

Title (en)  
APPARATUS FOR DIP-HARDENING METAL PIPE

Publication  
**EP 0172250 B1 19920506 (EN)**

Application  
**EP 84900872 A 19840217**

Priority  
JP 8400049 W 19840217

Abstract (en)  
[origin: WO8503726A1] A hardening apparatus is constructed so that a heated metal pipe is rotatably retained by retaining means so that it is pressed thereby from both above and below. The metal pipe is dipped into cooling water within a water tank by dipping means, and in addition, jets of cooling water are applied to both the inner and outer peripheral surfaces of the metal pipe by cooling water spraying means. After being rapidly cooled in this way, the metal pipe is transported out of the water tank by a transport means. In this apparatus, the metal pipe is not dropped from a height, so it is possible to prevent the surface of the metal pipe becoming flawed, and the rotation of the metal pipe makes it possible to promote what is effectively a stirring of the cooling water. It is also possible to constantly change the portions of the retaining means in contact with the metal pipe, so that the metal pipe can be rapidly and uniformly cooled, and therefore can be well hardened.

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**C21D 1/64**; **C21D 9/08**

IPC 8 full level  
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CPC (source: EP)  
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