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Ya'Akov et al.

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(54) **AVOCADO TREE NAMED 'MIRIAM'**

(50) Latin Name: ***Persea americana* P. Mill.**
Varietal Denomination: **MIRIAM**

(71) Applicant: **State of Israel, Ministry of Agriculture & Rural Development, Agricultural Research Organization**, Rishon Lezion (IL)

(72) Inventors: **Avraham Ben Ya'Akov**, Pardes Hana (IL); **Miriam Silberstein**, Pardes-Hana (IL); **Vered Irihimovitch**, Modiin (IL)

(73) Assignee: **State of Israel, Ministry of Agriculture & Rural Development, Agricultural Research Organization**, Rishon Lezion (IL)

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USPC **Plt./200**
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(58) **Field of Classification Search**
USPC Plt./200
See application file for complete search history.

(56) **References Cited**

PUBLICATIONS

Ben-Ya'acov et al. 1999. Revista Chapingo Serie Horticultura 5: 25-28.*

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Primary Examiner — Keith O. Robinson
(74) *Attorney, Agent, or Firm* — Foley & Lardner LLP

(57) **ABSTRACT**

A new and distinct avocado of *Persea americana* P. Mill. named 'MIRIAM', particularly characterized by resistance to *Phytophthora cinnamomi*, drought, Alkaline soils, and salinity.

5 Drawing Sheets

Botanical name of the genus and species of the plant claimed: *Persea americana* P. Mill.

Variety denomination: 'MIRIAM'.

BACKGROUND OF THE INVENTION

The present invention relates to a new and distinct variety of avocado tree, botanically known as *Persea americana* P. Mill. of the Lauraceae family, and hereinafter referred to by the variety denomination 'MIRIAM'.

Clonal avocado rootstocks were developed in Israel on a small scale between the years 1962 to 1977 and on a large scale in the years following. During the entire period about 220 different rootstocks have been developed in an attempt to solve soil problems caused by stress factors such as salinity, lime, poor aeration and root-rot, and various combinations of these factors, while simultaneously improving productivity. Uniformity among trees and dwarfness were also taken into account as part of the search for better rootstocks. The development process included field evaluation on a very large scale, in which 350 experiments and 65000 trees took part.

The new *Persea americana* P. Mill. 'MIRIAM' was discovered and selected by the inventors, Avraham Ben Ya'akov, Miriam Silberstein, and Vered Irihimovitch, growing in a cultivated area in the late 1970's in Givat Haim, Israel. The new *Persea americana* P. Mill. 'MIRIAM' was selected by the inventors based on *Phytophthora cinnamomi*, drought, Alkaline soils and salinity resistance.

Asexual propagation of the new *Persea americana* P. Mill. variety by the Frolich method for vegetative propagation was first performed in March 1985 in The Volcani

Center, Israel, and has demonstrated that the combination of characteristics as herein disclosed for the new variety are firmly fixed and retained through successive generations of asexual propagation. The new variety propagates true-to-type.

BRIEF DESCRIPTION OF THE INVENTION

The following traits have been repeatedly observed and are determined to be characteristics of 'MIRIAM' which in combination distinguish this avocado tree as a new, unique and distinct variety:

1. *Phytophthora cinnamomi* resistance;
2. Drought resistance;
3. Alkaline soils resistance; and
4. Salinity resistance.

Of the many varieties known to the present inventors, the most similar in comparison to the new *Persea americana* P. Mill. 'MIRIAM' is *Persea americana* P. Mill. 'Degania 117' (unpatented) which differs from the new avocado 'MIRIAM' in the characteristics described in Table 1:

TABLE 1

Comparison with most similar variety.

Characteristic	New Variety 'MIRIAM'	Comparison Variety 'Degania 117'
Phytophthora cinnamomi tolerance	Very high	High sensitivity

TABLE 1-continued

Comparison with most similar variety.

Characteristic	New Variety 'MIRIAM'	Comparison Variety 'Degania 117'
Drought resistance	Very high	Sensitive
Tree vigor characteristic	medium	Vigorous type

BRIEF DESCRIPTION OF THE PHOTOGRAPHS

The accompanying photographs illustrate the overall appearance of the new *Persea americana* P. Mill. variety 'MIRIAM' showing the colors as true as is reasonably possible with colored reproductions of this type. Colors in the photographs may differ slightly from the color values cited in the detailed morphological description, which accurately describe the color of 'MIRIAM'. Plants shown in the photographs are approximately two years old.

FIG. **1**—Shows typical trees of 'MIRIAM'.

FIG. **2**—Shows a typical leaf upper surface (left) and under surface (right) of 'MIRIAM'.

FIG. **3**—Shows a typical shoot of 'MIRIAM'.

FIG. **4**—Shows a typical vegetative bud of 'MIRIAM'.

FIG. **5**—Shows typical buds and inflorescences of 'MIRIAM'.

DETAILED BOTANICAL DESCRIPTION

The new *Persea americana* P. Mill. 'MIRIAM' has not been observed under all possible environmental conditions. The phenotype of the new variety may vary with variations in environment such as temperature, light intensity, day length, soil or pruning without any change in the genotype of the avocado plant.

The aforementioned photographs, together with the following observations, measurements and values describe trees of 'MIRIAM' as grown in the orchard in The Volcani Center, Israel, under conditions which closely approximate those generally used in commercial practice. The described plants were propagated by the Frolich method and planted at a distance of 6×4 m in sandy red loam soil at an elevation of about 30 meters above sea level with 700-1000 m3 per dunam per season of irrigation and N:P:K 30:30:5 of fertilizers. Average annual rainfall is about 550 mm, with an average 350 mm of rainfall in winter (December to February). Mean diurnal minimum temperature in January is 7.2° C., and mean diurnal maximum temperature in July is 30.8° C.

Unless otherwise stated, the detailed morphological description includes observations, measurements and values taken from 2014 to 2015 and based on two-year-old 'MIRIAM' plants/trees grown in the orchard in The Volcani Center, Israel. Quantified measurements are expressed as an average or a range of measurements taken from a number of plants of 'MIRIAM'. The measurements of any individual plant, or any group of plants, of the new variety may vary from the stated average or range.

Color references are made to The Royal Horticultural Society Colour Chart (R.H.S.), (1986 edition), except where general colors of ordinary significance are used. Color values were taken under daylight conditions in full sunlight in the the Volcani Center, Israel.

All of the plants of 'MIRIAM', insofar as they have been observed, have been consistent in all the characteristics described below.

Classification:

Botanical.—*Persea americana* P. Mill.

Propagation: Frolich method.

Growing conditions:

Light intensities.—Full sunlight.

	January	February	March	April	May	June
Mean maximum air temperature (° C.)	17.8	18.1	20.1	24.5	27	29.2
Mean minimum air temperature (° C.)	7.2	7.1	8.8	11.5	14.6	17.9
Mean rainfall (mm)	140.5	96.9	66.1	17.5	2.2	—

	July	August	Septem-ber	Octo-ber	Novem-ber	Decem-ber
Mean maximum air temperature (° C.)	30.8	31.2	30.4	28.3	24.1	19.7
Mean minimum air temperature (° C.)	20.6	21.2	19.4	16	11.8	8.6
Mean rainfall (mm)	—	—	0.4	20.4	76.2	130.3

Fertilization.—A balanced fertilizer with level of N:P:K 30:30:5.

Growth regulators.—As used in commercial practice.

TABLE OF CHARACTERISTICS

Age: Observed trees were about 2 years old.

Tree	Type: West Indian.
	Vigor: medium.
	Growth habit: semi-upright.
	General shape: globular.
	Density of canopy: sparse to medium.
	Height: about 4 m.
	Number of main branches: 2 or 3.
Main branch	Attitude: semi-upright.
Trunk	Diameter at 50 cm height: 30-35 cm.
	Surface: very rough.
	Color: light brownish gray RHS 199 C.
	Lenticels: not visible.
Young shoot	Color: medium green RHS 146 C.
	Color of lenticel: dark green RHS 146 A.
	Shape of lenticels: elongated or rounded.
	Density of lenticels: dense.
	Size of lenticel: about 1 mm.
Shoot	Length of internode: 15-30 cm.
	Thickness: 7-13 mm.
	Color: medium green RHS 146 B.
Vegetative bud	Shape: conical.
	Length: about 2 mm.
	Color: light green RHS 145 C.
	Pubescence: weak.
Young leaf	Color of pubescence of petiole: white, RHS 155 B.
	Color of upper side: medium green RHS 144 A.
	Color of lower side: medium green RHS 146 B.
Leaf	Attitude relative to shoot: semi-upright.
Leaf blade	Length: 13-18 cm.
	Width: 60-100 mm.
	Ratio length/width: longer than broad.

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TABLE OF CHARACTERISTICS Age: Observed trees were about 2 years old.	
	Shape: elliptic.
	Shape of apex: obtuse.
	Tip: acuminate.
	Color of upper side: medium green RHS 144 A.
	Color of lower side: medium green RHS 146 C.
	Anthocyanin coloration: absent.
	Shape in cross section: straight.
	Shape of base: obtuse.
	Twisting along whole length: absent.
	Twisting of apex: slight.
	Undulation of margin: medium.
	Relief of venation on upper surface: at level.
	Relief of venation on lower surface: raised.
	Color of veins of upper side: light green RHS 145 A.
	Color of veins of lower side: light green RHS 144 B.
	Number of secondary veins: 6 or 7 or 8.
	Distance of secondary veins: 1-1.5 cm.
	Density of pubescence on upper surface: absent.
	Density of pubescence on lower surface: medium.
	Color of hairs: white, RHS 155B.
	Anise aroma: weak.
Petiole	Length: 35-50 mm.
	Thickness: about 3 mm.
	Color: light green RHS 144 B.
	Pubescence: medium.
	Cross section: rounded and truncate.
	Lenticels: few.
Inflorescence	Length of axis: 30-38 mm.
	Thickness of axis: 5-6 mm.
	Number of side branches: 4 or 5 or 6 or 7.
	Length of lowest branch: 60-85 mm.
	Pubescence: medium.
	Color: 'medium yellow green RHS 151 A.
	Anthocyanin coloration: absent.
	Size of lenticels: pinhead.
	Shape of lenticels: rounded.
	Color of lenticels: 152B.
Flower	Position of nectary: along the main axis.
	Size of nectary: pinhead.
	Color of nectary: 152C.
	Length of pedicel: 5-7 mm.

-continued

TABLE OF CHARACTERISTICS Age: Observed trees were about 2 years old.	
	Number of petals: 6.
	Diameter: 8-10 mm.
	Shape: star shape.
	Fragrance: none.
	Number of styles: 1.
	Number of stamen: usually 6.
Petal	Length: 2-3 mm.
	Width: about 2 mm.
	Shape: triangular.
	Color of upper side: 'medium yellow green RHS 151 A.
	Color of lower side: 151B.
	Texture of Upper and Lower Surfaces: smooth.
Style	Shape of style: curved.
	Length of style: about 3 mm.
	Color of style: very light green RHS 145 D.
	Pubescence: not visible.
Stamen	Number: usually 6.
	Length of filament: 2-3 mm.
	Color of filament: very light green RHS 145 D.
	Pubescence of filament: not visible.
Anther	Size: pinhead.
	Shape: elongated.
	Color: 151D.
	Color of pollen: 151D.
Sepal	Shape: triangular.
	Length: miniscule.
	Width: miniscule.
	Color of outer surface: 151D.
	Color of inner surface: 151D.

Disease resistance: *Phytophthora cinnamomi* resistance.
Pest resistance: No atypical resistance has been noted.
Disease susceptibility: None observed.
Pest susceptibility: None observed.

We claim:

1. A new and distinct avocado variety of *Persea americana* P. Mill. named 'MIRIAM', as illustrated and described herein.

* * * * *

FIG. 1

FIG. 2

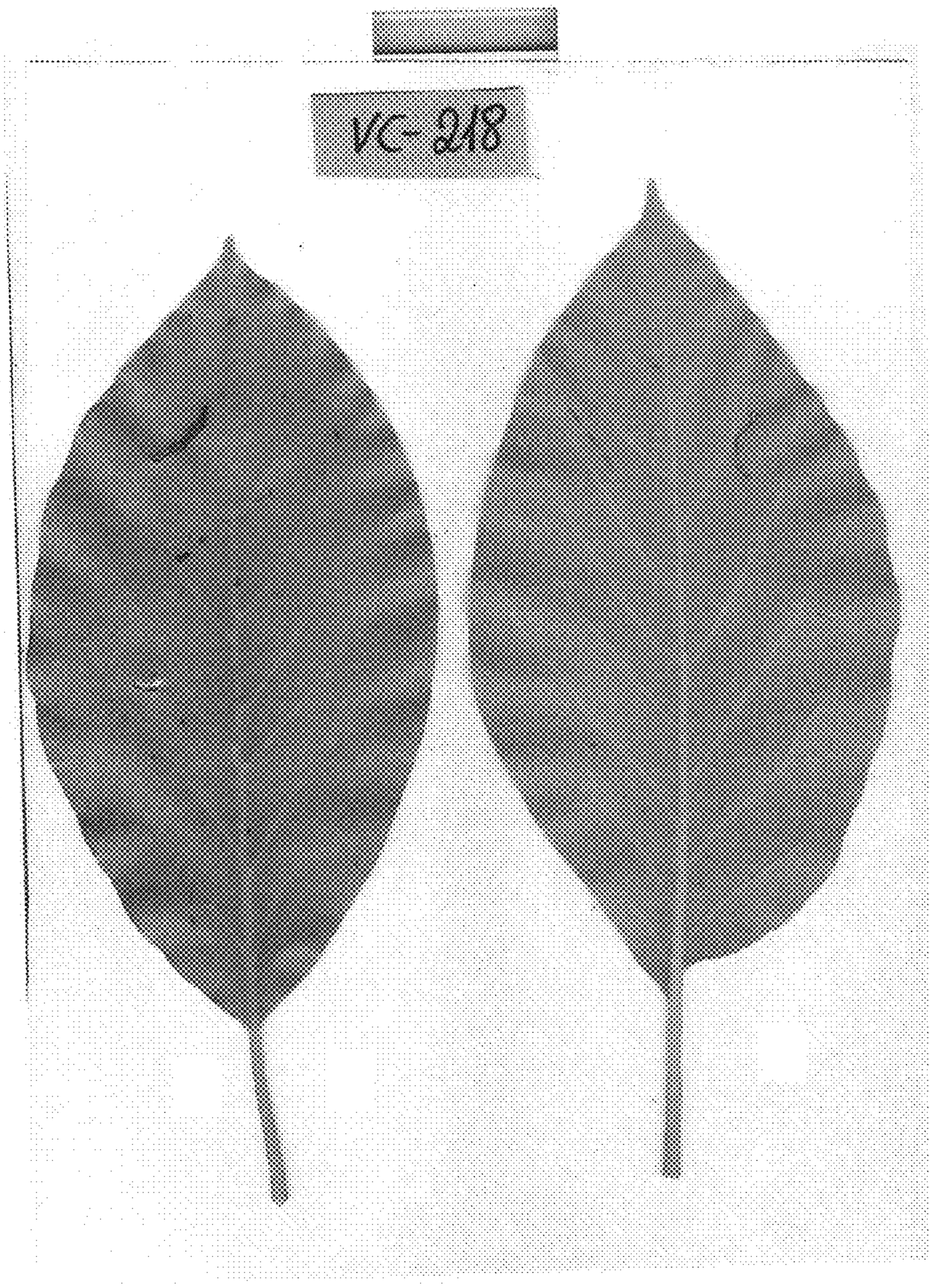

FIG. 3

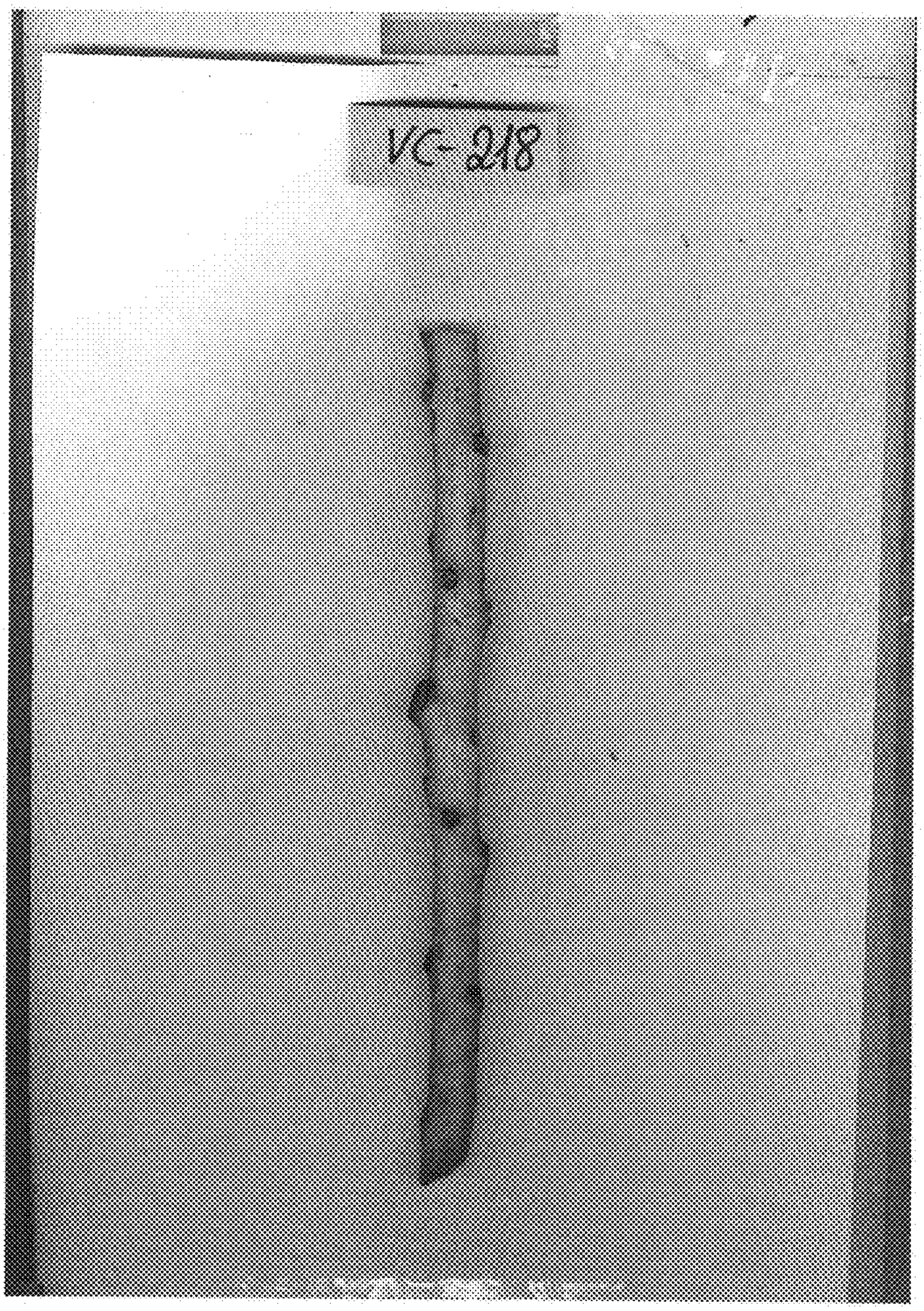

FIG. 4

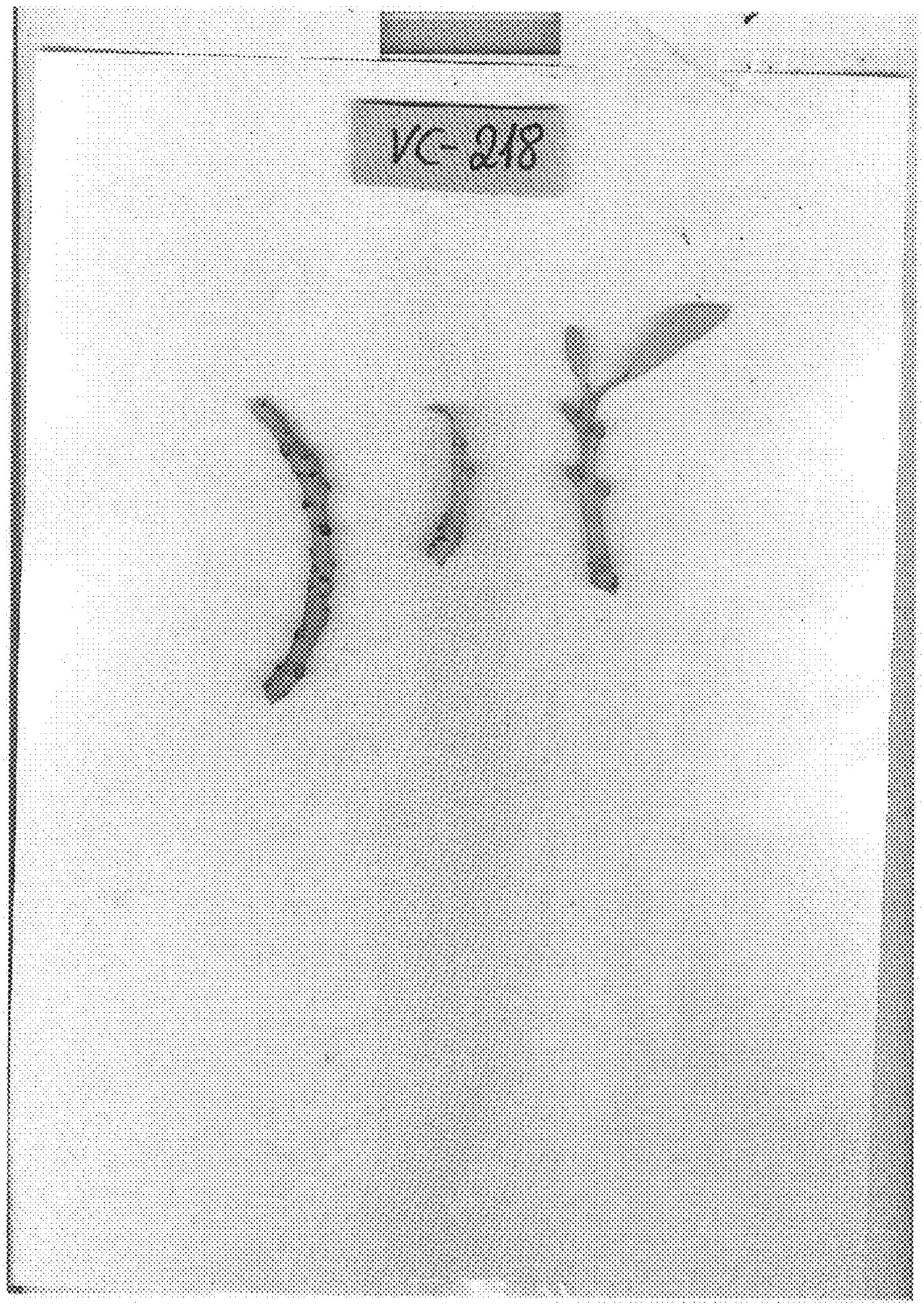

FIG. 5