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Mowrey et al.

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(54) **STRAWBERRY PLANT NAMED 'SAN JUAN'**

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(52) **U.S. Cl.** **Plt./209**
(58) **Field of Search** Plt./209, 208

(56) **References Cited**

U.S. PATENT DOCUMENTS

PP8,086 P * 1/1993 Nelson et al. Plt./209

* cited by examiner

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(57) **ABSTRACT**

This invention relates to a new and distinct variety of strawberry named 'San Juan'. The variety is similar to the varieties 'Commander' and 'Lido'. The variety is distinguished from 'Commander' and 'Lido', in particular, by its globose to flat globose habit, medium to strong interveinal blistering, weak to medium weak leaf glossiness, medium dense stipule pubescence, larger calyx diameter relative to the corolla, conical to almost cylindrical fruit, moderate differences in shapes of primary and secondary fruits, narrow band without achenes, and fruit with firm flesh and medium acidity.

6 Drawing Sheets

BACKGROUND OF THE INVENTION

The new variety originated as a result of a controlled cross between the strawberry plants 'Lido' (U.S. Plant Pat. No. 10,534) and '33×257' (unpatented variety) in an ongoing breeding program, and was discovered as a seedling in a controlled breeding plot at Monterey County, Calif. in May, 1996. The original seedling of the new cultivar was asexually propagated by stolons at McArthur, Shasta County, Calif. Propagules were transplanted to a controlled breeding plot in Monterey County, Calif., where the variety was identified and selected for further evaluation. 'San Juan' was subsequently asexually propagated and underwent further testing in the Monterey Bay area, California for three years. This propagation and testing has demonstrated that the combination of traits disclosed herein which characterize the new variety are fixed and retained true to type through successive generations of asexual reproduction.

SUMMARY OF THE INVENTION

The present invention relates to a new and distinct variety of strawberry named 'San Juan'. The variety is botanically identified as *Fragaria×ananassa*. The new variety is distinguished from other varieties by a number of characteristics as set forth in Tables 1–6.

The varieties which we believe to be similar to 'San Juan' from those known to us are 'Commander' (U.S. Plant Pat. No. 7,024) and 'Lido' (U.S. Plant Pat. No. 10,534). There are several characteristics of the new variety that are different from, or not possessed by 'Commander' and 'Lido'. The new variety has a globose to flat globose habit, medium to strong interveinal blistering, weak to medium weak leaf glossiness, medium dense stipule pubescence, a larger calyx diameter relative to the corolla, conical to almost cylindrical fruit, moderate differences in shapes of primary and secondary fruits, a narrow band without achenes, and fruit with firm flesh and medium acidity. Plants of 33×257 were lighter green and more vigorous than those of 'San Juan'. Fruit size and flavor were inferior to the 'San Juan' variety.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying photographs show typical specimens of the new variety, including fruit, foliage and flowers, in color as nearly true as it is reasonably possible to make in color illustrations of these characteristics.

FIG. **1** shows a close-up photo of the whole plant.

FIG. **2** shows the whole plant.

FIG. **3** shows the leaves of the plant.

FIG. **4** shows the upper side and the under side of the flowers.

FIG. **5** shows a close-up of the fruit.

FIG. **6** shows the fruit in longitudinal cross-section.

DESCRIPTION OF THE NEW VARIETY

The following detailed description of the new variety is based upon observations taken of plants and fruit grown in Monterey County, Calif., U.S.A. Observations of 'San Juan', 'Commander' and 'Lido' were taken in side by side comparison in 1999. This description is in accordance with UPOV terminology. Color designations, color descriptions, and other phenotypical descriptions may deviate from the stated values and descriptions depending upon variation in environmental, seasonal, climatic and cultural conditions. Colors are described and the most similar color designations

are provided from The Royal Horticultural Society (R.H.S.) Colour Chart.

PROPAGATION

The new variety is principally propagated by way of stolons. Although propagation by stolons is presently preferred, other known methods of propagating strawberry plants may be employed.

CHARACTERISTICS OF THE NEW VARIETY

Information on the new variety is presented in Tables 1, 2 and 3. In the tables, the flowers described are secondary flowers except where indicated. The petal color of 'San Juan' is white, 155C in the R.H.S. Colour Chart. The fruit described is the secondary fruit on one year old plants. Fruit and flower measurements are an average of both primary and secondary fruit and flowers.

Table 1 provides information on the plant and fruit characteristics of the new variety 'San Juan' compared with characteristics of 'Commander' and 'Lido'. Table 2 provides additional information of the plant and fruit characteristics of the new variety 'San Juan' compared with characteristics of the varieties 'Commander' and 'Lido'. Table 3 provides reactions of the new variety to stresses as compared to the varieties 'Commander' and 'Lido'. Tables 4 and 5 provide information of the new variety's reaction to pests and diseases, respectively, compared to the varieties 'Commander' and 'Lido'. Table 6 provides isozyme characteristics of the new variety as compared to the varieties 'Commander' and 'Lido'.

The leaf margin is crenate. The leaf texture is blistered and the leaf shape is rounded. The mid vein color on the terminal leaflet is RHS 151B. Leaf venation is pinate.

The average petiole diameter is 0.4 cm. The average length of the petiole on the terminal leaflet is 1.3 cm.

Petal shape is ovate to rounded. The petal margin is entire. The petal texture is smooth to slightly crinkled. The shape of the petal apex is rounded and the petal base is obtuse. The average number of petals per flower is 6.4.

The average length of the sepal is 1.17 cm. The average width of the sepal is 0.63 cm. The average number of sepals is 12.7. The color of the upper side of the sepal is dark green (138A) and the color of the lower side of the sepal is medium green (138B).

The achene color is green-yellow to grayed red (150B to 180A). The average number of achenes per berry is 359.

The average number of stolons per plant is 16. Stolons are tapered with an average diameter of 3 mm near the point of origination (at the mother plant), which average diameter gradually increases to 5 mm near the point of termination (at the daughter plant).

The anthocyanin pigmentation of various plant organs is red to purple in color.

The texture of the flesh is firm melting.

The initial bloom on the 'San Juan' variety occurs in early-March to mid-April in the vicinity of Watsonville, Calif. and continues until late fall.

TABLE 1

DETAILED COMPARISON of 'SAN JUAN', 'COMMANDER', AND 'LIDO'

	San Juan	Commander	Lido
Plant Characteristics			
Height of Plant (cm)	28.0	24.1	26.4
Spread of Plant (cm)	47.1	46.8	43.9
Number of Crowns	4.6	3.9	2.6
Leaf Characteristics			
Terminal Leaflet Width (cm)	7.6	7.1	7.9
Terminal Leaflet Length (cm)	8.0	7.7	7.4
Terminal Leaflet Length/Width Ratio	1.05	1.09	0.93
Number of Teeth/Terminal Leaflet	22.3	17.2	20.2
Color of upper side of leaf	Medium to dark green 147A	Medium green 147A	Medium to dark green 147A
Color of under side of leaf	Light green 147C	Light green 147C	Light green 147C
Petiole Length (cm)	23.8	22.1	19.4
Petiole color	yellow green 149A	yellow green 149A	yellow green 149A
Bract Frequency	58% Single or paired	17% Single only	58% Single or paired, typically single
Stipule Length (cm)	3.4	3.2	2.9
Stipule Width (cm)	1.0	0.9	0.9
Flower Characteristics			
Petal Width (cm)	1.42	1.34	1.28
Petal Length (cm)	1.30	1.27	1.08
Petal Length/Width Ratio	0.92	0.94	0.84
Flower Diameter (cm)	3.3	3.2	2.8
Calyx Diameter (cm)	3.9	3.9	3.1
Fruit Characteristics			
Fruit Width (cm)	4.1	4.5	4.8
Fruit Length (cm)	4.6	4.7	4.3
Fruit Length/Width Ratio	1.13	1.04	0.91
Average Berry Size (g)	27.5	24.5	23.8
Fruit Skin Color	Dark Red 53B	Orange red 45A	Orange Red 46A
Fruit Flesh Color	Red 44A and white 155A	Light red to orange red 41A & white	Pale rose 41B & white
Total Yield (g/plant)	1,212	1,399	671

TABLE 2

CHARACTERISTICS OF 'SAN JUAN', 'COMMANDER', AND 'LIDO'

	San Juan	Commander	Lido
Plant			
Habit	globose to flat globose	flat globose	globose
Density	medium	medium	open
Vigor	medium	medium	weak

TABLE 2-continued

CHARACTERISTICS OF 'SAN JUAN', 'COMMANDER', AND 'LIDO'

	San Juan	Commander	Lido
Leaf			
Shape in cross section	flat to slightly convex	slightly concave	concave
Interveinal blistering	medium to strong	weak	medium
Glossiness	weak to medium weak	weak	medium weak
Number of leaflets	sometimes more than 3 (approx. 17% of leaves)	3 only	3 only
Terminal leaflet margin profile	revolute to flat	flat	flat
Terminal leaflet shape of base	obtuse to rounded	rounded	obtuse
Terminal leaflet shape of teeth	rounded	obtuse	rounded
Stipule pubescence	medium dense	medium	sparse to medium
Petiole pubescence	medium	medium	sparse to medium
Petiole pose of hairs	outward to downward	outward	outward to upward
Stolon			
Number	16	—	—
Anthocyanin coloration	strong	—	—
Thickness	3–5 mm	—	—
Pubescence	medium	—	—
Inflorescence			
Position relative to foliage	beneath to level with	level with to above	level with to above
Diameter of calyx relative to corolla	larger	same size to larger	same size
Diameter of inner calyx relative to outer	same size	same size	larger
Spacing of petals	overlapping	overlapping	overlapping
Fruiting Truss			
Attitude at first picking	prostrate	prostrate	erect to semi-erect
Length	medium	medium	short to medium
Fruit			
Predominant shape	conical to almost cylindrical	conical to bi-conical	cordate
Difference in shapes between primary and secondary fruits	moderate	slight	moderate to marked
Band without	narrow	narrow to medium	very narrow

TABLE 2-continued

CHARACTERISTICS OF 'SAN JUAN', 'COMMANDER', AND 'LIDO'

	San Juan	Commander	Lido
achenes			
Unevenness of surface	medium	weak	medium
Evenness of color	even	slightly uneven	even
Glossiness	very strong	strong	very strong
Insertion of achenes	level with surface	level with surface	below to level with surface
Insertion of calyx	level	level	in a basin
Pose of the calyx segments	spreading to reflexed	spreading	spreading to reflexed
Size of calyx in relation to fruit	same size	same size	smaller
Adherence of calyx	strong	strong	strong
Firmness of flesh	firm	medium	medium firm
Evenness of flesh color	slightly uneven to even	slightly uneven	slightly uneven
Distribution of flesh color	marginal and central	marginal and central	only marginal to marginal and central
Hollow center size	medium	medium	absent
Sweetness	medium to strong	medium to strong	strong
Texture when tasted	medium	medium	medium
Acidity	medium	weak to medium	weak
Time of Flowering	medium to late	early to medium	early to medium
Harvest Interval	week ending May 1, 1999 to week ending October 30, 1999	week ending April 17, 1999 to week ending October 30, 1999	week ending April 24, 1999 to week ending October 30, 1999
Time of Bearing	partially everbearing	partially everbearing	partially everbearing

REACTION TO STRESS

TABLE 3

	San Juan	Commander	Lido
Reaction to Stress			
high pH	Moderately Resistant	Moderately Resistant	Moderately Resistant
high soil salt levels	Moderately Resistant	Moderately Resistant	Moderately Resistant

PEST AND DISEASE RESISTANCE AND SUSCEPTIBILITY

TABLE 4

	San Juan	Commander	Lido
Reaction to Pests			
Tetranychus urticae	moderately susceptible	moderately susceptible	susceptible
Aphis spp.	susceptible	susceptible	susceptible
Lygus hesperus	susceptible	susceptible	susceptible

TABLE 5

	'San Juan'	'Commander'	'Lido'
Reaction to Diseases			
Botrytis fruit rot	susceptible	susceptible	moderately resistant
Powdery mildew	moderately susceptible	—	—
Verticillium wilt	susceptible	susceptible	susceptible
Strawberry Mottle Virus	moderately resistant	moderately resistant	moderately resistant
Xanthomonas fragariae	moderately susceptible	moderately susceptible	moderately susceptible

ISOZYME ANALYSIS

In addition to the morphological description above, the new cultivar 'San Juan' has been analyzed to obtain an indication of its genetic makeup to provide further means for identifying the new variety and distinguishing it from some other somewhat similar and/or related strawberry varieties. Specifically, leaf samples of 'San Juan', 'Commander', and 'Lido' were analyzed by electrophoresis for isozyme patterns of the enzymes phosphoglucoisomerase (PGI), leucine aminopeptidase (LAP) and phosphoglucomutase (PGM). See *J. Amer. Soc. Hort. Sci.* 106:684–687. Isozyme characterization of the three varieties is presented in Table 4, with the letters representing the banding patterns for each enzyme as designated in the above-identified article.

TABLE 6

ISOZYME ANALYSIS FOR 'SAN JUAN', 'COMMANDER', AND 'LIDO'

Locus	San Juan	Commander	Lido
PGI	A2	A4	A3
LAP	B3	B3	B3
PGM	C4	C4	C2

What is claimed is:

1. A new and distinct variety of strawberry plant, substantially as shown and described.

* * * * *

FIG. 1

FIG. 2

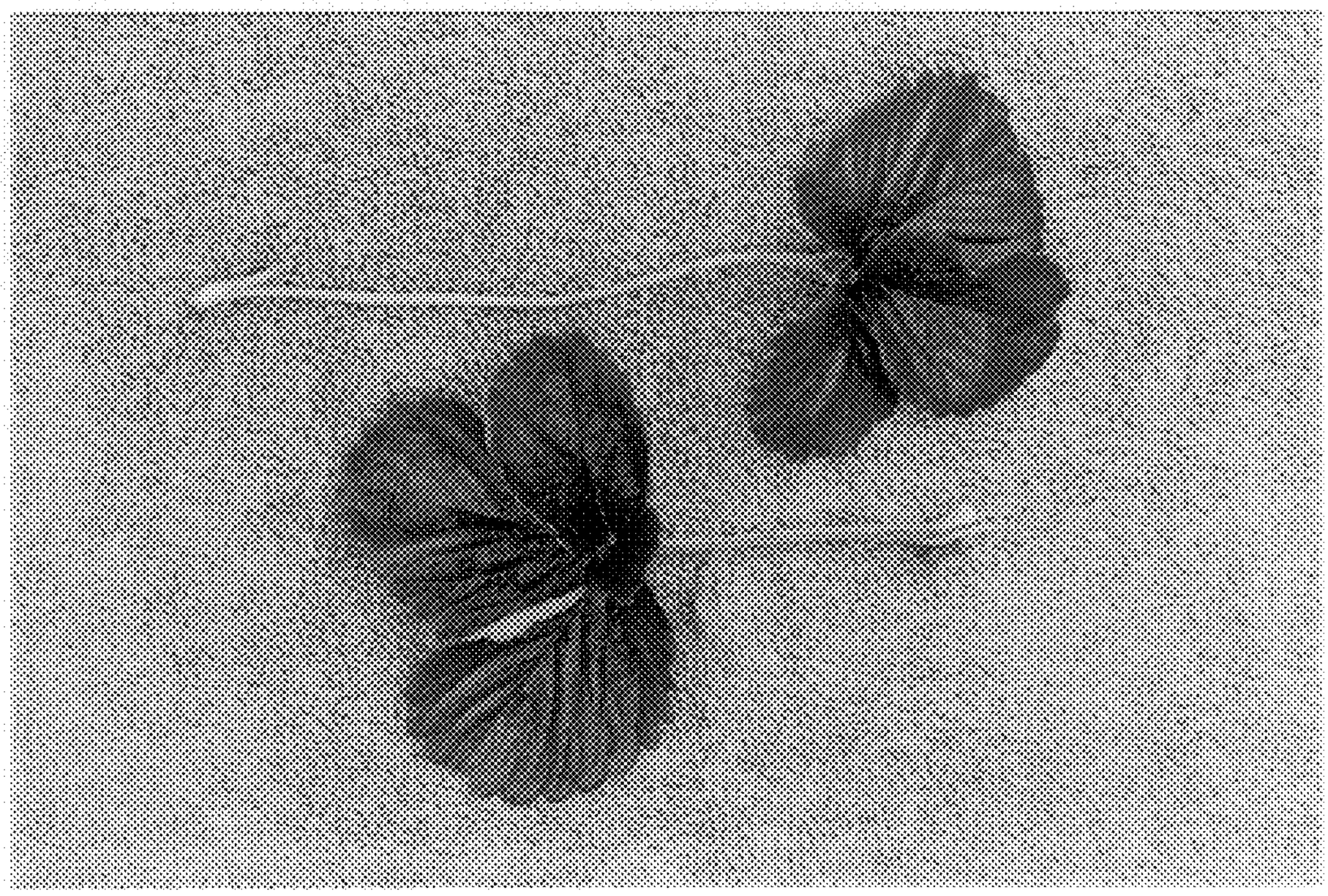

FIG. 3

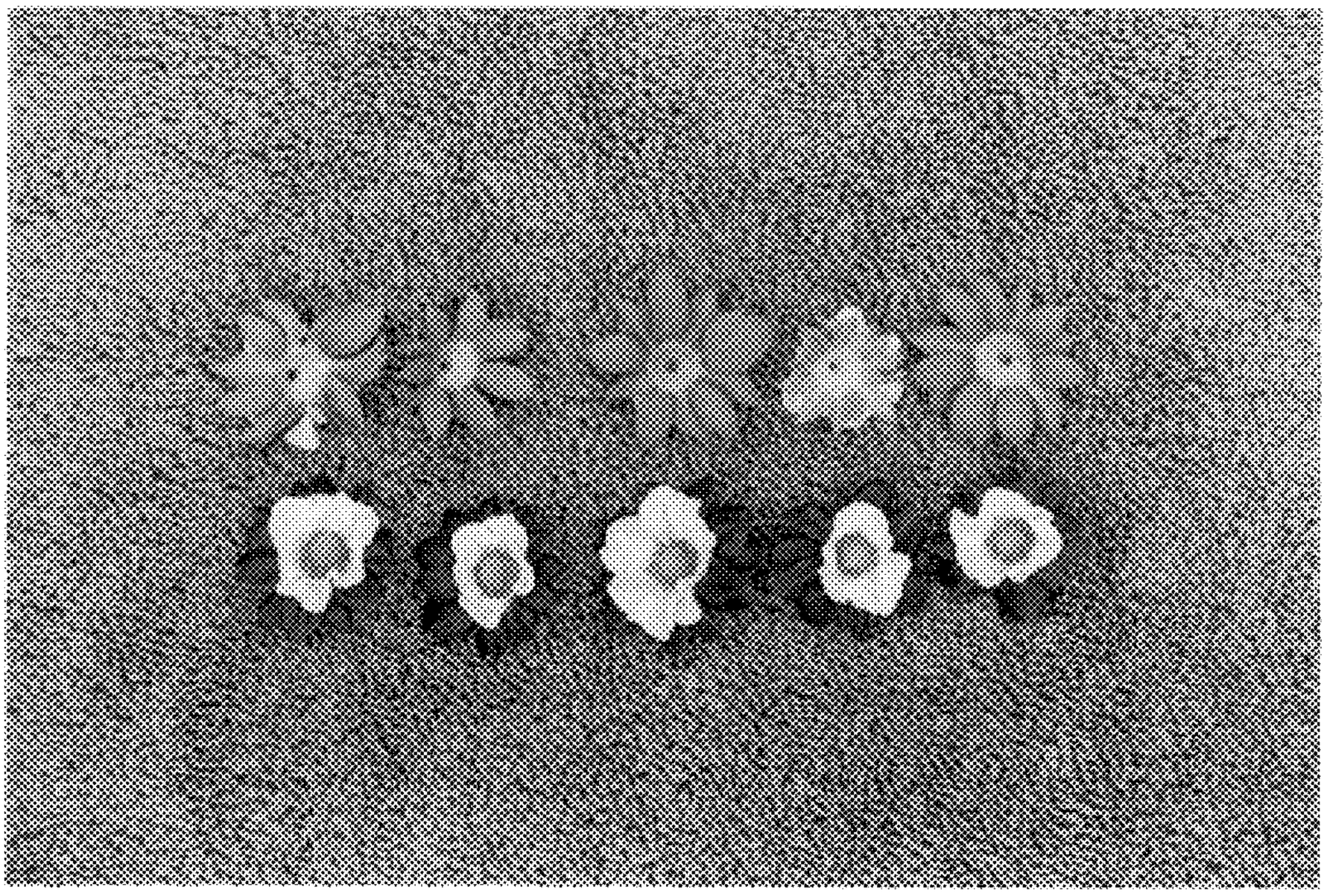

FIG. 4

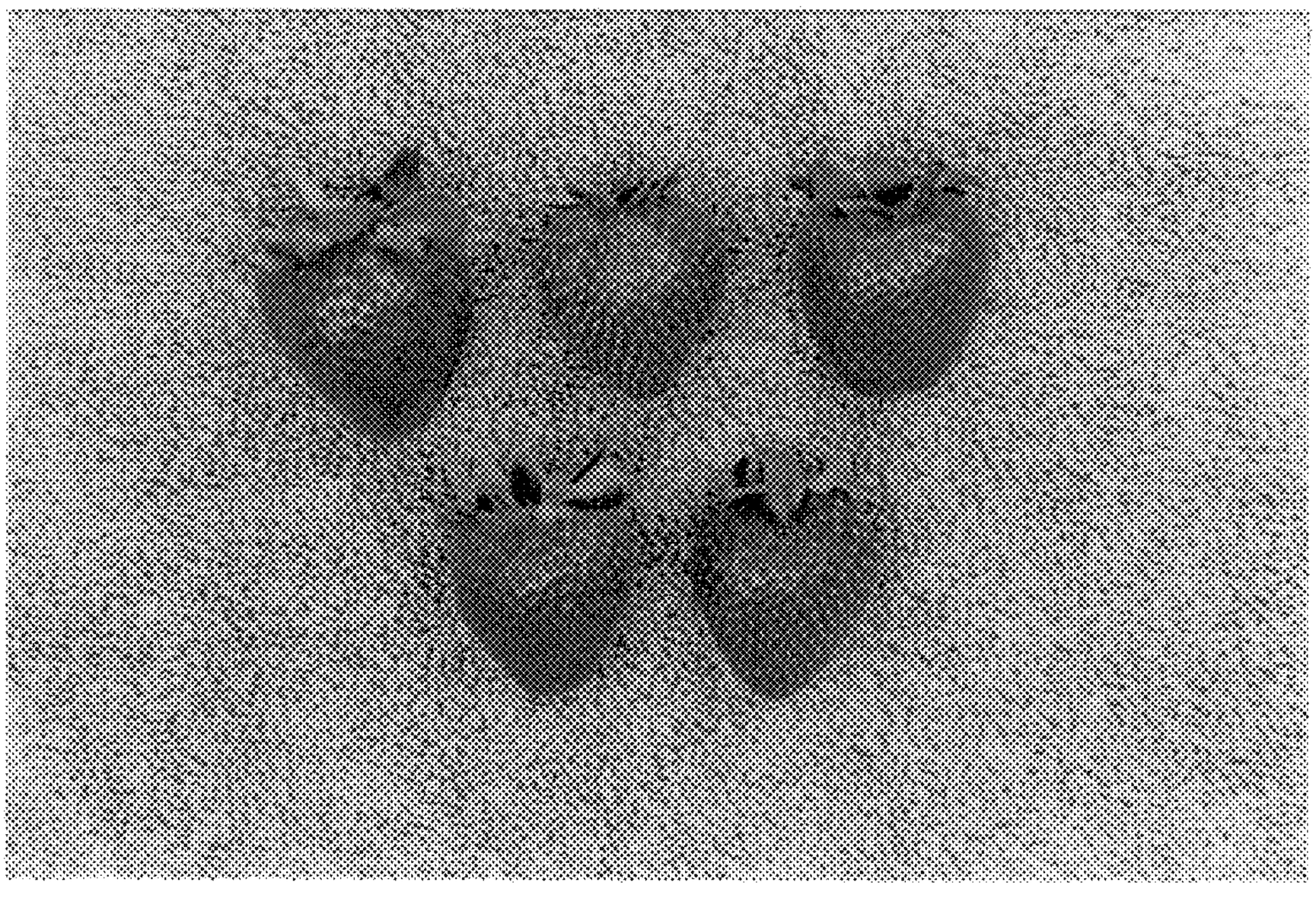

FIG. 5

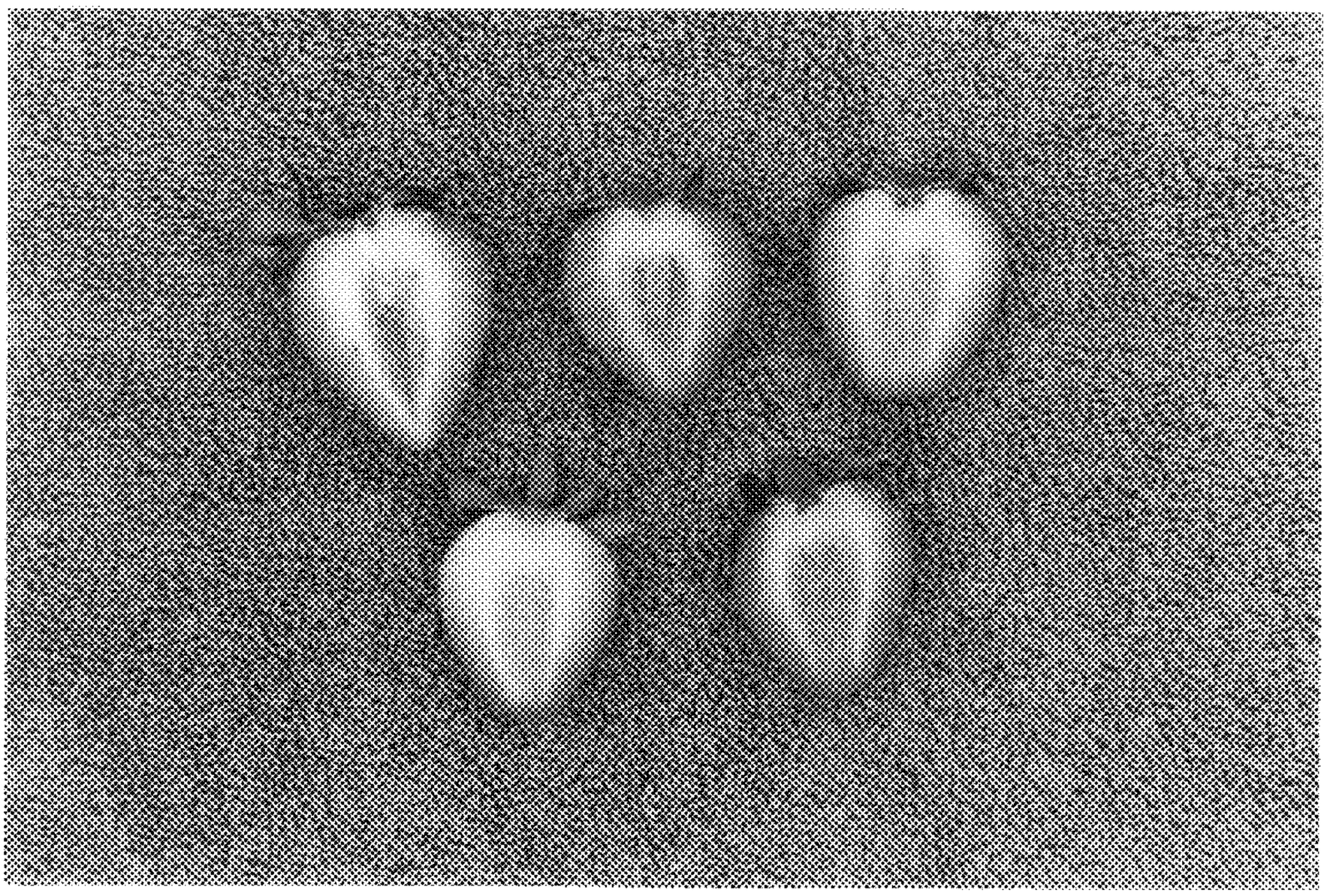

FIG. 6