US00PP11102P

United States Patent [19]

Fear et al.

[11] **Patent Number: Plant 11,102**

[45] **Date of Patent: Oct. 19, 1999**

[54] **RASPBERRY PLANT NAMED 'ANNAMARIA'**

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[73] Assignee: **Sweetbriar Development, Inc.**, Watsonville, Calif.

[21] Appl. No.: **09/019,173**

[22] Filed: **Feb. 5, 1998**

[51] **Int. Cl.**[6] **A01H 5/00**

[52] **U.S. Cl.** **Plt./204**

[58] **Field of Search** Plt./204

[56] **References Cited**

U.S. PATENT DOCUMENTS

P.P. 6,493	12/1988	Wilhelm	Plt./204
P.P. 7,437	2/1991	Ackerman	Plt./204

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[57] **ABSTRACT**

The present invention relates to a new and distinct cultivar of red raspberry plant named 'AnnaMaria', botanically identified as *Rubus idaeus* L. The new cultivar is distinguished from other red fruited cultivars by its large fruit of excellent firmness, its high yielding capacity on both primocane and floricane crops, and light red color of the fruit.

2 Drawing Sheets

BACKGROUND OF THE INVENTION

The new cultivar was developed from the hybridization of the selection 'E39-3' (unpatented variety) as the seed parent with the selection 'F164-3' (an unpatented variety) as the pollen parent. The parents were crossed in the Fall of 1992, whereafter fruit and seed were collected to produce seedlings for field planting in Watsonville, Calif. in 1992. The new cultivar was selected from these seedlings in August 1993 for its large fruit size, high productivity, and fruit flavor. The new cultivar has been grown and asexually propagated by in vitro shoot tip culture, root sucker division and root cuttings at the Cassin Ranch in Santa Cruz county, California, and has been shown to maintain the desired and distinguishing characteristics after propagation over several generations.

SUMMARY OF THE INVENTION

This invention provides a new and distinct cultivar of red raspberry plant named 'AnnaMaria'. The new cultivar is botanically identified as *Rubus idaeus* L. The 'AnnaMaria' cultivar produces a primocane crop which begins in mid July to early August and continues through November. The floricane crop begins in late April and continues through late June. Both the primocane and floricane yields are very high relative to other comparable cultivars. The fruit of 'AnnaMaria' is large and firm and remains consistently so throughout its harvest period. The fruit of 'AnnaMaria' is light red.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying photographs show typical specimens of the primocane fruit, leaves and shoot of the new cultivar, in color as nearly true as it is reasonably possible to make in color illustrations of these characteristics.

FIG. **1** is a photograph of a primocane mature leaf and fruit.

FIG. **2** is a photograph of a primocane shoot and leaf.

DETAILED BOTANICAL DESCRIPTION

The following detailed description of the new raspberry cultivar, 'AnnMaria', is based upon observations taken of plants and fruit grown in Watsonville, Calif. between 1994 and 1997, and is believed to apply to plants of the 'AnnaMaria' cultivar grown in similar conditions of soil and climate elsewhere.

Throughout the specification, color names beginning with a small letter signify that the name of the color, as used in common speech, is aptly descriptive. Color names beginning with a capital letter and followers by an alphanumeric code designating the color according to The R.H.S. Colour Chart published by The Royal Horticultural Society of London, England. Color designations, descriptions, and other phenotypical descriptions may deviate from the stated values and descriptions depending upon variation in environmental, seasonal, climatic and cultural conditions.

Tables 1 and 2 present information on the plant and fruit characteristics of the new cultivar 'AnnaMaria' compared with characteristics of the unpatented raspberry cultivars 'Heritage', 'Summit' and 'Amity'. The closest cultivars to 'AnnaMaria' are 'Amity' for its cropping cycle and 'Summit' for its primocare production. Observations of the cultivars were taken under similar conditions.

The new variety is particularly characterized and distinguished from other cultivars listed in tables 1 and 2 by its high yielding capacity on both primocane and floricane crops, and large fruit size, firmness of the fruit and fruit flavor.

The fruit color of 'AnnaMaria' is light red at harvest with little color change after harvest. Fruit of 'AnnaMaria' is large, separates very easily from the receptacle and is of very good firmness at harvest.

'AnnaMaria' is distinguished from its pollen parent, 'F164-3', as having a higher yield and greater fruit firmness. 'AnnaMaria' is distinguished from its seed parent, 'E39-3', by having a higher yield and fruit that is less firm.

ISOZYME CHARACTERISTICS

In addition to the morphological description above, the new variety 'AnnaMaria' has been analyzed to obtain an indication of its genetic makeup to provide further means to identify the new variety and distinguishing it from some other somewhat similar and/or related raspberry varieties. Specifically, leaf samples of 'AnnaMaria' and the unpatented varieties 'Heritage' and 'Summit' were analyzed by electrophoresis for the isosozyme patterns of the enzymes

phosphoglucoisomerase (PGI), malate dehydrogenase (MDH) and phosphoglucomutase (PGM) using the procedure described by J.C. Cousineau and D.J. Donnelly, "Use of isoenzyme analysis to characterize raspberry cultivars and detect cultivar mislabeling", *Hort Science* 27:1023–1025 (1992). The results of the electrophoresis analysis are presented in Table 3 with the letters representing the cultivar banding pattern for each enzyme as designated in the above-identified article.

DISEASE AND STRESS RESISTANCE

The cultivar is moderately susceptible to late leaf rust. Resistance is unknown to powdery mildew and root rots. Cold tolerance of the new cultivar has not been established. Post harvest fruit rot resistance is average in comparisons over many selections and varieties.

TABLE 1

PLANT CHARACTERISTICS OF 'ANNAMARIA'

	Anna-Maria	Heritage	Summit	Amity
General				
Plant size	large	large	small-medium	medium
Growth habit	erect	erect	semi-erect	erect
Productivity	very high	medium	high	low-medium
Self-fruitfulness	self-fruitful	self-fruitful	self-fruitful	self-fruitful
Primocane fruiting				
percent of cane flowering as primocane	~40–60	~5–20	~40–50	~20–35
percent of total yield	~50–70	~40–60	~50–70	~40–50
Number of young shoots	few	medium	few	many
Primocanes				
number fruiting laterals/cane	11–23 (mean 17)	2–14 (mean 8)	9–15 (mean 12)	6–14 (mean 10)
number of canes/crown	2–6 (mean 4)	3–5 (mean 4)	2–7 (mean 3)	1–6 (mean 3)
young shoot pigmentation	medium intensity red	medium intensity red	medium intensity red	medium intensity red
length (cm)	175–225 (mean 198)	182–230 (mean 208)	137–212 (mean 164)	135–208 (mean 168)
diameter (end of 1st year)				
cane base (cm)	0.8–1.7 (mean 1.2)	0.9–1.4 (mean 1.2)	0.8–1.3 (mean 1.1)	0.8–1.5 (mean 1.1)
central ⅓ of cane (cm)	0.7–1.2 (mean 0.9)	0.8–1.1 (mean 1.0)	0.7–1.0 (mean 0.8)	0.6–1.0 (mean 0.8)
time of shoot emergence	late	very late	late	medium
prickles				
pigmentation	green-brownish green	green-brownish green	brownish-purple-purple	purple

TABLE 1-continued

PLANT CHARACTERISTICS OF 'ANNAMARIA'

	Anna-Maria	Heritage	Summit	Amity
density on young shoots	medium	dense	sparse	sparse
attitude of tip	horizontal	downward	downward	horizontal
size	small	medium	medium	small
texture	heavy-rigid	rigid	heavy	heavy
presence and distribution on petioles	regularly distributed	regularly distributed	regularly distributed	regularly distributed
pubescence on canes	strong	absent or very weak	medium	medium
internodal distance (cm)				
(at central ⅓ of cane)	4.2–6.5 (mean 5.1)	3.0–6.0 (mean 4.7)	3.2–7.5 (mean 4.8)	3.0–6.5 (mean 5.0)
lenticels	not visible	not visible	not visible	not visible
Floricanes				
number nodes/lateral branch	9–11	10–14	10–15	12–19
number of flowers/node	1–2	1–4	2–6	1–2
Leaves				
Arrangement	compound	compound	compound	compound
Relief between veins	medium	very weak	medium	medium
Cross section	flat-convex	concave	flat	concave-flat
Leaflet number	3–5	3–5	usually 5	usually 3
Terminal leaflet				
length (cm)	14.0	14.6	12.4	13.7
width (cm)	14.0	7.8	7.2	12.1
shape	lobed	ovate	ovate	lobed
tip	acuminate	acuminate	acuminate	acuminate
base	cordate	acute	rounded	cordate
margin	doubly serrate	doubly serrate	doubly serrate	doubly serrate
Lateral leaflets (basal pair)				
overlap	overlapping	free	overlapping	overlapping
orientation	opposite	opposite	opposite	opposite
shape	ovate	oblique	ovate-lobed	ovate-lobed
tip	acuminate	acuminate	acuminate	acuminate
base	weakly cordate-round	oblique	oblique-rounded	oblique
margin	doubly serrate	doubly serrate	doubly serrate	doubly serrate
length (cm)	11.0	14.7	11.6	11.7
width (cm)	7.5	8.6	7.7	8.2
Rachis length between terminal leaflet and adjacent lateral leaflets (cm)	3.0–4.9 (mean 4.3)	0.8–2.2 (mean 1.5)	0.5–1.8 (mean 1.2)	2.4–3.9 (mean 3.0)

TABLE 1-continued

PLANT CHARACTERISTICS OF 'ANNAMARIA'

	Anna-Maria	Heri-tage	Summit	Amity
Glossiness	medium	medium	medium	dull
Color				
face	medium 147A	medium 137A, 139A	medium 137A	medium 147A
underside	148C	148C, 191B	191B	191A
Petiole				
length (cm)	6.3–10.7 (mean 8.3)	6.6–8.5 (mean 7.6)	5.8–8.9 (mean 7.4)	4.0–8.2 (mean 6.0)
pigmentation of upper surface	weak	lightly	lightly	lightly
pigmentation of underside	weak	unpig-mented	lightly	unpig-mented
Petiolule length	short	very short	short	very short
Stipule orientation	erect-clasping	erect	erect-clasping	erect-clasping
Flowers				
Flower color	white	white	white	white
Flowering period				
primocane	mid June-mid October	mid June-early October	early June-mid Septem-ber	early June-early October
floricane	late March-mid June	early April-early June	early April-early June	early to mid March-early June
Flower size	medium	small	medium	large
Petal				
length (cm)	0.8–0.9	0.7–0.8	0.7–0.9	0.7–1.0
width (cm)	0.4–0.5	0.3	0.3–0.4	0.3–0.5
Pedicel				
coloration	present, medium inten-sity red	present, strong inten-sity red	present, strong inten-sity red	present, strong inten-sity red
length	medium	medium	medium	long
Productivity				
Primocane	~13.3 t/acre	~5.1 t/acre	~7.3 t/acre	~6.4 t/acre
Floricane	~8.1 t/acre	~4.1 t/acre	~2.9 t/acre	~5.1 t/acre

TABLE 2

FRUIT CHARACTERISTICS OF 'ANNAMARIA'

	AnnaMaria	Heritage	Summit	Amity
Fruit				
Harvest season				
primocane	mid July to early August-November	late July-mid November	mid July-late October	mid July-mid November
floricane	late April-late June	mid May-mid July	mid May-mid July	late April -mid July
Color	Light Red	Medium Red	Medium Red	Medium Red
immature	39A, 43C	53A	46A	46A
maturing	46D, 47A	45A, 46D	45A	47A
mature	45D	44C	42B	42B
Glossiness	weak	medium	medium	medium
Dimensions				
weight (g/fruit)				
primocane	4.0–4.5 (mean 4.2)	2.7–2.9 (mean 2.8)	2.5–3.3 (mean 2.8)	2.7–3.7 (mean 3.2)
floricane	3.6–4.1 (mean 3.9)	2.3–2.7 (mean 2.6)	2.5–2.8 (mean 2.6)	3.0–3.4 (mean 3.2)
length (primocane) (mm)	21.4–33.3 (mean 28.7)	—	17.5–25.4 (mean 20.2)	17.5–22.2 (mean 20.1)
width (primo-cane) (mm)	20.6–27.0 (mean 23.7)	—	18.3–23.0 (mean 20.4)	15.9–23.0 (mean 20.2)
Soluble sol-ids (%)	9.2	—	9.4	9.7
Titratable acidity				
(% as citric acid)	11.2	—	14.5	11.2
Seeds				
weight (mg)	1.8	—	1.8	1.5
Number druplets/fruit	103–165 (mean 142)	45–102 (mean 72)	73–119 (mean 98)	62–108 (mean 88)
Firmness	firm	firm	firm	firm
Yield	very high	medium	high	medium

TABLE 3

ISOZYME BANDING PATTERNS OF 'ANNAMARIA' COMPARED WITH 'HERITAGE' AND 'SUMMIT'

	Isozyme and Pattern		
Cultivar	PGI	MDH	PGM
AnnaMaria	A	H	C
Heritage	A	D	C
Summit	A	C	A

We claim:

1. A new and distinctive cultivar of raspberry plant, as illustrated and described herein.

* * * * *

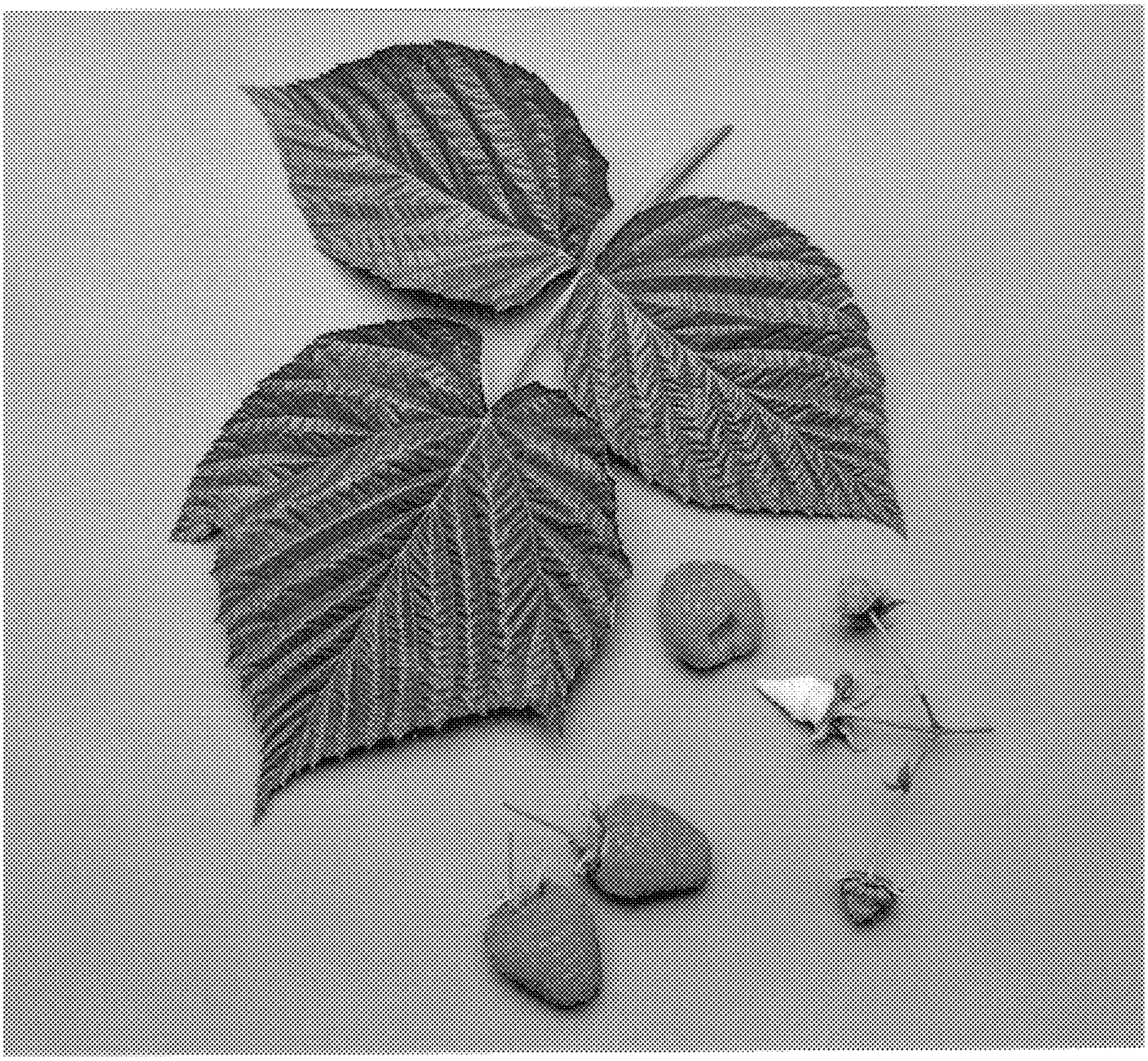

FIG. 1

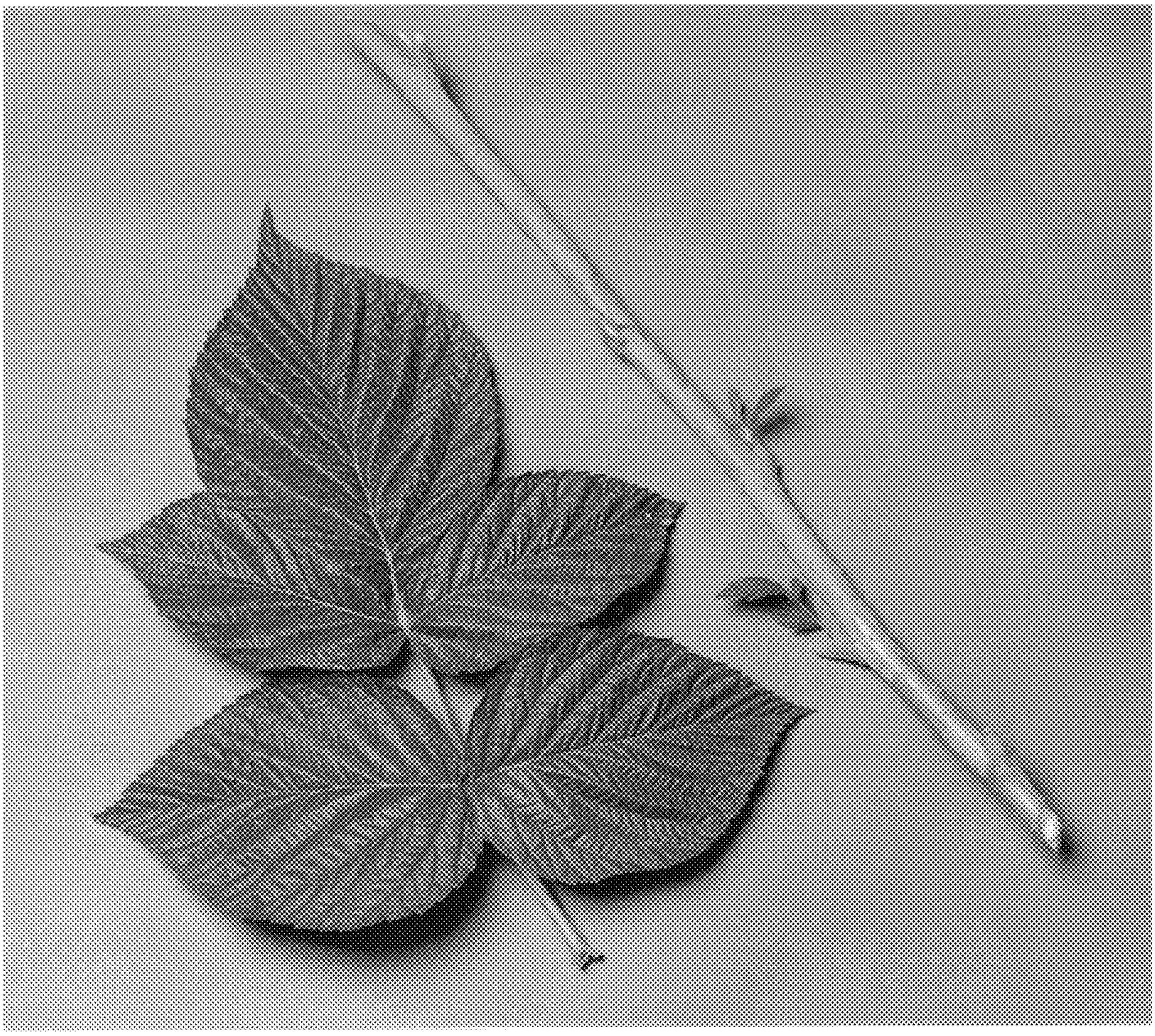

FIG. 2

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : PP11,102

DATED : October 19, 1999

INVENTOR(S) : Carlos D. Fear and Mella-Dee M. Mayberry

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 1, line 4: please delete "an"

Column 1, line 44: please delete "AnnMaria" and replace with --AnnaMaria--

Column 2, line 7: please delete "followers" and replace with --followed--

Column 2, line 8: please delete "designating" and replace with --designate--

Column 2, line 19: please delete "primocare" and replace with --primocane--

Column 2, line 41: please delete "distinguishing" and replace with --distinguish--

Column 3, TABLE 1, under the heading "Primocanes", 1st entry: please insert --of-- between "number" and "fruiting"

Column 4, TABLE 1, under the heading "prickles", 2nd entry down: please delete "on" and replace with --of--

Column 4, TABLE 1, under the heading "prickles", 4th entry down: please delete "on" and replace with --of--

Column 4, TABLE 1, under the heading "prickles", 5th entry down: please delete "on" and replace with --of--

Column 4, TABLE 1, under the heading "Floricanes", 1st entry: please insert --of-- between "number" and "nodes"

Signed and Sealed this

Tenth Day of April, 2001

Attest:

Nicholas P. Godici

NICHOLAS P. GODICI

Attesting Officer

Acting Director of the United States Patent and Trademark Office