US00PP14109P39

(12) **United States Plant Patent**
Gilford et al.

(10) **Patent No.: US PP14,109 P3**
(45) **Date of Patent: Aug. 26, 2003**

(54) **STRAWBERRY PLANT NAMED MADEIRA**

(75) Inventors: **Kristie L. Gilford**, Dover, FL (US); **Bruce D. Mowrey**, Watsonville, CA (US)

(73) Assignee: **Driscoll Strawberry Associates, Inc.**, Watsonville, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/968,558**

(22) Filed: **Oct. 1, 2001**

(65) **Prior Publication Data**

US 2003/0079264 P1 Apr. 24, 2003

(51) **Int. Cl.**[7] **A01H 5/00**

(52) **U.S. Cl.** **Plt./209**

(58) **Field of Search** Plt./209, 208

Primary Examiner—Bruce R. Campell
Assistant Examiner—Anne Marie Grünberg
(74) *Attorney, Agent, or Firm*—Pennie & Edmonds, LLP

(57) **ABSTRACT**

This invention relates to a new and distinct variety of strawberry named 'Madeira'. The variety is distinguished by its flat habit, dense plant density, obtuse terminal leaflet shape, reflexed pose of calyx segments, downward pose of petiole hairs, same size calyx in relation to fruit on the secondary fruit, and fruit with weak to medium acidity.

5 Drawing Sheets

Latin name: The Latin name of the plant is *Fragaria*× *ananassa.*

Variety denomination: The varietal denomination of the plant is 'Maderia'.

BACKGROUND OF THE INVENTION

The new variety originated as a result of a controlled cross between the strawberry 7C171 and 21Y13 (both unpatented varieties) in an ongoing breeding program, and was discovered as a seedling in a controlled breeding plot in Hillsborough County, Florida in December, 1997. The original seedling was asexually propagated by stolons in a nursery in Shasta County, Calif. Propagules were transplanted to a controlled breeding plot in Hillsborough County, Fla. where the variety was identified and selected for further evaluation. Madeira was subsequently asexually propagated and underwent further testing in Hillsborough County, Fla. for five 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 'Madeira'. 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 1–4.

COMPARISON TO SIMILAR VARIETIES

The varieties which we believe to be similar to Madeira from those known to us are 'Biscayne' (U.S. patent application Ser. No. 09/396,214 filed Sep. 15, 1999) and 'Marathon' (U.S. patent application Ser. No. 09/396,213 filed Sep. 15, 1999). There are several characteristics of the new variety that are different from, or not possessed by Biscayne or Marathon. The base of the terminal leaflet shape is obtuse.

The pose of the petiole hairs is downwards. The size of the calyx in relation to fruit on the secondary fruit is smaller.

In addition, there are several characteristics of the new variety that are different from, or not possessed by 21Y13 and 7C171, the antecedents of Madeira. Madiera differs from 21Y13 in that it is partially everbearing, while 21Y13 was a day-neutral variety. Madeira differs from 7C171 by having superior shipability.

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 the whole plant.

FIG. **2** shows the leaves of the plant.

FIG. **3** shows the upper side and the under side of the flowers.

FIG. **4** shows a close-up of the fruit.

FIG. **5** 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 Hillsborough, Fla. USA. Observations of Madeira, Marathon, and Biscayne were taken in side by side comparison in January, 2001. 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 or by tissue culture. Although propagation by stolons or tissue culture 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, 3 and 4. In the tables, the flowers described are secondary flowers except where indicated. The petal color of Madeira is white, 155C in The R.H.S. Color 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 Madeira compared with characteristics of Marathon and Biscayne. Table 2 provides additional information of the plant and fruit characteristics of the new variety Madeira compared with characteristics of the varieties Marathon and Biscayne. Table 3 provides information of the new variety's reaction to pests and diseases, respectively, compared to the varieties Marathon and Biscayne. Table 4 provides isozyme characteristics of the new variety as compared to the varieties Marathon and Biscayne.

TABLE 1

DETAILED COMPARISON OF MADEIRA, BISCAYNE AND MARATHON

	Madeira	Biscayne	Marathon
Plant Characteristics			
Height of Plant (cm)	17	13.7	14.3
Spread of Plant (cm)	28.2	32.7	34.1
Number of Crowns	4.8	6.9	6.0
Leaf Characteristics			
Terminal Leaflet Length (cm)	8.0	6.9	8.8
Terminal Leaflet Width (cm)	7.0	7.2	8.3
Terminal Leaflet Length/Width Ratio	1.14	0.96	1.06
# Teeth/Terminal Leaflet	19.9	26.0	25.7
Color of upper side	147A dark green	137A light green	137B light green
Color of under side	137B light gray green	139C light gray green	139C light gray green
Petiole Length (cm)	11.6	11.4	11.9
Petiole Color	145A yellow-green	141D yellow-green	144B yellow-green
Bract Frequency	90% mostly paired	100%	80% mostly paired
Stipule Length (cm)	3.6	3.6	3.3
Stipule Width (cm)	2.6	2.0	2.1
Flower Characteristics			
Petal Length (cm)	1.55	1.29	1.47
Petal Width (cm)	1.36	1.45	1.66
Petal Length/Width Ratio	1.14	0.89	0.89
Flower Diameter (cm)	3.6	3.36	4.14
Calyx Diameter (cm)	3.08	4.17	4.82
Flower Color	155C white	155C white	155C white
Fruit Characteristics			
Fruit Length (cm)	4.9	4.1	4.6
Fruit Width (cm)	4.3	3.9	4.0

TABLE 1-continued

DETAILED COMPARISON OF MADEIRA, BISCAYNE AND MARATHON

	Madeira	Biscayne	Marathon
Fruit Length/Width Ratio	1.15	1.06	1.13
Average Berry Weight (g)	19	18	26
External Color	46A dark red	46B red	42A orange red
Internal Color	43A medium red	44A medium red	42C light red
Achene Coloration	12A to 178B yellow to dark red	13B to 46A yellow to red	12A to 46A yellow to red
Yield (g/plant)	432	335	539

TABLE 2

CHARACTERISTICS OF MADEIRA, BISCAYNE AND MARATHON

	Madeira	Biscayne	Marathon
Plant			
Habit	flat globose	flat globose	flat globose
Density	medium	medium	medium
Vigor	strong	strong	strong
Leaf			
Shape in cross section	concave	concave	concave
Interveinal blistering	medium	weak	medium
Glossiness	medium	medium	medium
Number of leaflets	three only	three only	three only
Terminal leaflet margin profile	revolute	revolute	revolute
Terminal leaflet shape of base	obtuse	rounded	slightly oblique
Terminal leaflet shape of teeth	rounded	rounded	obtuse
Stipule pubescence	medium	medium	medium
Petiole pubescence	medium	medium	medium
Petiole pose of hairs	downwards	outwards	outwards
Stolon			
Number	many	many	medium to many
Anthocyanin coloration	strong to very strong	strong	medium to strong
Thickness	medium to thick	medium	medium to thick
Pubescence	medium	medium	sparse
Inflorescence			
Position relative to foliage	beneath	level	beneath
Diameter of calyx relative to corolla on secondary flowers	larger	larger	larger
Diameter of inner calyx relative to outer on secondary flowers	same size	same size	same size
Spacing of petals	overlapping	overlapping	overlapping
Fruiting Truss			
Fruiting Truss Length (cm)	13.7	17.1	18.3
Attitude at first picking	prostrate	prostrate	prostrate
Fruit			
Predominant shape	conical	conical	cordate

TABLE 2-continued

CHARACTERISTICS OF MADEIRA, BISCAYNE AND MARATHON

	Madeira	Biscayne	Marathon
Difference in shapes between primary and secondary fruits	slight	slight	slight
Band without achenes	narrow	narrow	narrow
Unevenness of surface	weak	weak	weak
Evenness of color	even	even	slightly uneven
Glossiness	strong	strong	strong
Insertion of achenes	level with surface	level with surface	below surface
Insertion of calyx	level	level	level
Pose of the calyx segments	reflexed	spreading	spreading
Size of calyx in relation to fruit on secondary fruit	smaller	larger	larger
Adherence of calyx	strong	strong	strong
Finnness of flesh	medium	firm	medium
Evenness of flesh color	slightly uneven	slightly uneven	slightly uneven
Distribution of flesh color	marginal and central	marginal and central	marginal and central
Hollow center size	medium	large	medium
Sweetness	weak to medium	strong	weak to medium
Texture when tasted	fine	fine	fine
Acidity	weak to medium	medium	medium
Time of Flowering	very early	early	very early
Harvest Interval	Late-November through Mid-April	Early-December through Mid-April	Early-December through Mid-April
Type of Bearing	partially everbearing	partially everbearing	partially everbearing

PEST AND DISEASE RESISTANCE AND SUSCEPTIBILITY

TABLE 3

	Madeira	Biscayne	Marathon
Reaction to Pests			
Tetranychus urticae	susceptible	susceptible	susceptible
Aphis spp.	susceptible	susceptible	susceptible
Lygus hesperus	susceptible	susceptible	susceptible
Reaction To Diseases			
Botrytis fruit rot	moderately susceptible	moderately susceptible	moderately susceptible
Powdery mildew	moderately susceptible	susceptible	susceptible
Verticillium wilt	moderately resistant	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, Madeira, 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 Madeira, Biscayne, and Marathon 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 4

ISOZYME ANALYSIS FOR MADEIRA, BISCAYNE AND MARATHON

Locus	Madeira	Biscayne	Marathon
PGI	A1	A1	A1
LAP	B1	B3	B3
PGM	C2	C4	C4

What is claimed is:

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

* * * * *

FIG. 1

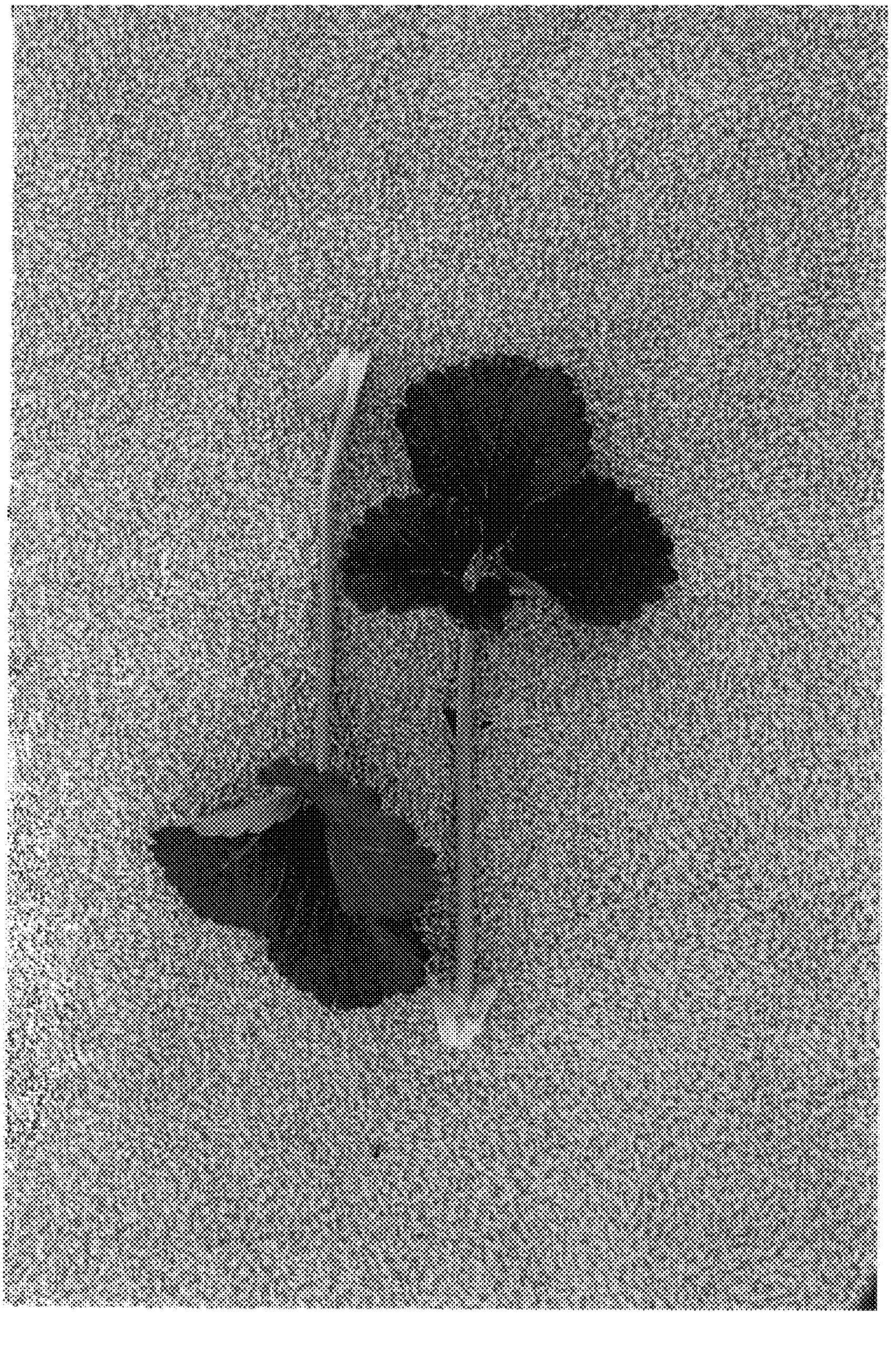

FIG. 2

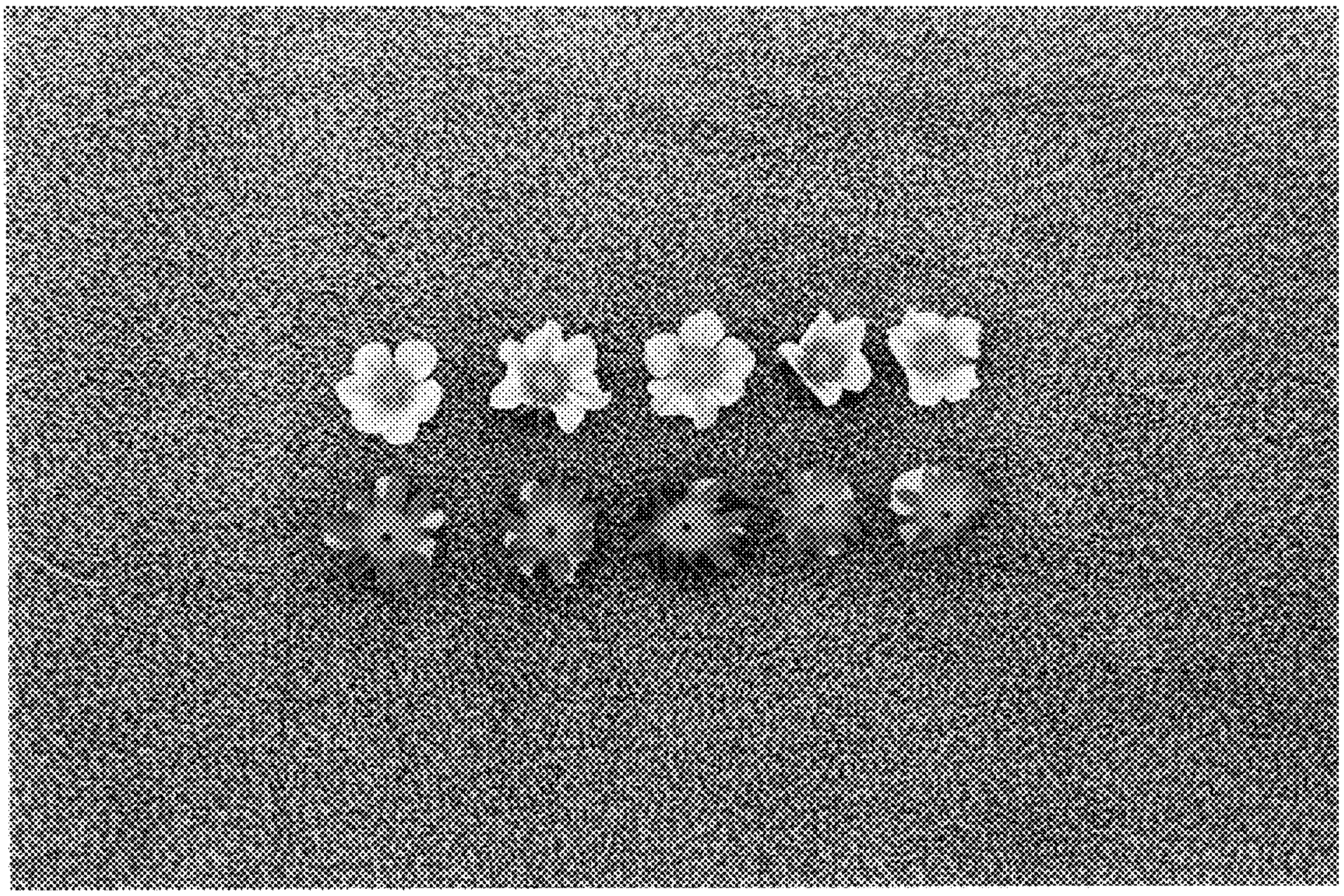

FIG. 3

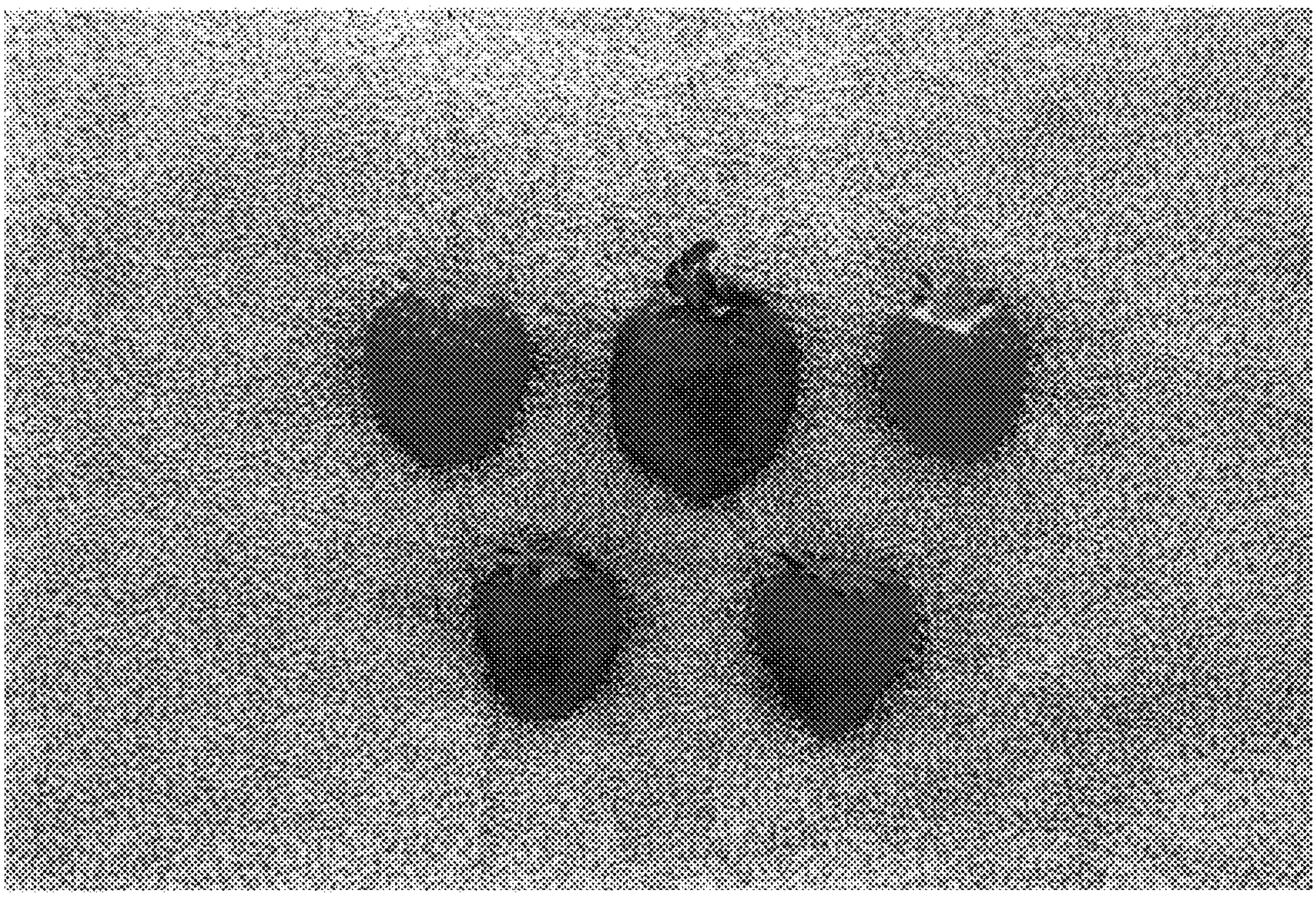

FIG. 4

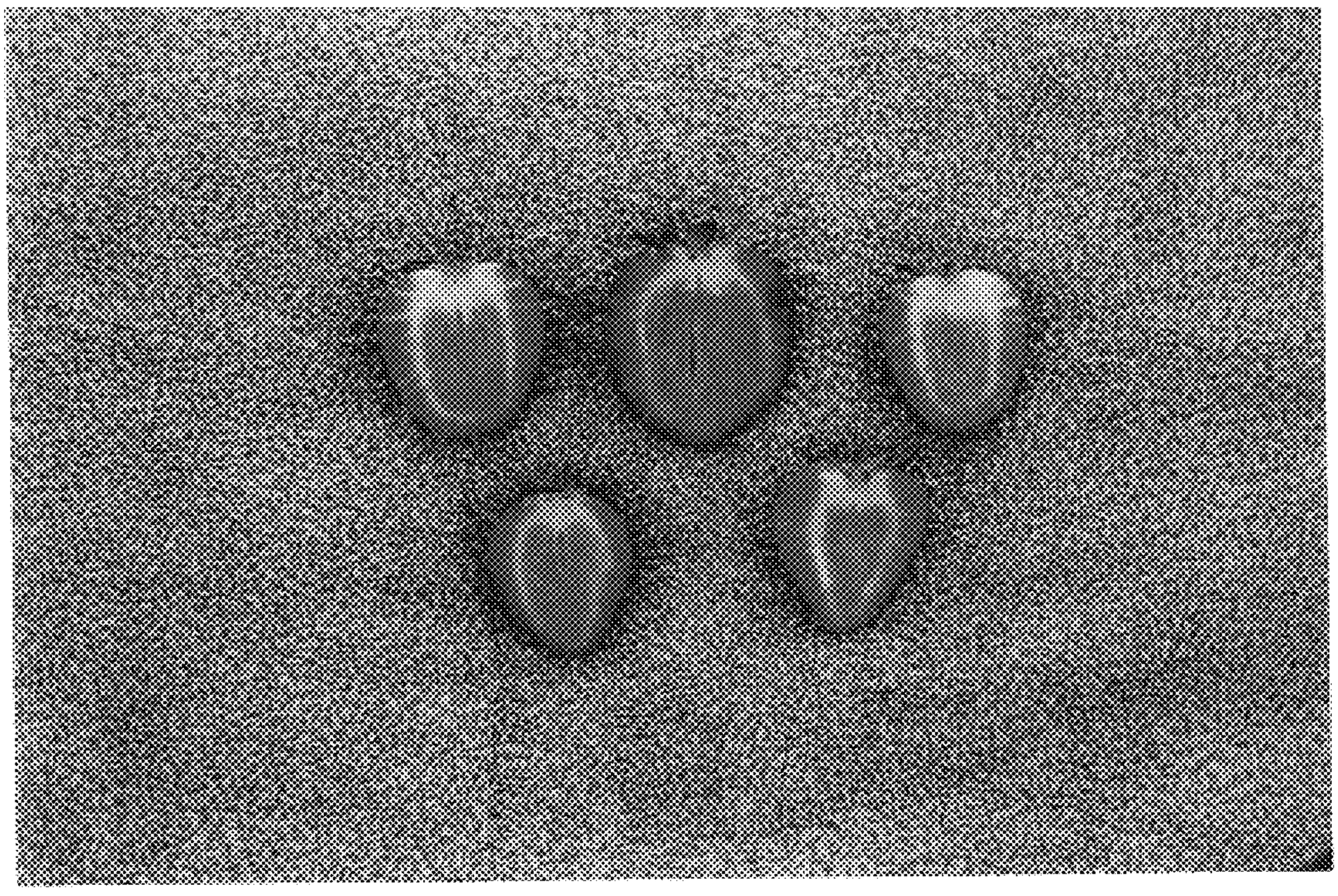

FIG. 5