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April 13.
May 18.

SEMET-SOLVAY COMPANY .....APPELLANT;

AND

THE COMMISSIONER OF PATENTS....RESPONDENT.

Patents—Appeal from decision of Commissioner—"On sale"—Specification—Claims

In December, 1922, appellants offered to construct a coking oven at Hamilton in accordance with certain specifications and drawings, which clearly disclosed the invention for which the patent is now asked. On February 21, 1923, a contract was entered into for the building of this oven, the construction commenced shortly thereafter and the plant was operating in January, 1925. The application for patent herein was made on June 19, 1925.

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Held, that the assignees of the invention by agreeing to construct and constructing a plant at Hamilton incorporating the said invention were putting this method of construction "on sale" in Canada within the meaning of the Patent Act.

2. Where in the specification in his patent for a coking oven the patentee states that a certain device or addition is advisable or preferable, but does not claim it as a necessary element of the invention, any oven so constructed as to represent the invention patented, but without such additional device would nevertheless be an infringement of the patent. Nor would anyone be entitled to a patent for leaving out the suggested addition or device out of the construction.

APPEAL by the appellant against the decision of the Commissioner of Patents refusing to grant a patent.

The appeal was heard at the city of Ottawa by the Honourable Mr. Justice Maclean, President of the Court.

R. S. Smart K.C. for the appellant.

O. M. Biggar K.C. for the respondent.

The facts are stated in the reasons for judgment.

THE PRESIDENT, now this 18th May, 1927, delivered judgment.

This is an appeal from the decision of the Commissioner of Patents, refusing an application for patent made by one Hughes, the appellant's assignor, and filed on July, 19, 1925. The alleged invention relates to improvements in coke ovens. The appeal was heard by me upon the documents transmitted by the Commissioner of Patents, and upon further oral and documentary evidence, adduced before me upon the hearing of the appeal.

It might be as well at this stage to refer to the inventor's specifications, in order to ascertain what it is that he claims as his invention. He states:—

> This invention relates to coke ovens, particularly of the horizontal flue type with regenerators individual to, and parallel with, each oven of the block or battery. In ovens of this character as constructed hitherto, it has been considered necessary to interpose so-called sole flues directly beneath the floors of the several oven chambers. These sole flues form a connection between the heating flues, located in the side walls or division walls of the oven chambers, and the regenerators in which the air is heated before it is mixed with fuel to support combustion.
>
> The object of the present invention is to improve structures of the class indicated above, in such a way that by establishing a direct connection between the regenerators and the heating flues and thus dispensing with and obviating the necessity for the customary sole flues, certain important advantages are obtained as will be set forth in detail hereinafter.

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It is to be noted that the connection between the regenerators and the heating flues is entirely a direct connection. By a direct connection I mean one by which all of the effective heat given off by the entire flue system connecting the ports of the respective regenerators is imparted wholly through the division walls of the oven laterally of the coking material in the oven and not in part through a sole flue. The connections of the heating flue C and of the risers F^1, F^2 with the regenerators E^1 and E^4 respectively, are made at the outer upper corners of these regenerators. At the opposite corners (that is, the inner lower corners) these regenerators are connected with channels G^1 G^2 respectively, the upper ends of which are in turn connected with the upper portions of inner regenerators E^2, E^3 respectively, the bottom of which has openings to communicate with the upper portions of passages H^2 H^3 respectively, said passages H^2 and H^3 extending transversely of the coking chambers, under the regenerators. By having the lower ends of the channels G^1 G^2 connected with the regenerators E^1, E^4 at the corners diagonally opposite to those at which said regenerators are connected with the heating flues C, I secure a proper and effective flow of the combustion gases or of the air through said regenerators.

* * * *

The advantages of my invention are important, both from the structural point of view and in the operation of the oven. Owing to the omission of the sole flues generally employed heretofore, the construction is simplified, and its cost reduced. The space formerly occupied by the sole flues is utilized for the upper portion of the regenerators, and in actual practice, it has been found that the bottom of the oven can in this way be maintained at the required temperature, notwithstanding the absence of sole flues, etc.

The application for patent was first allowed, but upon a reconsideration, the same was refused. The grounds upon which the application was refused were: That the application disclosed no invention; that there was anticipation by United States patent No. 970,720 issued to one King in 1910, and later assigned to the appellant; that by-product coke ovens according to the specifications disclosed in the Hughes application, were erected in Hamilton, Ontario by the appellant, for the Hamilton By-Products Coke Ovens Limited, the date of commencement of the installation being March 15, 1923, more than two years prior to the filing of the application for patent in Canada; that ovens of the Hughes type were installed at Ashland, Kentucky, U.S.A., prior to the installation of the Hamilton plant; and that the invention had been described in printed publications more than two years prior to the inventor's application for patent in Canada. Thereupon the applicant, through his solicitor sought amendment of his specifications and claims, in order to bring out, as was stated, more clearly the scope and nature of the invention, and

requested a reconsideration of the application. In the letter or memorandum addressed to the Commissioner of Patents, the applicant's solicitor states:—

The claims have been somewhat revised in order to bring out more clearly the scope and nature of the invention. Heretofore by-product coke ovens of the horizontal flue type have always been regarded as requiring, as one of the essentials of construction, a sole flue running from one end of the oven chamber to the other immediately beneath the floor of the coking chamber between the coking chamber and the regenerators. The applicant is the first to have constructed a coke oven of the horizontal flue type in which there was no sole flue, but in which the air from the regenerators passes directly and without sole flue conduits into the heating flues while the hot products of combustion flow directly and without sole flue conduits into the regenerators. This is an entirely new type of construction, etc.

The memorandum further stated:—

This leaves only the United States King patent No. 970,720. With references to that patent Mr. King, the patentee of the said patent, makes an affidavit in which he points to the merits of the present application, and says that the construction shown in his own patent "is not as simple as the Hughes construction and does not provide the economies of the new oven." He presents photographs of a model of his, King's construction which show very clearly that the King oven was a sole flue type of oven, the very thing which the applicant has overcome, and superseded. Figure 1 of the King patent also shows that the spaces marked "S" and "S^2" are located immediately below the floor of the coking oven, and that they are consequently sole flues. This is further shown by Figure 2, where the regenerators R and R^2 are shown as connecting with two branch flues leading to the right and to the left and those flues are not a part of the regenerators, but are sole flues just as indicated in Fig. 1. The King patent differs from prior patents in making a division of the sole flue into two branches, but the King oven is a sole flue oven, nevertheless. The applicant's oven is the first which dispenses with all sole flues. So long as the public constructs coke ovens with sole flues of any type, it will not encroach on the present invention, but when anyone departs from the previous sole flue practice and erects an oven which has no sole flue at all, he appropriates that which was first invented by Mr. Hughes and for which Mr. Hughes is clearly entitled to his patent in view of the great advantages of his invention and the fact that the novelty of his procedure cannot be challenged upon tangible grounds.

The application to reconsider the application for patent was refused by the Patent Office, and then followed this appeal.

Inasmuch as the King patent has already been referred to, and as it is the patent chiefly relied upon as an anticipation of Hughes, it might now be convenient to quote certain portions of the specifications of King, and which are as follows:—

My invention relates particularly to retort coke ovens provided with horizontally disposed heating flues connected in series. Such an arrange-

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ment of flues presents certain advantages, since it enables a very complete utilization of the heat developed in the flues, and such a regulation thereof as to secure a uniform coking of the coal charge. Heretofore with such an arrangement of flues the preheating of the air required for the combustion of the gas has usually been effected by means of recuperators, so called, in which the incoming air to be pre-heated and the outgoing gases of combustion flow continuously always in the same direction, through adjacent passages, the heat of the gases passing through the separating walls and being absorbed by the incoming air. Regenerators in which the gases of combustion and the air to be pre-heated flow alternately in opposite directions through a checkered brick construction, which becomes highly heated by the gases, and then imparts its heat to the air, are also employed to preheat the air, but while they are highly advantageous where their employment is feasible because of the extremely high temperature imparted to the air thereby, they are not readily applicable to the series, arrangement of flues.

The object of my improvement is to provide a simple and easily operated arrangement which shall enable the combination of regenerators with a series flue system, and thus unite the advantageous features of both constructions, and also to obtain certain incidental advantages of operation.

* * * *

Referring to the drawings 1, 2, 3, 4, 5, indicate the heating flues connected in series on one side of an oven. A similar set of flues is provided on each side of each oven throughout the block of ovens. Below each of the ovens are located two regenerators, R, R^2 built of checkered brick work in any usual manner. The regenerators R, R^2, are connected by passages P, P^2, with flues F, F^2, which are connected at one end through reversing valves V, V^1 with an outlet passage, G, for the waste gases of combustion, leading to a stack not shown in the drawings, and at the other end through reversing the valves V^2 V^3 with an air inlet passage, H. The passages P, P^2 are controlled by dampers W, W^2 by means of which the effective orifice of the passages may be controlled, or if desired, closed entirely. From each of the regenerators of one set, as R, a passage O, formed in the division wall between two adjacent sets of heating flues, leads upward and is connected with the uppermost flues 1, of the adjacent sets of heating flues. From each of the other set of regenerators, as R^2 openings, O^2 connect with the lowermost heating flues, 5.

Preferably a shelf or partition S, S^2 is constructed above each regenerator, whereby the air and gases passing to and from the heating flues are caused to traverse the entire length of the regenerators R, R^2, instead of taking the shortest course to and from the passage, O, and opening O^2.

Before proceeding to a consideration of the actual issues for determination, it is perhaps desirable to refer briefly to the construction of coking ovens. A coking oven, as a unit in a battery or block of ovens, is a long, high, and narrow or thin chamber of brick construction, wherein is placed the coal from which the coke and by-products are to be recovered. This result is produced by the application of heat to the ovens. Uniformity in the heating of

the coal in the ovens, in the process of coking coal, is essential, and it is the practice to apply heat of a high temperature to the ovens, through heating flues or spaces arranged vertically or horizontally in the side walls of the ovens. In the application in question the heating flues are of the horizontal type. Directly beneath the ovens are what is known as regenerators. A regenerator is a checker work structure of fire-brick, through which the air and waste gases may circulate to and fro, and its function is primarily to heat air which is introduced into it through air channels at or near its base, and to so heat it that it attains an approach to uniformity of temperature before it is delivered to the heating flues surrounding the ovens, where at desired points in the heating flues it is mixed with combustible gases. Connections are provided for, between the regenerators and the heating flues on the side walls of the coking ovens. I do not think it is necessary for the purposes of this case, to enter into precise details of the construction and operation of the combined regenerators and coking ovens, or the specific function and manner of operation of one regenerator as compared with another.

The principal issue for determination seems to be, whether or not King has what is known as a "sole flue," which when employed, is interposed immediately beneath the floor of the oven and above the top of the regenerator. It is simply a flue space underneath the bottom of the ovens, forming a connection between the heating flues located in the side walls of the ovens and the regenerators, and it is as well, the means through which the bottoms of the coking ovens are heated. Hughes claims invention for establishing direct connection between the regenerators and the bottom of the ovens and the heating flues, and dispensing with the sole flue. It is claimed on behalf of the Commissioner of Patents that King had previously dispensed with the sole flue. From the specifications of King, from which I have at length already quoted, it will be seen that this patent relates to horizontally disposed heating flues connected in series. From the drawings and specifications it is to be seen that nothing intervenes between the top of the regenerator and the bottom of the floor of the coking chamber, except that King states, that "preferably, a shelf

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or partition S. 32 is constructed above each regenerator," for the purpose of causing the air and gases passing to and from the heating flues, to traverse through the entire length of the regenerators, instead of taking the shortest or direct course to and from the passages or ports leading into and out of the regenerators, the purpose being to ensure that the air and waste gases would traverse as much as possible of the brick work of the regenerator. However, King does not claim the use of the shelf as a necessary element in his invention, or, as it was put by one of the respondent's counsel, King would be infringed by another construction if the shelf were left out and it otherwise were King, because King says you can put the shelf in or leave it out, and no one is entitled to a patent for leaving out what King said you might leave out. The shelf it is observed does not extend the full length of the regenerator, but leaves a space at one end to allow the air and waste gases to move to and from the heating flues. Whether King would efficiently operate without the shelf I am unable to say, because no evidence was given upon that point, but I think it is quite clear that King did not intend it as a sole flue but only to accomplish the end mentioned in his specifications. Even upon the statement in the Hughes' specifications, that a sole flue is a connection between the heating flues in the side walls of the coking chambers and the regenerators, King shelf cannot be said to be a sole flue, because that connection is otherwise provided for. I think Hughes is tied to the elimination of the sole flue as his improvement representing invention. King also I think clearly dispenses with the sole flue with which he was doubtless acquainted, but which he does not mention. The shelf was not intended as the equivalent of a sole flue, but for an entirely different purpose, and then even its use was made optional. He makes no claim for the shelf and consequently did not regard it of importance. He had abandoned the idea of a sole flue entirely, and was concerned with the question of means for ensuring the proper flow of air and waste gases through the regenerators. Whether or not King would successfully operate without the shelf, I do not think the shelf can be said to be a sole flue, or intended as such.

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There would not seem to be any invention in placing the regenerator in direct connection with the bottom of the coking chamber, that is in eliminating the sole flue, if provision is made for the proper circulation of the air and gases to and from the regenerators to the heating flues, and under the bottom of the coking chamber. The space immediately above King's regenerator is not part of a flue system as generally understood, the shelf relates to a means of ensuring successful operation of the regenerator for its intended purposes. I do not think there is room for a claim to invention in Hughes, whatever be the features of construction distinguishing it from King. Every change or improvement in the construction of a patented article, well-known and in wide and general use, and particularly where the principle of operation is not changed, is not invention. This seems like a belated effort to extend the monopoly granted to King, without improvements calling for invention.

Further I should say, it is claimed by respondent's counsel, that Hughes retains the shelf or partition of King, but he places it or its equivalent elsewhere, and under another name. It is urged that the appellants used King for several years in a modified form, that is, it put into King a sole flue which King did not suggest, and it uses this for twelve years, and now it says through Hughes, that it finds the sole flue was unnecessary, and it claims a patent for the elimination of an element which King did not include or suggest. But the respondent says that Hughes did not omit the shelf or partition, but kept it and put it or its equivalent in a different place, and the respondent says you cannot call it a sole flue in one place, and something else in another place, because in each case it performs the function of facilitating the circulation of air and gases in the regenerators, and in any event, King was the first to suggest it, but did not claim it. Now it is said, that Hughes in his construction of the regenerators uses the shelf or its equivalent, vertically instead of horizontally, in the centre of his regenerator, in order to cause the air and the waste gases as the case may be, to flow through the brick work of the regenerators. In his specifications, what Hughes calls "channels," separating vertically what he calls his inner

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and outer regenerators, were designed and intended to secure a proper flow of air and waste gases through the regenerators, and which was made possible by having the lower ends of the channels connected with the outer regenerators through a port at the corner diagonally opposite to that port in the same regenerators, and which connected them with the heating flue C. Thus by means of these channels and a division of his regenerators by such channels, he accomplished that with which he was concerned, namely, means of securing an effective flow of air and gases through his regenerator, just as King did with his shelf or partition, but in a slightly different way, and at a different point. It is not I think necessary to decide whether or not there is any material distinction between the "shelf" and the "channels." The "channel" has to do with the operation of the regenerators, and is not what is described by Hughes in his specifications as his invention, and cannot therefore be claimed.

Altogether I am of the opinion that the application of Hughes was properly refused for want of invention.

It is also contended on behalf of the Commissioner of Patents, that the invention in suit was "on sale in this country" for more than two years prior to the application for patent therefor, and that therefore under the provisions of section 7 of the Patent Act, Hughes has forfeited his right to a patent for his alleged invention.

The date of the application for patent was June 19, 1925. In December, 1922, a proposal in writing was made by Semet-Solvay Company to Hamilton By-Products Coke Co. Ltd., to construct a by-product coke oven plant at Hamilton. Accompanying the proposal were specifications and drawings, and the latter very clearly show Hughes to be present in the proposed construction. On the 21st of February, 1923, a contract in writing was entered into between these parties, the outcome I presume of negotiations following the written proposals made by Semet-Solvay Company. The specifications forming a part of the contract, clearly disclose the Hughes method of construction, and as disclosed in his application for patent. Construction commenced shortly afterwards, and the plant was in due course completed and went into operation in Janu-

ary, 1924. There is a provision in the contract to the following effect:

> Solvay hereby gives and grants to Hamilton the right and license to use any apparatus and processes, whether or not patented, which comprise a part of the plant constructed hereunder, or are necessary for its operation but only for and in the operation thereof, and Solvay agrees to indemnify Hamilton for and save it harmless from all claims, demands, suits or causes of action which may be made or brought against Hamilton for infringement of patents on account of the use by Hamilton in the operation of said plant of any apparatus, equipment or process installed therein by Solvay.

The question then is, if, under the facts disclosed, the invention of Hughes was "on sale" in Canada more than two years previous to the application for patent. It does seem to me, that when Semet-Solvay Company offered to construct, or agreed to construct, a plant at Hamilton, involving the incorporation of Hughes, there must have been a time when the Hughes method of construction was "on sale" in Canada. It was put on sale as a suggested method of construction, of a portion of the plant mentioned in the proposals of Semet-Solvay Company, and this suggestion was accepted and there then followed the contract referred to. The contract contains I think a license to the Hamilton Company to use the Hughes method of construction, as is to be found in the clause which I have already quoted from the contract. There was nothing experimental about the proposed construction in my opinion, which indeed would be entirely unlikely, where the projected plant involved an expenditure about one and three-quarter millions of dollars.

The point is perhaps a little confusing, but it appears to me that it would be against the spirit of the Patent Act to hold that the alleged invention was not "on sale" more than two years prior to the application. That would not appear to be the common sense view. There was also in my opinion a licensing of the invention, at about the same time, although this point was not urged upon me. I think what was done constitutes a licensing where the alleged invention is not for a manufactured product, but for a method of construction. Here, the invention could not be manufactured, and in that form sold or put on sale. It could only be sold or put on sale by a disclosure of the method of construction, such as by drawings or specifica-

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tions. The license here was perpetual as to time, but limited to the Hamilton plant. If Hughes possessed invention, and he had only applied for a patent in time, the licensing clause in the contract would not be an answer to infringement by any unlicensed person. Whether there was a licensing or not, certainly the invention was "on sale" immediately prior to the time of the making of the contract. I think the point is well taken, and upon that ground also, I am of the opinion that the application for patent cannot be granted.

It is hardly necessary that I should deal with any of the other points urged against the granting of the application for patent.

The appeal is dismissed with costs to the respondent.

Judgment accordingly.