



US00PP36100P2

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

(10) **Patent No.:** **US PP36,100 P2**
(45) **Date of Patent:** **Sep. 10, 2024**

- (54) **STRAWBERRY PLANT NAMED ‘USDA Lumina’**
- (50) Latin Name: *Fragaria x ananassa* Duchesne ex Rozier
Varietal Denomination: **USDA Lumina**
- (71) Applicant: **The United States of America, as represented by the Secretary of Agriculture**, Washington, DC (US)
- (72) Inventors: **Kimberly S. Lewers**, Columbia, MD (US); **John Enns**, Hyattsville, MD (US)
- (73) Assignee: **The United States of America, as represented by the Secretary of Agriculture**, Washington, DC (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.: **18/242,722**
- (22) Filed: **Sep. 6, 2023**
- (51) **Int. Cl.**
A01H 5/08 (2018.01)
A01H 6/74 (2018.01)
- (52) **U.S. Cl.**
USPC **Plt./208**
- (58) **Field of Classification Search**
USPC **Plt./208**

CPC A01H 5/08; A01H 5/00; A01H 6/7409; A01H 6/74
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

PP19,763 P2 * 2/2009 Ballington A01H 6/7409
Plt./208

OTHER PUBLICATIONS

CPVO OCVV on p. 15, col. 5 at No. 40 retrieved on Feb. 6, 2024 at https://cpvo.europa.eu/sites/default/files/documents/TP/fruits/TP_022-2_Strawberry.pdf, 2009, pp. 1 and 15. (Year: 2009).*
International Code of Nomenclature for Cultivated Plants, ISHS Scripta Horticulturae No. 18, Ninth ed. 2016, 2 cover pages and p. 30. (Year: 2016).*

* cited by examiner

Primary Examiner — June Hwu

(74) *Attorney, Agent, or Firm* — John Fado; John Henri

(57) **ABSTRACT**

This invention relates to a new and distinct cultivar of strawberry plant named ‘USDA Lumina’. The new early-season cultivar is primarily characterized by large, bright, glossy, sweet fruits resistant to anthracnose fruit rot.

3 Drawing Sheets

1

Latin name of the genus and species of the plant claimed: ‘USDA LUMINA’ is a new strawberry plant that is *Fragaria x ananassa* Duchesne ex Rozier.

Variety denomination: The new strawberry plant claimed is of the variety denominated ‘USDA Lumina’ *Fragaria x ananassa* Duchesne ex Rozier.

BACKGROUND OF THE NEW PLANT

The present invention relates to a new and distinct strawberry cultivar designated ‘USDA Lumina’. This new strawberry cultivar was discovered in Beltsville, Maryland, in Spring 2019 and originated from a cross between the female parent B2475 (unpatented) and the male parent B2197 (unpatented). The original seedling of the new cultivar was asexually propagated in Beltsville since 2019 by rooting daughter plants from stolons of the mother plant. The present invention has been found to be stable and reproduce true to type through successive asexual propagations rooting daughter plants from stolons.

BRIEF SUMMARY OF THE INVENTION

The cultivar ‘USDA Lumina’ is an early-season strawberry cultivar resistant to anthracnose fruit rot. Fruit yields are higher than other early-season cultivars. It has sweet fruit which are very attractive, brightly colored, glossy, and with uniform symmetry.

2

DESCRIPTIONS OF THE PHOTOGRAPHS

The accompanying color photographs show typical specimens of the new cultivar at various stages of development as nearly true as it is possible to make color reproductions.

FIG. 1 shows a six-plant plot of ‘USDA Lumina’ during fruiting.

FIG. 2 shows the uniform shape and variation in size of ‘USDA Lumina’ fruit from a single harvest of a six-plant plot.

FIG. 3 shows the glossiness of ‘USDA Lumina’ fruit.

DESCRIPTION OF THE NEW CULTIVAR

The following description of ‘USDA Lumina’ is based on observations taken from 2020 through 2023 growing seasons in in evaluations in Beltsville, Maryland, 2023 USDA Plant Hardiness Zone 7b. 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 on variation in environmental, seasonal, climatic, and cultural conditions. ‘USDA Lumina’ has not been observed under all possible environmental conditions. The botanical description of ‘USDA Lumina’ was taken from plants nine months after establishment in the field. Color terminology follows The Royal Horticultural Society Colour Chart, London (R.H.S.86).

DETAILED BOTANICAL DESCRIPTION

Table 1 shows selected characteristics of the new cultivar compared with plant characteristics of 'Earliglow' (unpatented) and 'Galletta' (U.S. Plant Pat. No. 19,763). Characteristics include fruit diameter and length, and the length/width ratio, average fruit weight, sweetness (Brix), acidity (pH and TA), and yield (weight and berry number).

TABLE 1

Characteristic	'USDA Lumina'	'Earliglow'	'Galletta'
Diameter fruit (cm)	5.0	3.8	4.8
Length fruit (cm)	3.9	3.6	3.6
Ratio fruit length/width	1.3	1.1	1.3
Weight fruit (g)	14.1	6.9	17.1
Brix (percent soluble solids)	9.13	10.87	8.07
pH	3.73	3.67	3.58
Titrateable acidity (TA)	0.92	1.01	0.89
Yield (kg/plant)	1.00	0.55	0.86
Yield (non-decayed berries/plant)	53.9	73.7	43.6

Table 2 shows plant characteristics of the new cultivar compared with plant characteristics of 'Earliglow' and 'Galletta'. Plant characteristics include plant height, diameter, number of crowns per plant, habit, density of individual plants and vigor.

TABLE 2

Characteristic	'USDA Lumina'	'Earliglow'	'Galletta'
Plant height (cm)	23.5	20.8	18.5
Plant diameter (cm)	46.2	45.5	37.7
Number of crowns plant	5.3	4.2	2.5
Habit	Upright open globose	Upright open globose	Upright open globose
Density of individual plant	Medium to dense	Medium	Not dense
Vigor	Medium to strong	Medium to strong	Medium

Table 3 shows leaf characteristics of the new cultivar compared with leaf characteristics of 'Earliglow' and 'Galletta'. Leaf characteristics include leaf type, leaf shape, leaf length, leaf width, terminal leaflet length, terminal leaflet width, terminal leaflet length to width ratio, leaf margins, shape of teeth, leaf serrations per leaflet, upper and lower leaf surface color, number of leaflets, terminal leaflet apex shape, terminal leaflet base shape, glossiness upper side leaf surface, texture upper side leaf surface, texture underside leaf surface, and leaf arrangement.

TABLE 3

Characteristic	'USDA Lumina'	'Earliglow'	'Galletta'
Leaf type	Semi-evergreen	Semi-evergreen	Semi-evergreen
Leaf shape	Trifoliolate with ovate leaflets touching to overlapping	Trifoliolate with ovate leaflets touching to overlapping	Trifoliolate with ovate leaflets touching to overlapping
Leaf length (cm)	12.8	15.0	12.9
Leaf width (cm)	16.0	17.3	15.9

TABLE 3-continued

Characteristic	'USDA Lumina'	'Earliglow'	'Galletta'
5 Terminal leaflet length (cm)	8.7	8.8	8.3
Terminal leaflet width (cm)	6.9	7.8	7.1
Terminal leaflet length width ratio	1.3	1.1	1.2
10 Leaf margins	Serrate	Serrate	Serrate
Shape of teeth	Apiculate	Apiculate	Apiculate
Leaf serrations per leaflet	27.7	26.8	26.3
Color mature leaves upper surface	Yellow-Green Group 146A	Green Group 137A	Green Group 137A
15 Color mature leaves lower surface	Yellow-Green Group 147B	Green Group 137C	Green Group 137C
Number of leaflets	3	3	3
Terminal leaflet apex shape	Obtuse	Obtuse	Obtuse
20 Terminal leaflet base shape	Acute cuneate	Acute cuneate	Acute cuneate
Glossiness upper side leaf surface	Semi-gloss	Semi-gloss	Semi-gloss
Texture upper side leaf surface	Very slightly rugose	Very slightly rugose	Very slightly rugose
25 Texture underside leaf surface	Very slightly reticulate	Very slightly reticulate	Very slightly reticulate
Leaf arrangement	Individual trifoliolate leaves attached to compressed stem (crown) at ground level	Individual trifoliolate leaves attached to compressed stem (crown) at ground level	Individual trifoliolate leaves attached to compressed stem (crown) at ground level

Table 4 shows information about the petiole, the petiolule, the bract and the stipule of the new cultivar compared to 'Earliglow' and 'Galletta'. This includes petiole length, petiole diameter, petiole pubescence, petiole color, petiolule length, petiolule hair attitude, bract frequency and color, texture petiole, and stipule length, width and color.

TABLE 4

Characteristic	'USDA Lumina'	'Earliglow'	'Galletta'
45 Leaf petiole length (cm)	15.0	16.9	12.6
Petiole diameter (cm)	0.36	0.32	0.41
50 Petiole texture	Smooth	Smooth	Smooth
Petiole pubescence	Sparse	Very sparse	Moderately dense
Petiole hair attitude	Upwards to outwards	Outwards	Outwards
55 Petiole color	Yellow Green Group 144A	Yellow Green Group 144B	Yellow Green Group 144B
Petiolule color	Yellow Green Group 144A	Yellow Green Group 144B	Yellow Green Group 144B
Petiolule length (cm)	0.84	0.52	0.58
60 Bract frequency	1 to 2 per florescence, generally unifoliolate	1 to 2 per florescence, generally unifoliolate	1 to 2 per florescence, generally unifoliolate
Bract color	Yellow Green Group 144A	Yellow Green Group 144B	Yellow Green Group 144B
65			

TABLE 4-continued

Characteristic	'USDA Lumina'	'Earliglow'	'Galletta'
Stipule length (cm)	3.6	3.1	2.8
Stipule width (cm)	0.59	0.49	0.70
Stipule color	Yellow Green Group 144A, Grayish Red Group 182B	Yellow Green Group 144B, Grayish Red Group 182B	Yellow Green Group 144B, Grayish Red Group 182B

Table 5 shows stolon characteristics of the new cultivar compared to 'Earliglow' and 'Galletta'. These characteristics include the number of stolons, the anthocyanin coloration of the stolons, the thickness of the stolons, and the pubescence of the stolons.

TABLE 5

Characteristic	'USDA Lumina'	'Earliglow'	'Galletta'
Stolon production per plant	9.3	2.3	7.7
Stolon color	Yellow Green Group 144A, Grayish Red Group 182B	Yellow Green Group 144B, Grayish Red Group 182B	Yellow Green Group 144B, Grayish Red Group 182B
Stolon anthocyanin	Medium	Strong	Medium
Stolon thickness (cm)	0.27	0.28	0.26
Stolon pubescence	Medium	Medium	Medium

Table 6 shows inflorescence characteristics of the new cultivar compared to 'Earliglow' and 'Galletta'. These characteristics include inflorescence position relative to foliage, flower type, flower size, petal shape, relative petal spacing, petal apex shape, petal margin, petal base shape, petal length, petal width, petal length/width ratio, number of petals, petal color, Stigma color, style color, anther color, filament color, and flower truss type.

TABLE 6

Characteristic	'USDA Lumina'	'Earliglow'	'Galletta'
Inflorescence position	Slightly below to level	Level to slightly above	Slightly below to level
Flower type	Complete simple	Complete simple	Complete simple
Flower diameter (cm)	3.1	2.3	1.9
Petal shape	Circular to obovate	Circular to obovate	Circular to obovate
Petal spacing	Overlapping	Separate to overlapping	Overlapping
Petal apex shape	Circular	Circular	Circular
Petal margin	Entire	Entire	Entire
Petal base shape	Obovate	Obovate	Obovate
Petal length (cm)	1.16	0.91	0.82
Petal width (cm)	1.14	0.74	0.93
Petal length/width ratio	1.02	1.25	0.88
Petal count	5.0	5.0	5.2
Petal color	White Group 155D	White Group 155D	White Group 155D

TABLE 6-continued

Characteristic	'USDA Lumina'	'Earliglow'	'Galletta'
5 Stigma color	Yellow-Orange Group 20C	Yellow-Green Group 150C	Yellow-Orange Group 18B
Style color	Yellow-Green Group 150B	Yellow-Green Group 154B	Yellow-Green Group 151D
Anther color	Yellow-Orange Group 20A	Yellow-Orange Group 21A	Yellow-Orange Group 21B
10 Filament color	Yellow-Green Group 150C	Yellow-Green Group 154C	Yellow-Green Group 154D
Anther count	23.6	22.3	24.6
Blooming habit	Cyme	Cyme	Cyme

Table 7 shows fruit characteristics of the new cultivar compared to 'Earliglow' and 'Galletta'. These characteristics include number of berries per truss, fruiting truss attitude, fruit length, fruit diameter, fruit length/width ratio, fruit weight, relative fruit size, predominant fruit shape, difference in shape between primary and secondary fruit, band without achenes, evenness of fruit surface, top color, non-blush side color, blush side color, internal color, achene color, achene count per fruit, insertion of calyx, pose of calyx segments, size of calyx in relation to fruit, ease of calyx removal, firmness of flesh, evenness of flesh color, distribution of flesh color, sweetness, acidity, Brix, pH, titratable acidity, texture when tasted, time of flowering, harvest maturity (50% of plants with ripe fruit), type of bearing, and yield.

TABLE 7

Characteristic	'USDA Lumina'	'Earliglow'	'Galletta'
35 Number of berries per fruiting truss	5.0	7.7	5.7
Fruiting truss attitude	Prostrate	Prostrate	Prostrate
Diameter fruit (cm)	5.0	3.8	4.8
40 Length fruit (cm)	3.9	3.6	3.6
Ratio fruit length/width	1.3	1.1	1.3
Weight fruit (g)	14.1	6.9	17.1
Relative fruit size	Medium to Large	Small	Medium to Large
45 Predominant fruit shape	Ovate to conic	Conic with neck	Ovate to conic
Difference in shape between primary and secondary fruits	None, uniform	None, uniform	Moderate, primaries have some ridging
50 Band without achenes	Slight	Moderate	None to slight
Evenness of fruit surface	Even to slightly uneven	Slightly uneven	Even to slightly uneven
Color of top of fruit	Red Group 44A	Red Group 46B	Red Group 45A
55 Blush side color	Red Group 45A	Red Group 46A	Red Group 46A
Non-blush side color	Red Group 44B	Red Group 44A	Red Group 45A
Internal flesh color	Orange-White Group 159D, Red Group 44A, Red Group 44C	White Group 155D, Red Group 44A	Orange-White Group 159D, Red Group 44A, Red Group 44C
60 Achene position	At surface	At surface	At surface to slightly raised
Achene color	Red Group 45A, Yellow	Red Group 46B, Yellow-Green	Yellow-Green Group 153B,
65			

TABLE 7-continued

Characteristic	'USDA Lumina'	'Earliglow'	'Galletta'
Achene count	Group 153A, Yellow-Green Group 152C 305	Group 152C, Greyed-Orange Group 166A 252	Greyed-Orange Group 166B 304
Insertion of calyx	At surface to slightly necked	Necked	At surface to necked
Pose of calyx segments	Reflexed	Reflexed	Reflexed
Size of calyx in relation to fruit	Smaller to slightly larger	Same to slightly larger	Same to slightly larger
Ease of calyx removal	Difficult	Difficult	Difficult
Firmness of flesh	Medium to firm	Medium	Medium to firm
Evenness of flesh color	Uneven	Uneven	Uneven
Distribution of flesh color	Red Group 44C core, Orange-White Group 159D halo, area near calyx, and radiant lines, through Red Group 44A outer ring	Red Group 44A core, then White Group 155D halo and radiant lines, through Red Group 44A outer ring	Red Group 44C core, Orange-White Group 159D area near calyx and radiant lines through Red Group 44A outer ring
Sweetness	Sweet	Very sweet	Mild
Acidity	Mild	Medium	Tart
Brix (percent soluble solids)	9.13	10.87	8.07
pH	3.73	3.67	3.58
Titrateable acidity (TA)	0.92	1.01	0.89
Texture when tasted	Smooth to Creamy	Fine, somewhat smooth	Fine, somewhat smooth, slightly gummy
Time of flowering	April to May	April to May	April to May
Harvest maturity (50% of plant with ripe fruit)	Mid to late May	Mid to late May	Mid to late May
Type of bearing	Short Day/ June Bearing	Short Day/ June Bearing	Short Day/ June Bearing

TABLE 7-continued

Characteristic	'USDA Lumina'	'Earliglow'	'Galletta'
5 Yield (non-decayed berries/plant)	53.9	73.7	43.6
Yield (kg/plant)	1.00	0.55	0.86

10 Table 8 shows the fruit quality of the new cultivar compared to 'Earliglow' and 'Galletta' after one week and two weeks in refrigerated storage. The postharvest fruit quality characteristics include the percentage of stored fruits that are marketable, degraded, or rotted after one week and two weeks in refrigerated storage.

TABLE 8

Cultivar	Percentage marketable		Percentage degraded	
	Week 1	Week 2	Week 1	Week 2
20 'USDA Lumina'	91 bcd	53 bc	45 bcd	94 bcd
'Earliglow'	98 a	51 bc	46 bcd	97 abc
'Galletta'	95 ab	42 cde	28 d	98 a
Cultivar	Percentage rotted			
	Week 1	Week 2		
25 'USDA Lumina'	2 cde	20 abc		
30 'Earliglow'	1 e	2 ef		
'Galletta'	1 e	1 f		

COMPARISON WITH PARENTAL GENOTYPES

35 When 'USDA Lumina' is compared to female parent, B2475 (unpatented), the fruits have better symmetry and are less susceptible to *Botrytis* fruit rot. When 'USDA Lumina' is compared to male parent, B2197 (unpatented), the fruits are more desirable, less mealy texture and are less susceptible to *Botrytis* fruit rot.

40 We claim:

1. A new and distinct cultivar of strawberry plant named 'USDA Lumina', substantially as described and illustrated herein.



FIG. 1

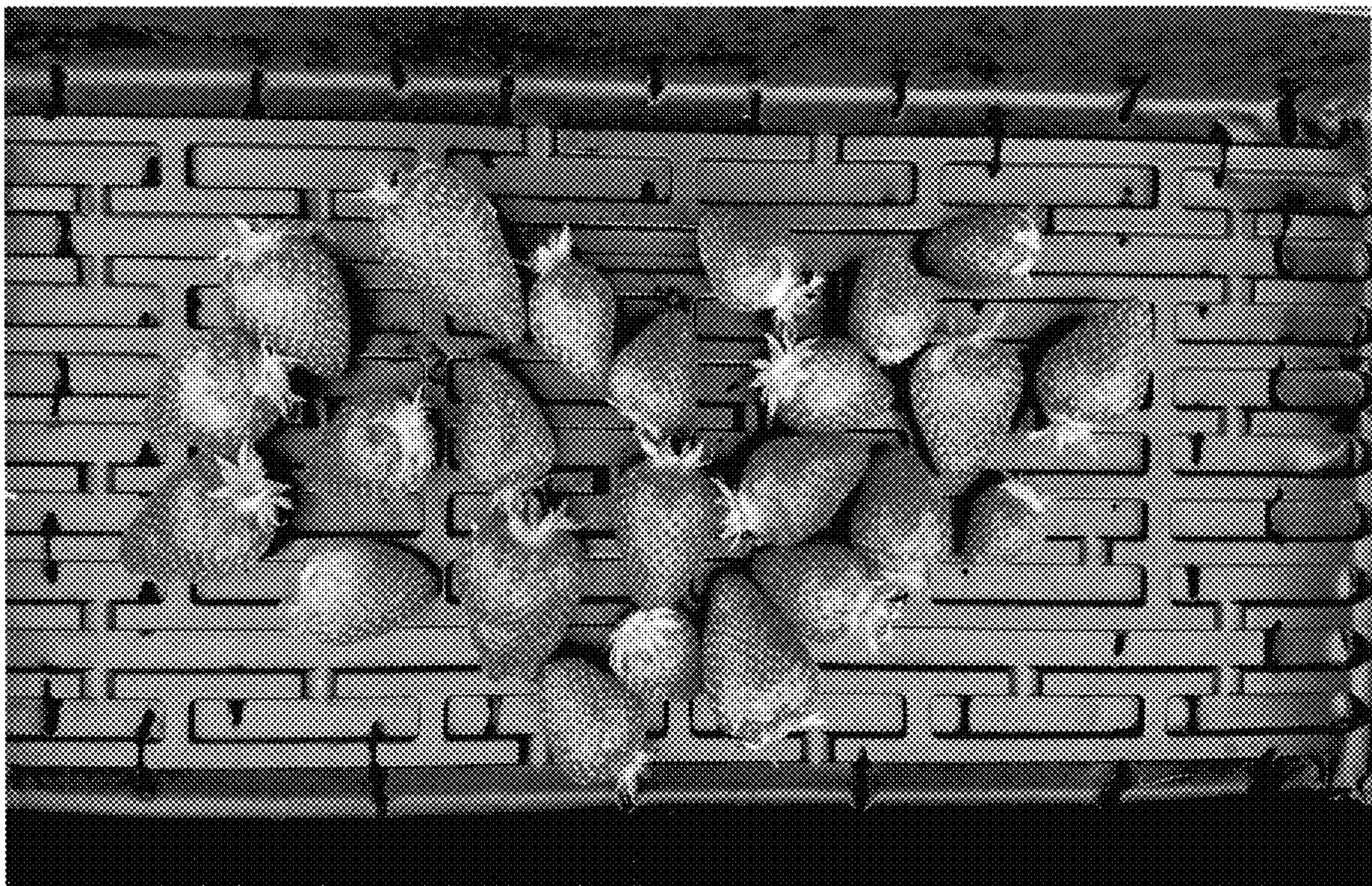


FIG. 2



FIG. 3