

# A FAMILY OF LONGCASE MOVEMENTS WITH AN EARLY ANCHOR ESCAPEMENT CIRCA 1670

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*There is a family of longcase movements with long pendulums and an early anchor escapement, dating to circa 1670, which are either anonymous or signed by Joseph Knibb or Abraham Fromanteel. Their chamfered plates and wheels appear to be Fromanteel castings. The Abraham Fromanteel appears finished by him. But the finishing of the signed Knibb clock appears to be by Knibb, and its signature is by his Oxford years' engraver. They all have similar escape wheels, with a wide floor between the triangular pointed teeth. The existence of this most interesting family raises the questions of whether the first working anchor escapement with long pendulum was introduced by either the young Knibb or Abraham Fromanteel or both in collaboration.*

The story starts with a clock in *English 30 Hour Clocks* by Darken and Hooper.<sup>1</sup> An exquisitely engraved, unsigned 9%in dial (Fig. 1) attached to a very early 1670s movement had been bought in Oxfordshire, and the buyer had speculated that it had emanated from the Knibb workshop. The escape wheel was unfortunately missing but the unusual anchor was a clue that it had an early experimental anchor escapement. A 30-hour clock by Abraham Fromanteel, numbered 44, with similar chamfered plates (Fig. 2) and escapement is illustrated in *Clockmakers of Northumberland and Durham*, and suggested to be circa 1670.<sup>2</sup> John Massey of Village Clocks, Long Melford, has an 8-day Abraham Fromanteel, with similar escapement. Another 8-day Abraham Fromanteel is described in depth by Aghib and Leopold.<sup>3</sup> Subsequently, a virtually identical movement to the 'Darken and Hooper' (D&H) came up for sale at Bonhams that had retained its full escapement, and with an equally finely engraved 9%in dial that was indeed signed 'Joseph Knibb London'. Jeff Darken learned that Hugh Cockwill (HC) has a third near-identical movement to the 30-hour Knibb and D&H, but missing the dial. Both the D&H and the 30-hour Fromanteel subsequently came up for sale at Bonhams. I have been able to examine

and photograph five of these six directly, thanks to Bonhams and the owners of the other clocks. The most useful for dating of the three non-Fromanteel movements is the signed Knibb because it is in near original condition, with an informative signature and some intriguing peculiarities.

There is, accordingly, a family of very early, experimental anchor escapement clocks (arranged in the table on the next page) that dates to the first few years of the English introduction of the long pendulum. Joseph Knibb moved from Oxford to London in 1670/71, shortly after the introduction of the anchor escapement, for which he and Clement have rival claims for the first working example with the long pendulum. These clocks raise some intriguing questions as to the relationship between Joseph Knibb and the Fromanteel family and add another twist as to who invented the anchor escapement with the long pendulum.

## DATING THE KNIBB SIGNATURE

The signed 30-hour Knibb is most likely the earliest of the movements, having, as will be seen, the most primitive of the escapements. It has a small dial, and the style of the signature

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1. J. Darken and J. Hooper, *English 30 Hour Clocks* (Penita Books, 1997), plates 2/9 to 2/13.
2. K. Bates, *Clockmakers of Northumberland and Durham* (Pendulum Publications, 1980), pp. 23-27.
3. E. G. Aghib and J. H. Leopold, 'More about the Elusive Fromanteel', *Antiquarian Horology* 8/8 (1974), 890-893.

Signed 30-hour Knibb	Bonhams <sup>a</sup>	Dial signed 'Joseph Knibb London'	30 hours	Fig 1a, 2a, 3d, 5a, 6a, 7a, 8a, 9, 10a, 11a, 12b
D&H	Darken and Hooper; Bonhams <sup>b</sup>	Dial unsigned	30 hours	Fig 1b, 2b, 5b, 6b, 7b, 8b, 10e, 11b
HC	Hugh Cockwill	Dial missing	30 hours	Fig 2c, 10b
30-hour Fromanteel	Bates; Bonhams <sup>c</sup>	Dial signed 'A Fromanteel Newcastle'	30 hours	Fig 1c, 2d, 6c, 7d, 8c, 10c, 10d, 11c
8-day Fromanteel	John Massey	Dial signed 'A Fromanteel New Castle'	8 day	Fig 1d, 10f
8-day Fromanteel	Aghib and Leopold	Dial signed 'Fromanteel Newcastle'	8 day	-

<sup>a</sup> lot 147 on 13 December 2005; <sup>b</sup> lot 147 on 9 December 2008; <sup>c</sup> lot 105 on 15 December 2009

**Table: the six clocks that make up the family, dating to the first few years of the English introduction of the long pendulum in the early 1670s.**

can be placed at the time of Joseph's move to London. The bold signature appears to have been engraved by the engraver of Knibb's early Oxford clocks (Fig. 3). The most distinctive feature is the small cursive 's', as used in Oxford; Knibb's earliest London dials have the elongated f-like cursive s, and from the mid 1670s the upright f. The two earliest 'Londini' signatures in Fig. 3 are from the Ham House 3-train 30 hour Knibb, which has a provenance dating back to at least 1672,<sup>4</sup> and a London longcase with movement features that place it as one of the earliest London productions and a top moulding that predates the Professor Gregory 1673 Knibbs (Fig. 4).<sup>5</sup> It is likely that Joseph had the dial engraved in Oxford in anticipation of or during his move to London.

#### KNIBB OR FROMANTEEL OR BOTH?

Darken and Hooper (note 1) speculate that the unsigned D&H movement could have come from a Fromanteel workshop. Knibb bought

in movements for his 'Phase 1' bracket clocks and finished them.<sup>6</sup> There are several pieces of evidence that the plates and much of the wheelwork were produced by the Fromanteels and the movement was finished by Knibb.

#### Tapered and conventional crossings

The signed 30-hour Knibb is unique among the movements in having a mix of tapered and conventional crossings on the wheelwork (Fig. 5). The great, the pin and the warning wheels have conventional crossings out, whereas the remaining (hoop, countwheel, second wheel and escape) have simple radial tapers. All the wheelwork is original despite the difference in crossings. The teeth of the warning and second wheels seem to have been cut on the same machine and finished identically, despite the different crossings. Secondly, the escape wheel has identical teeth to the 30-hour Fromanteel. There is very little wear on any of the wheels and pinions, and it is highly unlikely that the

4. T.O. Robinson, 'The Thirty Hour Longcase Clock', *Antiquarian Horology* 8/2 (1973), 163-171, and Picture Gallery 'Two Early Three-train Clocks by Joseph Knibb', *Antiquarian Horology* 31/3 (2009), 369-377; P.K. Thornton and M. F. Tomlin, *The Furnishing and Decoration of Ham House* (The Furniture History Society, 1980), Fig 96, pp. 59, 92.

5. R.A. Lee, *The Knibb Family, Clockmakers* (The Manor House Press, 1964), pp. 154-157.

6. P.G. Dawson, C.B. Drover and D.W. Parkes, *Early English Clocks* (Antique Collectors' Club, Woodbridge, Suffolk, published 1982, reprinted 2003), pp. 308-323.



Figs 1a-d. Dials of the signed 30-hour Knibb (a), D&H (b), the 30-hour Abraham Fromanteel (c) and the 8-day Abraham Fromanteel (d). There are traces of remaining fire gilding on the D&H and 8-day dials. The signed 30-hour Knibb dial is  $9\frac{3}{8}$ in (239 mm) square, has chapter ring,  $1\frac{5}{8}$ in (34 mm) with  $8\frac{1}{2}$ in (215 mm) external diameter. The D&H dial is  $9\frac{3}{8}$ in x  $9\frac{1}{4}$ in (251 mm wide x 253 mm high) with  $1\frac{1}{2}$ in (32.4 mm) chapter ring of  $8\frac{7}{8}$ in (226 mm) external diameter. The signed 30-hour Knibb dial is very thin.

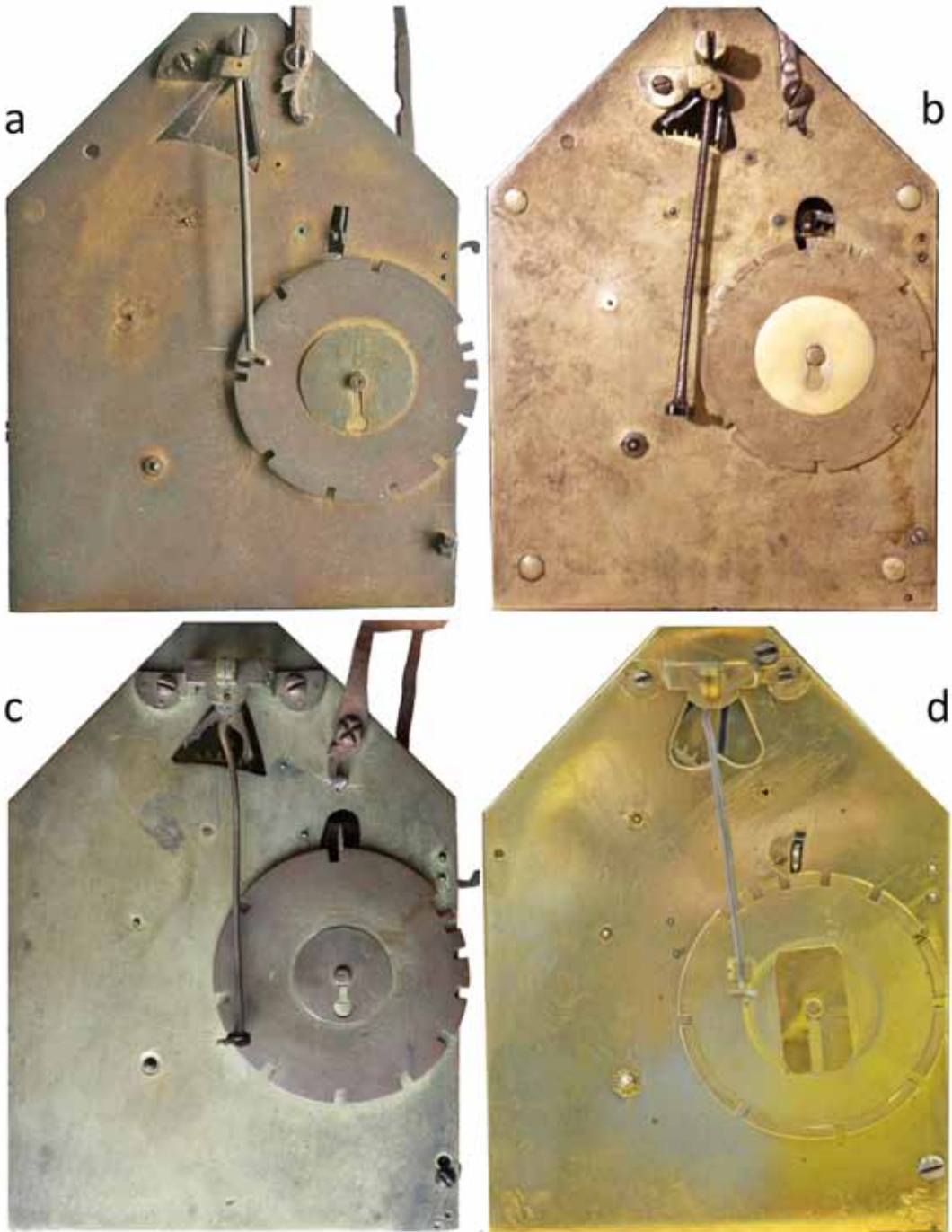
wheels would have been replaced, especially the countwheel, where there is little possibility of excessive wear (Fig. 6). A mixture of tapered and radial crossings is characteristic of Ahasuerus

Fromanteel, as are chamfered plates.<sup>7</sup> Dawson, Drover and Parkes illustrate several examples of mixes of crossings.<sup>8</sup> There is also an example in *Horological Masterworks*.<sup>9</sup>

7. See Dawson, Drover and Parkes (note 6), Fig 127.

8. Dawson, Drover and Parkes (note 6): e.g., pp.123-124 Fig. 155; Ahasuerus Fromanteel longcase, different crossings on the two main wheels, noted on p. 123; p. 89, Fig. 111, Ahasuerus Fromanteel longcase with roller cage, straight crossings on the both main wheels; p. 80, Fig. 98; and Ahasuerus Fromanteel longcase with square pillars, straight crossings on at least one main wheel, others have curved.

9. *Horological Masterworks* (The Antiquarian Horological Society, Ticehurst, 2003), p. 36.



Figs 2a-d. Backs of the signed 30-hour Knibb (a), D&H (b), HC (c) and the 30 hour Abraham Fromanteel (d). Their dimensions are, respectively: base = 144 mm, side = 133 mm, shoulder 83 mm, top 27 mm; 144, 137, 80, 27 mm; 143, 136, 80, 30 mm; and 144, 131, 77, 33 mm. The D&H is shown fitted with a new escape wheel, copied from that of the HC. The plates of the top two are 60.5 mm apart.



Figs. 3a-j. Signatures of Joseph Knibb on dials emanating from London that can be dated by provenance or style and from Oxford. The signed 30-hour Knibb (signature 3d) is tentatively dated as 1670. The Oxford clocks are described in Dawson, Drover and Parkes and in Lee.

Knibb tended to have posted frame movements for his later 30-hour clocks whereas Fromanteels have plated movements.

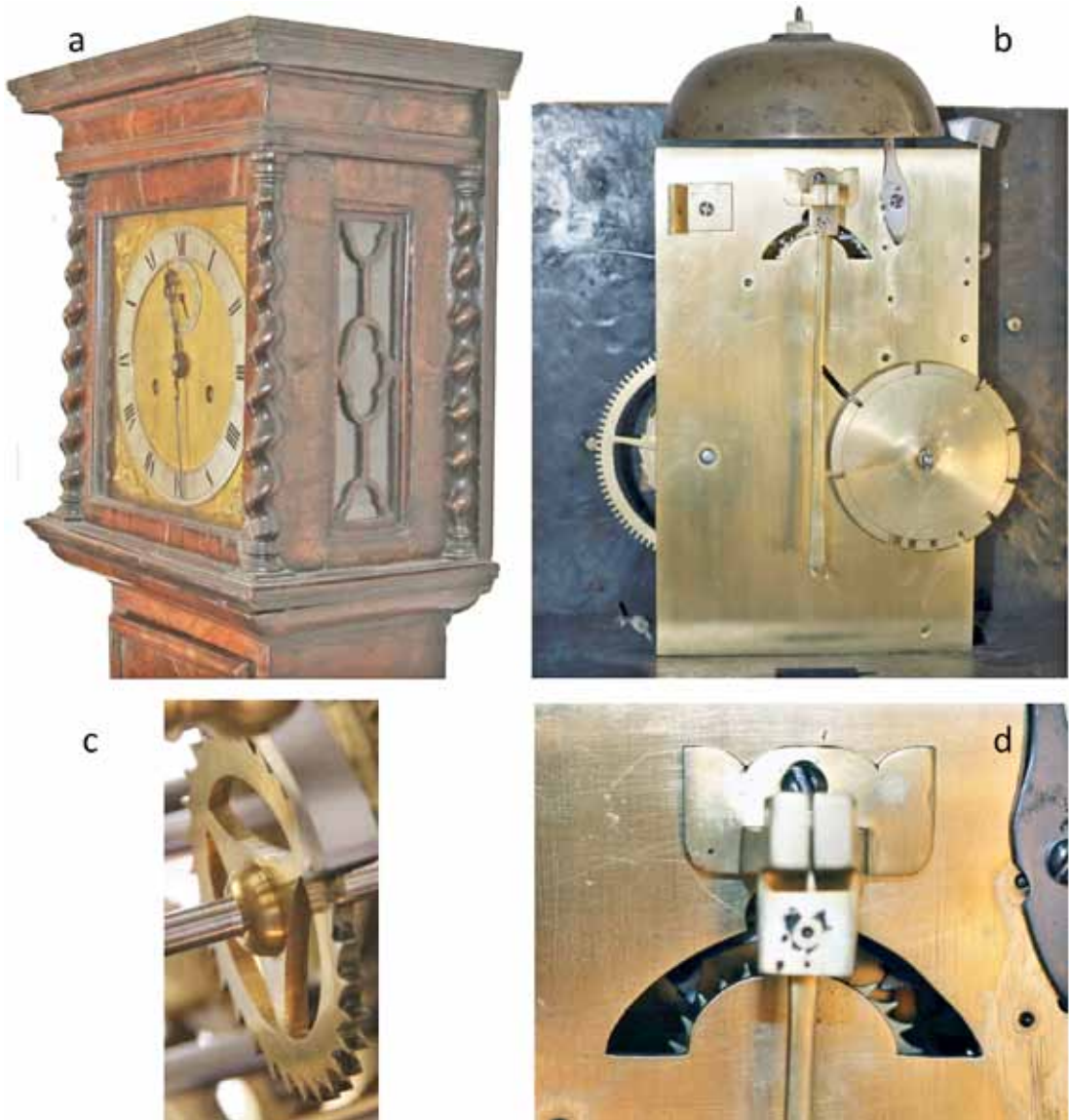
### Countwheels

The 39-toothed countwheels of the signed 30-hour Knibb and unsigned D&H clocks are identical apart from the crossings, having exactly the same profile teeth (Fig. 6). The countwheel of the 30-hour Abraham Fromanteel is much smaller. That of the 3-train 1672 Ham House Knibb is of similar

size but has thinner teeth than the other two Knibbs.

### Latches

The movements are all fully latched, and the latches provide valuable clues (Fig. 7). Knibb latches have the smaller arc coming from tangentially from the centre rivet region via an S shape, the longer arc coming out radially, with a very simple curved piece for opening the latch. The early Fromanteels illustrated here and in Dawson, Drover and Parkes have

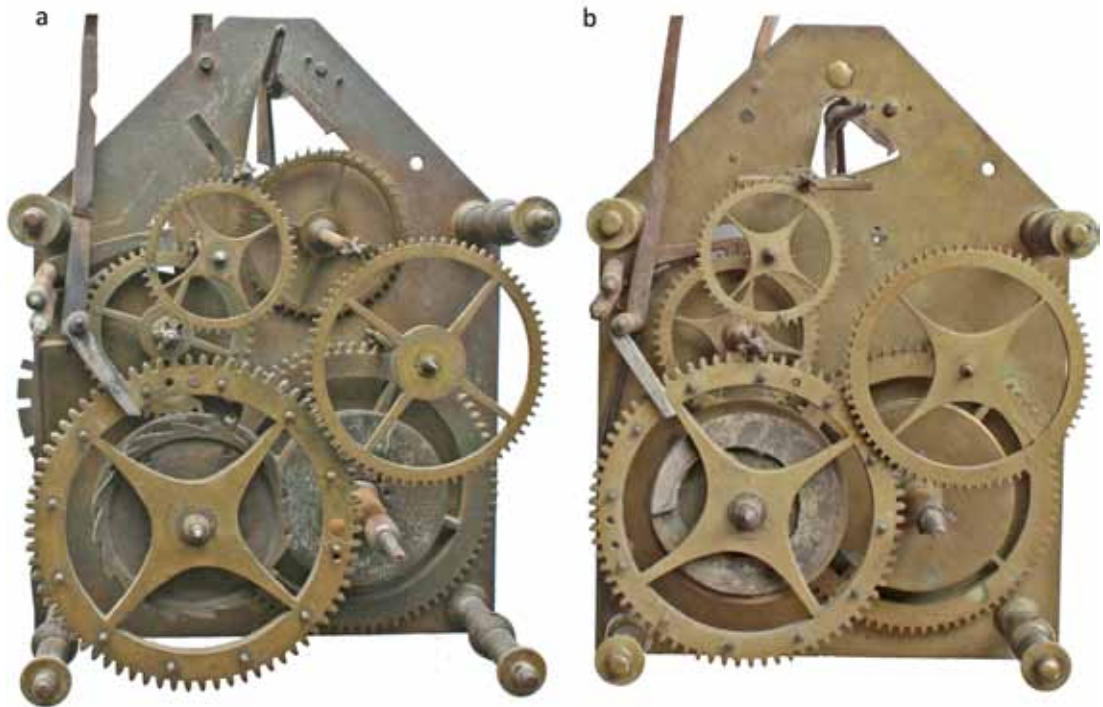


Figs 4a-d. Longcase signed 'Joseph Knibb Londini fecit' (signature Fig. 3f). This clock can be dated with confidence to within a year or so of 1671. The mouldings at the top of the hood are of a very early type, as used on architectural cases (see Lee, note 5, Plates 14 and 40 of case dated 1671-1673, clearly by the same maker). The locking piece engages the locking plate through a slot in the back plate. Knibb used that arrangement for his longcase verge movements in Oxford (and for the 30-hour movement) but dropped the practice soon after coming to London in 1670 (see Lee Fig. 99 and description p. 182.7). The early escape wheel (c) with 3, rather than 4 crossings (see Lee p. 149 for another example) is original, showing that Knibb was already using a conventional anchor by 1671. The crutch is brass, as typically favoured by Knibb, unlike that on the 30-hour clocks.

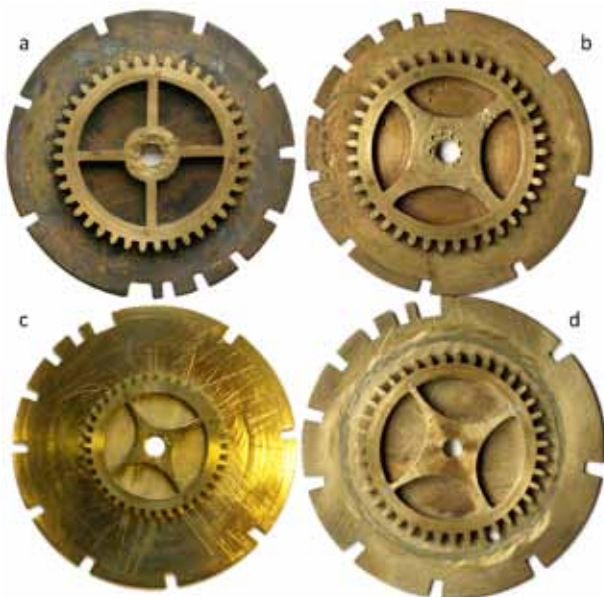
a lip at the end. John Fromanteel's are closer to Knibb's. Knibb's latches are thin, as they are here, whereas Fromanteel latches tend to be thick. The latches are consistent with Knibb's finishing of the movement.

#### Flies

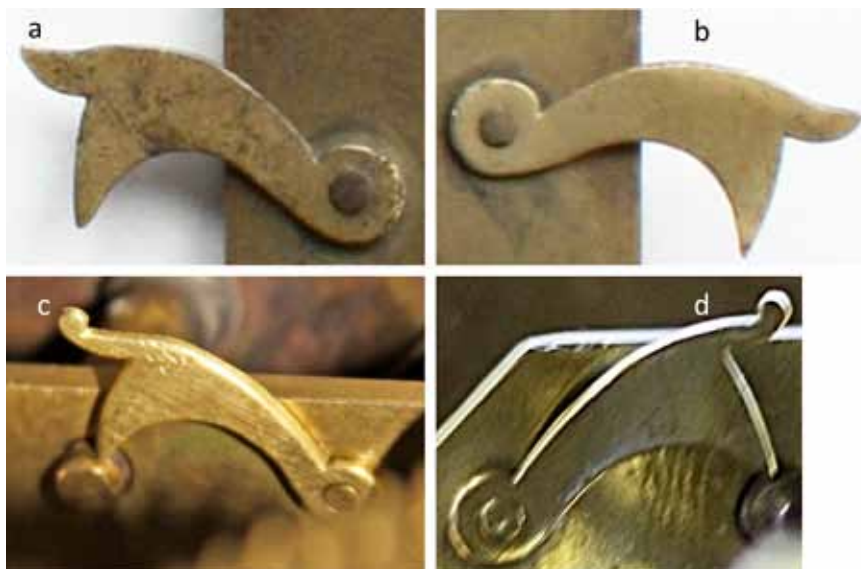
The flies of the signed 30-hour Knibb and D&H are very similar to those of the Ham House Knibb, with concave sides, unlike that of the 30-hour Abraham Fromanteel, which is double convex (Fig. 8).



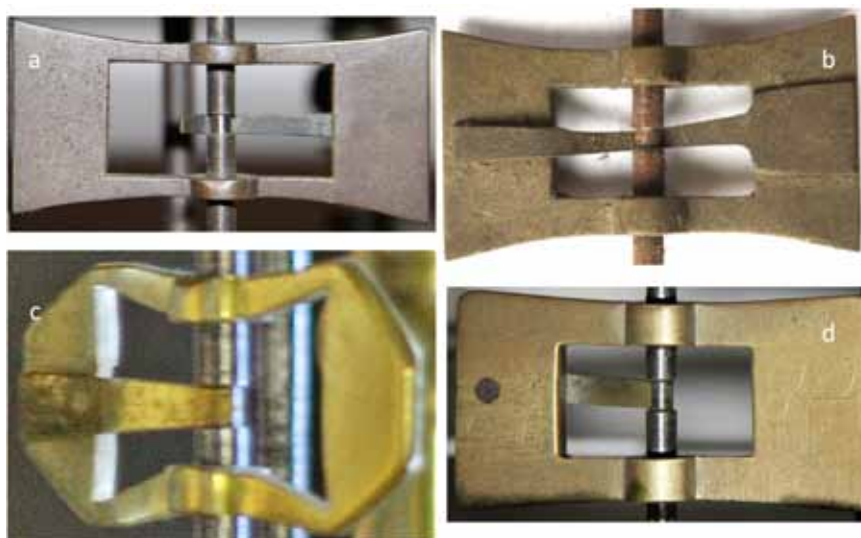
Figs 5a and b. Wheelwork of the signed 30-hour Knibb (a) and D&H (b). The signed 30-hour Knibb has a proper ratchet and click on the pinwheel, which is a Knibb characteristic as compared with the circular flat spring that catches the crossings that is normally found. The flat spring on the D&H movement is a later replacement, as can be seen from the two empty holes on its pinwheel for the click). Both movements have now been restored and conserved. Their plates have been carefully brushed clean and not polished, as the layer of zinc oxide on their surfaces is an excellent protection against oxidation of the copper. All of the wheelwork and pinions on the signed clock are original. At one stage, both movements were converted into two-handed by cannibalising the existing motion work. Michael McCoy used the original wheels to reconstitute the single-handed motion work, and made new hands and lifting wheels, and bosses for the hands. Michael McCoy also copied the escape wheel of Hugh Cockwill's clock to restore the missing one from the D&H, and replaced its click based on that of the signed clock.



Figs 6a-d. Countwheels of the signed 30-hour Knibb (a), D&H (b), the 30-hour Abraham Fromanteel (c) and the 1672 Ham House 3-train Knibb (d).



Figs 7a-d. Latches of the signed 30-hour Knibb (a) and D&H (b), which are typical Knibb style (the HC has identical latches), and from an Ahasuerus Fromanteel (c) and the 30-hour Abraham Fromanteel (d).



Figs 8a-d. Flies of the signed 30-hour Knibb (a), D&H (b), the 30-hour Abraham Fromanteel (c) and the 1672 Ham House 3-train Knibb (d).

### Pendulum cock

The signed 30-hour Knibb and D&H have a separate pendulum cock of gun-barrel form and separate from crutch pivot hole. The 30-hour Abraham Fromanteel has a one piece pendulum cock and crutch support, as does the HC. The only rope driven movement is the HC. The two Fromanteel movements have heart-shaped apertures for removal of the anchor.

The signed 30-hour Knibb and D&H and HC movements are clearly from the same workshop. There are so many stylistic differences between them and the signed Fromanteel movements that they were clearly finished in different workshops.

### THE EXPERIMENTAL ANCHOR ESCAPEMENT

The common feature of all the movements is the escape wheel, which has narrow teeth and a wide flat floor between the teeth (Figs 9 and 10). The anchors vary (Fig. 11).

The signed 30-hour Knibb anchor has long arms. There is very little recoil, and the one-second pendulum swings with a very narrow arc, which is suitable for a narrow case, as found for the early verge longcases of the 1660s. The D&H has a much wider swing, consistent with the movement having been made for a later, wider case of the 1670s. It may seem surprising



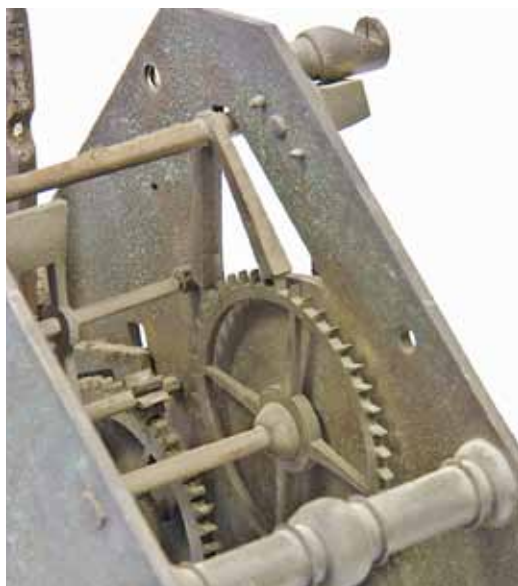


Fig. 9. The signed 30-hour Knibb escapement.

Figs 10a-d (right). Escape wheels seen through apertures: signed 30-hour Knibb (a), HC (b), 30-hour Fromanteel (c and d), D&H with new escape wheel (e) and 8-day Fromanteel (f).



Figs 11a-c (left). Anchors from left to right: signed 30-hour Knibb; D&H; 30-hour Fromanteel (with the crutches photographically cropped).

that this early escapement was first used for a 30-hour movement but such movements are very suitable for experimentation because of their simplicity for repetitive dismantling and reassembly and the more efficient transmission of power down the train.

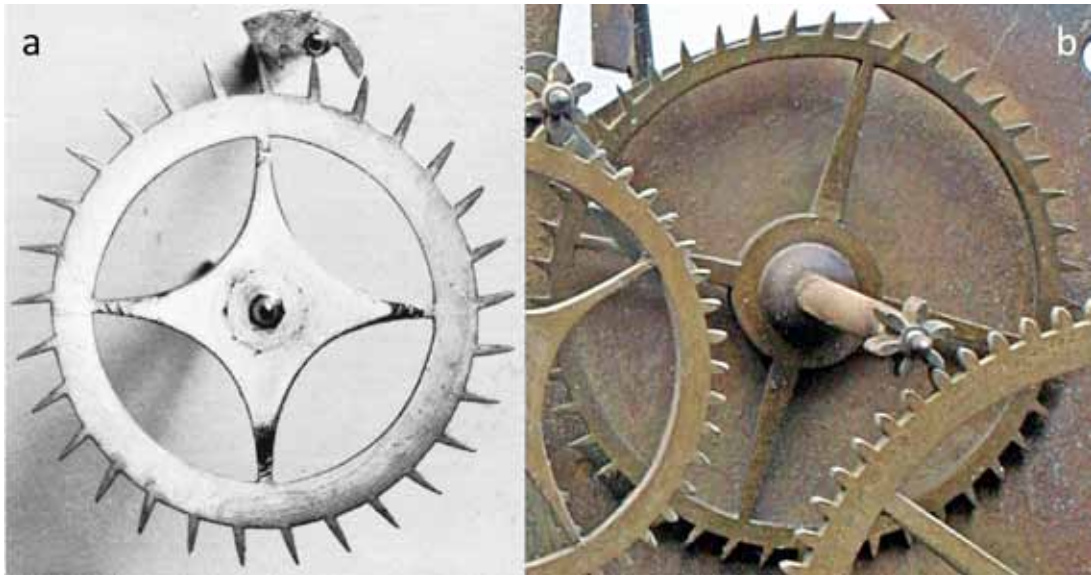
### WHO MADE THE ESCAPEMENT?

There are unresolved rival claims between Joseph Knibb and William Clement for the

first working long pendulum and anchor escapement, with more evidence favouring Knibb in 1670.<sup>10</sup> But this newly described family by Knibb or Fromanteel is now a further rival for a contemporaneous or even earlier independent introduction of such an escapement. Yet, there is a further twist. The escape wheel of a tick-tack movement in a Tompion clock, dated 1671-75 by Dawson, Drover and Parkes, has similar teeth to those of the Knibb-Fromanteel clocks (Fig. 12). (Jeremy Evans has informed me that Tompion bracket clock number 161, with a specially commissioned seconds ring, has a tick-tack escapement of similar tooth form.) Tompion (born 1639) is first recorded in London during the first quarter of 1671, where he became free a few months later.<sup>11</sup> Joseph Knibb (born 1640) also took up residence in

10. Dawson, Drover and Parkes (note 6), pp. 126-135.

11. J. Evans, *Thomas Tompion at the Dial and Three Crowns* (The Antiquarian Horological Society, Ticehurst, 2006), p. 11.



Figs 12a-b. a: Tompion tick-tack escape wheel, 1671-75 (Dawson, Drover and Parkes, plate 181, pp. 137-139, reproduced by permission of the publishers). b: signed 30-hour Knibb escape wheel.

early 1671 (1670 in the old calendar). Tompion's clockmaking whereabouts before 1671 are little known, although there are clear links with Knibb in the early 1670s, and Jeremy Evans speculates a Knibb-Fromanteel-Tompion link.<sup>12</sup> Jeremy Evans has also pointed out that Tompion finished movements from Knibb's workshop, probably including the tick-tack with the escape wheel in Fig. 12. Abraham Fromanteel (born 1646) moved to Newcastle in 1668 on leaving his father's workshop.<sup>13</sup> Could it be that the three bright young men got together to market a new escapement? But, such a collaboration is pure speculation, and the Tompion tick-tack has been restored. Michael McCoy thinks it might have been originally a crossbeat with an escape wheel of similar form.

The Knibb clock in Fig. 4 dating to circa 1671, and his famous Wadham College turret clock, the earliest intact example of an anchor escapement,<sup>14</sup> dating to 1670 both have a conventional escape wheel.

Christopher Greenwood, in an important article,<sup>15</sup> has analysed a London-signed Knibb clock that appears to predate the one illustrated in Fig. 4 and has an experimental anchor escapement with an escape wheel cut as a regular train wheel. Given the evidence in Greenwood's article and here, there is compelling evidence that Joseph Knibb was experimenting with anchor escapements, as well as the 'crossbeat',<sup>16</sup> in Oxford before 1670 and brought stock to London in circa 1670, which was signed London.

#### ACKNOWLEDGMENTS

I thank Michael McCoy for innumerable discussions, Hugh Cockwill for making available his movement, John Massey for his interest and insight, and Jeremy Evans for much additional information and encouragement.

12. Evans (note 11), pp. 13-16.

13. Bates (note 2), p. 211.

14. C.F.C. Beeson, *Clockmaking in Oxfordshire 1400-1850* (Oxford Museum of the History of Science 3rd Edn 1989), Figs 7 and 8, pp 64-66.

15. C. Greenwood. 'A Joseph Knibb Longcase Clock with Early Anchor Escapement', *Antiquarian Horology* 17/1 (1988), 259-263.

16. See Dawson, Drover and Parkes (note 6), pp 126-128.