UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte DENIS JOHN McCANN and ANDREW JOHN WARD

Appeal No. 2005-2669
Application No. 10/122,774

ON BRIEF

Before FRANKFORT, CRAWFORD and BAHR, Administrative Patent Judges.

BAHR, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's rejection of claims 11-34. Claims 35-37 stand objected to as depending from a rejected claim but are otherwise indicated to be allowable.

We AFFIRM-IN-PART.

BACKGROUND

The appellants' invention relates to a parking brake system for a vehicle having either a conventional or electronically controlled braking system. Appellants' system includes a control system having a brake load level determining means to determine the brake load level at which the brake is to be parked and a control means for controlling actuation of a latching mechanism, or a combination of several latching mechanisms, to selectively maintain that brake load level during a parking phase. A copy of the claims under appeal is set forth in the appendix to the appellants' brief.

The Applied Prior Art

Nakamoto et al. (Nakamoto)	4,561,527	Dec. 31, 1985
Neuhaus et al. (Neuhaus)	5,255,962	Oct. 26, 1993
Hanisko	5,637,794	Jun. 10, 1997
Halasy-Wimmer et al. (Halasy-Wimmer) (German patent application publication)	DE 196 20 344	Aug. 14, 1997[1]

The Rejections

(1) Claims 11-15, 17, 19-24, 28 and 29 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Nakamoto.

(2) Claims 16, 25 and 30 stand rejected under 35 U.S.C. § 103 as being unpatentable over Nakamoto in view of Neuhaus.

(3) Claim 26 stands rejected under 35 U.S.C. § 103 as being unpatentable over Nakamoto in view of Neuhaus and Hanisko.

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[1] We derive our understanding of this reference from the English-language translation provided by the examiner.

(4) Claim 18 stands rejected under 35 U.S.C. § 103 as being unpatentable over Nakamoto in view of Halasy-Wimmer.

(5) Claim 27 stands rejected under 35 U.S.C. § 103 as being unpatentable over Nakamoto in view of Neuhaus and Halasy-Wimmer.

(6) Claims 11, 12, 14, 17, 18, 21, 22, 28 and 31-34 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Halasy-Wimmer.

(7) Claims 11, 14 and 15 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of US Pat. No. 6,382,741 in view of Halasy-Wimmer.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellants regarding this appeal, we make reference to the examiner's answer (mailed February 15, 2005) for the examiner's complete reasoning in support of the rejections and to the appellants' brief (filed July 22, 2004) and reply brief (filed January 31, 2005) for the appellants' arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims, to the applied prior art, and to the respective positions articulated by the appellants and the examiner. As a consequence of our review, we make the determinations that follow.

The obviousness-type double patenting rejection

The appellants have not contested the rejection of claims 11, 14 and 15 under the judicially created doctrine of obviousness-type double patenting and instead have indicated on page 34 of their brief that they are willing to file a terminal disclaimer once the patentability of all of the claims is finally resolved if one is still necessary. The rejection is therefore summarily sustained.

The rejections based on Nakamoto

Nakamoto discloses an electric parking brake system for a vehicle, the parking brake system being provided with a control system for preventing the parking brake from being applied in situations, as described in columns 1-3 of Nakamoto, in which wheel-lock would be dangerous. As schematically shown in Figure 1, the vehicle includes a pair of disc brakes 1, a parking brake system A having a parking brake cable 2 connected to the disc brakes and adapted to be pulled or slackened to apply or release the brakes, and a main brake system 4 having flexible hoses 3 connected to the disc brakes and adapted to feed pressurized fluid to the brakes upon depression of a

brake pedal for application of the brakes (column 4, lines 7-17). Nakamoto discloses the following with respect to the actuation of the parking brake system:

> The parking brake system A is actuated or de-actuated under the control of an electromagnetic means, generally designated at reference character B, which comprises a reversible motor 5, a worm 6 provided on the rotation shaft of the motor 5, a worm gear 7 in meshing engagement with the worm 6, a speed-reduction gear 8 formed concentrically and integrally with the worm gear 7, and a sector gear 9 meshed with the speed-reduction gear 8, the parking brake cable 2 being connected at its one end to the sector gear 9. With this arrangement, when the motor 5 is driven to rotate in the forward direction, the parking brake cable 2 is drown [sic] or pulled to the left in FIG. 1 through the gears 7 to 9 thereby to actuate the parking brake A, whereas upon reverse rotation of the motor 2, the parking brake cable 2 is slackened or returned to the original condition through the action of the gears 7 to 9, thereby to release the parking brake A. Connected to the sector gear 9 is a spring 10 which acts to urge the sector gear 9 to rotate in the clockwise or counterclockwise direction, as viewed in FIG. 1, with change-over point at which the action of the spring 10 switches from one direction to the other being the position at which the spring 10 extends through the center of rotation or pivot point of the sector gear 9. Thus, the spring 10 serves to assist the brake-applying and brake-releasing operations of the parking brake A caused under the drive of the motor 5.
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> Also illustrated in FIG. 1 are a controller C for feeding a brake-application command signal and a brake-release command signal to the electromagnetic means B or the motor 5; a group of sensors D adapted to detect the various operating conditions of the vehicle and send out signals representative of the operating conditions thus detected; and an indicator E for displaying the output conditions of the controller C. The controller C serves to control the operation of the electromagnetic means B or the direction of rotation of the motor 5 in accordance with the detected operating conditions of the vehicle on the basis of the signals from the sensors D [column 4, lines 18-57].

With reference to Figure 2B, Nakamoto discloses the following:

> Reference character F designates a manually operated switch which is comprised of an automatic control switch 22 adapted to be manually turned on or off by the operator for switching the controller C into automatic mode; a manual brake application switch 23 adapted to be turned on or off by the operator so as to put the parking brake applying operation of the controller C into manual mode; and a manual brake releasing switch 24 adapted to be turned on or off by the operator so as to put the parking brake releasing operation of the controller C into manual mode. These switches 22 to 24, when turned on, produce output signals which are fed to the controller C [column 5, lines 39-51].

Once the CPU 25 has determined, based on signals from vehicle sensors, that the foot brake system is operating normally, that brake fluid levels are normal and that the vehicle speed is such that actuation of the parking brake is permitted, the CPU determines whether the manual brake application switch 23 is turned on. If the manual brake application switch 23 is turned on, the CPU acts to produce a brake application command signal in accordance with a sub-flow of operation, as shown in Figure 4. As disclosed in column 8, in the first full paragraph,

> [s]pecifically, in the sub-flow for controlling the operation of the parking brake A, as viewed in FIG. 4, the CPU 25 first measures the angle of inclination of the vehicle with respect to the horizontal by means of the inclination signal from the inclination sensor interface 31, and then sets the operation force of the parking brake A required for the inclination measured. Thereafter, a brake application command signal is put out by the CPU 25 to the motor 5 of the electromagnetic means B whereby the motor 5 is driven to rotate in the forward direction. The torque of the motor 5 is compared with the set force for the parking brake A and the motor 5 is operated until the motor torque increases to exceed the set force of the parking brake A. At the instant when the motor torque reaches the set force for the parking

> brake A, the brake application command signal is stopped to de-energize the motor 5 so that the parking brake A is put into a locked state of brake application.

The appellants argue that the subject matter of claim 11 is not anticipated by Nakamoto because Nakamoto does not "selectively maintain said initial park brake load level" as called for in claim 11. In particular, the appellants urge that Nakamoto's CPU measures the angle of inclination of the vehicle and then sets the operation force of the parking brake A required for the inclination measured and then operates motor 5 until the motor torque "increases to exceed the set force of the parking brake A" (column 8, lines 15-16; emphasis added). Thus, according to the appellants, Nakamoto applies a parking brake load level that exceeds the determined (or "set") parking brake load level. See pages 15-16 of the brief.

While the appellants are correct that Nakamoto discusses operating the motor until the motor torque increases to exceed the set force of the parking brake, Nakamoto then goes on to explain that "[a]t the instant when the motor torque reaches the set force for the parking brake A, the brake application command signal is stopped to de-energize the motor 5 so that the parking brake A is put into a locked state of brake application" (column 8, lines 16-22). In light of the entirety of Nakamoto's disclosure with regard to the operation of the motor 5, one of ordinary skill in the art would have understood that the operation force set by the CPU is the cut-off level at which the motor 5 is de-energized and, further, would have had sufficient understanding of control theory to understand that, in practice, this means that the motor is de-energized at the instant when the measured motor torque meets or exceeds such cut-off level and would

have considered the parking brake A to then be locked so as to maintain the set operation force, within the accuracy permitted by the control system.

In light of the above, we find no error in the examiner's determination that Nakamoto meets the limitations in the last paragraph of claim 11 argued by the appellants to be lacking. Accordingly, the rejection of claim 11, as well as claims 14 and 15, which the appellants have grouped with claim 11, as being anticipated by Nakamoto is sustained.

We shall also sustain the rejection of dependent claim 18 as being unpatentable over Nakamoto in view of Halasy-Wimmer since the appellants have not challenged such with any reasonable specificity (see In re Nielson, 816 F.2d 1567, 1572, 2USPQ2d 1525, 1528 (Fed. Cir. 1987)).

The rejection of claims 12, 13, 22-24, 28 and 29 as being anticipated by Nakamoto is not sustained. Nakamoto provides no disclosure of an adjustment of the park brake load level (set operation force) in response to a change in the inclination angle of the vehicle (the static vehicle characteristic upon which the set operation force is set) subsequent to the initial park brake load level (set force) being determined, as called for in claims 12, 13, 22-24, 28 and 29. The examiner's position that this limitation is met by Nakamoto by a subsequent reapplication of the parking brake (answer, pages 5 and 16-17) does not reflect a fair and reasonable reading of the claim language, especially in light of the appellants' specification.

While it is true that the claims in a patent application are to be given their broadest reasonable interpretation consistent with the specification during prosecution

of a patent application (see, for example, In re Zletz, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989)), it is also well settled that terms in a claim should be construed as those skilled in the art would construe them (see Specialty Composites v. Cabot Corp., 845 F.2d 981, 986, 6 USPQ2d 1601, 1604 (Fed. Cir. 1988) and In re Johnson, 558 F.2d 1008, 1016, 194 USPQ 187, 194 (CCPA 1977). Further, as pointed out by our reviewing court in Phillipps v. AWH Corp., 415 F.3d 1303, 1315, 75 USPQ2d 1321, 1327 (Fed. Cir. 2005), the claims, of course, do not stand alone but, rather, are part of a fully integrated written instrument consisting principally of a specification that concludes with the claims. For that reason, claims must be read in view of the specification, of which they are a part. "[T]he specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." Id.

First, one of ordinary skill in the art would not consider a subsequent application of the parking brake to be an adjustment to the park brake load level subsequent to said initial park brake load level being applied. Moreover, as explained in the paragraph bridging pages 18 and 19 of the appellants' specification, with the appellants' parking brake control system, the parking brake force can be adjusted, during the parked phase, in response to changes in static vehicle characteristics. In light of that disclosure, one of ordinary skill in the art would have interpreted the recitation of adjusting the park latch mechanism to an adjusted park brake load level subsequent to said initial park brake load level being applied in claims 12, 13, 22-24, 28 and 29 to refer to a single parking

brake application, not to a subsequent reapplication following release of the parking brake.

Claim 20 depends from claim 12. For the reasons cited above with respect to claims 12 and 13, we also cannot sustain the rejection of claim 20 as being anticipated by Nakamoto.

The rejection of claim 17, which depends from claim 11 and further recites that the variable position back stop comprises a cam member, as being anticipated by Nakamoto also cannot be sustained. In making this rejection the examiner contends that Nakamoto's sector gear 9 is a cam member. On page 20 of the brief, the appellants argue, and we agree, that one of ordinary skill in the art would not consider the sector gear 9 of Nakamoto to correspond to the appellants' claimed "cam member." The examiner points to a definition of cam on page 6 of the answer as "a multiply curved wheel mounted on a rotating shaft and used to produce variable or reciprocating motion in another engaged or contacted portion." Even accepting the definition proffered by the examiner, as recognized by the appellants (brief, pages 20-21), Nakamoto's sector gear 9 falls far short of meeting this definition. First, the sector gear is not multiply curved; it appears to have only a single radius of curvature. Second, it is not mounted on a rotating shaft.

We turn now to the rejection of claim 19 as being anticipated by Nakamoto. Claim 19 depends from claim 11 and recites that the parking brake system includes an electronic braking system with an input device for generating a park demand signal and further calls for the control system to generate a static compensation signal based on

said at least one static vehicle characteristic and to determine an initial park brake load level based on said park demand signal and said static compensation signal. In reading the claim language on Nakamoto's braking system, the examiner considers the input device to be the foot brake sensor interface 27 and finds that the CPU determines an initial park brake load level (operation force) based on the signal from the interface 27 and the inclination measurement signal. For the following reasons, the examiner's rejection is sustained.

The appellants argue that (1) Nakamoto does not determine an initial park brake load level based on both a park demand signal and a static compensation signal and (2) Nakamoto does not disclose an electronic braking system. With respect to the first argument, as illustrated in Figures 2A and 3B, Nakamoto's CPU determines whether a plurality of conditions are met, including whether or not the brake pedal is depressed, and, on the basis of that determination, decides whether or not to produce a brake command signal in accordance with a sub-flow as illustrated in Figure 4, such sub-flow determining an operation parking brake force based on the measured inclination angle of the vehicle (the at least one static vehicle characteristic). Accordingly, Nakamoto's CPU does determine an initial park brake load level (operation force) based on the park demand signal from interface 27 and on the inclination angle signal, thereby meeting the limitations of the control system set forth in claim 19. We also observe that Nakamoto's manual brake application switch 23 also meets the requirements of the "input device" recited in claim 19. As for the second argument, Nakamoto's parking

brake A is operated by an electromagnetic means B, which comprises motor 5 and the gears 7, 8, 9 and thus is an “electronic braking system” as recited in claim 19.

With regard to claim 21, the appellants argue (brief, page 23) that Nakamoto does not teach first and second actuation members cooperating with a single brake operating member for applying foundation brake force and a parking brake force, respectively. The examiner considers the brake pedal disclosed in column 4, line 16, along with elements 3 to correspond to the recited first actuation member cooperating with the brake operating member for applying a foundation braking force and the motor 5, gears 7-9 and cables 2 to correspond to the recited second actuation member cooperating with the brake operating member for applying a parking brake force (answer, page 7). As disclosed in column 4, lines 10-17, Nakamoto’s braking system includes a parking brake A having parking brake cables 2 connected to the disc brakes 1 and adapted to be pulled or slacked to apply or release the brakes 1 and a main brake system 4 having flexible hoses 3 connected to the disc brakes 1. Further, both the hoses 3 and cables 2 are illustrated in Figure 1 as being connected to identical locations on the disc brakes 1, thereby conveying to one of ordinary skill in the art that both the first actuation member (the brake pedal and hoses 3 of the main brake 4) and the second actuation member (motor 5, gears 7-9 and cables 2 of the parking brake B) cooperate with the same brake operating member for applying a foundation braking force and a parking brake force, respectively, as called for in the claim.

The appellants’ only other argument with respect to the rejection of claim 21 as being anticipated by Nakamoto is that Nakamoto does not teach determining an initial

park brake load based on static vehicle conditions and maintaining the load during an initial parking phase (brief, page 23). This argument is not well founded for the reasons cited above with respect to the rejection of claim 11. Accordingly, the rejection of claim 21 as being anticipated by Nakamoto is sustained.

The rejection of claims 16, 25 and 30 as being unpatentable over Nakamoto in view of Neuhaus is not sustained. Neither Nakamoto nor Neuhaus teaches or suggests determining said initial park brake load level based on brake temperature, as called for in these claims. Nakamoto discloses using a plurality of vehicle conditions, including a vehicle load condition, to determine whether or not parking brake application is appropriate and, if appropriate, entering a sub-flow to determine the braking force as a function of the measured angle of inclination. Neuhaus discloses an electronic braking system that uses vehicle load and brake temperature to modulate the main brake force to be applied but provides no teaching or suggestion with regard to parking brake force.

The rejection of claim 26, which depends from claim 25, as being unpatentable over Nakamoto in view of Neuhaus and Hanisko is also not sustained. The examiner's statement of the teachings of Hanisko on page 11 of the answer does not appear to be accurate. Specifically, Hanisko teaches placing a plurality of resistive sensors within a brake lining to monitor both changes in brake temperature and degree of wear of the lining. In accordance with Hanisko's disclosed method, a resistive temperature sensor is disposed within the brake lining and connected in series with external resistors connected to serially-connected electrical wire loops disposed within the brake lining at various selected wear heights. The maximum resistive change of the resistive

temperature sensor is selected to be smaller than the resistance of any individual resistive element in the resistor array. Therefore, relatively small changes in the circuit resistance indicate brake operating temperature changes while a relatively large change in circuit resistance indicates that a wire loop has been broken. Hanisko does not teach use of a means through which brake temperature is derived through assessment of change in travel of a first actuation member during brake application. It follows that Hanisko provides no teaching or suggestion to add such a feature to Namamoto's braking system. Moreover, in any event, the examiner's application of Hanisko provides no cure for the deficiency of the combination of Namamoto in view of Neuhaus discussed above with regard to claim 25.

The rejection of claim 27 as being unpatentable over Namamoto in view of Neuhaus and Halasy-Wimmer is also not sustained. The examiner's application of Halasy-Wimmer does not make up for the deficiency of the combination of Namamoto in view of Neuhaus discussed above with regard to claim 25, from which claim 27 depends.

Finally, the rejection of claims 11, 12, 14, 17, 18, 21, 22, 28 and 31-34 as being anticipated by Halasy-Wimmer cannot be sustained. As discussed above, each of the appellants' claims requires determination of an initial park brake load level based on at least one static vehicle characteristic or a control system for such determination. The examiner points out that Halasy-Wimmer discloses automatic triggering of the parking brake by a signal of an electric circuit linked to the ignition so that the brake is applied and locked when the ignition is turned on. While the on/off status of the ignition would

certainly appear to be a "static vehicle characteristic" as referred to in the appellants' claims, the examiner has not pointed to any step of or control system for determining the initial parking brake load level based on any static vehicle characteristic. Rather, Halasy-Wimmer appears to disclose that the parking brake operation is performed by using an electrically controlled and adjustable brake force booster and that the parking brake is triggered and adjusted by the driver by a parking brake switch (see column 7, first full paragraph). Inasmuch as the examiner has not pointed out, nor is it apparent, where such step of or control system for determining is disclosed in Halasy-Wimmer, the examiner has failed to set forth a *prima facie* case that the subject matter of the appellants' claims is anticipated[2] by Halasy-Wimmer.

CONCLUSION

To summarize, rejection (1) is sustained as to claims 11, 14, 15, 19 and 21 and reversed as to claims 12, 13, 17, 20, 22-24, 28 and 29, rejections (2), (3), (5) and (6) are reversed and rejections (4) and (7) are sustained. The decision of the examiner is AFFIRMED-IN-PART.

[2] To anticipate, every element and limitation of the claimed invention must be found in a single prior art reference, arranged as in the claim. Karsten Mfg. Corp. v. Cleveland Golf Co., 242 F.3d 1376, 1383, 58 USPQ2d 1286, 1291 (Fed. Cir. 2001); Scripps Clinic & Research Foundation v. Genentech, Inc., 927 F.2d 1565, 1576, 18 USPQ2d 1001, 1010 (Fed. Cir. 1991).

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

CHARLES E. FRANKFORT Administrative Patent Judge	)	
MURRIEL E. CRAWFORD Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
JENNIFER D. BAHR Administrative Patent Judge	)	

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