

SOMETHING SPECIAL

Students Design and Build Double Pendulum Clock



At the Swiss Watchmakers School in Solothurn (now in Bienne), students do some kind of 'end of apprenticeship' work, which can be practical or theoretical. Together with a friend and classmate, **Claude Shauerte** (on the right in the photograph), I decided to go beyond the usual scope and create a clock. We came up with a new method to combine two pendulums and power them with one single movement. The new gear would allow us to attach two pendulums to the same frame and transmit an equal energy to each. This way we could build a resonating clock with only one movement. Both Janiver and Breguet (and more recently Haldimann and Gagneux) used two.

In our clock, the pendulums are not only linked through the cock but also through the horizontal crutches. The Graham deadbeat escapement is mounted below the escape wheel. The crutch is turned horizontally and split so that each pallet impulses each pendulum as it swings towards the wall (there are in effect two asymmetric crutches operating alternately). The impulse is delivered via a ruby plate to a steel ball sitting on the impulse bracket of each pendulum. Small horizontal disturbances to either swing will be reduced by resonance or micro seism, larger ones will be levelled out between the two crutches.

We each spent 1000 hours of our spare time (being given out-of-hours access to the workshop) to build this clock. The hours of planning and testing remain uncounted. We finished our work in June 2002 (just in time for graduation) and it's working fine.

The wall plate was made by a snowboard manufacturer and is covered with carbon fibre. It carries a marble block to which the plate with the massive support brackets for the pendulums, which also carry the movement, are bolted. The pendulum rods are carbon fibre, which still has to prove its superiority to Invar, but we wanted to build a unique 21st century clock. The movement is driven by two 3.3kg weights both attached to the same barrel and runs 15 days.

The timepiece is protected by a hinged acrylic shield and measures 222 x 65 x 35cm overall. It is currently exhibited at SCHAUERTE BIJOUTERIE in Klosters, Switzerland.

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