NORTHERN ELECTRIC COMPANY, LIMITED, and WESTERN ELECTRIC COMPANY, INC. ..... } PLAINTIFFS;

AND

PHOTO SOUND CORPORATION and GEORGE PERKINS ..... } DEFENDANTS.

1935

Jan. 15, 16, 17, 18, 19 & 21.

Apr. 25.

Patents—Infringement—Anticipation—Invention—Reissue patent not restricted to invention claimed in original patent—Patent Act 1906, section 24.

The patent in suit has to do with the amplification of electric signals by means of a thermionic amplifier consisting of a number of audions connected in cascade whereby the original signal impressed upon the

1935

NORTHERN ELECTRIC CO. LTD. ET AL. v. PHOTO SOUND CORPN. ET AL.

input of the first audion is successively amplified and reproduced in the output of the last audion, in a substantially undistorted but highly magnified or strengthened form. The patent was a re-issue of an earlier patent. The Court found that the original patent lacked invention, and further that the re-issue patent is not confined to the invention described in the original specification, there being introduced additional descriptive matter, new subject-matter, and many of the new claims in the re-issue being based on the new subject-matter described in the specification of the re-issue patent.

Held: That the re-issue patent must be confined to the invention which the patentee attempted to describe and claim in his original specification, but which owing to "inadvertence, error or mistake," he failed to do perfectly; he is not to be granted a new patent but an amended patent.

2. That no patent is "defective or inoperative" within the meaning of the Act, by reason of its failure to describe and claim subject-matter outside the limits of that invention, as conceived or perceived by the inventor, at the time of his invention.

ACTION for infringement of two patents, one of which was a re-issue of an earlier patent.

The action was tried before the Honourable Mr. Justice Maclean, President of the Court, at Ottawa.

O. M. Biggar, K.C. and *R. S. Smart, K.C.* for the plaintiffs.

H. N. Chauvin, K.C. and *F. B. Chauvin* for the defendants.

The facts and questions of law raised are stated in the reasons for judgment.

THE PRESIDENT, now (April 25, 1935) delivered the following judgment:

This action was taken against the defendants for the infringement of two patents. The first to be mentioned is patent no. 226,704, which issued on November 28, 1922, to International Western Electric Company, Inc.; this patent was a re-issue of patent no. 179,709, which issued to Harold de Forest Arnold, the original patentee, on October 9, 1917, on an application dated May 18, 1916. This re-issue patent is attacked, first, on the grounds of lack of subject matter and anticipation, and again on the ground that it is invalid because it was not restricted to the same invention described and claimed in the original patent; while I am of the opinion, as will later appear, that the last-mentioned contention must prevail, yet, I feel that I should also express my opinion upon the question as to whether this patent contains subject matter.

This patent has to do with the amplification of electric signals by means of a thermionic amplifier consisting of a number of audions connected in cascade whereby the original signal impressed upon the input of the first audion is successively amplified and reproduced in the output of the last audion, in a substantially undistorted but highly magnified or strengthened form. The audion amplifier as such, was old in the art, and this patent has to do with details of the arrangement of the audions, capacities, inductances and resistances, whereby, it is alleged, improved results and improved reproduction are secured in the resulting amplified signal.

The patent describes a complete radio receiving apparatus consisting of a radio antenna connected to the input of a high frequency amplifying audion. This audion feeds into a second audion which serves as a detector to rectify the incoming radio signals. Following the detector there are shown two stages of audion frequency amplification employing one audion in each, the last of which, no. 38, feeds into two audions, 49 and 50, connected in what is referred to as a "push-pull" or "back-to-back" arrangement. The combined output of the push-pull audions is finally fed into a loud speaker or translating device, the amplified signals thereby becoming distinguishable to the senses.

The alleged infringing circuit is shown in two drawings, Exhibit 6. It consists of a three-stage amplifier, the signals being fed into the output of the first audion V1 through a transformer T1, the output of V1 is similarly fed to the input of audion V2 through a transformer T2 across the secondary of which is connected a resistance with a variable tap used for controlling the volume of the input to the audion V2. Audion V2, in turn, feeds through a transformer T3 into two audions V3 and V4, connected in push-pull arrangement; and across the secondary of the transformer T3 is connected a resistance R2. Associated with the plate battery circuit of audion V1, there is shown a condenser C2 and a resistance R4, and in the plate circuit of audion V2 there is shown a condenser C4 and a resistance R6.

Comparing Exhibit 6 with Arnold we find the following: condenser 33 corresponds identically with C2. Condenser

1935

NORTHERN ELECTRIC CO. LTD. ET AL. v. PHOTO SOUND CORPN. ET AL.

Maclean J.

40 corresponds identically with C4. Inductance 35 is in the same relative position in the circuit as resistance R4. Inductance 42 and condenser 40 in the plate circuit of audion 38 appear to be, in some respects, differently connected, but, generally speaking, I think correspond to resistance R6 and condenser C4 in audion V2. The resistance with variable tap or potentiometer 37 is identical with potentiometer R1. And resistance 46 and negative battery 47 correspond with resistance R2 and negative battery C13.

The claims of Arnold which are said to be infringed may be grouped and summarized as follows: (1) The combination of a single audion feeding into two audions connected in push-pull, in the diagram, the output of audion 38 feeding through transformer 44 into the input of audions 49 and 50; (2) The use of a resistance across the secondary of a transformer when such transformer is used to connect the output of one audion of an amplifier to the input of the next, 37 and 46, and a variable connection 37′ to this resistance 37 whereby the voltage impressed upon the grid of audion may be controlled; (3) The combination of a negative bias through a resistance to the grid of an audion, by battery 39 to resistance 37 and by battery 47 to resistance 46; and (4) The use of condensers and choke coils for the purpose of by-passing the alternating or signal currents around a common battery, namely, condensers 33, 40, etc., in conjunction with choke coils 35, 42, etc.

Referring now to the first group of claims said to be infringed, and which relate to the combination of a single audion feeding into two audions in push-pull connection. Amplifiers employing a number of single audions connected in cascade through intermediate transformers, were old in the art, the same being disclosed by Von Lieben and de Forest. The special "push-pull" connection of two audions was also old, having been disclosed by Colpitts, while a cascade arrangement of several stages of audions in "push-pull" relation was also old, this being attributable to Alexanderson. Accordingly we have only to consider whether invention lies in Arnold's arrangement of a single audion connected in cascade to two audions in "push-pull" relation.

It was, I think, early appreciated in the art that as a signal progressed from stage to stage in an amplifier the

amount of electrical energy which the successive audions had to convey became increasingly greater, and that there was inherent in any given audion a finite amount of energy which it could handle without overloading, and without resultant distortion of the signal. This I think was obvious to Von Lieben, and to de Forest, and they appreciated that once this point of amplification had been reached, further output without distortion could not be secured unless an audion of larger capacity was used.

The "back-to-back" or "push-pull" arrangement of Colpitts, I think, met this difficulty. He sets out an arrangement whereby two normal sized audions were connected in push-pull relation thereby securing the equivalent of a single audion of twice the capacity. It was known that a lightly loaded audion was less liable to give distortion than an audion loaded to capacity and it seems to me, that for Arnold, at the time material here, to use one audion feeding into two, instead of the same audion feeding into a larger one, would be an obvious arrangement to one trained in the art, and I do not think that invention can be claimed for this feature of Arnold's arrangement.

Coming now to the second and third group of claims said to be infringed and which have to do with the use of a resistance across the input of an audion or the secondary of the transformer feeding such audion, the use of a variable tap on this resistance for the purpose of controlling the volume of the output, and the use of such a resistance in combination with a negative bias on the grid of the associated audion. It was suggested that the resistances 37 and 46 were intended by Arnold to give uniformity of amplification, because, as already stated, it was known that weak signals were amplified proportionately greater than were strong signals, and the inclusion of the resistance was expected to rectify this undesirable condition. It was contended on behalf of the defendants that this condition was rectified by the negative bias given to the grid, the negative C battery, 39 and 47, which was the invention of Lowenstein, and that the function of the resistance was to provide a leakage path and not to give uniformity of amplification. Lowenstein states that by repeated tests he had found—though he did not clearly understand why—that the negative grid bias added to the strength and clarity of speech as heard in the receiver.

1935

NORTHERN ELECTRIC CO. LTD. ET AL. v. PHOTO SOUND CORPN. ET AL.

Maclean J.

Arnold himself recognized the advantage of the negative bias in improving the uniformity of magnification because in his note book, under date of March 4, 1914, he remarks:

> Note the advantage of using a high negative C voltage in audion in improving the uniformity of magnification over ranges of output, and also in improving exactness of reproduction.

Again, in his note book, he states:

> In audion put shunt across input so that cross talk will be lessened, for since resistance of input is great at low input voltage, the shunt will take a larger share of low voltage input than it will of high voltage input.

It was pointed out by Mr. Chauvin that the shunt referred to in this note of Arnold was not associated with the secondary of the transformer, as is claimed in the re-issue patent, and he suggested that at that time Arnold had in mind leaving out the transformer and using the resistance alone, this suggestion being based on the fact that in Arnold's United States patent, of May 28, 1914, he suggests the elimination of transformers; the note is as consistent with that idea as with the idea put forth in the re-issue patent here.

It was in effect contended that the groups of claims relative to the resistance, the negative bias to the grid, and the variable tap involved two inventive conceptions by Arnold, that is to say, he was the first to discover that weak signals received a greater amplification proportionately than strong signals, and, that he was the first to observe that an audion worked at a fraction of its capacity gave less distortion. But Arnold was not, I think, the first to discover the remedy for this condition then known to prevail in radio communication. Lowenstein in his patent, applied for in the United States in April, 1912, states:—

> The object of my invention is to provide a relay by means of which the relation of the potential differences of the complex incoming speech currents is well maintained in the telephone receiver so that the sound reproduced by the receiver diaphragm will be composed of waves of practically the same frequencies as impinge upon the transmitter diaphragm . . . these various frequencies will have about the same relative amplitudes as in the original sound waves actuating the transmitter. As a result of this the reproduced sound in intelligible.

It is evident, I think, that Lowenstein had in mind the provision of uniformity of amplification so that all signals, weak and strong, would receive the same relative magnification, and the means which he provides to achieve this end is by the negative bias to the grid, which is the means

which Arnold suggests and which he now claims as part of his invention.

Nor do I think that Arnold was the first to perceive that there was less distortion when an audion was not working to its full capacity. Richards disclosed this in his memorandum of November 21, 1912, which by the way was witnessed by Arnold, and in his patent specification he states:—

> It has been found by experiment that relays of the general type in which a gaseous conductor is included in the amplifying circuit will operate satisfactorily only on small amounts of incoming energy. When large amounts of incoming energy such, for instance, as are encountered in ordinary telephone systems, are impressed on such relays, the relay becomes inert and ceases to operate.

That means that the relay is overloaded and choked; it would seem therefore to have been generally known at that time that audions would not operate satisfactorily if they were called upon to handle more than a certain amount of incoming energy, and Richards speaks of it in that way, and not as a discovery of his own. Richards suggested the following means to meet the difficulty:—

> In the specific embodiment of the invention disclosed, the leakage path or shunt comprises a high resistance 14, preferably in the neighbourhood of one megohn. This resistance, which may be either inductive or noninductive, is connected between the grid element 3 and the plate 4.

While claim 6 reads:—

> In an electric relay, the combination with an audion, of a circuit including a resistance in shunt of two of the elements of said audion.

Richards' purpose in putting a resistance between the grid and the plate, that is between the input and the output circuits, was to relieve the audion from some part of the load when the same became too great. Claim 6 covers not only a resistance between the grid and the plate, but also between the grid and the cathode, which is the manner in which Arnold uses the resistance and for which he claims invention.

It does not therefore appear to me that Arnold was the first to observe that weak signals were amplified to a greater extent than strong signals, nor was he the first to provide a remedy; further, it seems to me that it is the negative bias to the grid that provides the means of uniform amplification, and that Arnold in suggesting a resistance across the input had as one of his aims, the provision of a by-pass across the input of audion 38, whereby the

1935

NORTHERN ELECTRIC CO. LTD. ET AL. v. PHOTO SOUND CORPN. ET AL.

Maclean J.

possibility of overloading this audion would be reduced; in other words, he followed the suggestion of Richards that the use of a resistance across the electrodes of an audion would perform a useful purpose. In addition, the manally adjustable connection 37′ to resistance 37, provides a still further control of the load to be passed on to the input of audion 38.

I should observe that a resistance with a variable tap, such as 37 and 37′, is called a potentiometer, a device long known in the electrical art, and is employed for the purpose of subdividing a voltage, which is the purpose, or at least one of the purposes, it serves in the structure of Arnold where it is said to subdivide the voltage across transformer 36 thereby acting as a volume control. The use of a potentiometer to effect a subdivision of the voltage, and its use as a volume control, does not, I think, constitute invention. It was a principle well known to the art. For example, we find the general idea disclosed in Langmuir's United States patent no. 1,273,627.

I now come to the use of a common battery, and of choke coils and condensers, to prevent objectionable singing, etc., and it is to those features of Arnold that the fourth group of claims said to be infringed refer. These instrumentalities were old in the art, it being well known that a condenser offers little or no resistance to alternating currents such as those which the amplifier is repeating, while a choke coil or inductance presents a high resistance to such currents. Once it was understood that the singing was caused by alternating currents passing through the battery, then well known means were readily at hand to by-pass these currents and thereby overcome the difficulty. It was stated in evidence that the problem resembled that at an earlier date confronting telephone engineers, when, to avoid cross-talk, it was found necessary to by-pass the alternating voice currents appertaining to the different telephone instruments, around the battery. The problem in the case of the amplifier, was perhaps more acute than that of the ordinary telephone, in that in the case of the former small currents were re-amplified and became thereby that much more harmful. I should think however that to one skilled in the telephone art, such as Arnold, the analogy was

reasonably obvious, and that he, in applying the general practice of the telephone art to the problem of the amplifier battery, would at once perceive that by by-passing the voice currents around the battery that the difficulty would be overcome. I do not think, however, that this could be construed as invention. It might also be observed that the defendants do not use choke coils and that the resistances they employ have different characteristics when used with alternating currents such as those under discussion.

I do not think there is invention in Arnold. Many features of this patent for which invention is claimed are discussed in the United States case of *Western Electric Co.* v. *Wallerstein* (1), and to which I would refer.

The validity of the re-issue patent to Arnold was strenuously attacked by counsel for the defendants on the further ground that what is described and claimed therein as invention, is not the invention described and claimed in the original patent, and that therefore there was no statutory authority for granting the re-issue patent. It becomes necessary therefore to refer to the original patent with some care and probably at some length.

The patentee describing his invention in the original specification states:

"This invention relates in general to receiving systems for radio communication, particularly to devices for limiting the electrical power which may be transmitted to a receiving instrument in such a system, and more particularly to devices in which such limiting action is obtained by employing electric currents in an evacuated vessel.

Its object is to provide rapidly responsive means by which a definite upper limit is set upon the amount of power which may be communicated to a receiving circuit or apparatus, while amounts of power below said limit may be transmitted without selective interference.

The ability to secure such limitation is desirable, in a radio receiving system for example, because foreign disturbances, which in the wireless art are often of large magnitude compared with that of the received signals, may be reduced to a value not exceeding that of the signals, thus securing higher intelligibility in reception.

This object is accomplished by making use of the fact that unilaterally conducting elements, placed in opposition in a circuit, limit the current which may flow in either direction around that circuit, and in this respect this invention is similar to that which forms the subject of my previous application No. 192,176 for a Protective Device for Electric Circuits, filed December 28, 1914. It differs from that, however, in that additional elements are associated with the unilateral devices and elsewhere, to secure certain improvements in operation, as explained later

(1) (1932) 60 Fed. Rep. 2nd Series 723 at pages 730 and 731.

1935

NORTHERN ELECTRIC CO. LTD. ET AL. v. PHOTO SOUND CORPN. ET AL.

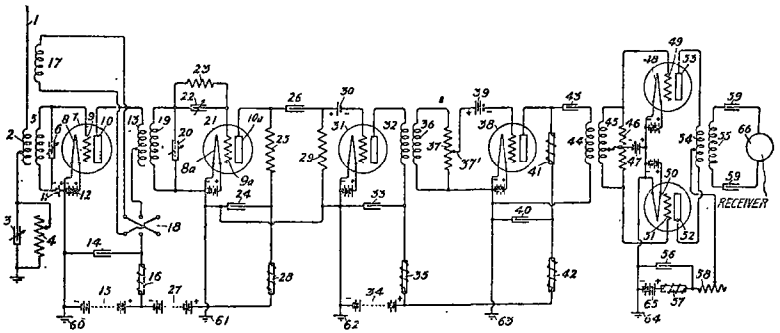
Maclean J.

in this specification, and also in that an amplifying effect is obtained which makes this device particularly applicable in radio communication.

In the preferred form of this device the unilateral conductivity is secured by causing part of the circuit to lie in the paths of thermionic currents between hot cathodes and cold anodes, said thermionic currents being oppositely directed with respect to said circuit. These thermionic currents are caused to flow by impressing upon their limiting electrodes, in multiple, an electromotive force operating through a high impedance, said high impedance being essential to the operation of the device for the purpose specified, by preventing unbalanced currents in the two halves of the device. This high impedance serves to differentiate this power limiting device from the repeating device described in U.S. patent No. 1,128,292, to E. H. Colpitts for an Electric Wave Amplifier, as will be apparent from the further explanation of its function given later.

The nature of this invention will be more fully understood by reference to the drawing, which represents a receiving system for radio communicative embodying this invention. . . .

The drawing referred to is hereunder reproduced.



The specification then proceeds to describe the receiving system which embodies the invention and that paragraph concludes thus:

The apparatus to the right of 44 comprises the power-limiting device and the receiving circuit.

The specification then proceeds:

In this device coil 45 is coupled to coil 44. 46 is a resistance. 48, 49 and 53 are the filament, grid and plate, respectively, of a structure of the audion type, as are also 50, 51, 52, respectively. 47 is a battery common to the input circuits of the two structures, which structures may be in the same vessel or in separate vessels. 54 is a transformer winding connecting plates 52 and 53 and having a connection brought out at its middle point. The secondary winding 55 of this transformer leads to a receiving instrument 66, preferably through the condensers 59.

Current is supplied to the output circuits of the last-mentioned structures of the audion type by battery 65 connected through coil 57, and the variable resistance 58 to the middle point of coil 54 and to the common point of the two filaments 48 and 50. The receiving set is grounded at the points 60, 61, 63 and 64.

The operation of this system is as follows: Power received by the antenna is transferred to the circuit 5, 6, augmented by amplifier 7, com-

municated to circuit 19, 20 transformed into low frequency form by detection in element 21, augmented by amplifiers 31 and 38, and passed to the receiving instrument through the power limiting device whose operation will now be explained.

The thermionic repeater being unilaterally conducting, the repeater element 48, 49, 53 can transmit positive current due to battery 65, only in the direction from 53 to 48. Also, element 50, 51, 52 can transmit positive direct current only in the direction from 52 to 50. If these currents are approximately equal, it follows that the maximum variation in current around the circuit 48, 53, 54, 52, 50 can never exceed the magnitude of the normal current in either element, provided none of this varied current can pass through the battery 65. To prevent such passage, choke coil 57 is used.

The variations in the normal currents in the winding 55 which variations constitute the signals to be received, are produced in the usual way by the action of the grids, 49 and 51, across which the signal voltage is impressed, so that it is obvious that an impressed voltage of large value, tending to produce a large variation of current in the power limiting device, cannot cause an alternating or varying current in winding 55 larger than the normal space current of the elements. This normal space current is adjusted until its value is just greater than the amplitude of the signals to be received.

The resistance 58 prevents serious unbalance of currents in the two halves of winding 54, when a large electro-motive force is impressed, by lowering the effective potential difference between plate and filament by the amount of the voltage drop in the said resistance, and consequently decreasing the current which can flow in the output circuit of either repeater element, this effect being a fundamental one in the operation of the thermionic repeater.

Owing to the fact that the vacuum tube repeaters can only transmit current in one direction, it is impossible to do more by any impulse than to decrease the current in one vacuum tube repeater to zero. The current in the other tends to increase according to the increase of potential on the grid.

On account of this rise of current the resistance of the tube decreases, and since the output circuit contains a very high resistance 58, the voltage across the tube decreases. The circuit is so arranged by adjusting the resistance 58 that the fall of potential finally becomes so great as to prevent the rise of current above a certain amount.

If this amount is made approximately equal to the current required to transmit the talk, the interfering sounds, due to accidental causes, cannot possibly be of greater intensity than the speech.

It will therefore be seen that the sole object of Arnold's alleged invention was to provide a power-limiting device, which when connected up to the particular radio receiving set shown in his diagram, was capable of automatically reducing any interfering or unwanted signal, no matter what its strength, to the same strength as the signal it was desired to receive. And on reference to the diagram it will be found that the power-limiting device is to the right of 44, as Arnold takes care to state in his specification, and nothing that precedes it is embraced in the invention. On

1935

NORTHERN ELECTRIC CO. LTD. ET AL v. PHOTO SOUND CORPN. ET AL

Maclean J.

any construction of the patent it would appear to me that nothing more is claimed as invention than the power-limiting device. In his corresponding United States patent Arnold names his invention as a " Power Limiting Amplifying Device."

In the re-issue patent Arnold claims not only the power-limiting feature but also the invention of improvements in the preceding amplifier network, that is to the left of 44, which further improvements have nothing to do with the power-limiting device since they come into action before the signal reaches that device. No evidence was given before me that Arnold's power-limiting device, as described in his original patent, was an operative device or not, but if it were the same device is to be found in the structure of the defendants. However, in this action there is no claim for infringement of this power-limiting device but rather for infringement of other features claimed as invention, and which appear in the re-issue only, and which, as I understand it, have solely to do with improvements in the amplifier structure or network, whereby better quality of reproduction would be secured in the output, an object not mentioned in the original patent.

Schedule B in the defendant's particulars of objections, sets forth in detail the many alterations and additions to be found in the specification of the re-issue patent, as compared with the original patent, but they are too extensive for me to repeat fully here. The specification of the re-issue patent departs very substantially in form, and, I think, in subject matter, from that of the original. At one point in the descriptive portion of the re-issue specification seven new paragraphs are added, at another four new paragraphs are added, at still another four new paragraphs are added, and the last two paragraphs of the original specification are replaced by six new paragraphs; besides these there are many other departures from the text of the original specification. The original patent contained but 14 claims while the re-issue has 87 claims; the first 14 claims are those of the original patent though modified somewhat but the remaining claims are practically all new. The claims covering the grid and negative bias, the potentiometer, and the common battery, are found in the re-issue for the first time. The adjustable connection 37'

is numbered in the drawing of the re-issue for the first time and this adjustable connection is now claimed as part of the invention. Arnold, after filing his original application, amended his specification, but still he kept within his alleged invention of a power-limiting device, as he did in his corresponding United States patent. The fact that the diagrams in the re-issue and the original patents are identical is not an indication to me that what Arnold had in mind, in his original application, was what his assignee had in mind when the specification of the re-issue patent was drafted, and in fact it leaves me with the very opposite impression. It is incomprehensible that with the diagram before him, Arnold, or his attorney, would deliberately say that the power-limiting device was to the right of 44 and would omit to claim as part of the invention anything to the left of that numeral if he then believed the same to embrace a part of the invention.

Some significance is to be attached to the letter of the International Western Electric Company, addressed to the Commissioner of Patents. In applying for the re-issue patent this letter attempts to explain the reason for the delay in the application to amend the original patent. The letter in part states:

> As is well known, the development of the thermionic discharge devices was greatly accelerated during the war. The energies of the inventors and engineers were devoted to producing apparatus of this type suitable for use in connection with war activities. It was in many cases difficult to accurately determine the patentable scope of the improvements made, and the inventors responsible therefor. Information on these points was to some extent confidential. It was not therefore, always possible to determine accurately the proper scope of the claims in various applications that were filed in the Canadian and other Patent Offices.

The war might have been the cause of delays in promoting patent applications in Patent Offices, but it could hardly be responsible for Arnold not fully understanding an invention which he claims to have made in 1912, and for which he applied for a patent in the United States in 1915, and in Canada in 1916. This letter is rather suggestive to me of the fact that Arnold's assignee, found, or thought he found, more in Arnold's specification than Arnold at the time believed to be invention.

Earlier, in the other branch of the case relating to this patent, I mentioned the four main features in Arnold's structure which are said to be infringed by the defendants'

1935

NORTHERN ELECTRIC CO. LTD. ET AL v. PHOTO SOUND CORP'N. ET AL

Maclean J.

structure, and I need not repeat them. So far as I can see not one of those four features of Arnold was claimed in the original patent, and, as I have already stated, claims relating to the power-limiting device are not sued upon here notwithstanding the same are to be found in the defendant's structure, and notwithstanding it constituted the only alleged invention in the original patent. I think it is quite plain that the re-issue patent is not confined to the invention which Arnold described in his original specification; there is introduced additional descriptive matter, new subject-matter, and many of the new claims in the re-issue are based on the new subject-matter described in the specification of the re-issue patent.

A re-issue of patents was authorized by sec. 24 of the Patent Act, 1906, that being the Act in force at the time of the re-issue in question. The material part of that section is as follows:—

24. (1) Whenever any patent is deemed defective or inoperative by reason of insufficient description or specification, or by reason of the patentee claiming more than he had a right to claim as new, but at the same time it appears that the error arose from inadvertence, accident or mistake, without any fraudulent or deceptive intention, the Commissioner may, upon the surrender of such patent * * * cause a new patent, in accordance with an amended description and specification made by such patentee, to be issued to him for the same invention, for any part or for the whole of the then unexpired residue of the term for which the original patent was, or might have been, granted.

(2) In the event of the death of the original patentee or of his having assigned the patent, a like right shall vest in his assignee or his legal representatives.

This provision of the Act, it will be seen, is designedly rigid, and the reason is obvious. It would look as if the original patent must be invalid before an amended patent can issue, because the words "whenever any patent is deemed defective or inoperative" must imply I think invalidity, that is to say, if the patent is inoperative it is invalid, and if the description or specification is insufficient it is again invalid, but in the absence of argument by counsel, precisely on this point, I do not propose pronouncing any definite opinion thereon. If the patentee claimed more (or less, under the present Act) than he had a right to claim as new, the situation would be different. The provisions of the Canadian Patent Act in respect of the re-issue of patents is much the same as in the United States Patent Act, and probably that was the source of the pro-

visions of the Canadian Act. The United States Patent Act uses the words "inoperative or invalid," and in that jurisdiction it has been held time and again that those words imply that the original patent was invalid. See Walker on Patents, 6th Ed. Chap. 11. However, it is quite clear that the amended patent must be for the same invention and cannot embrace any new invention.

In the vast majority of cases in which a patent is defective or inoperative, its defects must be found to reside in the description given of the invention in the specification or drawings, or in both, and it was to cure such defects that relief was provided by statute. Hence, in most cases, the purpose of a re-issue is to amend an imperfect patent, defects of statement or drawings, and not subject-matter, so that it may disclose and protect the patentable subject-matter which it was the purpose of that patent to secure to its inventor. Therefore the re-issue patent must be confined to the invention which the patentee attempted to describe and claim in his original specification, but which owing to "inadvertence, error or mistake," he failed to do perfectly; he is not to be granted a new patent but an amended patent. An intolerable situation would be created if anything else were permissible. It logically follows of course, that no patent is "defective or inoperative" within the meaning of the Act, by reason of its failure to describe and claim subject-matter outside the limits of that invention, as conceived or perceived by the inventor, at the time of his invention. Robinson on Patents, Vol. 2, page 318, discusses very effectively, I think, what a re-issue may or may not embrace. That author states:—

> If the idea of means had possibilities of further development or application, which the inventor did not then perceive, these did not enter into his actual invention. If his idea, as already conceived and apprehended, was divisible into other ideas of means, only a part of which had been reduced to practice, the latter alone could have constituted his invention. If his idea presented different aspects, capable of embodiment in essentially distinct inventions, each of which would have formed matter for an independent patent, the one selected by him as the subject of the patent whose amendment is in question is the sole invention which that patent could, if perfect, have secured. The limits of this invention thus exclude all new developments of the idea of means which have taken place since the original patent issued, all ideas which were not reduced to practice before the application for the original patent, and all distinct and independent parts or forms of the invention which were not embraced within the subject-matter of the patent already issued; and therefore no

1935

NORTHERN ELECTRIC CO. LTD. ET AL v. PHOTO SOUND CORPN. ET AL

Maclean J.

defect or insufficiency of statement concerning these can render the original patent inoperative or invalid, or furnish an occasion for its amendment. All that it can be made to cover, by any degree or species of correction is that completely conceived, perceived, and practically operative means for which the inventor then sought and the government then bestowed protection. Intervening inventions, whether wholly distinct or consisting in substantial variations in or improvements on the old, subsequently discovered attributes of the invention or any of its parts, independent arts or instruments though tracing their origin to the same fundamental idea, and new matters of any kind, are equally beyond the scope of the original patent and of any correction or enlargement of its terms by a re-issue.

That, I think, is a correct exposition of the law in respect of the re-issue of patents, and, I think, is applicable here.

It seems impossible to believe that, owing to "inadvertence, accident or mistake," Arnold failed to describe or claim in his original specification the device he claims to have invented, a power-limiting device. He seems to have done so. I have no reason for believing that the device was imperfectly described, or that more (or even less) was claimed than was described, and it has not been shown that the device as described was inoperative. I think it is imposing too much on human credulity to be asked to believe, that at the date of his original application, Arnold had in mind more than the power-limiting device, or that he then had in mind all the additional subject-matter described and claimed in the re-issue patent, as part of his invention. If subsequently there came to Arnold, or his assignee, further developments of his idea of means and ends, that would not furnish occasion for the amendment of the patent because it could not be said that there was insufficiency of description or specification in respect of such new developments. I am of the opinion therefore that there was no statutory authority for the granting of the re-issue patent, and that is invalid, for the reason that it embraces more than the invention described and claimed in the original patent.

Turning now to the Kendall patent, no. 230,335, the second patent here sued upon. The point at issue here has to do with the earthing or grounding of a certain part, or parts, of the audions and electrical circuits, as disclosed by Kendall, and which he describes as "a low impedance path to ground," and by "ground" it is agreed that "earth" is meant. The effect of this grounding in Kendall, it is

claimed, is to eliminate the effect of the capacity between the different components of the network, and also between the network as a whole and outside conductors. I am not satisfied that Kendall, dealing as it does with duplex cables involving balancing and other complex conditions, is altogether applicable to an amplifier circuit of the nature of that used by the defendants. It would seem to me that Kendall's grounds 31 and 28 would of necessity have to be to earth because his cables were grounded to earth, and his particular grounding was for one purpose while the defendants' was for another. This, however, is not the determining factor in my mind.

In the defendants' apparatus, a portable one, the amplifier for certain purposes or reasons is covered with a metal sheath, which is referred to as a chassis, that is, I presume, the apparatus is enclosed in a metal box, and the so-called ground connections made in the structure are not ground connections to earth, but connections to this sheath, where it ends; the sheath itself is not connected to earth but on the contrary is insulated therefrom and whatever virtue the form of grounding used in the defendants' apparatus may have, it is not due to any direct connection with the earth, which apparently is all that is claimed for Kendall. I, therefore, do not think that the method of grounding used in the defendants' apparatus infringes Kendall; if any one wishes to adopt a method, other than that suggested by Kendall, of securing the effects of grounding a circuit, they are free to do so, and Kendall is limited to his own selected method of grounding. It is not necessary for me to decide whether or not there is invention in the claims of Kendall which are sued upon, because, in any event, there is not, in my opinion, any infringement of Kendall by the defendants.

In the result therefore, the action of the plaintiffs is dismissed with costs. In any event, I see no reason for the joinder of the defendant Perkins in the action.

Judgment accordingly.