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(54) **A method of spheroidizing annealing of hypo-eutectoid low alloy steel**

(57) Method of spheroidizing annealing of hypo-eutectoid low alloy steel, wherein a hot rolled steel typical comprising ferrite and a high carbon phase such as pearlite or martensitic/bainitic microstructural constituents

- a) is heated to a temperature between A1 and A3

until austenitic domains with higher carbon content than the base composition has been created,

- b) the temperature is lowered and held under A1 to enable the austenite to transform into ferrite and carbides,
- c) the temperature is held under A1 until a desired degree of spheroidizing of the carbide is obtained.

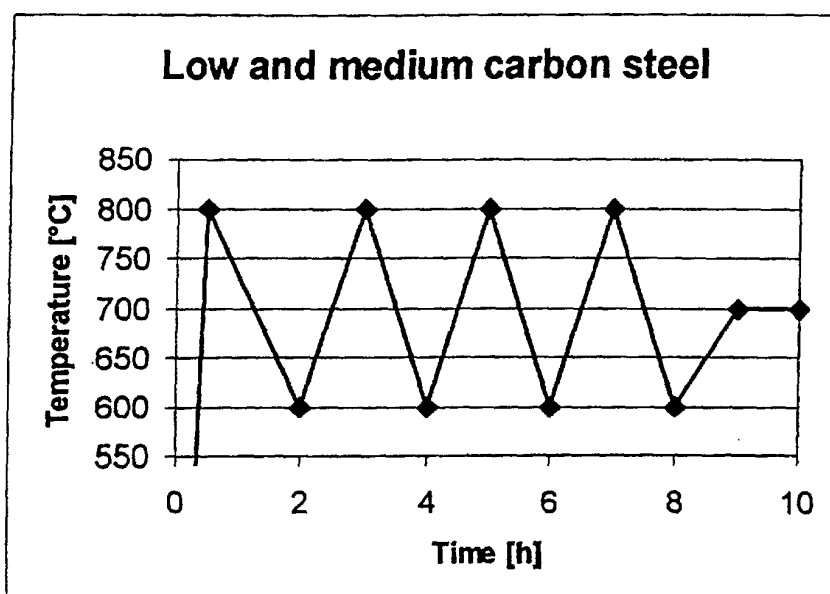


Fig. 1



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 00 85 0027

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.CI.7)
X	BYKADOROV A T ET AL: "SHPEROIDIZING OF ROLLED SECTIONS OF 20F2R STEEL" STEEL IN THE USSR, METALS SOCIETY. LONDON, GB, vol. 14, no. 9, October 1984 (1984-10), pages 446-448, XP002106012 * the whole document *	1,2	C21D1/32 C21D1/78
X	RU 2 023 026 C (UK GNII METALLOV) 15 November 1994 (1994-11-15) * the whole document *	1,2	
A	US 4 322 256 A (HENNING GARY S) 30 March 1982 (1982-03-30)		
			TECHNICAL FIELDS SEARCHED (Int.CI.7)
			C21D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 30 July 2003	Examiner Chebelev, A
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 85 0027

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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30-07-2003

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
RU 2023026	C	15-11-1994	RU	2023026 C1	15-11-1994
US 4322256	A	30-03-1982	US	4322247 A	30-03-1982
			US	4319934 A	16-03-1982