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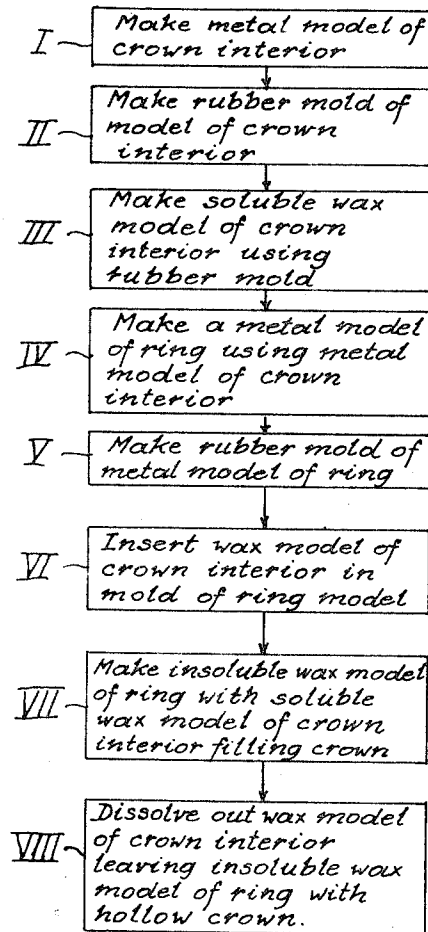
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[54] **METHOD OF MAKING A WAX MODEL OF A RING WITH HOLLOW CROWN**
 9 Claims, 15 Drawing Figs.

[52] U.S. Cl..... 164/45,
 264/221, 264/227
 [51] Int. Cl..... B22c 7/02
 [50] Field of Search..... 164/45;
 264/221, 227

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ABSTRACT: A hard, relatively insoluble wax form of jewelry such as a finger ring with hollow, framelike crowns is made by first making a metal model of the interior of the crown. A mold is made from the metal model and a soluble wax model of the interior of the crown is then cast by use of the mold. A metal model of the ring is then used in making a metal model of the ring with the metal model of the crown filling the crown of the model of the ring. A mold is made of the metal model of the ring. The soluble wax model of the crown interior is then inserted in the mold of the ring and then relatively insoluble wax is poured into the mold. The wax cast of the model of the ring is then removed from the mold and the wax form of the crown interior is dissolved out.



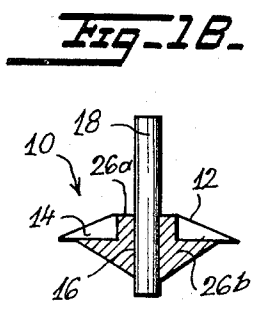
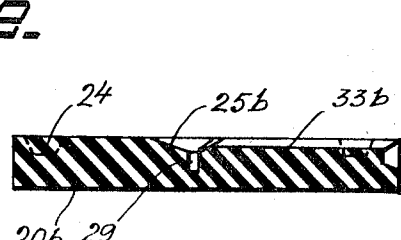
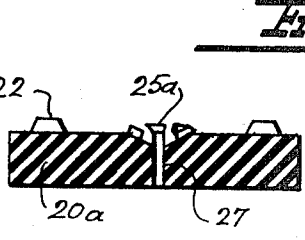
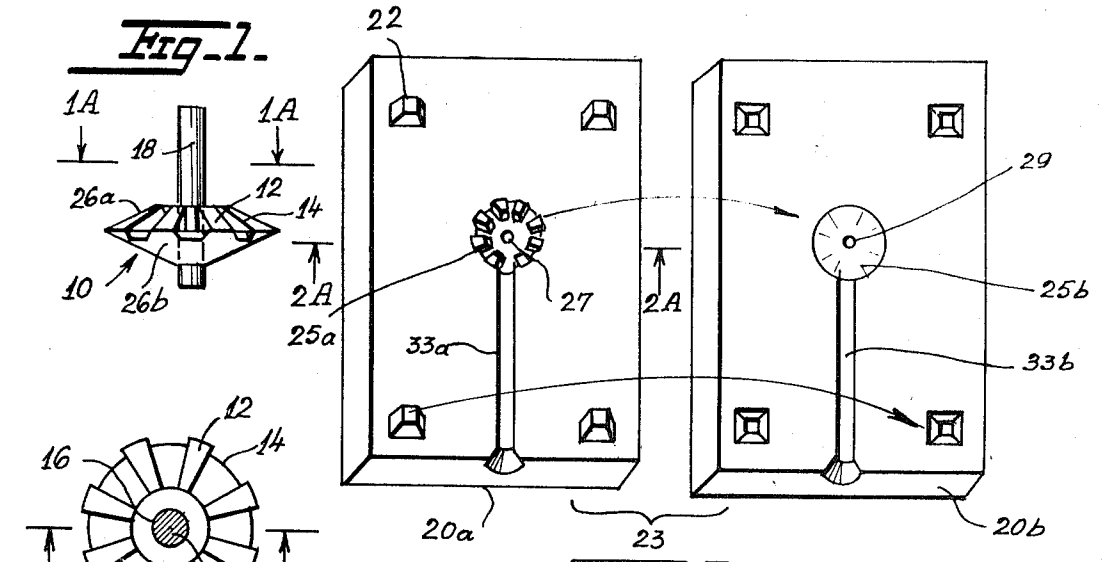


Fig. 2A

Fig. 2B

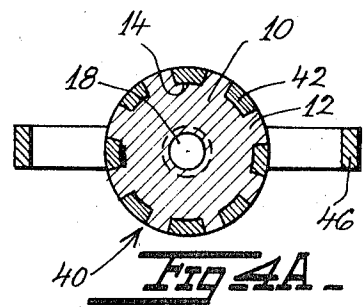
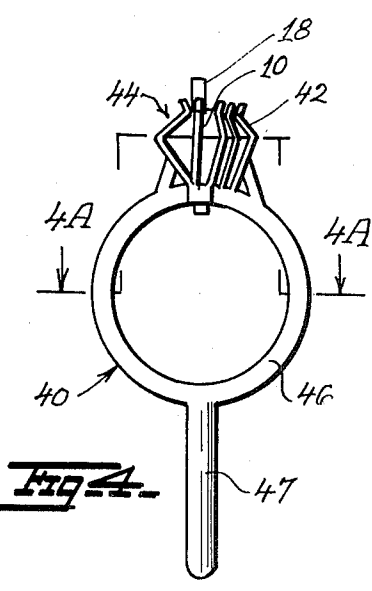
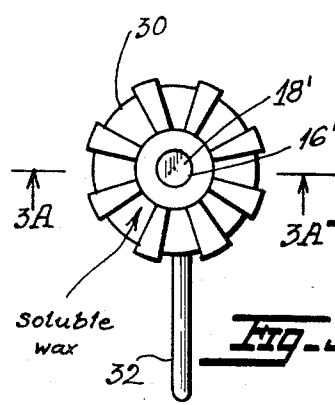


Fig. 4

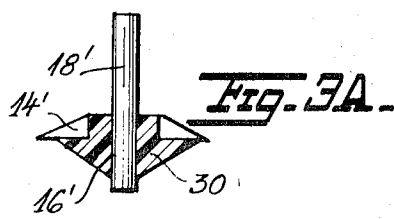


Fig. 3A

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- I - Make metal model of crown interior
- II - Make rubber mold of model of crown interior
- III - Make soluble wax model of crown interior using rubber mold
- IV - Make a metal model of ring using metal model of crown interior
- V - Make rubber mold of metal model of ring
- VI - Insert wax model of crown interior in mold of ring model
- VII - Make insoluble wax model of ring with soluble wax model of crown interior filling crown
- VIII - Dissolve out wax model of crown interior leaving insoluble wax model of ring with hollow crown.

Fig. 9.

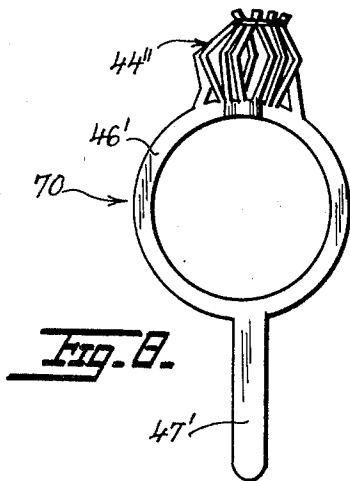


Fig. 8.

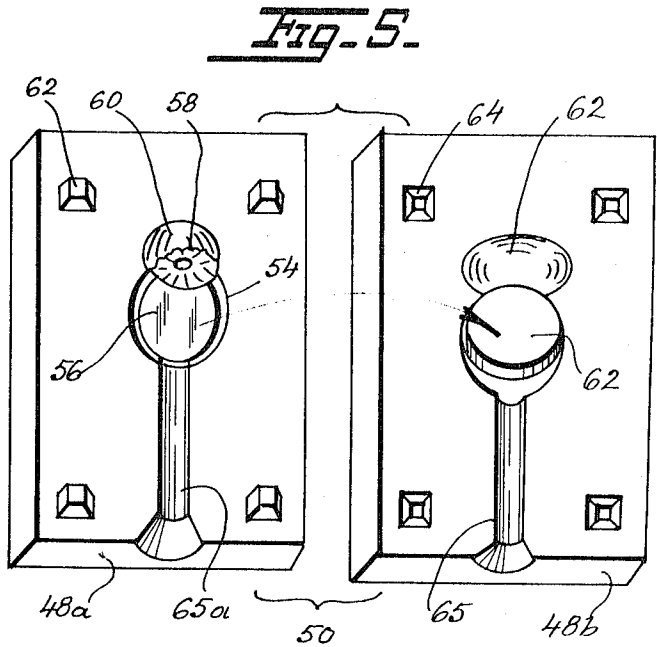


Fig. 5.

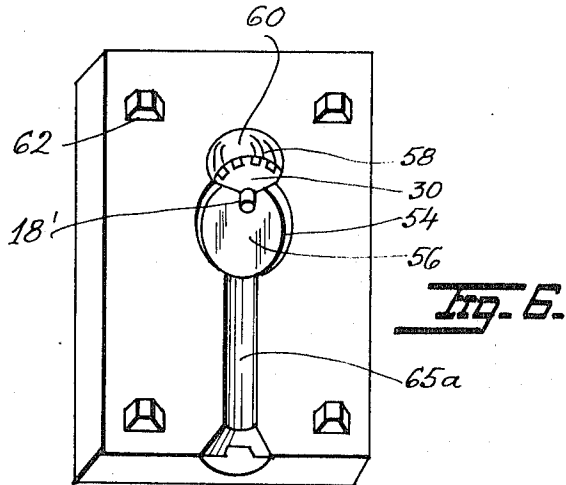


Fig. 6.

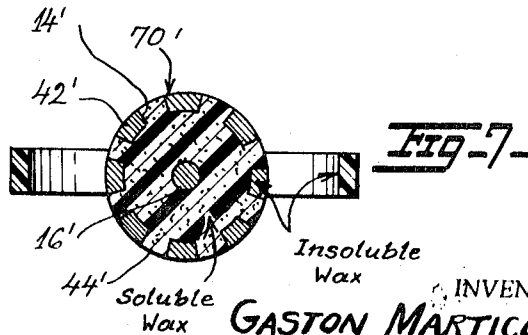


Fig. 7.

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METHOD OF MAKING A WAX MODEL OF A RING WITH HOLLOW CROWN

This invention relates to the art of jewelry manufacture and more particularly concerns a method of making a wax form of a jewelry article such as a ring with hollow crowns.

It is conventional in the art of jewelry manufacture to make a ring by casting metal in a mold. The cavity in the mold is generally made from a wax model of the ring by the lost-wax process. Some types of rings cannot be made by this process. Such rings are those having delicate, hollow, open-frame crowns. These rings are made by casting a ring base and then manually building up the hollow crown by welding or soldering followed by numerous hand-finishing processes. This is costly and time consuming and as a result such rings are generally prohibitively expensive.

The present invention is directed at providing a method of making a hard, insoluble wax model of a ring with hollow crown so that a precious metal ring can be cast therefrom by the lost-wax process.

According to the invention a metal model of a crown interior is first made and a first rubber mold is made of this crown interior. A metal model of a ring is then made by building the crown up around the metal model of the crown interior. A second rubber mold is made of the completed metal model of the ring. A soluble wax casting of the first mold is made to produce a wax model of the crown interior. This wax model is then inserted into the second rubber mold and an insoluble wax model of the ring is made with the soluble wax model inside the crown. Then the soluble wax model is dissolved out of the hard insoluble wax model of the ring, leaving the hard wax ring model with a hollow crown. This wax model can then be used to make a ring in conventional fashion by the lost-wax process.

The invention will be explained in further detail in connection with the drawings, wherein:

FIG. 1 is a side view of a metal model of the interior of a crown of a ring.

FIG. 1A is a cross-sectional view taken on line 1A—1A of FIG. 1.

FIG. 1B is an axial sectional view taken on line 1B—1B of FIG. 1A.

FIG. 2 is an oblique plan view of two parts of a rubber mold made by means of the metal model of FIGS. 1, 1A and 1B.

FIG. 2A is a cross-sectional view taken on line 2A—2A of FIG. 2.

FIG. 2B is a longitudinal sectional view taken on line 2B—2B of FIG. 2.

FIG. 3 is a top plan view of a soluble wax model of the crown interior made by use of the mold of FIG. 2.

FIG. 3A is an axial sectional view taken on line 3A—3A of FIG. 3.

FIG. 4 is a side view of a metal model of a ring with the metal model of the crown interior in its crown.

FIG. 4A is a cross-sectional view taken on line 4A—4A of FIG. 4.

FIG. 5 is an oblique plan view of two parts of a rubber mold made by use of the metal ring model of FIG. 4.

FIG. 6 is an oblique plan view of one part of the mold of FIG. 5 with the soluble wax model of FIG. 3 disposed therein.

FIG. 7 is a cross-sectional view similar to FIG. 4A of a wax model of a ring made by use of the mold parts of FIGS. 5 and 6, the model containing the wax model of the crown interior.

FIG. 8 is a side view of the wax model of the ring of FIG. 7, with wax model of the crown interior dissolved out.

FIG. 9 is a flow chart of the processes according to the invention.

Referring first to FIGS. 1, 1A and 1B, there is shown a round metal model 10 of the interior of a ring. This model may be handmade and is detailed with spaced projections or lands 12 defining channels 14 therebetween. At the center of the model is an axial bore 16 in which is removably inserted a metal guide pin 18.

FIGS. 2, 2A and 2B show two blocks 20a and 20b forming parts of a rubber mold 23. Block 20a has projections or keys 22 which fit into recesses 24 in block 22b. Cavities 25a and 25b in the respective blocks are formed by use of metal model 10 as a form, and define respectively the detailed top portion 26a and conical bottom portion 26b of the metal model. Hole 27 and recess 29 receive pin 18.

FIGS. 3 and 3A show a wax model 30 of the interior of the crown of the ring, made by use of rubber mold 23. This duplicates in structure model 10 shown in FIGS. 1, 1A and 1B and in addition it has a wax sprue 32 formed in channels 33a, 33b of the mold. This sprue is later broken off. Model 30 is made of a water-soluble wax. Another guide pin 18' is inserted in bore 16' in model 30.

FIGS. 4 and 4A show a metal model 40 of a ring. Framelike portions 42 of the crown 44 are built up by soldering, welding or otherwise around metal model 10. A circular band 46 is integral with the crown. A shaft 47 extends radially from band 46.

FIG. 5 shows two blocks 48a, 48b forming parts of rubber mold 50. This mold is made by using model 40 as a form. A raised circular land 52 in block 48b will be circumferentially spaced from the wall 54 of circular cavity 56 in block 48a to define a channel corresponding to band 46. Cavity 58 in block 48a corresponds to crown 44 and is formed in moundlike projection 60. Cavity 62 in block 48b receives projection 60. Keys 62 on block 48a fit into recesses 64 in block 48b. Channels 65a, 65b in the two blocks define a channel through which wax subsequently is poured and corresponds to shaft 47 of model 40.

FIG. 6 shows the soluble wax model 30 of the interior of the crown of the ring inserted into cavity 58 in block 48a. Thereafter block 48b is placed over block 48a and an insoluble wax is poured into the mold.

FIG. 7 shows in section the wax model 70' of the ring formed by use of mold 50. Guide pin 18 is still in place. This pin can be pulled axially out of the model. The soluble wax model 30 is embedded in the crown 44' of the model with wax-framelike portions 42' of the crown interfitted in channels 14' of model 30.

FIG. 8 shows the hard, insoluble wax model 70 of the ring after pin 18 is removed and after soluble wax model 30 is dissolved out. This is the finished wax model of a ring with hollow framelike crown 44'' which is the end product of the process. Wax band corresponds to metal band 46. Shaft 47' corresponds to shaft 47.

FIG. 9 shows the several stages I—VII of the process corresponding to the models and molds shown in FIGS. 1—8 respectively. At step I the metal model 10 of the interior of the ring is made. At step II, rubber mold 23 is made using model 10 as a form. At step III, soluble wax model 30 of the interior of the crown of the ring is made using rubber mold 23. At step IV, metal model 40 of the ring is made with metal model 10 in the crown. At step V, rubber mold 50 is made using the metal ring model 40. At step VI, the wax 30 of the crown interior is inserted in mold 50 as illustrated in FIG. 6. At step VII the hard insoluble wax model 70 of the ring is cast using mold 50 with soluble wax model 30 in the crown. At step VIII the final, completed insoluble wax model 70 of the ring is obtained after the pin 18 is removed and the soluble wax model 30 of the crown interior is dissolved out.

It will be apparent that molds 23 and 50 can be used over and over repeatedly to make hard, insoluble wax models 70. These wax forms can then be used in known, conventional ways to make precious metal rings.

The invention provides an inexpensive way to make wax forms of jewelry rings with hollow crown interiors. While reference has often been made to resilient rubber mold it should be understood that the mold can be made of materials other than rubber and nonresilient.

What I claim is:

1. A method of making a hard insoluble wax form of articles of jewelry with hollow framelike crowns, comprising the steps

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of making a rigid first model of the crown interior; making a resilient first mold of the model of the crown interior by using said first model as a form; making a rigid soluble second model of the crown interior using the mold to cast said soluble model; making a rigid first model of said ring using said rigid first model of the crown interior to fill the crown of the ring; making a second mold using the completed rigid first model of the ring as a form; inserting said rigid soluble second model of the crown interior into the second mold; making a second model of said ring by filling said second mold with a relatively insoluble wax so that the insoluble wax surrounds said soluble second model of the crown interior; and dissolving out the soluble wax model of the crown interior from said second model of the ring to obtain a hard, insoluble wax form of the article.

2. A method as defined in claim 1, wherein said soluble second model is made of wax.

3. A method as defined in claim 2, wherein said first and second molds are made of rubber.

4. A method as defined in claim 3, wherein said first and

second molds are each formed as two blocks with interfitting portions and facing cavities.

5. A method as defined in claim 4, wherein the rigid first model of the crown interior is made of metal.

6. A method as defined in claim 5, wherein the rigid first model of the ring is made of metal.

7. A method as defined in claim 1, wherein the first and second molds are made of rubber, the rigid first model of the crown interior is made of metal, and the rigid first model of the ring is made of metal.

8. A method as defined in claim 1, wherein said rigid first model of the crown interior is made of metal and is round in form with spaced lands defining grooves.

9. A method as defined in claim 8, wherein said rigid first model of the crown interior is formed with a central bore; and further comprising the step of inserting a cylindrical guide pin in said bore to anchor the rigid first model of the crown interior in said first mold.

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