

J. K. SMIT & SONS, INC. (PLAINTIFF)...APPELLANT;

1939

AND

* May 22, 23
* Dec. 22.

RICHARD S. McCLINTOCK (DEFEND- }
ANT) } RESPONDENT.

ON APPEAL FROM THE EXCHEQUER COURT OF CANADA

*Patent—Alleged infringement—Substance of the invention—Specification—
Claims.*

Appellant sued for a declaration that its machine for casting diamond core bits and its sale or use in Canada does not constitute an infringement of respondent's patent, which related to a method and mold for setting diamonds and was, according to the specification, "especially designed for setting diamond-cutters in tools and devices."

Respondent in his specification claimed that his method prevented the "floating" of the diamonds which, being lighter than the molten metal poured into the mold to form the tool, were apt to become dislodged (to "float"); that he prevented this by placing them in a pattern-holder, then placing it in the mold, and then utilizing air suction to retain the diamonds in their seats during the arranging of them and during the pouring of the molten metal into the mold. Appellant used a process of centrifugal casting, in which the problem of preventing the diamonds "floating" was not encountered, and which process in itself did not, nor did the machine used therein, infringe respondent's patent; but, prior to the casting operation, appellant temporarily anchored the diamonds in place to a die plate by a thin film of adhesive which, when the die plate (with the diamonds thus previously anchored to it) had been transferred to the mold, would, at the outset of the casting operation, immediately disappear under the heat of the molten metal; and, in applying this adhesive, appellant used a machine and process of suction, to assist in arranging the diamonds and to retain them in place during the spraying of the adhesive.

Held (reversing judgment of Maclean J., [1939] Ex. C.R. 121): Appellant should have the declaration as prayed.

It is not the province of the court to guess what is or what is not the essence of respondent's invention; that must be determined on examination of his language; and on construction of his specification, the primary thing at which he was aiming was to solve the problem of "floating" and he mastered that by using suction to retain the diamonds in place during the pouring of the molten metal into the mold; that was clearly indicated as an essential, if not the essential, part of the invention; and though he also used suction to keep the diamonds in place during their arranging, that was only after the diamond holder had been placed in the mold; and it cannot be said that the substance of respondent's invention was taken by appellant's process (which does not employ suction at all after the diamond holder has been placed in the mold or after the formation of the tool has begun by the introduction of the molten metal into the mold). *R.C.A. Photophone Ltd. v. Gaumont British Picture Corp'n. Ltd. et al.*, 53

* PRESENT:—Duff C.J. and Rinfret, Crocket, Davis and Kerwin JJ.
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R.P.C. 167, at 197, cited. Further, respondent at the time he applied for his patent could not have got a patent for the process which appellant employs in sticking the diamonds on a die plate by the adhesive and for that purpose making use of suction while arranging the diamonds and while applying the adhesive; in the state of the art, the employment of such process would have constituted no patentable advance. Such process of appellant could not be said to be the "equivalent" or operation in another form of respondent's process of pouring the metal and employing suction during it. Also, on consideration of those claims in respondent's specification alleged to be infringed, there was no description therein of a monopoly which clearly and plainly included a prohibition against anything the appellant does. (As to function and effect of claims in a specification, *Electric & Musical Industries Ltd. et al. v. Lissen Ltd. et al.*, 56 R.P.C. 23, at 39, cited).

APPEAL by the plaintiff from the judgment of Maclean J., President of the Exchequer Court of Canada (1), dismissing its action which asked for a declaration that its machine for casting diamond core bits and its sale or use in Canada does not constitute an infringement of the defendant's letters patent no. 368,042, relating to a method and mold for setting diamonds. The judgment in the Exchequer Court declared that as between the parties to the action, claims 1 and 4 of the defendant's patent are infringed by the use or sale in Canada of the plaintiff's machine.

By the judgment now reported, the appeal to this Court was allowed; appellant to have judgment with the declaration as prayed, with costs throughout.

R. S. Smart K.C. and *M. B. Gordon* for the appellant.

E. G. Gowling and *J. C. Osborne* for the respondent.

The judgment of the Court was delivered by

THE CHIEF JUSTICE—This is an appeal from the judgment of the President of the Exchequer Court of the 25th of February, 1939 (1), in which it was held that a machine for the casting of diamond core bits described in exhibit 1 attached to the statement of claim, as sold or used in Canada, constituted an infringement of claims 1 and 4 of a Canadian patent of the respondent dated August 10th, 1937; and the action of the appellants was dismissed in which they claimed a declaration under the provisions of section 60 (2) that their machine or its sale or use in Canada would not constitute such infringement.

The appellants began the construction of their machine early in the spring of 1937 before the issue of the respondent's patent and their design was to construct a machine in which diamond bits could be cast centrifugally. This is done by rotating the mold about a vertical axis at high speed so that the molten metal is disposed radially in the mold.

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The respondent in his specification says:

My present invention relates to an improved method and mold for setting diamonds which while applicable for use in a variety of industries, is especially designed for setting diamond-cutters in tools and devices, as for instance in rotary drill-bits for earth boring.

He proceeds to say that

Heretofore the common practice for setting diamonds, as cutters in industrial tools, has centered around the comparatively difficult, tedious, and therefore extremely expensive method of first drilling depressions in the face of the tool and then setting the diamonds in the depressions and forming facets from the surrounding material by means of punches and mauls.

This method, he declares, is

expensive and inefficient and necessitates the use of comparatively large and more expensive stones.

Then he refers to the method which proceeds by

temporarily holding the diamonds in proper position in a mold, and then, through the application of heat and pressure upon a powdered metal confined within the limits of the mold, a cutting tool is produced.

This, he says, has the "obvious disadvantage * * * that the diamonds are not held firmly" in their place in the tool with the natural consequence that there is a high percentage of loss of diamonds. He adds that attempts have been made at "casting diamonds in a slug," but he says that, the specific gravity of diamonds being considerably less than that of the molten metal of which the bit is to be composed, extreme difficulty has been encountered in holding the diamonds in their proper places "during the process of pouring the molten metal." The dislodgement of the diamonds is known as "floating" and hitherto, he says, this has presented a problem which has defied solution. He then explains the process by which he carries out his invention in these words:

I employ a pattern-holder for the diamonds in which they are initially seated, and after the pattern-holder has been located in the mold, I utilize a vacuum chamber in the mold and air-suction to retain the diamonds in their respective seats in the holder during the process of arranging the diamonds in the best chosen pattern and during the pouring

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of the molten metal for the formation of the tool. In this manner the diamonds are retained in their proper positions against dislodgement during arranging period and against "floating" and they are set with accuracy and firmly retained against loss during subsequent use.

It will be noticed that the invention is specially designed for "setting diamond-cutters in tools and devices" and that the method resorted to is casting the diamonds in a slug which, hitherto, has proved inefficacious by reason of the dislodgement of the diamonds during the process of pouring the molten metal into the mold because the diamonds are lighter than the molten metal; and that this is overcome by placing the diamonds in a pattern-holder which is then placed in the mold and by then utilizing air suction to retain the diamonds in their seats during the process of arranging them, and during the formation of the tool by pouring the molten metal into the mold.

I turn now to the appellants' machine and process which are described in exhibit 1 of the statement of claim.

The process of centrifugal casting was well known in other fields. In that process, as employed by the appellants, the mold is rotated about a vertical axis at high speed, between four and five hundred revolutions a minute, and the molten metal, subjected to centrifugal force, is disposed radially. The die plate in which the diamonds are placed at the end of the mold has, of course, a vertical extension and as the metal during the casting operation is thrown with great force in a horizontal direction against the end of the mold, the problem of floating of the diamonds does not arise. But, it is necessary temporarily to anchor the stones in place to this die plate prior to the casting operation. This is done by the appellants by employing a thin film of adhesive which temporarily holds the diamonds on the perforated die plate while it is being transferred to the mold but which immediately disappears under the heat of the molten metal at the outset of the casting operation.

It is not suggested that in this casting operation the centrifugal machine itself or the centrifugal process constitutes any infringement of the respondent's patent.

The appellants, in applying the adhesive to the die plate for retaining the diamonds temporarily in place until the

casting operation proper begins, make use of a machine and a process the essential features of which are the employment of suction for the purpose of assisting in arranging the diamonds in a perforated die plate and for retaining them in place during the process of spraying the adhesive over the die plate and the diamonds and while it solidifies. This last step of the process is virtually instantaneous. The adhesive once set anchors the diamonds in the die plate but, as has already been said, it immediately disappears under the heat of the molten metal at the outset of the casting operation.

The learned President has held that in this process the appellants have taken the substance of the respondent's invention. He comes to this conclusion without reference to the claims in the respondent's patent, which he does not discuss, and without reference also to a contention much pressed during Mr. Gowling's able argument to which I shall come later.

Now, there is no suggestion, as I have said, that the respondent is entitled in any way to complain of the appellants' process of centrifugal casting, or of the machine that he utilizes in that process. By it, as already mentioned, the molten metal is thrown under the impulse of centrifugal force horizontally into the mold and against the die plate placed at the periphery of the circle through which the mold revolves in the process. The die plate, which holds the diamonds, having a vertical extension, it is necessary that the diamonds should be stuck in their places in order to preserve the pattern in which they have been arranged while the die plate is being placed in position at the outer end of the mold, and, as we have seen, the adhesive is used for that purpose, it is used as a convenient way of preventing the diamonds being shaken or dropping out of the holes in which they have been placed.

It is plain, therefore, that the difficulty which the patentee emphasizes,—the problem which he says had been encountered in all attempts to cast diamonds in a slug and which had baffled solution before his invention, the problem, namely, of preventing the diamonds "floating" because of their low specific gravity as compared with that of the molten metal, is a problem which never arises. It is not encountered in the process of the appellants.

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Therefore suction by air is not used to hold the diamonds in place during the process of casting; there is no vacuum chamber and none of the apparatus of suction in the appellants' casting machine. The diamonds are held in place by the adhesive until the molten metal begins to be thrown against the end of the mold when it instantly disappears under the influence of heat and thereafter the pressure of the stream of molten metal and the centrifugal force hold the diamonds in place.

Let us observe again what it is that the patentee says about his invention. It is an invention for setting diamond cutters in tools and devices and for this purpose he uses a vacuum chamber in his mold and air suction to retain the diamonds in their respective seats in the holder during the process of arranging the diamonds and during the pouring of the metal for the formation of the tool; and the result declared is that in this manner the diamonds are retained against dislodgement during the arranging period and against "floating."

It does not appear to me that the patentee's own account of the essence of his invention is really at all doubtful. The primary thing at which he was aiming, according to his own story, was to solve the problem of "floating" and he mastered that problem by the use of suction to retain the diamonds in their seats during the process of pouring the molten metal. He resorts to suction, it is true, as a convenient means of keeping the diamonds in place during the process of arranging, but that is only after the diamond holder has been placed in the mold and, convenient and useful as that part of the process may be, it does not appear to me that the patentee regards it as so absolutely essential as the use of air suction during the pouring of the metal for the purpose of preventing floating.

On the face of it, therefore, it seems to me to be very difficult indeed to say that the substance of this invention has been taken by a process which does not employ suction at all after the diamond holder has been placed in the mold, or after the formation of the tool has begun by the introduction of the molten metal into the mold.

There are some observations of Lord Justice Romer, as he then was, in *R.C.A. Photophone Ltd. v. Gaumont-British*

Picture Corpn. Ltd. et al. (1), which I think ought to be quoted:

What is the principle? I do not know that it has ever been more clearly enunciated than it was by Lord Parker in *Marconi v. British Radio Telegraph Company* (2). "Where * * * the combination or process besides being new produces new and useful results, everyone who produces the same results by using the essential features of the combination is an infringer even though he has in fact altered the combination or process by omitting some unessential part or step and substituting another part or step which is equivalent to the part or step he has omitted." The word in this passage to which I should like to call particular attention is the word "unessential." It is only in respect of unessential parts of an invention to which the principle of mechanical equivalent can be applied. The principle is, indeed, no more than a particular application of the more general principle that a person who takes what in the familiar, though oddly mixed metaphor is called the pith and marrow of the invention is an infringer. If he takes the pith and marrow of the invention he commits an infringement even though he omits an unessential part. So, too, he commits an infringement if, instead of omitting an unessential part, he substitutes for that part a mechanical equivalent. But it is not the province of the Court to guess what is or what is not the essence of the invention; that is a matter to be determined on an examination of the language used by the patentee in formulating his claims. In the case of *Submarine Signal Co. v. Henry Hughes & Son, Ltd.* (3), I thought that the patentee had clearly indicated that an electric oscillator was an essential feature of the invention described in his eleventh claim. I consequently held that the defendant, who had not used an electric oscillator, but something that might properly be described as a mechanical equivalent of it, had not infringed. Further reflection has not caused me to change the view that I then expressed. The patentee in that case had made the electric oscillator part of the pith and marrow of his invention and the principle of mechanical equivalent was inapplicable.

Obviously, the invention, as described by the inventor himself, involves the use of air suction to hold the diamonds in place while the molten metal is being introduced into the mold. There can be no doubt, in my mind, that as the inventor puts it, that is an essential part of his process. That part of his process is clearly not taken by the appellants. Adapting the language of Lord Romer, it is not the province of the court to guess what is and is not of the essence of the invention of the respondent. The patentee has clearly indicated that the use of air suction at that stage of the process is an essential, if not the essential, part of the invention described in the specification.

(1) (1935) 53 R.P.C. 167, at 197. (2) (1911) 28 R.P.C. 181, at 217.

(3) (1931) 49 R.P.C. 149.

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In these circumstances, I find myself unable to agree that the appellants have taken the "pith and marrow" of the respondent's invention.

Let us look at this matter from another point of view. I ask myself the question, could the respondent at the time he applied for his patent have got a patent for the process which the appellants employ in sticking the diamonds on a die plate by the adhesive and, for that purpose, making use of suction while arranging the diamonds and while spraying the adhesive? I do not think that question is susceptible of any but one answer. The idea of holding diamonds in place while a plastic is being set about them by the use of suction was perfectly well known and the evidence is that it was common in the art, not only in setting diamonds in jewellery but also in setting them in diamond tools. It is not, as I understand, suggested that there is anything either in the respondent's or in the appellants' arrangements for the application of suction that would not suggest itself to any skilled person possessing a competent knowledge of the art.

Mr. Gowling argues that the appellants' operation of employing suction during the arrangement of the diamonds and the application of the adhesive is really the respondent's operation in another form, that the application of the adhesive and the pouring of the molten metal are equivalent steps; and that, therefore, there was a colourable taking.

Now, the first answer to that lies in what I have just said. Subject to any actually existing patent, there was nothing patentable in the application of suction for the purpose of retaining the diamonds in place while applying the adhesive. It was an old idea and there is no invention in it. There was no invention in making use of it for the purpose of producing a diamond tool. That being so, it is quite impossible that it can be an infringement of the respondent's patent. To put it in another way, it was (subject, of course, to any actually existing patent) before the respondent applied it to his patent, part of the common stock of knowledge in the art, and to employ it constituted no patentable advance in the art and could not, therefore, be an infringement of the respondent's patent.

In the second place, the premise of the argument must be rejected. For all relevant purposes, the process of apply-

ing the adhesive and the process of pouring the metal are not equivalent. The metal is poured into the mold for the purpose of fashioning the tool to which the diamonds are to adhere permanently. The respondent employs suction during that process and as an essential part of it. The appellants do not employ suction at all during that process. For the purpose of retaining the diamonds in place at the outset and during that process, the respondent employs suction. The appellants do not employ suction at any point of time while the tool is in process of formation or while the diamonds are in the mold. It is only after the suction has completely served its purpose in another machine that the appellants begin their process of casting, of forcing the metal under centrifugal impulse into the mold where the diamonds are held, not by suction, but at the outset by the adhesive that has been applied, and afterwards by the pressure of the molten metal and by the centrifugal force. In the respondent's process the action of the molten metal is not to anchor the diamonds in place in the diamond holder as the appellants' adhesive does; on the contrary it is to envelope the diamonds so that as the molten metal cools they become embedded in the molded tool; up to that point the diamonds are kept in place by the suction of air.

Let us turn now to the claims. With the greatest possible respect, I must say that I am quite unable to find in these claims the description of a monopoly which clearly and plainly includes a prohibition against anything the appellants do. The claims to be considered are claims 1 to 4 and claim 6. The only claims referred to in the judgment of the Exchequer Court are claims 1 and 4 and they are the only claims mentioned in the pleadings, but it seems to have been agreed at the trial that the claims to be considered are the claims numbered 1 to 4 and 6. I shall consider them in their order; but before doing so I quote a passage from the judgment of Lord Russell of Killowen cited by the appellants (1).

The function of the claims is to define clearly and with precision the monopoly claimed, so that others may know the exact boundaries of the area within which they will be trespassers. Their primary object is to limit and not to extend the monopoly. What is not claimed is disclaimed. The claims must undoubtedly be read as part of the entire

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(1) *Electric & Musical Industries Ltd. et al. v. Lissen Ltd., et al.*,
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document, and not as a separate document; but the forbidden field must be found in the language of the claims and not elsewhere. It is not permissible, in my opinion, by reference to some language used in the earlier part of the specification to change a claim which by its own language is a claim for one subject-matter into a claim for another and a different subject-matter, which is what you do when you alter the boundaries of the forbidden territory. A patentee who describes an invention in the body of a specification obtains no monopoly unless it is claimed in the claims. As Lord Cairns said, there is no such thing as infringement of the equity of a patent (*Dudgeon v. Thomson* (1)).

The first claim is in these words:

1. The method of setting diamonds in a molded casting which consists in seating the diamonds to be set in a pattern holder, supporting the diamond holder in the mold and applying suction of air to the diamonds while in their seats before and during the process of molding the casting.

The method is a method of "setting diamonds in a molded casting" and "consists in" the following steps:

1. Seating the diamonds in a pattern holder;
2. Supporting the diamond holder in the mold; and
3. Applying the suction of air to diamonds while in their seats before and during the process of molding the casting.

It seems clear to me that there is nothing in this claim that suggests that the suction of air is to be applied before the pattern holder is placed in the mold. If it were otherwise, the claim would be invalid as embracing something not disclosed in the specification. The invention disclosed is one in which suction is not and cannot be applied to the diamonds before the diamond holder is placed in the mold.

But, apart from that, this, at least, would appear to be beyond argument that, if the intention of the patentee had been to make such a claim he could have expressed himself in much less obscure language. He has not performed the duty of expressing his intention as clearly as possible to claim a monopoly which prohibits the application of the suction of air solely for the purpose of arranging the diamonds in a holder and sticking them there by an adhesive before the diamond holder is placed in the mold.

The second claim reads:

2. The steps in the method of setting diamonds in a casting which consists in locating a pattern holder and diamonds in a mold, in supporting the diamonds to be set in a pattern holder, and applying air suction to the pattern holder and diamonds to prevent "floating" of the diamonds.

This, obviously, does not embrace the appellants' process. According to this method air suction is applied solely to prevent floating of the diamonds. It is unnecessary to repeat what has been said upon that.

Claim 3 is as follows:

3. The steps in the method of setting diamonds in a molded casting which consists in fashioning seats in a diamond holder to form a pattern holder, seating diamonds in said seats, supporting the pattern holder in a mold, and applying air suction to the diamonds to prevent "floating" of the diamonds.

and to this the same observation applies.

Claim 4 is in these words:

4. The method of setting diamonds in a tool which consists in seating the diamonds in a mold, applying air suction to the diamonds to hold them in situ, and pouring molten metal in the mold to envelope portions of the diamonds.

The method in respect of which the monopoly is claimed is a method of "setting diamonds in a tool" and the steps of the process are:

1. Seating the diamonds in a mold;
2. Applying air suction to hold the diamonds *in situ*;
- and
3. Pouring molten metal into the mold to envelope portions of the diamonds.

The application of air suction here is an application to diamonds which are seated in a mold and, therefore, excludes the appellants' process.

Claim 6 is in these words:

6. In a diamond-setting mold, the combination with means for seating diamonds in the mold, and means for applying air-suction to the seated diamonds to prevent "floating" of the diamonds.

This is a combination claim and the things combined are means for seating diamonds in a mold and the means for applying air suction to the seated diamonds to prevent floating, which is outside the appellants' process.

The appeal should be allowed and the appellants should have judgment with the declaration as prayed and with costs throughout.

Appeal allowed with costs.

Solicitors for the appellant: *Smart & Biggar.*

Solicitors for the respondent: *Henderson, Herridge, Gowing & MacTavish.*

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