

1934 BETWEEN:

Sept. 25 & 26  
Oct. 1  
Dec. 15

WILLIAM H. CORDS AND CORDS }  
PISTON RING CO. OF CANADA }  
LTD. .... }  
AND

PLAINTIFFS;

STEELCRAFT PISTON RING CO. OF }  
CANADA, MAX ESAR, doing busi- }  
ness under the name of MONTREAL }  
AUTO PARTS, and the said MONT- }  
REAL AUTO PARTS. .... }

DEFENDANTS.

*Patents—Subject matter—Anticipation—Proof—Prior user—Invention.*

*Held:* That evidence of prior user in support of a plea of anticipation, depending upon the recollection of witnesses over a number of years, and implying fine distinctions or close diversities between two things, should be considered with great caution and should be disregarded unless established beyond a reasonable doubt, before it is accepted to defeat a patent under which a patented article is made, and particularly when it has gone into substantial use by the public.

- 2. That in order to establish that a patent has been anticipated, any information as to the alleged invention given by any prior publication must, for the purpose of practical utility, be equal to that given by the subsequent patent. The latter invention must be described in the earlier publication that is held to anticipate it, in order to sustain the defence of anticipation.
- 3. That where the question is solely one of prior publication it is not enough to prove that an apparatus described in an earlier specification, could have been used to produce this or that result. It must also be shown that the specifications contain clear and unmistakable directions so to use it. It must be shown that the public have been so presented with the invention, that it is out of the power of any subsequent person to claim the invention as his own. *Canadian General Electric Co. Ltd. v. Fada Radio Ltd.* (No. 7026) (1927) Ex. C.R. 134 followed.

ACTION by plaintiffs to restrain defendants from infringing a certain patent granted the plaintiff, William H. Cords, the plaintiff Cords Piston Ring Co. of Canada, Ltd. being the exclusive licensee in Canada under this patent. The patent in suit related to piston rings adapted particularly, though not exclusively, to motor car engines. The Court found that the patent in suit was not to be found in the prior art, was not anticipated and disclosed invention.

The action was tried before the Honourable Mr. Justice Maclean, President of the Court, at Ottawa.

*O. M. Biggar, K.C. and R. S. Smart, K.C. for plaintiffs.*

1934

*H. Gerin Lajoie, K.C. and Louis Diner, K.C. for defendants.*

W. H. CORDS  
ET AL  
v.  
STEELCRAFT  
CO. ET AL.

The facts and questions of law raised are stated in the reasons for judgment.

The PRESIDENT, now (December 15, 1934), delivered the following judgment:

This is an action for infringement of Canadian patent no. 340,505 granted to the plaintiff William H. Cords, of San Diego, California, U.S.A. It issued in April, 1934, upon an application made in March, 1933. The plaintiff, Cords Piston Ring Company of Canada Ltd., is the exclusive licensee in Canada under this patent. The alleged invention relates to packing rings and to methods of making them and applying them to reciprocating plungers and the like for sealing purposes. Cords piston rings are particularly, though not exclusively, adapted to motor car engines, and it is in connection with such engines that the use of his piston rings has developed.

The defendants carry on business at Montreal, and, *inter alia*, they sell and distribute piston rings which are manufactured in Detroit, U.S.A., by a concern known as Steelcraft Piston Rings Sales Company Inc., hereafter to be referred to as Steelcraft; these piston rings are imported into Canada, I think, only by the first named defendant, Steelcraft Piston Ring Company of Canada Ltd., and it is these rings that are said to infringe the piston rings described in the patent to Cords. The president of Steelcraft is one Carroll, who, prior to the organization of Steelcraft, was the selling agent for Cords rings, in Detroit.

The piston of an internal combustion engine moves in a cylinder and therefore the contact between the sides of the piston and the walls of the cylinder is necessarily a sliding one. Various methods have been adopted for closing any possible interval between the walls of the cylinder and the sides of the piston. The conventional practice was to construct the pistons with three grooves—there might be more, or less—around the exterior of the piston and into these grooves would be placed rings intended to have the effect of closing the interval between the sides of the piston and the cylinder walls, and such rings are called piston

1934  
 W. H. CORDS  
 ET AL  
 v.  
 STEELCRAFT  
 CO. ET AL.  
 Maclean J.

rings. The early piston rings were made of cast iron, later of steel, and were slipped over the head of the piston into the grooves; the rings would be split at some point. The top ring was usually referred to as the firing ring because it was the ring in an internal combustion engine that was exposed to the heat of the explosive material, and it was usually made of cast iron and of the full width of the groove. Next below the firing ring was what is known as a sealing or compression ring and differed from the firing ring generally in diameter, and sometimes in other respects; I understand it was usually slightly resilient, and would be susceptible of compression when in contact with the walls of the cylinder. The third and lowest ring, also slightly resilient, was called the oil ring, the same in construction as the second ring, except, as I understand it, there would be incorporated therein channels or means for the control or distribution of oil. The conventional practice, in the case of motor car engines, was to fill each groove with one ring, but in the case of other engines, it was frequently the practice, I understand, to assemble in each groove except the top one, more than one ring, according to the width of the groove. These piston rings would naturally suffer a great deal of wear themselves, and they would also wear the cylinder walls, and gradually the cylinder would acquire what is called a "taper," which would mean an extension of the diameter of the cylinder particularly at the bottom, and the correction of this condition required a re-boring of the cylinder so as to make the diameter the same throughout, and re-boring the cylinder, with the desired accuracy, was a difficult and expensive operation. The consequence of the tapering of the cylinder was that the oil would get past the piston into the firing chamber, resulting in a waste of oil or gas, the accumulation of carbon, and a loss of efficiency in the working of the engine.

In 1929, there came into this particular art, for the first time it is said, the alleged invention in question, the piston ring of Cords, who, it is said by Mr. Biggar, proposed a revolutionary change in piston rings, particularly in their application to motor car engines. Cords proposed that instead of using cast iron rings, or practically flat steel rings, that groups of thin steel rings of dish shape be used in the grooves, two, four, six, or more, according to the width of the groove, which would snugly but not solidly fill the

grooves; and these rings, it is claimed, possess such distinguishing characteristics, and disclosed such a new and useful improvement in the art, as to constitute invention. The rings are constructed by bending thin ribbon steel bands, and during the bending operation the band assumes a dished form, that is, the plane of the outer periphery of the rim is laterally offset from the plane of the inner circle of the ring; the dish is quite perceptible to the naked eye, in both the patented and infringing rings. One method of assembling the rings in a groove, and the specification of Cords so states, is by alternate pairs, so arranged that the dished sides of the rings of each are faced in opposite directions. In assembling the rings in the piston grooves in this fashion, V-shaped channels or intervals are formed between opposed pair of rings, throughout the outer circumference of the ring, and towards the wall of the cylinder; there would be formed a similar V-shaped channel of interval between each ring making up a pair, but on the inside. These channels or intervals are, I think, undoubtedly due to the dish formation of the rings, and their arrangement in the grooves, and the patent states they perform useful functions. These rings being susceptible of pressure downwards would therefore expand independently of one another, thus affording, it was said, packing rings much more satisfactory and efficient than anything that had been earlier known. The so-called "dish" in the Cords piston rings, and in the defendants' rings, was very frequently referred to at the trial as "cup." I think it preferable to continue the use of the word "dish" because the patentee, as will soon appear, uses that term, and it would seem to me the more correct term, having in mind the exact formation of the piston rings in question.

I think it is desirable to quote from the specification of Cords, so that the objects of the alleged invention, its construction, and its method of functioning, may appear in the language of the patentee. The objects of the invention are set forth as follows:

This invention aims to seal the joint, between a reciprocating plunger and the walls of the cylinder in which it moves, by the use of metallic seal rings that are extremely thin and highly flexible, and that are mounted in grooves in the plunger in such a way that each of the thin rings employed exerts a relatively light pressure against the walls of the cylinder substantially independently of other rings that may be disposed in the same groove in the plunger.

1934  
 W. H. CORDS  
 ET AL  
 v.  
 STEELCRAFT  
 Co. ET AL.  
 Maclean J.

1934

W. H. CORDS  
ET AL  
v.

STEELCRAFT  
Co. ET AL.

Maclean J.

A further object of the invention is to provide a packing ring that is normally dished in the process of its manufacture, and which may be substantially contracted in diameter in applying it to a piston so as to increase the dished effect of the ring, thus providing a line contact or contacts between the edge of the ring and the walls of the cylinder in which the piston moves, and at the same time produce a ring which will automatically adapt itself to the walls of the cylinder in which it is placed with great accuracy and a high degree of resilience.

Another object is to devise a method of bending a relatively wide strip of material edgewise in such manner as to distort said strip laterally and give it a greater over-all thickness than that of the material from which it is made.

A still further object of the invention is to provide a sealing arrangement for the piston, intended for reciprocatory motion in a cylinder, in which the grooves provided in said piston for the sealing rings are substantially filled with independent, or separate, thin metallic rings of dished form, the dishing of certain of said rings being disposed oppositely from that of other rings, whereby the normal reciprocation of the piston in the cylinder will have a tendency to flatten the dished rings and thus cause them to expand into firm sealing contact with the walls of the cylinder irrespective of minor variations from a regular contour in the walls of the cylinder.

Another object of the invention is to provide a novel packing ring having a width many times its thickness, and further having unusual flexibility and contractual yieldability, due to its formation from light and resilient steel ribbon or the like.

A further object is to provide a plunger packing in which a hydraulic oil seal will be maintained during operation. It is also an object to devise a packing which will have a peripheral oil channel provided at one or both of the edges of its sealing surface.

The specification then in part proceeds:

The packing rings of the present invention are formed of thin resilient metal having a width many times the thickness of the metal utilized in forming the rings. Preferably, the rings are constructed from oil-tempered ribbon steel bands having, for the average multi-cylinder engine piston, a width of about  $\frac{3}{8}$ - $\frac{1}{2}$  of an inch and a thickness of approximately .020 inches. These flat bands may be obtained from elongated straight stock or from spools of steel ribbon. The rings are constructed by bending the bands into either approximately circular or exactly circular form from straight strips of metal of the character just stated out to the necessary length. Preferably the diameter of the bent ring before it is contracted in positioning it in the cylinder, exceeds by  $\frac{1}{16}$  the diameter of the cylinder in which it is meant to be compressed and operated.

The ring is bent, while cold on lines transverse to the width of the band of metal from which the ring is formed, and use is made of the fact that the portions of the metal to the outside of the neutral axis are stretched or put under tension during the bending operation, while the portions of the metal to the inside of the neutral axis are compressed, to give to the completed ring the characteristic of conforming readily to the contour of the walls of the cylinder in which it is caused to operate. It will be found that if a thin band of metal having a width many times the thickness of the band is bent on lines normal to the width of the band, that it will have a tendency during the bending operation to assume a dished form—i.e., a form wherein the plane of the outer peri-

phery of the ring is laterally offset from the plane of the inner circle of the ring. By this invention, it is proposed to permit the rings to assume such form to a limited or slight degree during the bending operation. This tendency arises by virtue of the stretching of the portions of the metal beyond the neutral axis and the compression of the portions of the metal to the inside of the neutral axis just referred to. A strip may be bent in this way to form a piston ring that is capable of being readily contracted, when positioning it in the cylinder in which it is to operate, to a very substantial degree without setting up in the ring very substantial forces tending to expand it when in operation, which forces would manifest themselves by an excessive wear of the cylinder walls. On the other hand, due to the fact that the rings of the present invention may be contracted substantially in placing them in the cylinder, said rings have a distinct tendency to follow and conform accurately to the walls of the cylinder. Nevertheless the ring is highly flexible and does not apply a great degree of pressure against the walls of the cylinder with the result that wear is minimized, though an effective seal is provided.

1934

W. H. CORDS  
 ET AL  
 v.  
 STEELCRAFT  
 Co. ET AL.  
 Maclean J.

\* \* \* \* \*

Preferably, the multiplicity of rings in the grooves 21 and 22 are so assembled that approximately half of the rings in each groove have their dished or concave faces turned in one direction, while approximately the other half of the rings in that groove have their concavities facing in the opposite direction. Three convenient ways, of thus arranging the multiplicity of rings 10 in the groove 21 of the piston 16, are illustrated in Figures 4, 5, and 6 of the drawings. In Figure 4, alternate pairs of rings 10 are arranged with the dished sides of the rings of each pair facing in opposite directions, all of said rings bearing against the walls 28 of the cylinder to provide spaced circular contact lines for sealing purposes.

\* \* \* \* \*

As previously stated, the rings of this invention are designed to substantially completely fill a groove, leaving a lateral clearance of only about 0.005 inch. This ensures good sealing contacts between the rings themselves and between the rings and the groove walls. When reciprocation of the piston or fluid pressure acting laterally upon the packing, or both, causes compression of the ring assembly, the dished rings of the latter are flattened somewhat and their diameters slightly increased with the result that the ring peripheries are forced into correspondingly better sealing engagement with the cylinder bore. The improved rings thus provide not only an efficient oil seal but also a good compression packing. With reference to Figure 13 and 14, it should be observed that endless channels 34 are formed between the groove sides and the ring assembly. These channels serve to scrape and receive oil and thus prevent it escaping past the rings, and also serve to transmit working pressures against large lateral areas of the packing to compress the latter. Another endless channel 35, which is formed between the two opposed groups of each set of rings, provides an effective hydraulic seal for preventing the escape of fluid past the bottom of the groove. Channels of the nature of channels 34 and 35 are also present in the assemblies illustrated in figures 4, 5, 6, 8 and 9.

In addition to the advantages already pointed out, the ring assemblies of this invention have the further desirable characteristics of preventing carbon accumulation, due to the constant relative sliding and squeezing action of the laminations or convolutions; and of being able,

1934  
 W. H. CORDS  
 ET AL  
 v.  
 STEELCRAFT  
 Co. ET AL.

due to the extreme flexibility of the individual convolutions and their ability to rapidly assume various distorted circular forms, to adapt themselves within reasonable limits for full uniform sealing contact at all times with a bore that is non-circular and of non-uniform cross-sectional shape.

Maclean J. The utility of Cords is not seriously attacked, if at all. Whether or not there is invention in Cords, it is not disputed that following the placing of Cords on the market the same quickly came into very wide use in Canada and the United States. The defendants' chief expert witness, Mr. Bell, testified that Cords represented an improvement of five hundred per cent over any thing of the kind that had preceded it. The real attack made on the patent is that of anticipation, by prior user and by prior publications, the particulars of which will be later discussed. The evidence given on behalf of the plaintiffs as to utility and novelty has, I think, some bearing upon the weight to be attributed to the evidence given on behalf of the defendants as to prior user, and prior publication, and it perhaps is desirable to review briefly portions of this evidence, although as to utility it would seem to be unnecessary.

I will refer first to the evidence of Mr. Porter, president of the plaintiff company, and for eighteen years engaged in the repair of motor cars. He testified that he had been selling Cords piston rings since August, 1932, either by himself or through the plaintiff company, and between that date and August, 1934, his total sales, calculated upon the retail prices to consumers, amounted to over \$250,000 throughout Canada, and this notwithstanding the fact that his selling organization had not been fully developed. The cost of fitting the pistons of the average car with piston rings is, I think, about six or seven dollars. Porter stated that prior to the time he first came to know of Cords rings, 1932, he had experienced great difficulty, in the repairing of motor cars, in preventing oil finding its way past the piston rings and being burned; it was his experience that the rings then used in pistons, whether of cast iron or steel, gradually tapered the cylinder; that re-boring the cylinder was an expensive job, and that it was difficult to ensure a workable degree of taper; he stated that with the use of Cords in motor car engines, he would be able, in any re-boring of the cylinder resulting in a diameter variation up to 15/1000ths of an inch, to guarantee satisfaction to his cus-

tomers. He stated that with the old type of piston ring, in say a six cylinder car, the consumption of oil would be around three to six quarts per thousand miles under ordinary driving conditions, whereas with the use of Cords only a quart to a quart and a half would be used; this was in substance affirmed by other witnesses and was not denied by any. Again, he testified that with the use of the conventional piston rings, a car with 6/1000ths of an inch cylinder taper would give satisfaction for five thousand miles, while with Cords, thirty to thirty-five thousand miles would be obtainable, and this statement does not seem to have been questioned. Porter also testified that cast iron piston rings, apart from the wearing and tapering of the cylinder, would themselves become worn and loose in the grooves, and the oil would get past the compression rings, whereas by the use of Cords this would be avoided by reason of their compression or spring action, and this would also leave them tight and snug in the grooves. It is a fair inference from Porter's evidence that he had never before seen or heard of piston rings similar to Cords.

The plaintiff patentee, Cords, was a salesman of automobiles between 1917 and 1925, and later he worked as a mechanic with a marine engine construction company, at San Diego, and during such employments he became interested in the designing of engine piston rings. In 1927 he began experimental work on the dished type of piston rings, and in that year made a set from sheet tin but those he found short lived and unsatisfactory; he continued his experimental work, using more durable material. In the fall of 1929 he made his first satisfactory rings, a set of which he gave to a construction company operating a fleet of 250 motor trucks at San Diego, with the result that this concern equipped their entire fleet of motor trucks with Cords piston rings, and others in that city soon began the use of these piston rings with satisfactory results. Cords commenced selling his rings commercially early in 1930, and quickly there came a demand beyond his capacity to produce because he was unable to obtain raw material in sufficient quantities. When able to obtain raw material in the desired quantities he entered into contracts for the sale and delivery of rings, appointed distributors or selling agents in different sections of the United States, and pres-

1934  
 W. H. CORDS  
 ET AL  
 v.  
 STEELCRAFT  
 Co. ET AL.  
 Maclean J.



1934  
 W. H. CORDS  
 ET AL.  
 v.  
 STEELCRAFT  
 Co. ET AL.  
 Maclean J.

ently, he stated, there was hardly a city of any size in that country in which he had not a selling agent. His sales of rings grew rapidly, and apparently he has established a large and profitable business in the manufacture and sale of piston rings, which, he states, are used by millions of cars, in the United States; he stated however that the growth of his business has been impeded by numerous infringers, many of whom were at one time his selling agents. These rings are easily and cheaply manufactured once the idea or principle of construction is known, and little capital is required in the manufacture.

A witness named Jensen, presently in the automobile business in Washington, D.C. and a distributor there of Cords rings, testified that he first used Cords rings in California in 1930, and found them more satisfactory than any other type then known to him. These rings, he stated, will avoid the accumulation of carbon, cause less wear on the cylinder walls, and the rings themselves will last for thirty-five or forty thousand miles, whereas the conventional type of ring would last only about ten thousand miles. In Washington, he services a fleet of taxi-cabs and his experience in that connection is that with the taxi-cab fitted with the conventional piston ring there is a consumption of from two to five quarts of oil per twenty-four hours, whereas with those fitted with Cords rings the maximum consumption is about one quart every two days. This witness, I would infer, had never seen or heard of piston rings similar to Cords, prior to 1930. The witness Flaherty, a distributor of Cords rings in New York City came to know Cords rings through Jensen, in California, in 1930, and had not before then seen rings of that type, and he agrees with Jensen as to the comparative merits of Cords rings over the conventional type, particularly when used in motor cars.

In support of the defence of anticipation, the defendants rely upon five instances of alleged prior user, three of which go back to the period between 1913 and 1917, the remaining two relate to the years 1921 and 1931 respectively. It will be convenient now to mention these alleged prior users; the alleged anticipations by prior publication will be mentioned later. The first of the alleged prior users is the following: In 1914 the defendants'

witness Bell, who is now connected with Steelcraft, purchased from the Speedwell Motor Company of Dayton, Ohio, then in bankruptcy, a Speedwell motor car for \$75. Later, in overhauling the car, he states that he dismantled the motor and discovered that the piston rings were of a strange design, made of low carbon steel, and were dished even more than Cords rings, or the rings made by Steelcraft. He states also that he found that the rings had to be arranged, in the grooves, opposed to one another in order to furnish sufficient lateral tension to entirely close the grooves. The next instance of prior user is the following: In 1917, the Davis Ship Building Company of Levis, Quebec, built a number of submarine chasers for the British Government, the engines for which were built by the Standard Motor Construction Co. of New Jersey, U.S.A. There was produced in evidence, as exhibit E, one of the pistons of the motor engines installed in these subchasers, with the piston rings still in the grooves, and, as exhibit G, one single ring from another such piston. And it is contended by the defendants that these piston rings are dished, as in Cords. Lamonde, the master mechanic of the Davis Shipbuilding Company plant at the time, stated in evidence that such piston rings are dished, and were assembled in pairs in the piston grooves with the dish opposed, and if they were not assembled in this manner, in the grooves, they would be loose. Then there was produced as exhibit B, an air pump taken from a Cadillac car, purchased in Montreal in 1930, by one Shefler, such car being a 1929 model. The rings in the grooves of the piston forming part of the air pump were stated by Mr. Bell, for the defendants, to be dished, and he gave the measurement of the dish. Mr. Corbett, a trained mechanic, testified that he purchased, in 1931, a Cadillac car from the estate of one Dr. Garceau, and the piston of the air pump of this car, with the rings, was produced in evidence as exhibit C. Corbett stated that shortly before the trial he examined the piston of this air pump and found that it had but one groove with four steel rings, which rings he found, after measurement by a micrometer, to be "slightly cup shape," and he also stated that the rings had been assembled in the groove in pairs with the dish opposed. Corbett also stated that in 1921 he had re-

1934  
 W. H. CORDS  
 ET AL  
 v.  
 STEELCRAFT  
 Co. ET AL.  
 Maclean J.

1934  
W. H. CORDS  
ET AL  
v.  
STEELCRAFT  
Co. ET AL.  
Maclean J.

paired another Cadillac car, 1921 model, belonging to one Dr. Garrow. This car met with an accident and Corbett, with an assistant, had to examine the piston of the tire pump and for the first time in his life he noticed that piston rings were made of steel. He and his assistant found the piston rings were dish shaped, and seemed to be loose; after measuring the rings, they found they had to be placed in the groove in pairs opposed to each other, in order to fill up the groove, and they obtained the proper fitting by putting them in the grooves in this way; I would infer from this witness that it was his opinion that the rings had been improperly assembled in the grooves in the first instance. This piston was not produced in evidence, but Corbett states that it was the same as exhibit C. No evidence was given by any one representing the manufacturers of Cadillac cars. The next alleged user related to piston rings made by the firm of White and Middleton, of Baltimore. Mr. Middleton, of this firm, gave evidence at the trial. He stated that this concern started the manufacture of flat steel piston rings in 1911. They shortly discovered that the piston rings were being slightly dished in the bending, which in fact they wished to avoid; later, they discovered that the dished piston ring possessed advantages and they proceeded thereafter to manufacture and sell them in this shape, and it was stated that they were assembled in piston grooves in pairs with the dish opposed. This would be in 1913. He gave the names of some of the purchasers of such rings, such as the Standard Motor Construction Company, the manufacturers of Cadillac, Buick, and Packard cars. There was produced by Middleton, as exhibit H, a length of bent ribbon steel, in spiral form, manufactured by the Baltimore concern, and from which the dished rings sold by them would be cut, and this he took from the factory to his home before he left this firm in 1915, and it has since been in his possession. This piston ring material, as found in exhibit H, is claimed to have a dish. These piston rings, it was stated, were made and sold by Mr. White after 1915, when Middleton left the firm, and down to 1919 when the former sold out his business, but there is no evidence as to whether or not the successors of White continued the manufacture and sale of such rings. Mr. Middleton stated,

that while he was associated with the manufacture of these rings, he did not use the term "dished" or "cupped" in describing them, and that the words "cup" or "cupped," used so much during the trial by mostly all the witnesses, only came into his vocabulary since the commencement of the trial; his former business concern called them "steel rings."

1934  
 W. H. CORDS  
 ET AL  
 v.  
 STEELCRAFT  
 CO. ET AL.  
 Maclean J.

Before proceeding to discuss the effect of the evidence as to anticipation by prior user, I should pause to consider briefly a point pressed strongly upon me by Mr. Smart. He urged that the evidence of Bell concerning the piston rings of the Speedwell car, the evidence of Middleton concerning the piston rings made in Baltimore, and the evidence of Corbett regarding the piston rings of the Garceau car, should be disregarded, and that the recollection of these witnesses regarding the formation of piston rings seen thirteen and twenty years ago should not be relied upon. Mr. Smart's submission was that any evidence of this character should be established beyond a reasonable doubt; I have no comment to make concerning that submission. When it is sought to strike down a patent by the recollection of witnesses as to things seen either thirteen or twenty years ago, and which the party being attacked has little or no opportunity of investigating or answering, I agree, that such evidence should be established beyond a reasonable doubt before it is accepted to defeat a patent under which a patented article is made, and particularly where it has gone into substantial use by the public. But that, I think, is altogether a matter of the appreciation of evidence, and I do not think any definite rule can be laid down concerning it; each case must, I think, be considered upon the particular facts and circumstances involved. Mr. Smart referred me to several American authorities, but in each case the Court declined to accept certain evidence intended to establish anticipation by prior user because the Court was of the opinion that a witness must have had something else in mind other than the particular thing mentioned, or because a witness must have been confounding one thing with another, or because it would be hazardous to rely upon the recollection of a witness who testified that he saw a machine similar to the one being attacked, twenty years ago. In all these cases, it was the

1934  
 W. H. CORDS  
 ET AL.  
 v.  
 STEELCRAFT  
 CO. ET AL.  
 Maclean J.

particular facts and circumstances pertaining to each that influenced the Courts to reject certain evidence directed against the validity of a patent. The recollection of witnesses as to the details of a particular thing seen twenty years ago, particularly when it relates to the plea of anticipation of a patent by prior user, which, as so frequently happens, implies fine distinctions or close diversities, between two things, must of course be considered and weighed with very great caution, and should, I think, be disregarded unless established beyond a reasonable doubt; but much depends upon the nature of the subject matter in controversy, and all the facts and circumstances surrounding the case.

Coming now to a consideration of the evidence directed to the issue of anticipation by prior user. I will first refer to the evidence regarding the piston rings in the Speedwell car. It is strange, first, that Bell's recollection of the rings in the Speedwell car, twenty years ago, is so precise as to describe exactly the alleged invention of Cords; it is strange that he then should have made so close an examination of the Speedwell rings, as to find them individually dished and arranged in pairs with the dish opposed, and that the only way he could satisfactorily refill the grooves again with those rings was, by a similar assembly of them, in the grooves. He does not appear ever to have communicated the "queer design" of those rings, to any person, before this litigation started; he does not say whether they functioned more satisfactorily than the conventional rings; and, I think, it is probably correct to say that the Speedwell rings produced no particular impression on his mind at the time, as to construction or efficiency, else he would hardly say, twenty years after, that Cords were better than anything that had preceded it in the form of piston rings, by five hundred per cent. It appears strange that, for twenty years, apparently all knowledge of the strange Speedwell piston rings was forgotten, and only revived in this litigation. I do not think that the recollection of Bell as to the formation of those rings, which he saw twenty years ago, can be accepted as proof of the anticipation of the patent in suit, and I think his recollection is in error. The same may be said concerning the piston rings in the tire pump of the Garrow

car, which Corbett examined in 1921. Corbett states that they were only slightly dished; the difference between a perfectly flat ring and one slightly dished, would be but of the order of a few thousandths of an inch, so that Corbett's recollection of an examination of those rings, back thirteen years, should hardly be relied upon to establish the fact that they were dished and assembled in the sense described in Cords patent. In my opinion it is improbable that they were.

Then turning to the evidence in reference to the other alleged instances of prior user, and which are in a somewhat different position from those just above mentioned, because here the piston rings referred to were produced in evidence, or, as in the case of the Baltimore rings, a sample of the bent steel from which they were cut, was put in evidence. I will refer, first, to the rings used in the pistons of the engines that were installed in the submarine chasers. The rings in the piston taken from the submarine chaser, exhibit E, I could see and examine but partially, but the same ring, exhibit G, I have examined many times, and I should say they were all flat, though possibly they may have a very slight taper from edge to edge, one way or the other, only demonstrable by very precise measurements; I do not think such rings were ever manufactured or installed as dished rings in the sense understood and taught by Cords. There was a book of instruction furnished by the Standard Motor Construction Co. to the shipbuilding company at Levis, in connection with the installation of their engines in the submarine chasers. In this book, exhibit F, the piston is referred to in paragraph 3, page 85, and it states that the upper piston ring is of cast iron, all other grooves having four split steel rings in each, and there is no mention of their being dished. I cannot but think that these rings were made, practically speaking, as flat steel rings and were not intended to be anything else. The same thing may be said of the piston rings in the two air pumps, exhibits B and C, and the piece of spiral wire made in Baltimore by White and Middleton, exhibit G. They all appear to me to look flat, but there may possibly be found in them a very slight taper, or wedge shape formation, between the edges, a structural incident, but I doubt if they were designedly

1934

W. H. CORDS  
ET AL  
v.  
STEELCRAFT  
CO. ET AL.

Maclean J.

1934  
 W. H. CORDS  
 ET AL.  
 v.  
 STEELCRAFT  
 CO. ET AL.  
 Maclean J.

made with the dish that Cords speaks of in his specification. The dish in Cords and Steelcraft is obvious to the naked eye, and their contrast in this respect with the other rings in evidence is so evident, that one cannot but regard the latter as being practically flat rings. Mr. Mackey, called by the plaintiffs, gave evidence concerning the formation of the piston rings in evidence. Mackey spent a great part of his life in making scientific instruments of precision, and for many years was doing that work for the Dominion Observatory at Ottawa. He was cross-examined at length and with great care by Mr. Lajoie, and the impression left on me was that Mackey was very competent to express an opinion on the points for which he was called, capable of accurately making the tests and measurements which he did make, and, further, his evidence did not have any semblance of advocacy. And I feel I may be safely guided by his evidence. Mackey, after examining the rings said to anticipate Cords, and having measured them with the appropriate instruments, expressed the opinion, that the rings disclosed no dish, at least in a serious sense. As already stated, the rings in the piston from the submarine chaser, exhibit E, and the single ring of similar origin, exhibit G, were said by some of the defendants' witnesses to be dished and placed in opposed relation in pairs, in the grooves. Mr. Mackey, for the plaintiff, examined in Court, the rings in place in the piston exhibit E, particularly the bottom filled groove, with the aid of a "feeler," and he found their faces quite parallel and without any dish. With a micrometer he measured the rings in exhibits B and C in pairs with their alleged dish opposing each other, and in the reverse way, and he found them to measure the same, which would exclude the idea of any dish in the rings. With a measure or instrument known as "The Last Word Dial Indicator," handed him by Mr. Lajoie, he measured the rings in exhibits B and C, the pistons of the motor car air pumps, and the ring exhibit G, and he found no dish in any of them; this is to be qualified by saying that in one small section of exhibit C he found what might be called a dish, where there was a difference in the thickness of the outside edge and the inside edge, but not elsewhere in that ring. I accept the evidence of Mackey.

Two patents are cited by the defence, as anticipating Cords, and the first to be mentioned is the Canadian patent to Vivinis, which issued in October 1917. The piston ring there described, and however feasible, is, I think, clearly distinguishable from Cords. It appears to me to be a different conception altogether. It is true however that Vivinis is described as being substantially of cup-shape, and in a sense the complete piston ring has that formation. It was said by one of the defendants' expert witnesses that Vivinis was shaped like a pie plate with part of the centre and part of the remainder cut out, and this seems to me to be a quite accurate description of it. The inner side of the ring is held tightly in the groove but the ring projects outwardly beyond the groove with an inclined wall or flange bent up at one side; the flange, which is without the groove, is intended to wipe the wall of the cylinder; however arranged, the flanges would not seem to be subject to compression. I think the construction of Vivinis is altogether different from Cords and represents a different idea in the construction of piston rings. The next patent to be considered is that issued to Kitchen, in June, 1901, in the United States. The individual rings are said to be dished in the specification, but they are all assembled in the groove with the dish in the same direction and one ring will look like the others in any expansion from the axis of the piston towards the cylinder wall. Mr. Stevens, a witness for the plaintiff, stated that the piston rings described by Kitchen are intended to be stamped out; the patentee refers to them as plates, and this witness thought that the patentee would not apply the term "plate" to a light wire ring bent into shape. The rings are wide and are put into the grooves from the end of the piston which is there reduced in diameter, apparently, because the rings are so constructed that they would not stand expansion radially to bring the ring over the end of the piston to the groove. In Cords, the rings are flexible and may be put into the grooves without reducing the size of the end of the piston. The piston rings in Kitchen are locked in place on the end of the piston by a plate which jams the rings up against an aluminium boss and have substantially the effect of being a solid ring. I do not think that Kitchen can be held to be

1934  
 W. H. CORDS  
 ET AL  
 v.  
 STEELCRAFT  
 CO. ET AL.  
 Maclean J.



1934

W. H. CORDS  
ET AL.  
v.

STEELCRAFT  
Co. ET AL.

Maclean J.

an anticipation of Cords. In this connection I might quote from my judgment in *Canadian General Electric Co. Ltd. v. Fada Radio Ltd.* 1927, Ex. C.R. p. 141. I said:

Any information as to the alleged invention given by any prior publication must be for the purpose of practical utility equal to that given by the subsequent patent. The latter invention must be described in the earlier publication that is held to anticipate it, in order to sustain the defence of anticipation. Where the question is solely one of prior publication, it is not enough to prove that an apparatus described in an earlier specification, could have been used to produce this or that result. It must also be shown that the specifications contain clear and unmistakable direction so to use it. It must be shown that the public have been so presented with the invention, that it is out of the power of any subsequent person to claim the invention as his own.

Now, is there subject matter, invention, in Cords? I think there is. It is not perhaps a great invention, it may be a very narrow one, but yet, I think, it contains sufficient novelty and utility to hold that Cords discloses invention. No question arises as to the utility of Cords. The defendants' expert witness Bell conceded that Cords was superior, by five hundred per cent, to any piston ring that had preceded it; this witness probably had in mind the use of piston rings in motor cars, and he must have meant that the improvement of Cords over other piston rings was very great or he would not thus have expressed himself. That of itself goes far to establish novelty. Events have shown that there was a public demand for improved piston rings, particularly in connection with motor cars; Cords was quickly and widely adopted by the public when it was put upon the market and there is no evidence of any abatement in its popularity by the interested public; it would appear to effect a substantial saving in oil and a material reduction in the wear of cylinder walls; it defers materially the necessity of re-boring the cylinders, and the rings themselves have a longer life as compared with the conventional piston rings. It may possibly possess other advantages.

It seems to have the merits attributed to it by the patentee in his specification, and tribute seems to be paid it by very numerous imitators. If Cords had been previously made, used, or described in any publication, I do not think the idea would have perished, or have become entirely forgotten until 1929, when Cords made public his invention. I think there is invention in Cords.

Now as to the question of infringement. It was contended that the piston ring sold by the defendants did not infringe Cords by reason of the contrast in construction. It is said on behalf of the defendants that Cords rings have double the dish of Steelcraft rings; that the latter is fashioned from oval shaped material while the former is formed from thin flat steel; that due to the formation of Cords from flat material there is a revolving motion on the inner edge of the rings, whereas in the rings of Steelcraft, which are said to be high in the centre, there is a rocking motion which has the effect of removing any carbon that may appear there and which is carried off by the oil flowing in the crevices or channels found in the arrangement of the rings in the grooves. And it is said further that the difference between Steelcraft and Cords represents an improvement of three hundred per cent in the former over the latter. In my opinion there is no distinction between the two rings. I suspect that if any slight structural variation is to be found between the rings of Steelcraft and the rings of Cords, it was designed to meet the possible charge of infringement, but there is really no distinction between them, and Steelcraft is the equivalent of Cords.

1934  
 W. H. CORDS  
 ET AL  
 V.  
 STEELCRAFT  
 CO. ET AL.  
 Maclean J.

I am therefore of the opinion that the defendants have infringed the claims in the patent to Cords which are mentioned in the plaintiffs' particulars of breaches. Costs will follow the event.

*Judgment accordingly.*

NOTE: In this case the following form of judgment, which is a departure from the previous forms, was approved, and may be followed:

IN THE EXCHEQUER COURT OF CANADA

the \_\_\_\_\_ day of \_\_\_\_\_ 19 .

PRESENT:

The Honourable

Between:

Style of Cause

Preamble . . . . .

This Court doth order and adjudge that as between the plaintiffs and the defendants claims numbers . . . . . of the letters patent of the plaintiff, No. \_\_\_\_\_ bearing date the day of \_\_\_\_\_ 19, , in the pleadings mentioned, are valid and have been infringed by the defendants

1934  
W. H. CORDS  
ET AL  
v.  
STEELCRAFT  
Co. ET AL.

Macleod J.

And this Court doth further order and adjudge that the defendants, their servants, agents and workmen, be and they are hereby severally restrained during the continuance of the said letters patent from infringing the same and from making, constructing, using and/or vending to others to be used in Canada the invention described therein.

And this Court doth declare that the plaintiffs are entitled to recover from the defendants the damages sustained by them by reason of the infringement of the letters patent aforesaid or the profits which the defendants have made by reason of the said infringement, as the plaintiffs may elect after the filing of the statements, records and accounts herein-after referred to.

And this Court doth order that each of the defendants do within twenty days after the service of this judgment file with the Registrar of this Court statements duly verified on oath showing the numbers of articles made in infringement of the said patent, of the numbers of such articles sold from time to time by such defendants, of the prices at which the same were so sold and of the profit made by such defendants on such sale, together with the records and accounts kept by each of the defendants in accordance with the order made herein on the day of 19 , such records and accounts to be duly verified on oath.

And this Court doth further order that, after the plaintiffs have elected as aforesaid, inquiry be made by the Registrar of this Court as to the damages sustained by the plaintiffs or the profits made by the defendants as the case may be.

And this Court doth further order that each of the defendants do within ten days after the service of this judgment make and file a sufficient affidavit stating what articles were at the dates of this judgment and of the affidavit respectively in his or its possession or power made in infringement of the said letters patent and accounting for the said articles.

And this Court doth further order and adjudge that the defendants do within fourteen days after the filing of the said affidavit deliver up to the plaintiffs the articles which shall by such affidavit appear to be in his or its possession or power.

And this Court doth further order and adjudge that the defendants do pay to the plaintiffs their costs of this action forthwith after taxation thereof.

Costs of the reference are reserved.

By the Court,

Registrar.