

Silvering Clock Dials

Methods of Waxing, Silvering and General Finishing of Dials for Clocks and Instruments

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THE silvering and resilvering of clock and other instrument dials, and of nameplates of various kinds, is usually regarded as a complicated and exacting process suitable only for the experienced trade worker, and hedged all round with numerous "trade secrets" which make the whole procedure impossible of adoption by any amateur manipulator. So, also, is supposed to be the re-lettering of the engraved figures and other characters which are usually present on such nameplates and dials.

The fact is that, given reasonable skill and a little prior practice, the art of silvering and waxing dials and engraved or incised plates is an easily acquired one, thus making it possible for a careful amateur worker at a minimum of expense to turn out work which may compare favourably with even the best of professional efforts.

Instrument plates and dials are usually of brass or copper, particularly when they are to be surface-silvered by the chemical method, the reason being that only these metals take the white, matt, silver deposit well. When the plates are not required for

more or less badly abraded, discoloured and tarnished, or even, perhaps, actually blackened. The many "brass-faced" clocks of the grandfather type which are seen nowadays usually have other silvered circles, too—the seconds ring, the calendar ring, and, often enough, the maker's nameplate, which, in these days, is coming more and more to constitute a valuable feature of the clock. The silvered dial plates of the old domestic barometers are all similarly made-up, so that the procedure herein described and illustrated can be applied to any type of dial or nameplate, old or new, provided that it is of copper or brass.

The four illustrations given below show successive stages in the waxing and resilvering of the seconds circle of a grandfather clock dial.

Preliminary Cleaning

First of all, the dial or plate must be detached from its support on the instrument which carries it and then immersed in a solution of 1 part of caustic soda in 6 parts

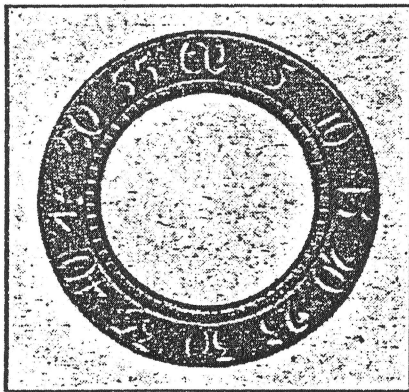
of water contained in an enamelled tray or other suitable non-metallic vessel. The tray is placed over a large pan of gently-simmering water in order to warm up the caustic solution. On no account should any article of zinc or aluminium be submitted to this treatment, since such metals are dissolved by the solution. After some 10-15 minutes' immersion, the part is withdrawn from the solution and gently scrubbed with a soft brush. This will remove the existing lacquer on the silvered part, together with the black wax paint or filling in the engraved numerals or other characters. For obstinate cases, two or three treatments of this nature may be required. Remember that warm caustic soda solution will readily remove the skin from the fingers, so that, after much manipulation of the parts immersed in such solution, the fingers should be rinsed constantly in cold water and dipped from time to time in strong vinegar or in weak hydrochloric acid.

After the silvered part has been stripped in the above manner, it should be thoroughly well rinsed in warm water and laid down on a flat table or bench top on which it can be dried properly.

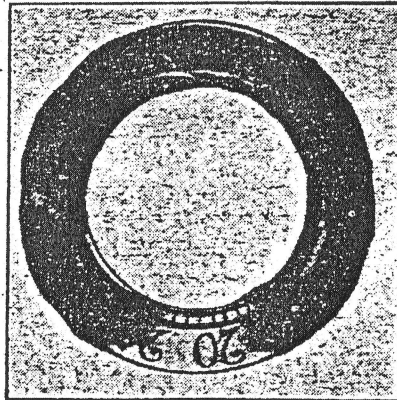
Waxing the Dial

The article is now laid face upwards on a clean iron sheet which is gently heated by being placed over a gas ring, the object being to heat the component gently and uniformly. If the object carries any soldered parts (the relics, perhaps, of former repairs) great care must be taken during this process not to melt or soften the solder. All that is required is that the object should be heated uniformly and to a temperature which makes it too hot for handling. Excessive heating is quite unnecessary and should be avoided.

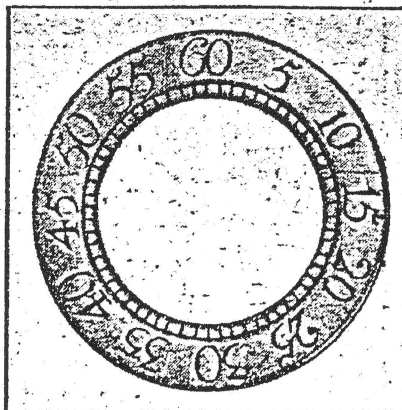
Take a stick of black engraving wax (which is usually obtainable from dealers in clockmaking materials). Hold it between the fingers and rub it vigorously and forcibly over the surface of the heated article so that the entire surface is blackened. This done, increase the heat slightly so that the applied film of wax becomes more fluid and sinks



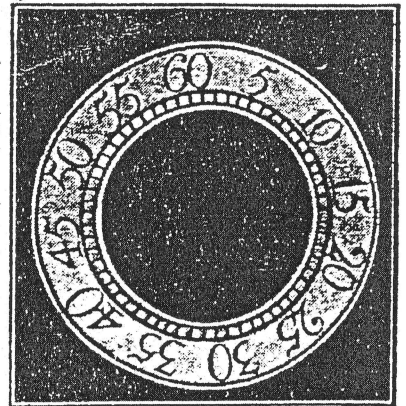
The cleaned, desilvered brass circle from which the old wax in the engraved numerals has been removed.



The brass circle surface coated with hard engraving wax, a portion of which latter has been removed by gentle abrasion, revealing the filled engraving.



The complete circle as it appears before silvering but after the removal of the wax. The numerals are now filled with the hard wax which is flush with the surface of the metal.



The finished result. The wax-filled seconds circle of a clock dial after its final silvering and lacquering, showing the characteristic contrast between the black waxed numerals and the matt-silvered background.

silvering, they may be of any metal, ranging from aluminium to stainless steel or even common lead. Brass and copper dials and plates, as well as those of bronze, are the more usual because these metals permit of ready and accurate, clear-cut engraving, stamping or other means of forming the incised characters which are afterwards to appear in black against a plain, polished or silvered background. The traditional example of the old-time workmanship is to be seen in the well-known silvered "chapter" or numeral circle on the dials of old clocks, on old barometer dials, and on other instruments of various descriptions. It should be understood, however, that it is possible to produce a passable imitation of these old and often very beautiful silverings merely by a process of printing in black on an aluminium, or on an anodised aluminium background.

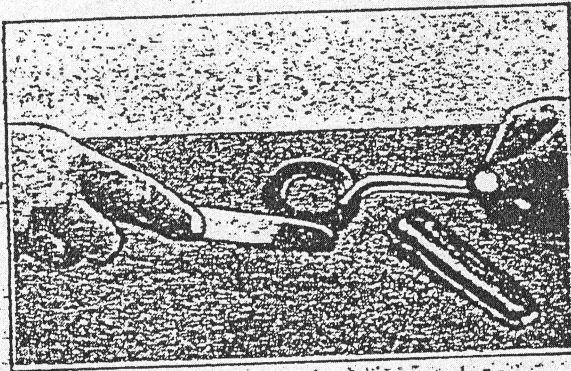
In order to illustrate the correct method of working the matt silvering process, let us take by way of example, one of the silvered dial rings or circles of a domestic clock which, in the course of time, has become

down into the engraved characters. Rub a hot flexible steel spatula blade over the blackened surface in order to press down and to consolidate the wax into the incised figures or letters. Then turn off the heat and allow the article to cool down itself to normal temperature.

Removing Surface Wax

The next operation is the most tedious of all. It consists in removing the surplus wax from the surface of the plate without, at the same time, pulling it out of the engraved hollows or other markings which the wax has filled. There are various methods of doing this. You can, for instance, try gently wiping over the wax-filled surface with a soft cloth saturated with petrol, paraffin, white spirit, benzene or some other solvent. Usually, in this instance, it will be found that the solvent, whilst readily and quickly dissolving the unwanted wax coating on the surface of the plate, will also remove some of the wax from the engraved characters, so that when the surface of the plate or dial has been finally cleaned the filling of the characters will look poor and uneven.

The surface cleaning-off of the wax without affecting the fillings should preferably be done by abrasive methods rather than by solvent ones. It is best, in the long run, to go over the entire wax-coated surface of the component with a soft cloth charged with a paste of fine pumice powder and water, or, better still, silica flour and water. Keep the surface well swilled with plenty of cold water and keep the rubbing in one direction only. Given patience with the job,



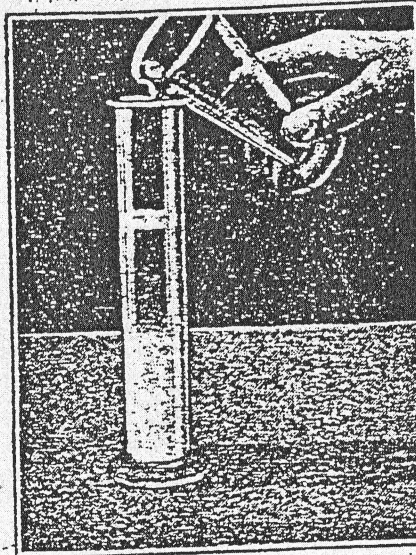
Pressing the applied layer of wax filling into the engraved surface by means of a hot spatula blade.

this procedure will remove all the surplus wax from the surface of the component without tearing any of the wax out of the "fillings," however fine the engraving may be. What is more, the abrasive treatment imparts a finely matted surface to the plate or dial which is admirable for silvering or for direct lacquering. Moreover, the wax in the fillings will not stand up with an objectionable gloss. Still further, as a result of this treatment the surrounding metal surface will be made chemically clean and free from tarnish.

If the plate is not required to be silvered it may be lacquered by brush or spray methods, care being taken to choose a transparent lacquer in which the wax filling is not soluble. Usually, the average clear cellulose lacquer suffices for this purpose.

Making Silver Chloride

If the plate has to be silvered, this operation will be found quite simple and rapid. Various silvering powders can be bought ready-made from dealers in clockmaking requisites or the amateur can make up for himself quite a good silvering powder by grinding together equal parts (by measure) of silver chloride, cream of tartar, and com-



Precipitating pure silver chloride by adding a common salt solution to a solution of silver nitrate. The heavy white insoluble precipitate of silver chloride rapidly sinks to the bottom of the vessel.

mon salt. Note here that silver chloride is stipulated, not the more readily available silver nitrate. Silver nitrate is obtainable from most pharmacists, but not silver chloride. The nitrate, however, can be converted into the chloride by dissolving one part of silver nitrate in about four parts of warm water, and then by adding to the resulting solution, drop by drop, a solution of one part of common salt in four parts of water. This will precipitate the silver chloride as a white, curdy mass which is insoluble in water. It should then be filtered off through blotting paper, washed by pouring cold water through the mass, and then spread out to dry without heat.

Be careful not to add too much common salt solution to the solution of silver nitrate, because the precipitated silver chloride is soluble in excess of common salt solution and, in this way, some of the valuable silver chloride would be lost. The correct procedure is to add the common salt solution drop by drop to the solution of silver nitrate and to stop adding

it when it is seen that no more of the white silver chloride is being formed.

Just another precaution. The handling of silver nitrate solutions indelibly stains the skin black, and also destroys it, for which reason this salt is much used for the removal of warts. Silver chloride has not this effect, although it will blacken if exposed to strong light. But if silver-nitrate solution is splashed on to the skin it should be washed off at once.

In the operation of silvering, a little of the above silvering powder, either ready-made or home-produced, is taken up on a wet, soft woollen pad, and is rubbed gently but firmly over the cleaned surface which has been previously waxed in the manner above described. The film of white, matted, metallic silver appears almost immediately. It may be thickened and whitened a little with continual rubbing with the pad. If the under metal surface has been nicely and very finely matted the new silver surface will have the same character. This appearance is usually aimed at in the best work, but if the under surface has been polished the silver layer will likewise tend to acquire a polished and lustrous appearance.

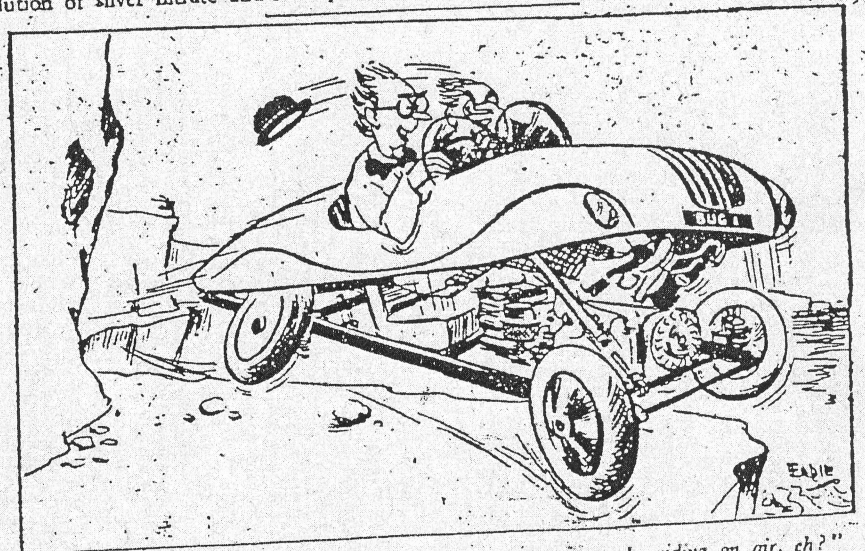
All that now remains is to rinse the silvered article well in cold water, and then to wipe it roughly dry with a soft cloth, allowing it afterwards to dry completely in the air and without heat.

Lacquering Necessary

If left in this condition, the newly silvered or re-silvered surface would quickly tarnish under ordinary atmospheric conditions. It must, therefore, to complete the job effectively, be given a thin coating of a clear cellulose lacquer, this being applied either by spray or by means of a soft brush. If this particular type of lacquering is overdone, or if the lacquer is too thick it will impart an objectionable glaze or shininess to the silvered part. In order to guard against this, it is usually advisable to use the latter in a diluted state, employing, say, two parts of a standard cellulose lacquer thinned down with one part of either acetone or toluene.

New brass and copper parts can be silvered in precisely the same way as the parts which require to be stripped before the work is commenced, but it should be noted that only copper and brass articles are amenable to the process. Articles made of other metals must be brass or copper-plated (preferably the former) before they can be matt-silvered in the above manner.

It is possible when dealing with purely letter nameplates to fill in the lettering with coloured waxes.



"With the new Boffin independent suspension you seem to be riding on air, eh?"