

PATENT SPECIFICATION

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(54) METHOD OF MAKING A TIMEPIECE

(71) We, KABUSHIKI KAISHA SUWA SEIKOSHA, a Japanese company of 3—4, 4-chome, Ginza, Chuo-ku, Tokyo, Japan, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed to be particularly described in and by the following statement:—

This invention concerns a method of making a timepiece.

Many metallic and non-metallic materials are used for making those parts of a timepiece which are visible from the exterior of the timepiece, such parts being, for example, a watch-case, a wristlet, a dial, or a glass for protecting the dial. Comparatively few means have, however, been used for providing such materials with an ornamental finish, such means being constituted by gold or chromium plating, using dyed aluminium, and coating with paint. Thus the kind of ornamentation which has hitherto been applied to such timepiece parts has been somewhat restricted.

According to the present invention there is therefore provided a method of making a timepiece comprising assembling therein a glass timepiece part which is visible from the exterior of the timepiece, a portion or portions only of the glass timepiece part being coated with a lustre, and at least a part of the or each lusted portion being subsequently coated with a liquid precious metal resinate coatant which is solidified thereon.

As will be appreciated, the invention enables the glass timepiece part to be given a greater range of colour and ornamentation than is possible with existing methods.

The liquid coatant preferably comprises

liquid bright gold i.e. a liquid paint containing a colloidal gold resin compound. This is used as a surface ornament by applying and firing on the surface of the glass, there being a reaction between the glass and the liquid bright gold.

Alternatively, or additionally, the precious metal may comprise liquid gold, platinum, palladium, or silver.

Preferably only the central part of the or each lusted portion is coated with the liquid coatant.

The or each said portion is preferably an indicium-bearing portion.

The liquid coatant may be solidified by heating.

The glass of the timepiece part may contain a colouring agent. The colouring agent may, for example, be a rare earth compound.

The invention also comprises a timepiece when made by the method set forth above.

The liquid coatant may thus be applied to only those portions of the glass timepiece part which are marked with numbers or other indicia. Many different kinds of glass can be utilised. For example, a colourless transparent glass may be used, or, alternatively, the glass may incorporate a colouring agent. The ability to apply the liquid coatant to the glass does not depend upon the composition of the glass itself.

Colouring agents used to colour the glass may include oxides of rare-earth elements, as well as various kinds of metals, metallic oxides, and metallic sulphides. The colouring agents may be so used as to produce a glass having excellent transparency and yet of an attractive colour.

TABLE

COLOURING AGENTS FOR GLASS AND THEIR COLOUR

COLOUR	COLOURING AGENT	
	COLOURING BY IONISED METAL	COLOURING BY COLLOIDAL METAL
red	U ion	Au, Cu, Sb, S, CdS + CdSe CdS, Ag
orange	Cr ion	
yellow	Cr ⁶⁺ , U ion	
green	Cr ³⁺ , V ³⁺ , Cu ²⁺ , U ion	S
blue	Co ²⁺ , Cu ²⁺ , Ti ³⁺ , W ion	
violet	Mn ³⁺ , Ni ²⁺ , Ti ³⁺ , Nd ion	

The liquid coatant, in addition to containing liquid bright gold, may contain a lustre. Such a lustre may contain one or more metallic resins as its main colouring agents, in addition to liquid bright gold, liquid platinum, and liquid silver.

The glass timepiece part, e.g. a dial made from a coloured glass, may have appropriate parts thereof screen printed with a lustre to produce figures and / or other indicia, the lustred portions then being dried by heating. Thereafter, a liquid bright gold coatant may be coated onto the lustred portions, and this liquid bright gold coatant may also be dried by heating. Thus a pleasing colour effect may be produced by skillfully matching the colours of the foundation glass, the lustre, and the liquid bright gold or liquid platinum employed.

EXAMPLE.

A light purple glass is produced by adding neodymium oxide to an inorganic glass, and a disc is made of the glass so produced, the disc having an outer diameter of 27.4mm and a thickness of 0.42mm. The disc is then formed into a dial for a timepiece such as a watch by pressing it to shape, after which it is polished and feet are stuck to it. Grease is then removed from the dial by washing it in a solvent, after which it is dried.

The dial is then provided with the necessary figures by screen printing a pearl lustre onto it, after which the dial is heated in air at 550°C for 20 minutes. The central parts of the pearl lustre figures on the dial are then screen printed with liquid bright gold, which is dried by firing the dial in air at 550°C for 20 minutes. The glass reacts with the liquid bright gold so that the resulting dial has an

appearance which cannot be produced by conventional means.

Although the above Example relates to a dial, the invention is also applicable to a glass watch-case, to a protecting glass for a dial, to a glass calendar display disc, and to glass hands of the watch. Moreover, the two sides of a glass of a display plate of a liquid crystal display of a timepiece may also be formed in accordance with the method of the present invention.

WHAT WE CLAIM IS:—

1. A method of making a timepiece comprising assembling therein a glass timepiece part which is visible from the exterior of the timepiece, a portion or portions only of the glass timepiece part being coated with a lustre, and at least a part of the or each lustred portion being subsequently coated with a liquid precious metal resinate coatant which is solidified thereon.

2. A method as claimed in claim 1 in which only the central part of the or each lustred portion is coated with the liquid coatant.

3. A method as claimed in claim 1 or 2 in which the liquid coatant comprises liquid bright gold.

4. A method as claimed in claim 1 or 2 in which the precious metal comprises platinum, palladium or silver.

5. A method as claimed in any preceding claim in which the or each said lustred portion is an indicium-bearing portion.

6. A method as claimed in any preceding claim in which the liquid coatant is solidified by heating.

7. A method as claimed in any preceding claim in which the glass contains a colouring agent.



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blue	Co ²⁺ , Cu ²⁺ , Ti ³⁺ , W ion	S
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The glass timepiece part, e.g. a dial made from a coloured glass, may have appropriate parts thereof screen printed with a lustre to produce figures and / or other indicia, the lusted portions then being dried by heating. Thereafter, a liquid bright gold coatant may be coated onto the lusted portions, and this liquid bright gold coatant may also be dried by heating. Thus a pleasing colour effect may be produced by skillfully matching the colours of the foundation glass, the lustre, and the liquid bright gold or liquid platinum employed.

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3. A method as claimed in claim 1 or 2 in which the liquid coatant comprises liquid bright gold.

4. A method as claimed in claim 1 or 2 in which the precious metal comprises platinum, palladium or silver.

5. A method as claimed in any preceding claim in which the or each said lusted portion is an indicium-bearing portion.

6. A method as claimed in any preceding claim in which the liquid coatant is solidified by heating.

7. A method as claimed in any preceding claim in which the glass contains a colouring agent.

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8. A method as claimed in claim 7 in which the colouring agent is a rare earth compound.

9. A method of making a timepiece substantially as hereinbefore described.

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10. A timepiece when made by the method claimed in any preceding claim.

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