

THE WESTERN ELECTRIC COM- }  
PANY, LIMITED ..... } PLAINTIFF;

1929  
Mar. 5.  
Sept. 10.

v.

ELIZABETH M. A. K. BELL.....DEFENDANT.

*Patents—Infringement—Injunction—Improvement—Equivalent*

Plaintiff, owner of a patent of invention, known as the Hartley patent, for a radio receiving circuit, alleged that the circuit used in the set manufactured and sold by the defendant was an infringement of the said Hartley patent and asked that it be so declared and that the defendant be restrained from further manufacturing and using the said circuit.

*Held*, that even assuming that the defendant's circuit contained component parts and arrangements distinguishing it from the specific circuit disclosed by Hartley, and were patentable improvements, nevertheless, the Hartley invention being new and useful, the fact that it was more useful with the subsequent improvement, afforded no ground for infringing the original invention by using it with the subsequent improvement.

ACTION for the infringement of Patent 174,690, Hartley.

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 plaintiff.  
*Lorne F. Lambier* for defendant.

The facts are stated in the reasons for judgment.

THE PRESIDENT, now (September 10, 1929), delivered judgment.

In this action the plaintiff alleges infringement by the defendant of Canadian Patent No. 174,690, issued to one Hartley. While it is pleaded that Hartley was invalid, yet, upon the trial no serious effort was made to establish its invalidity, and I therefore sustain the patent granted to Hartley.

The defendant, Robert Bell, is the patentee of Canadian Patent No. 282,210, and it is claimed that the receiving sets which are alleged to infringe Hartley, were constructed in accordance with the specification and drawings of Bell. In his specification Bell states that self-sustained oscillations in tuned radio frequency amplifiers are brought about by the effect of capacitative coupling between the primary and secondary windings of the transformer, used between two

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successive stages of the amplifier, and his claims are based upon that theory. This conception of the phenomena as stated in Bell's specification and claims, is, I think, entirely erroneous. It was stated by Mr. Waterman, a witness on behalf of the plaintiff, that the cause of self-sustained oscillations in this type of amplifier, is the regenerative effect of energy transferred back from the output or plate circuit to the input or grid circuit of the audion, by way of the internal capacity between the plate and the grid. This, I believe to be a correct explanation as to why such a circuit breaks into oscillation. The infringing circuits are constructed according to some of the drawings. I need not give further consideration to Bell's patent as the matter in issue resolves itself down to the question, as to whether the actual circuits in the receivers made and sold by the defendants, infringe Hartley.

It was shown in evidence that in order to neutralize the regenerative action due to the plate-grid capacity of the audion, it is necessary to impress upon the input circuit a voltage of the proper amplitude and in a direction opposing the voltage which causes oscillation. This may be done by coupling the output circuit to the input circuit, through means external to the audion. Hartley, as explained in his patent, accomplishes this by electromagnetic coupling between the output and input circuits. Claims 3 and 4 of the Hartley patent are specific in this respect.

The defendants' circuit accomplishes neutralization by coupling the output circuit to the input circuit by electrostatic means. A small disc, which forms part of the defendant's device, is placed in electrostatic relation with the wires of a coil electromagnetically coupled to the output circuit, thereby deriving energy from that circuit; this energy is conveyed back to the grid through a small variable neutralizing condenser. In another form of the defendant's circuit, a small coil, placed in electrostatic and also in electromagnetic relation to the output circuit, is used in place of the disc for the purpose of procuring the necessary energy or voltage from the output circuit. In all cases shown in the drawings referred to at the trial, a small variable condenser is used for the purpose of transferring this energy or voltage back to the input circuit. The principle involved in all the forms of Bell's receiver is the same, that

is to say, Bell secures a transfer of energy or voltage from the output circuit to the input circuit by means of an electrostatic coupling and thereby impresses upon the input circuit a voltage of the proper amplitude and phase to nullify the undesired voltage.

The defendants' receiver employs the principle set forth by Hartley inasmuch as it feeds back energy from the input to the output circuit of the proper amplitude and phase relation, to secure the desired effect. This is the vital principle in the method of neutralization. The means employed in the defendant's circuit to secure this end are in some respects different from Hartley, in that the energy is obtained by electrostatic means from a coil electromagnetically coupled to the output circuit, and transferred to the input circuit by means of a variable neutralizing condenser. The reason for doing this is, in the first place, to secure the necessary reversal of phase, and in the second place to provide means for controlling the amplitude. This gives the identical effect of Hartley. The defendant's receiver, wherein it differs from Hartley, may represent an improvement on the specific arrangement of Hartley, and conceivably it might afford subject matter for letters patent, if it has not already been anticipated. Nevertheless, the general principle of Hartley, which has not been attacked by the defendants, is I think embodied in the defendant's circuit. Assuming for the moment that the defendant's circuit contains component parts and arrangements distinguishing it from the specific circuit disclosed by Hartley, and that they are not the mere substitution of equivalents, and further assuming that they are improvements, yet I conceive it to be the law that where an invention is shown to be new and useful, as was Hartley, the fact that it is much more useful with a subsequent improvement affords no ground for infringing the original invention by using it with the subsequent improvement. For that reason, I think, the plaintiff must succeed, and is entitled to the relief claimed. Costs will follow the event.

*Judgment accordingly.*

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