

CLAIMS

1. Glass balance spring for a timepiece including coils of height h and locally a width l , characterized in that it is made of a photostructurable glass whose thickness has a value h and a Young's modulus thermal coefficient (CTE_0) close to zero.
- 5 2. Glass balance spring according to claim 1, characterized in that all of the balance spring or selected coil zones have an altered Young's modulus thermal coefficient (CTE_i) relative to the initial coefficient (CTE_0) of the photostructurable glass used, said alteration being obtained by UV irradiation, possibly completed by a high temperature heat treatment.
- 10 3. Glass balance spring according to claim 2, characterized in that the alteration from CTE_0 to CTE_i is carried out for one or several zones of the balance spring, over the entire width of the coil, the CTE_i of each zone being able to have different values.
- 15 4. Glass balance spring according to claim 2, characterized in that the alteration from CTE_0 to CTE_i is carried out over part of the width thereof, the same coil zone being able to have different CTE_i values.
5. Glass balance spring according to any of claims 1 to 4, characterized in that the alteration of CTE_0 is carried out over only one part of the height of the coils.
6. Glass balance spring according to claim 4, characterized in that one coil
- 20 zone locally includes more than two different CTE_i .
7. Method of manufacturing a glass balance spring for a timepiece movement, formed of coils of rectangular cross section of height h , of height l , and having between them a pitch p , characterized in that it includes the steps of:
 - a) taking a photostructurable glass plate of thickness h whose Young's
 - 25 modulus thermal coefficient CTE_0 is close to zero;
 - b) carrying out UV illumination through a first mask (3) whose windows (3a) correspond to the spaces that subsequently have to be released between the coils;
 - c) carrying out a high temperature thermal treatment;
 - d) carrying out UV illumination through a second mask (5) over coil zones
 - 30 whose Young's modulus thermal coefficient one wishes to alter from the initial value CTE_0 to a value CTE_i , and
 - e) carrying out an etch to remove the zones that have been treated in steps b) and c).
8. Method according to claim 7, characterized in that a thermal treatment is
- 35 also carried out after step e).

9. Method according to claims 7 or 8, characterized in that step d) is repeated at least once with an additional mask (6) whose windows (6d) correspond to coil zones whose initial Young's modulus thermal coefficient one wishes to alter to a value CTE_2 .

5 10. Method according to claim 9, characterized in that the second mask (5) and the additional mask (6) have common window zones for altering the initial Young's modulus thermal coefficient to a value CTE_3 .

11. Method of manufacturing a glass balance spring for a timepiece movement formed of coils of rectangular cross section of height h , of width l and
10 having between them a pitch p , characterized in that it includes the steps of:
 a) fixing a plate of thickness photostructurable glass plate of thickness h whose Young's modulus thermal coefficient CTE_0 is close to zero to an acid etch resistant substrate;
 b) carrying out UV illumination through a first mask (7) whose windows (7a, 7b)
15 have the same contour as the free spaces between the coils;
 c) carrying out a high temperature thermal treatment;
 d) carrying out an etch of the illuminated zones through the windows of the first mask in order to separate the coils held on the substrate via the base thereof,
 e) carrying out a second UV illumination through a second mask (8) whose
20 windows (8c, 8d, 8e) correspond to coil zones whose Young's modulus thermal coefficient one wishes to alter from the initial value CTE_0 to a value CTE_1 , and
 f) separating the balance spring from the substrate.

12. Method according to claim 11, characterized in that a thermal treatment is also carried out between steps e) and f).

25 13. Method according to claims 11 or 12, characterized in that step e) is repeated at least once with an additional mask (9) whose windows correspond coil zones whose Young's modulus thermal coefficient one wishes to alter to a value CTE_2 .

14. Method according to claim 13, characterized in that the second mask (8)
30 and the additional mask (9) have common window zones for altering the Young's modulus thermal coefficient to a value CTE_3 .

15. Method according to claims 7 or 11, characterized in that the mask used (5, 7) for defining the contour of the balance spring includes windows for varying the pitch p between the coils and/or the width l thereof.