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(12) **United States Plant Patent**
Lowe

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(54) **KIWI PLANT NAMED 'HORT51-1785'**

(50) Latin Name: ***Actinidia chinensis***
Varietal Denomination: **Hort51-1785**

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(51) **Int. Cl.**
A01H 5/00 (2006.01)

(52) **U.S. Cl.** **Plt./156**

(58) **Field of Classification Search** Plt./156
See application file for complete search history.

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(57) **ABSTRACT**

A new and distinct kiwi plant of the species *Actinidia chinensis* Planch. is described. The variety results from a controlled pollination using a female *A. chinensis* selection 'Jing Feng' (also known as 79-3, and by the accession code CK34_01) of unknown parentage, and a male *A. chinensis* selection CK40_02 of unknown parentage. Both parents ('Jing Feng' and CK40_02) are unpatented. The new variety is distinguished by its large globose-shaped fruit with a flat stylar end, golden coloured flesh and tangy sweet taste.

7 Drawing Sheets

Genus and species of plant claimed: *Actinidia chinensis*. Variety denomination: Hort51-1785.

BACKGROUND OF THE INVENTION

Kiwi plants in cultivation are mainly varieties of *A. deliciosa,* particularly 'Hayward' although some *A. chinensis* and *A. arguta* varieties are grown. *A. deliciosa* and *A. chinensis* are closely related and varieties of both types have large fruit (~100 g) with hair on the skin. The main varieties in New Zealand are 'Hayward' (*A. deliciosa*) and 'Hort16A' (*A. chinensis*). Fruit are usually cut and eaten with a spoon.

All *Actinidia* species are dioecious, so female varieties have to be interplanted with male pollinizers to ensure fruit production.

A. chinensis vines are deciduous and tend to grow vigorously in spring and summer when rapidly-growing shoots can intertwine and tangle if not managed. Vines do best in a mild warm-temperate climate without late spring or early autumn frosts. They produce consistently heavy crops when grown in well-drained fertile soils and given regular irrigation in dry spells.

A. chinensis flowers in spring (mid October–early December) in New Zealand. Harvest of *A. chinensis* fruit may occur between April and late-May in New Zealand depending on the selection and location of plantings.

SUMMARY OF THE INVENTION

The present invention is a new and distinctive kiwifruit variety having a generally globose shaped fruit with short, soft, silky hair and a golden yellow flesh when ripe. This new variety is designated 'Hort51-1785' and is derived from a controlled pollination using a female tetraploid *A. chinensis* selection 'Jing Feng' (also known as 79-3, and by the accession code CK34_01) of unknown parentage, and a male tetraploid *A. chinensis* selection CK40_02 of unknown parentage.

The female parent was introduced to New Zealand as vegetative plant material from Jiangxi, China. The male parent was selected in New Zealand from seedling plants raised from an introduction of seed from China in 1989. Both parents are unpatented.

This new variety was created during the course of a planned plant-breeding program, which was initiated during 1987 in Auckland, New Zealand. The cross was made on Nov. 24, 1994 in Te Puke, New Zealand. Seeds were sown in the winter of 1995 and 64 seedlings from this cross were planted out in the field at Te Puke in August 1996. The selection 'Hort51-1785' first flowered in November 1997 and fruit was first assessed in May 1998. Selection 'Hort51-1785' was grafted in 1998 onto four existing kiwifruit rootstocks in a clonal selection trial plot using graftwood from the original seedling plant.

The new variety can be asexually reproduced as cuttings or by grafting or budding on to seedling or cutting-grown rootstocks of *A. deliciosa* or *A. chinensis*. Trial plantings of grafted plants established at the Te Puke, Nelson and Kerikeri Research Centres in 1998 have shown that the unique combination of characters come true to form and are established and transmitted through succeeding asexual propagations.

'Hort51-1785' flowers at least two weeks later than Hort16A and requires specific tetraploid males to ensure adequate pollination.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** shows typical fruit of 'Hort51-1785' on the vine.

FIG. **2** shows typical fruit of 'Hort51-1785' in side profile.

FIG. **3** shows a stem end view of fruit of 'Hort51-1785'.

FIG. **4** shows a stylar end view of fruit of 'Hort51-1785'.

FIG. **5** shows fruit of 'Hort51-1785' in cross section.

FIG. **6** shows flowers of 'Hort51-1785'.

FIG. **7** shows the leaf of 'Hort51-1785'.

Photographs of fruit were taken at the normal harvest date. Fruit skin color may vary depending upon extent of exposure to direct sunlight.

DETAILED BOTANICAL DESCRIPTION

The new tetraploid kiwifruit variety 'Hort51-1785' is pistillate (female), and produces imperfect flowers, i.e. the flowers produce only sterile pollen and require a pollinizer to set fruit.

TABLE OF CHARACTERISTICS

Horticultural terminology is used in accordance with revised UPOV guidelines for kiwi. All dimensions are in millimeters, weights in grams (unless otherwise stated). Color references are in accord with the R.H.S. Colour Chart, the Royal Horticultural Society, London, 1966.

	'Hort51-1785'
PLANT	
(Measurements from samples of 10, unless stated)	
Plant: sex expression	female (flowers imperfect)
Plant: ploidy	tetraploid (2n = 2x = 116)
Plant: vigour	medium
Young shoot: hairs	present
Young shoot: density of hairs	medium
Young shoot: type of hairs	tomentose
Young shoot: anthocyanin coloration of growing tip	absent or very weak
Young shoot: anthocyanin coloration of leaf axil	absent or very weak
STEM	
Stem: coloration of leaf axil	absent or very weak
Stem: diameter	medium (mean 9.5 mm, range 7.6–10.5 mm at mid point[1])
Stem: length	1.2–1.8 m
Stem: dormant bud diameter	large (mean 6.3 mm, range 5.00–7.16 mm)
Stem: color on upper side of shoot	greyish-brown (near 177A to 199A)
Stem: character of bark	smooth
Stem: hairs	absent
Stem: conspicuousness of lenticels	conspicuous
Stem: number of lenticels/cm^2 bark area	mean 3.32/cm^2 (range 1.8–5.02/cm^2)
Stem: color of lenticels	brown, near 166C
Stem: size of lenticels - length	mean 3.27 mm, range 1.54–4.53 mm
Stem: size of lenticels - maximum width	mean 1.34 mm, range 0.82–2.03 mm
Stem: size of bud support	medium
Stem: visibility of bud (dormant canes)	visible
Stem: number of hairs visible on bud (dormant canes)	many
LEAF (Mature)	
Leaf: general shape of blade	very broadly ovate
Leaf: length	124 mm
Leaf: width	151 mm
Leaf: petiole length	103 mm
Leaf: shape of tip of blade	acute
Leaf: shape of base of blade	cordate
Leaf: arrangement of leaf bases	overlapping
Leaf: puckering/blistering on upper side of blade	medium
Leaf: margin	ciliate
Leaf: green color of upper side of blade	medium green, near 147A
Leaf: glossiness of upper surface of blade	medium
Leaf: color of lower side of blade	light green, near 148B
Leaf: glaucosity (lower side of blade)	absent
Leaf: hairs on petiole	present
Leaf: density of hairs on petiole	medium
Leaf: anthocyanin coloration on upper side of petiole	medium
FLOWER	
Inflorescence: predominant number of flowers	three
Flower: pedicel hairs:	present
Flower: pedicel length of hairs	very short
Flower: pedicel length	mean 27.09 mm
Flower: number of sepals	six or seven
Flower: color of sepals	green, near 148D
Flower: length of sepals	mean 11.45 mm, range 8.86–12.37 mm
Flower: diameter of sepals	mean 9.09 mm, range 8.32–9.67
Flower: diameter (terminal or king flower when fully open)	51 mm (mean of 7 flowers)
Flower: mean number of petals per flower	6
Flower: length of petals	mean 28.77 mm, range 27.0–31.6 mm
Flower: width of petals	mean 23.89 mm, range 22.4–26.0
Flower: ratio petal length/width	1.21
Flower: arrangement of petals	overlapping
Flower: petal shoulder	present
Flower: primary color of petals (when fully open)	white, near 155B
Flower: type of coloration of petals	bi-coloured, green at base
Flower: secondary color of base of petals	green, near 144D
Flower: filament color	white, near 157A
Flower: anther color	yellow, near 16C
Flower: attitude of styles	semi-erect
Flower: curvature of styles	absent
Flower: color of styles	white, near 155D
Flower: amount of hair on ovary	dense
Flower: colour of ovary	white near 157B
FRUIT	
Fruit: weight	mean 99 g
Fruit: length	66 mm
Fruit: width (max)	61 mm
Fruit: width (min)	58 mm
Fruit: core diameter (max)	12.4 mm
Fruit: core diameter (min)	7.8 mm
Fruit: locule number	30
Fruit: peduncle length	35 mm
Fruit: peduncle width	3.9 mm
Fruit: general shape	globose
Fruit: cross section at median	circular
Fruit: general shape of stylar end	flat
Fruit: shape of shoulder on stalk end	squared
Fruit: presence of calyx ring	present
Fruit: expression of calyx ring	strongly expressed
Fruit: skin color at harvest (fruit still hard)	medium brown, near 199B
Fruit: skin colour change during ripening	absent
Fruit: skin color at maturity for consumption	medium brown, near 199B
Fruit: lenticel color at maturity	near 164C
Fruit: hairs	present

-continued

	'Hort51-1785'
Fruit: density of hairs	sparse
Fruit: type of hairs	pubescent
Fruit: hair length	short
Fruit: concentration of hairs	uniform
Fruit: adherence of hairs to skin (when rubbed)	weak
Fruit: core diameter (at largest diameter)	small (approximately 12.4 mm)
Fruit: core shape (in cross section)	transverse elliptic
Fruit: core woody spike	weak
Fruit: prominence of core woody spike	small
Fruit: outer pericarp color at maturity for consumption	yellow, near 162D
Fruit: inner pericarp col. (locules) at mat. for consumption	yellow, near 162B
Fruit: core color at maturity	pale yellow, near 14D
Fruit: sweetness (Brix level) at maturity for consumption	13.8% (range 11.4–16.2%)
Fruit: vitamin C content (45 fruit sample)	133 mg/100 g fresh weight (range 123–140 mg/100 g fresh weight) mean of 5 plants, 3 values, per plant.
Fruit: seed colour at maturity (in flesh)	blackish-brown, near 200A
Fruit: seed colour when dry	dark brown, near 200C
Fruit: average seed number per fruit	mean 514, range 465–596
Fruit: seed length	mean 2.45 mm
Fruit: seed maximum diameter	mean 1.71 mm
EVENTS	
Time of vegetative budbreak	medium (mid September)
Time of beginning of flowering	8 Nov. (2004)
Time of maturity for harvest (at nominated Brix level)	last week of May (Brix 10%) under New Zealand growing conditions

[1]Measured in the middle of the cane i.e. halfway down the full length and midway between two buds.

Observations were made on plants growing at Te Puke, New Zealand. These plants had been grafted on to seedling kiwifruit rootstocks.

Rootstocks: 'Hort51-1785' vines can be grown on the same rootstocks as 'Hort16A'. Rootstocks currently being used in New Zealand include *A. deliciosa* and *A. chinensis* seedlings, 'Hayward' (not patented) and 'Kaimai' (not patented) rooted cuttings.

Cropping: Young vines of 'Hort51-1785' crop heavily when young, and must be thinned directly after fruit set to reduce crop loads and to ensure fruit size is not compromised by over cropping. Vines of 'Hort51-1785' begin to bear fruit in their second year from graft and can be expected to reach full capacity at about 5 years.

Storage life: The storage life of 'Hort51-1785' fruit is 20 weeks at 0° C., if stored in unventilated containers.

Pest and disease resistance/susceptibility: Unsprayed fruit of 'Hort51-1785' is slightly more susceptible to Greedy Scale infestation, but less damaged by Leaf Roller caterpillar compared to 'Hayward'. Flowers of 'Hort51-1785' are more susceptible to fungal *Sclerotinia* infection during wet weather, possibly due to the higher flower density (three flowers per inflorescence) compared to 'Hayward' (single flowers).

OTHER DATA

Fruit size: Date gathered from harvesting all fruit, from 6 vines, in May 2004.

Mean fruit weight:	99.2 g	maximum:	138 g	minimum:	73 g
Mean fruit number:	332	maximum:	1084	minimum:	102
Mean yield:	38.8 kg	maximum:	14.1 kg	minimum:	81.4 kg

FRUIT FLESH AND SKIN COLOR MEASUREMENT

Color chart: R.H.S. Colour Chart, The Royal Horticultural Society, London, 1966.

Fruit: core color at harvest	150C to 150D
Fruit: seed color (in flesh)	200A
Fruit: seed colour (dry seed)	200C
Fruit: skin color at maturity	199B
Leaf: color of upper side (in mature leaf after petal fall)	147A
Leaf: color of lower side (in mature leaf after petal fall)	148B
Plant stem: color on exposed side	177A to 199A

COMPARISON TO CLOSEST CULTIVAR

The distinctive characteristics of this new kiwifruit variety, described in detail below, were observed in 2005 at Te Puke, New Zealand. The age of the plants was 6 years from grafting onto seedling rootstocks.

Comparison with similar varieties 'Hort16A' (U.S. Plant Pat. No. 11,066) and 'KI 89' (U.S. Plant Pat. No. 8,497) shows that 'Hort51-1785' may be distinguished as follows in Table 1.

TABLE 1

Comparison with similar varieties
Color references are in accord with the RHS Colour Chart, the Royal Horticultural Society, London, 1966. Observations made under New Zealand growing conditions.

Characteristic	'Hort51-1785'	'Hort16A'	'KI 89'
Time of full bloom	late November	mid October	early November
Fruit: Color of skin	mid-brown, near 199B	yellow-brown, near 199A/161A	reddish-brown, near 164B/164C
Fruit: mean weight	99 g	91 g	103.4
Fruit: Core diameter (maximum)	very small (approximately 12.4 mm)	small (approximately 13.08 mm)	medium (approximately 15.3 mm)
Fruit: General shape	globose	ovoid	cylindrical
Fruit: shape at stylar end	rounded	protruding	slightly depressed
Fruit: presence of internal stylar cavity	present	not present	not present

TABLE 1-continued

Comparison with similar varieties
Color references are in accord with the RHS Colour Chart, the Royal Horticultural Society, London, 1966. Observations made under New Zealand growing conditions.

Characteristic	'Hort51-1785'	'Hort16A'	'KI 89'
Fruit: Flesh color (ripe)	golden yellow, near 162D	yellow, near 12C/12B	yellow-green, near 145C/154D
Fruit: Presence of lenticels on skin	present	not present	not present
Fruit: Visibility of lenticels on skin	conspicuous	not obvious	not obvious
Fruit: Mean soluble solids content when ripe	12.5–14%	14–19%	10.8–12.4%
Mean dry matter at harvest	17.8%	18.3%	15.5–17.2%
Mean flesh firmness at harvest	6.8 Kgf	4.6 Kgf	3.7 Kgf

Fruit of 'Hort51-1785' is globose in shape with a rounded stylar end compared with the ovoid shape and protruding stylar beak of 'Hort16A'. The flesh of 'Hort51-1785' is golden yellow when ripe compared to the lighter yellow flesh of 'Hort16A' and the yellow-green flesh of 'KI 89'. The skin of 'Hort51-1785' is a pale mid-brown color, whereas the skin of 'Hort16A' is yellow-brown and that of 'KI 89' is reddish-brown. The fruit of 'Hort51-1785' has conspicuous, raised lenticels on the skin, 'Hort16A' and 'KI 89' do not have raised lenticels.

The fruit of 'Hort51-1785' is generally larger sized, has lower brix, lower dry matter content, and higher flesh firmness at harvest than 'Hort16A'. The fruit of 'Hort51-1785' is generally shorter but of greater diameter than fruit of either 'Hort16A' or 'KI 89'.

TABLE 2

Comparison with female parent, 'Jing Feng'
Colour references are in accord with the RHS Colour Chart, the Royal Horticultural Society, London, 1966. Observations made under New Zealand growing conditions.

Characteristic	'Hort51-1785'	'Jing Feng'
Time of full bloom	late November	late November
Fruit: color of skin	mid-brown, near 199B	light brown, near 165B
Fruit: core diameter	12.4 mm	14.1 mm
Fruit: general shape	globose	ellipsoidal
Fruit: ratio of fruit maximum width/fruit length	0.92	0.78
Fruit: mean weight	99 g	103 g
Fruit: shape at stylar end	rounded	flat
Fruit: presence of stylar cavity	present	not present
Fruit: flesh color	golden yellow near 162D	golden yellow, near 163D
Fruit: locule color	near 162B	near 164B
Presence of lenticels on fruit skin	present	not present
Visibility of lenticels on fruit skin	conspicuous	not obvious
Mean soluble solids content of ripe fruit	12.5–14%	11.6–14.6%
Mean dry matter at harvest	17.8%	16.6%
Mean firmness at harvest	6.8 Kgf	5.5 Kgf

The most striking difference between 'Hort51-1785' and the female parent 'Jing Feng' is that of fruit shape. 'Hort51-1785' has globose-shaped fruit with a ratio of maximum width/fruit length of 0.92 whereas 'Jing Feng' fruit is ellipsoidal in shape with a ratio of maximum width/fruit length of 0.78. 'Hort51-1785' fruit have a small internal cavity, average length 10.2 mm, at the stylar end, whereas 'Jing Feng' fruit has no cavity.

I claim:

1. A new and distinct kiwi plant of the species *A. chinensis* substantially as herein illustrated and described.

* * * * *

FIG. 1

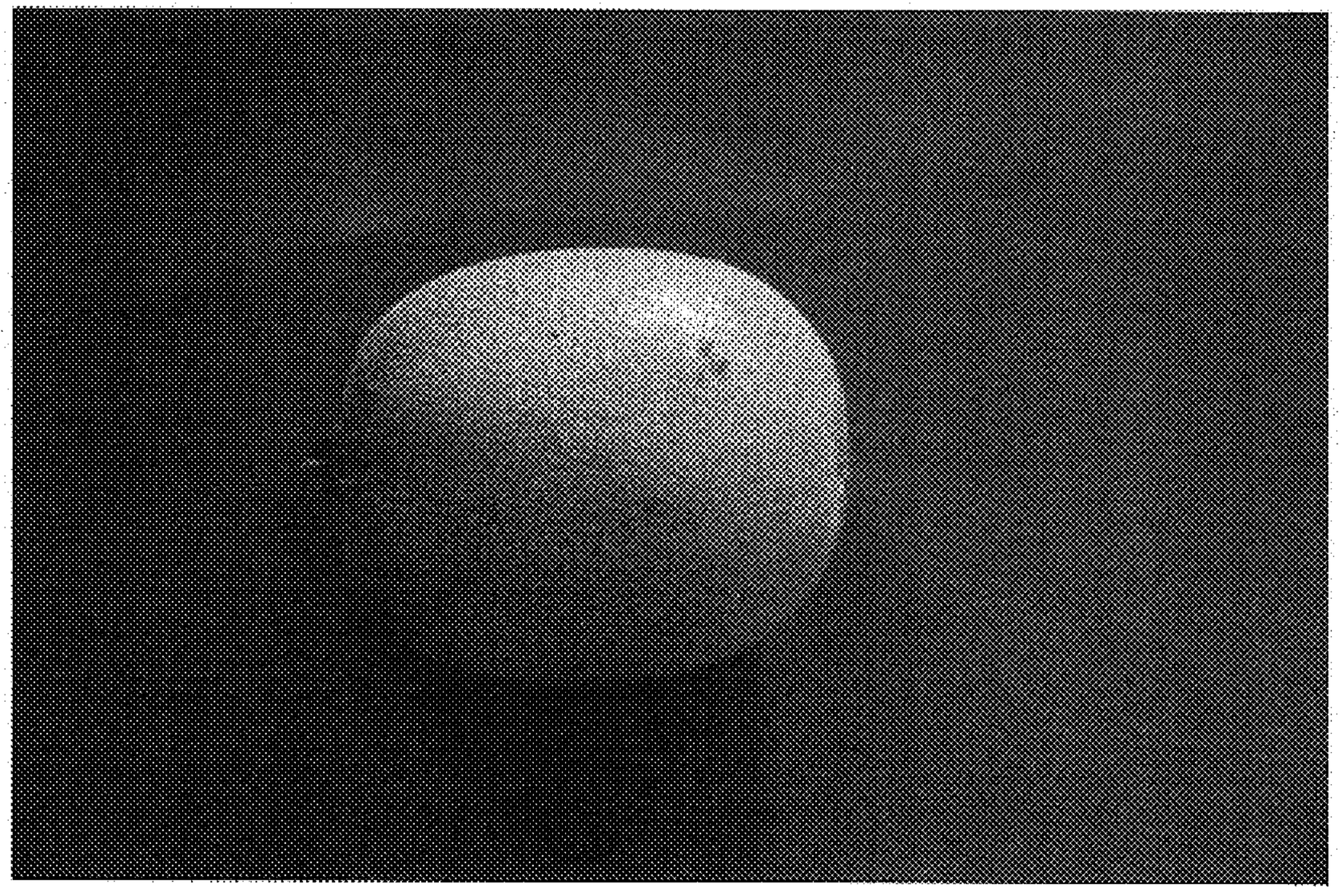

FIG. 2

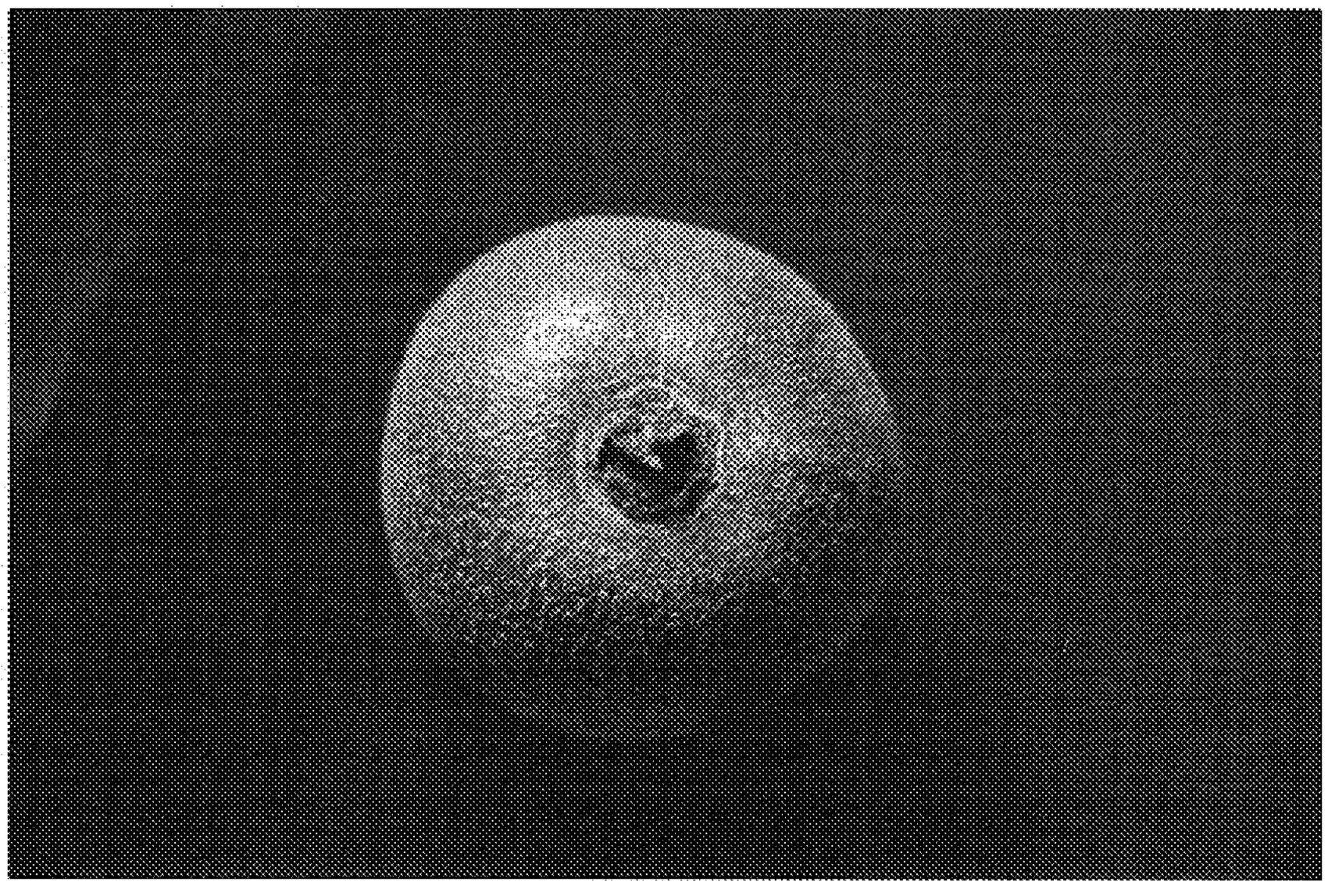

FIG. 3

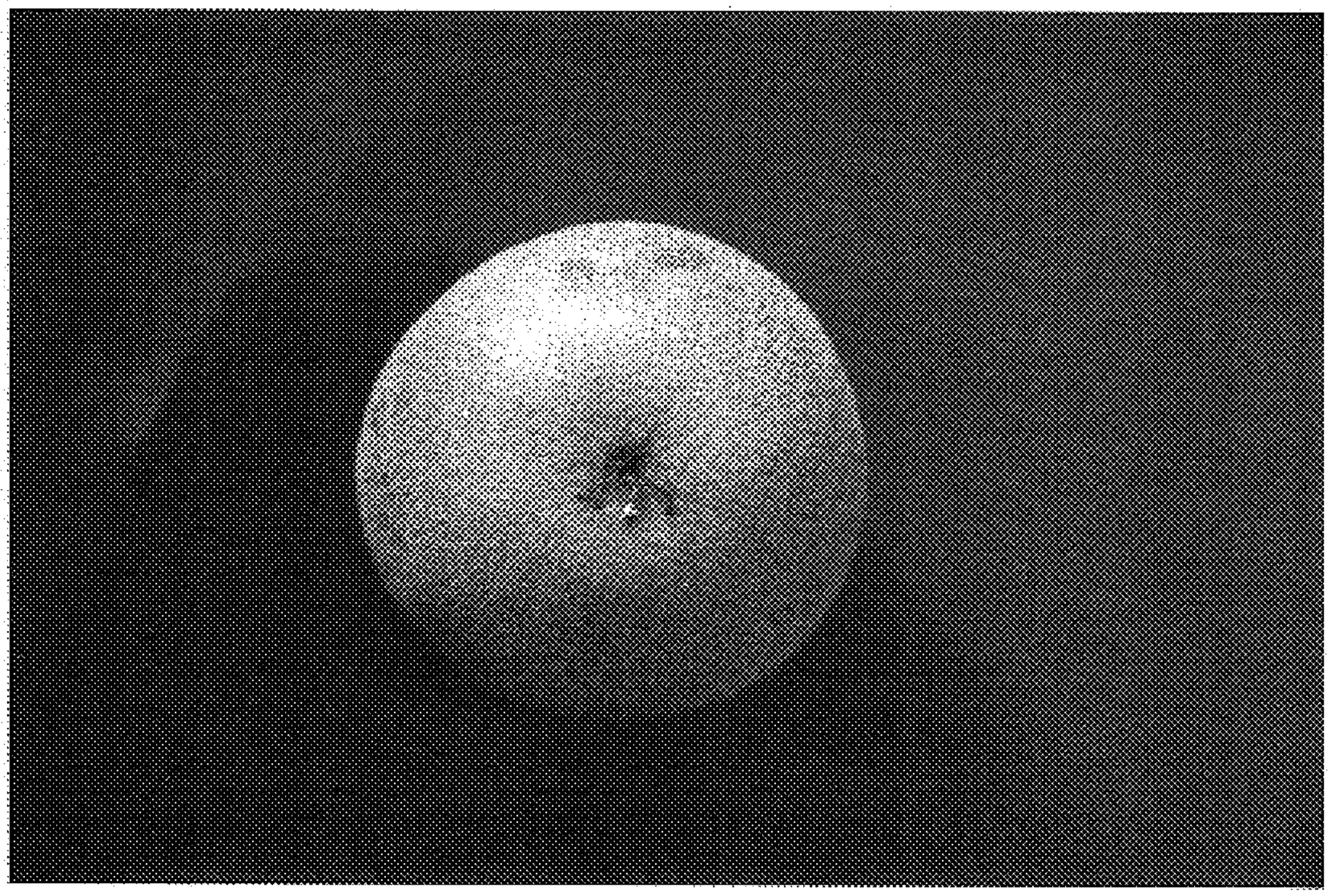

FIG. 4

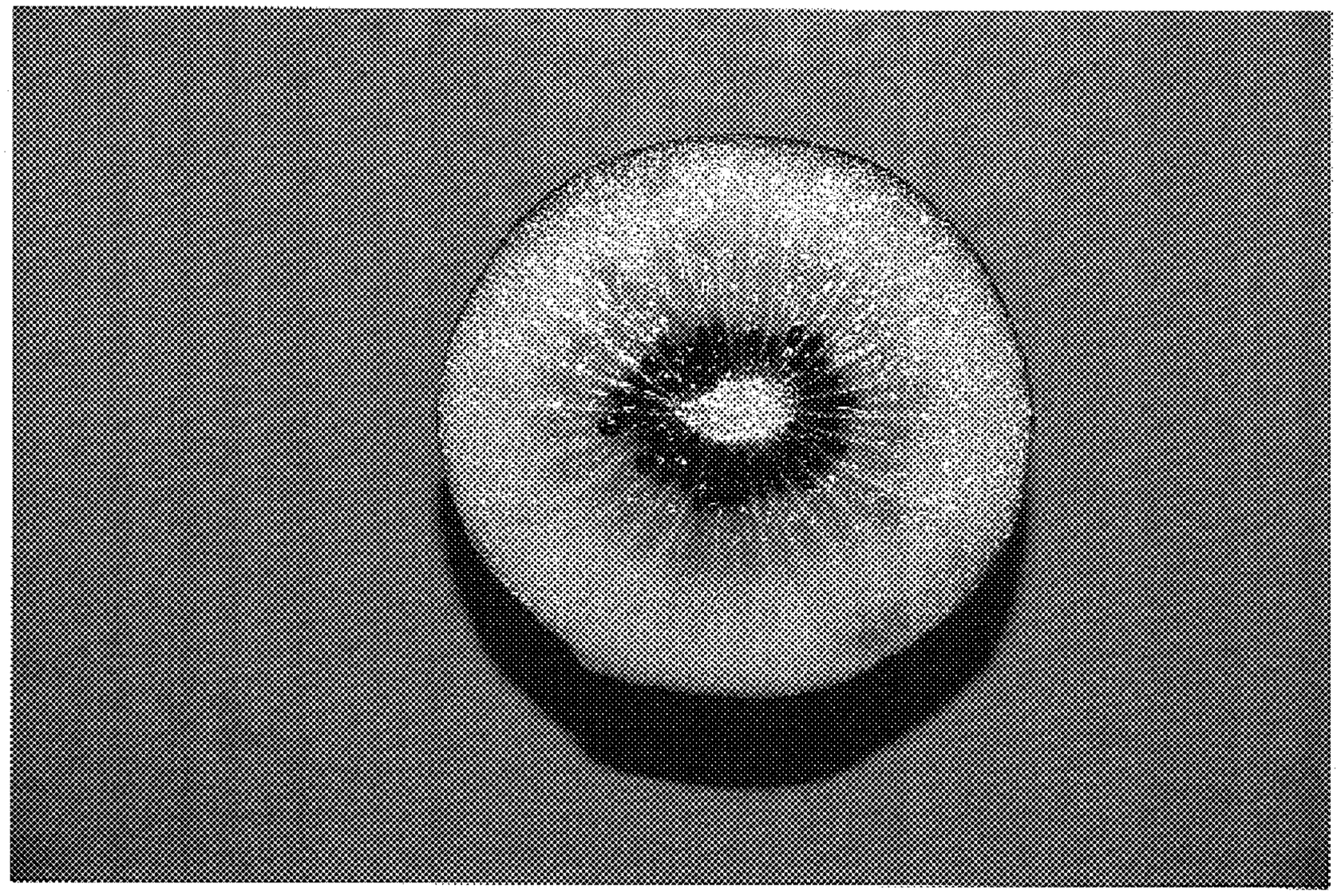

FIG. 5

FIG. 6

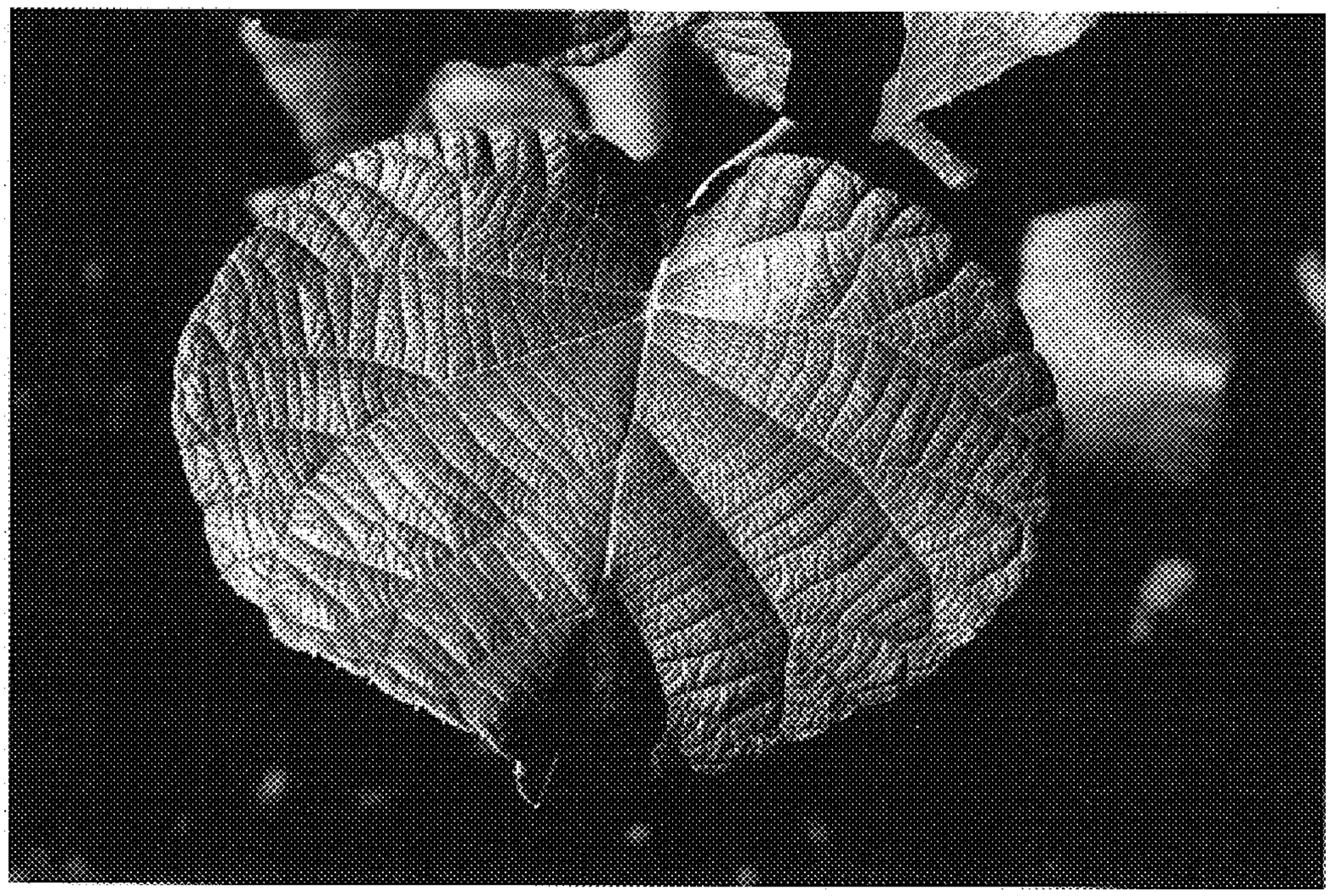

FIG. 7