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FOREIGN TECHNOLOGY DIVISION



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A DEVICE FOR CREATING AEROSOLS OF DRY VACCINE PREPARATIONS

by

S. F. Fedyayev, V. A. Belyakov, A. P. Drozdov



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FTD-ID(RS)T-2150-77

13 December 1977

MICROFICHE NR: *FD-77-C-001579*

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English pages: 2

Source: Izobreteniya i Ratsionalizatorskiye Predlozheniya v Oblasti Meditsiny Moscow, No. 2, 1973, pp. 7-8.

Country of origin: USSR

Translated by: Charles T. Ostertag

Requester: FTD/PHE

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PREPARED BY:
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WP-AFB, OHIO.

FTD -ID(RS)T-2150-77

Date 13 Dec 1977

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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 э	З э	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 ë in Russian, transliterate as yë or ë.

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

UDK 615.371.014.21:615.835.56-78

A DEVICE FOR CREATING AEROSOLS OF DRY VACCINE PREPARATIONS

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Devices for the generation of biological aerosols are of decisive value during aerosol immunization with dry vaccine preparations. The aerosol generators determine such an important factor in the immunization process as the uniformity of distribution of a vaccine preparation in a room or chamber. This guarantees that all those being vaccinated receive the same aspiration doses. Furthermore the degree of dispersion of the effective aerosol depends on the generator which is used. This dispersity in turn determines the depth of penetration and the degree of distribution of the particles over the respiratory tract of man or animal. Dispersity also determines the sedimentation properties of aerosols, and this means the economic effectiveness of the immunization process. All this points to the importance which is attached to the devices for creating aerosols.

The purpose of the present work was the development of a device for the spraying of dry biological preparations for the immunization of man and animals in closed quarters using the aerosol method. Particular attention was given to the scattering of the

vaccine preparation, the uniform distribution of the aerosol in the horizontal plane of the room (chamber), and the amount of noise in the process of aerosol generation.

The RSP-I type generator of dry aerosol preparations which was developed differs favorably from existing devices of this type by its relative noiselessness, by the satisfactory scattering of dry preparations, by the possibility of setting up the dispersion unit at any height within the limits of from 1 to 2 m, and by the presence of an adjustable tripod stand. The same atomizer can be used in small chambers (1 m³) for the immunization of animals and in large rooms (200 m³) during the mass immunization of man. One device ensures the uniform distribution of aerosol ($\pm 10\%$) on an area up to 60 m². The device makes it possible to move the control panel away up to a distance of 6 m, which provides for its remote control. A special design feature of the device is the centrifugal multistage aerosol generation unit with a drive from an electric motor, which at comparatively low revolutions of the generation unit rotor (2700-3000 rpm) makes it possible to disperse dry preparations effectively. During spraying of a coarsely dispersed "carrier" (fibrous structure), which enters into the composition of dry aerosol vaccines, the following breakdown is obtained for the countable fractional-disperse composition of the aerosol within the limits of diameters of from 3 to 35 μm :

fraction	3-7 μm	- 72.5%
"	7-11 μm	- 14.5%
"	11-15 μm	- 5.7%
"	15-19 μm	- 3.0%
"	19-23 μm	- 1.8%
"	23-27 μm	- 1.2%
"	27-31 μm	- 0.8%
"	31-35 μm	- 0.5%

A familiarization program with test models of the generator is underway at the "Tekhnolog" plant.

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C509 BALLISTIC RES LABS	1	E410 ADTC	1
C510 AIR MOBILITY R&D LAB/FIO	1	E413 ESD	2
C513 PICATINNY ARSENAL	1	FTD	
C535 AVIATION SYS COMD	1	CCN	1
		ETID	3
		NIA/PHS	1
C591 FSTC	5	NICD	5
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