Abstract from the Congressional Annual Report of the Hon. R. H. Buell, Commissioner of Patents, for the Year Ending December 31, 1875.

Money received by the Patent Office during the year 1875	$743,453.36
Expenditures during the year	721,657.91
Balance to credit of Patent Fund, December 31, 1875	21,795.65
Amount standing to credit of Patent Fund in the Treasury of the United States, January 1, 1875	$865,113.97
Total balance to credit of Patent Fund, December 31, 1875	886,909.62

Statement of the business of the Office for the year 1875.

Number of applications for patents during the year 1875	21,638
Number of patents issued, including reissues and designs	14,837
Number of applications for extension of patents	2
Number of patents extended	38
Number of caveats filed during the year	3,094
Number of patents expired during the year	1,323
Number of patents allowed, but not issued for want of final fee	3,518
Number of applications for registering of trade marks	1,055
Number of trade marks registered	1,138
Number of applications for registering of labels	566
Number of labels registered	313
Of the patents granted there were to—	
Citizens of the United States	14,274
Subjects of Great Britain	358
Subjects of France	83
Subjects of other foreign governments	122

Comparative statement of the business of the Office from 1837 to 1875, inclusive.

Year.	Applications.	Caveats filed.	Patents issued.	Cash received.	Cash expended.
1837			435	$29,289.39	$33,506.98
1838			520	42,123.54	37,492.10
1839			425	37,260.00	34,543.51
1840	735	228	473	38,056.51	39,020.67
1841	847	312	495	40,413.01	52,666.87
1842	761	394	517	36,505.68	31,241.48
1843	819	315	531	35,315.81	30,776.96
1844	1,045	380	502	42,309.26	36,244.73
1845	1,246	452	502	51,076.14	39,395.65
1846	1,272	448	619	50,264.16	46,158.71
1847	1,531	559	572	63,111.19	41,878.35
1848	1,628	607	660	67,576.69	58,905.84
1849	1,955	595	1,070	80,752.98	77,716.44
1850	2,193	602	995	86,937.05	80,100.95
1851	2,258	760	869	95,738.61	86,916.93
1852	2,639	996	1,020	112,656.34	95,916.91
1853	2,673	901	958	124,527.45	132,869.83
1854	3,324	868	1,902	163,789.84	167,146.32
1855	4,435	906	3,024	216,459.35	179,540.33
1856	4,960	1,024	3,502	192,588.02	199,931.02
1857	4,771	1,010	2,910	196,132.01	211,582.09
1858	5,364	934	3,710	203,716.16	193,193.74
1859	6,225	1,097	4,538	245,942.15	210,278.41
1860	7,653	1,084	4,819	256,352.59	252,820.80
1861	4,643	700	3,340	137,354.44	21,491.91
1862	5,038	824	3,521	215,754.99	182,810.39
1863	6,014	787	4,170	195,593.29	199,414.14
1864	6,932	1,063	5,030	240,919.98	229,868.00
1865	10,664	1,937	6,616	348,791.84	274,199.34
1866	15,269	2,723	9,450	495,665.38	361,724.28
1867	21,276	3,597	13,015	646,581.92	639,263.32
1868	20,420	3,705	13,378	681,565.86	628,679.77
1869	19,271	3,624	13,986	693,145.81	486,430.78
1870	19,171	3,473	13,321	669,456.76	557,149.19
1871	19,472	3,366	13,033	678,716.46	560,595.08
1872	18,246	3,890	13,598	699,726.39	665,591.36
1873	20,414	3,248	12,864	703,191.77	691,178.98
1874	21,602	3,181	13,599	738,278.17	679,288.41
1875	21,638	3,094	16,288	743,453.36	721,657.71

THE CENTENNIAL.

The Patent Office is to be represented at the Centennial celebration, and a space of 10,000 square feet has been assigned for the exhibition of models of American inventions, illustrating the more important and useful industries. Models to the number of about 5,000 are being selected for this purpose, being about three per cent of the aggregate number in the possession of the Patent Office. These, while illustrating in part the progress of our country in "mechanical and manufacturing industries," and the development of American genius and skill, represent in one way only the results attained. Another mode of presentation of the facts and figures in the case is obtainable from the census report of 1870, and the general subject-matter index of patents granted since the year 1790.

MANUFACTURES OF AGRICULTURAL IMPLEMENTS.

In referring to the census, under the head of "manufactories in operation in 1870, exclusively for agricultural implements," it is found that the—

Number of establishments in operation was	2,076
Number of steam engines at work	676
Horse power	15,873
Number of water wheels at work	426
Horse power	10,209
Number of hands employed	25,249
Capital invested	$34,834,600
Wages paid	$12,151,504
Material used, value	$21,473,925

The census shows an increase of $34,578,825 in the value of agricultural implements manufactured over the amount reported in 1860, and of $45,224,174 over the amount reported in 1850, while the total value for the year 1870 of the "mechanical and manufacturing industries" aggregates the sum of $4,232,335,442.

The following are the products of agricultural implements of the manufactories first above referred to, being the articles manufactured and number made:

Cane mills	108	Horse rakes	80,919
Clover hullers	5,206	Lawn mowers	2,536
Corn planters	21,709	Mowers	39,486
Corn shellers	12,914	Plows	864,947
Cotton planters	2,000	Reapers	60,388
Cultivators	88,740	Reapers and mowers	59,645
Fanning mills	19,772	Rollers and scrapers	4,803
Grain cradles	103,646	Seed sowers	6,900
Grain drills	32,033	Scythes	881,244
Handrakes	207,310	Scythe snaths	17,680
Harrows	9,150	Separators	1,131
Harvesters	3,566	Shovels	25,756
Hay and straw cutters	30,879	Sickles	300
Hay forks	1,288,260	Stump pullers	124
Hoes	135,139	Threshers	22,934
Horse powers	4,541	Other products	5,206,789

PATENTS FOR AGRICULTURAL IMPLEMENTS.

For the articles above enumerated, there have been granted between the years 1790 and 1873, inclusive—that is to say, since the organization of this Office (1790)—the following patents:

Cane mills	66	Horse rakes	373
Clover hullers	100	Lawn mowers	38
Corn planters	647	Mowers	173
Corn shellers	378	Plows	2,451
Cotton planters	173	Reapers	69
Cultivators	1,617	Reapers and mowers	61
Fanning mills	127	Rollers and scrapers	141
Grain cradles	18	Seedsowers	579
Grain drills	186	Scythes	50
Hand rakes	9	Scythe snaths	26
Harrows	329	Separators	334
Harvesters	2,244	Shovels	58
Hay forks	382	Sickles	13
Hoes	201	Stump pullers	191
Horse powers	415	Thrashers	732

MISCELLANEOUS AMERICAN PATENTS.

These indicate the scope and versatility of the inventive genius of our country, and all enter more or less into the "mechanical and manufacturing industries" that have been referred to. They are as follows:

Bee hives	645	Looms and appurtenances	1,210
Bending machines	144	Paper, manufacture of	269
Boots and shoes, etc	817	Pavements	404
Brick kilns and machines	808	Photography	346
Bridges	425	Planing machines	384
Brooms and brushes, etc	750	Propellers, etc	570
Buckles	388	Printing presses, etc	756
Burglar alarms	165	Railway apparatus	1,552
Burners, gas, lamp, and vapor	793	Roofs and roofing	506
Car brakes	485	Rotary engines	170
Car coupling	861	Saw mills and machines	1,981
Car wheels	314	Sewing machines, etc	2,295
Carriages, etc	1,495	Steam engines and apparatus	1,013
Churns, etc	1,391	Stoves	2,400
Clothes dryers and wringers	984	Straw cutters and machines	401
Curtain fixtures	864	Sugar mills and machinery	343
Fire arms	1,203	Telegraph and instruments	566
Gas and gas apparatus	1,359	Toys	300
Grain, cutting, binding, etc	135	Tobacco presses, etc	197
Grinding and grist mills	371	Valves	1,497
Lamps and appurtenances	1,483		

Total number of patents issued since 1836 171,640
Total number of reissues 6,830
Total number of designs 8,883
Total number of trade marks 3,287
Total number of labels 464

In presenting this annual report, the Commissioner makes several suggestions and recommendations for the improvement of business facilities at the Patent Office.

1. To the corps of one hundred examiners now employed, he asks for an addition of twelve more examiners. He also asks for the restoration of the grade of Third Assistant Examiners; and suggests that the duties of Principal Examiners ought to be defined by law.

2. He suggests that all decisions of the courts shall be published in the *Official Gazette*, such publication to have the same force and effect as if published by authority of the courts.

3. The publication of the back patents—those granted between 1836 and 1871—is urgently called for, as a matter of the highest importance.

4. The improvement of the Patent Office library, by an annual appropriation of $5,000, is suggested.

5. The necessity of enlarging the Patent Office is conclusively shown. From five to twelve persons are now compelled to occupy rooms averaging each not more than twenty feet square, this space being also reduced by the cases for letters, papers, etc.; while models have to be tucked away in the attic.

The Commissioner's Report is one of the most straightforward, practical documents ever issued from the Patent Office; and we hope that Congress will adopt the excellent suggestions it contains.

DECISIONS OF THE COURTS.

Supreme Court of the United States.

THE GREEN CORN PATENTS.—RUFUS K. SEWELL, ADMINISTRATOR OF HENRY CLARK, DECEASED, APPELLANT, *vs.* JOHN WINSLOW JONES *et al.*—APPEAL FROM THE CIRCUIT COURT OF THE UNITED STATES FOR THE DISTRICT OF MAINE.—OCTOBER, 1875.

To entitle a plaintiff to recover for the violation of a patent, he must be the original inventor, not only in relation to the United States, but to other parts of the world. Even if the plaintiff did not know that the discovery had been made before, still he cannot recover if it has been in use or described in public prints, and if he be not, in truth, the original inventor.

To constitute an infringement, the thing used by the defendant must be such as to substantially embody the patentee's mode of operation, and thereby to obtain the same kind of result as was reached by his invention. It is not necessary that the defendant should employ the plaintiff's invention to as good a vantage as he employed it, or that the result should be the same in degree, but it must be the same in kind.

To infringe a patent, it is not necessary that the thing patented should be adopted in every particular. If the patent is adopted substantially by the defendants, they are guilty of infringement.

In an action for infringement, the first question is whether the machine used by the defendant is substantially in its principle and mode of operation like the plaintiff's. If so, it is an infringement of it.

If he has taken the same plan and applied it to the same purpose, notwithstanding he may have varied the process of the application, his manufacture will be substantially identical with that of the patentee.

The question of infringement depends upon whether the plan which the defendant has employed is in substance the same as the plaintiff's, and whether all the differences which have been introduced are not differences in circumstances not material, and whether it is not in substance and effect a colorable evasion of the plaintiff's patent.

When a party has invented some mode of carrying into effect a law of natural science, or a rule of practice, it is the application of that law or rule which constitutes the peculiar feature of the invention. He is entitled to protect himself from all other modes of making the same application, and every question of infringement will present the question whether the different mode, be it better or worse, is, in substance, an application of the same principle.

When the inventor says: "I recommend the following method," he does not thereby constitute such method a portion of his patent.

Appert's process, embodied in the Durand patent of 1810, contains everything of value that is contained in Winslow's patent, through whom the appellees claim.

Mr. Justice HUNT delivered the opinion of the court:

Jones, as assignee of four several patents for a new and useful improvement in preserving Indian corn, brought his action against Clark, the original defendant, alleging infringements of the same. These patents were issued to Isaac Winslow, and were as follows, namely: No. 34,928, dated April 8, 1862, for "a new and useful improvement in preserving Indian corn;" No. 35,274, dated May 13, 1862, "for a new and useful improvement in preserving green corn;" No. 35,346, dated May 20, 1862; and No. 36,326, dated August 26, 1862.

The two patents last above mentioned were declared and adjudged by the court below to be void, and from this judgment no appeal has been taken. They are no longer elements in the case before us, and are dismissed from further consideration.

The patent first mentioned is for an article of manufacture—a result. The second one is for a process by which a result is obtained. The first is the more full, and embraces all that is contained in the second.

The first objection made to the patents is the want of novelty. It is contended that they were anticipated by the Appert process embodied in the Durand patent of 1810; also by the patent of Gunther, of 1841, and by that of Wertheimer, of 1842. It is an elementary proposition in patent law that, to entitle a plaintiff to recover for the violation of a patent, he must be the original inventor, not only in relation to the United States, but to other parts of the world. Even if the plaintiff did not know that the discovery had been made before, still he cannot recover if it has been in use or described in public prints, and if he be not in truth the original inventor. (Dawson *vs.* Follen, 2 Wash., C. C., 311, Bedford *vs.* Hunt, 1 Mason, 302.)

Durand's patent is described in his specification, enrolled in the English Court of Chancery, as based "upon an invention communicated to him by a certain foreigner, residing abroad, of the manner of preserving animal food, vegetable food, and other perishable articles a long time from perishing or becoming useless."

In describing the nature of the invention, and the manner in which the same is to be performed, he says:

1. "I place the said food or articles in bottles of glass, pottery, tin, or other metals or fit materials, and I close the aperture so as completely to cut off or exclude all communication with the external air," and he describes the various means of effecting that purpose.

2. "When the vessels are thus charged and well closed, I place them in a boiler, each separately surrounded with straw or wrapped in a coarse cloth, or otherwise defended from striking against each other. I fill the boiler so as to cover the vessels with cold water, which I gradually heat to boiling, and continue the ebullition for a certain time, which must depend upon the nature of the substances included in the vessels, and the size of the vessels, and other obvious circumstances, which will be readily apprehended by the operator. Vegetable substances are to be put into the vessel in a raw or crude state, and animal substances partly or half cooked, although these may also be put in raw."

The specification then declares that the inventor did avail himself of the application of heat by placing the vessel in an oven, stove, steam bath, or other fit situation for gradually and uniformly raising the temperature and suffering it to cool again, and that as the choice of the consumer, or nature of the said food or other articles, may render preferable, leave the aperture of the vessel, or a small portion thereof, open until the effect of the heat shall have taken place, at which period the same is to be closed.

The points following are embraced in this patent:

1. It is for the purpose of preserving for a long time animal or vegetable food.

2. The articles thus to be preserved are to be placed in tin or other vessels, so arranged as to exclude communication with the external air.

3. An aperture may be left in the vessel, at the choice of the operator, until the effect of the heat shall have taken place, when it is to be closed.

4. The vessels, thus prepared, are placed in a boiler filled with cold water, which is heated to a boiling point, which boiling shall be continued for such time as shall be required by the substances contained in the vessels.

5. Although a water bath is preferred, the inventor declares he avails himself of heat through an oven, stove, steam bath, or any other situation fit for gradually raising the temperature and suffering it to cool again.

6. Vegetables are to be put into the vessels in a raw or crude state; animal substances, raw or partly cooked.

7. The invention is general in its terms, embracing all vegetables and all animal substances capable of being thus dealt with.

Winslow's patent of April 8, 1862, No. 34,928, is declared to be for an improvement in preserving Indian corn in the green state.

The letters patent declare that the first success of the inventor was obtained by the following process:

"The kernels being removed from the cob were immediately packed in cans hermetically sealed, so as to prevent the escape of the natural aroma of the corn or the evaporation of the milk or other juices of the same. I then submitted the sealed cans and their contents to boiling or steam heat for about four hours. * * * By this method of cooking green corn in the vapor of its juices the ends of the cans are bulged out. Strong cans are required, and dealers are likely to be prejudiced against corn thus put up. I recommend the following method: Select a superior quality of green corn in the natural state, remove the kernels from the cob by means of a curved and gaged knife, or other suitable means. Then pack in cans, hermetically seal the cans, expose them to steam or boiling heat for about an hour and a half, then puncture, seal while hot, and continue the heat for about two hours and a half."

At the close, the inventor says that what he claims to secure by the patent is the new article of manufacture, namely, Indian corn preserved in the green state without drying, the kernels being removed from the cob, hermetically sealed, and heated, as described.

Let us now state the points embraced in this the plaintiff's patent, and compare them with the points heretofore stated as included in the Durand patent.

1. Winslow's declared object is the preservation of Indian corn in the green state.

Durand's is for preserving Indian corn not only, but all vegetable substances in their raw or crude state.

2. Winslow recommends removing the kernels from the cob before the process of preservation is commenced, placing the kernels in cans, sealing them, and exposing them to heat.

Durand, not limiting himself to the article of corn, provides that the articles to be preserved shall be placed in cans, and subjected to heat in the same manner. He does not stipulate or recommend that the article shall be first removed from the cob, the vine, the twig, or whatever may be the natural support of the vegetable to be preserved, as the corn from the cob, the pea from its pod, the grape or tomato from its vine, the peach from its stem, the berry from its stalk. Neither does he recommend that it shall not be so removed. His process embraces the article in whatever form it may be presented. It is for the preservation of raw or crude or uncooked vegetables in whatever form they may be presented, and necessarily includes a case where they have been previously removed from their natural support. A prior removal from the stalk would be the natural, and, in many cases, a necessary proceeding.

3. Winslow directs that the kernels shall be subjected to the heat for a period of about one and a half hours before puncturing, and for about two and a half hours after the puncturing. The double use of the word "about" indicates that the time is not to be considered as precisely specified.

Durand directs that the boiling shall continue for such length of time as shall be required by the particular substances contained in the vessel. Corn, peas, tomatoes, peaches, berries, asparagus, may very likely require great difference in the time in which the heat shall be applied to produce the required effect. In each case that is to be the measure of the time.

4. Winslow says other modes may be adopted so long as hermetical sealing and the use of heat are so managed as to secure the aroma and fresh flavor and prevent putrefaction.

Durand declares that he intends to include in his patent heat through an oven, stove, steam, or any other situation by which the temperature is gradually raised and suffered to cool again.

The same idea is put forth at the close of Winslow's specification, where he declares that what he claims by his patent is the manufacture of Indian corn in its green state, the kernels being removed from the cob, hermetically sealed, and heated.

We are of the opinion that the substance of all that is found in Winslow's patent had, nearly a half a century before he obtained his patent, been put forth in Durand's patent. If Durand's patent were now in force in this country, and a suit brought upon it against Jones, the claimant under Winslow, for an infringement, the right to recover could not be resisted. Durand would show a patent intended to effect the same purpose, to wit, the preservation of vegetables for a long time, employing the same process, to wit, the effect of heat upon vegetables placed in a metallic vessel, the gradual cooling of the same, hermetically sealed after puncture to allow the escape of gases. This is also Winslow's process.

To constitute an infringement, the thing used by the defendant must be such as substantially to embody the patentee's mode of operation, and thereby to attain the same kind of result as was reached by his invention. It is not necessary that the defendant should employ the plaintiff's invention to as good advantage as he employed it, or that the result should be the same in degree, but it must be the same in kind. (Winans *vs.* Denmead, 15 How., 330.)

To infringe a patent it is not necessary that the thing patented should be adopted in every particular. If the patent is adopted substantially by the defendants they are guilty of infrigement. (Root *vs.* Ball, 4 McLean, 177; Alden *vs.* Deney, 1 Story, C. C. R., 336.)

In an action for infringement the first question is whether the machine used by the defendant is substantially in its principle and mode of operation like the plaintiff's. If so, it is an infringement to use it. (Howe *vs.* Abbott, 2 Story C. C., 190, Parker *vs.* Haunth, 4 McLean, 370.)

If he has taken the same plan and applied it to the same purpose, notwithstanding he may have varied the process of the application, his manufacture will be substantially identical with that of the patentee. (Curtis, § 312.)

The discovery in question has been of immense benefit to mankind. By means of food preserved in a compact and nutritious form, protected from its natural tendency to decay, deserts are traversed, seas navigated, distant regions explored. It is less brilliant, but more useful than all the inventions for the destruction of the human race that have ever been known. It is to France that the honor of this discovery belongs, and to Appert, a French citizen. It does not belong to America or to Winslow. Appert's process presents all that we now know upon the subject. It contains absolutely everything of value that is contained in Winslow's patent.

Other grave questions are presented by the record before us. We are satisfied, however, to place our decision upon the ground that the want of novelty in the patents of Winslow is fatal to the plaintiff's right of recovery. We do not discuss the other questions.

The decree of the court below must be reversed, and judgment ordered in favor of the defendant below.

NEW BOOKS AND PUBLICATIONS.

REPORT ON THE COMPRESSIVE STRENGTH, SPECIFIC GRAVITY, AND RATIO OF ABSORPTION OF THE BUILDING STONES IN THE UNITED STATES. By O. A. Gillmore, Lieutenant-Colonel of the Corps of Engineers, Author of "A Treatise on Limes, Cements, etc" New York city: D. Van Nostrand, 23 Murray and 27 Warren streets.

This book contains Lieutenant-Colonel Gillmore's official report, to the Chief of Engineers of the United States Army, on a series of tests which were partly reported on to the end of July, 1874. The present volume carries the investigation one year further, and gives some very valuable and interesting facts and information, which, taking into consideration the rapid growth of the use of artificial stone, is of the highest practical importance.

DIGEST OF OPINIONS OF THE JUDGE ADVOCATE GENERAL OF THE ARMY, containing a Selection of Official Opinions furnished between September, 1862, and July, 1868. Edited by Major W. Winthrop, Judge Advocate. Washington, D. C.: Government Printing Office.

The scope of this work is fully set forth in its title, and it will be found a useful reference book by the legal profession.

REPORT ON THE HYGIENE OF THE UNITED STATES ARMY, with Descriptions of Military Posts. Washington, D. C.: Government Printing Office.

A voluminous document, containing information down to the end of the year 1874.

JAMES W. TUFTS' CATALOGUE OF SODA WATER APPARATUS. Boston, Mass.

A handsome volume, superbly illustrated.

DYNAMOMETER EXPERIMENTS ON SPINNING FLAX. By E. Cornut, Chief Engineer of the Association of Steam Power Proprietors of Northern France. Lille, France: L. Danel.

An interesting little treatise, of great practical value.

Recent American and Foreign Patents.

NEW MECHANICAL AND ENGINEERING INVENTIONS.

IMPROVED STOPPING MECHANISM FOR SPINNING JACKS.

William W. Sinclair and Edward Galvin, Mottville, N. Y.—This invention consists of automatic mechanism for throwing off the driving belt of a spinning jack in case the squaring band breaks or fails to act. The shifter lever has a strong spring attached to it for throwing it when released by the failure of the squaring band. The said spring is held distended, ready for action, by the shifter lever itself, which is lodged in a notch in a frame piece, and is tripped by a sliding cam rod when the band fails, and throws the belt shifter.

IMPROVED WIND POWER.

Timothy C. Guthery, Freedom, Ind.—This invention relates to an improvement upon the wind wheel covered by patent No. 91,457, and consists in mounting the wheel upon a shaft having its bearings in a rotating bar, to whose upper end a vane is rigidly attached. The object is to render the device simpler and less expensive.

IMPROVED AUTOMATIC WASTE PIPE CLOSING ATTACHMENT.

F. Philip Bourne, Brooklyn, N. Y.—The object of this invention is to furnish an improved attachment for waste pipes, so constructed as to prevent the escape of gases, odors, etc.; and it consists in the combination of a valve chamber or box, bottom plate, chambered top plate, pipes, pivoted valve, pivoted valve plate, and weight with each other, so arranged as, when the waste water is admitted into the pipe in sufficient quantity to overbalance the downward pressure of the weight, the valve will be lowered into an inclined position, allowing the waste water to flow into the pipe. As soon as so much of the water has run out that the weight of that remaining will be overbalanced by the weight, the valve will close. The valve will always have a small quantity of water above it, and will thus effectually prevent the escape of any gas or odor from the waste pipe.