



## LIII. Description of an improved eight-day clock, to strike without a fly

Mr. Edward Massey

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to publish what they think may be useful from what I have written; for public advantage is my grand object, as well as it is theirs. I remain, sir,

Your most obedient servant,  
W. PIERREPONT."

Burton Park,  
June 30, 1803.  
Charles Taylor, Esq.

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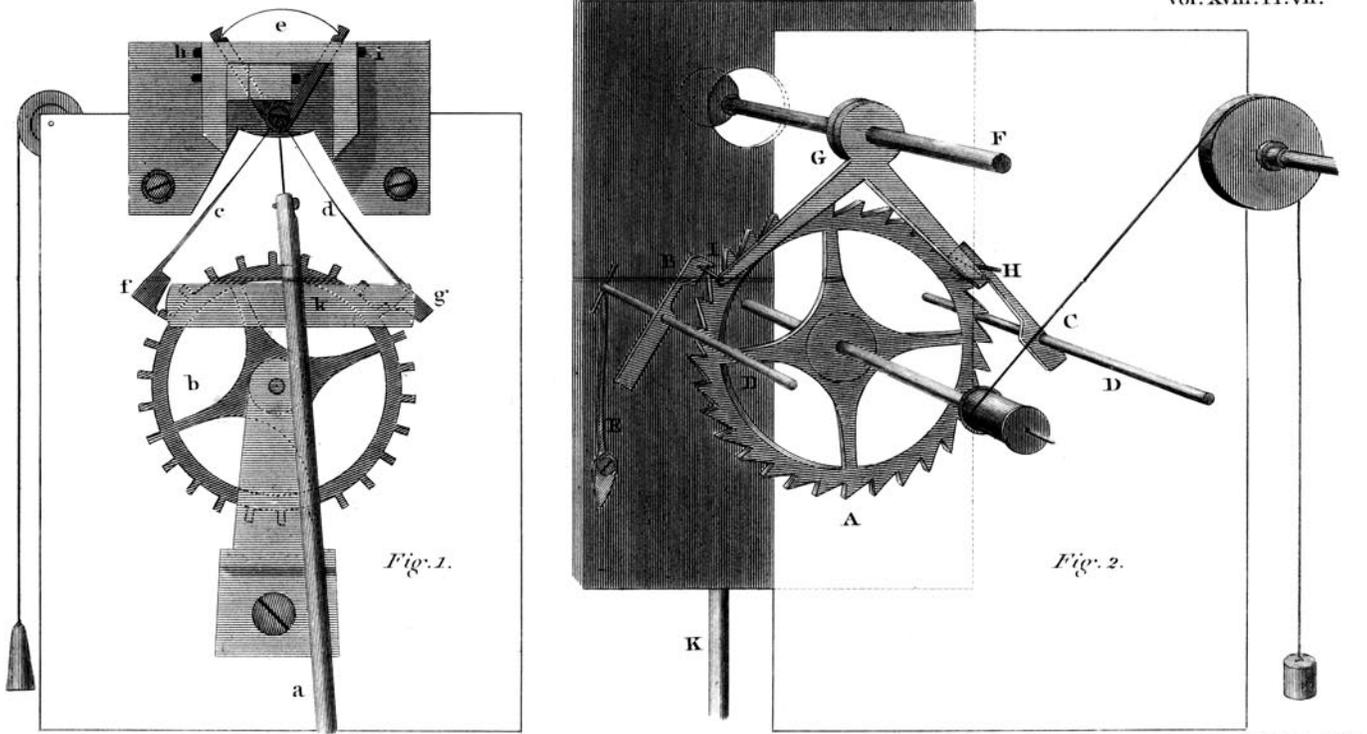
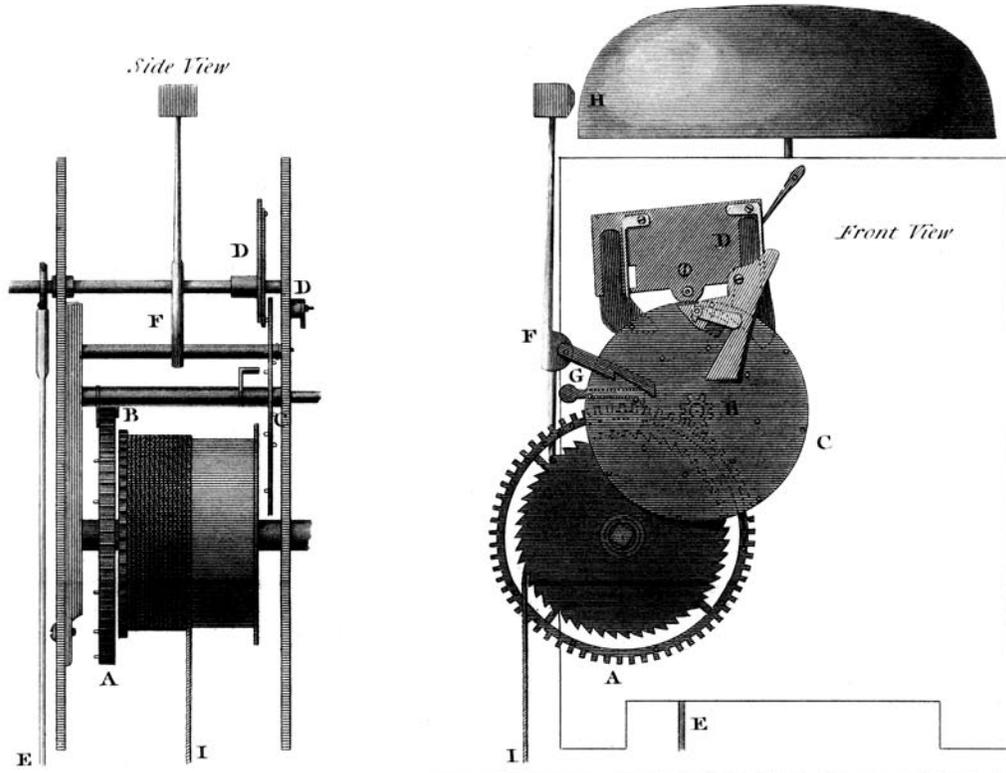
LIII. *Description of an improved Eight-Day Clock, to strike without a Fly; invented by Mr. EDWARD MASSEY, of Hanley, in Staffordshire.*

THE Society for the Encouragement of Arts, &c. voted, last session, a bounty of twenty guineas to Mr. Massey for this invention; a model of which is reserved in the society's repository. The subjoined account of it is by Mr. Massey\*.

"Having for a number of years considered a method of striking a clock at certain regular intervals, which I conceive may be of great service in making observations on the heavens, and ascertaining the velocity of sound, &c., I beg leave to lay before the Society for the Encouragement of Arts, &c. a striking part of an eight-day clock, which I have no doubt will answer the purpose intended; and if, upon examination, the Society should be of opinion that it may be useful, I trust they will reward it according to its merit. They will find that the work of this model is less than that of the common striking-movements, and may be made by a common workman, with less expense and trouble; the weight required is also considerably less. The principle I act upon is the pendulum, by which I regulate the stroke, instead of the fly; the advantage of which must be obvious to every one. The machine consists of a toothed wheel A, one pinion B, a pin wheel C, pallets DD, pendulum E, and locking detent G. The hammer-work F is as usual, and strikes on the bell at H. The weight hangs to the cord I. (See Plate VI. fig. 1 and 2, where a front and side view of the machinery are given, and where similar letters denote the same parts in each view.

"I consider it is only necessary for me to give the description of the wheels, so as to be a direction to a me-

\* From the *Transactions of the Society for the Encouragement of Arts, Manufactures, and Commerce*, vol. xxi.



chanic who wishes to manufacture clocks on this principle. The main wheel A, with seventy-eight teeth, is to act in a pinion of eight leaves B. The pin-wheel C should be large, so that the pins on which the pallets D and the locking G act, may be flung as far from the centre as possible; which pins may be eight or sixteen in number. If eight, the pendulum E should be about nine inches long, and it will vibrate twice betwixt each blow of the hammer; but if sixteen pins are put in the wheel, the pendulum must be about three inches long, and will make four vibrations betwixt each blow. The pins for drawing the hammer must be eight in number, and be fixed in a circle of about half the diameter of the aforesaid pins. The locking plate is on the main wheel. The stop is against the pins on which the pallets act, and may be discharged by a flirt-piece.

“As I have described the model, I beg leave to point out the method of striking a clock by the common pendulum, true seconds, without any additional pendulum or pallets for the striking part.

“Fix a cantrite wheel with sixty teeth on the same arbor with a swing wheel of thirty teeth. Now, suppose a striking-part to be made in the common way of making an eight-day clock, so far as the pallet pinion, leaving out the warning and fly pinions. A crank-piece must be fixed on the pallet pinion, which must come into contact with the cantrite wheel, which is fixed on the swing-wheel arbor. Then suppose the clock to be set a-going, and the rack discharged, the pallet pinion will make a revolution on every vibration of the pendulum, by which means a clock will strike seconds as true as a pendulum vibrates, which I hope will be considered as useful for the purposes I have described. I also beg leave to observe, that a great advantage arises in both the above machines from their not being liable to foul, as the stroke is given by the certain and regular vibration, instead of the uncertain motion of the fly. Its advantage likewise depends on the cleanness of the work; and church clocks will be much benefited from the decrease of weight.”