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METHOD OF FABRICATING CYLINDRICAL GRATINGS,(U)
JAN 82 V I YEREMIN, S I DENISOV
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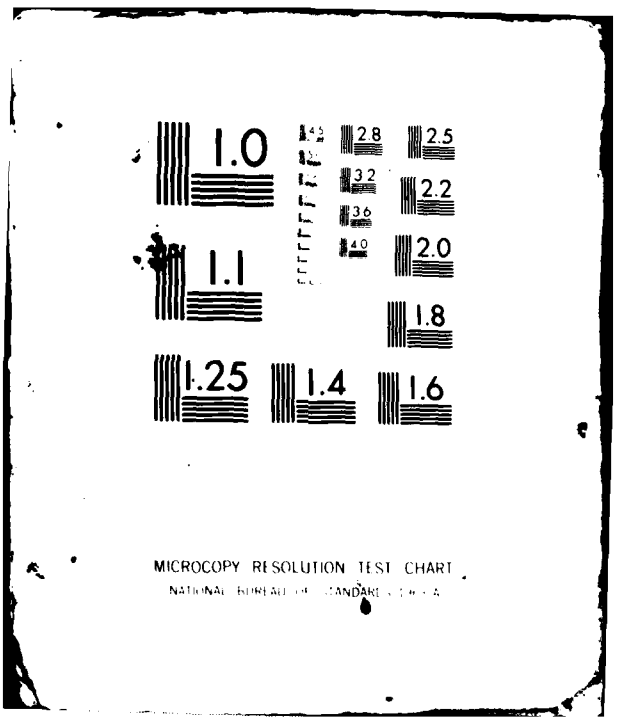
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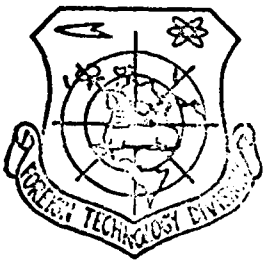
METHOD OF FABRICATING CYLINDRICAL GRATINGS

by

V.I. Yeremin, S.I. Denisov, et al



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EDITED TRANSLATION

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METHOD OF FABRICATING CYLINDRICAL GRATINGS

By: V.I. Yeremin, S.I. Denisov, et al

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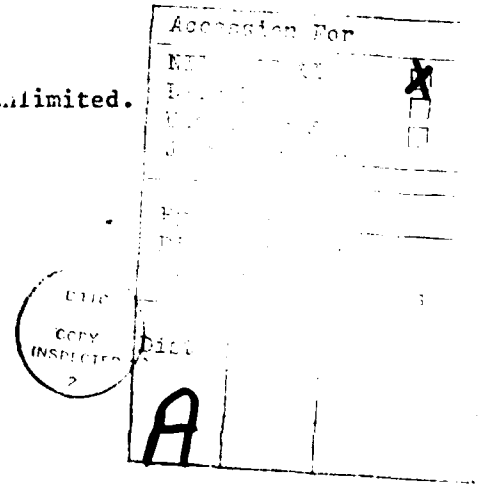

PREPARED BY:

TRANSLATION DIVISION
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WP-AFB, OHIO.

U. S. BOARD ON GEOGRAPHIC NAMES TRANSLITERATION SYSTEM

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

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

RUSSIAN AND ENGLISH TRIGONOMETRIC FUNCTIONS

Russian	English	Russian	English	Russian	English
sin	sin	sh	sinh	arc sh	$\sinh^{-1}$
cos	cos	ch	cosh	arc ch	$\cosh^{-1}$
tg	tan	th	tanh	arc th	$\tanh^{-1}$
ctg	cot	cth	coth	arc cth	$\coth^{-1}$
sec	sec	sch	sech	arc sch	sech^{-1}
cosec	csc	csch	csch	arc csch	csch^{-1}

Russian	English
rot	curl
lg	log

METHOD OF FABRICATING CYLINDRICAL GRATINGS

Authors of invention: V. I. Yeremin, S. I. Denisov, V. T. Arsent'yev and V. M. Korel'skiy

Applicant: Krasnogorskiy Machine Shop

This invention pertains to the area of the optical-mechanical industry.

A method is known for the fabrication of metallic cylinders by means of milling or slotting of openings by using the unproductive method of division. However, in this case after machining there is no assurance of the precision of dimensions and purity of the surface at the effective edges of the grating, since the connecting strips are deformed, and on the effective edges of the grating burrs and chips are formed, and mold lapping operations are necessary for eliminating them.

For improving the accuracy of dimensions of grating elements and their purity, and for cutting down of labor intensity when using the proposed method an annular recess is made on the inner surface of the grating, a holder is installed which has a diameter which is less than the inner surface of the grating, the gap is filled with an easily-fusible alloy, without removing the holder, teeth are cut by the method of generation simultaneously on the cylindrical part of the grating and the alloy, then by heating the alloy and holder are removed.

For ensuring the more compact abutment of the alloy to the surface of the grating and the holder, prior to filling the gap

with the alloy the grating is heated up to the melting point of the alloy.

The method is carried out in the following manner.

The grating billet, which has the form of a cylindrical ring, is degreased with benzine or acetone.

A holder (plug), the diameter of which is less than the inner diameter of the grating, is installed inside the grating. In the gap between the holder and the
sition which is readily fusible, the alloy "Vuda" for example, is poured. After hardening of the fusible composition teeth are cut on the cylindrical part of the grating and in the layer of the fusible composition simultaneously by the method of generation. Then by means of melting the fusible composition is removed and the holder is removed. Thus at the site of the fusible composition on the cylindrical part of the grating there will be through closed holes,alternating with the connecting strips, because the cylindrical part of the grating is formed so that it represents the rim of a gear, for example spur-gear wheel, at which from the inner side along the middle (in the billet) the recess is made. The diameter of this recess is equal to the diameter of the pitch circle, i.e., in this case the roots of the tooth are cut. This recess is filled with fusible alloy, which during cutting of the teeth protects the connecting strips which are formed here from deformation and eliminates undesirable vibrations. Simultaneously this prevents the formation of burrs and chips on the effective edges of the holes, since the process of cutting the teeth in this case takes place in the same manner as the process of cutting in the intact (without a recess) material. In order that during the time of cutting the teeth the hob cutter or pinion-type cutter do not cut the holder which is installed inside the grating, the magnitude of the gap between the holder and the inner surface of the grating should be greater than the height of the root of the tooth by 1-3 mm.

Object of Invention

1. A method of fabrication of cylindrical gratings, primarily with rectangular closed holes by means of maching them, characterized by the fact that for the purpose of improving the accuracy of the

dimensions of the grating elements, improving their purity and cutting down labor expenditure, on the inner surface of the grating an annular recess is made, a holder is installed which has a diameter which is less than the inner surface of the grating, the gap is filled with fusible alloy, and without removing the holder the teeth are cut by the method of generation simultaneously on the cylindrical part of the grating and the alloy, and then the alloy and the holder are removed by heating.

2. The method in point 1 is distinguished by the fact that for the purpose of providing a more compact abutment of the alloy to the surface of the grating and the holder, prior to filling the gap the grating is heated up to the melting point of the alloy.