

US00PP20624P3

(12) **United States Plant Patent**  
**Dozier, Jr. et al.**

(10) **Patent No.:** **US PP20,624 P3**  
(45) **Date of Patent:** **Jan. 5, 2010**

(54) **CHESTNUT PLANT NAMED ‘AU BUCK IV’**

(50) Latin Name: *Catanea mollissima*  
Varietal Denomination: **AU BUCK IV**

(75) Inventors: **W. Alfred Dozier, Jr.**, Opelika, AL (US);  
**Joseph Daniel Norton**, Auburn, AL  
(US); **Curtis J. Hansen**, Opelika, AL  
(US)

(73) Assignee: **Auburn University**, Auburn, AL (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.: **12/012,112**

(22) Filed: **Jan. 30, 2008**

(65) **Prior Publication Data**

US 2009/0193553 P1 Jul. 30, 2009

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

(52) **U.S. Cl.** ..... **Plt./152**

(58) **Field of Classification Search** ..... Plt./152  
See application file for complete search history.

(56) **References Cited**

PUBLICATIONS

Lin ye ke ji et al., “Forest science & Technology”, Jan. 1989,  
pp. 16–18, Baker Auxiliary Stacks SD1.L56, No. 2–1990.  
Crane, H. L. et al., Nut Breeding’, U.S. Department of Agri-  
culture Yearbook, Jan. 1937, pp. 827–837.

Hemming, E. Sam, “Chinese Chesnut in Maryland”, Jan.  
1944, pp. 32–34, A.R. Northern Nut Growers Assoc.

Kim, Kap Duk et al., Studies On The Farmers Cultivating  
Chestnut Orchards in Korea and Its Financial Analysis, Jan.  
1971, pp. 51–74, Bull. Seol. Nut Univ.Fores., No. 8.

Snare, Lester, Chestnuts Production’, Jan. 1996, pp.  
422–427, NSW Agriculture, Agfact H3.1.50., <http://www.nrdc.gov.au/pub/handbook/chestnuts.pdf>.

Harris, Hubert et al., Three Chinese Chestnuts: Au–Cropper,  
Au–Leader, and Au–Homestead–Their History and Produc-  
tion’, Mar. 1980, pp. 3–8, Agricultural Experiment Station  
Auburn University Circular 247.

Jaynes, Richard A. et al., “Handbook of North American Nut  
Trees”, pp. 264–286, The W.F. Humphrey Press, Inc. New  
York.

Primary Examiner—Annette H Para

(74) Attorney, Agent, or Firm—Haverstock & Owens LLP

(57) **ABSTRACT**

‘AU Buck IV’ is a new and distinct Chinese chestnut cultivar  
that is blight resistant, precocious and an annual bearer. It  
produces a medium to heavy crop load each year and a large  
sized nut. Nut drop begins about October 10 and continues  
for a 5–6 week period. A high percentage of nuts produced  
drop during the first 4 weeks of the period that nuts drop  
from this cultivar. ‘AU Buck IV’ is a small tree that is  
broadly elliptic in shape with high, upright to spreading and  
diffuse branches that was 8.23 meters tall with a canopy  
covering an area of 30.19 square meters at 15 years old. ‘AU  
Buck IV’ is the fourth cultivar to mature and drop nuts in a  
series of four Chinese chestnut cultivars that will provide for  
a continuous nut drop of a high energy wildlife food source  
from late August through mid-to-late November.

**3 Drawing Sheets**

**1**

Latin name of the genus and species of the plant claimed:  
*Castanea mollissima* Blume.

Variety denomination: ‘AU Buck IV’.

#### BACKGROUND OF THE INVENTION

A Chinese chestnut planting was established at Auburn  
University, Auburn, Ala., from nuts collected in China. The  
planting was established on the United States Department of  
Agriculture Horticulture Farm which in later years became  
the Mainstation Horticulture Farm. Precocious and prolific-  
bearing, blight resistant seedlings were selected for nut  
appearance, size and quality. Each generation of seedlings  
were the product of controlled mass pollination from the  
most promising seedlings selected from the previous genera-  
tion. ‘AU Cropper’, ‘AU Leader’ and ‘AU Homestead’ were  
released from a second generation of approximately 2000  
seedlings. A planting of third generation seedlings from con-  
trolled mass pollination of ‘AU Leader’, ‘AU Homestead’  
and ‘AU Cropper’ was established at the Auburn University  
Piedmont Substation at Camp Hill, Ala.

#### SUMMARY OF THE INVENTION

‘AU Buck IV’ is an open pollinated seedling of ‘AU Crop-  
per’.

**2**

The present invention relates to a new and distinct Chi-  
nese chestnut cultivar that is blight resistant, precocious and  
produces a medium to large crop annually for tree size. ‘AU  
Buck IV’ is a late maturing cultivar from which nuts starts  
dropping about October 10 and continues for a 5 to 6 week  
period. A high percent of the nuts produced drop during the  
first 3 weeks of the period that nuts drop from this cultivar.  
Nut size is large and average nut weight is 15.5 g. The large  
nut is an excellent high energy food source for wildlife such  
as deer and squirrels in late fall. The 15-year old original tree  
of ‘AU Buck IV’ is a small tree. It is 8.23 meters tall, has a  
canopy width of 6.20 meters and a canopy area of 30.19  
square meters. The original tree of ‘AU Buck IV’ cultivar has  
produced a medium to heavy crop load for tree size each  
season and produced 19.8 kg (43.6 pounds) of nuts in 2006.  
There has been no evidence of insect or disease damage to  
the tree, foliage or nuts.

‘AU Buck IV’ cultivar is the fourth cultivar to mature and  
drop nuts in a series of four Chinese chestnut cultivars that  
will provide for a continuous nut drop of a high energy wild-  
life food source from late August through mid-to-late  
November. ‘AU Buck I’, ‘AU Buck II’ and ‘AU Buck III’ are  
the other three cultivars, which are disclosed in U.S. patent



application Ser. No. 12/012,091, filed on Jan. 30, 2008, and entitled “CHESTNUT PLANT NAMED ‘AU BUCK I’”, U.S. patent application Ser. No. 12/012,025, filed on Jan. 30, 2008, and entitled “CHESTNUT PLANT NAMED ‘AU BUCK II’” and U.S. patent application Ser. No. 12/012,110, filed on Jan. 30, 2008, and entitled “CHESTNUT PLANT NAMED ‘AU BUCK III’”, which are hereby incorporated by reference.

The new cultivar is able to be asexually reproduced by budding or grafting onto a seedling Chinese chestnut root-stock. The unique characteristics come true to form and are established and transmitted through asexual propagation.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a photograph of nuts of the ‘AU Buck IV’ cultivar.

FIG. 2 is a photograph of nuts of the ‘AU Buck IV’ cultivar.

FIG. 3 is a photograph of a tree of the ‘AU Buck IV’ cultivar.

DETAILED BOTANICAL DESCRIPTION

The Chinese chestnut, *Castanea mollissima* Blume, is a cold hardy temperate zone species native to China. It can be grown between 30° and 50° latitudes. The Chinese chestnut is resistant to chestnut blight fungus *Cryphonectria parasitica*. Generally, Chinese chestnuts are grown on a wide range of soils, but well-drained, deep and fertile soils are considered the best. Soils should be slightly acidic with pH 5.6–6.5. The name *mollissima* means soft hair and this species is recognized by dense hair on young leaves and downy yellow terminal parts of the shoots in winter. The leaf blade is thicker and, in general, mature leaves are broader than those of other species. The nuts have a small scar or hilum. The pellicle or thin membranous skin on the nuts is thin and peels readily from the kernel. The trees are a spreading type and long-lived with a round top. The trees have bark with furrows and buds with 3–4 scales and leaves are 2 ranked, serrated with numerous parallel veins.

Chestnuts are monoecious and staminate flowers appear on erect cylindrical catkins with 10–20 stamens and 6-parted calyx. Pistillate flowers are borne on lower part of the upper staminate catkins and rarely on separate catkins usually 3 in a prickly symmetrical involucre with 7–9 styles and a 6-celled ovary. Nuts are small, brown with a pale scar at the base. Generally, 1–3 nuts per involucre or bur are present.

‘AU Buck IV’ is a small tree that is broadly elliptic in shape with high, upright to spreading, and diffuse branches. The original 15-year old ‘AU Buck IV’ tree is 8.23 meters (26.75 feet) tall with a trunk diameter at breast height of 19.5 cm (7.18 inches). The canopy is 6.20 meters (20.33 feet) wide and covers a canopy area of 30.19 square meters (324.97 square feet). ‘AU Buck IV’ produces a large nut that has a 5 year average weight of 15.5 g, length of 30.0 mm (1.18 inches) and width of 34.0 mm (1.34 inches). The nuts start dropping about October 10 and continues to drop for a 5–6 week period. A high percent of the nuts produced drop during the first 4 weeks of the period that nuts drop from this cultivar. ‘AU Buck IV’ is a small tree that is precocious, fruits annually, and produces a good crop for the tree size, and drops the nuts over an extended time period.

In the planting at the Piedmont Substation, Camp Hill, Ala., accurate yields could not be obtained due to extremely heavy wildlife (deer and turkey) feeding. Therefore, the trees

were rated for crop load each year. The crop load on ‘AU Buck IV’ has been rated as medium to heavy for the small sized tree. In the fall of 2006, individual trees were caged with 6 foot (1.83 meters) tall chicken wire prior to nut drop to exclude wildlife and nuts were picked up daily during nut drop. The 15-year old ‘AU Buck IV’ tree produced 19.8 kg (43.6 pounds) of nuts in 2006. This yield is about equal to the reported yields for similar aged trees.

The table below illustrates the specific differences between the ‘AU Buck IV’ cultivar and the ‘Revival’ cultivar.

The botanical details of this new and distinctive variety of chestnut tree - with color definitions (except those in common color terms) referenced to Royal Horticultural Society's Colour Chart (RHS) and color was also determined using an electronic spectrophotometer to determine hue angle and Chroma (spectrophotometer model CM-2002; Minolta Camera Co., Japan). ‘AU BUCK IV’ CHESTNUT
<u>Tree:</u>  Size (at maturity) - small - fifteen year old original tree is 8.23 meters tall with a canopy width of 6.20 meters and a canopy area of 30.19 sq. meters Tree shape is broadly elliptic. Vigor - moderately vigorous <u>Trunk:</u>  Form - upright with branches high and diffuse Texture - relatively smooth Color of bark - brown RHS N200B, Chroma C* 9.96, hue angle 88.61 <u>Branches:</u>  Form - upright to spreading Texture - relatively smooth Lenticels - few, small Branching habit - high and diffuse Color - new wood; grey-brown, RHS N199B, Chroma C* 15.74, hue angle 77.23, mature wood: greyed-green RHS 197A Chroma C* 11.43, hue angle 92.03 <u>Foliage:</u>  Quantity - abundant Density - dense <u>Leaves:</u>  Size - large. Length (cm) 16.8 (13.5-20.0) [20] width (cm) 7.6 (6.2-8.9) [20] leaf ratio 2.2(1.9-2.6) [20] Shape - broadly elliptic to oblong occasionally obovate leaf tip - acute leaf base - rounded, equal to oblique Thickness - thick. leaf venation 1° pinnate: 2° ± parallel, moderately prominent abaxially Texture - strongly coriaceous Margin - weakly to moderately serrate, teeth ascending Petiole - length 1.0 cm (0.5-1.51) [20] Petiole pubescence- glabrous to sparsely simple hairs Color- adaxial surface, glabrous blade, sparse simple hairs on veins medium green, highly shiny, RHS 147A, Chroma C* 16.61, hue angle 118.30 abaxial surface, moderately to densely stellate hairs on blade, sparse simple hairs on blade, RHS 148B, Chroma C* 19.77, hue angle 109.47 <u>Bloom:</u>  Amount of bloom - heavy Color - at anthesis, 161D greyed-yellow group, 157D green-white group, 155C white group Blooming period - mid-May. After foliation in April. Age at which tree starts flowering - early, 2-3 years after graft replacement. Male flower - Catkin length (cm) - 13.2 (9.0-15.3) [15] Male flower- stamen number per catkin - 11.6 (10.0-12.0) [15] Female flower - flower number per bur - 3 Female flower - style number per flower 7.7 (6-9) [15]



-continued
<u>Crop:</u>
Bearing - regular annual bearer
Productivity - prolific
Ripening period - long, nuts begins dropping about October 10 and continues for a 5-6 week period.
Distribution of nuts on tree - well distributed, fruits on terminals with 2-4 burs per terminal.
Tenacity - burs crack while on tree and nuts release and drop from bur.
<u>Hull:</u>
Description - spiny round bur
Size - 2.18-3.02" in diameter
Number of nuts - 2-3 per bur
Dehiscence - splits easily when still on tree
Color - yellow-green at dehiscence, RHS N144C
<u>Nut:</u>
Size - large. Average size - 1.18" × 1.34" × 0.87". Average weight - 15.5 grams 29 (23-35) nuts per pound.
Form - flattened on 1 side. occ. 2, hemispheric to somewhat ovoid on other side
Blossom end - broadly rounded with an obtuse tip
Basal end - broadly rounded to flat
Color - light brown, RHS 200B. Chroma C* 10.18, hue angle 43.00
Pubescence- mixed long and short, fine, white hairs densely covering ¼ to ½ of the distal end, otherwise glabrate to glabrous elsewhere
Shell - thin
Hardness of shell - relatively hard, yet not rigid
Texture of shell - smooth
Percentage of kernel to nut - very high-90-95%
<u>Kernel:</u>
Size - almost as large as nut size
Form - same as nut shape
Pellicle - thin
Flavor - excellent, very sweet
Color - light-straw color, RHS 162A, Chroma C* 47.61, hue angle 81.36
Resistance to insects: no unusual susceptibilities noted
Resistance to disease: no susceptibilities to disease noted
The chestnut tree and its nuts herein described may vary in slight detail due to climatic and soil conditions under which the variety may be grown; the present description being of the variety as grown in Camp Hill, Ala.
The botanical details of this variety of chestnut tree - with color definitions (except those in common color terms) referenced to Maerz and Paul Dictionary of Color - are as follows: ‘REVIVAL’
<u>Tree:</u>
Size (at maturity) - large
Vigor - very vigorous
<u>Trunk;</u>
Form - upright with branches spreading in upper reaches of tree.
Texture - relatively smooth
Color of bark - Silvergray (13-A-1)
<u>Branches:</u>
Form - strong
Texture - relatively smooth
Lenticels - few, small
Branching habit - spreading in upper region of tree
Color - new wood: reddish brown and glossy, mature wood: silver gray
<u>Foliage:</u>
Quantity - abundant
Density - dense
<u>Leaves:</u>
Size - large. Average length - 5-7" (including petiole). Average width - 2"

-continued
Shape - oblong with acute tip and rounded base
Thickness - thick
Texture - smooth
Margin - dentate
Petiole - length: medium. Thickness: medium.
Color - Top side - glossy dark green (22-L-12).
Under side- lighter green (21-D-7).
<u>Bloom:</u>
Amount of bloom - heavy
Color - cream white (17-B-1)
Blooming period - late. After leaf out in April
Age at which tree starts flowering - early; 2-3 years years after graft replacement.
<u>Crop:</u>
Bearing - regular (yearly) bearer
Productivity - prolific
Ripening period - short. September 15-October 1.
Distribution of nuts on tree - well distributed
Tenacity - burrs crack while on tree and nuts easily release, many falling by themselves
<u>Hull:</u>
Description - spiny, round burr
Size - 3-4" in diameter
Number of nuts - 2-3 per burr
Dehiscence - splits easily when still on tree. Some entire burrs split and fall to ground
Color - brown (15-A-8)
<u>Nut:</u>
Size - large. Average size - 1 ½" × 1 ½" × 1" thick.
Average weight - 24-32 nuts per pound
Form - broad and ovoid on one side, flat on other side
Blossom end - pointed tip
Basal end - flattened
Color - India Red (7-L-6).
Shell - thin
Hardness of shell - relatively hard, yet not rigid
Texture of shell - smooth
Percentage of kernel to nut - very high (95%)
<u>Kernel:</u>
Size - almost as large as nut size
Form - same as nut shape
Pellicle - thin
Flavor - excellent. Very sweet.
Color - Oyster white (10-B-1)
Resistance to insects: no unusual susceptibilities noted
Resistance to disease: very high inherent resistance to chestnut bark fungus ( <i>Endothia parasitica</i> ), no other susceptibilities to any other disease
The chestnut tree and its nuts herein described may vary in slight detail due to climatic and soil conditions under which the variety may be grown; the present description being of the variety as grown in Alachua, Fla.
‘AU Buck IV’ is different from ‘AU Gobbler I’ in several ways. For example, the size of the trees, the trunk forms and colors, the branches, the leaves, the crop and the nuts have differences. Specifically, the ‘AU Buck IV’ tree is shorter with a canopy width and a canopy area smaller than the ‘AU Gobbler I’ tree. The ‘AU Buck IV’ branches are upright to spreading and grey brown (new) or greyed-green (mature); whereas, the ‘AU Gobbler I’ branches are upright and brown (new) or greyed-green (mature). The leaves differ in size, shape, texture, margin and color. The ripening period for the ‘AU Buck IV’ is around October 10 and continues for a 5–6 week period, but the ‘AU Gobbler I’ ripening period is around August 25 and continues for 4–5 weeks. The average weight of the nuts of ‘AU Buck IV’ is 15.5 grams versus 7.7 grams for ‘AU Gobbler I’. Furthermore, ‘AU Buck IV’ has

roughly 29 nuts per pound, and ‘AU Gobbler I’ has roughly 59 nuts per pound.

‘AU Buck IV’ is different from ‘AU Gobbler II’ in several ways. For example, the trees, the trunk colors, the branch colors, the leaves, the crop and the nuts have differences. Specifically, the ‘AU Buck IV’ tree is taller with a canopy width and canopy area smaller than the ‘AU Gobbler II’ tree. The ‘AU Buck IV’ branches are grey-brown (new) or greyed-green (mature); whereas, the ‘AU Gobbler II’ branches are brown (new) or greyed-green (mature). The leaves differ in size, shape margin and color. The ripening period for the ‘AU Buck IV’ is around October 10 and continues for a 5–6 week period, but the ‘AU Gobbler II’ ripening period is around September 5 and continues for 4–5 weeks. The average weight of the nuts of ‘AU Buck IV’ is 15.5 grams versus 5.7 grams for ‘AU Gobbler II’. Furthermore, ‘AU Buck IV’ has roughly 29 nuts per pound, and ‘AU Gobbler II’ has roughly 65–101 nuts per pound.

‘AU Buck IV’ is different from ‘AU Premier’ in several ways. For example, the trees, the trunk colors, the branch colors, the leaves, the crop and the nuts have differences. Specifically, the ‘AU Buck IV’ tree is taller with a canopy width larger than the ‘AU Premier’ tree. The ‘AU Buck IV’ has a brown trunk, and the ‘AU Premier’ has a greyed-green trunk. The ‘AU Buck IV’ branches are grey-brown (new) or greyed-green (mature); whereas, the ‘AU Premier’ branches are brown (new) or greyed-green (mature). The leaves differ

in size, shape, thickness, texture, margin and color. The ripening period for the ‘AU Buck IV’ is around October 10, and the ‘AU Premier’ ripening period is early September through mid-November. The average weight of the nuts of ‘AU Buck IV’ is 15.5 grams versus 1.26 grams for ‘AU Premier’. Furthermore, ‘AU Buck IV’ has roughly 29 nuts per pound, and ‘AU Premier’ has roughly 360.3 nuts per pound.

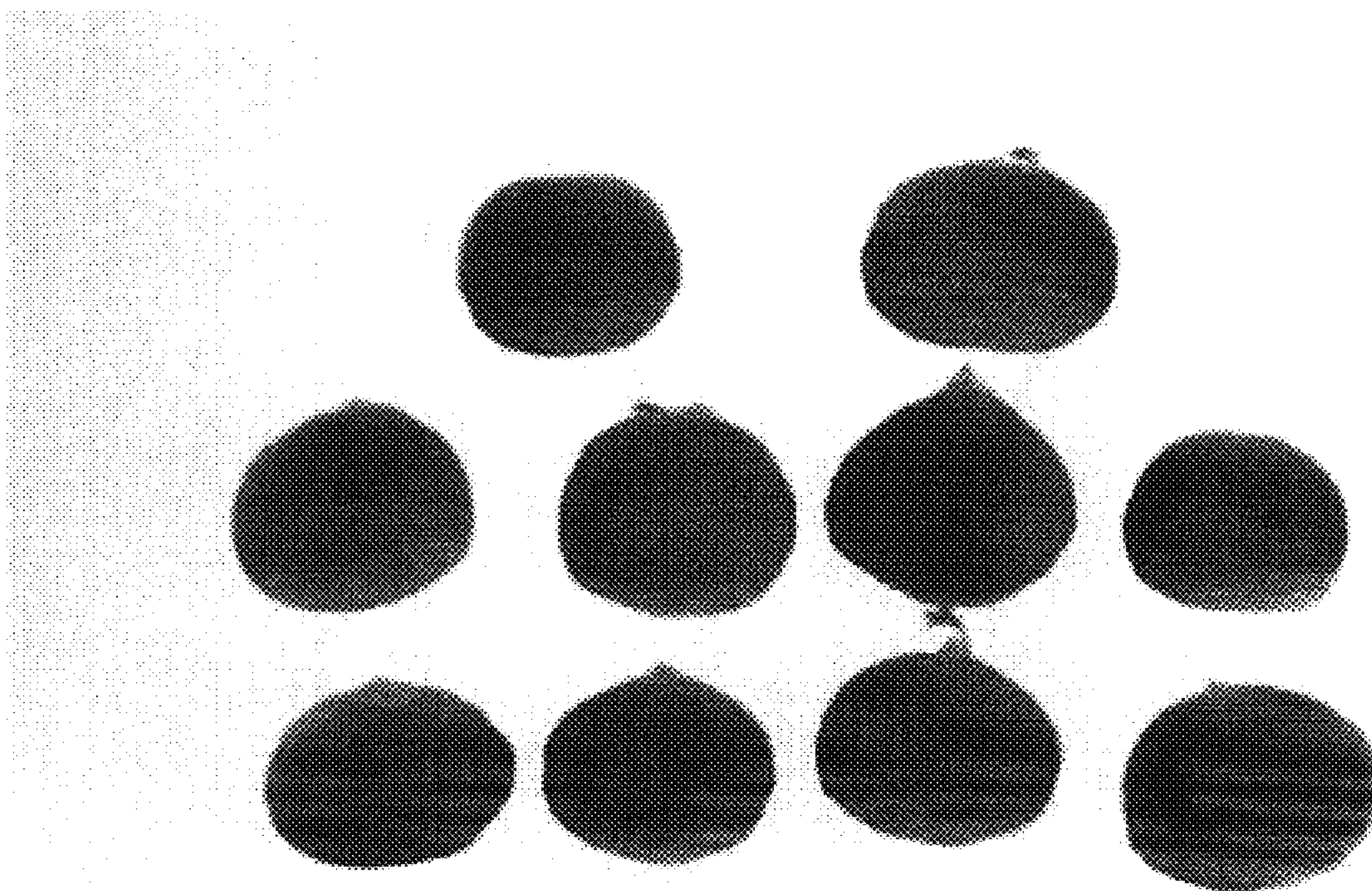
‘AU Buck IV’ is different from ‘AU Encore’ in several ways. For example, the trees, the trunk colors, the branch colors, the leaves, the crop and the nuts have differences. Specifically, the ‘AU Buck IV’ tree is taller with a canopy area smaller than the ‘AU Encore’ tree. The ‘AU Buck IV’ has a brown trunk, and the ‘AU Encore’ has a greyed-green trunk. The ‘AU Buck IV’ branches are grey-brown (new) or greyed-green (mature); whereas, the ‘AU Encore’ branches are brown (new) or greyed-green (mature). The leaves differ in size, shape, thickness, texture, margin, petiole and color. The ripening period for the ‘AU Buck IV’ is around October 10, but the ‘AU Encore’ ripening period is late September through late November. The average weight of the nuts of ‘AU Buck IV’ is 15.5 grams versus 2.4 grams for ‘AU Encore’. Furthermore, ‘AU Buck IV’ has roughly 29 nuts per pound, and ‘AU Encore’ has roughly 189.2 nuts per pound.

What is claimed is:

1. A new and distinct cultivar of the species *Castanea mollissima* Blume named ‘AU Buck IV’ as described and illustrated herein.

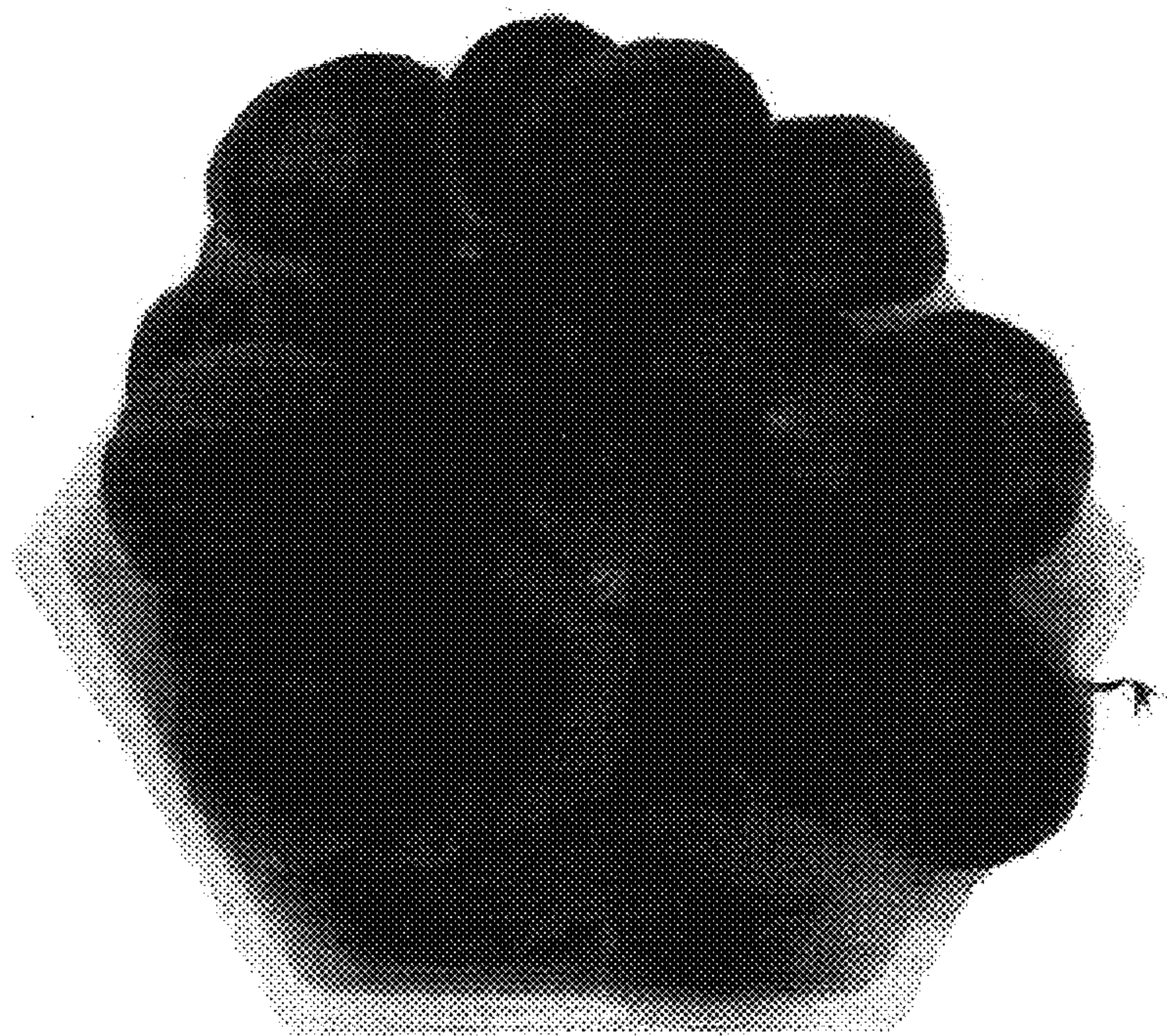
\* \* \* \* \*





‘AU Buck IV’

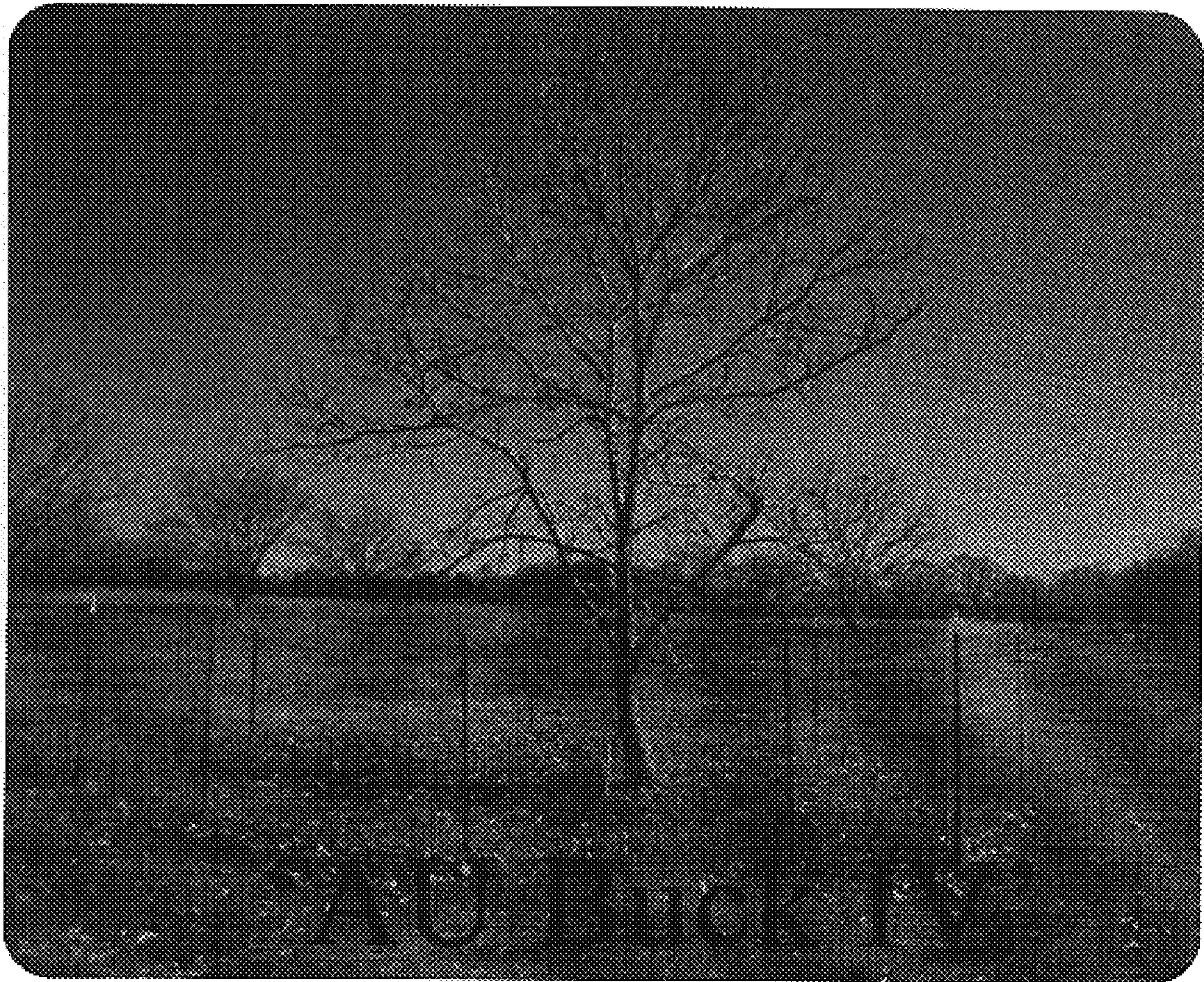
Fig. 1



‘AU Buck IV’

Fig. 2





**Fig. 3**



UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : PP 20,624 P3  
APPLICATION NO. : 12/012112  
DATED : January 5, 2010  
INVENTOR(S) : W. Alfred Dozier, Jr., Joseph Daniel Norton and Curtis J. Hansen

Page 1 of 1

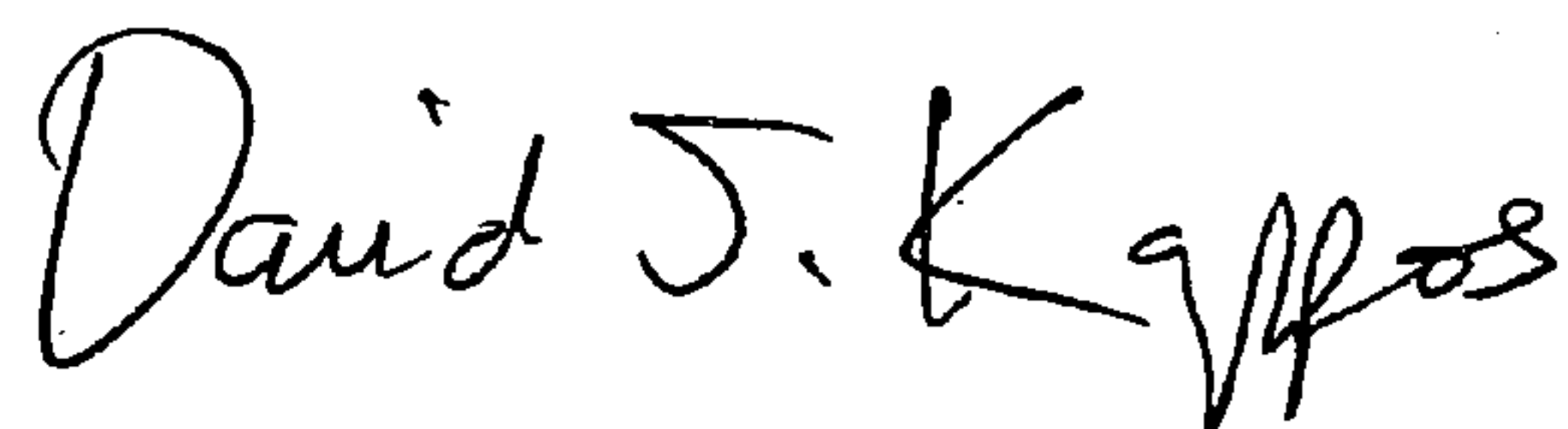
It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

IN THE SPECIFICATION

At the title page (50), please replace Latin Name: *Catanae mollissima* with *Castanea mollissima*

Signed and Sealed this

Sixteenth Day of March, 2010

A handwritten signature in black ink, reading "David J. Kappos". The signature is written in a cursive, flowing style with a large initial "D" and a stylized "K".

David J. Kappos  
Director of the United States Patent and Trademark Office