DONISTHORPE'S EARLIEST CLOCKS

part 1 of 3 A skeletonised posted-frame 30-hour

Figure 1. The original oak case of Clock 1.

Figure 2. The hood has a caddy top, free-standing pillars at the front, but no no pillars or backsplats at the rear.

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When I was offered a 30-hour dial and movement by the Leicestershire clockmaker Joseph Donisthorpe of Normanton-le-Heath by an American collector, it was not appreciated until it arrived how unusual and interesting it was. Not only was the posted-frame movement different to most of this type, but it was dated, and preparations had been made to fit an alarm but this had been abandoned. This will be called Clock 2, for despite it being the first to be found, it is discussed in the second part of this article.

Then, like buses, within a short time another one turned up, almost identical, although not dated, but in its original case. This will be called Clock 1 and will be discussed first.

Joseph Donisthorpe is mainly known as the master of the noted Samuel Deacon of Barton-in-the-Beans, who has featured extensively in *Clocks* magazine and elsewhere. Deacon was scathing about the training, or his perceived lack of it, that he claimed to have received from Donisthorpe, but Deacon was a person who was easily offended and could be quite vindictive to anyone who crossed his path. It seems to me that he was what we nowadays called a 'control freak' and a detailed study of both his written records and his clocks by an expert psychologist would be most revealing. Details of Joseph Donisthorpe's interesting life will be considered in Part 3 of this article, as well as his next dated clocks.

The case and dial of Clock 1 are good examples of a country-made single-handed 30-hour clock from the middle of the eighteenth century. The oak case, **figure 1**, is typical of many made in the Midlands and Northern counties, with free-standing hood pillars, a shaped top to the trunk door and a caddy top to the hood, **figure 2**. In comparison, a southern 30-hour clock would have pillars attached to the hood door, a flat-topped trunk door and be a little slimmer. This case only stands 6ft 5in tall and has probably lost a few inches off its plinth. As a result the weight drop is such that it barely runs for a full day, and even at its full height it


Figure 3. The wooden block at the base of each hood pillar.


Figure 4. The block sits round the end of the pillar.


Figure 5. The base panels fit directly onto the trunk without any packing pieces or added mouldings.

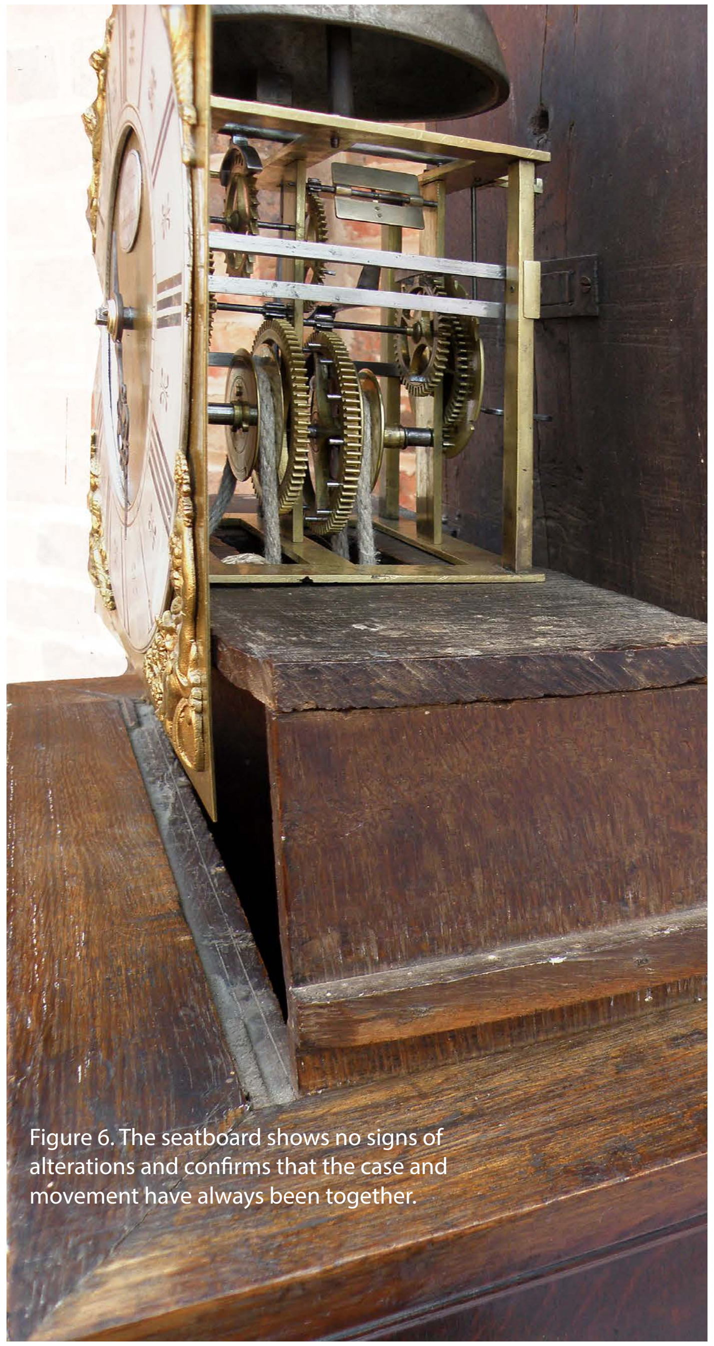
Figure 6. The seatboard shows no signs of alterations and confirms that the case and movement have always been together.

Figure 7. The single-handed dial with Four Seasons spandrels, but no calendar.


would not have kept going if daily winding was delayed for any reason. This is also a characteristic of Deacon's clocks and is discussed later.

A feature of the hood that I have never seen before are the unusual lower capitals to the pillars, **figures 3** and **4**. At the top there are the usual cast brass capitals, but at the bottom the pillars sit on wooden blocks. Or more accurately the wooden blocks sit round the reduced ends of the pillars. Was this done to save on the cost of a couple of brass castings? It must have been a deliberate feature, as the pillars have been turned down so that the blocks slip on. As the pillars are firmly fixed and cannot be readily removed they are not a later modification, but as originally made.

The base of the case, **figure 5**, is also of an unusual construction. Normally there are filler pieces to space the front and the sides of the base panels away from the trunk, the resultant gap being hidden with a relatively wide moulding. Here the base panels are nailed and glued directly on to the trunk and since the grain runs horizontally, a simple moulding has been cut along the top edge. The result is a narrower base than usual which gives the effect of a slightly top-heavy case. At the very bottom is a low plinth, which may have been reduced in height.

The seatboard, **figure 6**, shows no sign of ever having been interfered with and confirms the originality of the case with the dial and movement. In any event it was said to have come from a Leicestershire cottage, where it had probably been for many generations. It is the work of a country joiner who has not had a great deal of experience of making clock cases.

The 10½in square dial has a plain matted centre, no calendar, 'floating' half-hour markers, and since it has an (original) single hand, there are no minute divisions round the outside edge of the chapter ring, **figure 7**. The dial plate is solid, without the cast gaps behind the chapter ring that would be expected for a dial from this region. The spandrels are of the female Four Seasons pattern, which were often used on mid-century provincial clocks.

The clockmaker's full name and location is engraved on a silvered oval boss above the dial centre. While the chapter ring might have been a bought-in item, the engraving of his name was probably done by Joseph Donisthorpe himself, for, as we will see in Part Two, he was capable of doing at least some engraving work, competent, but not of the quality that a specialist engraver could produce. Donisthorpe usually displayed his name on an oval or round plaque in the centre of the dial of his clocks.

So far we have a pleasant country clock with many typical features and some that are not so typical. It is when we look at the movement that things get more interesting. All Donisthorpe's other known 30-hour clocks have plated-frame movements, as normally found in this part of the country, but Clocks 1 have 2 are posted-frame movements. This type of construction was primarily used in southern England an East Anglia (where posted-frame movements were still being made in the nineteenth century, long after they had fallen out of used elsewhere). They are rarely, with only with a few exceptions, found as far north as Leicestershire.

These two Donisthorpe movements display several features that, while unusual, are not by themselves unique. But their combination makes both clocks (and any other similar Donisthorpe movements that have survived and not been reported) quite different to other English posted-frame 30-hour clocks.

Most noticeable is that the frame has skeletonised top and bottom plates, **figure 8**, a construction known on just a few English clocks. Example I have noted in *Clocks* magazine (although a comprehensive search has not been made) include two by Benjamin Prew of Draycott, Gloucestershire (December 2001, pages 16-18 and April 2002, page 9), one by Richard Gilkes of Adderbury, Oxfordshire (December 2001, page 49), although not typical of his work, and an unsigned clock (September 2002, pages 36-7). While rare on English clocks this type of clock frame is often found French and Italian lantern clocks, but I do not suppose there many of these in rural northwest Leicestershire that Donisthorpe might have seen.

This type of frame may have been used to save brass, but it has a couple added advantages. With solid plates holes have to be cut in the bottom one for the winding rope or chain, with rectangular apertures in the top plate for the escapement, hammer shaft and fly. With this clock Joseph Donisthorpe would have just picked up two identical castings and filed smooth the inside edges of the two long rectangular holes in each. There was no need for him to mark the positions of the rope holes, nor those in the top plate.

For clocks driven by a rope, as this one is—both Donisthorpe and Deacon always used rope, not chain, on their 30-hour clocks—a major disadvantage of the usual English construct is that the frame cannot be put in a cleaning solution without removing the rope. This means cutting it and the tedious job of rejoining it (provided, of course, that it is still serviceable). With an open frame, once the front and rear movement bars are removed the great wheels can be taken out and the rope just drops out through the long slots. Replacement is

Figure 8. Movement from the front showing the skeletonised frame.

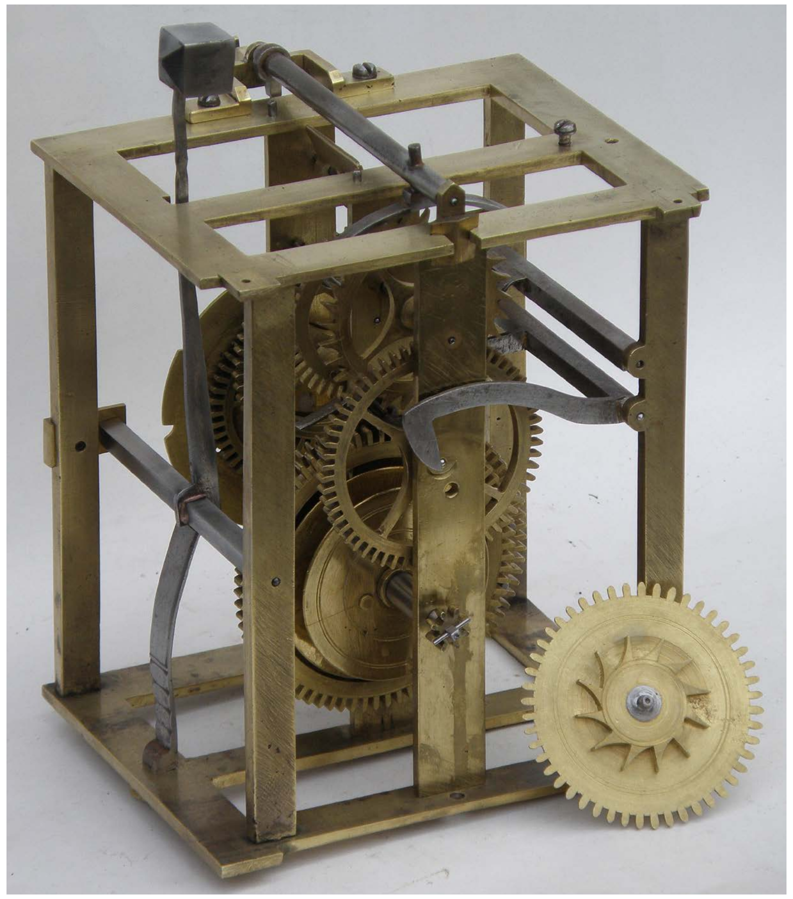

Figure 9. Front view with the hour wheel removed to show the starwheel to let off the strike. Note the strikework pivoted in two 'humps' on the right-hand front pillar.

just the reverse procedure, making sure that the weight pulley and counterweight are on the correct sides and the rope is positioned over the spiked pulleys. In these pictures of the movement there is no rope shown as it needed replacing and so was added later.

English 30-hour posted-frame clocks, including lantern clocks, usually have cruciform front and rear movement bars with the arbors for the strikework and the hammer pivoted in the ends of the cross arms. This is a specifically English system, only used on the Continent on some late Dutch and French lantern clocks based on English practice. The normal European method is to pivot these arbors in the corner pillars. On most French posted-frame clocks the front pivot sits in a hole in the front pillar, while at the rear a pivot is screwed through the pillar into a hole in the end of the arbor itself. A very small number of English clockmakers used this method, the most notable being John Belling of Bodmin, Cornwall.

The Germanic system is to locate the pivots at both ends of the arbors in holes in the square-section pillars. These movements usually have iron pillars with threaded ends which are fixed to the top plate with nuts, not riveted as is the English 30-hour practice. To avoid having to put the strikework arbors in place during the assembly of the frame it is commonly found that the tops of two diagonally opposite pillars sit in slots rather than holes in the top plate. Hence by slackening off the appropriate nuts these pillars can be separated sufficiently to allow the strikework to be inserted after the trains are in place.

Donisthorpe has pivoted his strikework in a manner that is different to anything seen on the Continental clocks I have examined, and quite differently to anything known on English clocks. At the front the pivots sit in holes in the rectangular-section brass pillars, while at the rear there are separate removable brass pivot blocks, each held to the pillar with a screw, **figure 10**. There is no need for steady pins as these blocks have a small return that sits against the outer edge of the rear pillars. The left-hand front pillar is set slightly to the right to allow for the offset caused by the block. On the right the pillars are in line, but the front pivots sit in two 'humps' on the pillar, **figure 9**. The significance of this when considering the chronological sequence of these two movements is considered in Part 2. These removable pivot blocks make Donisthorpe's posted-frame movements some of the easiest of any type to assemble.

Like most posted-frame clocks, including lantern clocks, the hammer strikes the inside of the bell. There is a conventional hammer spring fixed to the bottom plate, but no separate counter or stop. Instead the hammer shaft contacts the left-hand edge of the rear aperture in the top plate. This is not ideal, as the hammer needs to strike the bell and then rebound slightly to avoid jangling. Preferably the stop should make contact with the hammer shaft quite close to the pivot and posted-frame clocks usually have an L-shaped stop fixed to the top plate. Here the contact is almost two-thirds up from the pivot, which makes adjustment more critical.

One feature that is quite normal on most 30-hour clocks, is otherwise unknown on any other Donisthorpe (and Deacon) clocks—the slotted countwheel and two separate arbors for the lifting/warning and locking/countwheel detents. Joseph Donisthorpe was an early advocate of the pin countwheel, which uses just one arbor to which all four detents are fixed. His apprentice, Samuel Deacon, followed his master and Deacon's successors continued to use it to the end of the firm. Locking is by means of a pin on the second wheel, rather than the hoop wheel used on Clock 2. As a result the countwheel slots are curved to help lift the detent out of the slot at the start of the striking sequence.

The wheelwork is quite standard for 30-hour clocks, apart from the drive to the hour wheel. The teeth on all the wheels are quite long. The wheel counts are shown in a panel on this page. That for the going train gives 60 beats per minute, or a one-second pendulum.

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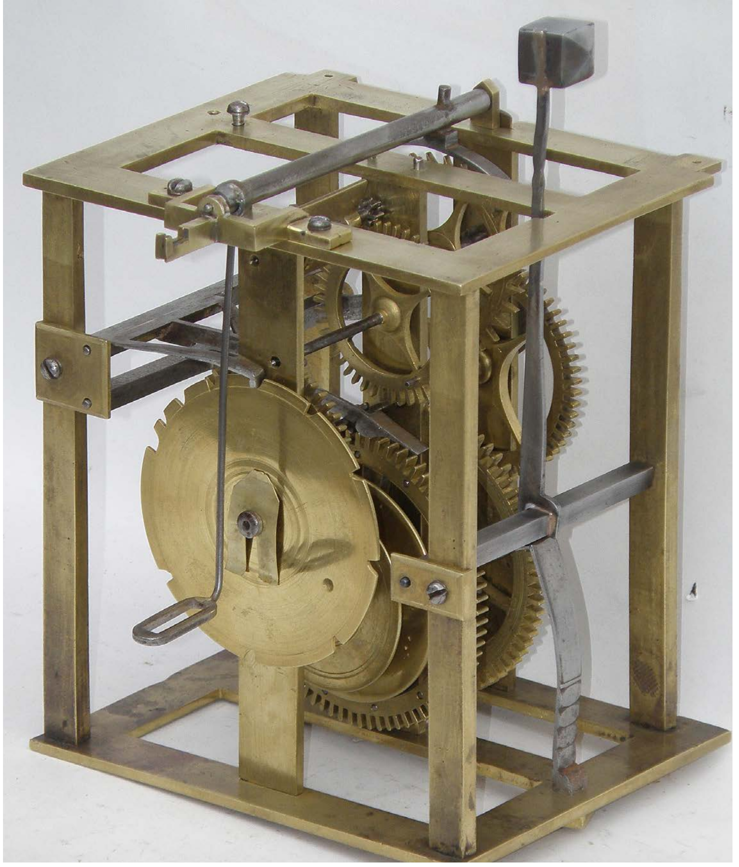

Figure 10. Rear view showing the slotted countwheel and the two removable pivot blocks for the strikework and hammer screwed to the rear pillars. There is no separate hammer stop.

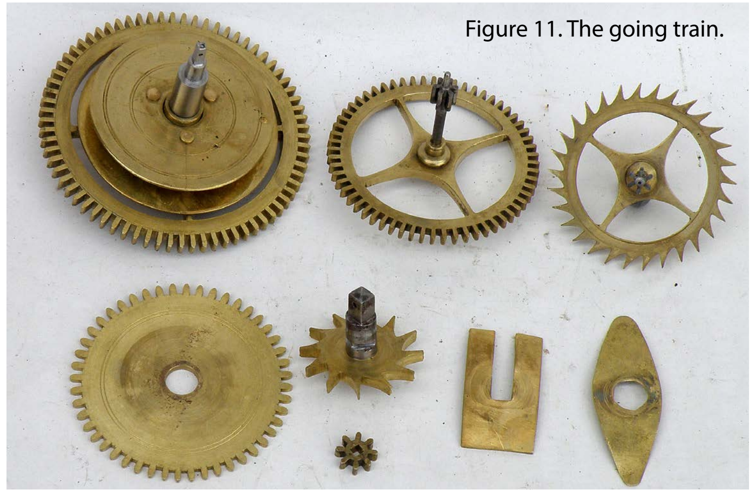

Figure 11. The going train.

Figure 12. The striking train.

WHEEL COUNTS

Going train			Strike train		
Escapewheel	30	6	Fly		6
Second wheel	60	6	Warning wheel	50	6
Great wheel	72	8	Locking wheel	48	6
Hour wheel	48		Great wheel (13 hammer pins)	78	8
			Countwheel	48	

drives the 48-tooth hour wheel, six turns of the greatwheel give one revolution of the hour hand and the great wheel turns once in two hours. For a given pulley diameter and weight drop, it is only this ratio (as well as a similar consideration for the striking train) which determines how long the clock will run before it needs rewinding—provided of course that the rest of the wheel train is geared so that the hour wheel turns exactly once in 12 hours.

The smaller the ratio the better—most 30-hour clocks have a ratio of 4:1 or even 3:1, but Donisthorpe (and later Deacon) used 6:1, resulting in the short duration that was mentioned earlier. This is compensated to some extent by having a smaller effective pulley diameter—and consequently needs a slightly heavier weight. These two clocks have an effective pulley diameter of about 1⅛in compared to the usual 1½in. A friend with a Samuel Deacon clock in its original case of normal height kindly noted how long it ran from fully wound to when it stopped. The result was just over 27 hours, several hours less than expected of a one-day clock and there is not much leeway if it is not wound promptly every day.

The striking train is shown in **figure 12**. The fly is a later replacement of the type used on plated movements. The combination of the positioning of the corner pillars and the lack of cross arms on the movement bars means that there is no need to have a removable lifting piece or countwheel detent, **figure 13**. This is much easier to make than fitting them onto squared extensions to the arbors. The hammer spring is decoratively filed on the visible side, **figure 14**, and this is something that is of significance when Clock 2 is considered.

This movement, like Clock 2, is very well finished with the edges of the frame and other parts neatly filed. The centre and rear movement bars are each held with two taper pins into holes drilled through the top plate into the thickness of the bar. This is a neat method, but has practical disadvantages. If the pins are left short with not much to grip they can be awkward to remove as there is no means of knocking them out from below, as can be done with a wedge.

The front bar shows that Joseph Donisthorpe had one of those experiences that all who work at the bench dread—a drill breaking off in a blind hole. The front bar, with a narrow vertical extension for the front pivot of the pallet arbor, was intended to be held in the same way, but when the drill broke, **figure 15**, a change of plan was necessary. Removing a broken drill can be very difficult if damage to the component is to be avoided. One method is to soak the part in a hot solution of alum to dissolve away the iron or steel without damaging the brass, but it is a very slow process and can take a couple of days to loosen the drill (also useful for a broken screw).

Presumably Donisthorpe either did not know of this useful method, or more likely, he was not prepared to wait and sought an alternative way out of his dilemma. He filled in the holes in the top plate, carefully finishing the top surface so they are invisible to the naked eye, but not the underneath surface where they can be seen quite clearly, **figure 16**. He then filed V-slots to take a triangular brass wedge. Like the rest of this movement, the wedge is carefully made (it appears to be

Figure 13. The posted-frame strikework.

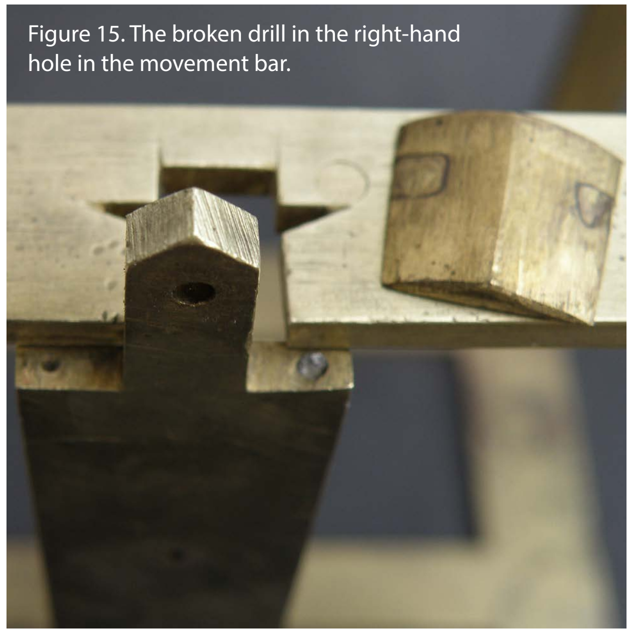

Figure 15. The broken drill in the right-hand hole in the movement bar.

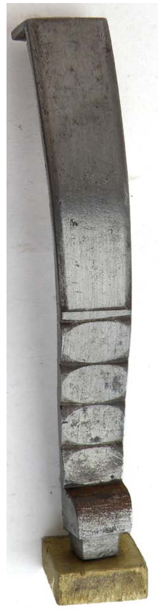

Figure 16. A view from underneath showing the filled-in holes.

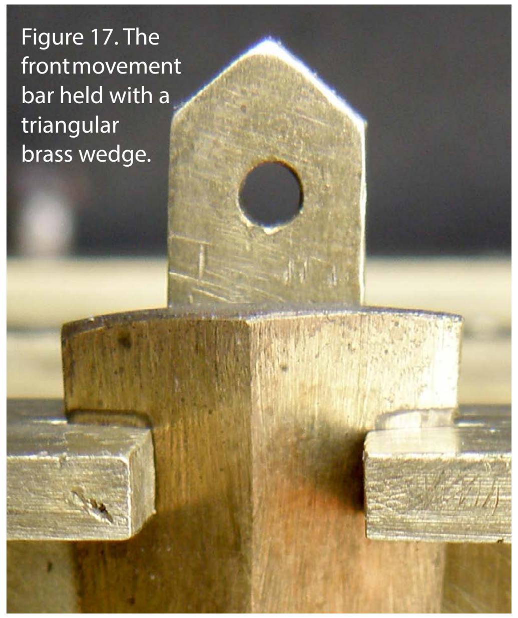

Figure 17. The front movement bar held with a triangular brass wedge.

Figure 14 (above left). The hammer spring with decorative filing..

Figure 18 (left). Top of the bell showing the ID casting mark and riveted bell stand.

the original one), not the crudely formed iron or brass ones that are so often seen. From the top, **figure 17**, one would not think this was anything other than the intended method of construction.

Examination of a perfectly made artefact of any type will often not reveal very much about how it was actually made. Much more can be learned about the methods used in its manufacture when something goes wrong, if there is a change of plan or if a part breaks away. From Donisthorpe's little accident we can tell that he first drilled two small pilot holes through the top plate and just into the top of the bar to leave small witness marks. The holes in the plate were opened up to final size with a larger drill and, if everything had gone to plan, he would have drilled larger holes in the movement bar to the required depth. By reading the clues it is almost as though he had left us written notes.

There are just a final couple of unusual features about this movement to discuss. Eagle-eyed readers may have noticed that the bell shown in **figure 8** is not held on its sturdy bell stand by the usual square brass nut. Instead, on both this clock and Clock 2, the bell is riveted permanently to the bell stand, something that I have not seen in over 30 years of studying longcase clocks. It certainly proves that these bells must be original to their movements.

Almost overlooked was a not particularly prominent 'ID' casting mark on the outside of the 5in diameter bell, **figure 18**. This is, of course, the eighteenth-century equivalent of 'JD', Joseph Donisthorpe's initials. Its existence implies that Donisthorpe cast his own bells, and if he could do that then he would have been able to cast his own brass parts. This might go some way to explaining why this type of skeletonised frame has not been seen on clocks by any other clockmaker. As we shall see in Part 2, there is evidence that Joseph Donisthorpe engraved at least part of his own dials, which implies that he was a very self-sufficient—and skilled—country clockmaker.