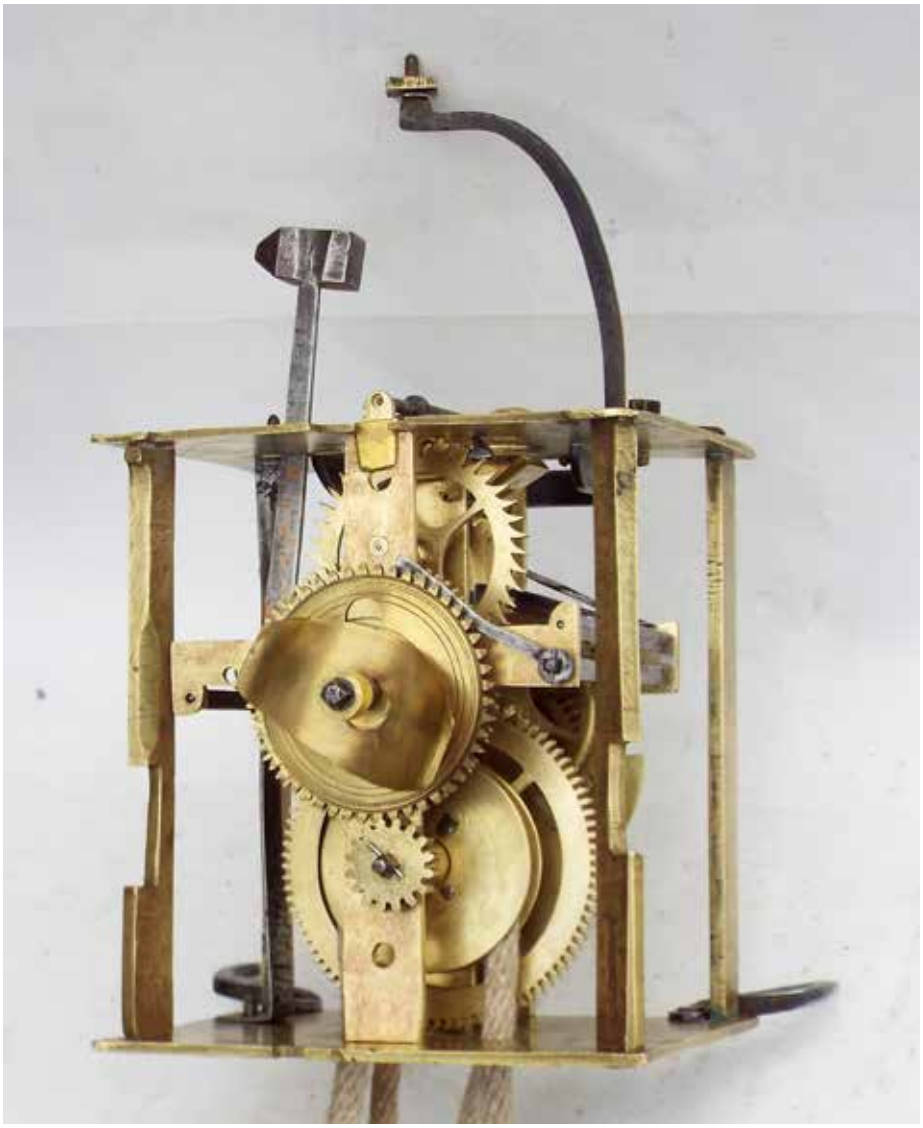


Figure 3. Front of the movement.

Figure 4. Movement with the hour wheel removed.

train is unlocked.

Firstly, on the Mayhew clock the link between the lifting and warning detents and the locking and countwheel detents was not set up correctly. This link allows both pairs of detents to be lifted together but fall independently. A few minutes before the hour (but often longer with a single-handed clock) the lifting piece is raised, along with the warning detent. At the same time the locking detent is lifted by a link so that when the striking train is unlocked the warning flag is ready to intercept the pin on the warning wheel.

On a clock with countwheel striking, especially posted-frame clocks, the link is a small curved piece fixed to the arbor of the warning detent that lifts up the locking detent. Or it may be on the locking detent to be lifted by the warning detent; whichever way round the effect is identical. If unlocking occurs too soon the warning flag will not be high enough to catch the pin, while if unlocking is delayed the flag will be too high and miss the lower edge of the flag. Gently adjusting when the link began to lift the locking detent solved the first fault.

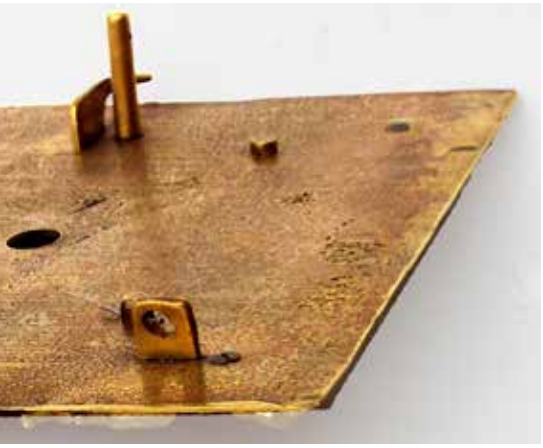
Warning and locking were now correct but the striking was still not in sequence. A broken tooth on the countwheel gear was discovered, so the countwheel disc had to be removed and the tooth replaced. This still did not correct the striking sequence and then it was noticed that the first step of the countwheel, which controls the two o'clock strike, had also been broken off. Both these repairs have been described many times in *Clocks*, so they will not be repeated here. The countwheel detent had been broken and had an over-engineered repair, so this was remade in a more appropriate manner, as well as making a new fly spring which was cracked and not doing the job it was meant to do.

With the clock now working correctly it is time to describe the dial and movement. The dial is quite small, being only 7in (178mm) wide and 71/4in (184mm) tall, with a plain matted centre, small cherub-head spandrels and a single iron hand, **figure 1**. The chapter ring is not silvered and this is how it may always have been. It is signed rather naïvely 'Hy. Mayhew' between the top two spandrels and 'Parham' at the bottom.

Figure 2. Dial rear showing the original tabs and later dial feet.

Figure 5. Rear of the movement.

The dial was originally fixed to the movement by the usual lug at the bottom sitting in a hole in the bottom plate, and at the top by two tabs held by screws to the top plate. At some stage this was not thought to have been sufficient, despite it having been used successfully on thousands of clocks. The lower lug had been bent to one side and two dial feet added, **figure 2**, that passed through holes in the front movement bar. The tabs at the top continued to be used, so the dial is now held very firmly by its 'belt-and-braces'.



Apart from the repairs and addition of the two dial feet, the movement is quite original and unmodified. It is what you would expect on a rural clock from the southern half of England, especially East Anglia where posted-frame construction continued to be used for 30-hour clocks long after it had been abandoned elsewhere. Posted- frame 30-hour clocks were a natural development of the lantern clock without the decorative pillars, finials, feet, frets and bell strap.

Continental clocks pivoted the hammer and strike-work arbors in the pillars, but since lantern clocks were enclosed with doors at the sides, this caused problems. Arbors pivoted in the pillars would have prevented the doors from opening fully, also the hammer would not have been able to swing outside the movement without a slot being cut in one of the doors.

The answer the English clockmakers came up with to solve both problems was to pivot these arbors inboard using horizontal extensions to the front and rear movement bars, and to arrange for the hammer to strike the inside of the bell instead of the outside. These cruciform bars and the hammer hitting the inside of the bell were retained on posted-frame movements for longcase clocks, even though they were no longer necessary. This emphasises the conservative nature of most craftsmen, including clockmakers, who preferred to continue to use the traditional methods they had been taught as apprentices. This would have been especially the case for those like Henry Mayhew, who made both lantern and posted-frame 30-hour clocks.

The frame of Henry Mayhew's clock has brass plates and brass pillars of a

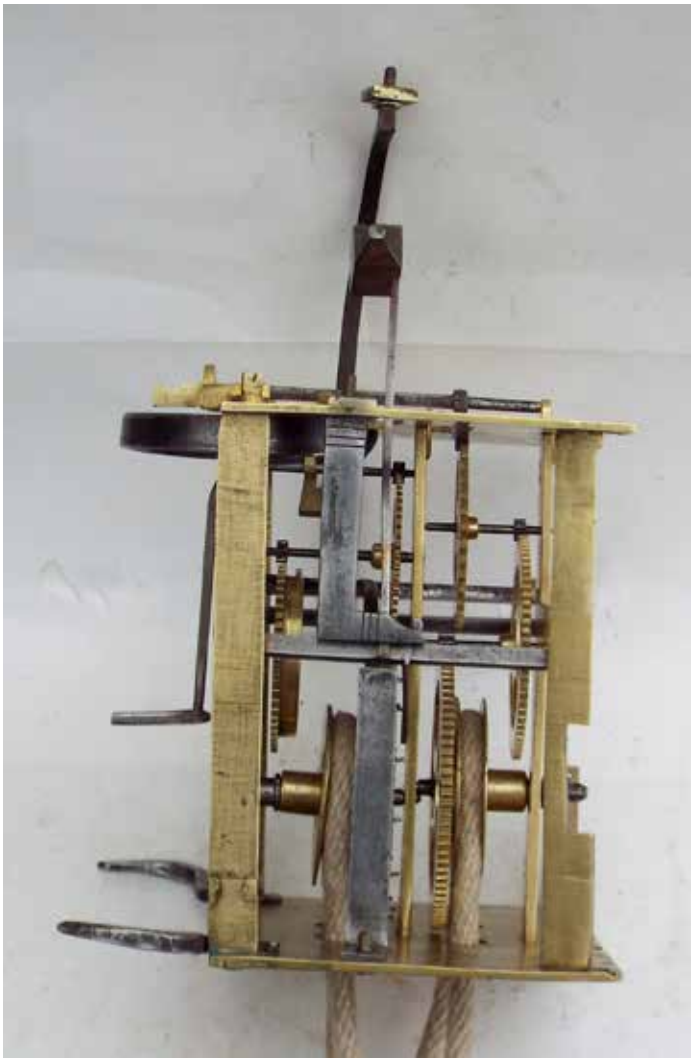


Figure 6. Left-hand side of the movement.

Figure 7. Right-hand side of the movement.

rectangular cross-section. The rear pillars are riveted to the plates with the wider side parallel to the plate sides, while the front pillars are at an angle to the edges. In addition the front pillars have, for some unknown reason, large sections filed away, **figures 3** and **4**. The left-hand arm of the front bar has a hole drilled that does not seem to serve any useful purpose. There is much more backlash or 'shake' on the hand than would be expected, being about 15 minutes. No doubt this was of little concern for an early eighteenth-century Suffolk farmer without a rigid timetable to follow. The wheelwork is quite conventional, with three wheels in each train having parallel arbors and brass 'cheese-head' collets, rather than the wheels fitting directly on to tapered arbors, **figures 6** and **7**, which was the method used on earlier clocks.

The top view, **figure 8**, shows the pallet arbor of the anchor escapement, which is pivoted between a small top extension to the front movement bar and a cast-brass backcock fixed to the top plate with square-headed brass screws. There is a 40-tooth escapewheel rather than the more usual 30 teeth. Since clocks with going trains of just three-wheels do not normally indicate seconds there is no need for a pendulum beating one second (though they are often found) and a wide range of alternative wheel counts were used. While short-duration clocks often have an escapewheel of 30 teeth, all the numbers up to 40 are not unusual, apart from 31 and 37, which were not included on the dividing plates of wheel-cutting engines. Even larger escapewheel counts of 42 and 45 are also known.

Henry Mayhew also used quite large counts on all the other wheels in the going train of this clock, and motionwork to suit. Clockmakers could use whatever they preferred, being limited only by what was available on their wheel-cutting engine. While it would make sense to standardise on one favourite set of wheel and pinion counts, some makers seemed to make almost every clock with different counts. One clockmaker who did this was Samuel Roberts of Llanfair Caereinion in mid-Wales; perhaps he preferred the variety even though it did not make economic sense.

For striking to operate correctly certain conditions have to be met, and the clockmaker has to follow certain 'rules' when planning the counts of the striking train. As a result there is far less variation in the striking counts used by different clockmakers. The exceptions are the warn wheel and fly pinion, which only determine how fast the clock strikes.

The various photographs of the movement show the iron hoop for hanging the clock on a hook fixed firmly to a wall, and the spikes that keep it vertical and also stop it from slipping to one side. This might otherwise have occurred either from the off-centre single weight pulling down on the left-hand side, or when the clock was being wound by pulling down on the rear right-hand section of the chain.

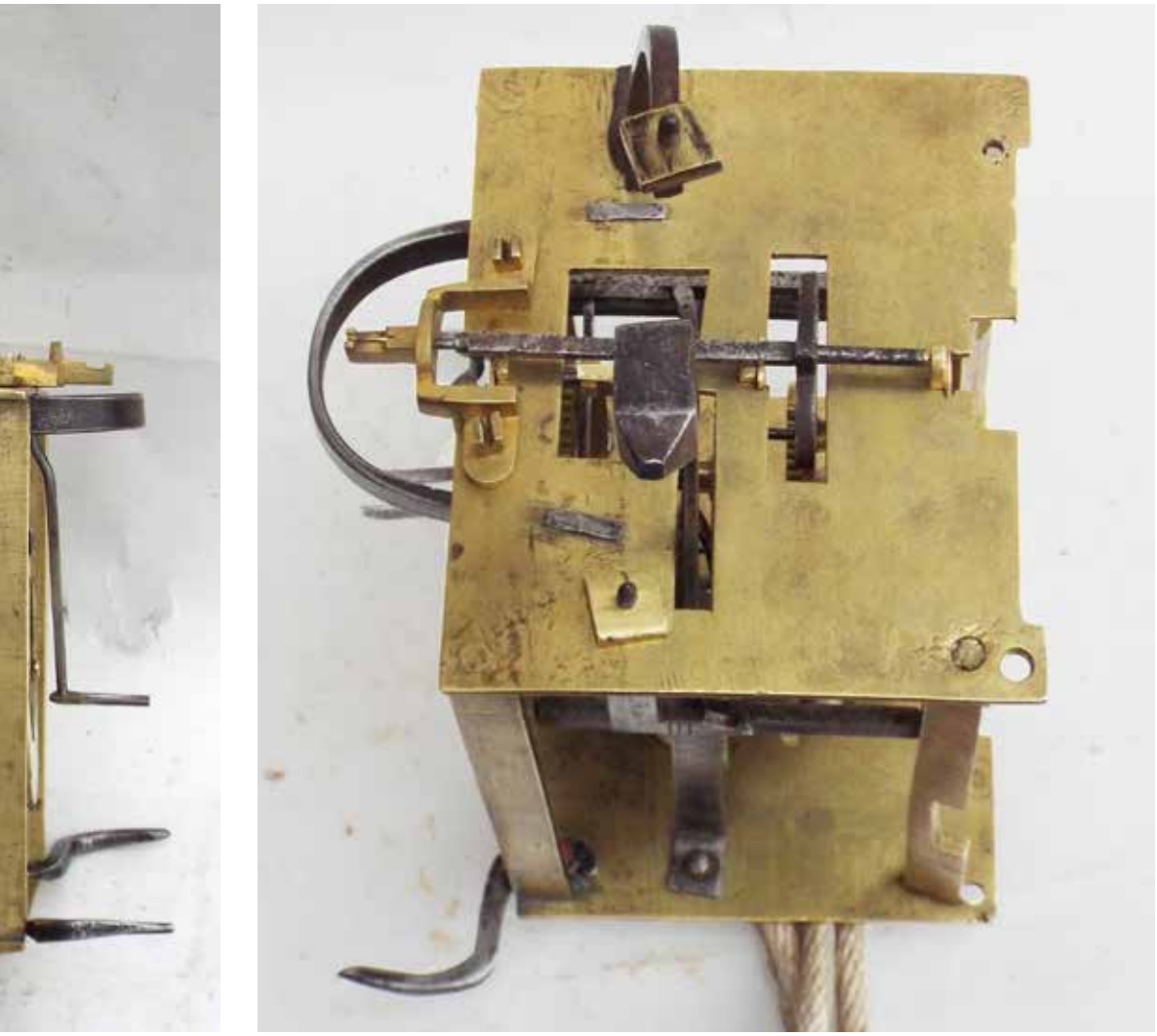


Figure 8. Top view showing the escapement.

The semicircular hoop is relatively deep compared to its thickness and is riveted to the underneath of the top plate.

This is different to the usual method on lantern clocks, where the hoop has an approximately square cross section with the flattened ends riveted to the top of the plate. The spikes also differ from those on lantern clocks, which are either riveted to an iron back plate or fitted into the rear feet. Since 30-hour posted-frame movements do not have back plates or feet they are riveted to the bottom plate. On Mayhew's clock the spikes are cranked round the rear pillars and riveted to the top of the plate. An additional crank moves the ends of the spiked further out so that they are 63/4in (170mm) apart (almost as wide as the dial) to reduce the chance of the clock moving on the wall.

It is said that hoop-and-spike clocks were made so that those who could not afford a longcase clock could upgrade later by buying a case when they could afford it. But this is speculation and there is very little evidence to confirm this, nor is there any reason to suppose that they were ever fitted in a hooded wall case. Of course it might be argued that these cases have all been destroyed, but a few might be expected to survive. There are always exceptions in horology and the hoop and spike clocks by the Quaker clockmakers of North Oxfordshire were made either to hang on a wall or on the backboard of a longcase, but it is almost impossible to say if the cases were made at the same time as the movements or later.

The dial of this clock is really too small for it to have been intended to fit in a longcase, either when first made or as a later upgrade. It is reasonable to suppose that Henry Mayhew's clock just hung on the wall of a farmhouse or cottage, exposed to the elements. This might have even been a deliberate ploy so that the movement needed more frequent cleaning and more income for the local clockmaker. The current owner has made a simple wooden cover to keep dirt out of the movement.

Henry Mayhew is recorded as working in Hacheston by 1686, when he made a clock for the church of St Lawrence, Ipswich, for £30, then at Parham, where his children were born—John in 1697 and William in 1699—to his wife, Elizabeth, who was buried at Hacheston in 1710. He was buried on 5th May 1720 also at Hacheston. A son, Francis, succeeded him at Parham.

As well as hoop-and-spike 30-hour clocks Henry Mayhew is known to have made a number of lantern clocks signed at Parham and Hatcheston'. Longcase clocks are also known, including an eight-day in a walnut case, though this was probably a London-made clock. Some clocks are signed 'Henry Mayhew Jun Parham', implying there was also a Henry senior.

Acknowledgement

I am grateful to the owner for permission to publish details of this clock.