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(54) ***CANNABIS* PLANT NAMED 'HAPPY PINEAPPLE'**

(50) Latin Name: ***Cannabis* hybrid**
Varietal Denomination: **HAPPY PINEAPPLE**

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(57) **ABSTRACT**

The present invention provides new and distinct *Cannabis* cultivars designated as 'HAPPY PINEAPPLE'. Disclosed herein are main terpenes of 'HAPPY PINEAPPLE', which are beta-ocimene, beta-caryophyllene, alpha-pinene, limonene, alpha-humulene, beta-pinene and myrcene. Also, the present invention provides the estimated concentration of the THCmax about 14.50-18.57% and CBDmax about 0.00%, respectively, at the time of assaying metabolites from flower samples of 'HAPPY PINEAPPLE'.

13 Drawing Sheets

Latin name of genus and species: *Cannabis* hybrid.
Variety denomination: 'HAPPY PINEAPPLE'.

BACKGROUND OF THE INVENTION

The present invention relates to a new and distinct *Cannabis* cultivar designated as 'HAPPY PINEAPPLE'. This new cultivar is the result of controlled-crosses between proprietary cultivars made by the inventors. The new cultivar of 'HAPPY PINEAPPLE' was asexually reproduced via a stem 'cutting' and 'cloning' method by the inventors at Salinas, Calif. Asexual clones from the original source have been tested in greenhouses, nurseries, and/or fields. The properties of each cultivar were found to be transmissible by such asexual reproduction. This cultivar is stable and reproduces true to type in successive generations of asexual reproduction.

TAXONOMY AND NOMENCLATURE

Cannabis, more commonly known as marijuana, is a genus of flowering plants that includes at least three species, *Cannabis sativa, Cannabis indica* and *Cannabis ruderalis* as determined by plant phenotypes and secondary metabolite profiles. In practice however, *Cannabis* nomenclature is often used incorrectly or interchangeably. *Cannabis* literature can be found referring to all *Cannabis* varieties as "*sativas*" or all cannabinoid producing plants as "*indicas*". Indeed the promiscuous crosses of indoor *Cannabis* breeding programs have made it difficult to distinguish varieties,

with most *Cannabis* being sold in the United States having features of both sativa and indica species.

Human cultivation history of *Cannabis* dates back 8000 years (Schultes, R E., 1970, Random thoughts and queries on the botany of *Cannabis*. Pages 11-38 in: CRB Joyce, and SH Curry eds., THE BOTANY AND CHEMISTRY OF *CANNABIS*. J. & A. Churchill. London, England). Hemp cloth recovered in Europe dates back 6000 years (Small, E, Beckstead, H D, and Chan, A, 1975, The evolution of cannabinoid phenotypes in *Cannabis*, ECONOMIC BOTANY 29(3):219-232). The written record of the pharmacologic properties of *Cannabis* goes back more than 4000 years (Ti, H. 2737 BC. NEI JING SU WEN HUANG TI, Yellow Emperor's Classic on Internal Medicine; referred to without citation in Small et al. 1975 Supra).

The taxonomy and nomenclature of the highly variable genus *Cannabis* (Emboden, W A, 1974, ECONOMIC BOTANY 28(3):304-310; Small, E and Cronquist, A, 1976, TAXON 25(4):405-435; Small E and Cronquist, A, 1977, TAXON 26(1): 110; Hillig, K W and Mahlberg, P G, 2004, American Journal of Botany 91(6):966-975), remains in question. This is in spite of the fact that its formal scientific name, *Cannabis sativa* L., assigned by Carolus Linneaus (Linnaeus, C, 1753, SPECIES PLANTARUM, 2:1027, Salvius, Stockholm, Facsimile edition, 1957-1959, Ray Society, London, U.K.), is one of the oldest established names in botanical history and is still accepted to this day. Another species in the genus, *Cannabis indica* Lam. was formally named somewhat later (de Lamarck, J B, 1785, ENCYCLOPEDIE METHODIQUE DE BOTANIQUE, 1(2):694-695), but is still very old in botanical history. In 1785, Jean-Baptiste Lamarck published a description of a second species of *Cannabis*, which he named *Cannabis indica*. Lamarck based his description of the newly named species on plant specimens collected in India. *C. indica* was described as relatively short, conical, and densely branched, whereas *C. sativa* was described as tall and laxly branched (Schultes R. E. et al, 1974, Harvard University Botanical Museum Leaflets, 23:337-367). *C. indica* plants were also described as having short, broad leaflets whereas those of *C. sativa* were characterized as relatively long and narrow (Anderson L. C., 1980, Harvard University Botanical Museum Leaflets, 28:61-69). *C. indica* plants conforming to Schultes' and Anderson's descriptions may have originated from the Hindu Kush mountain range. Because of the often harsh and variable (extremely cold winters, and warm summers) climate of those parts, *C. indica* is well-suited for cultivation in temperate climates.

Three other species names were proposed in the 1800s to distinguish plants with presumably different characteristics (*C. macrosperma* Stokes, *C. chinensis* Delile, *C. gigantean* Vilmorin), none of which are accepted today, although the epithet "*indica*" lives on as a subspecies of *C. sativa* (*C. sativa* ssp. *indica* Lam., Small and Cronquist 1976 Supra).

In the 20th century, two new names were added to the liturgy of proposed *Cannabis* species: *C. ruderalis* Janischevsky and a hybrid, x *C. intersita* Sojak. (Small, E, Jui, P Y, and Lefkovitch, L P, 1976, SYSTEMATIC BOTANY 1(1): 67-84; Small and Cronquist 1976 Supra). Further, numerous names have been proposed for horticultural variants of *Cannabis* but as of 1976, "very few of these have been validly published as formal taxa under the International Code of Botanical Nomenclature" (Small and Cronquist 1976 Supra). Moreover, other recent work continues to focus on higher-order evolutionary relationships of the genus. *Cannabis* has been variously ascribed as belonging to mulberry family (Moraceae) (Engler, H G A, Ulmaceae, Moraceae and Urticaceae, pages 59-118 in: A. Engler and K. Prantl eds., 1889, DIE NATURLICHEN PFLANZENFAMILIEN 3(1). W. Engelmann, Leipzig, Germany; Judd, W S, Sanders, R W, and Donoghue, M J, 1994, HARVARD PAPERS IN BOTANY 5:1-51; Humphries, C J and Blackmore, S, A review of the classification of the Moraceae, pages 267-277 In: Crane and Blackmore 1989 id.); nettle family (Urticaceae) (Berg, C C, Systematics and phylogeny of the Urticales, pages 193-220, in: P. R. Crane and S. Blackmore eds., 1989, EVOLUTION, SYSTEMATIC, AND FOSSIL HISTORY OF THE HAMAMELIDAE, VOL. 2, HIGHER HAMAMELIDAE, Clarendon Press, Oxford, U.K.); and most recently in its own family with hops (Humulus), Cannabaceae, or hemp family (Sytsma, K J, et al, 2002, AMERICAN JOURNAL OF BOTANY 89(9):1531-1546). While the work of Small and Cronquist 1976 Supra, seemed to effectively confine the genus to a single species with 2 subspecies (*C. sativa* ssp. *sativa, C. sativa* ssp. *indica*), each with two varieties (*C. s.* s. var. *sativa, C. s.* s. var. *spontanea; C. s.* i. var. *indica, C. s.* i. var. *Kafiristanica*) largely on the basis of chemotaxonomy and interfertility of all forms, more recent work (Sytsma et al. 2002 Supra), proposes a two-species concept, resurrecting the binomial *C. indica* Lam. Since Sytsma et al. (2002) provides no key for discriminating between the species, the dichotomous key of Small and Cronquist (1976), which accounts for all forms in nature, whether wild or domesticated, is preferred to classify the characteristics of the plants.

BRIEF SUMMARY OF THE INVENTION

This invention relates to a new and distinctive *Cannabis* cultivar designated as 'HAPPY PINEAPPLE'.

The objective of the breeding program which produced novel plants disclosed herein was primarily to develop a *Cannabis* cultivar with its unique blend of various cannabinoids and/or terpenes for (a) medicinal effects such as improving appetite and reducing nausea, vomiting and/or chronic pain, as well as neurological and cardiovascular effects, (b) psychoactive effects such as increased motivation and energetic behavior rather than indifference, passiveness and lethargy, and (c) recreational effects with enhanced enjoyment such as food and aroma.

As used herein, the term "cultivar" is used interchangeably with "variety", "strain", and/or "clone".

Cannabis plants produce a unique family of terpeno-phenolic compounds. Cannabinoids, terpenoids, and other compounds are secreted by glandular trichomes that occur most abundantly on the floral calyxes and bracts of female plants. As a drug it usually comes in the form of dried flower buds (marijuana), resin (hashish), or various extracts collectively known as hashish oil. The *Cannabis* plant has at least 545 distinct compounds that span 20 chemical classes including cannabinoids, terpenes, terpenoids, amino acids, nitrogenous compounds, simple alcohols, aldehydes, ketones, esters, lactones, acids, fatty acids, steroids, non-cannabinoid phenols, pigments, flavonoids, vitamins, proteins, enzymes, glycoproteins, and hydrocarbons. Terpenes and/or cannabinoids, in particular, have shown great potential in terms of medicinal value.

Terpenes and/or cannabinoids have been shown to be largely responsible for beneficial effects of a *Cannabis* plant. In fact, each *Cannabis* plant has the varying concentrations of medically viable compounds depending on different strains (genotypes) and their resulting chemotypes. Even a small variation in terpene and/or cannabinoid concentration can cause noticeable differences in the entourage and/or synergistic effects of a *Cannabis* plant, which distinguishes one variety from another. Research shows that it relies heavily on the physiological effects produced by terpenes and/or cannabinoids.

Over 100 different kinds of terpenes have been identified in *Cannabis* plants although not being as well-studied as cannabinoids, they are instrumental in giving rise to the physiological and psychoactive effects in *Cannabis*.

Terpenes are a large and diverse class of organic compounds, produced by a variety of plants. They are often strong smelling and thus may have had a protective function. Terpenes are an important component, not only influencing taste and smell of each *Cannabis* strain but also influencing its effects on the mind and body of a subject such as humans and animals. Terpenes are a classification of organic molecules that are found in a wide variety of plants and animals. These molecules are known for their characteristic scents and flavors. The varying terpene concentrations found in *Cannabis* plants directly influence the resulting taste and smell, as well as the observed effects. Non-limiting examples of terpenes include Hemiterpenes, Monoterpenes, Sesquiterpenes, Diterpenes, Sesterterpenes, Triterpenes, Sesquarterpenes, Tetraterpenes, Polyterpenes, and Norisoprenoids. The main terpenes found in *Cannabis* plants include, but are not limited to, myrcene, limonene, caryophyllene, pinene, terpinene, terpinolene, camphene, terpineol, phellandrene, carene, humulene, pulegone, sabinene, geraniol, linalool, fenchol, borneol, eucalyptol, and nerolidol.

Cannabinoids are the most studied group of the main physiologically active secondary metabolites in *Cannabis*. The classical cannabinoids are concentrated in a viscous resin produced in structures known as glandular trichomes. At least 113 different cannabinoids have been isolated from *Cannabis* plants. The main classes of cannabinoids from *Cannabis* include tetrahydrocannabinol (THC), cannabidiol (CBD), cannabigerol (CBG), and cannabinol (CBN). Cannabinoid can be at least one of a group comprising tetrahydrocannabinol (THC), cannabidiol (CBD), cannabigerol (CBG), cannabinol (CBN) cannabichromene (CBC), cannabinodiol (CBDL), cannabicyclol (CBL), cannabivarin (CBV), tetrahydrocannabivarin (THCV), cannabidivarin (CBDV), cannabigerovarin (CBGV), cannabichromevarin (CBCV), cannabigerol monomethyl ether (CBGM), cannabielsoin (CBE), cannabicitran (CBT), cannabinol propyl variant (CBNV), cannabitriol (CBO), tetrahydrocannabinolic acid (THCA), tetrahydrocannabivarinic acid (THCVA), cannabidiolic acid (CBDA), cannabigerolic acid (CBGA) and cannabinerolic acid.

Most cannabinoids exist in two forms, as acids and in neutral (decarboxylated) forms. The acidic form of cannabinoids is designated by an "A" at the end of its acronym (i.e. THCA). The cannabinoids in their acidic forms (those ending in "-A") can be converted to their non-acidic forms through a process called decarboxylation when the sample is heated. The phytocannabinoids are synthesized in the plant as acidic forms. While some decarboxylation does occur in the plant, it increases significantly post-harvest and the kinetics increase at high temperatures (Flores-Sanchez and Verpoorte, 2008, Plant Cell Physiol. 49(12): 1767-1782). The biologically active forms for human consumption are the neutral forms. Decarboxylation is usually achieved by thorough drying of the plant material followed by heating it, often by combustion, vaporization, heating, or baking in an oven. Unless otherwise noted, references to cannabinoids in a plant include both the acidic and decarboxylated versions (e.g., CBD and CBDA).

The molecules lose mass through the process of decarboxylation. In order to find the total theoretical active cannabinoids, the acid forms should be multiplied by 87.7%. For example, THCA can be converted to active THC using the formula: THCA×0.877=THC. The maximum THC for the sample is: THC_{max}=(THCA×0.877)+THC. This method has been validated according to the principles of the International Conference on Harmonization. Similarly, CBDA can be converted to active CBD and the yield is determined using the yield formula: CBDA×0.877=CBD. Also the maximum amount of CBD yielded, i.e. max CBD for the sample is: CBD_{max}=(CBDA×0.877)+CBD. Additionally, CBGA can be converted to active CBG by multiplying 87.8% to CBGA. Thus, the maximum amount of CBG is: CBG_{max}=(CBGA×0.878)+CBG.

The biologically active chemicals found in plants, phytochemicals, may affect the normal structure or function of the human body and in some cases treat disease. The mechanisms for the medicinal and psychoactive properties of a *Cannabis* plant, like any medicinal herb, produce the pharmacologic effects of its phytochemicals, and the key phytochemicals for a medical *Cannabis* plant are cannabinoids and terpenes.

Δ9-Tetrahydrocannabinol (THC) is a psychoactive cannabinoid responsible for many of the effects such as mild to moderate pain relief, relaxation, insomnia and appetite stimulation. THC has been demonstrated to have anti-depressant effects. The majority of strains range from 12-21% THC with very potent and carefully prepared strains reaching even higher. While Δ9-Tetrahydrocannabinol (THC) is also implicated in the treatment of disease, the psychotropic activity of THC makes it undesirable for some patients and/or indications.

Tetrahydrocannabinol, THC, is the primary psychoactive and medicinal cannabinoid and is the result of the decarboxylation of tetrahydrocannabinolic acid (THC-A), its acidic precursor. THC-A, (6ar,10ar)-1-hydroxy-6,6,9-trimethyl-3-pentyl-6a,7,8,10a-tetrahydro-6h-benzochromene-2-carboxylic acid, is found in the trichomes of the plant and converted into THC, which actually exists in only minute quantities in the living plant, after harvest and drying.

Cannabidiol (CBD) is one of the principal cannabinoids found in a *Cannabis* plant and is largely considered to the most medically significant. CBD occurs in many strains, at low levels, <1%. In some cases, CBD can be the dominant cannabinoid, as high as 15% by weight. CBD is non-psychoactive, meaning that unlike THC, CBD does not cause a noticeable "high". CBD has shown potential for its medical properties in the treatment of a wide variety of diseases and symptoms, including cancer, nausea, chronic pain, spasms, seizures/epilepsy, anxiety, psoriasis, Crohn's disease, rheumatoid arthritis, diabetes, schizophrenia, post-traumatic stress disorder (PTSD), alcoholism, strokes, multiple sclerosis, and cardiovascular disease. CBD also has been reported to act as a muscle relaxant, antibiotic, anti-inflammatory, and bone stimulant, as well as to improve blood circulation, cause drowsiness, and protect the nervous system. It can provide relief for chronic pain due to muscle spasticity, convulsions and inflammation, as well as effective relief from anxiety-related disorders. It can offer relief for patients with Multiple Sclerosis (MS), Fibromyalgia and Epilepsy. CBD has also been shown to inhibit cancer cell growth when injected into breast and brain tumors in combination with THC.

A *Cannabis* cultivar can be used to achieve the desire of patients to be treated with CBD without the adverse side-effects (e.g., psychoactivity) of THC.

Cannabichromene (CBC) is a rare, non-psychoactive cannabinoid, usually found at low levels (<1%) when present. It has been shown to have anti-depressant effects and to improve the pain-relieving effects of THC. Studies have demonstrated that CBC has sedative effects such as promoting relaxation.

Cannabidiol (CBD) and cannabichromene (CBC) are both non-psychoactive and end products of CBG metabolism, like THC, so that they can be used medically.

Cannabigerol (CBG) is a non-psychoactive cannabinoid. CBG-acid is the precursor to both THC-acid and CBD-acid in the plant usually found at low levels (<1%) when present. It has been demonstrated to have both pain relieving and inflammation reducing effects. CBG reduces intraocular pressure, associated with glaucoma. CBG has been shown to have antibiotic properties and to inhibit platelet aggregation, which slows the rate of blood clotting. While Cannabigerol (CBG), is not considered psychoactive, it is known to block the psychoactive effects of THC and is considered medically active in a variety of conditions. Its precursor, cannabigerolic acid, CBG-A, (E)-3-(3,7-Dimethyl-2,6-octadienyl)-2,4-dihydroxy-6-pentylbenzoic acid, is being studied medically.

Cannabinol (CBN) is an oxidative degradation product of THC. It may result from improper storage or curing and extensive processing, such as when making concentrates. It is usually formed when THC is exposed to UV light and oxygen over time. CBN has some psychoactive properties, less strength than THC. CBN is thought to enhance the dizziness and disorientation that users of *Cannabis* may experience. It may cause feelings of grogginess, and has been shown to reduce heart rate.

High potency *Cannabis* plants contain large quantities of specific terpenes as well as various assortments of other terpenes. For instance, a *Cannabis* plant may have a profile with either a high level of, a moderate amount of or a small amount of various terpenes depending on its cultivar and environmental conditions.

Various cultivars of '*Cannabis*' species have been cultivated in an effort to create a cultivar best suited to meet the interest of inventors according to their own need. The particular plant disclosed herein was discovered in the area where the inventors were intentionally cross-pollinating and cultivating plants described below using standard Mendelian breeding procedures well known to those of ordinary skill in the art. This resulted in the progenies of the inventors' crosses.

The progenies resulting from any selection stage of either the crossing, selfing or backcrossing versions of the breeding regimes of the present invention were asexually reproduced to fix and maintain the desirable THC content, CBs content, terpenes content, the aroma and flavor(s) typical of the desired class, and the other desirable phenotypic and/or genotypic characteristics. The resultant selected *Cannabis* cultivar is designated as 'HAPPY PINEAPPLE' disclosed herein.

The inventors reproduced progenies asexually by stem cutting and cloning. This is the origin of this remarkable new cultivar. The plant has been and continues to be asexually reproduced by stem cutting and cloning at the inventors' greenhouses, nurseries and/or fields in Salinas, Calif., Oakland, Calif., and/or Washington, D.C.

The following are the most outstanding and distinguishing chemical characteristics of this new cultivar when grown under normal conditions in Salinas, Calif. Chemical analyses of the new *Cannabis* variety and the check variety (or the parental varieties) disclosed herein were performed using standard chemical separation techniques well known to those skilled in the art. Samples for assaying were obtained from flower tissues of the *Cannabis* plant disclosed herein. Cannabinoid composition of this cultivar can be determined by assaying the concentration of at least one cannabinoid in a subset (e.g., sample) of the harvested product.

Table 1 includes detailed information of the *Cannabis* plant named 'HAPPY PINEAPPLE' including the concentration ranges of terpenes and cannabinoids as tested on flowers at least four different times. The *Cannabis* plant has been tested in a laboratory setting and/or facility to determine cannabinoids and terpenes concentrations in the *Cannabis* plant named 'HAPPY PINEAPPLE' according to the procedures provided in Giese et al. (Journal of AOAC International (2015) 98(6):1503-1522).

1) The main terpenes found in 'HAPPY PINEAPPLE' are beta-ocimene, beta-caryophyllene, alpha-pinene, limonene, alpha-humulene, beta-pinene and myrcene; and

2) The estimated concentration of the total THC_{max} and CBD_{max} is about 14.50-18.57% and about 0.00%, respectively, at the time of assaying metabolites from flower samples of 'HAPPY PINEAPPLE'.

Terpene and cannabinoid profiles of 'HAPPY PINEAPPLE' demonstrate that 'HAPPY PINEAPPLE' has a phenotypically unique profile, particularly insofar as to the level of terpenes and cannabinoids. This data is presented in a tabular form in Table 1.

TABLE 1

Ranges of Active Cannabinoids and Terpenes			
Ranges of Active Cannabinoids (% by weight)			
THC max	14.50-18.57%	CBD max	0.00%
Ranges of Terpenes (% by weight)			
Terpinolene	0.00%	Fenchol	0.02-0.06%
Alpha phellandrene	0.00%	Camphene	0.01-0.02%
Beta ocimene	0.32-0.60%	Alpha terpineol	0.03-0.05%
Carene	0.00%	Alpha humulene	0.08-0.18%
Limonene	0.14-0.32%	Beta caryophyllene	0.20-0.48%
Gamma terpinene	0.00%	Linalool	0.03-0.08%
Alpha pinene	0.23-0.31%	Caryophyllene oxide	0.01-0.02%
Alpha terpinene	0.00%	Myrcene	0.02-0.11%
Beta pinene	0.08-0.11%	Total Terpenes	1.18-2.19%

The *Cannabis* plant named 'HAPPY PINEAPPLE' has a complement of terpenes, including but not limited to, relatively high levels of beta-ocimene, beta-caryophyllene, alpha-pinene, limonene, alpha-humulene, beta-pinene and myrcene compared to other terpene compounds. This unique combination of differently concentrated terpenes further distinguishes 'HAPPY PINEAPPLE' from other varieties in its odor, its medical qualities, and its effects on mood and mentation.

Asexual Reproduction

Asexual reproduction, also known as "cloning", is a process well known to those of ordinary skill in the art of *Cannabis* production and breeding and includes the following steps.

The *Cannabis* cultivar disclosed herein is asexually propagated via taking cuttings of shoots and putting them in rock wool cubes. These cubes are presoaked with pH-adjusted water and kept warm (~80° F.). Full trays are covered, left under 18 hours of light and allowed to root (7-14 days). Upon root onset, the plantlets are transplanted into rigid 1 gallon containers filled with a proprietary soil mix A and remain in 18 hours of daylight for another 14-21 days. Once root-bound, plants are transplanted into rigid 3 gallon containers filled with proprietary soil mix B. Immediately, the light cycle is altered to 12/12 and flower initiating begins. The plants remain in 12/12 lighting until harvesting. They undergo a propriety nutrient regimen and grow as undisturbed as possible for 60-70 days depending on chemotype analysis.

All sun leaves are removed and the plant is dismantled to result in approximately 12" branches covered in inflorescences and trichomes. The goal in harvesting is to actually harvest trichome heads but not 'buds'. Thus, great care is taken not to disturb the trichome heads and as much of the plant remains intact as possible to promote even and slow drying. Slow drying is followed by a one to two months curing process.

Observation of the all female progenies of the original plant has demonstrated that this new and distinct cultivar has fulfilled the objectives and that its distinctive characteristics are firmly fixed and hold true from generation to generation vegetatively propagated from the original plant.

Under careful observation, the unique characteristics of the new cultivar have been uniform, stable and reproduced true to type in successive generations of asexual reproduction.

DESCRIPTION OF THE DRAWINGS

The accompanying color photographs depict characteristics of the new plants designated 'HAPPY PINEAPPLE' as nearly true as possible to make color reproductions. The overall appearance of the plants named 'HAPPY PINEAPPLE' in photographs is shown in colors that may differ slightly from the color values described in the detailed botanical description.

FIG. **1**A-C shows the 'HAPPY PINEAPPLE' plant at the mid to late vegetative growth stage; a close view of the middle part of plant from the side (FIG. **1**A), a close view of the plant from the above (FIG. **1**B), and another close view of the plant from the above (FIG. **1**C).

FIG. **2** shows an overall view of the 'HAPPY PINEAPPLE' plant from the side. The large and tall plants in the back of FIG. **2** are the 'HAPPY PINEAPPLE' plants.

FIG. **3**A shows a close view of a single leaf of the check variety BLK03 plant.

FIG. **3**B shows a close view of a single leaf of the new variety 'HAPPY PINEAPPLE' plant.

FIG. **4**A shows top parts (including inflorescence) of the BLK03 plant from the side.

FIG. **4**B shows top parts (including inflorescence) of the 'HAPPY PINEAPPLE' plant from the side.

FIG. **5** shows a close view of flowers of the 'HAPPY PINEAPPLE' plant at the late flowering stage.

FIG. **6** shows a close view of flowers of the 'HAPPY PINEAPPLE' plant at the late flowering stage.

FIG. **7** shows a close view of flowers of the 'HAPPY PINEAPPLE' plant at the late flowering stage.

FIG. **8** shows a seed of the 'HAPPY PINEAPPLE' plant.

FIG. **9** shows a reproductive part of a sample *Cannabis* plant, indicating position/location of a flower, a bract and a stipule in the plant. The sample *Cannabis* plant in FIG. **9** is not the claimed 'HAPPY PINEAPPLE' plant.

DETAILED BOTANICAL DESCRIPTION

The 'HAPPY PINEAPPLE' plant has not been observed under all possible environmental conditions, and the phenotype may vary significantly with variations in environment. The following observations, measurements, and comparisons describe this plant as grown at Salinas, Calif., when grown in the greenhouse, nursery or field, unless otherwise noted.

Plants for the botanical measurements in the present application are annual plants. In the following description, the color determination is in accordance with The Royal Horticultural Society Colour Chart, 2007, 5th Edition, except where general color terms of ordinary dictionary significance are used.

The *Cannabis* plant disclosed herein was derived from female and male parents that are internally designated as below.

The internal GNBR code of the *Cannabis* cultivar named 'HAPPY PINEAPPLE' is 39.R3.02. The internal GNBR Breeding Code of the *Cannabis* plant named 'HAPPY PINEAPPLE' is (B03.S1.39)x(R08.S09.03).02. The additional number '.02' was only assigned to the 2nd individual plant (i.e. 'HAPPY PINEAPPLE') selected for phenotypic and chemotypic traits from progenies of the cross event between pollen acceptor (B03.S1.39) and pollen donor (R08.S09.03). 'HAPPY PINEAPPLE' is a fertile hybrid derived from a controlled-cross between two proprietary cultivars: (i) B03.S1.39 (pollen acceptor; female parent), also known as 'B3.S1.39' or '39' and (ii) R08.S09.03 (pollen donor; male parent), also known as 'R8.S9.03' or 'R3'. The initial cross between two parental cultivars was made in Oct. 28, 2016. The initial selection for the *Cannabis* cultivar named 'HAPPY PINEAPPLE' was made in Aug. 27, 2017. The primary phenotypic criteria used to select the new and distinct *Cannabis* cultivar disclosed herein is as follows: structure/phenolic(s) score, susceptibility/resistance to pests, and susceptibility/resistance to diseases. Also, the chemotypic characteristics (including cannabinoids, terpenes, and other secondary metabolites) described in Table 1 were used to select the new and distinct *Cannabis* cultivar disclosed herein. The first asexual propagation of 'HAPPY PINEAPPLE' occurred on Sep. 5, 2017 in Salinas, Calif.

The following traits in combination further distinguish the *Cannabis* cultivar 'HAPPY PINEAPPLE' from the check variety 'BLK03', which is set as a standard for phenotypic comparison. Tables 2 to 6 present phenotypic traits and/or characteristics of 'HAPPY PINEAPPLE' compared to the check variety 'BLK03' as follows. Unless otherwise indicated, all plants were raised together and evaluated at day 60 in flowering or at day 92 from when stem cuttings were placed in rooting media.

TABLE 2

General Characteristics

Characteristics	New Variety
Plant life forms	An herbaceous plant (herb)
Plant growth habit	An upright, tap-rooted annual plant
Plant origin	A controlled-cross between pollen acceptor (B03.S1.39) and (R08.S09.03)
Plant propagation	Asexually propagated by stem cuttings and cloning
Propagation ease	Easy
Height	3.56-3.96 m
Width	2.13-2.24 m
Plant vigor	High
Resistance to pests or diseases	Pests that 'HAPPY PINEAPPLE' is resistant to: Two-spotted spider mite (*Tetranychus urticae* (Koch)); (2) Aphids species such as: Cannabis Aphids (*Phorodon cannabis*), Green Peach Aphid (*Myzus persicae* (Sulzer)), Foxglove Aphid (*Aulacorthum solani*), Peach Aphid (*Macrosiphum euphorbiae*), Black Bean Aphid (*Aphis fabae*); (3) Whitefly (*Trialeurodes vaporariorum*; (4) Lepidoptera species such as:

TABLE 2-continued

General Characteristics	
	Armyworm (*Spodoptera frupperda*), Cabbage Whites (*Pieris rapae*), Painted Lady (*Vanessa cardui*), *Lepidoptera* sp. Diseases that Happy Pineapple is resistant to: Powdery Mildew (Podosphaeraxanthii)
Time to Harvest (Seed to Harvest)	8-10 weeks
Genetically-modified organism	NO

Characteristics	Check Variety (BLK03)
Plant life forms	An herbaceous plant (herb)
Plant growth habit	An upright, tap-rooted annual plant
Plant origin	A controlled-cross between pollen acceptor (GLD13) and (BDIA)
Plant propagation	Asexually propagated by stem cuttings and cloning
Propagation ease	Moderate
Height	0.5-2.5 m
Width	1.20 m
Plant vigor	Medium
Resistance to pests or diseases	Pests that BLK03 is NOT resistant to: Two-spotted spider mite (*Tetranychus urticae* (Koch)); (2) Aphids species such as: Cannabis Aphids (*Phorodon cannabis*), Green Peach Aphid (*Myzus persicae* (Sulzer)), Foxglove Aphid (*Aulacorthum solani*), Peach Aphid (*Macrosiphum euphorbiae*), Black Bean Aphid (*Aphis fabae*); (3) Whitefly (*Trialeurodes* vaporariorum; (4) Lepidoptera species such as: Armyworm (*Spodoptera frupperda*), Cabbage Whites (*Pieris rapae*), Painted Lady (*Vanessa cardui*), *Lepidoptera* sp. Fungal diseases that BLK03 is NOT resistant to: Botrytis/Flower Rot (*Botrytis cinerea*) and Powdery Mildew (*Podosphaera xanthii*)
Time to Harvest (Seed to Harvest)	8 weeks
Genetically-modified organism	NO

TABLE 3

Leaf/Foliage		
Characteristics	New Variety	Check Variety (BLK03)
Leaf arrangement	Opposite at seedling (immature) stage; Alternate at flowering (mature) stage	Opposite at seedling (immature) stage; Alternate at flowering (mature) stage
Leaf shape	Palmately compound	Palmately compound
Leaf structure	Linear-lanceolate leaflet blades with glandular hairs	Linear-lanceolate leaflet blades with glandular hairs

TABLE 3-continued

Leaf/Foliage		
Characteristics	New Variety	Check Variety (BLK03)
Leaf margins	Dentate, coarsely serrated, and the teeth point away from the tip	Dentate, coarsely serrated, and the teeth point away from the tip
Leaf hairs	Present on both upper and lower surfaces	Present on both upper and lower surfaces
Leaf length with petiole at maturity	33.5-39.5 cm	9.5-11.4 cm
Leaf width at maturity	9.8-16.4 cm	9.6-12.4 cm
No. of leaflets	5-9	5-7
Middle largest (longest) leaflet length	15.5-18.2 cm	1.8-4.2 cm
No. teeth of middle leaflet	35-38	21-28
Leaf (upper side) color (RHS No.)	N186A (purple); 136A (green); Leaves turn purple when temperature drops below 55 F.	132A
Leaf (lower side) color (RHS No.)	135D	134D
Leaf glossiness	Medium at the upper leaf surface	Strong at the upper leaf surface
Leaflet apex shape	Lanceolate	N/A
Leaflet base shape	Lanceolate	N/A
Vein/midrib shape	Obliquely continuous throughout leaflet	Obliquely continuous throughout leaflet
Vein/midrib color (RHS No.)	139D	144C
Petiole length at maturity	13.4-18.3 cm	5.8-7.2 cm
Petiole color (RHS No.)	139D	150D
Intensity of petiole anthocyanin	Moderate-strong	Moderate-strong
Stipule shape	Linear-lanceolate	Elliptical
Stipule length at maturity	0.9-1.1 cm	0.4-0.8 cm
Stipule color (RHS No.)	139D	145C
Foliage Fragrance	Bitter, Acerbic, and earth-spice tones	N/A

TABLE 4

Stem		
Characteristics	New Variety	Check Variety (BLK03)
Stem shape	Hexagonal in shape, large, robust	Hollow, ribbed, textured
Stem diameter at base	6.-8.1 cm	2.8-3.4 cm
Stem color (RHS No.)	149D	195C
Stem pith type	Thick	Absent
Depth of main stem ribs/grooves	Medium	Medium
Internode length	Base (7.0-11.5 cm); Canopy (4.0-11.0 cm)	Base (4.5-6.1 cm); Canopy (3.0-6.9 cm)

TABLE 5

Inflorescence (Female/Pistillate Flowers)	
Characteristics	New Variety
Flowering (blooming) habit	Cymes (compound in nature)
Inflorescence position	Flowers develop above the apical portions of main and lateral axes
Flower arrangement	Cymose (Clusters of bracts are overlapping within each cyme)
Number of flowers per plant	200 flowers per cyme; 8-12 panicles per plant
Flower shape	Urceolate (Each individual flower has a small green bract enclosing an ovary with two-long, slender stigmas projecting well above the bract)
Flower (individual pistillate) length	1.04-1.21 cm
Flower (compound cyme) diameter	6.0-9.1 cm
Corolla shape	No defined corolla
Corolla Color (RH S No.)	N/A
Bract shape	Urceolate
Bract size	3.1-6.0 mm
Bract color (RHS No.)	N187A (purple); 134B (green)
Stigma shape	Pointed, linear
Stigmalength	1.0-1.2 mm
Stigma color (RHS No.)	44A
Calyx shape	No defined calyx
Calyx color (RHS No.)	N/A
Trichome shape	Capitate-stalked glandular
Trichome color (RHS No.)	157A (early flowering stage); N30B (late flowering stage)
Other types of trichomes	Capitate sessile trichomes are present on the surfaces on leaves of plants, as well as being noticed in the flowers (color: 157A at day 40 in flowering). During later flowering, i.e. day 55 to day 70 in flowering, the capitate stalked trichomes are present (color: N30B). Bulbous and non-glandular trichomes are also present and most noticeable on the petioles, stems, and leaves (color: 157A).
Terminal bud shape	Oblong
Terminal bud length	7.60-9.42 cm
Terminal bud width	5.48-7.20 cm
Terminal bud color (RHS No.)	N187A(purple); 134B(green)
Pedicel	Present
Pedicel color (RHS No.)	139D
Sepal	Absent
Sepal color (RHS No.)	N/A
Petal	Absent (Apetulous)
Petal color (RH No.)	N/A
Staminate shape	No staminate flowers produced naturally; however, male flower (staminate) can be induced with chemical compounds (such as silver nitrate and silver thiosulphate anionic complex).
Pollen	N/A
Seed shape	Globular and textured
Seed size (Diameter)	1.8-2.4 mm
Seed color (RHS No.)	199A
Marbling of seed	Weak to absent
Max THC content	About 14.50-18.57%
Max CBD content	0.00%

TABLE 5-continued

Inflorescence (Female/Pistillate Flowers)	
Characteristics	Check Variety (BLK03)
Flowering (blooming) habit	Cyme
Inflorescence position	Flowers develop above the apical portions of main and lateral axes
Flower arrangement	Cymose
Number of flowers per plant	50-70 flowers per cyme; 6-9 panicles per plant
Flower shape	Urceolate (Each individual flower has a small green bract enclosing an ovary with two-long, slender stigmas projecting well above the bract)
Flower (individual pistillate) length	0.85-1.09 cm
Flower (compound cyme) diameter	4.7-8.1 cm
Corolla shape	No defined corolla
Corolla Color (RH S No.)	N/A
Bract shape	Urceolate
Bract size	1.9-2.99 mm
Bract color (RHS No.)	134A
Stigma shape	Acute
Stigmalength	1.3-1.6 mm
Stigma color (RHS No.)	44A
Calyx shape	No defined calyx
Calyx color (RHS No.)	N/A
Trichome shape	Capitate-stalked glandular
Trichome color (RHS No.)	157A (early flowering stage); N30B (late flowering stage)
Other types of trichomes	Capitate sessile trichomes are present on the surfaces on leaves of plants, as well as being noticed in the flowers (color: 157A at day 35 in flowering). During later flowering, i.e. day 60 in flowering, capitate stalked trichomes are present (color: N30B). Bulbous and non-glandular trichomes are also present and most noticeable on the petioles, stems, and leaves (color: 157A).
Terminal bud shape	Oblong
Terminal bud length	N/A
Terminal bud width	N/A
Terminal bud color (RHS No.)	134A

TABLE 5-continued

Inflorescence (Female/Pistillate Flowers)	
Pedicel	Present
Pedicel color (RHS No.)	150D
Sepal	Absent
Sepal color (RHS No.)	N/A
Petal	Absent (Apetulous)
Petal color (RH	N/A
Staminate shape	No staminate flowers produced naturally; however, male flower (staminate) can be induced with chemical compounds (such as silver nitrate and silver thiosulphate anionic complex).
Pollen	N/A
Seed shape	Smooth and globular
Seed size (Diameter)	1.6-1.9 mm
Seed color (RHS No.)	199D
Marbling of seed	Weak to absent
Max THC content	About 18.88-19.37%
Max CBD content	0.00%

N/A: Not available

TABLE 6

Other Characteristics	
Characteristics	New Variety
Aroma	Citrus-Pineapple Sweet Zest
Proportion of Hermaphrodite	N/A
Time period and condition of flowering/ blooming	60-70 days
Plant Hardiness	Hardy (120° F.-20° F.)
Breaking action	Strong, Flexible; resistant to breakage
Rooting rate after cutting/cloning	High
Types of Cutting for Cloning	Stem
Shipping quality	High, great
Storage life	Long (3-8 months with minor changes in physical appearance and/or smell/taste); Minor decrease in green coloration; Up to 8 months with minor change in metabolites and/or appearance.
Market use	Medicinal
Productivity of flower	Weight per plant is approximately 0.68-1.59 kg (1.5-3.5 lbs)
Characteristics	Check Variety (BLK03)
Aroma	Spice-Earth tones
Proportion of Hermaphrodite	N/A
Time period and condition of flowering/bloo ming	50-60 days
Plant Hardiness	Hardy (120° F.-20° F.)
Breaking action	Stout, non-flexible; resistant to breakage

TABLE 6-continued

Other Characteristics	
Rooting rate after cutting/cloning	Medium
Types of Cutting for Cloning	Stem
Shipping quality	Moderate
Storage life	Medium (2-6 months with minor changes in physical appearance and/ or smell/taste)
Market use	N/A
Productivity of flower	Approximately 0.14-0.45 kg can be produced per plant; dependent on finished size; Growing conditions/environment will dictate final yield/output

N/A: Not available

In general, 'HAPPY PINEAPPLE' is larger in width and height than both parents, pollen acceptor (B03.S1.39) and pollen donor (R08.S09.03). 'HAPPY PINEAPPLE' is more robust in terms of growing performance, time to rooted clones, and time to flower maturity. As 'HAPPY PINEAPPLE' has greater resistance to pests and diseases as described in Table 2 (specifically to powdery mildew and bud rot, i.e. *Botrytis cinerea*), it yields higher than both parents. Since 'HAPPY PINEAPPLE' has stronger branches and thicker stems with greater flexibility than both parents, its main and lateral branches gives 'HAPPY PINEAPPLE' ability to produce higher yields under different growing conditions. The flowers of 'HAPPY PINEAPPLE' are larger in width and length than both parents. 'HAPPY PINEAPPLE' clearly demonstrates hybrid vigor, and outperforms both parents overall. Chemically, 'HAPPY PINEAPPLE' has a higher cannabinoid content with a higher percentage of CBG-A content in addition to a higher and unique/ terpene content and combination thereof than either parent.

When 'HAPPY PINEAPPLE' is compared to the check variety 'BLK03', 'HAPPY PINEAPPLE' is taller in plant height and wider in plant width than 'BLK03'. 'HAPPY PINEAPPLE' has higher plant vigor. 'HAPPY PINEAPPLE' has longer leaves than 'BLK03' in terms of whole leaf length including petiole. Also, 'HAPPY PINEAPPLE' has longer leaflets than 'BLK03' when comparing the length of middle largest leaflets. The petioles and stipules of 'HAPPY PINEAPPLE' are longer than those of 'BLK03' at maturity. Regarding the stem diameter at base, 'HAPPY PINEAPPLE' is at least twice longer than 'BLK03'. Also, the internodes of 'HAPPY PINEAPPLE' are longer than that of 'BLK03' at both the base and the canopy. When comparing the number of flowers per cyme, 'HAPPY PINEAPPLE' have more flowers than 'BLK03'. Regarding the compound cyme diameter, 'HAPPY PINEAPPLE' is longer than 'BLK03', and also individual pistillate flowers of 'HAPPY PINEAPPLE' are longer than those of 'BLK03'. 'HAPPY PINEAPPLE' has longer bracts than 'BLK03', while having a little shorter stigmas than 'BLK03'. With respect to aroma, 'HAPPY PINEAPPLE' have a smell of citrus-pineapple with sweet zest, while 'BLK03' has a spicy smell with earth tones.

When 'HAPPY PINEAPPLE' is compared to the known *Cannabis* plant named 'ECUADORIAN SATIVA' (U.S. Plant Pat. No. 27,475), there are several distinctive characteristics. For example, the overall form of 'HAPPY PINEAPPLE' plant is taller in height and wider across at the widest point than 'ECUADORIAN SATIVA' plant. 'HAPPY PINEAPPLE' plant has longer whole leaves and middle leaflets at maturity than 'ECUADORIAN SATIVA' plant. Also, 'HAPPY PINEAPPLE' plant has longer petioles than 'ECUADORIAN SATIVA' plant. 'HAPPY PINEAPPLE' plant has longer stipules than the 'ECUADORIAN SATIVA' plant. Regarding stem diameter at base, 'HAPPY PINEAPPLE' plant is at least twice longer than 'ECUADORIAN SATIVA' plant. When comparing individual pistillate flower and cyme length, 'HAPPY PINEAPPLE' flowers are longer than 'ECUADORIAN SATIVA' flowers. While the aroma of 'ECUADORIAN SATIVA' is strongly mephitic with hints of limonene, 'HAPPY PINEAPPLE' has a smell of citrus-pineapple with sweet zest. When comparing total THC content between 'HAPPY PINEAPPLE' and 'ECUADORIAN SATIVA', the total THC content of 'HAPPY PINEAPPLE' is about 14.50-18.57%, while 'ECUADORIAN SATIVA' accumulates 12.45% total THC.

The invention claimed is:

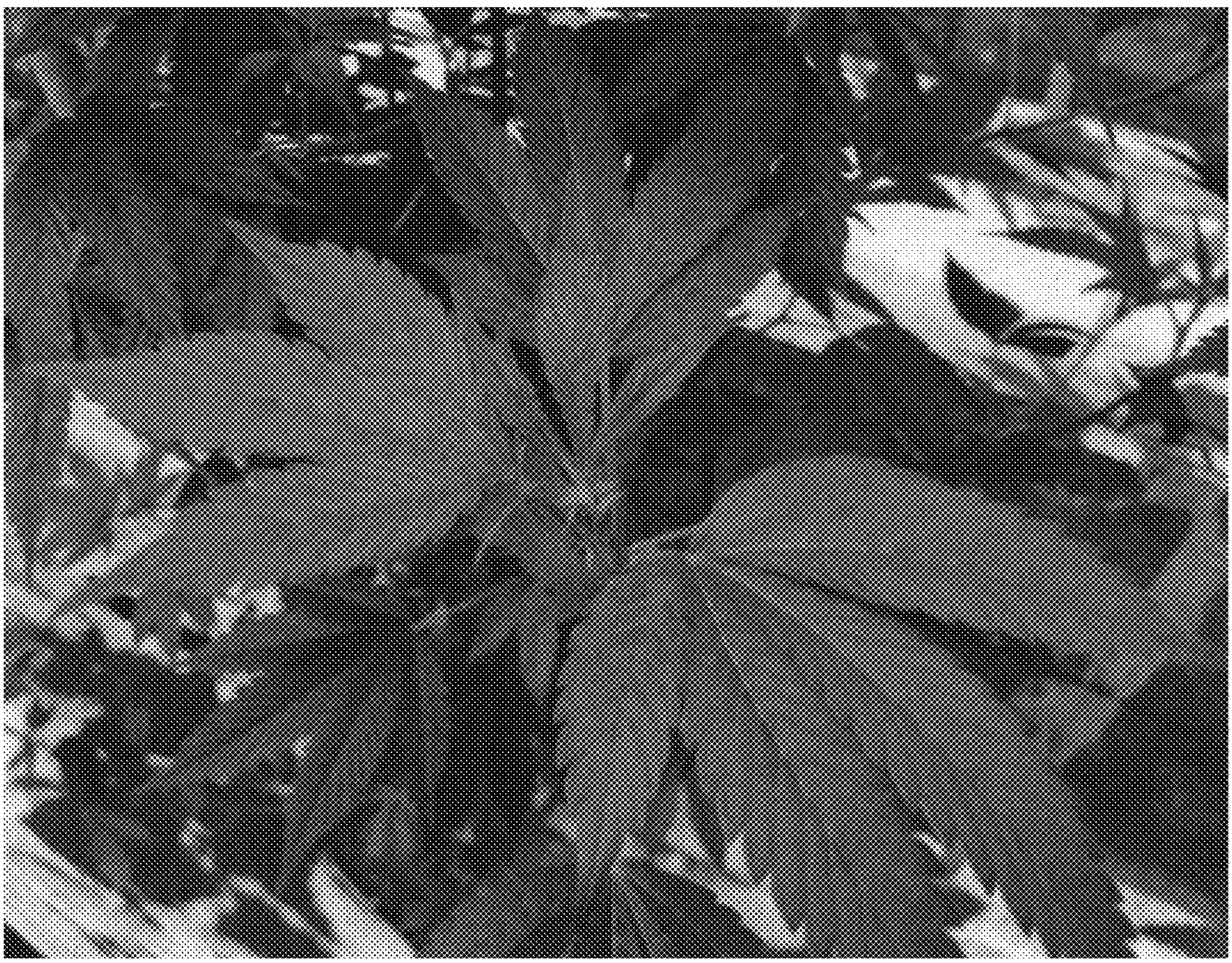
1. A new and distinct cultivar of *Cannabis* plant named 'HAPPY PINEAPPLE' substantially as shown and described herein.

* * * * *

FIG. 1A

HAPPY PINEAPPLE

FIG. 1B



HAPPY PINEAPPLE

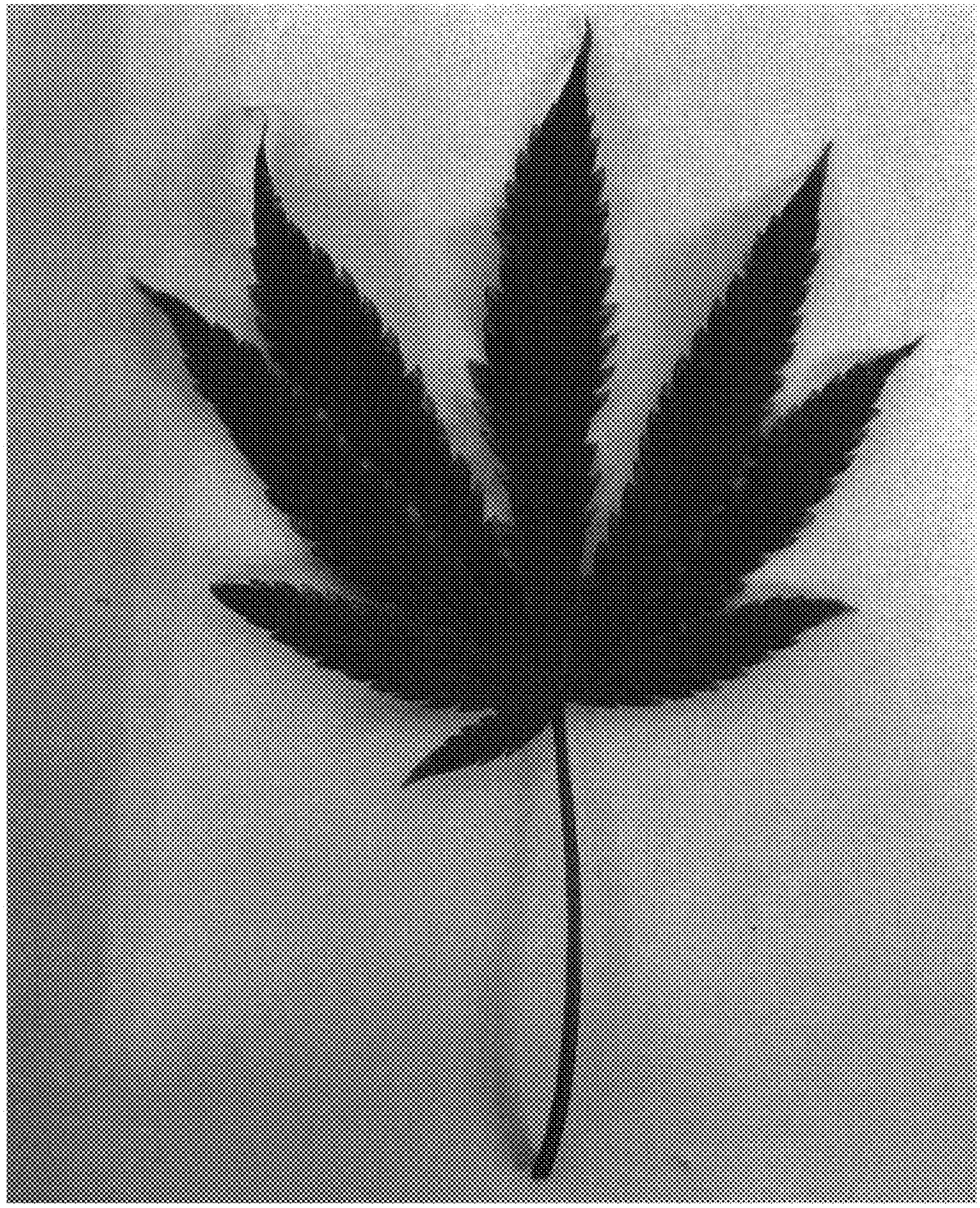
FIG. 1C

HAPPY PINEAPPLE

FIG. 2

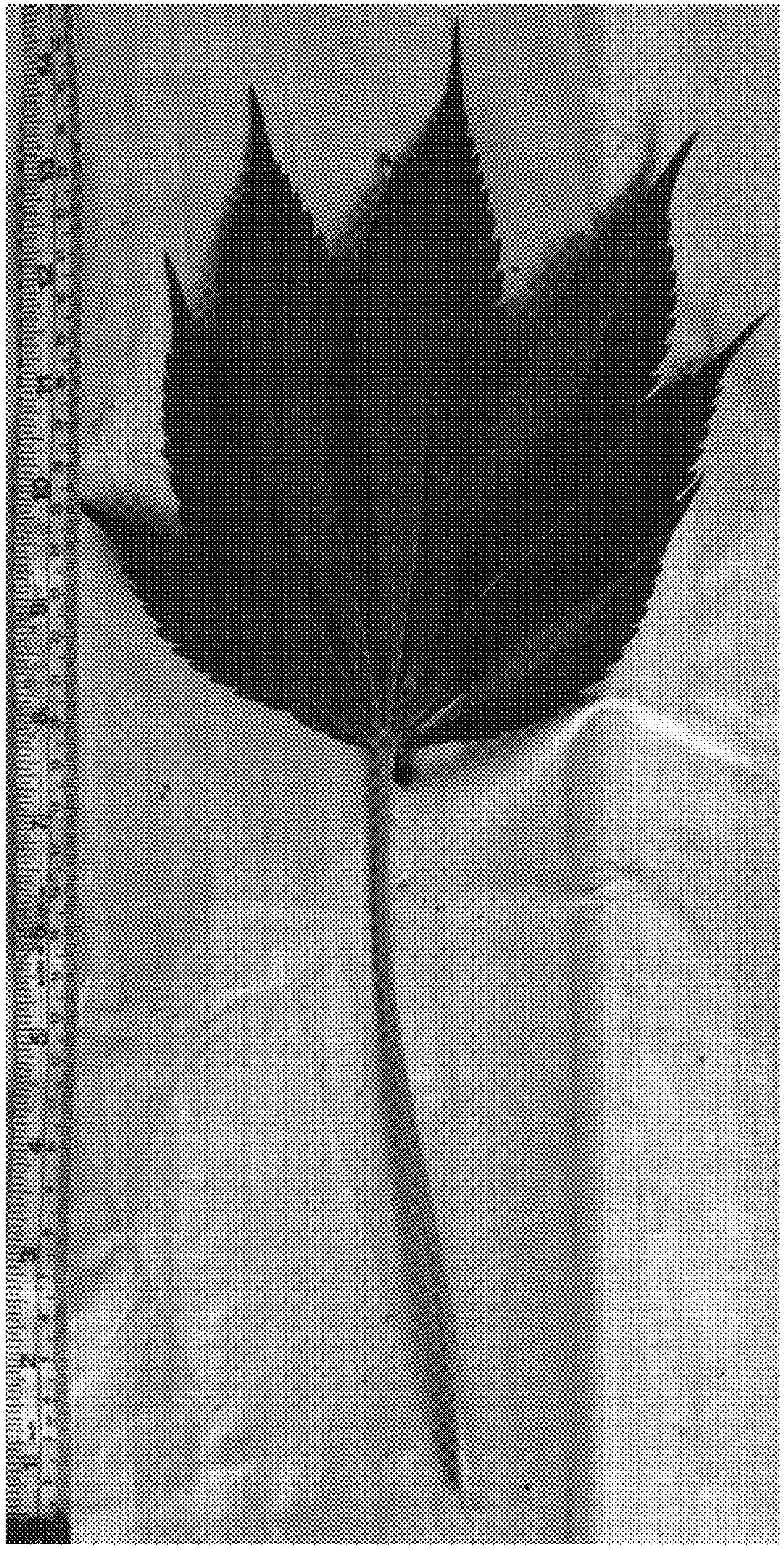
HAPPY PINEAPPLE

FIG. 3A



BLK03

FIG. 3B



HAPPY PINEAPPLE

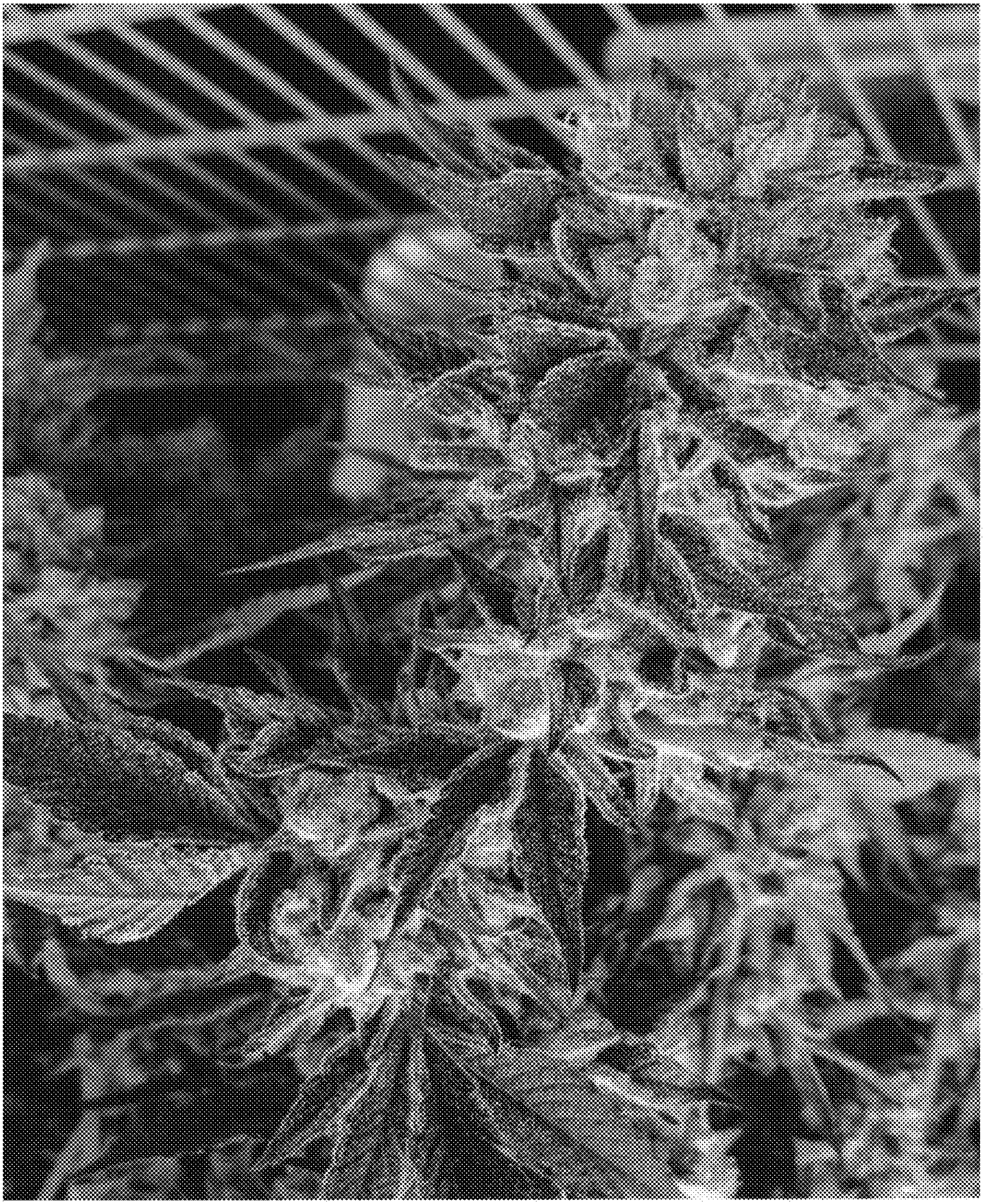
FIG. 4A

BLK03

FIG. 4B

HAPPY PINEAPPLE

FIG. 5

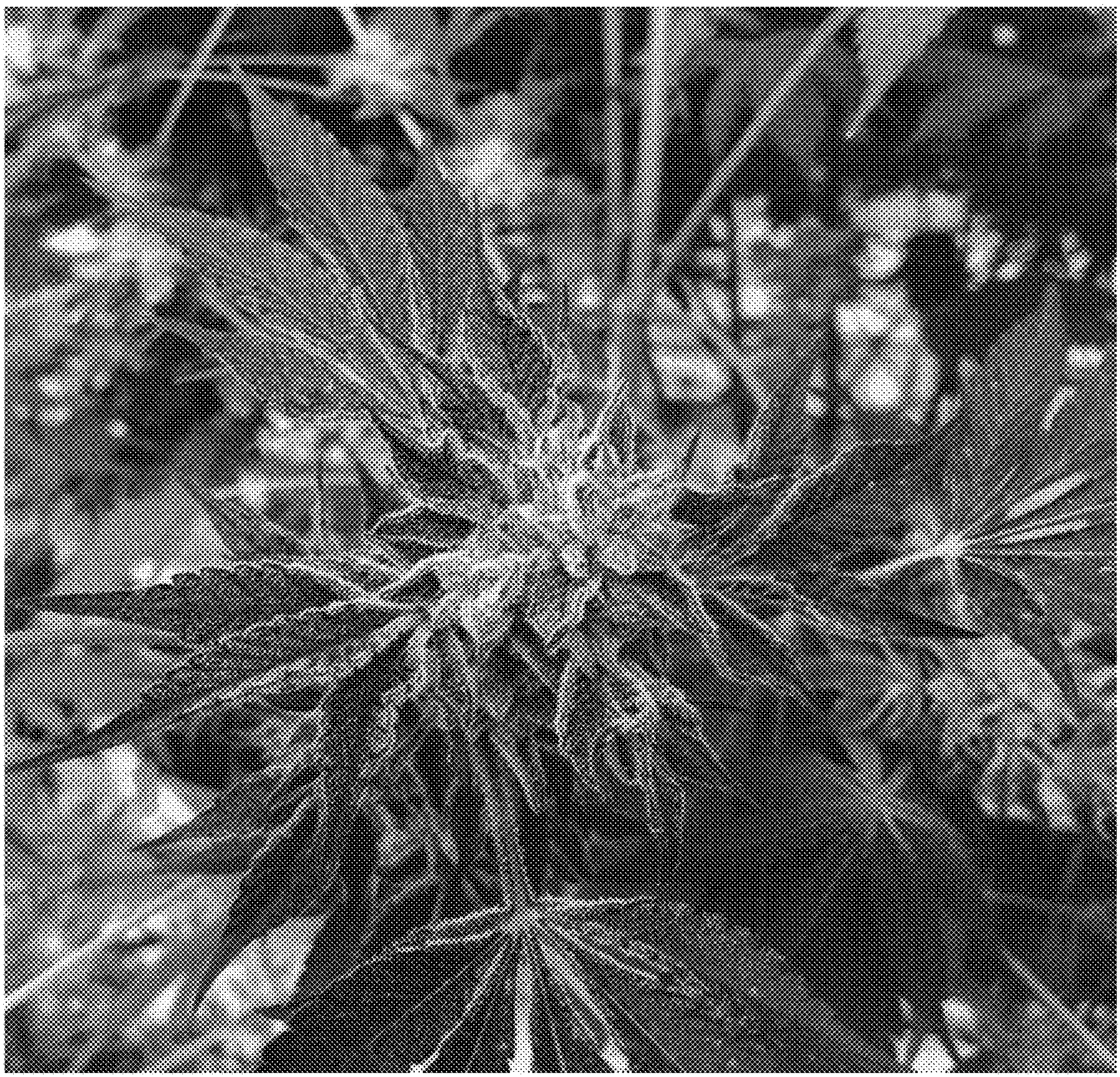


HAPPY PINEAPPLE

FIG. 6

HAPPY PINEAPPLE

FIG. 7



HAPPY PINEAPPLE

FIG. 8

HAPPY PINEAPPLE

FIG. 9