FRENCH DEAD-BEAT ESCAPEMENT WITH IMPULSE ON ONE PALLET ONLY OR A SINGLE-BEAT ESCAPEMENT
WJ Gazely, Clock & Watch Escapements, 1956

There is a very interesting French clock escapement which is often met. It is usually in a complicated clock having more functions than just showing teh time of day and striking, and is often provided with a 10" or half-seconds pendulum. It always gives very good results and is always centre seconds. In some cases the Ellicott type of pendulum is used with this escapement.

The escape wheel has 10 teeth very simliar to the Graham, although they are sometimes of a more elaborate shape at the backs, which does add strength, although the tips of the teeth are very thin (see Figure 58).

With nearly all escapements the entrance pallet requires the most power or has more friction, but this escapement does not use the entrance pallet except for locking, all the impulse being on the exit pallet, which requires less power for the amount of impulse.

There are two sets of actions on the escape wheel; the teeth on the wheel are for locking only, but the impulse is given by perpendicular pins on the band of the wheel; when the wheel is in the clock these pins are, of course, horizontal. The impulse plane is mounted on a higher plane than the entrance pallet to allow the wheel teeth to pass underneath.

The impulse plane is again out of the ordinary, inasmuch as it is curved instead of flat and has a concave face. The idea behind this, which is to make the impulse equal of the entire length of the plane, is quite sound, but there is not a great deal of advantage in it. In the case of a flat plane the impulse varies in intensity with the maximum in the centre, the total impulse being the same in all cases, but in this case the impulse is 4 degrees, i.e., the same as 2 degrees on each of two pallets. There is, of course, no difference in the train calculation, although there is impulse on one side only, and apparently the wheel moves only once every two vibrations. The pendulum, as stated earlier, is a half-seconds one, and the seconds hand beats seconds. However, there is discernible movement other than the beat.

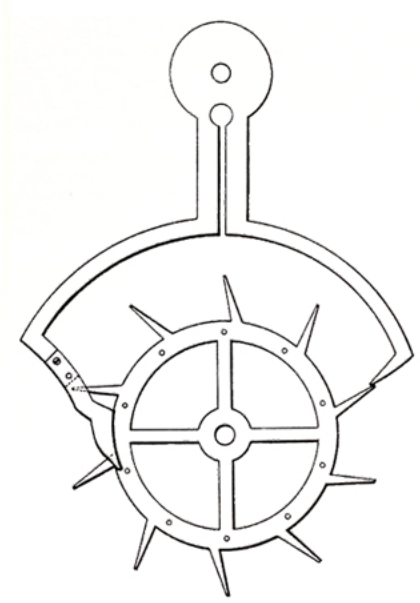

Figure 58. French single-beat escapement having impulse on one pallet, the other acting as locking only. This escapement gives a very good performance. The impulse pallet is raised above the plane of the locking and is engaged by the pinds. Both pallets are jeweled.

From observation over long periods this escapement gives very good results. As in any good escapement, the pivots must fit the holes well and be perfectly smooth and straight, also the locking on the entrance pallet must if anything be heavy, otherwise the pin may not fall on the right side of the impulse plane.

This action is a very critical one, and the pallet arms are often adjustable in the same manner as some of the Brocot pin-pallet arms already described. These clocks mut be nicely in beat, although of course this applies to all clocks.

In Beat - To test for in beat the pendulum is led from rest towards the locking pallet, when the pin will drop off the impulse plane and the tooth will lock. At the instant that this happens the pendulum is release, and if in beat the clock will start and keep going. The procedure is now reversed and the pendulum moved in the reverse direction until the pin drops on to the locking corner of the impulse plane, when the pendulum is at once released and the clock should start.

If it does not start in the first instance the crutch must be moved towards the locking pallet thus to favor the impulse pallet, whereas if it fails to start in the second instance the reverse procedure must be adopted. The crutch in these clocks is usually adjustable, but where this is not the case the adjustment is made by slightly bending the crutch.

This test can be applied to all clocks, i.e., the pendulum can be led from rest until the tooth drops, when the pendulum is released and the clock starts. The directions can then be reversed from rest until the opposite side is freed, when the pendulum is released and the clock started. In other words, if the movement is the same both sides the clock is in beat.