

Title (en)

Permanent mould with insert for casting mill balls and other crushing elements.

Title (de)

Dauergießform mit Einsatz zum Giessen von Mahlkugeln und ähnlichen Brechelementen.

Title (fr)

Moule permanent avec pièce insérée pour la coulée de boulets pour broyeur et autres éléments broyants.

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Application

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Priority

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Abstract (en)

The subject of this invention is production of permanent metal moulds (1) with insert (2) of the gating system for casting mill balls and other crushing elements. The known method for mill balls casting are those using moulds of sand-binder mixture which moulds can serve for a single use only. Disadvantage of such moulds is in their lower heat conductivity which affects the structure and properties of produced balls. To get the appropriate quality grade of balls it is necessary, apart from the high content of alloying elements, to apply very complex thermal treatment. Authors of this invention have solved the problem in such a way that one metal mould can serve for repetitive use of several thousand times. With regard to thermo-physical properties of the mould, cooling of cast balls can be very intensive owing to which the casting process gives such structure and other ball properties that balls of high quality can be produced even from materials having a lower content of alloying elements. The problem of ball rising is solved by introducing an insert made from sand-binder mixture in which way the issue of controlled metal solidification in the mould has also been solved. To increase the operational life of tools (metal moulds), and to make them easy replaceable and to lower the costs of mould amortization, authors have introduced ball crystallizers (14) in the mould (1) as replaceable part in this way, after some time of mould operation, only the crystallizers (14) are to be replaced and since all other mould parts (2-13) are rather resistant to wear and tear their operational life will last long. Crystallizers (14) are made from alloyed steel, suitable for water cooling, or are made from hard copper i.e. Cu-Cd; Cu-Cr; Cu-Ag and Cu-Be to which the alloying elements are added in small quantities which do not affect heat conductivity of copper but on the contrary increase its hardness.

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