

(12) **United States Plant Patent**
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(54) **HYDRANGEA ARBORESCENS PLANT**
NAMED ‘NCHA4’

(50) Latin Name: *Hydrangea arborescens*
Varietal Denomination: **NCHA4**

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USPC **Plt./250**

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(57) **ABSTRACT**

A new and distinct *Hydrangea* cultivar named ‘NCHA4’ is disclosed, characterized by large, mop-head inflorescences with prevalent sterile flowers. Plants produce distinctive two-toned sepals with pink upper surfaces and deep pink lower surfaces. Plant habit is compact, and plants are triploid. The new variety is a *Hydrangea* normally produced as an outdoor garden or container plant.

4 Drawing Sheets

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Latin name of the genus and species: The Latin name of the novel plant Variety disclosed herein is *Hydrangea arborescens*.

Variety denomination: The seedling of *Hydrangea arborescens* disclosed herein has been given the varietal denomination ‘NCHA4’.

BACKGROUND OF THE INVENTION

The present invention comprises a new and distinct *hydrangea* cultivar hereinafter referred to by the cultivar name ‘NCHA4’. This new *hydrangea* was developed through a breeding program at North Carolina State University, Mills River, N.C. ‘NCHA4’ was selected from a population of seedlings that resulted from a cross of the seed parent *Hydrangea arborescens* H2008-143-001 (unpatented) and the pollen parent *Hydrangea arborescens* H2009-068-007 (unpatented). See FIG. 1 for complete pedigree. The first asexual propagation of ‘NCHA4’ was carried out in July 2012 by rooting stem cuttings at the North Carolina State University, Mountain Horticultural Crops Research Station, Mills River, N.C. and has been asexually reproduced repeatedly by vegetative cuttings over a two year period. ‘NCHA4’ roots readily from softwood cuttings treated with a basal dip of 2,500-5,000 ppm indole butyric acid (potassium salt) in water. ‘NCHA4’ has been found to retain its distinctive characteristics through successive asexual propagations.

SUMMARY OF THE INVENTION

The following are the unique combination of characteristics of this new cultivar when grown under standard horticultural practices at North Carolina State University, Mountain Horticultural Crops Research Station, Mills River, N.C.

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1. Very large mop-head inflorescences (i.e., a hortensia flower form) with prevalent sterile flowers.
2. Two-toned sepals with pink upper surfaces and deep pink lower surfaces.
3. Triploid cytotype.
4. Compact form.

COMPARISON WITH PARENT VARIETIES

‘NCHA4’ is similar to the seed parent in most horticultural characteristics, however, the new variety differs in the following:

1. The new variety has a different red-purple sterile sepal color.
2. The new variety has as different genome size, 3.8 pg, compared to 2.7 pg of the seed parent.

‘NCHA4’ is similar to the pollen parent in most horticultural characteristics, however, the new variety differs in the following:

1. The new variety has a darker red-purple sterile sepal color.
2. The new variety has as different genome size, 3.8 pg, compared to 5.2 pg of the pollen parent.

COMPARISON WITH COMMERCIAL CULTIVARS

Table 1 shows distinguishing characteristics between ‘NCHA4’, and other commercially available cultivars of *Hydrangea arborescens*. *Hydrangea* ‘NCHA4’ has a unique combination of traits including large mophead inflorescences, two-toned pink sepals, a compact form, and a triploid cytotype.

TABLE 1

Comparison to commercial cultivars.			
Trait	Taxa		
	<i>H. arborescens</i> 'NCHA1' (U.S. Plant Pat. No. 20,765)	<i>H. arborescens</i> 'NCHA2' (U.S. Appli- cation No. 14/545,787)	<i>H. arborescens</i> 'NCHA3' (U.S. Appli- cation No. 14/545,795)
Ploidy level (genome size, pg)	Diploid (2.7 pg)	Triploid (3.9 pg)	Triploid (3.8 pg)
Growth habit	Rounded	Rounded	Rounded
Height and width	100 cm × 100 cm	80 cm × 80 cm	60 cm × 60 cm
Stem internode length	5 to 15 cm	Avg. 7 cm (typical range: 3 to 10 cm)	Avg. 6 cm (typical range: 3 to 8 cm)
Flowers per inflorescence			
Fertile	Approx. 600	Approx. 150	Approx. 150
Sterile	Approx. 600	Approx. 300	Approx. 300
Corymb diameter	8-20 cm	Avg. 14 cm	Avg. 12 cm
Sepal color			
Above	Red-Purple (ranges from 68D/C to N66D/N66C)	Red-Purple (65A to 67C) fading to Red- Purple (65C)	Red-Purple (60C) fading to Red-Purple (70C)
Below	Red-Purple (ranges from 68D/C to N66D/N66C)	Red-Purple (63B)	Red-Purple (60A)
Sepal			
Length	0.5-0.7 cm	Avg. 1.2 cm	Avg. 1.0 cm
Width	0.3-0.5 cm	Avg. 1.0 cm	Avg. 0.7 cm

Trait	Taxa	
	<i>H. arborescens</i> 'NCHA4' (U.S. Application No. 14/545,796)	<i>H. arborescens</i> 'PIIHA-I' (U.S. Plant Pat. No. 21,227)
Ploidy level (genome size, pg)	Triploid (3.8 pg)	Unknown
Growth habit	Rounded	Upright, spreading
Height and width	80 cm × 80 cm	90 cm × 90 cm
Stem internode length	Avg. 7 cm (typical range: 3 to 10 cm)	About 6 cm
Flowers per inflorescence		
Fertile	Approx. 200	Approx. 75
Sterile	Approx. 400	Approx. 300
Corymb diameter	Avg. 20 cm	Avg. 12.5 cm
Sepal color		
Above	Red-Purple (63D to 65B)	Close to Red-Purple (58A)
Below	Red-Purple (63A)	Close to Red-Purple (63A)
Sepal		
Length	Avg. 1.0 cm	0.7 cm
Width	Avg. 0.7 cm	0.5 cm

BRIEF DESCRIPTION OF THE DRAWINGS

This new *hydrangea* is illustrated by the accompanying photographs which show the plant's pedigree, form, foliage and inflorescences. Photographs were taken on 2-year-old plants. The colors shown are as true as can be reasonably obtained by conventional photographic procedures. Colors in the photographs may differ slightly from the color values cited in the detailed botanical description, which accurately describe the colors of the new *hydrangea*.
FIG. 1 Shows the pedigree of 'NCHA4'.
FIG. 2 Shows the inflorescences with pink sepals.
FIG. 3 Shows the form of a field-grown plant.
FIG. 4 Shows the form of a container-grown plant.

DETAILED BOTANICAL DESCRIPTION

The following is a detailed description of the botanical characteristics of the new and distinct *hydrangea* variety plant known by the denomination 'NCHA4'. The detailed description was taken on a three-year-old field-grown plant in Mills River, N.C. in 2014. All colors cited herein refer to The Royal Horticultural Society Colour Chart (The Royal Horticultural Society (R.H.S.), London, 2001 Edition). Where specific dimensions, sizes, colors, and other characteristics are given, it is to be understood that such characteristics are approximations or averages set forth as accurately as practicable.

Technical Description of the Variety

Classification:
Botanical name.—*Hydrangea arborescens* 'NCHA4'.
Common name.—Smooth *Hydrangea*.
Parentage: 'NCHA4' originated as a seedling that resulted from a cross of *H. arborescens* H2008-143-001 and *H. arborescens* H2009-068-007.
Plant description:
Growth habit.—Rounded. Non-climbing.
Height (from top of soil including inflorescences).—About 80 cm.
Width (including inflorescences).—About 80 cm.
Shoot and stem:
Length.—60 cm (typical range: 40 to 80 cm).
Diameter.—0.5 cm (typical range: 0.3 to 0.9 cm).
Internode length.—7 cm (typical range: 3 to 10 cm).
Immature shoot texture (current year).—Pubescent.
Immature shoot color (current year).—Yellow-Green (146C).
Mature stem texture (from prior year).—Glabrous.
Mature stem color (from prior year).—Grey-Brown (199D).
Fasciation.—Not present.
Lenticels.—Not present.
Branching habit: Freely branching with as many as 100 or more terminal shoots.
Leaves:
Type.—Simple.
Persistence.—Deciduous.
Arrangement.—Opposite.
Shape.—Broadly ovate. Not lobed.
Apex.—Acuminate. Tip length approximately 5 to 10 mm.
Base.—Cordate to rounded.
Venation.—Pinnate, opposite to subopposite.

Vein color.—Upper: Yellow-Green (148B). Lower: Yellow-Green (148D).

Margins.—Dentate to serrate.

Texture.—Upper surface: Glabrous. Lower surface: Slightly pubescent.

Emerging leaves.—Color: Upper and lower: Yellow-Green (146B).

Mature leaves during growing season.—Color: Upper: Green (139A). Lower: Yellow-Green (146B). Length of lamina: Avg. 8 cm (typical range: 6 to 9 cm). Width: Avg. 6 cm (typical range: 3 to 8 cm).

Leaf attachment.—Petiolate

Petiole.—Length: Avg. 3 cm (typical range: 1 to 4 cm). Diameter: Avg. 0.2 cm (typical range: 0.15 to 0.25 cm). Color: Yellow-Green (147D) flushed with Greyed-Red (181B).

Inflorescence:

Description.—Fertile (approximately 400) and sterile (approximately 200) flowers arranged on individual hemispherical or dome-shaped terminal, compound corymbs. Fertile flowers moderately conspicuous.

Flowering season.—Late May to late June in Mills River, N.C.

Corymb.—Diameter: Average 20 cm (typical range: 15 to 25 cm). Height: Average 10 cm (typical range: 8 to 12 cm). Quantity: Often 100 or more corymbs per plant over the flowering season. Longevity: Showy for approximately 4 weeks.

Sterile flowers.—Petals, pistils and stamens are greatly reduced (<0.5 mm). Buds: Shape: Round. Diameter: 0.2 cm. Color: Red-Purple (63A-59B). Sepals: Number: 2 to 4. Length: Avg. 1.0 cm (typical range: 0.7 to 1.2 cm). Width: Avg. 0.7 cm (typical range: 0.5 to 1.0 cm). Shape: Oval. Apex: Mucronate to rounded. Base: Rounded. Margin: Entire. Texture: Glabrous upper and lower surfaces. Color: Upper: Red-Purple (63B-65B). Lower: Red-Purple (63A).

Fertile flowers.—Sepals and petals are greatly reduced (<0.5 mm). Buds: Shape: Round. Diameter: 0.2 cm. Color: Red-Purple (59A). Width: 0.2 cm. Height: 0.2 cm.

5 Reproductive organs:

Gynoecium.—Pistil number: 2, fused. Pistil color: White (155B). Pistil length: 0.2 cm. Stigma shape: Blunt. Stigma diameter: 0.025 cm. Style length: 0.1 cm (typical range: 9.5 to 10.9 mm). Ovary shape: Rounded. Ovary diameter: 0.1 cm. Ovary color: Near RHS Yellow-Green 145B.

Androecium.—Stamen number: 10. Anther: Shape: Rounded, fusiform. Length: 0.05 cm. Color: White (158D). Filament: Length: 0.2 cm. Color: White (155B). Amount of pollen: None observed.

15 Fruit/seed set: Seeds are minute, dust-like.

Disease and insect resistance: No significant disease or insect pests have been observed.

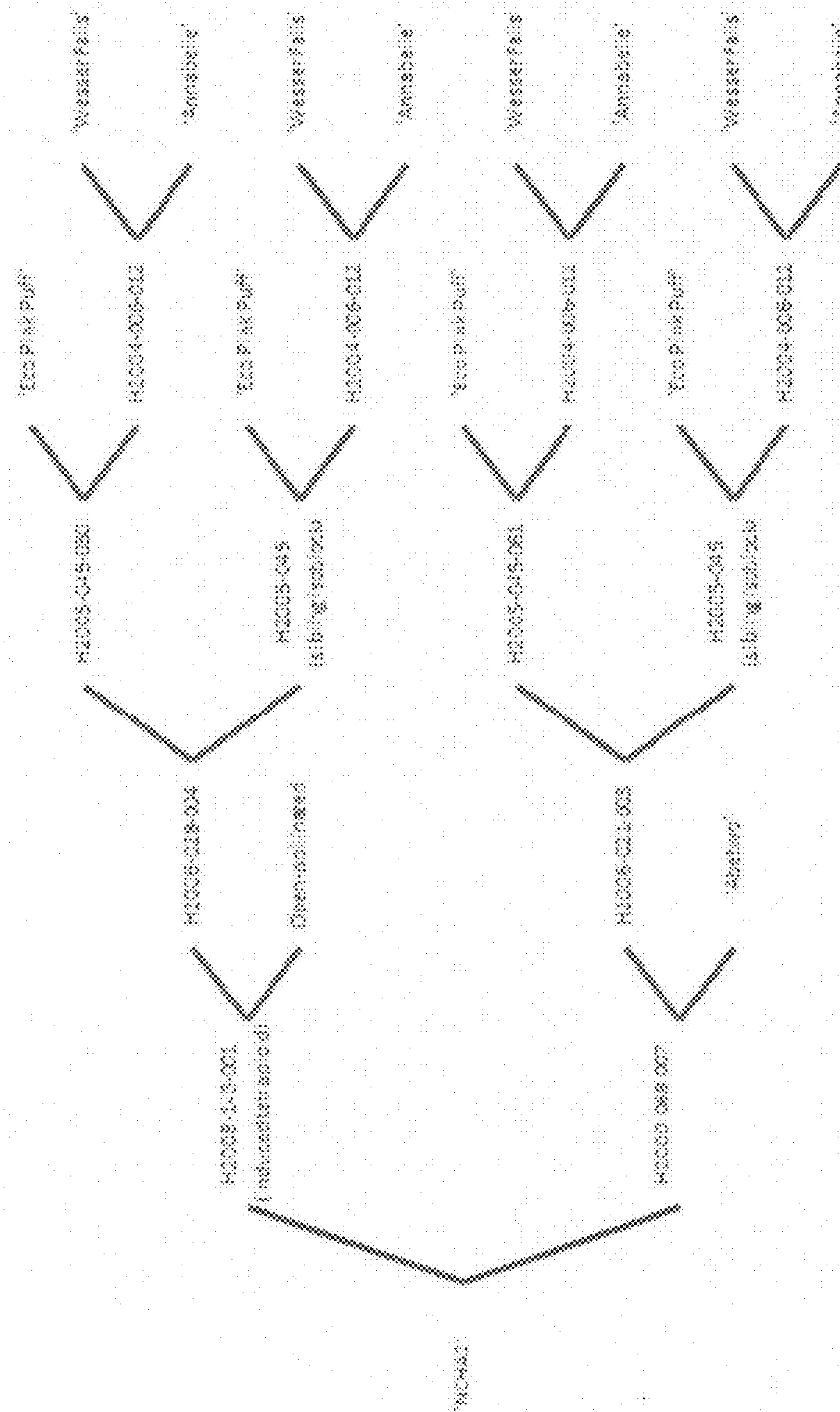
Cold hardiness: At least USDA zone 6b; testing has not been completed in colder zones.

20 Genome size: Flow cytometry was conducted to determine DNA content which is directly correlated with ploidy among closely related taxa. Holoploid, 2C DNA content was determined on newly expanded leaf tissue. Nuclei were extracted, stained with 4',6-Diamidino-2-phenylindole (DAPI), and analyzed (minimum of 5,000 nuclei per sample) using a flow cytometer (PA-I, Partec, Minster, Germany). *Pisum sativum* L. 'Ctirad', with a known genome size of 8.75 pg was used as an internal standard. 2C DNA content for 'NCHA4' was 3.8 pg, approximately 1.5 times the DNA content of a diploid (e.g., 'NCHA1'), and consistent with being a triploid as would be expected from an interploid cross between diploid and tetraploid parents (see Table 1).

What is claimed is:

35 1. A new and distinct cultivar of *Hydrangea arborescens* named 'NCNA4' as shown and described herein.

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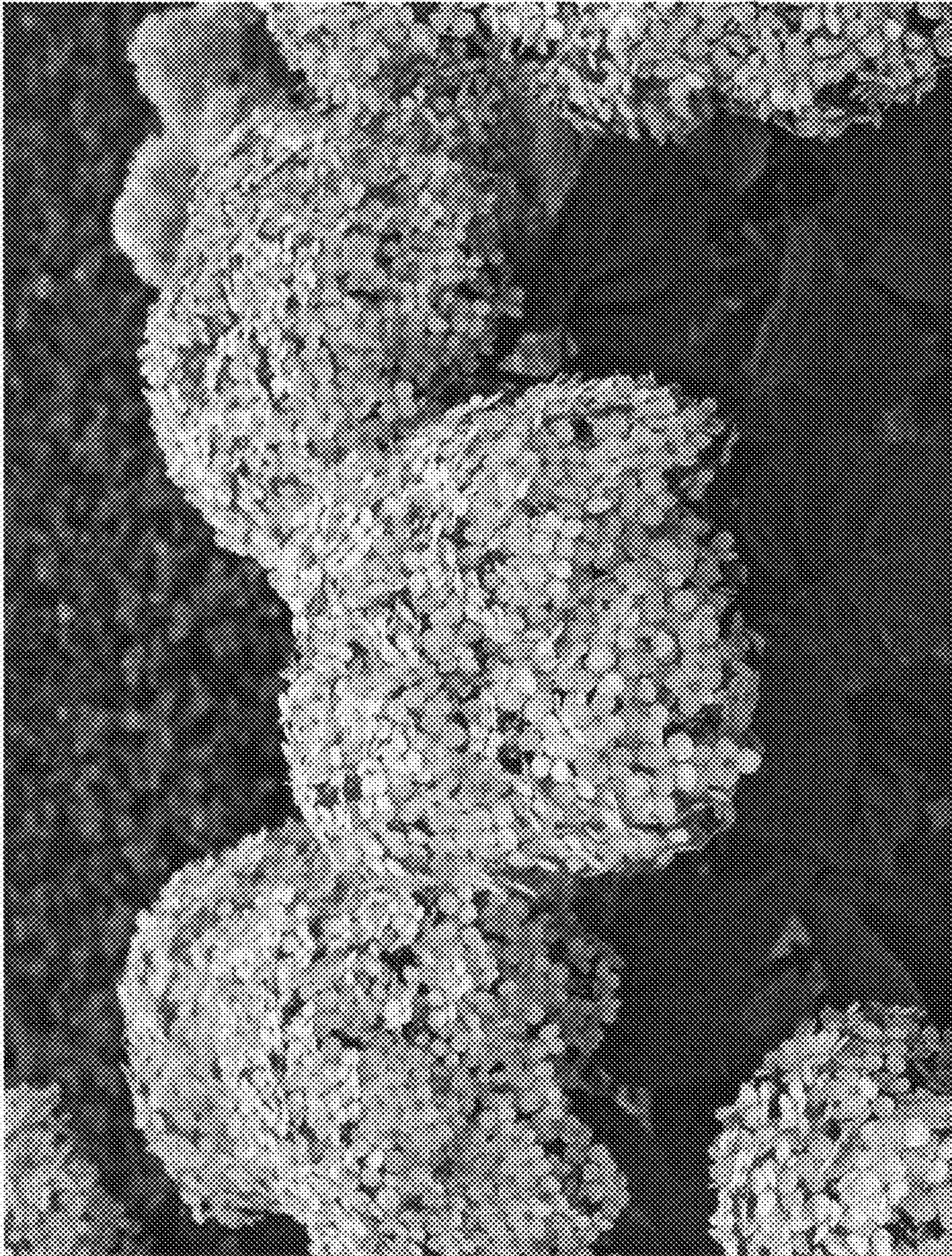


Fig. 2

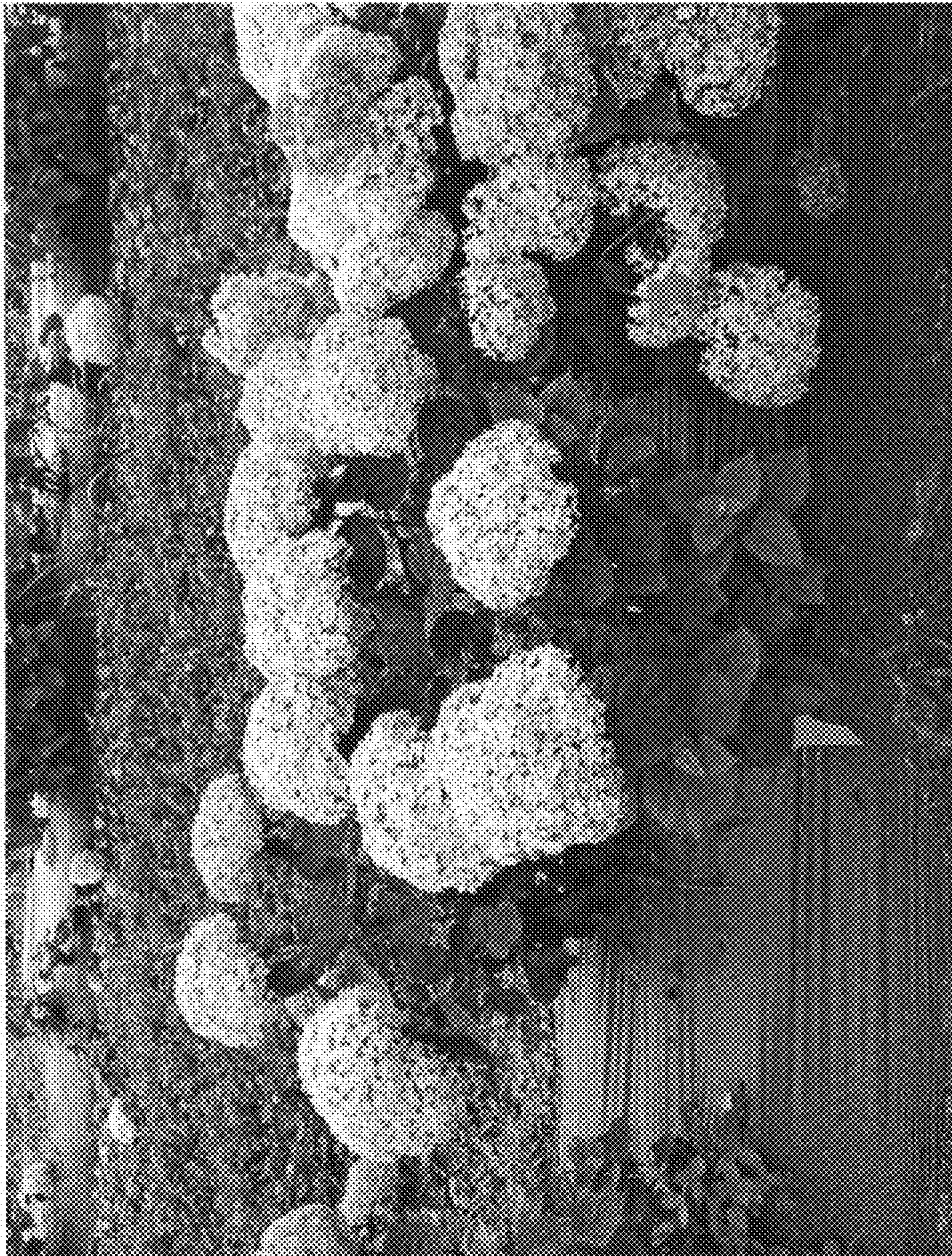


Fig. 3



Fig. 4