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- (54) Title: PROCESSES FOR PRODUCING NITROGEN, ESSENTIALLY NITRIDE-FREE CHROMIUM AND CHROMIUM PLUS NIOBIUM-CONTAINING NICKEL-BASED ALLOYS AND THE RESULTING CHROMIUM AND NICKEL-BASED ALLOYS

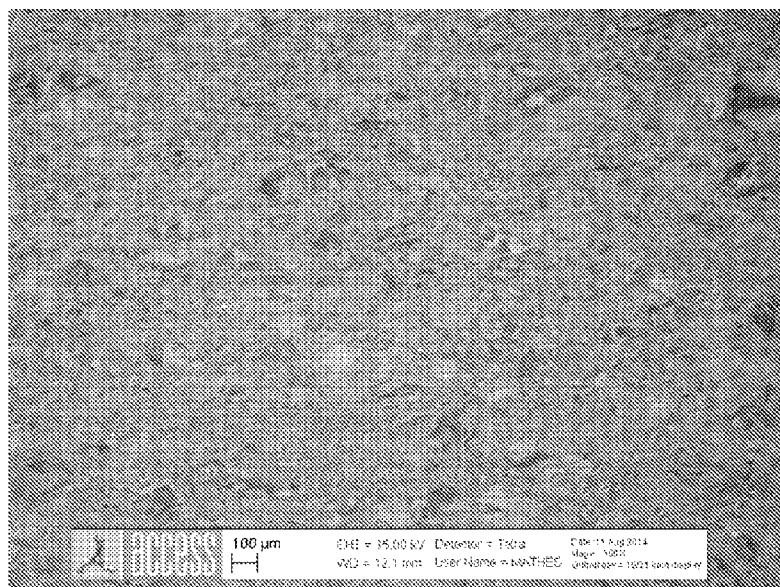


Fig. 1

(57) Abstract: Processes for producing low nitrogen, essentially nitride-free chromium or chromium plus niobium-containing nickel-based alloys include charging elements or compounds which do not dissolve appreciable amounts of nitrogen in the molten state to a refractory crucible within a vacuum induction furnace, melting said elements or compounds therein under reduced pressure, and effecting heterogeneous carbon-based bubble nucleation in a controlled manner. The processes also include, upon cessation of bubble formation, adding low nitrogen chromium or a low nitrogen chromium-containing master alloy with a nitrogen content of below 10 ppm to the melt, melting and distributing said added chromium or chromium-containing master alloy throughout the melt, bringing the resulting combined melt to a temperature and surrounding pressure to permit tapping, and tapping the resulting melt, directly or indirectly, to a metallic mold and allowing the melt to solidify and cool under reduced pressure.