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# United States Patent [19]

Izhar et al.

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## [54] STRAWBERRY PLANT VIRGINIA

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## [30] Foreign Application Priority Data

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[52] U.S. Cl. .... Plt./49

[58] Field of Search ..... Plt. 48, 49

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## [57] ABSTRACT

A new and distinct variety of strawberry (*Fragaria* L.) called "Virginia" is disclosed. The variety is a cross between "Chandler" and "230" which results in a variety that flowers several months earlier than most other known strawberry varieties.

2 Drawing Sheets

## 1

### BACKGROUND OF THE INVENTION

The present invention relates to a new and distinct variety of strawberry (*Fragaria* L.) called "Virginia". The variety was developed from an organized scientifically designated breeding program carried out at the Agricultural Research Organization, the Volcani Center, Bet Dagan, Israel. The variety is the product of selection of seedlings resulting from crosses between the strawberry varieties "Chandler" and "230". The variety was asexually vegetatively propagated through runners and the reproduction ran true.

### SUMMARY OF THE INVENTION

The new variety "Virginia" is able to grow in September and produce fruit starting in November and lasting until summer. The production of fruit beginning in November is two months earlier than short-day strawberry varieties and within a similar time frame of strawberry varieties "Shalom" (U.S. Plant Pat. No. 7,876), "Smadar" (U.S. Plant Pat. No. 7,865), "Saa'id" (U.S. Plant Pat. No. 7,870), "Dorit" (U.S. Plant Pat. No. 7,689), "Sharon" (U.S. Plant Pat. No. 7,881). The fruit of the "Virginia" variety is characterized by good taste, good shape and size as well as a long shelf life.

### BRIEF DESCRIPTION OF THE FIGURES

FIG. 1.—Photograph of the "Virginia" variety illustrating the fruit.

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FIG. 2.—Photograph of the "Virginia" variety illustrating a cross-section of the fruit.

FIG. 3.—Photograph of the "Virginia" variety illustrating the entire plant with foliage, flowers and fruit.

### DETAILED BOTANICAL DESCRIPTION OF THE INVENTION

The "Virginia" variety was grown in winter under polyethylene tunnels in Israel. "Virginia" is an infra short-day strawberry variety. Infra short-day varieties are induced to initiate flower bud primordia in response to relatively long light regimes (but under short-day conditions) and are relatively insensitive to night temperatures. Flowering and fruit production is not affected by the use of polyethylene wind tunnels. This production procedure is utilized in normal agricultural practices by the skilled artisan and does not involve temperature or light control. Mother plants were stored at 0° C. from January through April. They were then planted in the nursery without further treatment. Runners with plantlets were produced during summer. These young plantlets were collected from the nursery in September and transferred to raised beds. Average temperatures at that time of the year are 30° C. during the day and 22° C. at night. Water and fertilizers were applied through drip irrigation. An August 25 and September 15 with the approximate date of flowering on October 1-10 and the approximate date of first fruiting on November 1. "Virginia" flowering is not induced by chilling, but by natural exposure to shortening day



length. Color readings described herein were taken under natural light conditions and color identifications were made by reference to The Royal Horticultural Society Colour Chart (RHSCC) except where common terms of color definition are employed.

The pertinent characteristics of the present invention are presented in Table 1 and Table 2. Additionally, the variety "Virginia" (1) has no tendency toward fruit malformation; (2) disease resistance appears normal in that no particular problematic conditions arose during trials; and (3) the type of bearing is not remontant (e.g., "Virginia" blooms perpetuously, during late fall and winter).

The fruit is longer than broad, with first order and second order fruit possessing similar shapes (Table 2). The fruit is medium to firm with a red color (Table 2).

The variety "Virginia" flowers several months earlier than known strawberry varieties. One of the closest known varieties would be "Karina" (Table 1), and the new varieties mentioned supra; e.g., U.S. Plant Pat. No. 7,881 ("Sharon"), U.S. Plant Pat. No. 7,876 ("Shalom"), U.S. Plant Pat. No. 7,865 ("Smadar"), U.S. Plant Pat. No. 7,870 ("Saaïd"), and U.S. Plant Pat. No. 7,869 ("Dorit"). Additionally, early flowering results in early fruit production for "Virginia" and the two varieties; "Ofra", subject of U.S. Plant Patent Application Ser. No. 07/823,638, filed Jan. 22, 1992, and "Nama", subject of U.S. Plant Patent Application Ser. No. 07/823,721, filed Jan. 22, 1992. Total Soluble Solids (TSS), marketable appearance, fruit color, sepal appearance, firmness, pressure defects and general health are presented in Table 3 by comparison to the co-pending varieties as well as the short-day variety, "Douglas" (U.S. Plant Pat. No. 4,487).

TABLE 1

PLANT CHARACTERISTICS OF "VIRGINIA"		
MORPHOLOGICAL TRAIT	DESCRIPTION <sup>a</sup>	COMPARABLE VARIETY <sup>b</sup>
Classification	Botanical- <i>Fragaria</i> L.	
Plant habit	Flat-Globose	"Sengana"
Plant density	Dense	
Plant vigor	Strong	"Grande"
Leaf:		
a) Length	115-155 mm	
b) Width	100-115 mm	
c) Color		
1) Upper Side:	Medium to Dark Green	
d) Blistering	Medium	
e) Cross-section	Concave	
f) # of leaflets	Sometimes >3	
Terminal leaflet		
a) Length/Width ratio	Longer thn Borad	
b) Shape of base	Obtuse	
c) Shape of teeth	Obtuse	
d) Length	50-65 mm	
e) Width	50-60 mm	
Flower		
a) Size	Large	
b) Size of calyx to corolla	Similar to Large	
c) Size of inner calyx versus outer calyx	Similar	
d) Spacing of petals	Overlapping	
e) Diameter		
1) First order	30 mm	
2) Second order	25 mm	
f) Petal length/width	As Long as Broad	
1) length 11-14 mm		
2) width 11-15 mm		
g) Time of flowering	Very early	"Karina" <sup>c</sup>

TABLE 1-continued

PLANT CHARACTERISTICS OF "VIRGINIA"		
MORPHOLOGICAL TRAIT	DESCRIPTION <sup>a</sup>	COMPARABLE VARIETY <sup>b</sup>
5 Petiole		
a) Pose of hairs	Outwards	
b) Length	55-90 mm	
Fruiting truss:		
Attitude	Prostate	
10 Inflorescence		
a) Position relative to foliage	Above	
15 <sup>a</sup> The description of "Virginia" is based on the test guidelines for <i>Fragaria</i> L. of the International Union for the Protection of New Plant Varieties, (UPOV).		
<sup>b</sup> Only characteristics which are relevant for comparing varieties are listed. For example, there are no varietal differences acknowledged in the characteristic "color of lower side of leaf".		
<sup>c</sup> "Virginia" flowers at the end of October. One of the earliest known varieties for comparison is "Karina", which flowers in January. Additionally, "Virginia" flowers within approximately the time range as strawberry varieties "Shalom" (U.S. Plant Patent 7876), "Smadar" (U.S. Plant Patent 7865), "Saaïd" (U.S. Plant Patent 7870), "Dorit" (U.S. Plant Patent 7869), "Sharon" (U.S. Plant Patent 7881), as well as "Ofra" and "Nama", described in U.S. Plant Patent Application Ser. No. 07/823,638, filed Jan. 22, 1992, and U. S. Plant Patent Application Ser. No. 07/823,721, filed Jan. 22, 1992, respectively.		

TABLE 2

FRUIT CHARACTERISTICS OF "VIRGINIA"	
CHARACTERISTICS	DESCRIPTION
Time of ripening	Very Early
Ratio of length/maximum width	Longer than broad
Size	Large
30 First Order	
a) Predominant Shape	Wedged
b) Length	40-50 mm
c) Width	34-42 mm
d) Thickness	30-38 mm
e) Weight	23 g
35 Second Order	
a) Predominant Shape	Wedged
b) Length	34-44 mm
c) Width	32-38 mm
d) Thickness	25-32 mm
e) Weight	19 g
40 Difference in Shape Between First Order and Second Order Fruit	
Band without achenes	None or Very Slight
Unevenness of surface	Narrow
Color	Absent or very weak
Evenness of color	Red
Glossiness	Even
45 Insertion of achenes	
Insertion of calyx	Strong
Pose of calyx segments	Below surface
Size of calyx in relation to fruit diameter	At Level
Adherence of calyx	Reflexed
50 Firmness	
Color of flesh	Similar
Evenness of flesh color	Strong
	Medium Firm
	Red
	Slightly uneven

TABLE 3

COMPARATIVE SHELF-LIFE AND FLAVOR OF "VIRGINIA"									
		Percentage		Firmness <sup>a</sup>		Se-	Mar-		
		Pres-				pal	ket-		
60	Vari-	sure		New-		ap-	Fruit	ap-	Sugar
	ety	Health	de- fects	Vis- ual	ton units	pear- ance <sup>b</sup>	co- lor <sup>c</sup>	pear- ance <sup>d</sup>	content T.S.S. <sup>e</sup>
<hr/>									
First test:									
<u>at harvest date</u>									
65	Vir- ginia	100	0	5	4.2	5	3.5	4.0	8.5
	Ofra <sup>f</sup>	100	0	5	6.0	5	4.0	4.5	9.6
	Na- ma <sup>g</sup>	100	0	5	3.7	5	3.5	4.0	8.0

TABLE 3-continued

COMPARATIVE SHELF-LIFE AND FLAVOR OF "VIRGINIA"								
Vari- ety	<u>Percentage</u>		<u>Firmness<sup>a</sup></u>		Se- pal ap- pear- ance <sup>b</sup>	Fruit co- lor <sup>c</sup>	Mar- ket- able ap- pear- ance <sup>d</sup>	Sugar content T.S.S. <sup>e</sup>
	Health	Pres- sure de- fects	Vis- ual	New- ton units				
Douglas <sup>h</sup>	100	0	5	3.7	5	4.5	4.0	6.5
Second test:								
<u>After 3 days of storage at 2° C.</u>								
Vir- ginia	80	20	3.5	3.5	4	4.2	3.8	
Ofra	92	8	4.0	6.0	4	4.2	4.4	
Na- ma Douglas	78	22	3.5	3.0	4	4.0	3.7	
	76	24	3.7	3.5	4	5.0	3.7	
Third test:								
after 3 days storage at 2° C. plus								
<u>2 additional days at simulated shelf temperature of 18° C.</u>								

TABLE 3-continued  
COMPARATIVE SHELF-LIFE AND  
FLAVOR OF "VIRGINIA"

Variety	Percentage		Firmness <sup>a</sup>		Se-	Fruit color <sup>c</sup>	Mar-	Sugar content T.S.S. <sup>e</sup>
	Health	Pres- sure de- fects	Vis- ual	New- ton units	pal		ket-	
					ap- pear- ance <sup>b</sup>		able ap- pear- ance <sup>d</sup>	
10 Virginia	50	50	3.0	2.8	3.0	4.5	3.2	
Ofra	55	45	3.5	5.5	3.2	4.5	3.5	
Nama	44	56	3.0	3.0	3.0	4.5	3.0	
Douglas								
15	45	55	3.0	3.0	3.2	5.0	3.2	

INDEX:  
<sup>a</sup>5-hard 1-soft  
<sup>b</sup>5-green, fresh like, 1-dry, brown  
<sup>c</sup>5-dark red, 1-green, pink  
<sup>d</sup>5-prime 1-not marketable  
<sup>e</sup>Total Soluble Solids (T.S.S.) expresses fruit sweetness and was determined with a refractometer  
<sup>f</sup>U.S. Plant Patent Application Ser. No. 07/823,721, filed January 22, 1992.  
<sup>g</sup>U.S. Plant Patent Application Ser. No. 07/823,721, filed January 22, 1992.  
<sup>h</sup>U.S. Plant Patent No. 4,487

What is claimed is:

1. A new distinct variety of strawberry plant substantially as illustrated and described and distinguished as being able to grow in September and produce fruit starting in November and lasting until summer, with fruit having a good taste and shape and a long shelf life.

\* \* \* \* \*



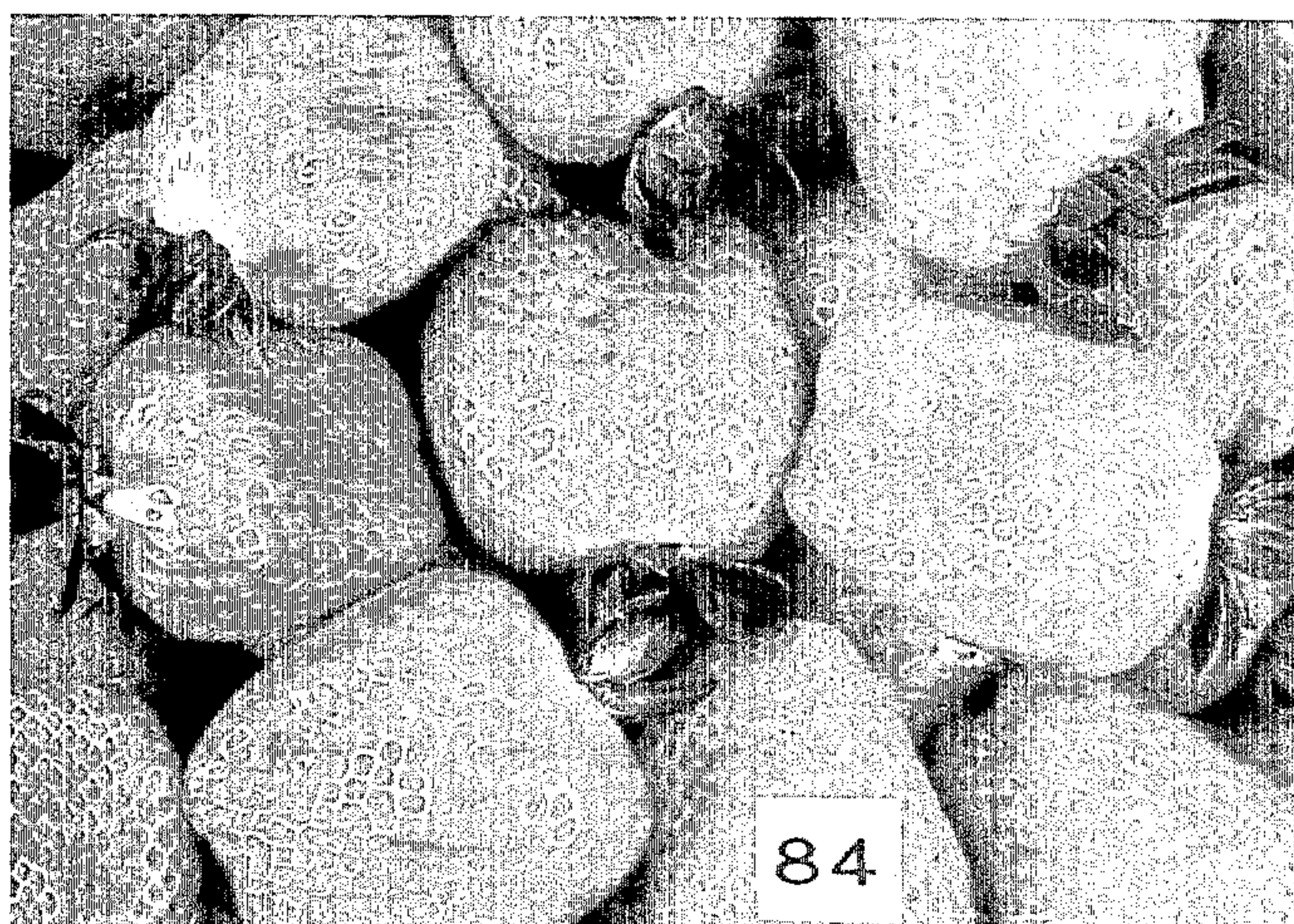


FIG. 1

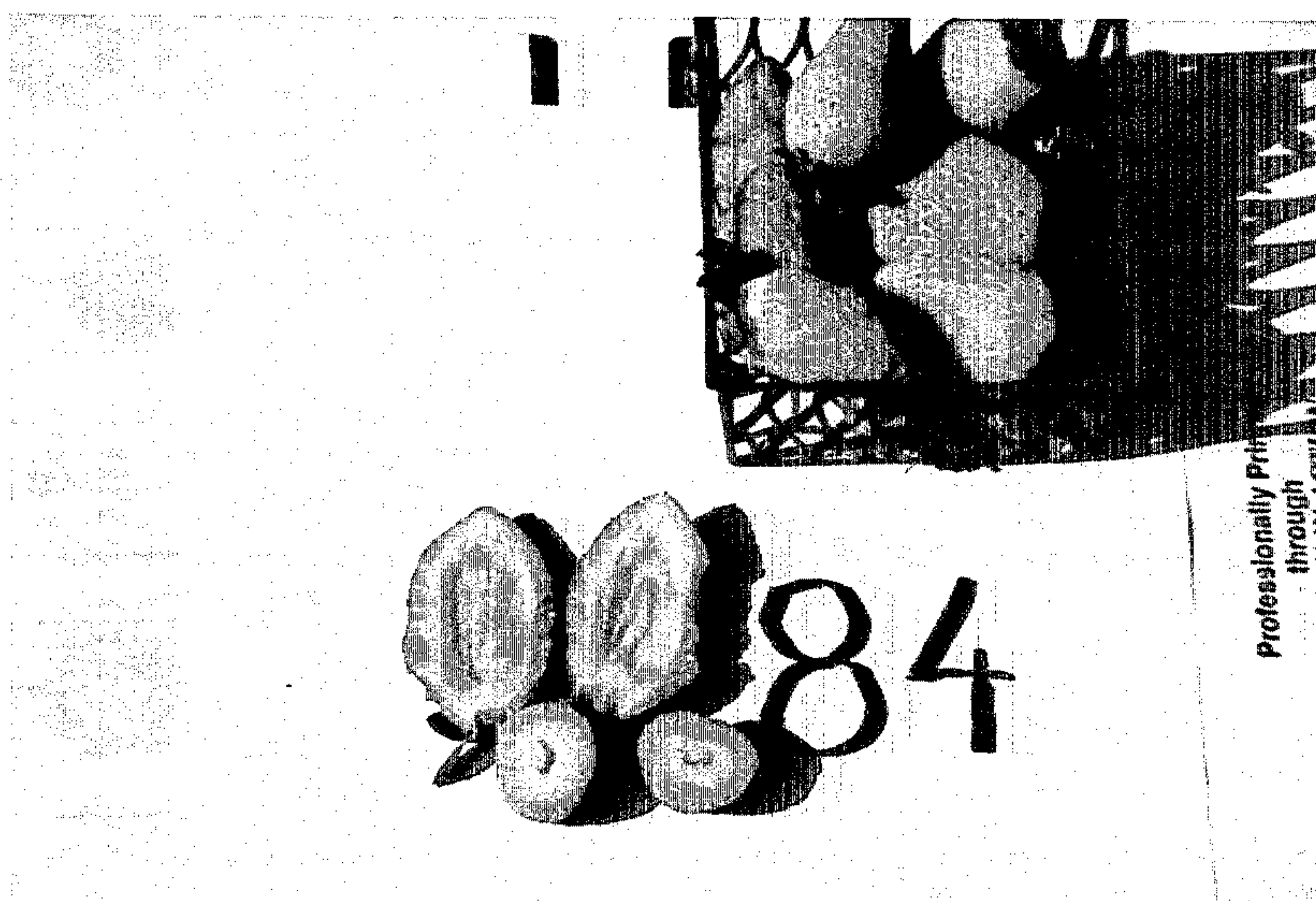


FIG. 2





FIG. 3