

# Protections, Privileges, and Patents: Intellectual Property in American Horticulture The Late Nineteenth Century to 1930<sup>1</sup>

DANIEL J. KEVLES

Stanley Woodward Professor of History  
Yale University

THE BEST-KNOWN FORM of intellectual property protection (IP) is the common utility patent, whose requirements include the stipulations that the invention must be man-made and useful. What is patentable in the United States according to statute dates back to the patent law of 1793, which declared, in language written by Thomas Jefferson, that patents could be obtained for “any new and useful art, machine, manufacture, or composition of matter, or any new or useful improvement thereof.”<sup>2</sup> The code said nothing about whether an innovation’s being alive or not has any bearing on its patentability. However, in the nineteenth century living organisms were taken to be unpatentable. Plants and animals were not machines or manufactures. Improvements upon them were not identifiable new compositions of matter. And how could one define the utility of a fruit or an ornamental plant—say, a rose exhibiting a new fragrance or hue?

Under the circumstances, through most of the nineteenth century horticultural improvers did not seek patents on their products, but this is not to say that they were indifferent to intellectual property protection. While they did not speak of “intellectual property,” they were alive to the concept, and they devised a variety of arrangements outside the patent system to achieve protection of the IP in their living innovations.

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<sup>2</sup>35 U.S.C. § 101; Bruce W. Bugbee, *Genesis of American Patent and Copyright Law* (Washington, D.C.: Public Affairs Press, 1967), 152.

In establishing their arrangements, the improvers recognized, at least tacitly, that they had to deal with several difficulties. The enforcement of any property right requires that the property be specified. This was easily accomplished with a tract of land but not with a living organism—for example, a shorthorn bull or a Concord grape.

The establishment of *intellectual* property also entails reliable reproduction of the product. But the achievement of reproductive fidelity posed a problem for innovators because living organisms reproduce themselves. If an improved plant or animal reproduced itself faithfully—or could be made so to reproduce itself—the original improver potentially faced competition from the purchaser that in the absence of the blocking power of patents could not be easily forestalled.

In the United States, IP protection in law for living products found its way onto the agenda of horticulturalists during the latter third of the nineteenth century. In devising methods to protect IP in their products, innovators looked in part to the means used by animal breeders. These breeders managed to warrant the identity of purebred animals by registering their pedigrees in publicly available stud-books that by the late nineteenth century were owned by recently formed breed associations such as the American Shorthorn Association. This system did not firmly protect the IP developed by individual breeders, but it protected very well the collective IP of the cartel of breeders represented by the breed association. In 1891, Liberty Hyde Bailey, the prominent plant scientist and a professor at Cornell University, called the attention of plant innovators to the value of the system: “There is no law to compel one to register an animal, but every breeder knows that it is only through registration that he can advertise, sell and protect blooded stock. And there is no intelligent purchaser who would think of negotiating for such stock without having obtained the testimony of the herd-book.”<sup>3</sup>

IP protection for horticultural innovators broke down into two categories—sexually reproducing plants and asexually reproducible plants and trees. The principal IP-related problem for improvers of plants that were reproduced sexually—for example, most vegetables and flowers (as well as corn and the grains)—was that they did not ordinarily breed true. Sellers of their seed thus could not guarantee the quality and character of any given crop. J. M. Thorburn & Co., a prominent nursery in New York, warned buyers that the firm gave “no warranty, express or implied, as to description, quality, productiveness, or any other matter of any seeds, bulbs or plants they send out.” Among

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<sup>3</sup>Liberty Hyde Bailey, report, “Protection to the Originator of Varieties,” read at the meeting of the American Association of Nurserymen, 4 June 1891, printed in *Transactions of the American Association [of Nurserymen]*, 3–13 June 1891, pp. 88–91.

the reasons was “*the well-known tendency of many vegetables to revert to their original types, notwithstanding the care of the seed-grower.*”<sup>4</sup> Then, too, farmers could save seed from their crops, and then either plant them or sell them, or both, thus undercutting the improver’s control of his IP in the plant. Under the circumstances, the nascent private seed industry paid little attention to IP protection.

The IP issues in asexually reproducible plants and trees were wholly different. Innovations and improvements in such plants and trees came partly from the hybridizing work of breeders like Luther Burbank, whom Americans ranked in the league of inventive genius with Ford and Edison. But in the overwhelming main, innovations in plants came from chance finds in the field and orchard. The finds arose from bud sports or fortunate sexual pollinations, but once found they could be reproduced virtually identically by the nurturing of grafts or cuttings, i.e., by asexual reproduction. Commercial nurseries acquired such finds, then put them on the market. Stark Brothers Nursery and Orchards, based in Louisiana, Missouri, and one of the oldest and perhaps the largest such enterprise in the country, sponsored an annual fair that encouraged farmers to submit their good fruits, including those of chance finds, for competitive judgment. In 1893, through this means, the firm learned about an apple tree that produced a luscious red fruit. The next year, it brought the tree with all propagation rights—which is to say all its IP—from its owner, a farmer in Iowa, named the fruit the “Delicious” apple, and proceeded to market the tree to the world.<sup>5</sup>

Using asexual reproduction, nurserymen and orchardists could be confident that the young trees they sold would bear fruit very much like the fruit on the trees from which they had been derived. Yet the ease with which, say, valuable fruit trees could be easily reproduced virtually identically, through grafting, and thus numerous multiplied, facilitated theft of the developer’s IP. Competitors could—and did—purchase the trees, or take cuttings of them from someone’s nursery in the dead of night, then propagate and sell them. Burbank tried to protect himself against such thieves by charging high prices for his innovations—say, \$3,000 for a new plum tree, including all “stock and control”—thus attempting to gain in the first sale revenue that would cover his costs and return a reasonable profit.<sup>6</sup> The pricing strategy was intended to

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<sup>4</sup>J. M. Thorburn & Co., Catalogue [1908], copy in New York Botanical Gardens Archives, Catalogue Collection, Box 538.

<sup>5</sup>Dickson Terry, *The Stark Story: Stark Nurseries’ 150th Anniversary* (Columbus, Mo.: Missouri Historical Society, 1966), 38–40.

<sup>6</sup>Catalogue, *New Creations in Fruits and Flowers, June 1893* (Santa Rosa, Calif.: Burbank’s Experimental Grounds, 1893), 12, copy in Luther Burbank Papers, Library of Congress, Box 14.

capture what economists call the downstream revenues, of which thieves might deprive him, since he would be unable to control the reproduction of the tree once he had sold it.

Even so, nurserymen repeatedly complained that they failed to receive just returns for all their investment of time and money. Burbank fulminated to the readers of *Green's Fruit Grower* that he had "been robbed and swindled out of my best work by name thieves, plant thieves and in various ways too well known to the originator."<sup>7</sup>

Unlike Burbank, Stark Brothers, which did not breed new fruit trees but only acquired them, was in the business of mass marketing. Realizing the value of their IP by charging high prices would have been counterproductive to their business plan. To protect the IP in their fruit trees, the Starks trademarked them, using the trademark law that Congress passed in 1881. In the 1890s, the Stark catalogues included gorgeous paintings of their named fruits with a small banner beneath each declaring that it was covered by a trademark or, in the case of the gold plum, that it was "Trademark Pat[ente]d. Feb. 25, 1895."<sup>8</sup> The trademark, however, would not prevent someone from obtaining the tree or cuttings from it, propagating the wood, and then selling the tree under a different name.

Under the circumstances, beginning in the 1880s and with mounting insistence in the 1890s, American nurserymen began urging the establishment of legal protection for what they called the rights of "originators." Some of the agitation aimed to expand the patent system to include coverage for innovations in plants and trees. The move to patentability was blocked, however, when, in 1889, in *Ex parte Latimer*, the U.S. commissioner of patents rejected an application for a patent to cover a fiber identified in the needles of a pine tree, declaring that it would be "unreasonable and impossible" to allow patents upon the trees of the forest and the plants of the earth.<sup>9</sup> The commissioner's ruling formed the basis for what came to be known as the "product-of-nature" doctrine—that while processes devised to extract what is found in nature can be patented, objects discovered there or bred from there cannot be patented. In a report to the American Association of Nurserymen in 1891, Liberty Hyde Bailey rejected the horticulturalists' patenting ini-

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<sup>7</sup>Burbank to Jacob Moore, 4 May 1898, published in *Green's Fruit Grower*, June 1898, clipping in Luther Burbank Papers, Luther Burbank Home and Gardens, Archives, Santa Rosa, Calif., Scrapbooks, 2:45.

<sup>8</sup>*Stark Nurseries Fruit Book*, 1895, in Scrapbooks, 1:141, Burbank Home and Gardens, Archives.

<sup>9</sup>Kevles, "Ananda Chakrabarty Wins a Patent," *HSPS: Historical Studies in the Physical and Biological Sciences* 25.1 (1994): 111–36, at 111.

tiative as in any case unwarranted. New varieties were not inventions, he noted, precisely because they were accidents found in the fields.<sup>10</sup>

Bailey held that plant originators should nevertheless be protected. He proposed that the nurserymen draw on existing trademark law to obtain protection through a national register of plants administered by the Department of Agriculture. The originator would send the department “a specimen, description and perhaps picture of his novelty,” and the department would issue a certificate, a type of trademark insuring him “inviolable rights” in his innovation. The public would soon learn to buy only from originators who possessed a registration certificate, just as they had learned to purchase only animals registered with the breed associations.<sup>11</sup>

An informal registry system had been established in 1886 in the new Department of Pomology in the U.S. Department of Agriculture. While it was created for the purposes of systematic classification of fruits, after Bailey’s proposal in 1891 it was heavily used by orchardists and nurserymen to protect their claims to their innovations. One of the remarkable features of the registration system was that the department employed a team of artists to paint, and thus to provide visual identification of, selected specimens of the submitted fruits. Between 1887 and 1915, fifty-two such artists worked for the department at one time or another. By 1936, when the portrait program ended, the artistic team—a total of at least seventy-five by then, twenty-two of whom were women—had produced all told some 7,700 watercolors, portraying apples, blackberries and raspberries, currants and gooseberries, pears, quinces, citrus, peaches, plums, strawberries, and numerous other fruits.<sup>12</sup>

Despite the considerable artistic merits of the registration system, it did not measure up to Bailey’s vision for IP protection, which, recall, included trademarking that would not only protect the name of the innovation, but also secure to the originator the exclusive right to the plant or tree and to its propagation. That ingredient was severely undercut in 1895 by the ruling of a federal appeals court in the case of *Hoyt et al. v. J. T. Lovett Co.* The case concerned a dispute over the trademarking of a grape that came from the Green Mountains of Vermont. The court held that trademarks could not cover living products as such, because, like the grape, they grew out of the earth on their own.<sup>13</sup>

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<sup>10</sup> Bailey, report, “Protection to the Originator of Varieties,” 88–89.

<sup>11</sup> *Ibid.*, 89–90.

<sup>12</sup> James J. White and Erik A. Neumann, “The Collection of Pomological Watercolors at the U.S. National Arboretum,” *Huntia* 4.2 (1982): 103–23. The watercolors are now housed at the National Agricultural Library, in Beltsville, Md.

<sup>13</sup> *Hoyt et al. v. J. T. Lovett Co.*, Circuit Court of Appeals, Third Circuit, 71 F. 173; 3 Dec. 1895.

The ruling in *Hoyt et al.* had nullified the hope of the nurserymen that the registration system coupled with trademarks would suffice. During the next decade the leading nurseries, including Burbank and Stark Brothers, moved to obtain legislation extending trademark protection to their innovations. In 1906, at the behest of the nation's nurserymen, a bill was introduced in the House that would amend the trademark act by authorizing the commissioner of patents to register an originator's new variety of plant, bush, shrub, tree, or vine. Registration of the name would constitute a trademark and would include for twenty years the "exclusive right to propagate for sale and vend such variety of horticultural product under the name so registered."<sup>14</sup>

The bill failed, but it led to the formation of a lobbying group, the National Committee on Plant Patents under the American Association of Nurserymen. In 1929, Paul Stark, of Stark Brothers, became chair of the committee. Along with other nurseries, Stark Brothers had been trying to protect its propagation rights in new fruits by imposing contractual obligations upon the purchaser—for example, an agreement that he would neither sell nor give away scions, cuttings, or buds. However, the contracts were sometimes difficult to enforce, which helped energize Stark's eagerness for the stronger IP protection that a patent would provide. In 1930, not least because of Stark's lobbying effort, Congress passed the Plant Patent Act.<sup>15</sup>

The act covered only asexually reproduced organisms, and it authorized a patent to anyone who "has invented or discovered and asexually reproduced any distinct and new variety of plant, other than a tuber-propagated plant. . . ."<sup>16</sup> Given its requirement of distinctiveness rather than usefulness, it was not a utility patent law. Moreover, it did not establish the conventional legal bargain that granted the inventor a monopoly right in exchange for public knowledge of how the invention was produced so that others could innovate beyond it. In most cases, there was no such knowledge to be disclosed.

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<sup>14</sup>U.S. Congress, House of Representatives, Committee on Patents, Arguments before the Committee . . . on H.R.113570, Authorizing the Registration of the Names of Horticultural Products and to Protect the Same, 28 March 1906, 59th Cong. (Washington, D.C.: GPO, 1906), 3–5, 12–13.

<sup>15</sup>Liberty Hyde Bailey had suggested in 1891 that nurserymen use such contractual arrangements and the court in *Hoyt et al.* had in passing noted their acceptability. Bailey, report, "Protection to the Originator of Varieties," 90; *Hoyt et al. v. J. T. Lovett Co.*, 71 F. 173; 3 Dec. 1895; Cary Fowler, "The Plant Patent Act of 1930: A Sociological History of Its Creation," *Journal of the Patent and Trademark Office Society* 82 (September 2000): 630–42; Glen Bugos and Daniel J. Kevles, "Plants as Intellectual Property: American Law, Policy, and Practice in World Context," *Osiris*, 2nd ser., 7 (1992): 81–88.

<sup>16</sup>Quoted in Fowler, "The Plant Patent Act," 641.

In all, the Plant Patent Act harkened back to the seventeenth century, when patents were granted as privileges in the market—royal dispensations to encourage commerce in new technologies, often from abroad, or to reward favorites. Indeed, the Plant Patent Act might well have been called the Stark Horticultural Privilege Act, not only because of Stark's role in its passage but because it granted a privilege of intellectual property protection that was tailored to the practices and needs of horticultural innovators. Still, for all its simultaneous restrictiveness and looseness, the act was the first statute passed anywhere in the world that extended patent coverage to living organisms. It helped pave the way for the legal protection of IP in sexually reproducing plants, which Congress authorized in 1970, and for the extension of utility patents to all living organisms other than human beings after 1980, when in the emerging age of biotechnology the U.S. Supreme Court ruled, in the case of *Diamond v. Chakrabarty*, that whether an innovation is alive or not is irrelevant to its patentability.<sup>17</sup>

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<sup>17</sup>*Diamond v. Chakrabarty*, 447 U.S. 303, 100 S.Ct. (1980), 2207. For the full story of the case, see Daniel J. Kevles, "Ananda Chakrabarty Wins a Patent"; and Rebecca S. Eisenberg, "The Story of *Diamond v. Chakrabarty*: Technological Change and the Subject Matter Boundaries of the Patent System," in *Intellectual Property Stories*, ed. J. C. Ginsburg and R. C. Dreyfuss, 327–57 (New York: Foundation Press, 2006).

