Mobile Having Clearance Compensation

~~Backlash-compensating mobile~~

The present invention relates to the field of gears, in particular in horology. The present invention relates more particularly to a backlash-compensating mobile for a gear.

In traditional gears, the mutually engaged toothed mobiles necessarily have backlash or play therebetween in order to make allowance for manufacturing tolerances. Backlash is defined as the difference between the pitch and the sum of the widths of two respective teeth of the mobiles. In the field of horology, the backlash of gears has a detrimental effect on the display precision in that they can cause in particular the indicating hands to tremble.

Backlash-compensating gear mobiles have already been proposed. Patent EP 1520123 describes a gear in which the teeth of one of the wheels are divided into two half-teeth by a radial slot, one of these half-teeth being complete and having a degree of rigidity sufficient to fully ensure the transmission of the forces to which it is subjected, the other half-tooth having a recess which allows it to be resiliently deformed in the event of locking. This gear is designed to operate in one particular direction of rotation. Operating the gear in the other direction seems possible but only with a poor performance since the forces would be transmitted by the resilient half-teeth. This gear is also very prone to manufacturing defects, in particular to variations in the distance between centres. The working range of the resilient half-teeth is in fact relatively limited, so that a distance between centres that is slightly smaller than the theoretical distance between centres of the two wheels risks causing jamming, whilst a distance between centres that is slightly larger than the theoretical distance between centres risks the resilient half-tooth not being engaged and the backlash not being compensated for.

Japanese patent application JP 63-130961 describes a gear wheel whose teeth are slotted either symmetrically, in the case of a bidirectional gear, or asymmetrically, in the case of a unidirectional gear, to allow resilient deformation of the teeth to absorb pitch errors, tooth profile errors or the like. In the case of a unidirectional gear, this gear wheel has the same disadvantages as those mentioned above with respect to document EP 1520123. In the case of the bidirectional gear, the performance is poor in both directions since the forces