

Such a mobile is described in patent no. ... (Application no. 0385/03) in the name of the owner. It comprises a hub rotating on its axis, and a transmission or rolling zone designed to come into contact with a mobile or fixed component, a flexible zone able to undergo deformation being inserted between the hub and the transmission zone. The flexible zone is a deformable foam, or is made up of a series of leaves linking the hub to the transmission or rolling zone. The object of this invention is to propose a similar mobile made in one piece.

A first aspect of the present invention, provides a mobile designed to come into contact with a mobile or fixed component, characterised in that it comprises a hub rotating on its axis, and a transmission or rolling rim designed to come into contact with the mobile or fixed component, the hub and the transmission or rolling rim being linked by leaves arranged to allow for the relative movement of the rim in relation to the hub under the spring action of the leaves.

The leaves extend concentrically relative to the transmission and rolling rim, with radial play being provided between the hub and the rim.

There may be a bent section in the middle of the leaves allowing for the difference in elongation of the said leaves to be absorbed.

The hub may have openings placed opposite the bent sections of the leaves, the openings allowing the leaves to carry out

their spring function without coming into contact with the hub or the rim.

The hub may have recesses in which studs integral to the transmission or rolling rim are positioned.

5 Play is usually provided between the recesses and the studs. The leaves and the studs are evenly arranged on the periphery of the circumference of the mobile.

10 In a preferred embodiment, the mobile has three spring leaves evenly arranged around its circumference, and three recesses are arranged to each receive a stud on the transmission or rolling rim, the recesses being evenly spaced around the circumference of the mobile, each of the studs being inserted between two leaves of the mobile. The transmission or rolling rim is a toothed wheel, a star wheel or a smooth wheel allowing for friction driving.

15 The mobile is preferably made of steel and coated with molybdenum disulphide.

20 An additional object of the invention is a production method for the mobile characterised in that it is made all in one piece without molecular discontinuity, by traditional machining, starting from a blank, by metal cutting, wire cutting, spark EDM, electroforming or swage cutting, or by micromoulding through exposure of UV-sensitive resin, galvanic deposition in micromoulds or galvanic coating on a substrate.

The drawing shows, as an example, an embodiment of a mobile according to the invention that can be offset relative to its axis, and set in motion in its offset position.

In the drawing:

- 5 • figure 1 is a top view of the mobile, and
- figure 2 is a perspective view of the mobile in figure 1.

The mobile described with reference to figures 1 and 2 has been developed for the clock and watch-making industry. Its application is not however limited to this specific field, and can be extended to general mechanics, and in particular to the automotive industry, aviation, micromechanics, machine tools, medicine and any technical field in which a mobile must be brought into contact with a fixed mechanical component or a mobile, by deformation of its structure corresponding to a movement of its centre of rotation.

Once in place, the mobile shown in the embodiment in figures 1 and 2 allows for meshing with another mobile or any other sort of transmission whilst being offset from its axis of rotation.

20 The mobile M in figure 1 comprises a central part or hub 1 linked by means of flexible leaves 2 to a transmission or rolling rim 3. The transmission rim 3 is equipped, in the embodiment in figures 1 and 2, with teeth allowing for the mobile M to mesh with another mobile. Alternatively, the transmission rim 3 may be a smooth rim allowing for friction driving or a star performing the function of a jumper.

The central section or hub 1 has openings 4 that allow the leaves 2 to deform freely, and recesses 5 designed to support studs 6 that are an integral part of the rim 3. The studs 6 have a guiding function and relay the transmission of the force exerted by the rim 3 in order to ensure the transmission of the movement, limit the deformation of the leaves 2, and thus eliminate the risk of breakage.

The leaves 2 are attached at regular intervals on either side of the hub 1 and the rim 3 respectively. They have in their middle a bent section 7 designed to absorb the differences in elongation of the leaves 2. The bent sections 7 will preferably be slightly thicker than the straight sections of the leaves 2, which allows for the stress to be distributed and the strength of the mobile increased.

As shown in the drawing, the mobile has three leaves 2 particularly spaced around its circumference and the rim 3 has three studs 6 evenly spaced and placed between the openings 4. Play is left between the studs 6 and the recesses 5 in such a way as to give the assembly a certain freedom of operation, the studs 6 only coming into contact with one or other of the lateral edges of the recesses 5 after the spring action of the leaves 2 has been exerted. The studs 6 are thus used to limit the spring action of the central sections 7 of the leaves 2, and thus prevent breakage. The straight sections of the leaves 2 are designed to absorb the offsetting of the rim 3 relative to the hub 1.

The mobile M that has just been described will preferably be made of phosphorus nickel or steel, and will be coated with molybdenum disulphide. The surfaces in contact during the operation of the mobile M, particularly the surfaces of the
5 recesses 5 and the studs 6, will thus be able to slide more easily against each other and premature wear of the mobile will thus be limited.

With the mobile that has just been described, it is possible to force the circumference of the mobile to compensate for an
10 insufficient distance between two centres without altering the transmission function and transmission ratio of the assembly.

This solution also allows for compensation for lesser problems encountered in clock and watch-making, such as radial run-out of mobiles or problems of butting between mobiles. Minor
15 defects due to the positioning of the pivot holes of the various mobiles can also easily be corrected.

CLAIMS

1. Mobile designed to come into contact with a mobile or fixed component, characterised in that it comprises a hub rotating on its axis, and a transmission or rolling rim designed to come into contact with the mobile or fixed component, the hub and the transmission or rolling rim being linked by leaves arranged to allow for the relative movement of the rim in relation to the hub under the spring action of the leaves.
2. Mobile according to claim 1, characterised in that the leaves extend concentrically relative to the transmission and rolling rim, with radial play provided between the hub and the rim.
3. Mobile according to claims 1 or 2, characterised in that there is a bent section in the middle of the leaves that allows for the difference in elongation of the said leaves to be absorbed.
4. Mobile according to claim 3, characterised in that the hub has openings placed opposite the bent sections of the leaves, the openings allowing the leaves to perform their spring function between the hub and the rim .
5. Mobile according to any one of the preceding claims, characterized in that the hub has recesses in which studs integral to the transmission or rolling rim are positioned.

6. Mobile according to claim 5, characterised in that play is provided between the recesses and the studs.
7. Mobile according to claims 2 or 5, characterised in that the leaves and the studs are evenly arranged on the periphery of the circumference of the mobile (M).
8. Mobile according to any one of the preceding claims, characterized in that it has three spring leaves evenly arranged on its circumference.
9. Mobile according to claims 5 or 6, characterised in that there recesses, each receiving a stud on the transmission or rolling rim are evenly spaced on the circumference of the mobile.
10. Mobile according to claims 8 and 9, characterised in that each of the studs is inserted between two leaves.
11. Mobile according to any one of the preceding claims, characterized in that the transmission or rolling rim is a toothed wheel, a star wheel or a smooth wheel allowing for friction driving.
12. Mobile according to any one of the preceding claims, characterised in that it is made of steel,
13. Mobile according to any one of the preceding claims, characterized in that it is coated with molybdenum disulphide.
14. Mobile according to any one of the preceding claims, characterize in that it is made of one piece.
15. Production method for the mobile according to claim 1, characterised in that it is made all in one piece without

molecular discontinuity, by traditional machining starting with a blank, by metal cutting, wire cutting, wire EDM, electroforming, spark EDM or swage cutting, or by micromoulding through exposure of UV-sensitive resin, galvanic deposition in micromoulds or galvanic coating on a substrate.