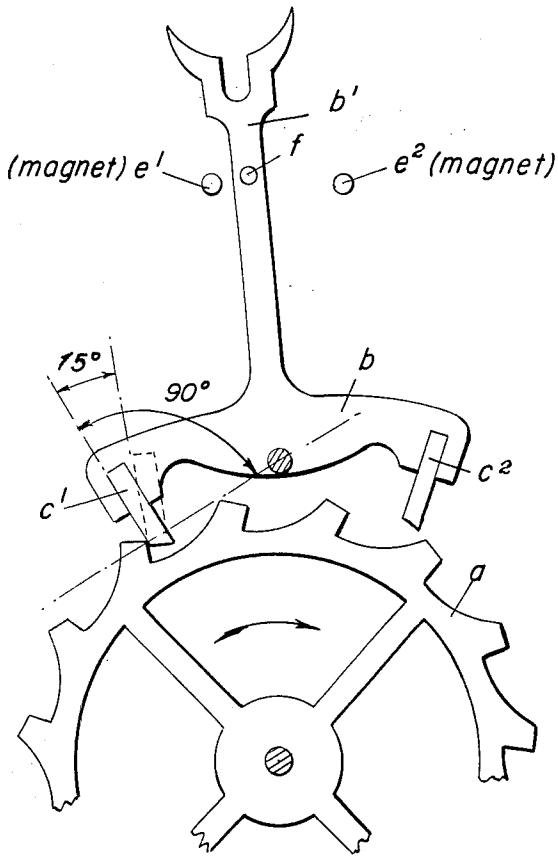
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ANCHOR ESCAPEMENT

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ANCHOR ESCAPEMENT

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This invention relates to detached lever escapements for clockwork, by which term I include clocks, watches and other time measuring devices of similar nature.

In order that, in clockworks, the lever shall function correctly and in particular the balance wheel shall be able to swing freely except for the fairly short time intervals of the transfer of force to the balance-wheel shaft by the lever fork, the lever fork must be temporarily halted in its terminal positions during the free swings of the balance-wheel shaft. This halting, as is well known, is effected by this means, that the teeth of the scape-wheel press against the impact face of the lever pallets. In the lever escapements hitherto known the impact face of the lever pallets forms with the perpendicular to the connection line between the impact point and the axis of turning of the lever a positive angle of about 15°, which is called a positive draw angle. As a result of this draw angle the lever pallet is drawn toward the center of the scape-wheel and thus halts the lever fork in its rest position. This well-known arrangement has two disadvantages:

1. In the rapid unlocking movement of the lever fork by the balance-wheel shaft, the wheel is thrown back by the inclined plane of the lever pallet. This rearward acceleration of the scape-wheel dissipates energy and delays the commencement of the force impulse of the scape-wheel tooth on the lifting face of the lever pallet.

2. The resistance to the unlocking of the lever from its rest position still increases toward the end of the unlocking operation, a circumstance which again causes a fairly great loss in the transmission of energy on the part of the lever to the balance-wheel shaft, which loss is expressed by the decline of the amplitude of the oscillating system.

The present invention has the purpose of overcoming these disadvantages in lever escapements for clockworks by arranging the lever pallets on the lever in such a way that the planes in which the engagement face portion of the lever pallets is situated, at the engagement of any particular time in a scape-wheel tooth, form with the connection line passing through the point of engagement and the axis of turning of the lever an angle which amounts to at least 90° and at most 115°, and that the temporary halting of the oscillating lever fork in the terminal positions is effected by magnetic means which have two limiting stops, determining these terminal positions, consisting of magnetizable material.

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In the accompanying drawing one form of execution of the object of the invention is illustrated in the single figure.

a is the scape-wheel of a lever escapement and b is the lever with the lever fork b^1. This lever b is provided with two lever pallets, the entry pallet c^1 and the exit pallet c^2. The two lever pallets c^1 and c^2 are, in the position of engagement, situated perpendicularly to the connection line between the center of turning of the lever and the point of contact of the lever pallet with the scape-wheel tooth, instead of forming, as is customary, with the perpendicular an angle (a so-called positive draw angle) of +15°, as indicated in dot-and-dash lines. The lever pallet c^1 might, however, also form a negative angle of several degrees with the aforesaid perpendicular. The temporary halting of the lever fork in its terminal positions is here effected by magnetic means. For this purpose two permanent magnets are installed as impact pins e^1 and e^2 to the left and the right of the lever fork b^1, while the lever fork b^1, consisting, for example, of steel or brass, is provided with a light soft-iron armature, for instance a pin f, which is attracted by the magnetic impact pins e^1 and e^2. Due to this, the impulses in the rearward direction that are otherwise periodically exerted on the scape-wheel by the lever pallets at the swinging of the lever are eliminated, and the drawing force exerted on the lever at the exit of the lever pallet out of the scape-wheel, by means of which drawing force, as was mentioned at the start, the lever pallet is drawn toward the center of the scape-wheel, decreases. Thereby the transmission of force through the lever to the balance-wheel shaft becomes substantially better, a circumstance which makes itself manifest by an increase of the amplitude of oscillation of the balance wheel up to 60°.

What I claim is:

1. In a detached lever escapement for clockworks, a lever, banking stops on opposite sides of said lever, said lever being swingable between said banking stops, a scape wheel, teeth on said scape wheel, magnetic means associated with said lever and said banking stops to hold said lever in banked position by magnetic traction, pallets on said lever, said pallets being arranged to eliminate a positive draw angle with respect to a perpendicular to the lever radius through the locking point between said pallets and said teeth, said magnetic means comprising magnetic bank-

ing pins of high coercivity and a soft iron armature mounted on said lever, said magnetic banking pins and said soft iron armature coacting to hold said lever in banked position.

2. A detached lever escapement as claimed in claim 1, said pallets being provided with locking faces, said locking faces in relation to a line perpendicular to the lever radius through the locking points between a said tooth on said scape wheel and the locking face of said pallet when the lever is in banked position being inclined towards the locked tooth at an angle up to approximately 10°.

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