

The opinion in support of the decision being entered today  
is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* BRANDON A. RUBENSTEIN

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Appeal 2007-0631  
Application 10/379,652  
Technology Center 2800

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Decided: July 25, 2007

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Before TONI R. SCHEINER, DONALD E. ADAMS, and LORA M.  
GREEN, *Administrative Patent Judges*.

ADAMS, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal under 35 U.S.C. § 134 involves claims 1-24, the only  
claims pending in this application. We have jurisdiction under 35 U.S.C.  
§ 6(b).

## INTRODUCTION

The claims are directed to a device for insertion and removal of a circuit board into a mating connector (claims 1-5 and 19-24), a method of locking a printed wiring board into a connector (claims 6-13), a latching device (claims 14-18), and a printed wiring board (claim 18). Claims 1, 6, 10, 14, and 18 are illustrative:

1. A device for insertion and removal of a circuit board into a mating connector, said connector positioned within a housing, said device comprising:

a first end for pivotal engagement with said circuit board, said first end also adapted to mate with a front surface of said housing when said circuit board to which said device is pivotally engaged begins to engage said connector; and

a second end disposed longitudinally from said first end, said second end adapted with a latch having a slot for releasably mating with a protrusion on said circuit board such that when said board is engaged with said connector said second end becomes releasably mated to said protrusion thereby latching said board to said connector wherein said first end and said second end are part of one continuous member of said device.

6. A method of locking a printed wiring board into a connector, said connector mounted to a housing, said housing having at least one guide for positioning said board with respect to said connector, said method comprising:

placing a board within said guide in a direction such that said board will, upon application of insertion force thereupon, move into mated relationship with said connector;

applying said insertion force to said board to move said board toward said connector until a first end of a device which is pivotally mounted to said board engages with an edge of said housing;

rotating said device so that a longitudinal portion of said device engages on a portion of said board;  
continuing to apply force to said device so as to move said board and said connector into said mated relationship; and

retaining said device in an engaged position on said portion of said board, even after said external insertion force has been removed, said engaged position maintaining a force to bias said board into said connector and preventing said board from becoming disconnected from said connector at least in part by said first end of said device engaging said edge of said housing.

18. A printed wiring board (PWB) adapted for latching into a mated relationship with a housing mounted connector, said PWB comprising:

a protrusion for releasably accepting a latching mechanism, said latching mechanism operable, in conjunction with said protrusion, and with an outer portion of said housing, for maintaining positive force between said PWB and said connector to maintain positive electrical contact between said PWB and said connector after externally applied insertion force has been removed.

The Examiner relies on the following prior art references to show unpatentability:

Hristake	US 5,414,594	May 9, 1995
Na	US 6,537,085	Mar. 25, 2003

The rejections as presented by the Examiner are as follows:

1. Claims 1-16 and 18-24 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Hristake.
2. Claim 17 stands rejected under 35 U.S.C § 103(a) as unpatentable over the combination of Hristake and Na.

We affirm-in-part.

## DISCUSSION

### Anticipation:

Claims 1-16 and 18-24 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Hristake.

### Claim 1:

Claim 1 is drawn to a device. The device comprises one continuous member having a first end and a second end disposed longitudinally from said first end. According to claim 1, the device is for the insertion and removal of a circuit board into a mating connector that is positioned within a housing. In this regard, the first end pivotally engages a circuit board and is adapted to mate with a front surface of the housing when the circuit board begins to engage a connector. The second end is adapted with a latch having a slot for releasably mating with a protrusion on a circuit board such that when the circuit board is engaged with a connector the second end becomes releasably mated to a protrusion thereby latching the board to the connector.

The Examiner finds that Hristake teaches a device that comprises a first end and a second end (Answer 3). In addition, the Examiner finds that since Hristake's first and second ends are connected to the device, they are part of one continuous member (Answer 4). For clarity, we direct attention to Hristake's figure 5.

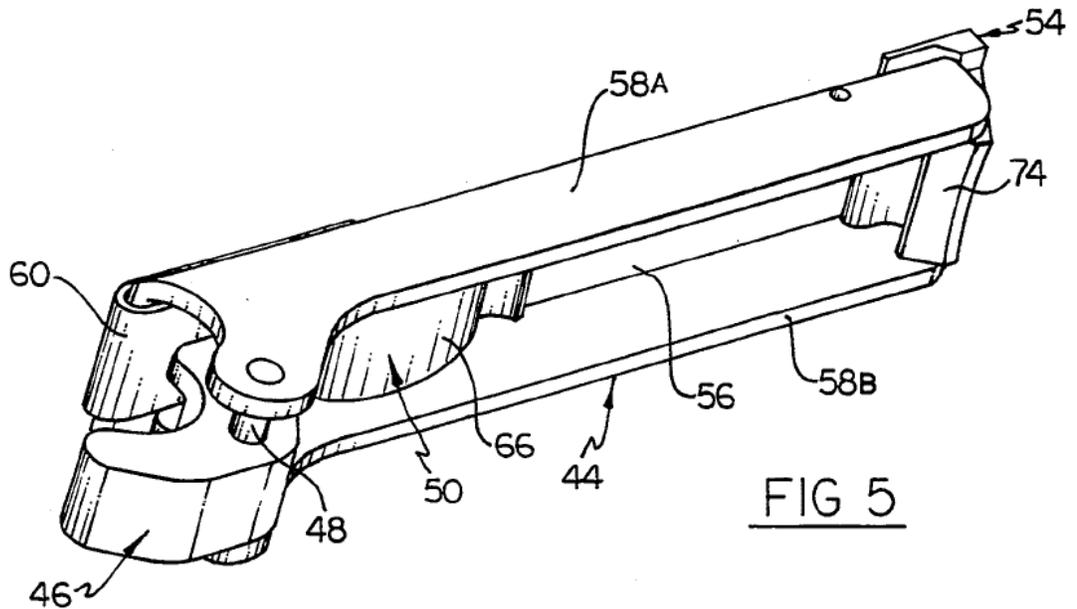


Figure 5 is said to depict “a perspective view of the underside of the insertion/extraction apparatus of FIG. 2” (Hristake, col. 3, ll. 62-63). As illustrated by figure 5, Hristake’s device comprises one continuous member having a first end (46) and a second end (54), wherein the second end is disposed longitudinally from the first end.

The Examiner finds that Hristake’s device is for the insertion and removal of a circuit board into a mating connector that is positioned within a housing (Answer 3). The Examiner finds that the first end (46) of Hristake’s device pivotally engages (via pin 48) with a circuit board and is adapted to mate with a front surface of the housing when the circuit board begins to engage a connector. In addition, the Examiner finds that the second end (54) of Hristake’s device is adapted with a latch having a slot for releasably mating with a protrusion on a circuit board such that when the circuit board

is engaged with a connector the second end becomes releasably mated to a protrusion thereby latching the board to the connector (Answer 3-4).

In response, Appellant asserts that Hristake fail to teach that the first and second ends are part of one continuous member. In this regard, Appellant asserts that Hristake's first end (44) is connected by a pivot pin (48) to the remainder of Hristake's device. As such, Appellant asserts the first end is separate from the second end (Br. 9). Accordingly, Appellant asserts that the first and second ends "are not part of one continuous body, as required by claim 1" (*id.*). In this regard, Appellant asserts that the Merriam-Webster Dictionary "definition of continuous is: 'marked by uninterrupted extension in space, time, or sequence'" (Reply Br. 4-5, footnote omitted). From this, Appellant asserts that since the first end (44) and the remainder of Hristake's device are separate, disjointed, and interrupted from one another it cannot be said that they represent part of one continuous body (Reply Br. 5).

In response, the Examiner finds that the first end (44) and the second end (54) of Hristake's device are attached and assembled to form one continuous connected piece (Answer 11). In our opinion, the Examiner has the better argument. Attachment of the first end via a pivot pin (48) does not cause the first end to be separated in space, time, or sequence from the remainder of Hristake's device. To the contrary, Hristake's device comprises one continuous member having a first end and a second end disposed longitudinally from said first end. We find nothing in Appellant's claim to suggest that the first end cannot be attached via a pivot pin to the second end of the device.

For the foregoing reasons, we affirm the rejection of claim 1 under 35 U.S.C. § 102(b) as being anticipated by Hristake. Appellant does not separately argue claim 2. Accordingly, claim 2 falls together with claim 1. 37 C.F.R. § 41.37(c)(1)(vii).

Claim 3:

Claim 3 depends from and further limits the slot in the device of claim 1. Specifically, claim 3 requires that the slot has a notch for mating with the board protrusion. In addition, claim 3 requires that while the slot serves to lock the board into a mated relationship with the connector, it allows for over travel of the circuit board during mating into the mating connector.

The Examiner finds that Hristake's device has a slot with a notch (74) for mating with a board protrusion (Answer 4). According to the Examiner, while the notch (74) in Hristake's device serves to lock the board into a mated relationship with the connector, it allows for over travel of the circuit board during mating into the mating connector (*id.*).

Appellant disagrees, asserting that Hristake teaches that pivoting the device's lever (e.g., 44) operates to seat the circuit board into the connector and that once seated further pivoting of the pawl (46) is precluded (Br. 14). Accordingly, Appellant asserts that Hristake "cannot allow for over travel of the circuit board during mating of the board into the connector. . . ." Appellant has the better argument.

We recognize the Examiner's reliance on Hristake, column 5, line 23+ to support the assertion that Hristake's device allows for over travel of the circuit board during mating into the mating connector (Answer 4). However, this portion of Hristake discusses the use of the device to

accommodate boards of varying height. In this regard, we note that rather than discussing the over travel of a board during mating into the mating connector, this portion of Hristake teaches that the device's leaf spring will be more or less compressed to account for the height of the board. The Examiner has failed to identify any section in Hristake, and we find none that expressly or inherently teaches a board over traveling into the mating connector.

On reflection, we reverse the rejection of claim 3 under 35 U.S.C. § 102(b) as being anticipated by Hristake. Claims 4 and 5 depend from claim 3. Accordingly, we reverse the rejection of claims 4-5 under 35 U.S.C. § 102(b) as being anticipated by Hristake for the same reasons as claim 3.

Claim 6:

Claim 6 is drawn to a method of locking a printed wiring board into a connector, which is mounted to a housing and has at least one guide for positioning the board with respect to the connector. The method comprises five steps:

1. placing a board within the guide in a direction such that the board will, upon the application of insertion force thereupon, move into mated relationship with said connector;
2. applying insertion force to the board to move the board toward the connector until a first end of a device which is pivotally mounted to the board engages with an edge of the housing;
3. rotating the device so that a longitudinal portion of the device engages on a portion of the board;

4. continuing to apply force to the device so as to move the board and the connector into the mated relationship; and

5. retaining the device in an engaged position on the portion of the board, even after the external insertion force has been removed, the engaged position maintaining a force to bias the board into the connector and preventing the board from becoming disconnected from the connector at least in part by the first end of the device engaging the edge of the housing.

The Examiner finds that the claimed method is inherent to the structure of the device taught by Hristake (Answer 4). According to the Examiner, Hristake teaches a connector mounted to a housing and having at least one guide for positioning the board with respect to the connector (*id.*). The Examiner finds that Hristake teaches a device having a first end (46) pivotally mounted to the board that engages with an edge of the housing (*id.*). The Examiner finds that Hristake teaches that the device is rotated so that a longitudinal portion of the device engages a portion of the board, thereby retaining said device in an engaged portion even after the external insertion force has been removed, said engaged position maintaining a force to bias said board into said connector and preventing said board from becoming disconnected from said connector at least in part by said first end of said device engaging said edge of said housing (Answer 4-5).

In response, Appellant asserts that Hristake fails to teach that when the insertion force has been removed the engaged position maintains a force to bias the board into the connector and prevent the board from becoming disconnected from the connector (Br. 9). According to Appellant, "Hristake teaches that after the apparatus is used to move the PC board into connection

with the rack connector, the PC board is thereafter held in place by friction force provided by the connector and an additional mechanism of some kind . . . [is] used to prevent dislodgment of the PC board from the rack” (Br. 10).

To install a PC board into a PC board rack, Hristake teaches that the board is placed into a slot in the rack with the lever 44 pivoted upwardly to a raised position. The rack slot is oriented such that the PC board's lower edge is positioned immediately above the multi-terminal connector (not shown) at a lower portion of the rack. Pivoting the lever downwardly about the pivot pin 48 yieldably biases the pawl 46 into engagement with the underside of a ledge 52 that is part of the rack. This applies a downward force to the PC board, via the pivot pin, to urge the board into engagement with the connector. After the lever has been pivoted fully downwardly to a lowered position (as depicted in FIG. 2), a secondary lock 54 is engaged, to lock the PC board in place.

(Hristake, col. 4, ll. 50-63.) As illustrated in figure 5 above, the secondary lock (54) is at the second end of Hristake’s device. Hristake teaches that when the secondary lock (54) is engaged, the PC board is locked in place. As we understand it, if the PC board is locked in place, the board is prevented from becoming disconnected from the connector. Accordingly, we disagree with Appellant’s assertion.

On reflection, we find no error in the Examiner’s prima facie case of anticipation. Therefore, we affirm the rejection of claim 6 under 35 U.S.C. § 102(b) as being anticipated by Hristake. Appellant does not separately argue claim 9. Accordingly, claim 9 falls together with claim 6. 37 C.F.R. § 41.37(c)(1)(vii).

Claim 7:

Claim 7 depends from and further limits the retaining step of claim 6 to include providing positive feed-back to a user that said engaged position is being maintained. According to the Examiner, by remaining in the engaged position, Hristake's device inherently provides positive feed-back to a user that the device is being maintained in the engaged position (Answer 5). Appellant asserts that the Examiner has not identified which of Hristake's structures would inherently provide the claimed limitation (Br. 15).

The invention of claim 7 does not require a particular structure to provide positive feed-back. Claim 7 simply requires that positive feed-back is provided to a user that the engaged position is being maintained. We find no error in Examiner's finding that by remaining in the retained position the device provides positive feed-back to a user that the engaged position is being maintained. Accordingly, we affirm the rejection of claim 7 under 35 U.S.C. § 102(b) as being anticipated by Hristake.

Claim 8:

Claim 8 depends from and further limits the method of claim 6 to further comprise briefly reapplying a force in the direction of the insertion force to an outer edge of the device to release the maintained engaged position.

The Examiner finds that the method steps are inherent to Hristake's device, wherein a force is applied to an outer edge to release the device from its engaged position (Answer 5). In contrast, Appellant argues that Hristake does not teach reapplication of insertion force to release the device from its

engaged position (Br. 14). Appellant has the better argument. According to Hristake, the PC board is extracted from the PC board rack by manually releasing the secondary lock (54) and pivoting the lever (44) upwardly toward its raised position (Hristake, col. 4, ll. 64-67). The Examiner has failed to identify any section in Hristake, and we find none, that expressly or inherently teaches the reapplication of a force in the direction of the insertion force to an outer edge of the device to release the maintained engaged position.

On reflection, we reverse the rejection of claim 8 under 35 U.S.C. § 102(b) as being anticipated by Hristake.

Claim 10:

Claim 10 is drawn to a device for locking a printed wiring board (PWB) into a connector, which is mounted to a housing and has at least one guide for positioning the board with respect to the connector. The device comprises:

1. means for applying an external insertion force to the PWB to move the PWB toward the connector along the guide, the means having a first end pivotally attached to the PWB board, the first end having a portion for engaging with a portion of the housing;
2. means for contacting a front edge of the PWB along a longitudinal portion of the device: and
3. means for maintaining at least a portion of the insertion force so that the means for contacting the front edge maintains a force to bias the PWB into the connector after the external insertion force has been removed.

As discussed above with regard to claims 1 and 6, Hristake teaches a device encompassed by Appellant's claim 10. In response, Appellant asserts that Hristake fails to teach that when the insertion force has been removed the engaged position maintains a force to bias the board into the connector and prevent the board from becoming disconnected from the connector (Br. 10-11). According to Appellant, Hristake "teaches that the PC board is held in place by friction force provided by the connector and an additional mechanism of some kind . . . [is] used to prevent dislodgment of the PC board from the rack" (Br. 11). We disagree for the reasons set forth with regard to claim 6. Accordingly, we affirm the rejection of claim 10 under 35 U.S.C. § 102(b) as being anticipated by Hristake. Appellant does not separately argue claims 11, 12, 14, and 16. Accordingly, claims 11, 12, 14, and 16 fall together with claims 10. 37 C.F.R. § 41.37(c)(1)(vii).

Claim 13:

Claim 13 depends from and further limits the device of claim 10 to further comprise a means operative upon the reapplying of the external insertion force for releasing the maintained positive force. We recognize the Examiner's reference to Hristake, col. 5, ll. 23+. However, this section of Hristake fails to teach the reapplication of an external insertion force to release the positive force maintained by the device. As set forth above with respect to claim 8, the Examiner has failed to identify any section in Hristake, and we find none, that expressly or inherently teaches the reapplication of a force in the direction of the insertion force to an outer edge of the device to release the maintained engaged position. Accordingly,

we reverse the rejection of claim 13 under 35 U.S.C. § 102(b) as being anticipated by Hristake.

Claim 15:

Claim 15 depends from and further limits the device of claim 14 to further comprise a means operative upon the reapplying of the external insertion force for releasing the maintained positive force. As set forth above with respect to claims 8 and 13, the Examiner has failed to identify any section in Hristake, and we find none, that expressly or inherently teaches the reapplication of a force in the direction of the insertion force to an outer edge of the device to release the maintained engaged position. Accordingly, we reverse the rejection of claim 15 under 35 U.S.C. § 102(b) as being anticipated by Hristake.

Claim 18:

Claim 18 is drawn to a printed wiring board (PWB) adapted for latching into a mated relationship with a housing mounted connector. The PWB comprises:

1. a protrusion for releasably accepting a latching mechanism,
2. the latching mechanism operates, in conjunction with the protrusion, and with an outer portion of the housing, for maintaining positive force between the PWB and the connector to maintain positive electrical contact between the PWB and the connector after externally applied insertion force has been removed.

As the Examiner points out, Hristake teaches a printed circuit board (40) adapted for latching into a mated relationship with a housing (42)

mounted connector (Answer 8). Therefore, as discussed above with regard to claims 1, 6, and 10, Hristake teaches a PWB encompassed by Appellant's claim 18. In response, Appellant asserts that Hristake fails to teach that when the insertion force has been removed, the engaged position maintains a force to bias the board into the connector and prevent the board from becoming disconnected from the connector (Br. 12). According to Appellant, Hristake "teaches that after the lock engages the locking pin, the PC board is thereafter held in place by friction force provided by the connector and by some supplementary mechanisms . . . used along the edges of the PC board, to prevent dislodgment of the PC board from the rack (*id.*). We disagree for the reasons set forth with regard to claim 6. Accordingly, we affirm the rejection of claim 18 under 35 U.S.C. § 102(b) as being anticipated by Hristake.

Claim 19:

Claim 19 is drawn to a device for aiding in latching an electronic circuit board in a mated relationship with an electrical connector, wherein the connector is located at a back end of a housing. The device comprises:

1. a first end for engaging a front surface of the housing;
2. means for pivoting the first end around an outer corner of a circuit board to be latched; and
3. a second end disposed laterally from the first end.

Claim 19 requires that the second end comprises

- a. a latch mechanism for releasably latching to a pin mounted on the board wherein operation of the latch mechanism provides over travel of the

electronic circuit board during mating of the electronic circuit board into the electrical connector; and

b. a body extending between said ends, said body having upper and lower portions separated by a distance to allow at least a portion of the board to fit between the portions when the latch mechanism is latched to the pin.

Hristake's device is discussed above. According to the Examiner, the second end (54) of Hristake's device is disposed laterally from the first end and comprises a latch mechanism (74) for releasably latching to a pin (76) mounted on the board, wherein operation of the latch mechanism provides over travel of the electronic circuit board during mating into the electrical connector (Answer 9). However, as discussed above with regard to claim 3, the Examiner has failed to identify any section in Hristake, and we find none, that expressly or inherently teaches a board over traveling into the mating connector.

On reflection, we reverse the rejection of claim 19 under 35 U.S.C. § 102(b) as being anticipated by Hristake. Claims 20-24 depend from claim 3. Accordingly, we reverse the rejection of claims 20-24 under 35 U.S.C. § 102(b) as being anticipated by Hristake for the same reasons as claim 19.

Obviousness:

Claim 17 stands rejected under 35 U.S.C § 103(a) as unpatentable over the combination of Hristake and Na. Claim 17 depends from and further limits the electronic circuit board of claim 16 to include a cutout section adapted for mating with said longitudinal portion such that said longitudinal portion lies flush with an outer front edge of said electronic circuit board when said insertion force is being maintained.

According to the Examiner, Hristake teaches every element of the claimed device with the exception of a “cutout section adapted for mating with said longitudinal portion such that said longitudinal portion lies flush with an outer front edge of said electronic circuit board when said insertion force is being maintained” (Answer 10). To make up for this deficiency in Hristake, the Examiner relies on Na to teach a circuit board comprising a cutout portion allowing a longitudinal portion of a device to lie flush with the outer edge of the circuit (Answer 11). Based on this evidence, the Examiner finds that it would have been prima facie obvious to a person of ordinary skill in the art at the time the invention was made to modify Hristake with the teachings of Na “to accommodate an additional device specific shape/size” (*id.*).

In response, Appellant asserts that 17 depends from claim 16, which “is patentable over Hristake due to the deficiencies discussed above” (Br. 16, emphasis removed). As discussed above, we find no deficiency in the Examiner’s rejection of claim 16. Since Appellant fails to identify any deficiency in the combination of Hristake and Na, we affirm the rejection of claim 17 under 35 U.S.C § 103(a) as unpatentable over the combination of Hristake and Na.

#### CONCLUSION

In summary, we affirm the rejection of claims 1, 2, 6, 7, 9-12, 14, 16, and 18 under 35 U.S.C. § 102(b) as being anticipated by Hristake and the rejection of claim 17 under 35 U.S.C § 103(a) as unpatentable over the combination of Hristake and Na.

We reverse the rejection of claims 3-5, 8, 13, 15, and 19-24 under 35 U.S.C. § 102(b) as being anticipated by Hristake.

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

AFFIRMED-IN-PART

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