BRUSH ELECTRIC CO. *v.* JULIEN ELECTRIC CO. *ET AL.*

Circuit Court, S. D. New York. March 18, 1890.

1. PATENTS FOR INVENTIONS—IDENTITY—SECONDARY BATTERIES.

Letters patent No. 337,298 and No. 337,299, both issued March 2, 1886, to Charles F. Brush, for improvements in secondary electric batteries, are for the same invention, each consisting of a plate or support provided with a mechanically applied coating, the only difference between the specifications being that in the one case the coating is composed of "active material," and in the other of "absorptive substance, adapted to be transformed into an active coating" upon immersion in the electrolyte.

2. SAME.

A secondary battery, as referred to in said patents, is a battery which has no original power of developing a current of electricity, and becomes active only when a current, elsewhere generated, is sent through it. Following *Electrical Accumulator Co.* v. *Julien Electric Co.*, 38 Fed. Rep. 121.

3. SAME—ANTICIPATION.

Said patents were not anticipated by letters patent No. 53,668, issued April 3, 1886, to George C. Percival, for an improvement in secondary batteries formed by electrodes consisting of cells filled with coarse conducting powder, and divided by a porous partition.

4. SAME—ABANDONMENT.

The invention described in said Brush patent No. 337,298 was not abandoned by by the descriptions in letters patent Nos. 261,512 and 261,995, which were issued to Brush, July 18, 1882, and August 1, 1882, it appearing that the application for the patent No. 337,298 was sworn to two days before the applications for said patents Nos. 261,512 and 261,995 were filed, and that it was filed six days after it was sworn to.

5. SAME—CHANGE IN APPLICATION.

Said patent No. 337,298 is not invalidated by the fact that, after the original application was filed, the expression, "mechanically applied porous, granular, spongy, or equivalent lead," was changed to "mechanically applied absorptive substance," since such change of language did not change the invention.

6. SAME.

Said patent is not unlawfully expanded by the addition of the word "perforations" to the description of the plates, which were originally described as ribbed or honey-combed, since the word "perforations," as so used, will be held to mean cavities in the plate, and not openings extending through it.

7. SAME—INFRINGEMENT.

Said patent is infringed by a device consisting of electrodes formed by a cast-metal support plate, with receptacles, and an exterior spongy or porous coating of mechanically applied active material.

8. SAME.

The tenth claim of said patent No. 337,298, for "combining by means of pressure an absorptive substance and suitable material to form a support therefor," in the process of making a secondary battery plate, and the claim of patent No. 260,654, issued July 4, 1882, to said Brush, for "forming the plates of a secondary battery consisting in forming receptacles in its surface, then applying oxide of lead to the plate, and within such receptacles, and afterwards subjecting the oxide of

lead to pressure," is not infringed by a device in which the coating is put on by the pressure of a trowel or spatula, without the use of hydraulic or other similar pressure.

9. SAME.

Claims 1 to 6 of patent No. 266,090, issued October 17, 1882, to said Brush, relating to the form of the plates for secondary batteries as having "ribs," are not infringed by a device consisting of plates perforated by uniform square holes, since the walls between these holes are not "ribs."

10. SAME.

Claim 7 of said patent No. 266,090, which describes the plates as having "cells or cavities," and claim 14, which describes it as having "slots, perforations, or openings," are infringed by said device.

11. SAME—NOVELTY.

Claims 9 and 12 of said patent No. 266,090, which describe the material of the plates as cast lead, are void for want of patentable novelty.

12. SAME—DATE OF INVENTION.

The invention described in letters patent No. 252,002, issued January 8, 1882, to C. A. Faure, for improvements in secondary batteries, having beep conceived by the patentee in France while a citizen of that country, he cannot claim the invention here earlier than December 7, 1880, the date of the delivery of his French patent. Following *Electrical Accumulator Co.* v. *Julien Electric Co.*, 38 Fed. Rep. 117.

In Equity.

W. H. Kenyon and *W. C. Witter*, for complainant.

Thomas W. Osborn and *H. M. Ruggles*, for defendants.

COXE, J. This is an equity action for the infringement of four letters patent, granted to Charles F. Brush for improvements in secondary batteries, and now owned by the complainant. These patents are dated and numbered as follows: Nos. 337,298 and 337,299, were applied for June 13, 1881, and were granted March 2, 1886. No. 260,654, was applied for June 13, 1881, and was granted July 4, 1882. No. 266,090, Was applied for June 9, 1881, and was granted October 17, 1882. The first of these, No. 337,298, which is distinguished as "Case I," relates to secondary batteries, and consists in a plate or support provided with a mechanically applied coating of absorptive substance adapted to be transformed into an active coating. Also, in a plate or support provided with a mechanically applied coating of granulated, spongy or porous metallic lead. It further consists in the method of constructing plates for secondary batteries, consisting in mechanically coating lead, or other suitable plates, with an absorptive substance adapted to be transformed into an active coating. The drawings attached to the specification represent the supports in various forms. They show plain, studded, honey-combed, corrugated and ribbed plates; plates with angular corrugations, arranged singly or in pairs, and plates with slots or perforations extending through the plates. The active material consists of granular, porous or spongy lead, which is held in position upon the plain plate of lead by a sheet of heavy paper, card-board, cloth or felt, which may be secured to the plate by rivets, ties or binding strips of wood or metal. The paper or felt may be dispensed with and the spongy lead held in position on both sides of the support by subjecting it to pressure, hydraulic or otherwise. In the corrugated, grooved, ribbed, perforated, studded or cellular plates the spongy lead may be held in the grooves, cells or cavities by paper or felt, or it may be rammed or pressed into them. The specification states that "when a pair of plates are associated together to form a secondary battery, and immersed in dilute sulphuric acid and charged by the passage of an electric current in the usual manner, one of the plates absorbs a large quantity of hydrogen, while the other plate has its spongy or granular portion peroxidized, and thus forms the oxygen element of the battery."

The claims alleged to be infringed are the first, fifth, eighth, tenth, and eleventh. They are as follows:

"(1) A suitable plate or support, provided with mechanically applied absorptive substance, and adapted for use as a secondary battery element or electrode, after being rendered active by an electric current, substantially as

set forth." "(5) An improvement in the construction of a secondary battery element or electrode, said improvement consisting in a plate or suitable support provided with grooves, receptacles, or perforations primarily coated, combined or filled with mechanically applied absorptive substance, substantially as set forth." "(8) In the process of making plates or elements for secondary batteries, primarily and mechanically applying or combining with a suitable plate or support an absorptive substance, adapted to be transformed into active material, substantially as set forth." "(10) In the process of making a secondary battery plate or element, combining by means of pressure an absorptive substance and suitable material to form a support therefor, substantially as set forth. (11) In the process of making a secondary battery plate or element, constructing a suitable plate or support, with grooves, cells, receptacles, or perforations, said plate or support having an absorptive substance primarily applied thereto or combined therewith, substantially as set forth."

The second patent, No. 337,299, which is distinguished by the inventor as "Case J," is for the same invention, substantially, as Case I. The drawings of the two are identical and the language of the specifications is very similar; where it differs, equivalent expressions are employed. Perhaps the principal differences are the substitution of the words "active material" for the expression "absorptive substance adapted to be transformed into an active coating," of Case I, and the words "lead oxide" for the "granular or porous lead," of Case I.

The specification in question contains this additional statement:

"Peroxide is the best oxide of lead to use in the preparation of the plates; but, as this is rather expensive to prepare, red lead or minium may be used. Some sulphate of lead is liable to be formed when this oxide of lead is employed, by the action of the sulphuric acid of the battery on it before peroxidation or reduction is effected. Protoxide of lead or litharge may also be used, but is objectionable, on account of the large quantity of sulphate of lead which is unavoidably produced by the action of the acid on it."

And also the following:

"I would have it understood that I do not restrict myself to any particular form of active or absorptive material, or to any particular method of applying it to or combining it with the plate or support, as ray invention consists, broadly, in a secondary battery plate or element having active or absorptive material primarily and mechanically applied thereto or combined therewith, as contradistinguished from a plate or element having the active material produced by the disintegrating action of electricity, as in the well-known Planté process."

The claims alleged to be infringed are the first, second, third, sixth, seventh, eleventh, twelfth, and thirteenth. They are as follows:

"(1) A secondary battery element or electrode consisting of a plate or suitable support primarily coated or combined with mechanically applied active material, or material adapt-

ed to become active, substantially as set, forth. (2) In a secondary battery, an electrode consisting of a plate or support provided with a coating or surface layer of an absorptive substance, such as metallic oxide, applied thereto, substantially as set forth. (3) A plate or suitable support primarily coated or combined with mechanically applied oxide of lead or equivalent lead compound, substantially as set forth." "(6) A plate or suitable support provided with grooves, perforations, or receptacles, and primarily coated, combined, or filled with mechanically applied active material, or material adapted to become active, substantially as set forth. (7) A

plate or suitable support provided with grooves, perforations, or receptacles, and primarily coated, combined, or filled with mechanically applied oxide of lead, or equivalent lead compound, substantially as set forth." "(11) In the construction of secondary battery elements or electrodes, a plate or suitable support primarily coated or combined with mechanically applied red lead, substantially as set forth. (12) The method of making plates or electrodes for secondary batteries, consisting in primarily combining active material with suitable plates or supports mechanically, in contradistinction to forming the suitable plates or supports mechanically, in contradistinction to forming the active material by an electrical disintegration of the plate or support, substantially as set forth. (13) The method of making plates or electrodes for secondary batteries, consisting in coating the plates or supports with red lead prior to their immersion in the battery fluid, substantially as set forth."

These two patents, Nos. 337,298 and 337,299, are fundamental patents designed to cover the broad inventions of Mr. Brush. No. 260,654 is a division of Case J, and is distinguished by the inventor as "Case J, Division A." The invention "consists in the method of making the plates of a secondary battery consisting in forming receptacles for oxide of lead in its surface, then applying oxide of lead to the plates and within such receptacles and afterwards subjecting the oxide of lead to pressure." The drawings of this patent are identical with those of the preceding patents, except that Fig. 1, showing the use of cardboard or felt, is omitted. The specification contains the statement above quoted from Case J, relative to peroxide being the best oxide of lead to use, and says further, that the oxide of lead may be retained in place by being rammed or pressed into its receptacles, cells or grooves. The single claim is as follows:

"The method of forming the plates of a secondary battery, consisting in forming receptacles for oxide of lead in its surface, then applying oxide of lead to the plate and within such receptacles, and afterwards subjecting the oxide of lead to pressure."

In No. 266,090, distinguished as "Case C," the invention consists in, a secondary battery element, constructed of cast lead, or other suitable substance, having cells, receptacles, ribs, or projections on its surface, whereby an extended surface of metal is exposed to action. The drawings are the same as those attached to the preceding patents, with some new ones added, showing the plates arranged ready for charging. The specification says of Fig. 4 that it shows a modified form of ribbed plate resembling an ordinary window-blind with the slats open. It may also be regarded as a thick plate, perforated with a series of parallel slots. And of Fig. 5, that it shows the honey-comb form of plate, resembling in construction a simple or double comb of bees-wax. It may have its cells extending entirely through the plate. The plates may be made by pressing plain sheets of lead, or other suitable metal, into dies or forms by hydraulic or other means; also by slotting, punching, or otherwise perforating suitable plates, and also by casting the melted metal into suitable molds.

The claims alleged to be infringed are the first, third, fourth, fifth, sixth, seventh, eighth, ninth, twelfth, and fourteenth. They are as follows:

"(1) In a secondary battery, an element or electrode made up of a series of ribs, substantially as and for the purposes set forth." "(3) A secondary battery element or electrode having its body support or frame provided with ribs. (4) In a secondary battery, the combination, with one cell thereof, of two or more ribbed plates or elements, substantially as set forth. (5) In a secondary battery, a plate, frame, or other sustaining body provided with ribs or their equivalent, of a less general thickness than the said plate or support, substantially as set forth. (6) In a secondary battery, a plate, frame, or other sustaining body provided with ribs or their equivalents, said ribs or their equivalents being thicker at their bases than at their free edges or ends, substantially as set forth. (7) A secondary battery element or electrode having its frame, support, or body provided with cells or cavities, the walls of said cells or cavities, or the *septa* between them, having an increasing thickness from their outer or free edges inward. (8) In a secondary battery, plates or elements provided with comparatively thin ribs, or their equivalents, for surface exposure, and thicker ribs suitably disposed for supporting or stiffening purposes, substantially as set forth. (9) A secondary battery having a body frame or support of cast lead." "(12) A secondary battery element or electrode having a supporting body or frame of cast lead for the active coating or substance, said body or frame provided with ribs or projections." "(14) A secondary battery element or electrode having a supporting body or frame of cast lead for the active coating or substance, said body or frame provided with slots, perforations, or openings."

The defendants have made, used and sold secondary or storage batteries composed of a series of electrodes consisting of a cast-metal support plate, 96 per cent. being metallic lead, and an exterior spongy or porous coating of mechanically applied active material consisting of lead oxides. These electrodes are placed in an electrolyte of dilute sulphuric acid in water. The charging current converts the lead oxide coating upon the oxygen plates into peroxide of lead and reduces the lead oxide coating upon the hydrogen plates to the condition of spongy or porous metallic lead. The battery is capable of numerous charges and discharges in the course of which the active material undergoes successive reductions and reoxidations. The lead oxides used consisted generally of minium and litharge, the former largely predominating in the mixture applied to the oxygen plates and the latter predominating in the mixture applied to the hydrogen plates.

The defenses to all of these patents are anticipation, want of novelty, lack of invention, abandonment (except of No. 260,654) and that the claims have been fatally broadened. As to Cases I and J it is said that the scope of the original applications has been unlawfully enlarged; that the patents expired with an Italian patent to Brush containing the same invention; and, finally, that they are for the same inventions and that one of them is, therefore, void. It is also insisted that No. 266,090 is limited by the Italian patent. Invalidity and non-infringement of several claims are alleged.

Are Cases I and J for the same invention, and, if so, what course should be pursued regarding them? It will simplify the controversy to answer this question at the outset. As stated above, the drawings of the two patents are the same, and the language of the specifications and claims are substantially alike upon all matters material. The contention of the complainants is that Case I is for a secondary battery support

mechanically coated with an *absorptive material,* and Case J for a similar support coated with an *active material;* "the distinction between the two relating to the condition and inherent capacity of the material of the coating as that material exists at the time of mechanical application." For instance, the spongy lead of Case I has, it is said, no oxygen and is initially absorptive and inactive, while the peroxide of Case J is a fully saturated oxygen compound and is, therefore, active and non-absorptive. It is admitted that the moment a battery, constructed with plates having either coating is charged or discharged, all distinction vanishes. "The fundamental distinction between these patents," says the complainant's brief, "is that in the former the coatings of the secondary battery electrodes are, broadly, mechanically applied *absorptive substance,* while in the latter these coatings are that class of mechanically applied absorptive substance defined as active material." Therefore, both patents, it is argued are valid.

This quotation, though it is an accurate statement of the difference between the two, would seem quite tantamount to an assertion that a party may have a patent for a device composed of a combination of iron and wood and a second patent for the same device composed of iron and basswood or hemlock. One who has a patent for a combination, one element of which is an adhesive substance, may not have a second patent for a combination identical in every respect except that the adhesive material suggested must be moistened before it becomes adhesive. The coatings of both patents being absorptive and active, is the fact that one, prior to immersion in the electrolyte *has* absorbed, and that the other *will at once* absorb, a sufficient dissimilarity upon which to base invention? Is it a patentable distinction? The difference is one which would hardly occur to a practical electrician, and even specialists enthusiastic in the cause of the patents, find it difficult to state it in words which are intelligible to ordinary men. It is too esoteric, metaphysical and minute. It is a mere theory of the scientists and not a fact upon which to found a patent.

The essence of Brush's broad invention was an improvement upon the secondary batteries of Planté, by adding the porous layer, mechanically, to the supports, in the manner described, instead of forming it by the tedious and inefficacious process of disintegration in the body of the plates themselves. When he is thoroughly protected in this invention he has received all that he is entitled to. By taking two patents he should not be permitted to multiply claims which could not stand side by side in one and the same patent. There seems to be little controversy that "absorptive substance" and "active material" are used in the art as synonymous and equivalent terms and have been so used since the time of Planté. The inventor, himself, apparently so understands it, for he has frequently used them interchangeably, not only in his testimony, but in the patent (Case J) itself.

Professor Barker says:

"To a person skilled in the art, as it seems to me, the terms are only different forms of expression for one and the same thing. A secondary battery electrode, such as is contemplated in these patents, can consist of but two

essential parts: (1) The material of the coating which gives to the battery its usefulness, and to which is due its capacity of storing electrical energy; and (2) the conducting frame or support upon which this material is spread. Since upon the former the action of the secondary battery depends, it has become the general practice to speak of it as the 'active material' of the electrode, in contradistinction to the support of the plate itself, which is or should be inert. The function of the coating is to change its chemical condition, as, for example, its state of oxidation, so far as to vary this condition in one direction in charging, and in another on discharging. * * * Since, in my judgment, granular, porous, or spongy lead, the substance of the first patent, is 'active material, or material adapted to become active,' in the words of the second, and since the oxides of lead of the second patent 'are absorptive substances adapted to be transformed into an active coating' in the first, I am of the opinion that the 'absorptive substance' of the first patent, and the 'active material' of the second, are to be understood as equivalent terms."

The court is fully satisfied that this conclusion is correct. The identity of the two patents can best be illustrated by placing similar claims in juxtaposition; the first claim of Case I and the first and second claims of Case J, for instance:

CASE I.	CASE J.
(1) A suitable plate or support provided with mechanically applied absorptive substance, and adapted for use as a secondary battery element or electrode, after being rendered active by an electric current, substantially as forth.	(1) A secondary battery element or electrode, consisting of a plate or suitable support primarily coated or combined with mechanically applied active material, or material adapted to become active, substantially as set forth. (2) In a secondary battery, an electrode consisting of a plate or support provided with a coating or surface layer of an absorptive substance, such as metallic oxide, applied thereto, substantially as set forth.

There can be no question, if "absorptive substance" and "active material" are equivalent terms, that these claims are for the same invention. Each has the following elements: (1) A secondary battery support plate, (2) mechanically coated with (3) an absorptive or active material. The question then, is, can a patentee who has received a patent for a plate coated with absorptive substance obtain another patent for the same plate coated with active material? Can an inventor obtain two patents for a broad invention because in one he practices the invention with one substance, and, in the other, he practices it with an equivalent substance? Manifestly not!

After Case I no one else could have had a patent for Case J, even if confined solely to the points wherein the two are said to differ. The former includes the latter. I am

constrained to say, therefore, that the two patents are, in legal contemplation, the same. Although the possibility that the court might reach this conclusion was stated at the argument, neither counsel offered any solution of the difficulty and none has been offered since. The situation is, certainly, an unusual one. Here

are two patents for the same invention applied for at the same time and granted at the same time. It is true that no injury can result in this particular instance, but what would be the situation if one of these patents were owned by a third party and a suit were brought on it against the defendants for the same infringement, or if the second patent were granted years after the first? If the principle is once established that an inventor can by such inconsequential changes, as here are shown, obtain two patents for the same invention the greatest injustice may be done, both to competitors and to the public. It would seem that as the inventor has given Case I the preference and as his expert regards that as the broader of the two patents the difficulty might be met by a surrender of Case J or, perhaps, by a disclaimer of similar claims in Case J, leaving those which have not been brought into controversy or considered, and, possibly, the red-lead claims, to stand. But, as neither counsel has expressed his views on this subject, the method of carrying out the opinion of the court can best be arranged on the settlement of the decree.

Many of the propositions now advanced were examined arid decided, upon identical testimony, by this court in the case of *Electrical Accumulator Co.* v. *Julien Electric Co.,* 38 Fed. Rep. 117. These need not be again considered. A definition of a secondary battery was there attempted, and is now adopted for the purposes of this controversy. When the present inventor refers to a secondary battery he means precisely what Mr. Faure meant when he used that term. It was further decided in the *Accumulator Case* that the exhibits which were the closest approximations to the invention were the article from the Electrician of 1863, the Report of the Smithsonian Institution for 1856, the Grove gas battery, Planté's descriptions of 1872, and the patents to Kirchhof and Percival. Faure's claim, before being limited by a disclaimer, was broad enough to cover a secondary battery electrode to which the active material was applied, not only mechanically, but by galvanic action, chemical precipitation or in any other way, so that it was not formed out of the plates themselves in the manner described by Planté. The evidence referred to, together with the testimony of Mr. Brush, was regarded as sufficient to limit the Faure invention to the application of the active material in the one form described by him, namely, as a paint, paste or cement. What effect the evidence disclosing the prior art had upon the patents in suit was, of course, not directly considered.

In the complainant's brief considerable space is devoted to the establishment of the proposition that Brush was, in legal contemplation at least, prior to Faure. It is thought that a discussion upon this point is unnecessary. The precise question was presented and decided in the interference proceedings before the patent-office and in the *Accumulator Case.* The defendants' counsel having there contended that Brush anticipated Faure, recognizes the impropriety of now contending that Faure anticipates Brush, and merely submits the testimony in this behalf without comment. The decision heretofore made upon

the same state of facts will, therefore, be adhered to. It was there decided—although the date was not definitely fixed—that Faure, being a citizen of France, and

having conceived his invention in a foreign country, was not permitted to claim it here earlier than the date of the delivery of his French patent,—December 7, 1880. Faure's contributions to the art need not, therefore, be considered in this action. The proof now offered to establish invention was carefully examined in the *Accumulator Case* and it was held that "the evidence of Mr. Brush as to what he accomplished in 1879 and 1880 must be accepted as true."

What did Brush accomplish? A history of his experiments and their results is given at length in the other case (pages 129–131) and need not be again repeated. In brief, it is this: In the summer of 1879 he made secondary battery electrodes by applying to suitable plates an active, or absorptive coating consisting in three instances, respectively, of metallic lead in the form of a fine powder, red oxide of lead, and litharge. These coatings were held in place by a piece of blotting paper, a strip of wood and a string wound tightly around the whole. In July, 1880, he made lead plates with deep grooves, into the grooves of some he rammed yellow oxide of lead and in others sulphate of lead. In September, 1880, he made six plates grooved by a gang of circular saws and filled the grooves of two by ramming them full of litharge, and of two others by ramming, them full of sulphate of lead. The electrodes thus constructed operated successfully in secondary batteries and produced satisfactory results. Many other structures leading up to the invention were made, but it is not necessary to consider them in detail. It may be said, however, that from the time the idea first entered his mind until the applications were filed Mr. Brush was engaged, almost constantly, in progressive experiments and investigations. For the reasons stated in the *Accumulator Case* it is thought that this invention is not anticipated by the testimony of Professor Van der Weyde, the article from the Electrician, the Smithsonian Report, the Grove battery, or the patents to Kirchhof or Pulvermacher, (39 Fed. Rep. 490.)

It was said of the patent granted to George G. Percival, April 3, 1886:

"The idea of Percival also, as shown in his United States patent No. 53,668, was to improve on Planté's method by saving time and expense. He describes a secondary battery consisting of one pair of electrodes placed in a water-tight wooden box, divided in its center by a porous partition. On each side of this partition is a layer of powdered gas carbon. These layers constitute the two electrodes and when in use they are wet by a proper solution. For convenience in establishing connection with these layers there is on each end of the box a screw-cup fastened to a strip of copper which is in contact with the carbon. 'Lead or any othersuitable metal in the form of a coarse powder may be substituted for the gas carbon.' This appears to lie some-what analogous to some of the forms described by Faure. The complainant contends that the reference is valueless for the reason that there is no suggestion of a conducting support plate like Faure's which holds the active layer and conducts electricity to each and all parts of it so that the whole material instantly

becomes spongy and thus capable of receiving and discharging electricity. In short, that the Percival battery is without the Faure support plate." *Accumulator Case*, 38 Fed. Rep. 126.

It is argued that this patent is an anticipation of claims 1 and 8 of Case I. This is probably true if a very broad construction is placed on

these claims, but there is nothing in the record requiring such a construction. There is no evidence that a Percival battery was ever used or could be made operative. His invention does not seem to be on the line subsequently followed by Brush. He has no plate or support at all resembling those of the Brush patents. He has no *coatings.* His two copper connecting slips *support* nothing. The pulverized gas carbon is not mechanically applied to them; they are simply in contact with the gas carbon. Their presence is not necessary; they are put there for greater convenience only. Percival's electrodes are not coated supports at all; they are cells filled with coarse conducting powder and divided by a porous partition. Percival's claim is for "the forming of the electrodes of a secondary pile of layers of gas carbon or some other conducting powder, substantially as and for the purpose hereinbefore described."

Is it not clear that he did hot have in mind a lead, or other suitable plate, with a layer or coating of active material mechanically applied thereto? It would seem then that nothing in the record anticipates the Brush patent, Case I, when a construction commensurate with the invention is placed upon it. He did not invent secondary batteries, or electrodes for such batteries having a layer of active material, or the use therein of a conducting powder, but he seems to have been the first, in this country, who held the absorptive substance, in the form of dry powder, in place on the supports by paper or equivalent material, and the first who rammed or pressed it into grooves or receptacles in the plates.

The invention of Case I was not abandoned by descriptions in patents Nos. 261,512 and 261,995, granted to Mr. Brush, respectively, July 18 and August 1, 1882. There is no evidence as to when the applications for these patents were filed, other than the date appearing upon the specification, and this would seem to be insufficient proof of the fact. But accepting this date, June 9th, as the true one, only four days elapsed before the filing of the application of Case I,—June 13th. The inventor was not responsible for the delay in the patent-office, which was occasioned by interminable interference proceedings between him and other inventors. His intention not to abandon is demonstrated by the fact that the application for the patent in suit was made out and sworn to two days before the applications for the prior patents were filed. In *Holmes Electric Protective Co.* v. *Metropolitan Burglar Alarm Co.,* 33 Fed. Rep. 254, this court decided that where a patent fully describes an invention which could be claimed therein, and makes no reservation and gives no warning to the public, a second patent granted upon an application filed months after the first patent was issued, which claims simply the invention previously made public, is invalid. But the court also used the following language, which seems quite applicable here:

"This is not the case of a patentee who has made application for the second patent before the first is issued. It would be manifestly unfair to hold him responsible for the action of the patent-office in this regard."

It is thought no authority can be found holding an invention abandoned upon such facts as are here developed. I should be sorry to make

a precedent now which can have little but the most technical reasoning to support it.

This patent is not invalidated by the introduction of the descriptive term "absorptive substance" after the original application was filed. The claims as originally stated use the language "mechanically applied porous, granular, spongy, or equivalent lead." The claims as issued substitute the words, "mechanically applied absorptive substance." This did not change the invention. It was the employment, simply, of more apt and and artistic terms for the, comparatively, clumsy language of the original.

It is argued that claims 5 and 11 of Case I have been unlawfully expanded by the insertion of the word "perforations" therein. Neither the specifications, claims or drawings, as originally filed, mention perforations extending through the plate. They first appear in an amendment filed June 1, 1882. Prior to this, in the summer of 1881, Prof. Eaton had made perforated secondary battery plates. *Accumulator Case,* 38 Fed. Rep. 141. John S. Sellon and Joseph Wilson Swan had described similar plates in their patents of March 10, 1882, and November 22, 1881, respectively. It is not contended that Mr. Brush ever made such a plate. There is no proof that he did and he testifies that he cannot recall having done so. The value of perforations extending through the plate seems to be conceded. Proof of the advantages of this construction appears in the record and the language of Sir William Thomson, who testified in the previous case, may be adopted as an epitome of what is affirmed by the witnesses here. See *Accumulator Case,* 38 Fed. Rep. 140. The complainant's brief contains the following:

"Thus perforations may in his view be a specific improvement over recesses or receptacles broadly considered, but recesses broadly considered in combination with the mechanically applied active or absorptive material in a secondary battery is the subject of the claims now under consideration."

And again:

"As to the improvement in recessed plates which consisted in carrying the recesses through the plates and forming perforations, Mr. Brush has no separate claim for that specific improvement. Defendants insist that Swan has the prior right to that specific improvement. Brush's claims are for the broad ground of a recess, and it may be that Swan is entitled to be considered the first who carried the recess through the plates, making a recess which was also a perforation. But that question does not arise here."

But it seems that the question does arise. The claim is certainly susceptible of a construction covering a plate containing receptacles not only, but also perforations which go entirely through the plate. In other words it may be construed to cover the features Mr. Brush is entitled to as well as the one he is not entitled to. So construed an infringer after paying complainant for the use of the recesses which belong to Brush might also be compelled to pay for perforations which, so far as this patent is concerned, belonged to some one else—Eaton Sellon or Swan. Neither of these gentlemen if he had a patent for

this specific improvement could prevent complainant, with the Brush patent construed as above, from using perforations as distinguished from recesses. The common

meaning of "perforation" is a hole or aperture passing through a body. It is argued that the patentee intended that this meaning should be adopted, for he says. "Fig. 8 shows a vertical section of a ribbed plate provided with slots or perforations extending through the plate." And yet, other parts of the specification would indicate that he intended to make no distinction between perforations and receptacles. As before stated, the language quoted first appeared a year after the original application was filed. The court has grave doubt, therefore, whether these facts do not bring the case within the rule laid down in *Railway Co.* v. *Sayles*, 97 U. S. 563; *Kittle* v. *Hall*, 29 Fed. Rep. 508; 514, and cases cited.

But consideration should be given to the unusual circumstances attending the filing of so large a number of applications and drawings at or about the same time. The inventor seems to have thought that by cross-references the information contained in all could be imported into each separately. This, certainly, bears upon the question of intent. The drawings which he afterwards filed in Case I were in fact filed with Case C and were in the patent-office when the application for Case I was filed. The third claim, as originally proposed, covered a ribbed, honey-combed or equivalent plate. If the claims as finally allowed may be fairly construed to cover nothing more than a honey-combed or equivalent plate, which certainly contemplates a plate containing cells or cavities, can it be said that the claims in question have been fatally expanded? It is true that the ordinarily accepted meaning of the word "perforation" would imply an opening extending entirely through the plate, and such an opening the inventor could not ingraft upon the original application. But the word may also have a meaning synonymous with "cavities" or "cells," it may mean a hole not passing entirely through, but into the center or interior, and a plate with such perforations the inventor was at liberty, it would seem, to claim under the original application. Such a construction does not interfere with the rights acquired by the public for it does not permit a broadening of the claim. It holds the inventor strictly to what he asked for in the first instance. When, by a liberal construction, a patent may be sustained, is it not the duty of the court to adopt it rather than one which, though possibly more plausible, will deprive the patentee of the fruits of a meritorious invention to which he is fairly entitled? With considerable hesitation. I shall hold that these claims, as thus construed, are valid. That they are infringed there can be little doubt. The defendants' electrodes have receptacles; they may be improved receptacles, but they are receptacles nevertheless. These claims do not cover the improvement.

Regarding the pressure claims, so called, the defenses are that they are void for want of invention and if a construction is placed upon them sufficiently narrow to enable them to stand, the defendants do not infringe. The tenth claim of 337,298 is as follows:

"(10) In the process of making a secondary battery plate or element combining by means of pressure an absorptive substance and suitable material to form a support therefore, substantially as set forth."

The only claim of No. 260,654 is as follows:

"The method of forming the plates of a secondary battery, consisting in forming receptacles for oxides of lead in its surface, then applying oxide of lead to the plate and within such receptacles, and afterwards subjecting the oxides of lead to pressure."

The latter is a narrower claim than the former, being limited to oxides of lead, to support plates having receptacles and to pressure after, and, therefore, in addition to, the mere mechanical application. It is not denied that the prior art plainly reveals the use of pressure in making primary battery plates. The distinguishing feature of the invention of these claims is *pressure.* Every other element is covered by other claims. It is argued with plausibility and force that it is not invention for the patentee, with the coated plate before him, to subject it to treatment which he could easily have learned from Leclanché and others. It is said that the function of pressure is the same whether used on a primary or secondary battery electrode and that the claim cannot be upheld by importing into it all the valuable features of the broad invention. It is contended for the complainant, on the other hand, that pressure applied to secondary battery plates produces an entirely different result and performs an entirely different function from that produced when applied to primary battery plates. If the claims are limited to the use of hydraulic, or other similar pressure, the court, as now advised, would be inclined to recognize the force of the complainant's contention. But the construction asked for is broad enough to cover the application of the absorptive material with trowel or spatula and the incidental pressure attending this operation. Says the complainant's expert:

"In the plates of defendants' battery I find a series of small cells perfectly filled with an apparently uniform and extremely even mass of absorptive material; I know of no way in which this could have been effectively done except by spreading and forcing into the perforations the absorptive substance, either in the form of a paste or of a powder; generally the application of the absorptive substance to the plate is accomplished by means of a trowel or spatula; the support is usually laid upon a slab of some material such as slate or glass, and the absorptive material in the form of powder or paste, is spread over the plate and forced into the perforations; considerable pressure is always applied to the material to force it into the receptacles; the excess of material is removed by a spatula or some equivalent implement, and the plates are then quite smooth, the absorptive material at the receptacles having almost the thickness of the support plate; from a careful examination of defendants' batteries and from my general knowledge as to the methods employed, I am of the opinion that the absorptive material has been applied in substantially the manner of the tenth claim above described, and that considerable pressure has been employed in the operation,"

There can be no doubt that a construction as broad as here demanded would invalidate the claim. It would cover a well-known and exceedingly simple operation. It would

cover the mechanical application of the coating. It is hard to conceive how it could be made to adhere without some degree of pressure. Even the blotting-paper, stick and string of the 1879 electrode would infringe. Pressure such as this, it is believed, was not contemplated; by the inventor. He had in view pressure,

plus the mechanical application, by means of which the coatings would adhere more perfectly hot only, but by which better conductivity could be obtained. But if the narrower construction is given these claims, the defendants do not infringe; at least they have not been proved infringers. I do not lose sight of Mr. Weston's later testimony taken April 3, 1889, but it seems to me that it adds nothing to his former statements, upon which the court would be warranted in acting. It is hearsay merely and wholly indefinite as to time. The bill was filed in April, 1887, alleging that before the commencement of the action the defendants had infringed. This allegation is hardly sustained by the testimony of a witness taken two years later that he has been informed that the defendants have infringed for "some time." The stipulation signed by the defendants' solicitors, designed to cover undisputed matters upon the subject of infringement, makes no mention of pressure.

Case C, No. 266,090, contains two classes of claims. The first class (claims 1 to 8 inclusive) relate to the form of the plates, the second class (claims 9, 12 and 14) to the material of which the plates are formed. Claim 7 relates to a secondary battery electrode having its support provided with "cells or cavities." The other claims of the first class relate to "ribs." Claim 14, in addition to the element of cast lead, has also the element, not elsewhere claimed in this patent, of "slots, perforations, of openings." It is said that the defendants do not infringe the claims of the first class, other than the seventh, for the reason that they do not have a ribbed support plate. The language of the seventh claim describes with much greater precision the defendants' supports than that of any other claim of this class. They certainly use cells or cavities. Whether they use ribs or not is, at least, doubtful. If there were nothing in the art but the contributions of Mr. Brush it is evident that a narrow construction must be given to these claims. Every word by which, even a shade of distinction in the formation of these plates can be expressed has been adopted. Advantages of the most surprising and mysterious character are said to lurk in the slightest change of size, shape or depth in the holes or recesses. In these circumstances, a different rule should be adopted than if the art showed that all these methods of keeping the active material in place are, substantially, equivalents. The defendants use a support filled with rows of uniform square holes. The court is not prepared to say that the walls between these holes are ribs. The ordinary meaning of the word would have to be strained and distorted to make it cover the "partitions or *septa* between the cavities," and especially so in an art where a restricted meaning is required. A careful reading of the specification confirms the impression that the patentee intended to use the word, not as now asserted, but in its ordinary sense, as synonymous with projections or ridges. He intended to draw, and does draw, a sharp distinction between plates with ribs and those with cells, cavities and perforations.

Claims 9 and 12 are clearly void for want of patentable novelty. Their only distinguishing feature is cast lead. The complainant, if its position is correctly understood, does not

assert that there is anything patentable in casting lead. It is not alleged that the eleventh claim, which

covers the process of casting, is infringed. Not only every skilled mechanic, but every school-boy who has experimented with melted lead, who was shown a model of defendants' grid, and asked to make a series of them, would at once suggest the idea of casting them in molds. This proposition is, virtually, conceded by the complainant's counsel, for, in speaking of the advantages of casting over rolling or pressing, they say:

"If this latter were the only advantage and the only mode of operation and result then the invention would be old in any casting of a complex form, and that is the plane on which defendants deal with this invention; but the true understanding of the invention shows that it had its birth in the needs of secondary batteries that operate by expansion and contraction of a permanent coating which must not be allowed to get away from its support, and that its peculiar mode of operation and advantages exist only in such a battery."

What, then, is the novelty upon which these claims are sought to be sustained? It would seem to rest solely on the theory that cast lead produces better results in a secondary battery than rolled or pressed lead. A patent cannot stand, for a moment, upon ground so narrow. Lead plates were old in secondary batteries, cast lead plates were old in primary batteries. The art of casting was old and free to all. The form of the plates desired would suggest casting them to the skilled artisan. This right being clear it is idle to assert that one may cast his plates but shall not be permitted to use them after they are cast. It being quite impossible to pour melted lead into molds without producing cast lead the question arises: Can the person who first uses this obvious process in making secondary battery plates not only obtain a monopoly of the product but of the process as well? Manifestly not! It is not even the substitution of one known material for another. It is the substitution of one well-known form for another well-known form of the same material. In *Hotchkiss* v. *Greenwood,* 11 How. 248, the court say:

"The improvement consists in the superiority of the material, and which is not new, over that previously employed in making the knob. But this, of itself, can never be the subject of a patent. No one will pretend that a machine, made, in whole or in part, of materials better adapted to the purpose for which it is used than the materials of which the old one is constructed, and for that reason better and cheaper, can be distinguished from the old one, or, in the sense of the patent law, can entitle the manufacturer to a patent. The difference is formal, and destitute of ingenuity or invention. It may afford evidence of judgment and skill in the selection and adaptation of the materials in the manufacture of the instrument for the purposes intended, but nothing more."

See, also, *Bushing Co.* v. *Doelger,* 23 Blatchf. 167, 23 Fed. Rep. 191, and cases cited.

With every disposition to act with liberality towards those who, with undoubted genius and untiring research, are developing this recently discovered mine of industry, the court cannot ignore the repeated and uniform utterances of the supreme court upon this

subject. In addition to the familiar and oft-quoted authorities, see the following, decided at the present term: *Burt* v. *Evory,* 10 Sup. Ct. Rep. 394, (February 3, 1890;) *Hill* v. *Wooster,* Id. 228, (January 13, 1890;) *Day* v. *Railway Co.,* 132 U. S. 98, 10 Sup. Ct. Rep. 11; *Watson* v. *Railway Co.,* 132 U. S. 161, 10 Sup. Ct. Rep. 45;

Marchand v. *Emken,* 132 U. S. 195, 10 Sup. Ct. Rep. 65; *Royer* v. *Roth,* 132 U. S. 201, 10 Sup. Ct. Rep. 58.

Claim 14 may be construed as covering a combination, one element of which, the slots, etc., is new and useful, and is not covered by the other claims. The original specification and drawings, filed June 9, 1881, describe and show grooved, honey-combed and slotted plates. Indeed, the drawings, for the absence of which Case I is criticised, were filed at the outset in Case C. Of Fig. 4, showing the slotted plate, the specification says:

"Here the supporting plate between the ribs is removed, the latter being supported by the heavier side or end ribs, and other intermediate transverse ribs, if necessary. This modification is in form somewhat like an ordinary window-blind, with the slats open."

This can mean nothing else except that there were openings extending entirely through the plate. The specification as originally filed is sufficient, therefore, to support the claim.

Regarding the infringement of this claim and claim 7 there can be no doubt and the same is true of the claims, in controversy, of Case I. The point is suggested that the defendant Bracken is not proved to be an infringer, but the stipulation signed by the solicitors makes no distinction between the defendants.

The questions arising on the expiration of the Italian patent are of a serious character, and, in view of the elaborate attention given to other defenses, would seem to demand greater consideration in the testimony and in the briefs. The patent appears in the record, but no word of explanation, so far as can be discovered, has been offered on the part of the defendants. The only testimony explanatory of the patent is the clear and positive statements the complainant's expert, that it describes and claims inventions entirely different from those of the patents in controversy. The patent contains five divisions and twenty-two claims. It requires little expert knowledge to perceive that some of these are wholly dissimilar to the inventions in suit. Others would seem to be dangerously near to some of the inventions, but those portions of the Italian patent which seem to the court to be most in point are but little discussed and in some instances are not even alluded to in the defendants' brief. For example, take a portion of Division D and its corresponding claims. The Italian patent says:

"To form an element having a core or body coated with the mass described, I take a sheet or other suitable piece of lead, or of other substance suitable for the purpose, and, if necessary, roughen or score its surface, or pierce it with numerous perforations, to insure a firm adhesion of the mass which is to constitute the active coating. I cover it with the finely divided superficially oxidized lead, (or the mixture of metallic lead and lead-oxide particles,) and apply heavy pressure. The result is that the finely divided particles are not only pressed into a firm and strongly coherent mass, but the mass is also firmly united to the supporting core or body. This core may be of lead, or it may consist of non-oxidizable metal, such as gold or platinum, or any alloy of these metals with lead."

Claim 17 of the Italian patent is as follows:

"A process for making secondary battery elements, (or material from which said elements can be constructed:) said process consisting in covering one or more or all of the surfaces bf a suitable metallic and electro-conducting core or body, either with superficially oxidized particles of lead, or with a mixture of particles of pure lead and lead oxide, and afterwards applying pressure sufficient both to unite said particles or mixture into a compact and firmly coherent mass, and to unite the mass to the core or body, as set forth in Division D."

Bearing in mind the fact that metallic lead and lead oxide are absorptive or active material, a comparison with some of the claims in controversy will certainly show marked features of similarity. Claim 10 of Case I is as follows:

"In the process of making a secondary battery plate or element, combining by means of pressure an absorptive substance and suitable material to form a support therefor, substantially as set forth."

To the uninitiated it would seem that these claims are for similar inventions. Would not a person following the formula of the Italian patent infringe the pressure claims of the patents in suit? Is not the method of making electrodes by pressing active material upon the support "set free" by the expiration of the Italian patent? It is true that Division D of the Italian patent describes also the process of uniting the absorptive substance into a compact or firmly coherent body or mass without the intervention of a support plate, but to the ordinary reader it would seem to be reasonably clear that when the inventor says, as in the description quoted, that he takes a sheet of lead, pierces it with numerous perforations to insure a firm adhesion of the mass which is to constitute the active coating, covers the support with the mixture of metallic lead and applied heavy pressure, so that the mass is not only pressed together but is also firmly united to the supporting core, he is describing the process which is covered by the claim in question.

Other claims of the Italian patent are as follows:

"(11) As a new article of manufacture, a mass consisting of a mechanical mixture or association of metallic lead and oxide of lead, united by pressure into a coherent and firm body, substantially as Set forth in Division D." "(14) For use in an element of a secondary battery, a metallic core or body, to one or more sides of which is attached a mass or substance, primarily consisting of metallic lead and oxide of lead, united by pressure so as to be strong and firmly coherent, substantially as set forth in Division D. (15) A secondary battery element, consisting of a metallic core, or body having attached to it a coating primarily consisting of mixed lead and oxide of lead firmly united by pressure into a strong and coherent mass, substantially as set forth in Division D. (16) A secondary battery element, consisting of the combination with a metallic supporting core or body, of a coating attached or united to said core; said coating primarily consisting of metallic lead

and lead oxide in an intimately commingled state, united by pressure into a strong and firmly coherent mass, substantially as set forth in Division D."

It will be observed that the first of these, claim 11, covers only lead and oxide of lead mixed and united by pressure into a coherent mass for use as an electrode or as a coating. The element of a support plate is wanting in this claim, but it is present, under the name of a "metallic

core and body," in all the others. Compare these claims with the pressure claims of the patents in suit, but also compare them—and particularly claim 11—with claims 12 and 13 of Case I. They are as follows:

"(12) Absorptive material for use in secondary batteries formed into a coherent mass by pressure, substantially as set forth. (13) For use in secondary, batteries, porous, granular, spongy, or equivalent lead formed into a coherent mass by pressure, substantially as set forth."

The language is different but, in substance, where is the lack of identity? But all these are questions which the court, in view of the action of the American and Italian patent officials, in distinguishing between the inventions covered by the Italian patent and those covered by the patents in suit, and in view of the uncontradicted opinion of the complainant's expert, should hesitate long before answering in the affirmative. Mr. Weston says of "Division D" of the Italian patent: "It is for an improved form of electrode especially adapted to the formation by electrical disintegration either by the Planté method, or by the peculiar method of electrical disintegration invented by Mr. Brush and described in Division A." It should be remembered that we are dealing here with a mysterious and occult power of nature, the science of which is still in its infancy, the phenomena of which are but little understood, even by those who have made its study their life-work. For one who has but a casual and superficial knowledge to place a construction upon a patent which is addressed to those who are educated in this department of science and which constantly employs terms of art, in opposition to the opinion of the only electrician who speaks upon the subject, would be unwarranted, especially when such a construction will destroy rights and interests of great value. In very many of the patent causes which come before the courts, where the device is so simple that any man of ordinary capacity can understand it, the presence of an expert is wholly unnecessary, but when the invention relates to a subject where even the pioneers are still groping in shadows, the court needs the instruction of those most competent to advise and without such assistance should proceed with the utmost caution. The law does not favor forfeitures. A patent should never be declared invalid because of the expiration of a foreign patent if there is doubt about the inventions being the same. The burden is upon the defendants and the doubt should be resolved in favor of the patent. After such study as I have been able to give the subject I am not satisfied that the Italian patent is for the same invention as those in controversy. It is sufficient, for present purposes, to state that the mind of the court is in doubt upon the question. The language of Judge BRADLEY in the case of *Bischoff* v. *Wethered,* 9 Wall. 812, where a patent was introduced, as here, without explanation, seems particularly applicable:

"The specifications of patents for inventions are documents of a peculiar kind. They profess to describe mechanisms and complicated machinery, chemical compositions and

other manufactured products, which have their existence *in pais*, outside of the documents themselves; and which are commonly described by terms of the art or mystery to which they respectively belong, and these descriptions and terms of art often require peculiar knowledge and

education to understand them aright; and slight verbal variations, scarcely noticeable to a common reader, would be detected by an expert in the art, as indicating an important variation in the invention. Indeed, the whole subject-matter of a patent is an embodied conception outside of the patent itself, which, to the mind of those expert in the art stands out in clear and distinct relief, whilst it is often unperceived, or but dimly perceived by the uninitiated. This outward embodiment of the terms contained in the patent is the thing invented, and is to be properly sought, like the explanation of all latent ambiguities arising from the description of external things, by evidence *in pais;*"

It was, therefore, decided that the circuit court was right in charging the jury that there was not on the face of the respective patents such an identity as authorized the court to pronounce that they were for one and the same invention. No. 260,654 is not, in any event, affected by the Italian patent. The former bears date July 4, 1882, the latter August 8, 1882, and it was not applied for till July 28, 1882.

It follows that upon filing a disclaimer of the invalid claims the complainant is entitled to a decree in accordance with this opinion, but without costs.

In connection with this decision the following statement should, I think be made: A suit similar to this is pending against the Electrical Accumulator Company. Some time after the oral argument in this cause was concluded the counsel for that company after due notice to all parties interested called the attention of the court to the following facts: On the 28th of March, 10 days after the decision on the Faure patent was filed, the president and secretary of the Julien Company, without the knowledge or consent of counsel, obtained from the complainant an option to take an exclusive license under the patents in suit provided they were sustained. In view of these facts the court was asked either to refuse to decide the cause altogether or to postpone the decision until the cause against the Accumulator Company is ready for argument. The court urged upon counsel the importance of having the issues passed upon in a controversy which is, in all respects, genuine and earnest, and expressed his own disinclination to decide an action where a suspicion to the contrary might exist. Several plans were suggested, but none upon which counsel could agree. As a decision in the other cause will not be reached for a year and as the option alluded to is not regarded as a settlement of this cause, the conclusion has been reached that justice to the parties demands that a decision should be made at this time. I regret having to inflict so long an opinion upon litigants and counsel, but the examination and study of a record and briefs aggregating 2,500 printed pages has made it impossible to devote the necessary time to review and condensation.