

[HIGH COURT OF AUSTRALIA.]

ROSE HOLDINGS PROPRIETARY LIMITED

PETITIONER ;

AND

CARLTON SHUTTLECOCKS LIMITED

RESPONDENT.

H. C. OF A. *Patents—Revocation—Specification—Requirement of full description of invention—*
 1957. *Meaning—Novelty—Prior paper publication—Each publication to be considered*
 { *separately—Patents Act 1952-1955 (No. 42 of 1952—No. 3 of 1955), ss. 40,*
 MELBOURNE, 100 (1) (c), (e), (g).

June 3, 4, 5,
6;

SYDNEY,
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Section 40 of the *Patents Act* 1952-1955 provides that (1) A complete specification (a) shall fully describe the invention, including the best method of performing the invention which is known to the applicant; and (b) shall end with a claim or claims defining the invention. (2) The claim or claims shall be clear and succinct and shall be fairly based on the matter described in the specification.

Held, that the requirement that the invention shall be fully described in the specification means no more than that the inventor shall fully describe what he claims to have invented. It may turn out that what he claims to have invented is not an invention at all because e.g. it is not novel but that would not prevent the specification from complying with s. 40. A full description of the invention does not require the patentee to distinguish between the integers, if any, which are new and those which are old.

Section 100 (1) (g) of the *Patents Act* provides that a patent may be revoked on the ground that the invention so far as claimed in any claim was not novel in Australia on the priority date of that claim.

Held, that where it is alleged that a patent is not novel because the invention has already been disclosed in a prior paper publication each publication must be considered separately and it is not permissible to make a mosaic of publications.

Held, further, that in the circumstances, a petition for revocation of a patent should be dismissed.

PETITION for revocation of patent.

Rose Holdings Pty. Ltd. petitioned, by petition dated 24th July 1956, under Pt. XI of the *Patents Act* 1952-1955 for the revocation of Letters Patent No. 146,286 granted to Carlton Shuttlecocks

Limited for an improved shuttlecock and method of manufacture used in the game of badminton.

The petition was heard before *Williams J.*, in whose judgment hereunder the material facts appear.

K. A. Aickin, for the petitioner.

M. J. Ashkanasy Q.C. and *A. C. King*, for the respondent.

Cur. adv. vult.

WILLIAMS J. delivered the following written judgment :—

Rose Holdings Pty. Limited is petitioning under Pt. XI of the *Patents Act* 1952-1955 for the revocation of Letters Patent No. 146,286 granted to Carlton Shuttlecocks Limited (the priority date for all the claims in the specification being 1st May 1950) for an improved shuttlecock and method of manufacture used in the game of badminton. The specification which is a lengthy document contains twenty-seven claims but during the hearing the respondent abandoned claims 6, 10-16 inclusive and 19-27 inclusive and consented to an order being made for their revocation. This leaves the validity of claims 1-5 inclusive, 7, 8, 9, 17 and 18 in dispute. These are the only claims to which these reasons are intended to relate. Claim 1 is the principal claim and all the rest of these claims are tied to it. Unless claim 1 be valid it might be difficult to support the validity of these subsidiary claims although independent validity is claimed for them. The text of claim 1 is as follows :
 “A shuttlecock comprising a cap, an upper skirt and a lower skirt, and characterised by the cap and lower skirt being connected by stems which vary in thickness without sacrificing width and are connected to at least one other stem by material in the same mass and each stem has a plurality of ribs projecting from it in the area of the lower skirt.” The inventor of the shuttlecock described in the specification is William Charles Carlton and he is the managing director of the respondent company. He gave detailed evidence of the experiments it was necessary for him to carry out before he was able to make the shuttlecock in question. His evidence completely satisfies me that it required a very considerable exercise of inventive ingenuity to achieve this result. According to the *Encyclopaedia Britannica* the game of badminton is by English standards not of great antiquity. It seems not to have been played in England prior to 1873 and to have been an offshoot of the very much older game of battledore and shuttlecock. But its popularity

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has since spread throughout the world. Be that as it may, at the time that Mr. Carlton was making his experiments, the accepted shuttlecock was a projectile which consisted of a nose-cap made of cork into which from fourteen to sixteen goose feathers were inserted in such a way as to make a conical-shaped skirt. To keep the feathers in position the ends of their stems were inserted into holes made to receive them in the nose-cap and also generally but not invariably the stems were bound together by one or more bands made of thread wound around the stems in the area of the upper skirt. The fourth of the laws of badminton requires that “ A shuttle shall weigh from 73 to 85 grains (4.73 to 5.50 grammes) and shall have from 14 to 16 feathers fixed in a cork, 1 inch to 1½ inches (0.025 to 0.028 metres) in diameter. The feathers shall be from 2½ to 2¾ inches (0.064 to 0.070 metres) in length from the tip to the top of the cork base. They shall have from 2⅛ to 2½ inches (0.054 to 0.064 metres) spread at the top and shall be firmly fastened with thread or other suitable material. Subject to there being no substantial variation in the general design, pace, weight and flight of the shuttle, modifications in the above specifications may be made, subject to the approval of the national organisation concerned (a) in places where atmospheric conditions, due either to altitude or climate, make the standard shuttle unsuitable; or (b) if special circumstances exist which make it otherwise expedient in the interests of the game. A shuttle shall be deemed to be of correct pace if, when a player of average strength strikes it with a full underhand stroke from a spot immediately above one back boundary line in a line parallel to the side lines, and at an upward angle, it falls not less than 1 foot (0.30 metres), and not more than 2 feet 6 inches (0.76 metres) short of the other back boundary line ”.

It will thus be seen that a shuttlecock, to comply with the laws of the game, must be of a certain weight, the nose-cap must be of a certain diameter, and the feathers must be to a certain length, and must have a certain spread at the top. The law appears to have been framed on the assumption that a feather shuttlecock complying with these requirements will possess the necessary aerodynamic qualities that the projectile used in the game should have. But the law provides, as will have been seen, that subject to there being no substantial variation in the general design, pace, weight and flight of the shuttle, modifications in these requirements may be made, subject to the approval of the national organisation concerned if, *inter alia*, special circumstances exist which make it otherwise expedient to do so in the interests of the game. Thus,

room is left for the approval of a shuttlecock made otherwise than with feathers if it can reproduce these aerodynamic qualities and shuttlecocks made in accordance with the claims in the respondent's specification have been so approved.

The skirt of a shuttlecock is divided for convenience into two portions, the upper skirt, comprising about half the total length of the skirt commencing from the cap, and the lower skirt comprising its lower half and ending with what is called the trailing edge. The trajectory of a shuttlecock is important. The shuttlecock should have a tendency to rise immediately after it has been struck and should fall sharply at an angle of almost ninety degrees at the end of its flight. When it is struck with a racquet on the end of the nose-cap, that is where it should be struck, it is liable to be deflected by the oscillations imparted to it by the force of the blow causing turbulences in the air. These oscillations, if uncontrolled, are liable to cause the shuttlecock to travel upon an erratic trajectory. The sooner the shuttlecocks turn over and the oscillations cease the truer will be the trajectory. In the case of a feather shuttlecock the oscillations are controlled by the rotations imparted to the shuttle at the trailing edge of the lower skirt by the ridges formed there by the ends of the feathers projecting beyond the region where they overlap. The disadvantages of feather shuttlecocks are that they are comparatively expensive to manufacture and have a short life, that goose feathers complying with the law are difficult to obtain, and that the projectiles vary somewhat in their pace and length of flight due to slight differences in the weight and composition of the feathers. As a result, soon after plastic substances were discovered suitable for moulding by injection or compression, many would-be inventors applied their time and talents in attempting to make a plastic substitute. Mr. Carlton said that after he had carried his experiments to a certain stage he examined the prior state of the art by searching the specifications filed in the Patents Library in London and found there between five hundred and six hundred specifications on the subject. One can only assume that none of these inventors was able to make a satisfactory shuttlecock because none of the shuttlecocks they describe appears ever to have been marketed. Presumably they would not behave as well behaved shuttlecocks should. The shuttlecock conceived by Mr. Carlton has not met with this fate. It has emerged as a projectile which is in every way suitable for the game and has been approved under the laws of badminton. It has the general design, pace, weight, and flight of the feather shuttlecock. It was an immediate commercial success when placed

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on the market. It is now being manufactured by the respondent company and its subsidiaries in West Germany and Denmark at the rate of 80,000 shuttles a day and this output is insufficient to satisfy the demand. Licences have been freely granted to other manufacturers to make it. It is cheaper to manufacture than feather shuttlecocks. It stands up better to the buffetting than such projectiles receive from fervid exponents of the game. It is also more durable.

The petitioner in its particulars objected to the validity of the letters patent upon five grounds: (1) That the complete specification does not comply with the requirements of s. 40 of the *Patents Act* 1952-1955. In particular the patentee does not sufficiently distinguish and point out in the specification which of the matters and things therein mentioned it claims to have invented and which it does not claim to have invented or admits to be old. (2) That the alleged invention so far as claimed in any of the claims is not an invention within the meaning of the *Patents Act*. (3) That the alleged invention so far as claimed in any of the claims was obvious and did not involve any inventive step having regard to what was known and/or used in Australia on or before the priority date of the alleged invention. (4) That the alleged invention so far as claimed in any claim was not novel in Australia on the priority date thereof by reason of (a) prior publication, (b) prior general knowledge. Under (a) the petitioner will rely on:—“(i) The publication as The Public Library Department of Patents Canberra of the specification of the following—United States Letters Patent No. 2,163,236 issued in June 1939. British Letters Patent No. 602,791 published in Melbourne on 5th November 1948. United States Letters Patent No. 2,192,180 issued in March 1940. United States Letters Patent No. 2,212,079 issued in August 1940. United States Letters Patent No. 2,218,593 issued in August 1940. United States Letters Patent No. 2,354,790 issued in August 1944. United States Letters Patent No. 2,338,274 issued January 1944. United States Letters Patent No. 1,620,922 issued March 1927.”

The whole of each of the above specifications is relied upon as against each of the claims of the Letters Patent No. 146,286. “(ii) The publication in the Australian Register of registered designs of design No. 25,750 dated 25th November 1948—class 14 entitled ‘Shuttlecocks’.” (5) The alleged invention did not at the date thereof constitute proper subject matter for the grant of valid letters patent and the petitioner relies on the whole of the matters alleged under par. 4 hereof. But, the petitioner withdrew the

particulars of prior user at the commencement of the hearing and confined itself to the prior paper publications. In the end it relied on the grounds set out in s. 100 (1) of the *Patents Act*, pars. (c), (e) and (g). The ground set out in par. (c) is that the complete specification does not comply with the requirements of s. 40 of the *Patents Act*. Section 40 is in the following terms: “(1) A complete specification—(a) shall fully describe the invention, including the best method of performing the invention which is known to the applicant; and (b) shall end with a claim or claims defining the invention. (2) The claim or claims shall be clear and succinct and shall be fairly based on the matter described in the specification.” Accordingly, in order to comply with this section the inventor in his specification must define the invention clearly and succinctly in the claims at the end of the specification and the invention must be fully described in the specification including the best method of performing the invention which is known to the applicant. The claims must be fairly based on the matter described in the specification. But the requirement that the invention shall be fully described in the specification means no more than that the inventor shall fully describe what he claims to have invented. As consideration for the grant of the monopoly he must disclose the best method of performing the invention which is known to him. It may turn out that what he claims to have invented is not an invention at all. It may not be novel in Australia or it may be obvious having regard to what was known or used in Australia on or before the priority date of the claims. But the specification could comply with s. 40 of the *Patents Act* although it might prove to be a specification of a worthless patent. Section 40 prescribes what a specification must contain. But a full description of the invention does not require the patentee to distinguish between the integers if any which are new and those which are old. A patentee must define what he claims to have invented but there is no requirement that the claim shall distinguish between what is old and what is new: *Allmanna Svenska Elektriska A/B v. Burntisland Shipbuilding Co. Ltd.* (1); *Martin and Biro Swan Ltd. v. H. Millwood Ltd.* (2); *Sonotone Corporation v. Multitone Electric Co. Ltd.* (3); *Terrell and Shelly on Patents*, 9th ed. (1951), pp. 95, 96. The present specification in my opinion complies with the requirements of s. 40.

The crucial question is whether the claims in dispute can be attacked on either of the grounds contained in pars. (e) and (g) of sub-s. (1) of s. 100 of the *Patents Act*. Paragraph (e) provides

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(1) (1951) 69 R.P.C. 63, at p. 72.
(2) (1956) 73 R.P.C. 125, at p. 132.

(3) (1955) 72 R.P.C. 131, at pp. 139,
140.

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that a patent may be revoked on the ground that the invention, so far as claimed in any claim, was obvious and did not involve any inventive step, having regard to what was known or used in Australia on or before the priority date of that claim. Paragraph (g) provides that the patent may be revoked on the ground that the invention, so far as claimed in any claim, was not novel in Australia on the priority date of that claim. In my reasons for judgment in *H. P. M. Industries Pty. Ltd. v. Gerard Industries Limited* (1) I referred to the meaning placed upon this ground in the *Patent Act* 1949 (Imp.) corresponding to par. (e) by the Court of Appeal in *Allmanna Svenska Elektriska A/B v. Burntisland Shipbuilding Co. Ltd.* (2) and by the House of Lords in *Martin and Biro Swan Ltd. v. H. Millwood Ltd.* (3) and I will not repeat what I said there. I expressed the opinion that in Australia the law as it existed prior to the *Patents Act* 1952-1955 relating to the failure of an invention for want of novelty has not been altered by anything in par. (g). In other words, where it is alleged that a patent is not novel because the invention has already been disclosed in a prior paper publication, it is still not permissible to make a mosaic of such documents. Each publication must be considered separately. "The specification alleged to constitute anticipation must contain within its own four corners the whole of the invention impugned, together with clear directions for making it effective. In the language of *Holker L.J.* in *Otto v. Linford* (4), 'the specification which is relied upon as the anticipation of an invention must give you the same knowledge as the specification of the invention itself' " per *Jenkins L.J.*, in the *Allmanna Case* (5).

It would be difficult for the law relating to novelty to be otherwise because the question is whether the alleged invention is a new manufacture and this can only be decided by comparing it with prior manufactures whether the prior manufacture has been disclosed by describing it on paper or revealed by some prior user. Unless the disclosure is such that it would tell a skilled craftsman all he wanted to know to solve the same problem the alleged invention would at least be novel.

Assuming it to be novel, the next question is whether it was obvious and did not involve any inventive step having regard to what was known or used in Australia on or before the priority date of the claim. In the solution of this question the Court must ask itself whether the alleged invention would have been obvious

(1) (1957) 98 C.L.R. 424.

(2) (1951) 69 R.P.C. 63.

(3) (1956) 73 R.P.C. 125.

(4) (1882) 46 L.T. 35, at p. 44.

(5) (1951) 69 R.P.C., at p. 68.

to a hypothetical skilled craftsman having regard to the common general knowledge in the art which must be presumed to be a part of his skilled equipment and taking into account all the public general knowledge disclosed by any prior document or prior user with which he must be presumed to have made himself acquainted before grappling with the problem. In the present case the relevant art is presumably the art of plastic moulding as it was known or used in Australia prior to 1st October 1950. But there is no evidence that any plastic shuttlecocks had been used in Australia prior to this date. The first plastic shuttlecocks used in Australia were the respondent's shuttlecocks and they were first imported in February 1951. Since then, these imports have continued and the shuttlecocks have also been manufactured locally under licence. A craftsman in the art of plastic moulding who was set the task of making the respondent's shuttlecock prior to October 1950 would have had at his disposal only the knowledge disclosed by any documents to which the public had access prior to that date. The only documents in evidence are the eight specifications and the registered design itemised in the petitioner's particulars. They were all available to the public in the Patents Library at Canberra prior to this date. But Mr. *Aickin* did not in his address place any reliance on the registered design and it would have been difficult for him to do so because it is a design of a shuttlecock made out of fabric and does not in my opinion disclose anything that could be of any assistance to a skilled craftsman searching the prior art. Before coming to the specifications one of which, that of Phillpotts, was strongly relied upon by Mr. *Aickin*, it will be convenient to refer shortly to Mr. Carlton's evidence and to the respondent's specification in order to ascertain the true nature of the invention claimed. It is unnecessary to set out Mr. Carlton's evidence in any detail. He gave a full and interesting account of the various experiments he carried out before achieving his object. Firstly he made a careful examination of feather shuttlecocks and soon realised that the extreme lightness of a natural feather could not be obtained in an artificial feather and that artificial feathers were therefore useless because it only required the slightest addition to the weight of the natural feathers to upset the performance of a feather shuttlecock. He thought at first that the capacity of a feather shuttlecock rapidly to overcome the initial oscillations imparted to it by being struck on its nose-cap with the racquet and to turn over and pick up its proper trajectory was due to its light weight because he found that it lost this capacity as soon as the slightest addition was made to its weight. He made a shuttle-

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cock with a skirt of foil which was as light as a feather shuttlecock but the foil shuttlecocks when struck, unlike the feather shuttlecocks, continued to oscillate as long as they were in flight. This led him to conclude that more than lightness was required to overcome the oscillations. He found that feather shuttlecocks rotated when they were struck and that this rotation was due to the ridges caused by the ends of the feathers overlapping the end of the lower skirt. He put a series of flutes around the skirt of the foil shuttlecock to make it rotate but it became too heavy and continued to oscillate on account of its weight. He then discovered that the oscillations could be controlled by making holes in the foil but the shuttlecock would still not fly on a proper trajectory because the skirt was not stiff enough. He put stiffeners in the skirt and it then had very much the same performance as the feather shuttlecock. But it was not durable enough because when foil is fluted most of the stiffness is at the bottom of the skirt whereas, if a shuttlecock is to last, the stiffness should be at the top closest to where the shuttle is struck with the racquet. Mr. Carlton then by injection moulding attempted to make a plastic shuttlecock having plastic feathers similar to the natural feathers. But he was unable to make a tool to mould plastic feathers of the necessary lightness. Finally he succeeded in making a mould in which the plastic material would flow from the nose-cap down a series of stems in the shape of a conical skirt and out of the stems in the area of the lower skirt to form a series of horizontal ribs between the stems there. This led to the invention claimed. The lower skirt is very light and there are spaces between the stems in the upper skirt and between the stems and ribs in the lower skirt through which air can flow and create counter-turbulences which counteract the turbulences set up by the flight of the projectile when first struck. The initial oscillations are rapidly damped out and the shuttlecock turns over and takes up its proper trajectory as an effective shuttlecock should do. These counter-turbulences also induce drag and prevent the shuttlecock flying too great a distance. Mr. Carlton said that the essential features of the invention are that to provide the requisite skirt having the necessary aerodynamic qualities and durability each vertical stem must be integral with at least one other stem, all the stems preferably being integral with each other, and that there should be a plurality of ribs between the stems in the lower skirt. In the body of the specification it is stated that the invention is devoted to showing methods of construction and manufacture which will permit a shuttlecock, or certain parts of a shuttlecock to be made, which will have strength

and delicacy where each is required, and yet be made extremely quickly, without assembly operations, in one mass of material. Ten objects of the invention are then set out. It is unnecessary to refer specifically to all of them. It is sufficient to refer to the first three. The specification states that: "The first object of the present invention is to enable at least two stems of a shuttlecock to vary in thickness without sacrificing width, and be made in the same mass of material. The second object of the invention is to enable the upper and lower skirts of a shuttlecock to incorporate stems as in object one and to be made in the same mass of material. The third object of the invention is to enable the upper and lower skirts and the cap of a shuttlecock (less any covering of leather or the like) to be made in one mass of material." The specification tells us how these objects are to be achieved: "The first object of the invention is achieved by injection moulding through an end cap a number of fine tapered rods, the injection being made at the big end of each rod, and arms being grown on each side of the rod at a distance from the end so that the injected material will reunite at the ends of these arms and thus make one mass. A suitable plastic material is used. The second object of the invention is achieved as in the first object except that the invention is that in addition to the arms growing from each rod, a number of ribs, or a leaf are made to grow under pressure at the fine end of each rod, and the group of ribs or leaves forms the lower skirt. The third object of the invention is achieved by starting the injection at an earlier stage, so that before flowing up the tapered rod spaces the material flows round a small bowl, and, after removal of the injection pip, this part becomes the cap of the shuttlecock."

The first claim has already been set out. It claims what Mr. Carlton said was the essence of the invention. That is to say it is a claim for a shuttlecock characterised by the cap and lower skirt being connected by stems which vary in thickness without sacrificing width and are connected to at least one other stem by material in the same mass and each stem has a plurality of ribs projecting from it in the area of the lower skirt. A stem is defined in the specification to mean: "... a body of material which connects the cap to the lower skirt and merges into it. The stem is thicker at the point where it leaves the cap than the material between the stems in the lower skirt, and preferably reduced in cross-sectional area as it approaches the trailing edge of the lower skirt. Each stem is integral with another stem, the connection being made at least in the cap, or upper skirt or lower skirt. The connection must, therefore, be in the same mass of material as

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the stems themselves. Preferably all the stems of the shuttlecock are integral with each other.” One may wonder at first sight why the claim is for a shuttlecock in which each stem need only be joined to one other stem in the same material. This description includes of course the preferred form of manufacture where the stems are all connected to one another by a plurality of ribs in the lower skirt. The claim as drawn has the advantage of being in sufficiently wide terms to prevent anyone seeking to pirate the true merit of the invention from contending that there would be no infringement if all the stems were not integral with one another, and Mr. Carlton said that the shuttlecock there described would be quite effective. The claim requires that the stems should be stems which vary in thickness without sacrificing width. Stem is defined in the body of the specification as a stem which is thicker where it leaves the cap than the material in the lower skirt. The reduction in thickness is one way of providing lightness in the lower skirt. It is not apparent to me however why this desideratum must be obtained by reducing the thickness of the stem but not its width. In the body of the specification it is further stated that to come within the requirements of the invention each stem would have to be connected to at least one other stem by a connexion in the same material and would vary in thickness either in the main body of the stem or in the connexion between the main bodies. No reference is here made to any necessity not to sacrifice the width in the process. But the inventor has chosen to prescribe that the width must not be sacrificed. In re-examination he said that it was the Saunders patent No. 2,212,079 the specification of which described a shuttlecock made substantially with foil that prompted this prescription because otherwise it may have been possible to conceive making a shuttlecock in foil “which would not meet the requirements of our invention”. I do not understand this evidence but it does not seem to matter because Mr. *Aickin* made no use of it and it was not suggested that a skilled craftsman would not be able to make a mould to carry out this requirement. Its effect is probably somewhat to narrow the claim for a reason not at all apparent.

The stage has now been reached where the prior specifications may be examined. The only prior specification that could possibly be relied upon as an anticipation of the claims still in dispute is Phillpotts’ specification. There is a provisional and a complete specification. These specifications describe a shuttlecock formed wholly or partially by moulding plastic materials. In the provisional specification it is stated that in one form of the invention the

“quills or feathers are each moulded separately from a suitable composition and include a stem portion of substantial thickness and of about half the length of the whole quill, the remainder being formed by a very thin but wider flight portion; this part being formed superficially to resemble a feather or flight with outwardly extending grooves or ribs running from a central rib extending lengthwise and forming a continuation of the stem . . . in another form of the invention the whole assembly or ring of quills is moulded in one piece In this case the separate quills, which in the first-mentioned construction, would overlap at the flared part, now merge one into the other in the enlarged or flared portion and may be formed superficially to have the appearance of overlapping elements although actually formed in one piece.” In the complete specification it is stated that “The assembly of artificial feathers or quills is preferably formed to simulate the ordinary arrangement of natural feathers or quills in shuttlecocks, comprising leaf-shaped foliate portions in overlapping ring-like relation, the successive foliate portions merging one into the other but providing tangentially directed ridges formed by the continuation of each foliate portion in the outward direction beyond the point of merging with the adjacent foliate portion. The assembly is of conical form in the manner of the usual shuttlecock and each foliate portion has its maximum dimension at the largest diameter end of the assembly and tapers off to a stem which is attached to or formed with a cap. The said ridges are formed by the projecting portions of each foliate portion and hence the edges of such ridges are directed at an angle to the axis of the assembly and tend to cause rotation of the shuttlecock in flight.” It is also stated that “to give added strength the stems may be connected by moulded-in ties and, further, each foliate portion may include a thickened ‘spine’ in line of the stem”. In the illustrations the stems in the upper skirt are thicker than those in the lower skirt, there are spaces between these stems in the upper skirt, and the artificial feathers in the lower skirt have a central stem with ribs extending from it around their circumference. Mr. *Aickin* contended that in these specifications there is a complete disclosure of the whole of the respondent’s invention in the sense that any skilled craftsman who wanted to make it would find there all the information he required for the purpose. He submitted that they disclosed the combination of stems and ribs in the lower skirt which is the essence of the plaintiff’s invention. I am unable to accept this contention. Phillpotts’ specifications are in my opinion directed and directed only to producing in plastic a shuttlecock of the same nature as a feather shuttlecock with artificial

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feathers replacing the natural feathers. The grooves or ribs he described are grooves or ribs to give the artificial feathers the appearance of natural feathers. His idea was to place the artificial feathers in the same juxtaposition as natural feathers so that their overlapping would cause the plastic shuttlecock to rotate in the same way as the feather shuttlecock. But it will not do so, presumably because the lightness of natural feathers cannot be reproduced in plastic feathers. The information disclosed in these specifications would in my opinion be far more likely to mislead a skilled craftsman in search of sufficient information to enable him to make the respondent's shuttlecock than to assist him. It would suggest an altogether different form of manufacture. The essence of the respondent's invention is that it discards feathers or any artificial substitutes for them. It provides an altogether different kind of lower skirt. It is true that Phillpotts' specifications disclose an upper skirt with spaces between the stems, a moulded bank around the skirt to strengthen the stems where the upper and lower portions join and state that each foliate portion may include a thickened spine in line of the stem to give it strength. But he is referring to the upper stems and the spine or central ribs of his artificial feathers. Natural feathers have upper stems, that is stems extending beyond the feathered portion, and central spines and this information would suggest to a skilled craftsman nothing more than certain precautions which it might be desirable to take if he was attempting to make a lower skirt of artificial feathers. There is no suggestion anywhere that in a plastic shuttlecock such a skirt should be discarded and replaced by an openwork skirt made of stems and connecting ribs. The other specifications can be briefly disposed of. They describe attempts to make shuttlecocks the flight portions of which are made of some other material than feathers. The manufactures they describe are very different from the respondent's invention. The two Collier specifications describe plastic shuttlecocks the flight portions of which are made of conical vanes. In the earlier specification, No. 2,163,236 the conical vanes have flutes or fins on their exterior and a number of holes in them and it is stated that suitable apertures formed in the member reduce vacuum formed behind the member on its flight through the air and control its apparent buoyancy by reducing the vacuum drag. This assertion, according to Mr. Carlton, is quite incorrect because the effect of the holes would not be to reduce drag but to increase it. In the later specification, No. 2,192,180, the vanes have a plurality of corrugations running substantially at right angles to that of the longitudinal axis of the

shuttle. The Ushakoff specification is more informative. It has a flight portion consisting of a vane with holes in it. Ushakoff states, correctly according to Mr. Carlton that: "The holes offer a considerable resistance to the flow of air through them and cause a turbulence. They thus induce a drag which limits the distance and controls the trajectory of the flight of the shuttle; and at the same time, being located near the larger end of the vane where the amplitude of oscillation is greatest, are very effective in absorbing quickly the oscillatory energy of the shuttle whether the shuttle is struck a light or a very heavy blow and in maintaining its flight directionally stable." The first claim in this specification is for "A shuttle for the game of badminton comprising head and vane portions, said vane portion consisting of a thin, seamless, jointless generally conical member of homogeneous colloidal material provided in its upper half with drag-inducing holes of substantial aggregate area whereby the distance of flight of the shuttle is limited and the direction of its flight stabilized." The information disclosed in this specification might become important if claim 1 of the respondent's specification failed, and an attempt was made nevertheless to support the independent validity of claims 7, 8 and 9. The remaining three specifications all describe shuttlecocks of very different manufacture to that of the respondent. They recognise that rotation is imparted to a feather shuttlecock by the ends of the feathers projecting beyond the assembly and thereby forming ridges. Yancey tries to improve this rotation by providing a number of stems with threaded sleeves shaped rather like feathers with spaced pitched vanes, each vane having an aperture in it. So far as the evidence goes, none of these shuttlecocks was of any use. According to Mr. Carlton the respondent's shuttlecock is the only plastic one on the market.

When the hypothetical skilled craftsman had been to Canberra and spent some time there reading the disclosures in these specifications he would have been told by quite a number of would-be inventors all about the alleged disadvantages of the feather shuttlecock and the advantages such as cheapness of manufacture and durability that a plastic shuttlecock should have over it. But what he would want to know was how to make a plastic shuttlecock embodying these advantages that would be at least as effective a projectile as a feather shuttlecock. It would not have helped him much to know that a plastic shuttlecock could be moulded partially or in one piece. What he would want to know was how to make a shuttlecock that would perform properly. Mr. Carlton's evidence, which is uncontradicted, is that none of these shuttlecocks

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would do so. These specifications may have disclosed information relating to some of the claims that have now been abandoned. Mr. Carlton admitted that Phillpotts' specification anticipated some of these claims. But with these claims I am no longer concerned. The claim still in dispute closest to Phillpotts' specification is claim 4. This claim relates to a shuttlecock as in claim 1 in which at least one connexion between the stems is in the area of the lower skirt in the form of a thin leaf in the same mass of material for making a vane and speeding production. But this form of thin leaf would not be suggested by the leaves described in Phillpotts' specifications because it is between the stems whereas in Phillpotts' leaves the stems like those in natural feathers are in the centre of the leaf. The disclosures contained in Collier's and Ushakoff's specifications might be material if I thought claim 1 were invalid and the question arose whether claims 7, 8 and 9 could nevertheless survive because of the additional integer they contained. Claims 17 and 18 relate to a particular method of manufacturing the shuttlecock described in claim 1. If claim 1 were invalid this particular method of making the ribs could hardly give these claims independent validity. But none of these questions arises because I am of opinion that this claim is valid. I have reached this conclusion without relying upon the immediate commercial success of the respondent's shuttlecocks when they were placed on the market. The conditions which make such a success powerful evidence of inventive ingenuity are well established. The passage relating to them usually cited appears in the judgment of Tomlin J. in *Samuel Parkes & Co. Ltd. v. Cocker Bros. Ltd.* (1): "The truth is that, when once it had been found, as I find here, that the problem had waited solution for many years, and that the device is in fact novel and superior to what had gone before, and has been widely used, and used in preference to alternative devices, it is, I think, practically impossible to say that there is not present that scintilla of invention necessary to support the patent" (2). The evidence proves that the problem solved by Mr. Carlton, that is how to make an effective plastic shuttlecock, had awaited solution for many years, that many inventors had attempted to solve it and had failed, that the respondent's shuttlecock was in fact novel and has been widely used and used in preference not to alternative plastic devices because there is none on the market but even to the time-honoured feather shuttlecock.

For these reasons I am of opinion that the petition fails except as to the claims of the respondent's specification which have been

(1) (1929) 46 R.P.C. 241.

(2) (1929) 46 R.P.C., at p. 248.

abandoned. It is not easy to decide what would be an appropriate order for costs in all the circumstances. It would not be proper to order the petitioner to bear the whole of the costs of the petition but I am of opinion that it should bear most of them. It prayed that the letters patent should be revoked or in other words challenged the whole of the claims. I feel little doubt that claim 1 and the claims appendant to it were its main target and the attempt to invalidate these claims has failed. An order that the petitioner should pay two-thirds of the respondent's costs would be, I think, not inappropriate. I order that claims 6, 10-16 inclusive and 19-27 inclusive be revoked and that the respondent lodge at the Patents Office a disclaimer of these claims. I certify that the validity of claims 1-5 inclusive, 7-9 inclusive, 17 and 18 came in question in the petition. I order the petitioner to pay two-thirds of the respondent's costs of the petition.

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Order that claims 6, 10-16 inclusive and 19-27 inclusive of Letters Patent No. 146,286 be revoked and that the respondent lodge at the Patents Office a disclaimer of these claims. Otherwise petition dismissed. Certify that the validity of claims 1-5 inclusive, 7-9 inclusive 17 and 18 came in question in this petition. Order the petitioner to pay two-thirds of the respondent's costs of the petition.

Solicitors for the petitioner, *Smith & Emmerton.*

Solicitors for the respondent, *Malleson Stewart & Co.*

R. D. B.