

CASES ADJUDGED
IN THE
SUPREME COURT OF THE UNITED STATES
AT
OCTOBER TERM, 1934.

RADIO CORPORATION OF AMERICA ET AL. *v.*
RADIO ENGINEERING LABORATORIES, INC.

CERTIORARI TO THE CIRCUIT COURT OF APPEALS FOR THE
SECOND CIRCUIT.

No. 619 (October Term, 1933). Argued May 2, 3, 1934.—Decided
May 21, 1934. Petition for rehearing denied, and opinion amended,
Oct. 8, 1934.

1. Where this Court has affirmed a decree upholding a patent in a suit presenting the issue of priority between those who were rival claimants in the patent office proceedings, upon the ground that the unsuccessful party had failed to establish his superior right by thoroughly convincing evidence, the decree is not conclusive upon a stranger to that record in a subsequent suit against him for infringement, but it is persuasive as a precedent where the issue in the second suit and the evidence concerning it are the same as before. P. 7.
 2. Patents Nos. 1,507,016 and 1,507,017, to Lee De Forest, Sept. 2, 1924, for a "feed back" and an audion "oscillator," sustained upon the evidence as to priority of discovery. P. 10.
 3. A patentee is entitled not only to the uses for his invention that were apparent when it was made, but also to other uses then dimly apprehended but realized later. P. 14.
- 66 F. (2d) 768, reversed; 1 F. Supp. 65 (D. C.), affirmed.

CERTIORARI, 290 U. S. 624, to review the reversal of a decree of the District Court sustaining patents upon the ground of priority, in a suit brought by their assignees

against an infringer. Because of the pendency of a petition for rehearing, the opinion, delivered at the last Term, was not published in vol. 292. It is now printed with the amendments that were directed by the order of October 8, 1934, denying the rehearing. See *post*, p. 522.

Messrs. Thomas G. Haight and Samuel E. Darby, Jr., with whom Messrs. James R. Sheffield, William R. Ballard, and Abel E. Blackmar, Jr., were on the brief, for petitioners.

Mr. William H. Davis for respondent.

MR. JUSTICE CARDOZO delivered the opinion of the Court.

The petitioners, assignees of two patents, numbers 1,507,016 and 1,507,017, granted to Lee De Forest on September 2, 1924, have sued to restrain an infringement and for other relief.

The respondent, defendant in the trial court, admits the infringement if the patents are valid, but maintains that they are void in that they were issued to a patentee who was not the first inventor.

Long before this suit the rival claimants to the invention, Armstrong and De Forest, had fought out between themselves the legal battle now renewed. The outcome of their contest was a decree whereby priority of invention was found in accordance with the patents now assailed by the respondent, a decree binding on the claimants and their several assignees. For the purpose of any controversy between Armstrong and De Forest the validity of the patents must be accepted as a datum. Even for the purpose of a controversy with strangers there is a presumption of validity, a presumption not to be overthrown except by clear and cogent evidence. The question is whether the respondent has sustained that heavy burden.

At the outset there were four claimants to priority of title. All four, acting independently, had made the same or nearly the same discovery at times not widely separate. The prize of an exclusive patent falls to the one who had the fortune to be first. *Du Bois v. Kirk*, 158 U.S. 58, 66; *Evans v. Eaton*, 3 Wheat. 454. The others gain nothing for all their toil and talents. Of the four claimants Langmuir filed an application for a patent on October 29, 1913, claiming August 1, 1913, as the date of his invention. Armstrong filed an application on October 29, 1913, and a second one on December 18, 1913, fixing the date of his invention as the fall of 1912 or the beginning of 1913. As early as October 6, 1914, he received a patent covering the subject matter of his first application (patent No. 1,113,149), but not the subject matter of his second. Meissner filed an application on March 16, 1914, fixing the date of his invention as April 9, 1913. De Forest filed an application on March 20, 1914, and another on September 23, 1915, fixing as the date of his invention August 6, 1912, the earliest date of all, which would make him the first inventor if the claim could be made good.

Interferences were declared by the Patent Office as the result of these conflicting applications. One involved the applications of De Forest and Langmuir; another the applications of De Forest, Langmuir and Meissner; a third the applications by De Forest, Langmuir and Meissner and also the second one of Armstrong's, the only one of his then pending. While these interferences were still undecided, Armstrong and his assignee brought suit for the infringement of patent No. 1,113,149, which had been issued to him in October, 1914, the defendant in that suit being the De Forest Radio Telephone & Telegraph Company. The District Court (per Mayer, J.) fixed the date of Armstrong's discovery as January 31, 1913, rejected De Forest's claim to discovery on August 6, 1912, and gave

an interlocutory decree for an injunction and an accounting. 279 Fed. 445. The Circuit Court of Appeals (per Manton, J.) affirmed. 280 Fed 584. In the meanwhile the interference proceedings went on in the Patent Office. On March 31, 1923, the Commissioner of Patents rendered a decision which gave priority to Armstrong. There was an appeal to the Court of Appeals of the District of Columbia, invested at that time with supervisory jurisdiction in the administration of the patent laws. *Butterworth v. Hoe*, 112 U.S. 50, 60; *Postum Cereal Co. v. California Fig Nut Co.*, 272 U.S. 693. The Court of Appeals reversed the decision of the Commissioner, and decreed priority of invention in favor of De Forest. 54 App.D.C. 391; 298 Fed. 1006. On September 2, 1924, pursuant to the mandate of that court, patents numbers 1,507,016 and 1,507,017 were issued by the Patent Office.

The fight was far from ended. Already there was pending in the District Court in Delaware a suit brought under the authority of R.S. § 4915 (35 U.S.C. § 63¹) to direct the issuing of a patent to Meissner or his assigns. After the decree in the District of Columbia there was a suit in Pennsylvania under R.S. § 4918 (35 U.S.C. § 66²),

¹“Whenever a patent on application is refused, either by the Commissioner of Patents or by the Court of Appeals of the District of Columbia upon appeal from the Commissioner, the applicant may have remedy by bill in equity; and the court having cognizance thereof, on notice to adverse parties and other due proceedings had, may adjudge that such applicant is entitled, according to law, to receive a patent for his invention, as specified in his claim, or for any part thereof, as the facts in the case may appear. . . .”

²“Whenever there are interfering patents, any person interested in any one of them, or in the working of the invention claimed under either of them, may have relief against the interfering patentee, and all parties interested under him, by suit in equity against the owners of the interfering patent; and the court, on notice to adverse parties, and other due proceedings had according to the course of equity, may adjudge and declare either of the patents void in whole or in

which was brought by the assignee of the De Forest patents to set aside the Armstrong patent of October, 1914 (No. 1,113,149), all the interested parties being joined as defendants. Later on there was still another suit in Delaware, under R.S. § 4915, to establish priority for Langmuir. The suit in Pennsylvania came to a decree in July, 1926. The decision was in favor of De Forest, 13 F. (2d) 1014, the court adjudging that the holder of the Armstrong patent had failed to overcome the presumption of validity attaching to the De Forest patents under the administrative ruling in the District of Columbia, and that the earlier decision in New York (279 Fed. 445, 280 Fed. 584) did not sustain the defense of *res judicata* for the reason that the cause had never gone to final judgment. In February and March, 1927, the two suits in Delaware were decided the same way. 18 F. (2d) 338; 18 F. (2d) 345. The decrees in the three suits came up for review before the Circuit Court of Appeals for the Third Circuit. All three were affirmed with a comprehensive opinion by Woolley, J., marshalling the evidence and weighing the competing arguments. As the upshot the court held that the presumption of validity which protected the De Forest patents had not been overthrown, and that apart from any presumption De Forest had made out his title as the original inventor. 21 F. (2d) 918. Writs of certiorari brought the controversy here. 278 U.S. 562. This court affirmed the decree on the authority of *Morgan v. Daniels*, 153 U.S. 120, and *Victor Talking Machine Co. v. Brunswick-Balke-Collender Co.*, 273 U.S. 670. The first of those cases lays down the rule

part, or inoperative, or invalid in any particular part of the United States, according to the interest of the parties in the patent or the invention patented. But no such judgment or adjudication shall affect the right of any person except the parties to the suit and those deriving title under them subsequent to the rendition of such judgment."

that "where the question decided in the Patent Office is one between the contesting parties as to priority of invention, the decision there made must be accepted as controlling upon that question of fact in any subsequent suit between the same parties, unless the contrary is established by testimony which in character and amount carries thorough conviction." 153 U.S. at p. 125. The second case (273 U.S. 670) adds to that presumption of validity the support of the familiar principle, repeatedly applied in our decisions, that the concurrent findings of the courts below will be accepted by this court "unless clear error is shown." See, e.g., *United States v. State Investment Co.*, 264 U.S. 206, 211; *Texas & N. O. R. Co. v. Brotherhood of Railway Clerks*, 281 U.S. 548, 558; *United States v. Commercial Credit Co.*, 286 U.S. 63, 67.

One might have supposed that controversy would have been stilled after all these years of litigation. It proved to be not so. The petitioners, after repelling every assault from within the ranks of rival claimants, found it necessary to meet a challenge from without. The respondent, Radio Engineering Laboratories, Inc., allying itself with Armstrong, who is paying its expenses, insists that the invention is at large for the reason that De Forest, who received the patents, is not the true inventor, and that Armstrong, who *is* the inventor, is barred by a final judgment, conclusive between himself and the pretender, from obtaining the patent that is due him, and with it an exclusive right. The evidence in this suit for an infringement is a repetition, word for word, of the evidence in the earlier suits, so far as material to the conflicting claims of Armstrong and De Forest. What has been added is so nearly negligible that to all intents and purposes the records are the same. The District Court (per Campbell, J.) held upon that evidence that the respondent had not succeeded in overcoming the De Forest patents, and entered a decree for the complainants. 1 F.Supp. 65. Upon

appeal to the Court of Appeals for the Second Circuit, the decree was reversed by a divided court with instructions to dismiss the bill. 66 F. (2d) 768. A majority of the court adhered to the conclusion which it had announced eleven years before. 280 Fed. 584. A dissenting opinion enforced the view that De Forest's title as inventor, conclusively established as between himself and Armstrong, should be held, upon substantially the same record, to be good also against others. A writ of certiorari issued from this court. 290 U.S. 624.

The judgments in the suits between Armstrong and De Forest and their respective assignees are not conclusive upon the respondent, a stranger to the record. This is so by force of the accepted limitations of the doctrine of *res judicata*. It is so by force of the statute (R.S. § 4918), which provides in so many words that "no such judgment or adjudication shall affect the right of any person except the parties to the suit and those deriving title under them subsequent to the rendition of such judgment." But the respondent does not move very far upon the pathway to success by showing that what has been heretofore determined is without conclusive force. A patent regularly issued, and even more obviously a patent issued after a hearing of all the rival claimants, is presumed to be valid until the presumption has been overcome by convincing evidence of error. The force of that presumption has found varying expression in this and other courts. Sometimes it is said that in a suit for infringement, when the defense is a prior invention, "the burden of proof to make good this defense" is "upon the party setting it up," and "every reasonable doubt should be resolved against him." *Cantrell v. Wallick*, 117 U.S. 689, 695, 696; *Coffin v. Ogden*, 18 Wall. 120, 124; *The Barbed Wire Patent*, 143 U.S. 275, 285; *Washburn v. Gould*, 3 Story 122, 142; *H. J. Heinz Co. v. Cohn*, 207 Fed. 547, 554; *Detroit Motor Appliance Co. v. Burke*, 4

F. (2d) 118, 122; *Wilson & Willard Mfg. Co. v. Bole*, 227 Fed. 607, 609; *Stoody Co. v. Mills Alloys, Inc.*, 67 F. (2d) 807, 809; cf. *Morgan v. Daniels*, *supra*, p. 123. Again it is said that "the presumption of the validity of the patent is such that the defense of invention by another must be established by the clearest proof—perhaps beyond reasonable doubt." *Austin Machinery Co. v. Buckeye Traction Ditcher Co.*, 13 F. (2d) 697, 700. The context suggests that in these and like phrases the courts were not defining a standard in terms of scientific accuracy or literal precision, but were offering counsel and suggestion to guide the course of judgment. Through all the verbal variances, however, there runs this common core of thought and truth, that one otherwise an infringer who assails the validity of a patent fair upon its face bears a heavy burden of persuasion, and fails unless his evidence has more than a dubious preponderance. Cf. *Philippine Sugar E. D. Co. v. Philippine Islands*, 247 U.S. 385, 391. If that is true where the assailant connects himself in some way with the title of the true inventor, it is so *a fortiori* where he is a stranger to the invention, without claim of title of his own. If it is true where the assailant launches his attack with evidence different, at least in form, from any theretofore produced in opposition to the patent, it is so a bit more clearly where the evidence is even verbally the same. From all this it results that a stranger to a patent suit does not avoid altogether the consequences of a judgment rendered in his absence by establishing his privilege under the doctrine of *res judicata* to try the issues over again. If he has that opportunity and there is substantial identity of evidence, he may find that the principle of adherence to precedent will bring him out at the end where he would be if he had been barred at the beginning. Cf. *National Folding Box & Paper Co. v. American Paper Pail & Box Co.*, 48

Fed. 913; *Roussio v. First Nat. Bank*, 37 F. (2d) 281; *Cary v. Domestic Spring-Bed Co.*, 27 Fed. 299; 3 Robinson, Patents, § 1017.

This court in affirming the decrees in favor of De Forest did not say out and out that it would have reached the same conclusion upon the issue of priority if it had been itself the trier of the facts. It did, however, say in substance that Armstrong had failed to establish his own superior right by evidence sufficient to carry thorough conviction to the mind (*Morgan v. Daniels, supra*), or by evidence of manifest error in the findings of the courts below. We do not need to go into the question whether *Morgan v. Daniels* is applicable in all its force unless the parties to the later suit were parties also to the contest in the administrative proceeding. There are statements in the opinion (153 U.S. at pp. 124, 125) with reference to the analogy between a patent and a judgment that presuppose, perhaps, identity of parties. Cf. *Roussio v. Barber*, 3 F. (2d) 740; *Roussio v. First Nat. Bank, supra*. Be that as it may, the requirement of evidence sufficient to carry conviction to the mind is little more than another form of words for the requirement that the presumption of validity shall prevail against strangers as well as parties unless the countervailing evidence is clear and satisfactory. Nice distinctions are suggested between the application of these principles by the court that finds the facts and their application by the court that sits as a reviewing body, though we know that an appeal in equity imports a broad power of revision. Conceivably, we are told, a court might have a clear conviction that the validity of a patent had been successfully impeached, if it were passing upon the issue unhampered by the views of others, and yet the conviction might not be clear enough to overthrow a holding to the contrary approved by other

judges. Gradations of difference so subtle are not susceptible of pursuit without leading us into a land of shadows. This court held the view when these patents were last before it that the evidence was insufficient to overcome the presumption of their validity in any clear or certain way. If our estimate of probative values had been different, the invention must have gone to Armstrong, no matter though other courts or administrative officers had been persuaded to the contrary. The evidence that was insufficient at that time to evoke a clear conviction that the patents were invalid is the same in all essentials as the evidence before us now. We must pronounce a like decree unless we are prepared to say in the light of fuller argument that the first decree was wrong.

The record has been reëxamined patiently without inducing that persuasion. After all that has been written about the De Forest patents in these many years of litigation, there is no need to fill the pages of our reports with an analysis of the opposing arguments as if we were a court of first instance trying the controversy anew. For present purposes it is enough to bring out into sharp relief a few considerations of dominating significance. Patent No. 1,507,017 is for an invention known as a "feed-back circuit" and patent No. 1,507,016 for an invention known as the audion "oscillator." The two, however, are closely associated, for the oscillator can be produced only by use of the feed-back circuit, though the feed-back circuit can be used without producing an oscillator. As far back as 1908, De Forest had received a patent for a form of vacuum tube to which he gave the name of "audion." The Fleming vacuum tube in use up to that time had in it a metallic filament, which was electrically heated to incandescence through an input circuit, and a cold metallic plate to which electrons were trans-

mitted from the filament, passing from the plate to another or output circuit. De Forest's "audion" changed the Fleming tube by interposing a special wire known as the "grid" between the filament and the plate, thereby increasing its capacity as a detector of waves of radio or inaudible frequency and serving better to transform them into waves of audible frequency.

The device established itself almost at once as a revolutionary improvement in the art of transmitting sounds at great distances by wire and through the air. At the beginning, however, its potencies were not fully appreciated by electrical experts, not even by its inventor. Many experiments were made with a view to exploring its capacities and developing them. Among those interested and curious was Armstrong, then a very young man, a student in the school of electrical engineering at Columbia University. He conceived the idea about January, 1913, that through a hook-up or coupling of the output and the input circuit there would be a feed-back or regeneration of energy whereby the plate in the audion would become an independent generator of continuous oscillations. Tuning the circuit to the appropriate frequency, he found that the messages communicated through the antenna of a radio station were heard with a new clearness. Signals from distant lands were borne to him across the seas.

It was a brilliant conception, but another creative mind, working independently, had developed it before in designs and apparatus till then unknown to the art. De Forest with his assistant Van Etten had been working during the summer of 1912 along two lines of thought. One was the use of the audion as a telephone repeater to amplify weak telephone currents and thus facilitate the transmission of long distance messages. The other was its development as a generator of alternating currents for any and all uses, some perhaps indefinite, that were capable of

being served by oscillations thus produced. On August 6, 1912, a diagram showing a feed-back hook up of the input and output circuits is recorded in Van Etten's note book with a note that by the use of the coupling "a beautiful clear tone" had been developed, which means that oscillations had been produced and that the oscillations were sustained. There is also a note that the pitch, i. e., the frequency, was varied by altering the plate voltage, which means, or was understood, we are told, by De Forest to mean, that by other simple adjustments the frequency of the oscillations could be varied at will. Armstrong does not deny that all this was done just as stated by De Forest. Indeed the authenticity of the note-book entries has never been disputed through the many phases of the controversy. What Armstrong does deny is that anything done or recorded in August, 1912, is an anticipation of his own invention. He says that the sustained oscillations generated at that time were of audio and not of radio frequency, and this, it seems, is admitted. He says there was then no perception or thought that the audion plate could be made to oscillate at radio as well as audible frequencies through a coupling of the circuits. This De Forest denies. He maintains, with the backing of other witnesses, that upon discovering the effect of the feed-back in generating sustained oscillations of the plate, he understood at once that by controlling the inductance or capacity in the oscillating circuit he could also control the frequency. This, he says in substance, must have been obvious upon reflection to any competent electrician, though there would be need of a certain amount of adjustment and experiment in substituting the correct inductance or capacity, a process, it is argued, that would be well within the ability of any one skilful in the art. Beyond this he insists that having discovered the generative virtue of the feed-back, he was not confined in his invention to the uses then developed, but if his patent

claims were broad enough was entitled to the benefit of other and related uses made manifest thereafter.

We think that for all these contentions of De Forest adequate support exists in the record and the law. There is evidence that in August, 1912, he discussed with his assistants the possibility of using sustained oscillations of the audion in generating and transmitting radio waves as well as those of audio frequency. There is evidence that intermittently in 1913 he worked upon that theory, and particularly that on April 17 of that year at Palo Alto, California, he received a clear note, the true heterodyne beat note, from the radio signal station at San Francisco Beach with the aid of the coupled circuits. The entry in his note book made the same day tells us, "This day I got the long looked for beat note." This was long before he had heard of Armstrong or of like experiments by any one. There is evidence that in the early part of 1914, he renewed his investigations in that field of research, after being temporarily diverted, and finally on February 27, 1914, recorded in his note book, as the outcome of a number of experiments, that he had "full proof that the audion acts as a generator of high frequency currents."

True there are circumstances that have been thought to bear against him. Thus, in December, 1913, he read a paper before the Institute of Radio Engineers on "The Audion Detector and Amplifier." In the discussion following the paper he made answers which, it is argued, are irreconcilable with a belief that there was a regenerative feed-back of radio frequencies from the plate circuit to the grid. He denies, however, that he intended to convey the meaning now ascribed to him, and insists that to his understanding in the heat of the discussion the audio and not the radio frequencies were the subject of the questions. Much is made also of his failure to perfect his invention promptly or to apply promptly for a

patent, the delay being extraordinary, it is argued, if a conception so important in its possibilities of profit and utility was present in his mind. For this delay he gives his explanations, lack of funds, preoccupation with other uses of the audion having a cash value at the moment (its use, for illustration, as a telephone repeater), and perhaps chiefly the belief that he was a pioneer in the art without a rival in the offing. These explanations, even if not wholly convincing, are not so manifestly inadequate as to lead us to say that the conception of the oscillator as a generator of radio frequencies has been proved in any clear or certain way to have been developed and applied by Armstrong before it was born in De Forest's mind. To say this, moreover, would not be enough, even if we were willing to go so far, which, as already stated, we are not. Vacuum tube oscillators have a commercial use for other purposes besides radio. If De Forest's explanations and excuses were to be disregarded altogether, the result at most would be that the apparatus of the coupled circuits had potencies and values more important than the uses that were immediately apparent, potencies and values at least dimly apprehended, and never discarded or forgotten down to the time of their complete fruition. The benefit of all alike belonged to the inventor. *Corona Cord Tire Co. v. Dovan Chemical Corp.*, 276 U.S. 358, 369; *Roberts v. Ryer*, 91 U.S. 150, 157; *Stow v. Chicago*, 104 U.S. 547, 550; cf. *Lovell Manufacturing Co. v. Cary*, 147 U.S. 623, 634; *The Telephone Cases*, 126 U.S. 1, 536; Robinson, Patents, Vol. 1, § 81, p. 124.

The decree of the Circuit Court of Appeals should be reversed and that of the District Court affirmed.

Reversed.

The CHIEF JUSTICE took no part in the consideration or decision of this case.