

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 28

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JAMES P. BURGESS, DAVID J. PEARSON and
GILBERT F. SHULTZ

Appeal No. 1998-2932
Application No. 08/603,680

HEARD: May 17, 2001

Before THOMAS, KRASS, and LALL, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1-12, all of the pending claims.

The invention is directed to a power distribution module, preferably entirely contained within an enclosure having an integral heat sink in thermal communication with power switches, and especially suitable for vehicular applications.

Representative independent claim 1 is reproduced as follows:

1. A power distribution module, comprising:

an input/output port adapted for connection to an external multiplexed communication path;

transceiver circuitry connected to the input/output port operative to send and receive messages over the communication path in digital form;

an input for connection to a source of power;

a plurality of power output ports;

a plurality of controllable power switches, each associated with one of the power output ports, each power switch being operative to route power from the source of power to an associated power output port in accordance with a control signal; and

a controller operatively connected to the transceiver circuitry and to each power switch, the controller being operative to perform the following functions:

send and receive messages over the communication path through the transceiver circuitry, and

provide a control signal to a specific power switch in accordance with a received message, causing power to be routed from the power source to the output port associated with that switch.

The examiner relies on the following references:

Sagues et al. (Sagues)	4,557,225	Dec. 10, 1985
Cruickshank et al. (Cruickshank)	4,951,250	Aug. 21, 1990
Tomita et al. (Tomita)	5,065,153	Nov. 12, 1991
Shultz et al. (Shultz)	5,433,283	Jul. 18, 1995 (filed Oct. 27, 1993)

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Claims 1-12 stand rejected under 35 U.S.C. § 103. As evidence of obviousness, the examiner cites Shultz with regard to claim 1, adding Cruickshank with regard to claims 3, 4 and 8-12. With regard to claim 2, the examiner cites Shultz and Tomita. With regard to claim 5, the examiner cites Sagues, to which Cruickshank and Tomita are added with regard to claims 6 and 7.

Reference is made to the briefs and answer for the respective positions of appellants and the examiner.

OPINION

Turning first to independent claim 1, the examiner holds the subject matter of this claim to have been obvious over Shultz. More specifically, the examiner identifies, in Shultz, a power distribution module (Figure 1), an I/O port (40 with connection to 70) for connection to an external multiplexed communication path, transceiver circuitry (within 40) connected to the I/O port and operative to send and receive messages over the communication path in digital form (column 4, lines 38-48), an input (20 and 55) for connection to a source of power, a plurality of power output ports (GATE DRIVES), controllable power switches (30-32) and a controller (40) for sending and receiving messages (column 3, lines 55 through column 4, line 48).

The examiner contends that a control signal is provided to a specific power switch in accordance with a received message, causing power to be routed from the power source but not to the output port associated with that switch. However, the examiner concludes that it would have been obvious “to be able to route the power from the source of power through the actual power output port, if so desired, in order to provide a more compact design by including the power switches within the main module (40)” [Paper No. 10-page 4].

For their part, appellants contend that Shultz merely discloses a processor which converts a pulse-width-modulated command input signal along line 69 into gated drives to transistors 30-32 which control a motor 11. While the examiner characterizes the outputs of processor 40 of Shultz as “power outputs,” appellants contend that Shultz’s outputs are merely low-power gate drive lines to transistors 30-32 and it is the transistors themselves that actually route power from bus 20 directly to the motor. In fact, appellants argue, Shultz does not contain any power output ports but only MOSFETs 30-32 which are used to switch coils in the motor. Appellants further state that the examiner’s conclusion regarding the obviousness of routing power through the actual output port is erroneous because Shultz contains no suggestion for doing so since Shultz is not directed to power distribution, but only to motor control in a throttle plate/carburetor application.

While appellants may be correct in that Shultz's outputs are "merely low-power gate drive lines" and it is the transistors themselves that actually route power from the source to the motor, we find nothing in independent claim 1 that would distinguish "low-power gate drive lines" from the broadly claimed "power output ports." In fact, one may consider the outputs of transistors 30-32 of Shultz to be "power output ports," as claimed. The microprocessor 40 would then provide a control signal to the transistor switches in accordance with a received message (i.e., a desired throttle position). The controller, 40, would also be "operatively connected to the transceiver circuitry and to each power switch (i.e., to each transistor).

The claim requires that "each" of the controllable switches is "associated with one of the power output ports" and that "each power switch" be able to route power to an associated power port in accordance with a control signal. In Shultz, each one of the transistor switches 30-32 is associated with its own output, or "power output port" and each transistor "routes power to an associated power port in accordance with a control signal" as provided by processor 40. Further, the claim requires that the control signal is provided to a "specific" power switch, in accordance with a received message and that power is caused to be routed from the power source to "the output port associated with that switch." Shultz's controller provides a gate drive to each transistor

switch so that the control signal is, indeed, provided to a “specific” transistor switch. While the controller, 40, of Shultz does provide control signals to each of the power switches (transistors 30-32) and the switches do provide power to be routed from the power source to the windings 15-17 of the motor 11 with each of the transistor switches associated with an output port, Shultz is very clear that *simultaneous* driving signals are applied to at least two windings [column 5, lines 10-15, claims 1 and 11]. However, we do not find any claim language that would preclude this simultaneous application to at least two windings in Shultz. Thus, Shultz does provide a control signal to a specific power switch, causing power to be routed from the power source to the output port associated with that switch. Shultz provides a control signal to power switches causing power to be routed from a power source to the output port associated with that switch. Even though Shultz requires the application of the control signal to *at least* two switches, Shultz can still be said to teach providing a control signal to a specific power switch since the control signal is applied to each winding, as needed.

Nevertheless, we will not sustain the rejection of claim 1 under 35 U.S.C. § 103 because the claim requires “transceiver circuitry . . . to send and receive messages” and that the control signal is provided “to a specific power switch in accordance with a received message”. While the examiner contends that Shultz’s “transceiver circuitry”

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is included in processor 40, we do not agree. It may be broadly stated that Shultz's processor 40 does send and receive signals, because the processor 40 does send signals to the transistors through the gate drives and the processor 40 does receive signals from the temperature input on line 68 and command input on line 69. However, a transceiver is commonly known in the art as sending and receiving "communication" signals. The signals described with regard to Shultz's processor 40 are not communication signals. Column 4, lines 44-48, of Shultz does describe the microcontroller 40 as providing on-board or diagnostic multiplexed "communications" to provide warnings or other operating indicia externally of the system, wherein the diagnostics and "communications" functions are denoted by box 70 in Figure 1. However, while processor 40 is described as providing "communications" signals, there is no indication that there is any signal received by the processor 40 regarding the warnings or other operating indicia. In fact, it would seem that the communication is only one way if the processor is providing warning signals to an operator. Without two-way communication, the processor 40 of Shultz cannot be said to comprise a "transceiver," as required by independent claim 1.

Turning to the rejection of claims 2-4, we will not sustain the rejection of these claims since they are dependent on claim 1 and neither Cruickshank nor Tomita, relied

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on by the examiner for other claim limitations (Cruickshank for programmable control and distribution modules and Tomita for use of control modules within a shared communication medium in which contention protection is offered), provides for the deficiency of claim 1.

Independent claims 8 and 9 include recitations of a “network.” Claim 8 calls for a “vehicular communication network” while claim 9 calls for a “first, existing network” and a “plurality of power-control modules interfaced to the first network...”

Neither Shultz nor Cruickshank suggests a “network” of any kind. Accordingly, we will not sustain the rejection of independent claims 8 and 9, or of claims 10-12, dependent on claim 9, under 35 U.S.C. § 103.

Independent claim 6 is a very narrow claim directed to a power distribution module having, inter alia, an enclosure, bidirectional communication path, digital communication circuitry for sending and receiving messages, contention detection circuitry for outputting a fault signal if a message is received while one is being sent, and protection circuitry.

The examiner relies on the combination of Sagues, Cruickshank and Tomita in rejecting claim 6 and its dependent claim 7. However, we do not find the required bidirectional communication and digital communication circuitry disclosed or suggested

in any of the applied references. The examiner contends that Sagues has a

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communication capability which is considered two-way “as information is gathered from sensors, compiled and acted upon by the sending of signals to various power-consuming loads. We do not view the sending of signals to loads, wherein the signals are derived from processing signals from sensors, as “bidirectional communication” or as constituting “digital communication circuitry” as claimed. Any signals in Sagues are not considered as constituting communication “messages” which are sent and received over the bidirectional communication path as in the claimed invention. Neither Cruickshank nor Tomita are of any help in this regard.

Accordingly, we will not sustain the rejection of claims 6 and 7 under 35 U.S.C. § 103.

With regard to independent claim 5, we take the opposite view and will sustain the rejection of claim 5 under 35 U.S.C. § 103.

The examiner employs Sagues, alone, to reject claim 5 under 35 U.S.C. § 103. Specifically, the examiner sets forth, at pages 7-8 of the final rejection (Paper No. 10, Dec. 10, 1996) how each claimed element is considered to correspond to an element in Sagues. The only difference between the claimed subject matter and that disclosed by Sagues, as the examiner sees it, is that Sagues does not specifically disclose that

switches selectively route power from the power input connector to a terminal of the power output connector through an associated power switch . The examiner finds that it would have been obvious to route the power from the power input connector to a terminal of the power output connector through an associated power switch, if desired, because an additional power source would have been saved and this would reduce space requirements.

The examiner at least makes a rational case for obviousness by identifying corresponding components in the reference, identifying differences between the reference and the claimed subject matter and sets forth a reason why the claimed subject matter as a whole would have been obvious to the artisan.

It also appears clear to us from Sagues' disclosure (column 1, lines 45-47; column 7, lines 58-62) that the reference provides a suggestion for routing power from an input source to various components at an output.

The only response by appellants is set forth at pages 10-12 of the principal brief. This response comprises citations from the examiner's final rejection and from column 1, lines 40-52, of Sagues and general allegations that the examiner's position is in error and that Sagues teaches away from the claimed invention because Sagues employs voltage regulators to power internal components rather than using elements 80 to

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provide power outputs. Appellants also contend that because Sagues recites a solid-state switch to power an actuator, this does not necessarily provide a power output to a terminal.

We do not find appellants arguments in this regard to be persuasive. Sagues clearly discloses a switch for powering an actuator. The actuator clearly enables functioning of some output device. Thus, it appears to us that unless there is evidence to the contrary of which we are unaware, Sagues does, indeed, provide power to some output terminal. If not, no load at the output would be operable.

At the telephonic hearing of May 17, 2001, appellants' representative was invited to point to a specific claim limitation in claim 5 which distinguished over Sagues and/or to dispute the examiner's correspondence of elements at pages 7-8 of the answer but no such indication or dispute was made. General allegations of the reference's inapplicability to the claimed subject matter do not suffice to overcome the prima facie case of obviousness set forth by the examiner.

CONCLUSION

We have sustained the rejection of claim 5 under 35 U.S.C. § 103 but we have not sustained the rejection of claims 1-4 and 6-12 under 35 U.S.C. § 103.

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Accordingly, the examiner's decision is affirmed-in-part.

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

JAMES D. THOMAS)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
ERROL A. KRASS)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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