

[HIGH COURT OF AUSTRALIA.]

JOHN MCILWRAITH INDUSTRIES LIM-
TED } APPELLANT ;
DEFENDANT,

AND

PHILLIPS RESPONDENT.
PLAINTIFF,

Patent—Validity—Invention—Objection—Want of subject matter in that no inventive
step involved—Scope of objection—Meaning of inventive step—Patents Act
1952-1955 (No. 42 of 1952—No. 3 of 1955), s. 100 (e).

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The defence to an action for infringement of a patent was invalidity of the patent on the ground that the alleged invention involved no inventive step. The plaintiff claimed to have invented an improved float valve. The evidence showed that while the plaintiff's valve did not incorporate any new mechanical principle the use made of the principle on which it functioned was not analogous to any prior user and was not the subject of any "paper anticipation".

MELBOURNE,
May 14;
Oct. 14.
—
Dixon C.J.,
McTiernan
and
Fullagar JJ.

Held, that in the circumstances the invention did involve an inventive step and the patent was valid.

Observations on the scope of the objection of want of subject matter in *H. P. M. Industries Ltd. v. Gerard Industries Ltd.* (1957) 98 C.L.R. 424 approved.

Decision of *Taylor J.* affirmed.

APPEAL from *Taylor J.*

On 30th November 1955 Malcolm Tarlton Phillips commenced an action in the High Court of Australia against John McIlwraith Industries Ltd. claiming, *inter alia*, an injunction restraining the defendant from infringing Letters Patent No. 137286 granted to the plaintiff and dated 20th August 1947 in respect of an invention entitled "An improved float valve".

The action was heard before *Taylor J.* who, in a written judgment delivered on 11th December 1957, held that the plaintiff was entitled to the relief sought.

From this decision the defendant appealed to the Full Court of the High Court.

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The facts and the arguments of counsel are set out in the judgments hereunder.

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L. Voumard Q.C. and *R. L. Gilbert*, for the appellant.

H. G. Alderman Q.C. and *A. C. King*, for the respondent.

Cur. adv. vult.

Oct. 14.

The following written judgments were delivered :—

DIXON C.J. This appeal is brought by the defendant in an action for infringement of a patent. The original jurisdiction of the Court to entertain the action is conferred by s. 113 of the *Patents Act* 1952-1955 read with s. 5 (2). The patent goes back to 20th August 1947. The defence was invalidity and the defendant counter-claimed for revocation. The objection to validity was want of subject matter inasmuch as the alleged invention involved no inventive step. The scope of that objection having regard to s. 100 (e) of the *Patents Act* 1952-1955 was discussed by *Williams J.* in *H.P.M. Industries v. Gerard Industries Ltd.* (1). As will be seen the decision of the present case proceeds upon the assumption that the view adopted by his Honour that the scope of the objection has been enlarged is correct. By the judgment appealed from the counter-claim was dismissed and an injunction during the continuance of the patent against infringement by the defendant was granted.

The invention the subject of the patent relates to an improved float valve. A float valve is used in cisterns troughs and the like and is a means by which a floating ball carries up the arm of a lever as the cistern or other vessel fills and, by means of a sliding valve worked by the lever, closes the orifice whence the water or other liquid issues. The valve is formed of a cylinder containing a sliding plunger or piston which is moved against the aperture through which the water flows and so shuts it off. In such a device the hollow ball at the end of the horizontal lever is raised vertically by the rising water in the cistern or other reservoir. Of course the sliding piston or plunger must be pushed horizontally and held by a horizontal force against the orifice. The vertical force provided by the rising ball is transmuted into a horizontal force by means of a turn at right angles of the lever. The arm or lever is turned upwards at the other end and is pivoted at the angle. The vertical section of the bent arm forming the lever then turns upon the pivot as a fulcrum and exerts its force upon the sliding plunger or piston and moves it forward to shut the aperture or orifice through which the water flows. The

practice, before the alleged invention came into use, was to place a cam at the end of the lever to enmesh with a slot or cavity in the piston or plunger for the purpose of moving it forward. The cam was thrust through a slot in the cylinder in which the piston or plunger moved and then into the slot or cavity of the piston. The invention claimed by the plaintiff respondent is concerned with a substitute for the cam, its mode of engagement and of pivoting. Under the practice followed before the alleged invention took effect, the water coming from the main supply was held by the pressure upon the piston and cam so that it could not enter the cylinder or chamber. This pressure was exerted when the water rose and the floating ball raised the arm so that the cam set at right angles to it was moved forward in its cavity or slot in the piston or plunger and thus thrust the latter against the orifice through which the water would otherwise discharge. The chamber is cylindrical and when the orifice or aperture is open the water turns at right angles and is discharged through a vent or short pipe into the cistern or reservoir. According to the then prevailing practice the cylinder contained a round sliding metal piston or plunger of such a diameter that it fitted closely the bore of the cylinder. At the end which would be pressed against the aperture forming the inlet of water to the cylinder the piston was provided with a washer held by flanges of the metal. On one side of this cylindrical shaped valve or plunger it was the practice to cut out a section or a slot for the purposes of taking the cam of the pivoted arm or lever which has so far been referred to by the word cavity. The cam was flat and necessarily was not thick. Its thickness could only be such as would mean that it occupied but a relatively small proportion of the space provided by the section cut from the cylindrically shaped plunger. The flat cam was circular in shape at the top and narrowed at the neck where the hole for the pivot occurred. There was a slot cut in the cylindrical chamber on the underside for the purpose of admitting the cam. The piston or plunger was inserted into the chamber, the section that had been cut out being placed opposite this slot and the cam fitted through the slot into the cavity. A split pin or the like was passed through holes in the walls of the cylinder and through the pivot hole in the cam. By the split pin the arm and cam were at once pivoted and secured. The movements up and down of the hollow ball and the attached arm forced the plunger forwards and backwards thus closing and opening the orifice through which the water flows.

The foregoing is an account of a form of float valve constructed according to the practice prevailing at the time when the plaintiff applied for this patent. It was called a Doulton or Portsmouth type.

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Doubtless in other types there were variations in method but the Doulton article appears to form a good example of the practice that was current. There were certain disadvantages in the method, disadvantages which for the most part appeared in the methods of manufacture and in the costs of production. The defects imputed to what may for shortness be called the Doulton float valve may be stated very briefly. In the first place it is said that to employ a cam inserted through a slot and pivoted thereabouts was to make it impracticable to provide an accurate fitting. It was necessary to cast, grind, file and fit the cam, fit it to the slot. The slot itself, it was said, had to be milled or broached, that is, no doubt, worked by hand with a broach. All that meant a slow and tedious process where inaccuracies would occur through human error. Moreover, it is said to have been too expensive for it to be possible economically to produce a close smooth-fitting result. The slot was in the body of the cylinder which was sand cast or hot pressed. There could be no automatic machining. One result of the imperfect fitting of the cam, so it was said, manifested itself in a tendency to wear and then to jam. The thrust of the cam was not centred in the axis of the piston. It might swing to the side and jam between the piston and the wall of the cylinder. The fulcrum of the cam was formed of a narrow pivot.

The essence of the invention claimed by the plaintiff lies in the substitution of another mechanism for the cam, for the form of cavity or slot in the piston and for the slot in the cylinder. The invention begins by postulating a cylindrical bore and a plunger or piston (called by the specification a valve member) which is cylindrical and slides within the cylindrical bore. It postulates too the floating ball on one end of the lever arm. But, these things postulated, the elements which provide the improvements are substituted. There is to be no longer a cam, a slot in the under-part of the body of the cylinder to receive a cam; nor is there to be a section crudely removed from the piston in order to engage the cam. Instead of the cam there is to be a ball forming the end of the upturned section of the lever. Below that another ball forms part of the section. The upper ball is engaged in a round socket bored in the piston or plunger. The lower ball is pierced so that the pin on which it pivots may go through it, whether a split pin or some other pivot pin forms the fulcrum. The lower ball occupies the space in the under-part of the cylinder through which the vertical part of the lever is inserted. The pin is thrust at that point through holes in the cylinder wall and the hole in the ball. A wide pivot is thus provided to form the fulcrum. The round socket in which the upper ball engages is counter-bored

so that below it the diameter of the circular boring is made sufficiently wide to enable the vertical part of the lever to move through wide enough limits. It should be remarked that the lower of the two balls in the vertical part of the lever is not made essential in all the claims and in the specification is saved from indispensability by the adverb "preferably". But clearly it has its importance. The specification asserts as the feature of the invention first for mention that a ball on the pivoted arm is adapted to operate in a cylindrical bore in the "valve member", that is the plunger or piston. The specification goes on to say that the ball on the pivoted arm is adapted neatly to engage in the cylindrical bore in the piston in order to provide the movement for the piston from the float and so control the inlet and outlet of the liquid. In favour of using a second or lower ball where the pivot is placed, it is said that it will tend to seal the body of the cylinder and will increase the bearing surface for the pivot.

The advantages which the specification attributes to the form of construction specified include the following. There is less resistance in pressing the piston forward or for that matter back. This is so because the contact between the ball and bore in the piston in which it is housed is on the curved surface of the ball, so that a minimum amount of resistance is given to the axial movement of the valve member. There is a larger bearing surface in the pivoted arm. Wear is thus reduced. The valve can be manufactured without the use of castings and without undue machining of working surfaces. The component parts may be turned from solid metal so that the speed of manufacture may be increased. It is said too that, in manufacture, it is possible without much difficulty to turn from solid metal the important section and to do so producing great numbers. The section is that consisting of the two balls and an extension below into which is inserted or screwed the long lever carrying on the other end the float. It is said that because the upper ball is spherical it is only necessary for it to make a neat fit in the cylindrical bore in the piston or plunger.

In varying degrees the evidence supported the assertion of these virtues in the alleged invention. The specification concludes with nine claims but it seems necessary to refer to comparatively few of them. The first claim is as follows:—"1. In float valves of the type in which the float is coupled to a pivoted arm to operate a valve member improvements characterised by; a ball on the operative end of the pivoted arm and a cylindrical bore in the valve member to neatly engage the ball on the pivoted arm, said valve member being cylindrical in form and being slidable in a cylindrical bore in the

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body of the valve.” The fifth claim adds an element to this and other preceding claims, viz. the counter-boring of the cylindrical bore in the valve member or piston. For the purpose of this appeal it is unnecessary to deal with every claim: indeed many of the claims may be disregarded. It will be seen that the subject of the first claim is described as improvements in float valves of a then existing type. The improvements are those already described in this judgment. It will be noticed too that among the improvements the use of the lower ball is not mentioned in the first claim. That is introduced as a further element in the second claim, which otherwise resembles the first.

There is no doubt that the plaintiff took the step of introducing the improvements consisting in the substitution of the ball for the cam and of the cylindrical bore in the piston or “ valve member ” to receive the ball. The purpose remained, namely, that the lever might operate the piston. But the purpose was fulfilled in another and better way. In the case of certain of the claims in the specification there are added as essential features the lower ball for the pivot pin and the counter-boring. There is no doubt that the introduction of these elements into a float valve was entirely new. Further, the evidence makes it clear enough that it was a step that was highly useful.

The question in the case is whether it was an inventive step. The defendants’ objection could be expressed almost in the language which, little short of a century ago, Lord *Westbury* employed in *Harwood v. Great Northern Railway Co.* (1), viz.: “ You cannot have a patent for a well-known mechanical contrivance merely when it is applied in a manner or to a purpose, which is not quite the same, but is analogous to the manner or the purpose in or to which it has been hitherto notoriously used ” (2). The defendant says that a ball and socket joint is a commonplace, that to insert a pivot when the movement desired is confined to one plane is an obvious practice and that the substitution of such parts for the cam, for the slot in the underside of the cylinder and for the cavity in the plunger was nothing but the application of a well-known method to an analogous purpose. It meant no more, so it was argued, than the adaptation and substitution of well-known equivalents without exhibiting any inventive ingenuity. The passage from Lord *Davey’s* judgment in *Riekmann v. Thierry* (3) was quoted: “ It is not enough that the purpose is new or that there is novelty in the application, so that the article produced is in that sense new, but there must be some novelty

(1) (1865) 11 H.L.C. 654 [11 E.R. 1488]. (2) (1865) 11 H.L.C., at pp. 682, 683 [11 E.R., at p. 1499]. (3) (1897) 14 R.P.C. 105.

in the mode of application. By that I understand, that in adapting the old contrivance to the new purpose, there must be difficulties to be overcome, requiring what is called invention, or there must be some ingenuity in the mode of making the adaptation" (1). The defendant in answer to the plaintiff's reliance on the advantages which he ascribed to his alleged invention, not unnaturally went back to the old doctrine that advantages do not establish invention; if you apply an old device or known mechanical method to an analogous purpose you cannot obtain a patent simply because advantages are produced not hitherto secured.

The defendant amplified its reliance upon general public knowledge by bringing before the Court, at a late stage, an American specification presumably published here before 20th August 1947, the date of the plaintiff's application for his patent. The specification, so it contends, shows that a lever with a ball and socket joint had been put forward in connexion with a float valve. Literally that is so. But when the specification is examined with the drawings, the knowledge they supply does not strike one as carrying the thoughts of a person looking for the result embodied in the plaintiff's article any further than would his common general knowledge. The whole device disclosed by the American specification is far away from the invention claimed by the plaintiff. All the citation does is to show that the arm of the lever carrying the float was given a fulcrum some distance from its other end and at that other end there was a ball and socket joint from which a vertical plunger was suspended so that it could be moved downward to shut off a horizontal flow of water. One may venture to say that to study the specification would not have suggested the construction claimed by the plaintiff.

It is necessary to come back to the question whether, notwithstanding the considerations advanced by the defendant, the step which the plaintiff embodies in his specification and in certain of his claims was not sufficiently inventive. Of course that means sufficiently inventive having regard to the knowledge available concerning float valves and to the more general knowledge of mechanical and engineering principles and practice and of the mechanical and engineering expedients that at that time were open. The suit was heard by *Taylor J.* from whose judgment the appeal comes and his Honour's answer to the question whether there was an inventive step is expressed as follows:— "The defendant's contentions in the case, it seems to me, are aptly described as asserting, in the language of *Maugham J.* in *Adelmann and Ham Boiler Corporation v. Llanrwst Foundry Co.* (2), that 'the alleged invention,

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(1) (1897) 14 R.P.C., at p. 121.

(2) (1928) 45 R.P.C. 413.

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though possessing the advantages of being an excellent design, is simply the application of a well known and well understood piece of mechanism to achieve an obvious advantage, and is not the proper subject of letters patent' (1). In my opinion, such a conclusion is not open on the facts of the case. Whilst it must be conceded at once that the plaintiff's valve does not incorporate any new mechanical principle it is, I think, clear that the use made of that principle was in no way analogous to any prior user proved by the evidence. Nor was it the subject of any 'paper anticipation'. Upon the evidence the plaintiff made a new and not obvious use of a known mechanical device and the adaption of that principle in the manufacture of his valve was the result of inventive skill."

The question of inventive step is one of degree and often it is by no means easy. To decide the question in the present appeal it has been necessary to give close consideration to the examples of the old method put in evidence and to the device embodied in the specification and the claims that have been made. Such a consideration leaves one reasonably satisfied that the improvements, or if you like the changes, made by the plaintiff in the construction of the valve involved a step fulfilling the conditions upon which the title or description "inventive step" legally depends. It is not the kind of improvement or development that could have been achieved without the use of ingenuity, as well as a knowledge of available engineering expedients. Such a knowledge alone would not suffice without the exercise of the inventive faculty. Doubtless the inventor's general knowledge of engineering or mechanical principles and expedients included the use of a ball and socket joint, of a pivot and of a counter-bore. But it remained to take these pieces of knowledge from his general stock and to use his ingenuity to apply them in such a way as would produce the desired result. Difficulties existed which were overcome. What he brought into being is not such a development as a person of ordinary skill in the relevant art could, if he wished to do so, make naturally and in the ordinary course: cf. *Place v. Blackburn Loom and Weaving Machinery Making Co. Ltd.* (2) per *Hamilton L.J.* The phrase "matter of routine" could certainly not be applied to the invention, a phrase that has been applied in relation to new chemical products: cf. *Sharp & Dohme Inc. v. Boots Pure Drug Co. Ltd.* (3).

On the contrary the claims that have been mentioned and the specification describe and contain a development requiring inventive skill to make it.

The appeal should be dismissed.

(1) (1928) 45 R.P.C., at p. 420.

(2) (1912) 29 R.P.C. 656, at p. 663.

(3) (1927) 44 R.P.C. 367, at p. 402.

McTIERNAN J. The order appealed from restrains the appellant from infringing letters patent of an invention described as "An improved float valve". The appeal turns upon the question whether the invention lacks proper subject matter for the grant of a patent. A float valve is a device for controlling the flow of water into a cistern. The force resulting from the rise and fall of the float is converted into a horizontal force which opens and shuts the valve. Previously to the invention the conversion of the vertical force to a horizontal one was effected by a flat cam fitted into a rectangular slot in the moving valve member sliding in a cylindrical container. The essence of the present invention consists in the substitution of a ball and socket joint for the former flat cam and slot joint. The question is whether this improvement amounts to an inventive step. It is shown that the invention simplifies the manufacture of float valves; that it results in a more durable valve; that it is more effective in operation. There is the further fact that the valves made in accordance with the invention have met with striking commercial success. Besides, the invention was the result of efforts made by the respondent over a period of years to improve the existing type of float valve, and it is also shown that the appellant had been engaged in less fruitful efforts to produce the same result. In these circumstances, I find it impossible to disagree with the view of the learned trial judge that the adaptation by the respondent of the ball and socket principle to a float valve was an inventive step. Of course, it was not a new mechanism, but it had not hitherto been applied in the present manner. I cannot agree that the invention does not display ingenuity and that it was merely an obvious workshop improvement. The application which the respondent made of the ball and socket mechanism is sufficiently novel and ingenious to rebut the suggestion that it was merely analogous to any pre-existing user. I think the judgment of *Taylor J.* was right and I would dismiss the appeal.

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FULLAGAR J. I agree with the judgment of the Chief Justice, which I have had the advantage of reading. The decision of *Taylor J.* is, in my opinion, right, and I think that the appeal should be dismissed.

Appeal dismissed with costs.

Solicitors for the appellant, *Arthur Phillips & Just.*

Solicitors for the respondent, *Madden, Butler, Elder & Graham.*

R. D. B.