



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

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(54) **PEACH TREE NAMED ‘LIBERTY JOY’**

(50) Latin Name: *Prunus persica* (L.) Batsch
Varietal Denomination: **Liberty Joy**

(71) Applicant: **The United States of America, as
Represented by the Secretary of
Agriculture**, Washington, DC (US)

(72) Inventors: **Chunxian Chen**, Byron, GA (US);
William R. Okie, Warner Robins, GA
(US)

(73) Assignee: **The United States of America, as
Represented by the Secretary of
Agriculture**, Washington, DC (US)

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Primary Examiner — Annette H Para

(74) *Attorney, Agent, or Firm* — John D. Fado; Ariel L.
Atkinson

(57) **ABSTRACT**

A new and distinct variety of peach tree, denominated
‘Liberty Joy’, has firm, freestone, melting, yellow flesh fruit
with normal acidity, and good eating quality. The fruit
typically ripen approximately with ‘Redglobe’ and about
one week after ‘Sunland’ in early July in Byron, Ga., have
a high percentage of red blush with an attractive yellow
ground color on skin surface, and usually are almost round
with a slightly oblong apex in some years. The tree is
moderately vigorous and semi-spreading in growth habit,
has self-fertile showy pink flowers, and regularly bears
heavy annual crops. This variety has a winter chilling
requirement estimated at approximately 650 chill hours and
is suited for medium to high chill areas.

4 Drawing Sheets

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Latin name of the genus and species of the plant claimed:
‘Liberty Joy’ is a peach tree that is a *Prunus persica* (L.)
Batsch.

Variety denomination: The new peach tree is of the variety
denominated ‘Liberty Joy’.

BACKGROUND OF THE NEW PLANT

The present invention relates to a new and distinct variety
of fresh-market peach designated ‘Liberty Joy’ and botani-
cally known as *Prunus persica* (L.) Batsch. This new peach
tree is adapted to a Southeastern subtropical climate with
medium high chill in winters. ‘Liberty Joy’ variety resulted
from a hand-pollinated cross between BY99P1405 (un-
patented, an advanced selection) yellow peach, which was
used as the seed parent, and BY02P3862 (unpatented, an
advanced selection) yellow peach, which was used as the
pollen parent. ‘Liberty Joy’ variety was obtained by hybrid-
izing and propagated by grafting on ‘Guardian’® rootstock
trees. It has desired chilling requirement (~650 hours, lower
than comparable main-season cultivars) and cropped rela-
tively well even in years with inadequate chill and spring
freezes, making it less vulnerable to the adverse weather
conditions in Byron, Ga. and worthy for trial for commercial
fresh fruit production. Clonal plants were asexually propa-
gated from the original ‘Liberty Joy’ tree by grafting in
Byron, Ga. These asexually propagated plants, along with all
characteristics of the tree and the fruit, remained true-to-type
to the original ‘Liberty Joy’ tree. There are no known effects
of the standard rootstock on the scion cultivar characteris-
tics.

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‘Liberty Joy’, produces firm, freestone, melting, yellow-
flesh fruit with normal acidity, good eating quality, and
attractive blush, ripening in late June to early July in Byron,
Ga. ‘Liberty Joy’ is a promising candidate for commercial
success in that it appears less vulnerable to inadequate chill
and spring freezes in Byron, Ga., based on data in years with
the conditions.

Byron, Ga. is under a subtropical climate. Winters are
short, mild and with little snow; summers are long, hot and
humid. The average January low temperature is about 1.20°
Celsius and the average July high temperature is about
33.20° Celsius. The hours with temperatures below 7°
Celsius vary often between 600 and 1200 hours per year.
There are about 67 rainy days per year. Average annual
precipitation (rainfall) is 1182.88 millimeter (46.57 inch)
with great monthly and yearly variabilities and frequent
thunderstorms in summers.

SUMMARY OF THE INVENTION

The new and distinct variety ‘Liberty Joy’ peach tree
blooms late February to early March, approximately with or
slightly before ‘Goldprince’ and ‘June Gold’ (both
unpatented) peach trees in Byron, Ga. The estimated chilling
requirement, based on bloom time, is approximately 650
chill hours. The blooming period and the blooming date are
dependent on climatic conditions. The flower anthers are
yellow, and leaf glands are reniform, common characteris-
tics of many standard peach varieties.

The first fruit of ‘Liberty Joy’ ripen generally in late June
to early July in Byron, Ga., approximately in the season of
‘Redglobe’ (unpatented) and one week after ‘Sunland’ (un-

patented). ‘Liberty Joy’ trees are vigorous and productive, size well, and crop reliably. ‘Liberty Joy’ fruit tend to have melting texture, good eating quality, and more blush coverage (approximately 90% red skin) than ‘Redglobe’ and ‘Sunland’ (both unpatented). There is some red pigmentation in the yellow flesh at the pit if allowed to mature on the tree. The potential for commercial production of fresh ‘Liberty Joy’ fruit is high, due to its lower chilling requirement compared to other commercial cultivars ripening the same harvest windows and thus less vulnerability to inadequate chill in Byron, Ga.

BRIEF DESCRIPTION OF THE PHOTOGRAPHS

The accompanying drawings are color photographs that are as nearly true as it is reasonably possible to make in a color illustration of this type:

FIG. 1 is a color photograph that shows a close view of typical fruits of the new variety ‘Liberty Joy’ at ripening time at Byron, Ga.

FIG. 2 is a color photograph that shows an attractive shape, exterior coloration, flesh, and pit of five specimens of ‘Liberty Joy’ fruit in a back side view (top left), a suture side view (bottom left), a blossom end view (top middle), a stem end view (bottom middle), and a fruit longitudinally cut into halves with and without the pit (top right and bottom right). Fruit are picked from an orchard at Byron, Ga.

FIG. 3 is a color photograph that shows the typical semi-spreading architecture of an 8-year-old tree of the new variety ‘Liberty Joy’ at Byron, Ga.

FIG. 4 is a color photograph that shows typical showy flowers of the new variety at Byron, Ga.

Due to photographic light, chemical development, processing and printing, the leaves and fruit depicted in these photographs may or may not be accurate when compared to the actual botanical specimen.

DETAILED BOTANICAL DESCRIPTION

The tree, flowers, and fruit may vary in slight detail due to variations in soil types, cultural practices, climatic conditions, growing seasons, and development stages. Referring more specifically to the detailed botanical description of this new and distinct variety of yellow peach tree, the following was observed on 4-year-old trees of the variety grafted on ‘Guardian’® rootstock under the ecological conditions prevailing at the orchards located at the town of Byron, Ga., USA. All major color code designations are by reference to the Royal Horticultural Society (R.H.S.) Colour Chart (Fourth Edition).

Tree:

Size.—Generally considered large when trained to an open vase form. The average height and width of 4-year-old tree are 3.13 meters and 4.20 meters, respectively, including current season shoots.

Spread.—Grown to a vase shape with summer and winter pruning to keep the tree open to get strong fruiting wood in the lower center.

Vigor.—Considered moderately vigorous. Approximately 1.0 to 1.5 meters in height and width of growth occurs in the orchards at Byron, Ga. Trees respond typically to irrigation and fertilization.

Productivity.—Very productive and regular, every year. Fruit set is spaced by thinning to develop the remain-

ing fruit into desired market size. The fruit number varies with the prevailing climatic conditions and cultural practices.

Bearer.—Very regular without alternate bearing observed. The fruit is distributed homogenously on both short and long shoots and must be thinned to avoid limb breakage and obtain large fruit size.

Form.—Semi-spreading, but easily pruned to vase shape.

Density.—Considered dense. Pruning is required to open the tree center to promote sunlight entrance for enhancing fruit color and sugar.

Hardiness.—Hardy with respect to typical Georgia winters.

Chilling requirement.—Estimated endodormancy chilling requirement is approximately 650 chill hours based on time of bloom and leafing in relation to standard varieties.

Trunk:

Size.—Approximately 9.8 cm in diameter and at a height of approximately 312.5 cm on the 4-year-old trees at Byron, Ga.

Bark texture.—Generally smooth, but changes to light shaggy as tree ages.

Bark color.—RHS Grey Group 201D, slightly darker than the outside of lenticel color. Bark crack’s color is RHS Greyed-Orange Group 177A.

Lenticels.—Moderately low number, approximately 1 to 3 per square cm of surface area of trunk; and the average lenticel length and width of lenticels are approximately 10.1 millimeters and 2.1 millimeters, respectively.

Lenticel color.—The outside of lenticels is RHS Greyed-Orange Group 198D, whereas the inside is RHS Greyed-Orange Group 177A.

Branches:

Size.—Average as compared to other peach varieties. Strong growth of scaffold branches. The current season mature fruiting branches have a diameter from 15.0 to 25.0 millimeters, and the average diameter is 28.0 millimeters. Tree growth and structure permits easier and faster winter pruning.

Surface texture.—Relatively smooth, numerous lenticels but smaller size than found on trunk and old scaffolds. Roughness increases with age.

Crotch angles.—Moderate to wide angles within the normal range of standard varieties for a semi-spreading tree after proper summer and winter pruning.

Internode length.—Approximately 1.8 to 3.1 centimeters with the average of 2.36 centimeters.

Color of current season shoots.—RHS Greyed-Orange Group 172B at the upper part (sunny side) of the shoots and RHS Yellow-Green Group 146D at the lower part (shady side) of the shoots.

Color of mature branches.—RHS Greyed-Orange Group 165A at the upper part (sunny side) of the shoots and RHS Greyed-Brown Group 199A at the lower part (shady side) of the shoots.

Leaves:

Size.—Considered medium to large for the species.

Length.—Approximately 14.2 to 17.3 centimeters with the average of 16.09 centimeters, not including the petiole.

Width.—Approximately 3.3 to 3.8 centimeters with the average of 3.49 centimeters.

Thickness.—Regular and average for commercial varieties, approximately 0.13 to 0.17 millimeters with the average of 0.15 millimeter, not noticeably unusual.

Form.—Lanceolate.

Apex.—Acute.

Margin.—Serrulate.

Base.—Acute.

Surface.—Upper, glabrous; Lower, medium large veins that are pinnately netted.

Color.—Regular green, slightly different in seasons. In early shoot growth, both upper and lower leaf surfaces are RHS Yellow-Green 151A. In late season, upper leaf surface is RHS Green Group 137B and lower surface is RHS Yellow-Green Group 146B. Leaf vein is RHS Yellow-Green Group 145C.

Glands.—Reniform. Usually 0-2 on lower leaf blade and 0-2 on petioles. Color is RHS Yellow-Green Group 146B.

Petiole.—Approximately 7.0 to 10.1 millimeters length with the average of 8.43 millimeters, approximately 1.1 to 2.0 millimeters diameter with the average of 1.61 millimeters. Color is RHS Yellow-Green Group 146C.

Stipules.—Medium, equal to most commercial peach varieties, visible on early young leaves, usually about 2 per leaf, and abscising just before leaves become full size in summer growth. Color at full size is RHS Yellow-Green Group 151A before abscising.

Leaf blade incisions.—Serrulate.

Arrangement.—Alternate.

Flowers:

Flower buds.—The form of flowers buds changes as blooming approaches, with variable dimensions. They are conic at pre-floral stage and approximately 5.7 to 6.8 millimeters long with the average of 6.26 millimeters and 4.2 to 4.8 millimeters wide with the average of 4.49 millimeters. The bud color in mid-winter is RHS Greyed-Green Group 198A. The abundance is very high due to shorter than average internode length. Most buds set fruit in absence of spring frosts and show little evidence of bud drop.

Hardiness.—Hardy with respect to Georgia winters.

Date of bloom.—Late February to early March depending on winter chill hours and amount of warm weather.

Blooming time.—Considered early in bloom relative to other commercial peaches in central Georgia. Typically blooms with 'June Gold' and 'Goldprince'.

Duration of bloom.—Approximately 6 to 14 days. This characteristic varies significantly with chill hours accumulated in winter as well as temperatures during bloom.

Bloom quantity.—Generally abundant, with a good distribution.

Flower bud frequency.—Generally two flower buds per node, but occasionally one.

Fragrance.—Undetectable.

Type.—Showy.

Size.—Approximately 27.3 to 44.4 millimeters in diameter at full bloom, with the average of 34.37 millimeters.

Petal.—Size: Generally considered large. Length: approximately 16.9 to 19.0 millimeters with the average of 17.99 millimeters. Width: approximately

11.8 to 15.3 millimeters with the average of 13.68 millimeters. Form: generally round-shaped. Count: almost always five. Arrangement: usually overlapping, sometimes touching. Texture: smooth, soft and glabrous. Color: RHS Red-Purple Group 62D in the upper surface and RHS Red-Purple Group 69C in the lower surface. Margins: generally slightly undulating. Apex: generally round and curved-shaped.

Pedice.—Length: approximately 2.4 to 4.1 millimeters with the average of 3.62 millimeters. Diameter: approximately 1.33 to 1.8 millimeters with the average of 1.51 millimeters.

Calyx cup.—Diameter: approximately 13.2 to 16.9 millimeters with the average of 15.13 millimeters. Color: RHS Yellow-Green Group 146B at the interior surface and Greyed Red Group 178A at the exterior surface.

Sepals.—Number: generally five sepals. Length: approximately 6.2 to 6.8 millimeters with the average of 6.46 millimeters. Width: approximately 4.6 to 6.1 millimeters with the average of 5.27 millimeters. Color: RHS Red-Purple 59B.

Stamen number.—Approximately 21 to 35 stamens per flower with the average of 26.80.

Anthers.—Color: RHS Yellow 4D at opening.

Pollens.—Generally abundant and approximately RHS Yellow 12C.

Filaments.—Length at opening: approximately 11.2 to 14.6 millimeters with the average of 13.27 millimeters. The length of filaments is generally higher than that of pistils. Color: RHS Yellow Group 11D.

Pistil.—Number: Usually one. Length: approximately 9.7 to 14.4 millimeters with the average of 12.60 millimeters and generally equal to stamen length, if not slightly smaller. Color: RHS Yellow-Green Group 145C.

Fruit:

Maturity when described.—Firm ripe for commercial picking.

Date of harvest.—Vary with the prevailing climatic conditions and blooming time. Harvest in 2018 at Byron, Ga. was July 5 until July 10. Due to its lower chilling requirement (650 hours) relative to most late-ripening cultivars (850+ hours), the ripening season may be more elastic in some years compared to typical late-ripening cultivars in Byron, Ga.

Size.—Generally uniform, large size. Weight: approximately 159 to 251 grams with the average of 216.80 grams. Equatorial diameter: approximately 73.0 to 81.0 millimeters with the average of 76.90 millimeters. Polar diameter (from stem to distal end): approximately 71.0 to 81.0 millimeters with the average of 76.20 millimeters. This characteristic highly depends on fruit number per tree, soil type, climatic conditions, and cultural practices, and therefore is not particularly distinctive of the variety.

Peduncle.—Length: approximately 4.0 to 5.6 millimeters with the average of 5.00 millimeters. Width: approximately 2.9 to 3.6 millimeters with the average of 3.16 millimeters. Color: RHS Green Group 139D.

Longitudinal section form.—Round-ovate.

Transverse section through diameter.—Generally round to slightly oblong.

Suture.—Slightly ridged proximal to distal end of suture.

Ventral surface.—Generally round.

Shape of fruit base.—Round to oblate.

Apex.—Round to ovate.

Crater at stem attachment.—Flaring oval to the suture.

Depth: approximately 11.2 to 14.5 millimeters with the average of 13.21 millimeters. Width at top (cheek to cheek): approximately 16.0 to 27.0 millimeters with the average of 22.3 millimeters. Width at top (suture to back): approximately 21.0 to 37.0 millimeters with the average of 29.7 millimeters. Width at bottom (pedicel attachment): approximately 4.2 to 5.4 millimeters with the average of 4.97 millimeters.

Skin.—Thickness: generally medium in comparison to commercial peach varieties. Texture: generally typical of commercial peach varieties. Tenacity: Tenacious. Color: RHS Grey-Purple 187A, approximately 85% to 95% of skin. Fruit exposed to sunlight likely have a higher degree of enhanced skin color. Ground color: RHS Yellow 4B. Tendency to crack: None observed. Taste: No astringency observed. Epidermis: Typical short pubescence.

Flesh.—Ripens: evenly within each fruit. Texture: smooth, firm, melting, and juicy when fully ripe. Fibers: very fine, small, tender, and abundant. Aroma: moderate and typical of commercial peach varieties. Eating quality: excellent flavor with typical acidity for fresh market. Soluble solids content: approximately 7.6 to 14.2° Brix with the average of 11.53° Brix when at approximately 5.2 to 7.6 kgf of penetrometer firmness (the average is 6.28 kgf) with a standard $\frac{5}{16}$ -inch tip following a seven-day post-harvest storage protocol. This characteristic varies slightly with fruit number per tree, climatic conditions, cultural practices, and ripening stages. Color: RHS Yellow 13B. Color of red flecks within flesh: RHS Red 42C. Color of flesh at pit: RHS Red 42A. Browning by oxidation: none observed on tree ripe fruit beginning to soften. Amygdalin: none detected.

Stone:

Type.—Freestone.

Size.—Generally medium large. The stone size varies upon the tree vigor, crop load and prevailing growing conditions. Length: approximately 31.8 to 38.1 millimeters with the average of 35.44 millimeters. Width: approximately 21.6 to 26.0 millimeters with

the average of 23.31 millimeters. Diameter: approximately 16.6 to 20.3 millimeters with the average of 18.33 millimeters.

Wall thickness.—Approximately 5.3 to 6.4 millimeters with the average of 5.77 millimeters.

Color.—RHS Greyed-Orange 177A when flesh is freshly cut.

Form.—Oblong.

Base.—Acute.

Apex.—Straight with cuspidate tip.

Sides.—Generally equal.

Surface.—Generally furrowed toward ventral edge, smooth on dorsal edge and lighted pitted from base to apex.

Tendency to split.—None observed.

Kernel.—Viable if stratified upon removal from fruit at harvest, and without drying. Taste: bitter. Size: Considered medium large. Length: approximately 15.4 to 22.3 millimeters with the average of 17.40 millimeters. Width: approximately 9.7 to 13.3 millimeters with the average of 10.76 millimeters. Thickness: approximately 4.2 to 7.7 millimeters with the average of 5.37 millimeters. Form: generally acute apex with acute, sometimes straight base. Color: RHS Yellow-Orange 20B.

Use of the fruit: Fresh, dessert.

Keeping quality: Excellent after about two weeks at approximately 2 to 8 degrees Celsius and with little bruising or scarring appearing on skin.

Shipping quality: Considered very good. The fruit showed little bruising of the flesh or skin damage after normal harvesting and packing procedures. The fruit retained firmness and showed no internal breakdown of flesh or appreciable loss of eating quality under refrigeration at approximately 2 to 8 degrees Celsius indicates fruit should be highly acceptable for shipping.

Resistance to disease: High resistance to bacterial spot incited by *Xanthomonas campestris* pv. *pruni*. No unusual resistance or susceptibility to insects and diseases was noted.

We claim:

1. A new and distinct variety of peach tree as illustrated and described, characterized by a medium high chilling requirement and bearing fruit having, yellow-fleshed fruit with normal acidity and melting, freestone with excellent eating quality a high percentage of red blush with an attractive yellow ground color, with fruit ripening in early July in Byron, Ga.

* * * * *



Fig. 1



Fig. 2



Fig. 3

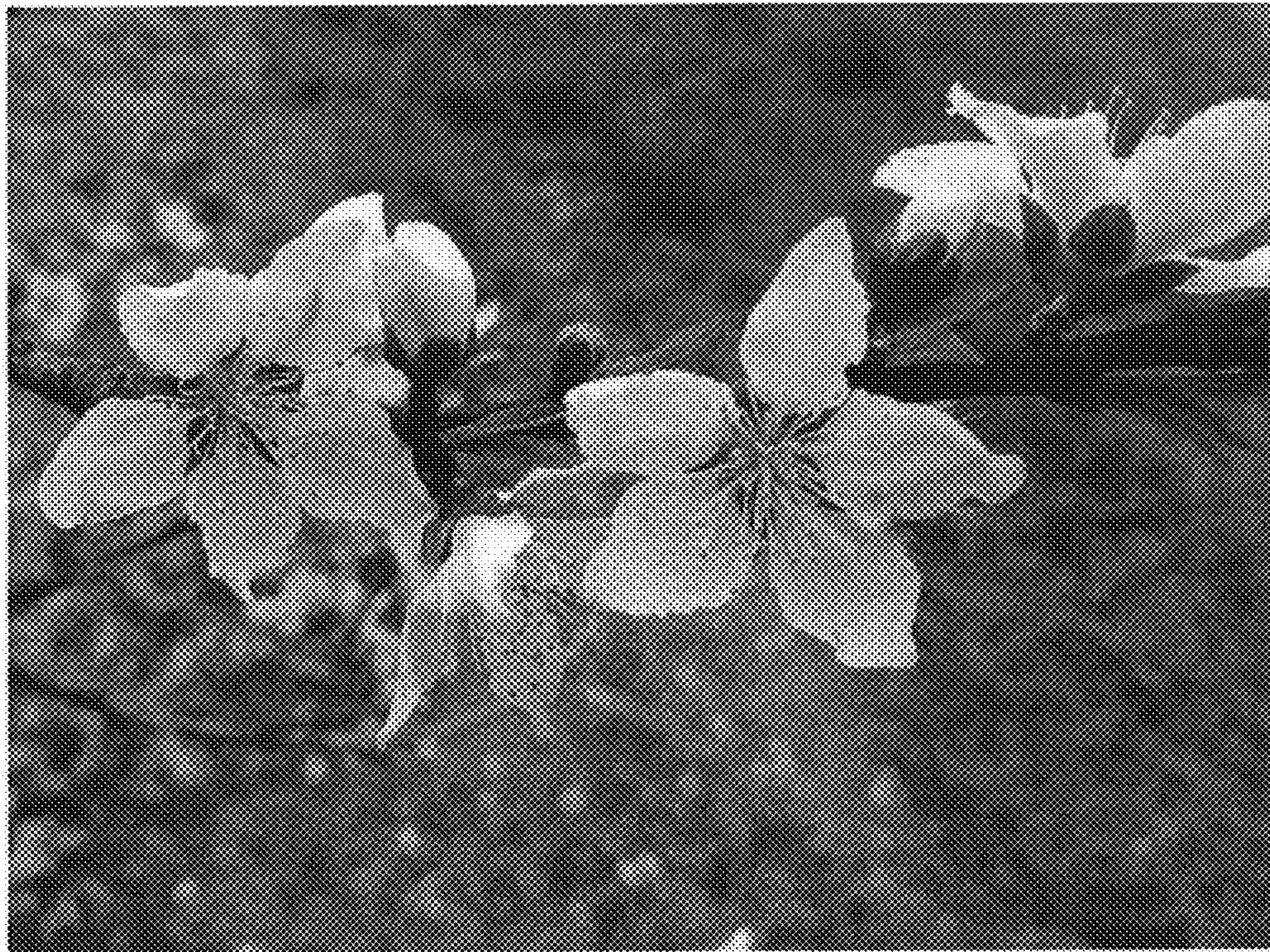


Fig. 4