mass. The best results were obtained when silver and tin were mixed in the ratio of 72%:28% by weight respectively to form the alloy mass. This alloy was obtained by melting the above mixture in a furnace. Silver and tin in the range of ratio between 60%:40% to 80%:20% other than the said best ratio by weight respectively are although workable they did not give the best result. The homogeneous alloy mass was then lathed or ground to obtain a coarse powder which powder was then ball milled to a fine powder.

(b) The fine powder from (a) was reacted with hydrochloric acid at elevated temperatures, i.e. the fine powder of the alloy was mixed with hydrochloric acid and heated to boiling point temperatures to remove the dissolved Tin. The above treatment with the acid was repeated several times on the remaining solid particles after siphoning off the treated acid solution, so as to remove the dissolved Tin. The process of acid treatment was stopped when the original dark grey colour of the solid particles changed to a yellowish brown colour. The remaining solid particles formed the composition referred to as treated silver which filtered and washed several times until it was acid free and was then dried and stored.

(c) By repeated experiments metallic silver granules of high purity and mercury were weighed in a range of ratio between 1:1 to 1:2.2 by weight respectively to determine the optimum ratio to obtain best results; a ratio of 1:1.9 by weight respectively gave the best results for obtaining the silver-mercury compound. The metals as selected in the ratios above were dissolved together in nitric acid and the common solution of silver-mercury Nitrate was then preferably diluted by the addition of water. Alternatively the metals in the desired ratios were reacted with nitric acid separately and thereafter the solutions were mixed together. The silver-mercury compound was precipitated by an "exchange process" by the introduction of copper metal of high purity into the solution. The precipitated powder was filtered then washed with warm water until acid free. The powder so obtained being the composition referred to as the silver-mercury compound.

(d) By repeated experiments the treated silver from (b) was mixed with silver-mercury compound of (c) in the range of ratio between 50:50% to 80:20% by weight respectively and the best results of the mixture were obtained in the ratio of 55% to 45% by weight respectively.

(e) Again by repeated experiments, the resultant mixture from (d) was mixed with a mercury at ambient temperature to form an amalgam, the range of ratio of mixture to Mercury by weight respectively were tried between 1:1.18 to 1:1.4 although the final amalgam was formed to be workable but by far the best results were obtained when mixed in the ratio of 1:1.18 by weight respectively.

A preferred embodiment of the processes of production of the compositions and amalgam to get the best results according to the invention is described below.

The method of preparation of the treated silver composition is described below. To form a silver and tin alloy, Silver and Tin of high purity is weighed in the ratio of 72%:28% by weight respectively. The metals are melted together in a furnace to form an alloy mass, preferably in the form of a cylindrical bar. The alloy bar is then reduced to fine powder by means known to the art. In the present invention the alloy bar is lathed to obtain a coarse powder, which powder is subsequently ball milled to fine powder. This fine powder is treated with hydrochloric acid and heated to boiling point, then siphoned and the process of acid treatment is repeated until the original dark grey colour of the solid particles turns into yellowish brown colour when all the tin present in the alloy is removed by this chemical process.

The remaining solid particles in the acid solution is treated silver. The treated silver solid particles as powder is filtered, then washed repeatedly with warm water to remove all traces of acid from the powder it is then dried. This treated silver in fine powder form may be referred to as composition "A".

In a separate process, advantageously metallic silver granules and mercury of high purity are used in the ratio of 1:1.9 by weight respectively for best results. The silver and mercury selected in the ratio above is reacted with nitric acid either separately or together whereby both the silver and mercury go into solution. The solution of silver and mercury, if dissolved in the nitric acid separately the solutions are later mixed together. The resultant solution is diluted by adding water. Silver-mercury compound is then precipitated by the introduction of copper metal into the solution. The precipitated powder is removed by filteration from the solution and washed with warm water until it is acid free. Thereafter it is dried. The resultant silver-mercury compound may be referred to as composition "B".

As the next step, composition A and composition B are mixed together preferably in the ratio of 55% of A to 45% of B by weight for best results. This resultant mixture is called mixture "C".

Mixture "C" is mixed with mercury at ambient temperature in the ratio of mixture "C" to Mercury at 1:1.18 by weight for obtaining the best working properties of the amalgam (D).

The resultant amalgam D is used to fill dental cavities in the conventional manner.

An important feature of the invention is that the filling composition is devoid of free mercury.

Those skilled in the art will appreciate that the invention described is herein susceptible to variations and modifications other than those specifically described. It is to be understood that the invention includes all such variations and modifications. The invention also includes all of the steps, features, compositions and compounds referred to or indicated in this specifications, individually or collectively, and any of all combinations of any two or more of the steps of or features.

I claim:

1. A process for making dental amalgam for use as a dental filler characterized by the preparation of a mixture comprising a treated silver composition and a silver-mercury compound, comprising:

preparing the treated silver composition from metallic silver and tin of high purity by the steps of forming a homogeneous alloy of silver and tin, reducing the alloy to form a fine powder, reacting said powder with hydrochloric acid to remove the dissolved tin from the alloy thereby leaving solid particles of treated silver in the acid solution, the process of hydrochloric acid treatment being carried out several times on the solid particles until there is a noticeable color change in the solid particles from a dark grey to a yellowish brown color, filtering the yellowish brown solid particles and washing them several times with warm water to remove all traces of the acid, and drying the particles to form the treated silver composition;

preparing said silver mercury compound from granules of metallic silver of high purity and mercury by the steps