10-1980

Diamond v. Bradley

Lewis F. Powell, Jr.

Recommended Citation

Lewis F. Powell Jr. Papers, Box 531/Folder 8

This is the patent law case straight-lined with Diamond v. Diehr, 79-1112

Grant one (probably 79-1112 & Hold other)

S G says ct. below failed to follow Parker v Flook (p 4)

Patent has been assigned to Honeywell (no other cork is mentioned & I am not dis-qualified.

PRELIMINARY MEMORANDUM

March 14, 1980 Conference
List 1, Sheet 1

No. 79-855-COX   Cert. to U.S. Ct. Cus.& Pat. Apps
                                  (<u>Rich</u>, for ct)
DIAMOND (Comm'r Patents)

v.

BRADLEY   Federal/Civil   Timely w/ext

    1. <u>SUMMARY</u>. This case is straight-lined with no. 79-1112,
<u>Diamond v. Diehr</u>. The issue is whether computer "firmware"
which controls the internal workings of a computer is
patentable subject matter under 35 U.S.C. § 101.

I would grant. The CCPA is purposefully disregarding Flook. Perhaps they have valid objections. If not, the court must bring them back into line. Ellen

2. <u>FACTS</u>. In April 1975, resps applied for a patent on an invention that directs the transfer of data within a computer. The physical components of a computer include a main memory, which has a system base with which the programmer can communicate. In certain computers certain information that is part of the system base may be stored in storage components called "scratchpad registers." These scratchpad registers were not previously accessible to the programmer. Thus in order to retrieve the information stored on the registers it was necessary to reprogram the entire system base or to use software (the computer program) limited to the particular computer model.

Bradley's claimed invention was an improved method for changing the data in the scratchpad registers. Certain hardware elements are added to the computer along with a "microprogram" called "firmware." A microprogram has been defined as "a sequence of elementary steps which permits the computer hardware to carry out a program instruction."

An instruction in Bradley's firmware causes a particular sequence of computer operations to take place, which permits the programmer to communicate with the scratchpad registers and to switch data back and forth from the registers to the system base.

The patent examiner rejected the invention as nonpatentable. He noted that the hardware arrangement was well known and old in the art. The only novel part of the invention was an algorithm designed to control the computer to solve the particular problem indicated.

The Patent and Trademark Office (PTO) Board of Appeals agreed with the examiner. It agreed that the only novel element of Bradley's invention was the microprogramming. It ruled that the fact that Bradley's claims were in "apparatus," rather than "methods" format did not make them any less "related to an algorithm." Since a "program-implemented algorithm" is unpatentable, Gottschalk v. Benson, 409 U.S. 63 (1972); Parker v. Flook, 437 U.S. 584 (1978), the patent application was rejected.

3. OPINION BELOW. The Court of Customs and Patent Appeals (CCPA) reversed. The court held that the examiner and the PTO Bd. had erroneously interpreted this Court's cases as holding that all computer program or program related inventions are nonstatutory under 35 U.S.C. § 101.* The court felt that the Board found resps' invention to be mathematical in nature because digital computers operate in some number radix. However, this confused what the computer does with how it is done. A computer that solves the Pythagorean theorem or a complex vector equation describing the behavior of a rocket in flight is performing a mathematical algorithm. However, one which retrieves the contents of a page of the Milwaukee telephone directory or the text of a court opinion is not solving an equation or using a mathematical formula.

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* 35 U.S.C. § 101 provides:

"Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title."

The court noted that resps claimed to have created a new hardware system -- a mechanism which enables the computer to alter information in the system base. Resps do not claim the information, and the information acted upon is irrelevant to the invention. Resps' invention thus was found to be no different from an adding machine, which is patentable in nature, if the claim does not embrace any particular calculation the machine is capable of making.

The court rejected the the Board's reliance on the fact that firmware is involved in the invention. If resps had claimed the information embodied in the firmware as their invention, a different question would be presented. However, resps claimed a combination of hardware elements, one of which happens to be firmware programmed in a particular way. The court ruled that resps' invention must be considered as a whole.

4. CONTENTIONS. The SG argues that in this case, as well as in Diamond v. Diehr, no. 79-1112, the CCPA refused to apply this Court's decision in Parker v. Flook, 437 U.S. 584 (1978) and read too narrowly the decision in Gottschalk v. Benson, 409 U.S. 63 (1972).

The decision in Parker v. Flook set forth a two-step analysis to be applied to a patent claim involving an algorithm. First, one must determine whether the claim contains a principle, formula, idea or concept, which , as one of the "basic tools of scientific and technological work," is itself unpatentable. Second, what remains of the claim after such principle, or concept is separated must be analyzed to determine what is old in the art.

The PTO Bd. of Appeals found that everything in Bradley's claim was old in the art except the programmed algorithm. The CCPA, did not overturn these two rulings. Nonetheless it rejected the Board's approach of "distill[ing] appellants' claim down to the information contained in the firmware," rather than regarding the invention "as a whole."

The SG insists that the type of "distillation" performed by the Board is exactly what is required by Flook.

The CCPA also wrongly concluded that only mathematical algorithms are unpatentable. Although the algorithms in Flook and Benson were mathematical, the Court's decisions did not rest on any distinction between mathematical andnonmathematical algorithms. Phenomena of nature, mental processes and abstract intellectual concepts may be mathematical, but are not necessarily so. The phenomena that water runs downhill is no more patentable than a mathematical equation.

Bradley's program is a set of directions to the computer. These directions reflect abstract intellectual concepts as much as do directions for the translation of texts from Russian to English.

Finally the SG argues that the case is important because the CCPA consistently has refused to apply Parker v. Flook, preferring instead the dissent in that case. See In re Gelnovatch, 595 F.2d 32, 36-37 (1979); In re Johnson, 589 F.2d 1070, 1081 (1978); In re Sarkar, 588 F.2d 1330, 1332-1333 (1979) and In re Diehr, supra. The SG suggests that Diehr be consolidated with this case for argument.

The SG notes that the PTO presently has pending more than 3000 patent applications in which the patentability of computer software or firmware is involved. The office needs guidance on whether to continue to apply its interpretation of Flook or to yield to the CCPA in order to avoid repeated, costly and unsuccessful litigaton in that court.

Resps argue that they are not attempting to patent any computer program or algorithm. They draw an analogy to a player piano, which consists of the piano and the musical composition encoded on a roll. They have not invented a new roll (computer program); resps contend they have invented a new piano (redesigned computer hardware). Their invention is not analogous to a program for translating from Russian to English; any program for doing such a translation will run faster on their improved computer machine. Thus Flook is not even applicable.

The SG replies that if resps' claimed invention is the hardware rather than the algorithm contained in the firmware, the invention is not novel. The combination of hardware is old in the art, as found by the Board and not disturbed on appeal, and the only novelty is the algorithm embodied in the firmware. Thus under the analysis of Flook still mandates. denial of the application.

5. DISCUSSION. It appears that the directions contained in the firmware are a form of computer program. The difference between firmware and software, I think, is that a basic program is put on the firmware and placed permanently inside the computer (although firmware can be reprogrammed). Thus a

computer program exists inside the computer and directs the computer to perform certain basic functions when carrying out other programs. I am uncertain whether the program contained on the firmware is an algorithm. In Flook the Court used "algorithm" to refer to a "procedure for solving a given type of mathematical problem ," 437 U.S., at 585 n.l. The SG's definition of algorithm is broader and includes "A fixed step-by-step procedure for accomplishing a given result; usually a simplified procedure for solving a complex problem, also a full statement of a finite number of steps . . . ." See Petn 6, n.10. Under the SG's definition the directions contained on the firmware would seem to qualify as an unpatentable algorithm.

Assuming that the directions on the firmware are unpatentable, which the CCPA did, Flook seems to require rejection of the application under 35 U.S.C. 101, if the rest of the claimed invention is old in the art. The CCPA appears to have rejected this approach, and has considered only whether resps' invention as a whole, including the unpatentable algorithm, is a new and useful process. If something else about resps' invention is inventive, such as the claimed new combination of hardware elements, or even the use of a firmware/hardware combination, then Flook does not make it unpatentable. See 437 U.S., at 594, quoted in Preliminary Memo on no. 79-1112. However, the CCPA did not reject the PTO Bd's. conclusion that everything about resps' invention but the microprogramming is nonnovel.

The dissent in Flook took the position that novelty and inventiveness considerations are inappropriate under § 101, and the CCPA seems to agree with the dissent. The CCPA stated in Application of Bergy, 596 F.2d 952, 962-64 (1979), cert. granted, No. 79-136 (Oct. 29, 1979), that the SG had intentionally misled the Court in Flook into importing novelty considerations into § 101. The CCPA stated that, despite Flook, "prior art is irrelvant to the determination of statutory subject matter under § 101," Id., at 962-63 (emphasis in original). The court also opined that Flook might have "consequences of unforeseeable magnitude" which were "unintended." Id., at 965, 966.

I think three options are worth considering. This case and Diehr could be held for Bergy. It seems inevitable that the Court's attention will be focused on Flook in considering Bergy, since the Court once remanded Bergy for reconsideration in light of Flook. However, it is not likely that Bergy will resolve the precise issue presented here. Second, the Court could consider summary reversal, as an indication to the CCPA that insubordination will not be tolerated. However, I think granting the petn in this case and in Diehr is the best solution. The CCPA has gone far out on a limb in expressing its view that the Court did not anticipate the consequences of Flook. Such strong statements of disagreement from a court with some expertise in the area probably merit full plenary consideration.

There is a response and a reply.

2-27-80   Hair   Op in petn

March 14, 1980

Court ....   Voted on......,........., 19...

Argued ...., 19...   Assigned ...., 19...   No. 79-855

Submitted ...., 19...   Announced ...., 19...

DIAMOND, COMMR. PATENTS

vs.

BRADLEY

J.P.S. says one is "dead wrong" & other is doubtful.

grant

	HOLD FOR	CERT.		JURISDICTIONAL STATEMENT				MERITS		MOTION		ABSENT	NOT VOTING
		G	D	N	POST	DIS	AFF	REV	AFF	G	D		
Burger, Ch. J.			✓										
Brennan, J.			✓									✓	
Stewart, J.		✓			Join 3								
White, J.		✓	✓										
Marshall, J.			✓										
Blackmun, J.		✓											
Powell, J.		✓	·										
Rehnquist, J.		✓	✓										
Stevens, J.		✓	·										

BENCH MEMORANDUM

TO: Mr. Justice Powell

FROM: Paul Cane

DATE: October 11, 1980

RE: No. 79-855, Diamond v. Bradley ②

Question Presented

Does 35 U.S.C. § 101 permit issuance of a patent for a device, which includes both "hardware" and an accompanying microprogram, that regulates the internal operation of a computer?

Background

This case, like its companion case Diamond v. Diehr, involves an application of the Supreme Court's decision in Parker v. Flook, 437 U.S. 584 (1978). I will not repeat here the summary of Flook contained in my memo in Diehr. I will, however, try to explain the nature of the device at issue in

See memo in Diehr for summary of Flook

this case.

A computer program is known as "software." The physical components of a computer are called "hardware." Within the hardware is the computer's memory and its "system base." The system base is the storage place for information which instructs the computer to perform its tasks. Much of the computer's "thinking time" is occupied by trips to the system base to receive instructions. Speed is important in high performance computers. To save time, some information in the system base can be stored in handy "scratchpad registers." These scratchpad registers are not, however, normally accessible to the user by means of computer programs. Thus, changing the data they contain is difficult.

Resps' invention makes it easy to change the data in the registers. In addition to some additional elements of hardware, the invention employs "firmware": a microprogram containing a sequence of basic instructions in the memory. When activated by software, the instructions cause a particular sequence of computer operations to take place. An instruction in resps' firmware permits the user to communicate with and alter the data in the scratchpad registers.

The patent examiner rejected the invention under § 101 because it involved nonstatutory subject matter under § 101. He found that the only novel aspect of the invention was an algorithm -- sequence of formulae -- designed to direct the computer to solve the particular problem presented. The agency

Board of Appeals agreed. It found that, "save for the microprogramming," resps' arrangement of hardware was old in the art. According to the Board, a "claim for an improved method of calculation, even when tied to a specific end use, is unpatentable" under <u>Parker v. Flook</u>. In sum, the Board concluded that resps' invention consisted of an apparatus old in the art coupled with programming which is nonstatutory.

The <u>CCPA reversed</u>. It noted that resps were claiming an "machine or apparatus" composed of a combination of hardware elements patentable under § 101. The court recognized that the combination involved a microprogram, and did not reverse the Board's finding that everything but the microprogram was old in the art. The CCPA thought the proper analysis involved whether the claim attempted entirely to preempt use of the algorithm. The court found that it did not attempt to do so. The claimed invention was not a method of calculation, but rather a method of instructing the computer to accomplish certain beneficial tasks. The product of the invention was not a solution of an equation, as in <u>Flook</u>, but a useful method of running a machine.

<div align="center">Discussion</div>

A. Petr's Arguments

<u>Petr</u> (the Commissioner of Patents) claims that the CCPA misapplied <u>Parker v. Flook</u>. That case prescribes a two-step test for determining whether a claimed invention is patentable under § 101. First, the claim must not recite a scientific principle or phenomenon of nature. Second, what

[margin note: SG says CCPA mis-applied Flook]

remains must be novel. If -- after subtracting out the unpatentable scientific components -- what is left is old, the claim does not recite statutory subject matter. In this case, the Board correctly found that (1) the algorithm was not patentable, and (2) everything else in the claims was conventional.

(1) Traditional computer programs are not patentable. *True* Gottschalk v. Benson, 409 U.S. 63, 72-73; Flook, 437 U.S. at 595. To patent a computer program -- which is, at bottom, simply a formal structure describing an idea for problem-solving -- is to patent the idea itself. There is no difference between a program using an algorithm to solve a mathematical problem and using a program, as here, to convey instructions and manipulate data within the computer. In each case, the attempt is to patent an idea. That this case involves firmware rather than software is of no consequence. A program directing a series of sequential steps is the essence of both.

(2) According to Parker v. Flook, resps' invention is not patentable if, stripped of the firmware component, nothing novel exists in what remains. Here, there is nothing new. The hardware components of the claimed invention were old in the art, according to the examiner and agency Board of Appeals. The CCPA did not disturb that conclusion. Resps are unable to show that the agency's conclusions were clearly erroneous.

B. Resps' Arguments

Resps' claim that they have applied to patent a

machine. Not a computer program. Not an algorithm. Not a
method of calculation. The inquiry, then, must focus on whether
the machine falls within § 101.

The Commissioner seems to be trying to prohibit
patents on any invention even related to a computer. This is
incorrect. The invention at issue in this case is not a
computer program, but a machine that makes a computer work more
efficiently. In other words, the claimed invention is not an
idea itself, but a machine that carries the idea into effect.
In sum, the Commissioner ignores the key hardware elements in
the invention that differentiate this application from one
attempting to patent a computer program.

The Commissioner also is erroneously trying to inject
questions of novelty in § 101. Of course, novelty is highly
relevant to the decision to award a patent. But those questions
should be addressed in §§ 102 and 103. Section 101 deals only
with the threshold question of whether the invention is
susceptible to a patent at all. (Even if novelty is thought to
be relevant under § 101, this invention is novel. A remand
should occur to permit the CCPA to rule on the novelty issue
that it thought to be irrelevant.)

C. Criticism and Analysis

Although this case and Diehr involve different fact
settings, the cases are very similar in their components. They
each touch upon use of a computer. They each have elements
apart from the computer that, when applied, perform useful

[handwritten margin note: Respa say they have patented a machine — not a computer program]

[handwritten margin note: Good]

functions. The Flook analysis -- and that used by the agency in this case -- would appear to require a showing that (1) the invention not describe a natural phenomenon and (2) some component, apart from the computer aspect of the invention, is "new."

My conclusion in this case is the same as that in Diehr. I do not understand why novelty should be relevant under § 101. I should have thought that §§ 102 and 103 were designed for that purpose. Thus, I would prefer to clarify Flook and explain that novelty is irrelevant under § 101.

Assuming that all of Flook's language remains good law, I think a reversal and remand is necessary in this case and in Diehr. The CCPA treated novelty as irrelevant and found each invention patentable. If novelty is relevant, a remand to the CCPA is necessary so that it can review the agency's finding that each invention was old.

Paul

P.W.C. 10/11/80

79-855   <u>DIAMOND v. BRADLEY AND FRANKLIN</u>   Argued 10/14/80

Patent case involving meaning of <u>Hook</u>.
(Resps are only parties, but patent
has been assigned to <u>Honeywell</u>)

79-855 _Bradley_
(Pre-Conference memo)
Q - whether CCPA applied
Flook correctly.?
  There is troublesome
language in _Flook_
suggesting that § 101
is concerned both with
patentability and novelty
(word "new" is in § 101).
∴ But structure of Act
indicates these are separate
issues. § 102 & 103: CCPA
did not consider "novelty".

  This case is factually
different. A _machine_ is
claimed — not merely a
"program". _Flook_ involved
a _formula_ capable of
broad application. Patent
there is narrowly limited

~~Affirm 5-4~~
Affirmed 4-4   WJB changed
vote
79-855 Diamond v. Bradley and Franklin   Conf. 10/17/80

The Chief Justice

Out

Mr. Justice Brennan Affirm tentatively. Reverse
Await JPS's views, but WJB thinks
Flook is distinguishable.
Invention here is a machine.

X X Y

After further consideration W.J.B.
voted to Reverse.

Mr. Justice Stewart Affirm
Gov't's view of Flook is far too broad.
It is that whenever an invention
involves computer programming, it is
not patentable. Too extreme
& novelty issue not here.

Mr. Justice White *Affirm*

Untenable to say can't patent anything if a computer program in involved.

J. Rich misinterpreted Flook — but we don't need to decide case on their basis.

We certainly have not said all computer programs are unpatentable.

Mr. Justice Marshall *Reverse*

Flook controls. It means what it says.

Mr. Justice Blackmun *Reverse*

Three issues:

1. Machine or program. The original claims did int embrace a machine, & amend. claims did int change this. Thee in a computer program

2.

3. Flook should not be reconsidered

CHAMBERS OF
JUSTICE BYRON R. WHITE

March 4, 1981

Re: 79-855 - Diamond v. Bradley

and Franklin

Dear Chief,

    I agree with the per curiam
disposition of this case.

                    Sincerely yours,

The Chief Justice

Copies to the Conference

CHAMBERS OF
JUSTICE JOHN PAUL STEVENS

March 5, 1981

Re: 79-855 - Diamond v. Bradley & Franklin

Dear Chief:

Please join me.

Respectfully,

J-h

The Chief Justice

Copies to the Conference

CHAMBERS OF
JUSTICE HARRY A. BLACKMUN

March 5, 1981

Re: No. 79-855 - Diamond v. Bradley

Dear Chief:

The proposed disposition, I suppose, is inevitable. I
therefore go along with the proposed per curiam.

One matter of protocol: Should not the reference to
your nonparticipation refer to "The Chief Justice" rather
than to you by name? After all, there is only one.

Sincerely,

The Chief Justice

cc: The Conference

CHAMBERS OF
JUSTICE POTTER STEWART

March 5, 1981

Re: No. 79-855, Diamond v. Bradley & Franklin

Dear Chief,

      I agree with the proposed disposition
of this case.

Sincerely yours,

The Chief Justice

Copies to the Conference

CHAMBERS OF
JUSTICE WILLIAM H. REHNQUIST

March 5, 1981

Re: No. 79-855 Diamond v. Bradley & Franklin

Dear Chief:

Please join me in your per curiam.

Sincerely,

The Chief Justice

Copies to the Conference

Powell

(Slip Opinion)

SUPREME COURT OF THE UNITED STATES

No. 79–855

Sidney A. Diamond, Commissioner of Patents and Trademarks, Petitioner,

v.

John J. Bradley and Benjamin S. Franklin.

On Writ of Certiorari to the United States Court of Customs and Patent Appeals.

[March 9, 1981]

PER CURIAM.

The judgment is affirmed by an equally divided Court.

THE CHIEF JUSTICE took no part in the consideration or decision of this case.

THE C. J.	W. J. B.	P. S.	B. R. W.	T. M.	H. A. B.	L. F. P.	W. H. R.	J. P. S.
PC 1st draft 3/2/81		Join CJ 3/5/81	Join CJ 3/4/81	Join CJ 3/5/81			Join CJ 3/5/81	
				79-855 Diamond v. Bradley and Franklin				