

The present invention relates to the electric metallurgy, specifically to the equipment for melting metals by electron beam. The proposed electron-beam melting gun contains a working chamber with openings for removing air, a cup, a cathode casing containing a cathode holder with a directly heated cathode, an electronically heated cathode, and current-supplying electrodes, as well as a plate anode holder with an anode, a beam guide, electromagnets for focusing and deviating the electron beam, and a cooling system. In order to improve operation reliability and simplify manufacture, repair and maintenance of the electron-beam melting gun, the cathode casing contains a flange that is connected to a high-voltage insulator via a seal. The flange has cooling channels and an opening for inserting the current-supplying electrodes into the working chamber. The current-supplying electrodes have cooling channels. The cathode casing and current-supplying electrodes are included into the common circuit of the cooling system by a water distributor. The hydraulic resistances of the water distributor channels are proportional to the voltage of the electron heating of the cathode and the accelerating voltage. Between the plate anode holder and the beam guide, a copper screen can be installed.