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METHOD OF DRYING POLYMER PAINT AND VARNISH COATINGS  
ON METAL PARTS

(Description of an invention for an author's certificate)

by

M.D. Maksimenko, S.G. Romanovskiy, et al.



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Block	Italic	Transliteration	Block	Italic	Transliteration
А а	<i>А а</i>	A, a	Р р	<i>Р р</i>	R, r
В в	<i>В в</i>	B, b	С с	<i>С с</i>	S, s
В в	<i>В в</i>	V, v	Т т	<i>Т т</i>	T, t
Г г	<i>Г г</i>	G, g	У у	<i>У у</i>	U, u
Д д	<i>Д д</i>	D, d	Ф ф	<i>Ф ф</i>	F, f
Е е	<i>Е е</i>	Ye, ye; E, e*	Х х	<i>Х х</i>	Kh, kh
Ж ж	<i>Ж ж</i>	Zh, zh	Ц ц	<i>Ц ц</i>	Ts, ts
З з	<i>З з</i>	Z, z	Ч ч	<i>Ч ч</i>	Ch, ch
И и	<i>И и</i>	I, i	Ш ш	<i>Ш ш</i>	Sh, sh
Й я	<i>Й я</i>	Y, y	Щ щ	<i>Щ щ</i>	Shch, shch
К к	<i>К к</i>	K, k	Ъ ъ	<i>Ъ ъ</i>	"
Л л	<i>Л л</i>	L, l	Ы ы	<i>Ы ы</i>	Y, y
М м	<i>М м</i>	M, m	Ь ь	<i>Ь ь</i>	'
Н н	<i>Н н</i>	N, n	Э э	<i>Э э</i>	E, e
О о	<i>О о</i>	O, o	Ю ю	<i>Ю ю</i>	Yu, yu
П п	<i>П п</i>	P, p	Я я	<i>Я я</i>	Ya, ya

\*ye initially, after vowels, and after ъ, ь; e elsewhere.  
When written as ѣ in Russian, transliterate as yѣ or ѣ.

RUSSIAN AND ENGLISH TRIGONOMETRIC FUNCTIONS

Russian	English	Russian	English	Russian	English
sin	sin	sh	sinh	arc sh	sinh <sup>-1</sup>
cos	cos	ch	cosh	arc ch	cosh <sup>-1</sup>
tg	tan	th	tanh	arc th	tanh <sup>-1</sup>
ctg	cot	cth	coth	arc cth	coth <sup>-1</sup>
sec	sec	sch	sech	arc sch	sech <sup>-1</sup>
cosec	csc	csch	csch	arc csch	csch <sup>-1</sup>

Russian      English

rot      curl  
lg      log

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All figures, graphics, tables, equations, etc. merged into this translation were extracted from the best quality copy available.

METHOD OF DRYING POLYMER PAINT AND VARNISH COATINGS  
ON METAL PARTS

(Description of an invention for an author's certificate)

Maksimenko, M.D., Romanovskiy, S.G., Dudnik, M.P.,  
and Lifshits, A.I.

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and Lifshits, A.I.

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Red Banner Institute of Heat- and Mass-exchange, AS Byelarussian SSR

(54) METHOD OF DRYING POLYMER PAINT AND VARNISH  
COATINGS ON METAL PARTS

The invention relates to methods of drying paint and varnish coatings which have been applied on metal parts, and can be used in machine building, ship building, and other branches of industry.

Methods are known for drying paint and varnish coatings on metal parts by means of their inductive heating in an electromagnetic field created by industrial frequency currents.

The purpose of the invention is improving the quality of drying and accelerating the process. For this the heating is carried out at a rate of 30-60°C/h up to a temperature below the break-down temperature of a polymer by 10-15°C with a field strength of 2500-5000 Oe and relative humidity of the surrounding medium of an order of 65-80%, after which the parts undergo isothermal holding for 3-6 h and then are cooled at a rate of 20-40°C.

Items made out of metal or other ferromagnetic material with the paint and varnish coating applied are placed into a chamber which is equipped with a solenoid-type winding made over the entire perimeter of the chamber, in which an electromagnetic field of a specific and same intensity of an order of 2500-5000 Oe is created. The winding is powered with a voltage of 220/380 V of industrial frequency current. When voltage is supplied an electromagnetic field is created, which due to the eddy currents and the effect of remagnetization causes the heating up of the part. The transfer of heat to the coating takes place conductively from the part itself.

The temperature of the part is regulated by changing the magnitude of intensity of the electromagnetic field.

The temperature in the coating is increased at a rate of no more than 60°C an hour and no less than 30°C an hour. The humidity of the medium in the chamber is maintained within the limits of 65-80%, with the help of a vaporizer as an example. Upon achievement of the necessary assigned temperature, which should be 10-15°C lower than the break-down temperature of the polymer in the coating there is isothermic holding for 3-6 h, and then the cooling of the part at a rate of 20-40°C an hour.

The proposed method of drying makes it possible to realize the codirectivity of flows of heat and moisture and to improve the heat- and mass-exchange and the quality of the coating..

#### Invention Claim

A method of drying polymer paint and varnish coatings on metal parts by means of their inductive heating in an electromagnetic field which is created by industrial frequency currents. Its distinguishing feature is that for the purpose of improving the quality of drying and accelerating the process, the heating is done at a rate of 30-60°C/h up to a temperature which is lower than the polymer break-down temperature by 10-15°C with a field strength of 2500-5000 Oe and relative humidity of the surrounding medium of an order of 65-80%, after which isothermic holding is done for 3-6 h, and then cooling at a rate of 20-40°C/h.

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