

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DENNIS A. KRAMER

Appeal 2008-2035
Application 10/641,577
Technology Center 3600

Decided: August 27, 2008

Before WILLIAM F. PATE, III, LINDA E. HORNER, and MICHAEL W.
O'NEILL, *Administrative Patent Judges*.

O'NEILL, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Dennis A. Kramer (Appellant) seeks our review under 35 U.S.C. § 134 of the final rejection of claims 1-5 and 7-9. We have jurisdiction under 35 U.S.C. § 6(b) (2002).

SUMMARY OF DECISION

We AFFIRM-IN-PART.¹

THE INVENTION

The claimed invention relates to a parking brake for a vehicle.

Claim 1, reproduced below, is representative of the subject matter on appeal.

1. A parking brake for a vehicle comprising:
 - an electric motor driven to rotate an internally threaded nut;
 - a shaft having an external thread and received within said internally threaded nut, said shaft being constrained from rotating by being connected to an actuator member;
 - said actuator member being connected to a brake mechanism such that said actuator member is movable between two extreme positions to in turn move said brake mechanism between a park position and a release position; and
 - a control for driving said electric motor to rotate and cause said shaft to move, and in turn cause said actuator member to move said brake mechanism between said park and said release positions, said shaft driving a lever to pivot, said lever carrying a cam surface which cams a brake disc into engagement with a driveline structure to be locked to provide said park position.

THE PRIOR ART

The Examiner relies upon the following as evidence of unpatentability:

Eikelberger	US 4,175,646	Nov. 27, 1979
Taig	US 4,865,165	Sep. 12, 1989

¹ Our decision will refer to Appellant's Appeal Brief ("App. Br.," filed Oct. 10, 2006), Reply Brief ("Reply Br.," filed Oct. 23, 2006), and the Examiner's Answer ("Answer," mailed Aug. 22, 2006).

Appeal 2008-2035
Application 10/641,577

Harrison '577	US 4,909,577	Mar. 20, 1990
Harrison '553	US 4,941,553	Jul. 17, 1990
Finley	US 6,068,091	May 30, 2000
Zipp	US 6,249,737 B1	Jun. 19, 2001
Oppitz	US 2002/0092710 A1	Jul. 18, 2002
Ward	US 6,505,714 B1	Jan. 14, 2003

THE REJECTIONS²

The following rejections are before us for review:

Claims 1 and 2 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Taig, Ward, and Finley or Oppitz.

Claims 3, 7, 8, and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Taig, Ward, Finley or Oppitz, and Harrison '553.

Claims 4 and 5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Taig, Harrison '553, and Eikelberger.

Rejection of claims 1 and 2

The Appellant contends that “there is nothing within the Taig reference that would suggest utilizing its threaded nut and shaft arrangement to drive a lever. Instead, Taig appears to have a drive structure solely intended for use in pulling a cable.” (App. Br. 5 and see also Reply Br. 1.) As a result, the Appellant contends that “this combination is based solely on hindsight.” (App. Br. 5.) The Appellant argues claims 1 and 2 together, we select claim 1 as representative and claim 2 stands or falls with claim 1. 37 C.F.R. § 41.37(c)(1)(vii) (2007).

² The Examiner referred to Zipp and Harrison '577 in the Answer “to provide additional background on the control of stepper motors” (Answer 7).

Rejection of claims 3 and 8

The Appellant contends that “in the claim, the movement between the park and release position is tied directly to the length of the pulse.” (App. Br. 5.) The Appellant contends that “[t]he prior art does not disclose the feature.” (*Id.*) The Appellant argues claims 3 and 8 together, we select claim 8 as representative and claim 3 stands or falls with claim 8.

Rejection of claim 9

The Appellant relies on the contentions raised against the rejection of claims 8 and 3. (App. Br. 6.)

Rejection of claim 4

The Appellant contends that claim 4 requires a timer that is a mono-stable, multi-vibrator switch and the Examiner fails to point to any timer in the prior art at all and further does not point to a mono-stable, multi-vibrator switch. (*Id.*) The Appellant contends that Eikelberger fails to add the particular timer. (*Id.*)

ISSUES

The first issue is whether the Appellant has shown that the Examiner erred in rejecting claims 1 and 2 as being unpatentable over Taig, Ward, and Finley or Oppitz. This issue turns on whether the Appellant has identified an error in the Examiner’s prima facie case of obviousness by contending that Taig needs to provide a suggestion to use its threaded nut and shaft arrangement to drive a lever.

The second issue is whether the Appellant has shown that the Examiner erred in rejecting claims 3, 7, 8, and 9 as being unpatentable over Taig, Ward, Finley or Oppitz, and Harrison ‘553. For claims 3, 8, and 9, this issue turns on whether the Appellant has identified an error in the Examiner’s prima facie case of obviousness by contending Harrison does not describe the number of pulses sent by the control circuit is not longer than necessary to move the brake mechanism between the full park and full release positions. For claim 7, this issue turns on whether the Appellant has shown that the Examiner erred in rejecting claim 1 as being unpatentable over Taig, Ward, and Finley or Oppitz.

The third issue is whether the Appellant has shown that the Examiner erred in rejecting claim 4 as being unpatentable over Taig, Harrison ‘553, and Eikelberger. This issue turns on whether the Appellant has identified an error in the Examiner’s prima facie case of obviousness by contending Eikelberger does not describe a mono-stable, multi-vibrator switch.

FINDINGS OF FACT

We find that the following enumerated findings of fact are supported by at least a preponderance of the evidence. *Ethicon, Inc. v. Quigg*, 849 F.2d 1422, 1427 (Fed. Cir. 1988) (explaining the general evidentiary standard for proceedings before the Office).

1. Appellant’s Specification discloses that “[a] timed current pulse drives the [electric stepper] motor . . . [and] a timer . . . controls the amount of drive time.” In addition, the Appellant’s Specification discloses that “[t]he length of the pulse is preferably longer than the time

required to drive the mechanism to either the full park or full release position.” (Specification ¶ 0013.)

Scope and content of the prior art

2. The Examiner finds and Appellant chose not to rebut that Taig and Ward describe:
- an electric motor driven to rotate an internally threaded nut;
 - a shaft having an external thread and received within the internally threaded nut where the shaft is constrained from rotating by being connected to an actuator member;
 - the actuator member being connected to a brake mechanism such that the actuator member is movable between two extreme positions to in turn move the brake mechanism between a park position and a release position; and
 - a control for driving the electric motor to rotate and cause the shaft to move, and in turn cause the actuator member to move the brake mechanism between the park and the release positions, where the shaft drives a lever to pivot, and where the lever carrying a cam surface which cams a brake disc into engagement with a driveline structure to be locked to provide a park position.

Accordingly, we find Taig and Ward describe the claimed subject matter within claims 1, 4, 8, and 9 that has been identified above.

3. Harrison describes, in a braking system, an electric motor for controlling the application of a friction element to a rotating part. (Harrison ‘553, col. 1, ll. 19-21.) In particular, Harrison describes a stepper motor 10. The rotor of the stepper motor 10 is moved through

one step for each pulse produced at one output 18a in a direction determined by the signal at another output 18b. (Harrison '553, col. 3, ll. 20-23 and Figure 1.) The stepper motor 10 is under the control of control circuit 18. (Harrison '553, col. 3, ll. 19-20.) Control circuit 18 positions the rotor of the stepper motor 10 by supplying pulses to the switching circuit 17. (Harrison '553, col. 3, ll. 41-46.) The control circuit 18 ensures no slip or stall occurs in motor 10 and thus ensures the value of the position count reflects the actual position of the rotor. (Harrison '553, col. 3, ll. 46-50.) Control circuit 18 follows main brake control algorithm 30. Algorithm 30 causes a fixed number of pulses to be supplied to back the brakes off by a fixed clearance distance. (Harrison '553, col. 3, ll. 63-65.)

4. Eikelberger describes a parking brake system that is operated with the flick of a manual switch 36. An electric motor 26 turns worm shaft 28 that carries traveler block 30 and drives block 30 along its length. (Eikelberger, col. 5, l. 64 to col. 6, l. 4.) A catch pin extends from traveler block 30. (Eikelberger, col. 6, l. 4-5.) As shown in figure 6, knife type limit switches 32 and 34 define the range of cyclical operation of the motor 26. (Eikelberger, col. 6, ll. 6-8.) The actuation of either switch breaks the electrical power supplied to the motor to stop its rotation. (Eikelberger, col. 6, ll. 8-10.)

Differences between the claimed subject matter and the prior art

5. For claim 1, the claimed invention combines elements separately disclosed in the prior art.

6. For claim 4, the claimed invention claims a timer being a mono-stable, multi-vibrator switch whereas Eikelberger describes the switches being knife type limiting switches.
7. For claim 8, the claimed invention claims the number of drive pulses supplied to drive the electric motor is more than necessary to move the lever between the park position and the release position via the threaded shaft whereas Harrison describes the number of drive pulses supplied to drive the electric motor is not more than necessary to move the lever between the park position and the release position.

PRINCIPLES OF LAW

“Section 103 forbids issuance of a patent when ‘the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.’” *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1734 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, and (3) the level of skill in the art. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). *See also KSR*, 127 S. Ct. at 1734 (“While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”) The Court in *Graham* further noted that evidence of secondary considerations “might

be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.” 383 U.S. at 17-18.

The Supreme Court emphasized that “the principles laid down in *Graham* reaffirmed the ‘functional approach’ of *Hotchkiss*, 11 How. 248.” *Id.* (citing *Graham*, 383 U.S. at 12 (emphasis added)), and reaffirmed principles based on its precedent that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR* at 1739. The operative question in this “functional approach” is “whether the improvement is more than the predictable use of prior art elements according to their established functions.” *KSR* at 1740.

ANALYSIS

The Appellant and Examiner agree Taig and Ward describe all claimed elements associated with claim 1. (FF 2.) The difference between the claimed invention and the prior art is that the claimed invention combines the elements of the prior art. (FF 5.) The Appellant contends, not only do all the claimed elements need to be described by Taig and Ward, but there needs to be a suggestion in Taig to utilize its threaded nut and shaft arrangement to drive a lever. (App. Br. 5.) However, the prior art need not contain an express suggestion. “The motivation need not be found in the references sought to be combined, but may be found in any number of sources, including common knowledge, the prior art as a whole, or the nature of the problem itself.” *Dystar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1361 (Fed. Cir. 2006). In this case,

the Examiner finds “[o]ne having ordinary skill in the art at the time of the invention would have found it obvious to have used a parking brake system as taught by Ward for the generic lever arrangement shown in Taig simply as a choice of one of many pivotally actuated brakes available in the art and to have used this combination to actuate a parking brake attached to a vehicle driveline.” (Answer 4.) As we understand the Examiner’s rejection, the Examiner has used the particularly described parking brake mechanism in Ward in place of the generically described parking brake mechanism in Taig. Absent some evidence of unexpected results from using one particular parking brake mechanism over another particular parking brake mechanism, we find the Examiner’s substitution of the particular parking brake mechanism described in Ward for the generic parking brake mechanism described in Taig reasonable and yields no more than one would expect from such an arrangement. “[W]hen a patent ‘simply arranges old elements with each performing the same function it had been known to perform’ and yields no more than one would expect from such an arrangement, the combination is obvious.” *KSR* at 1740 (quoting *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273, 282, 96 S. Ct. 1532 (1976)). Such is the case with claim 1. Claim 1 simply arranges old elements found in Taig and Ward and yields no more than what one would expect from such an arrangement, the actuation of a parking brake on a vehicle. With respect to the Appellant’s contention that the Examiner has used hindsight, we are not persuaded by this contention because the Examiner has articulated a rational reason with a logical underpinning: use a specific parking brake described in Ward for the generic parking brake described in Taig. (See Answer 4.) Accordingly, we are not persuaded by the Appellant’s contentions that the Examiner erred in the

rejection by not finding the prior art had a suggestion to combine and the combination is solely based on hindsight. We will sustain the Examiner's rejection of claims 1 and 2.

The Appellant contends, for claim 8, "the movement between the park and release position is tied directly to the length of the pulse" and this feature is not disclosed in the prior art. (App. Br. 5.) The Examiner admits while the prior art "does not specifically mention a 'pulse length' for which the motor is actuated by the controller such a 'pulse length' could be interpreted broadly when the motor is activated to make adjustments, such as for wear of the pads or slack in the cable." (Answer 5.) The claim limitation at issue is "said drive pulses being supplied over a length longer than that necessary to move said shaft to drive said lever and move said brake mechanism between said park and said release positions." We determine the scope of the claims in patent applications not solely on the basis of the claim language, but upon giving claims "their broadest reasonable interpretation consistent with the specification" and "in light of the specification as it would be interpreted by one of ordinary skill in the art." *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). The Specification does not disclose a specific definition for "pulse length." Instead, the Specification discloses the length of the pulse is longer in time than the required time to drive the mechanism to either full park or full release position. (FF 1.) As such, we construe this claim limitation as the number of pulses provided by the "control[er]" is greater than the number of pulses needed to move the brake mechanism between the full park and full release positions. Harrison describes the rotor of the stepper motor is moved through one step for each pulse produced at one output 18a

in a direction determined by the signal at another output 18b. (FF 3.) Harrison describes the stepper motor is under the control of control circuit 18. (*Id.*) Harrison describes the algorithm 30 causes a fixed number of pulses to be supplied to back the brakes off by a fixed clearance distance. (*Id.*) Our review of Harrison concludes that the number of pulses is not longer than necessary to move the brake mechanism between the full park and full release positions. Thus, we find a difference between the claimed invention and the combined description of Taig, Ward, Finley or Oppitz, and Harrison '553.³ (FF 7.) Accordingly, the Appellant has persuaded us of an error in the Examiner's rejection of claims 3, 8, and 9 by identifying an error in the Examiner's underlying factual determination of the scope and content of Harrison. We will not sustain the Examiner's rejection of claims 3, 8, and 9.

The Appellant has not presented arguments for the rejection of claim 7. Accordingly, we are not persuaded that the Examiner erred in rejecting claim 7 for the same reasons given above with respect to claim 1. We will sustain the Examiner's rejection of claim 7.

The Appellant contends claim 4 requires a mono-stable, multi-vibrator switch. (App. Br. 6.) The Examiner finds Eikelberger shows providing electric motors with limit switches and concludes it is well known in the art to control the amount of time that an electric motor is actuated. (Answer 6.) While the Examiner is correct that Eikelberger describes limit switches (FF 4), the Examiner is incorrect to conclude because Eikelberger describes limit switches it is notoriously well known to control the amount of time that an

³ The Examiner has not used Taig, Ward, Finley or Oppitz to cure the deficiency of Harrison '553.

electric motor is actuated. Eikelberger's limit switches do not operate on a basis of time. The switches operate based on the length of travel of the travel block 30 and when the pin contacts one of the knife type limit switches the electrical power is removed from the motor. (FF 4.) Claim 4 requires a switch that operates on the principle of time, not a distance between two electrical contacts as Eikelberger describes, and that switch is a mono-stable, multi-vibrator switch. We find a difference between the claimed invention's timer being a mono-stable, multi-vibrator switch and Eikelberger's knife type limit switches. (FF 6.) Accordingly, the Appellant has identified an error in the Examiner's findings of the scope and content of Eikelberger. We will not sustain the Examiner's rejection of claim 4. For the same reasons, we will not sustain the rejection of claim 5 over the cited prior art. *Cf. In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992) (“[D]ependent claims are nonobvious if the independent claims from which they depend are nonobvious.”).

CONCLUSIONS OF LAW

We conclude that the Appellant has not shown that the Examiner erred in rejecting claims 1 and 2 as being unpatentable over Taig, Ward and Finley or Oppitz.

We conclude that the Appellant has not shown that the Examiner erred in rejecting claim 7 as being unpatentable over Taig, Ward, Finley or Oppitz, and Harrison '553.

Appeal 2008-2035
Application 10/641,577

We conclude that the Appellant has shown that the Examiner erred in rejecting claims 3, 8, and 9 as being unpatentable over Taig, Ward, Finley or Oppitz, and Harrison ‘553.

We conclude that the Appellant has shown that the Examiner erred in rejecting claims 4 and 5 as being unpatentable over Taig, Harrison ‘553, and Eikelberger.

DECISION

The Examiner’s decision to reject claims 1, 2, and 7 is affirmed.

The Examiner’s decision to reject claims 3, 4, 5, 8, and 9 is reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv) (2007).

AFFIRMED-IN-PART

hh

CARLSON, GASKEY & OLDS, P.C.
400 WEST MAPLE ROAD
SUITE 350
BIRMINGHAM, MI 48009