

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JAN-ERIK ERIKSSON, CONNY SVAHN,
MATS MOLANDER, CARL-FREDRIK LINDBERG, PETER LOFGREN,
STEFAN ISRAELSSON TAMPE and BENGT RYDHOLM

Appeal 2012-005891
Application 11/632,312
Technology Center 1700

Before CHUNG K. PAK, CHARLES F. WARREN and
TERRY J. OWENS, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

DECISION ON APPEAL

Applicants appeal to the Board under 35 U.S.C. § 134(a) from the decision of the Primary Examiner finally rejecting claims 1-17 and 19 under 35 U.S.C. § 103(a): claims 1-5, 8, 12-14, 16 and 17 over Chae (KR 2001055804 A),¹ Eriksson (WO 02/14192 A1) and Kimura (US 6,471,153 B1), claims 1-7 and 11-17 over Price (GB 2 334 351 A), Eriksson and Kimura, claims 8-10 over Price, Eriksson, Kimura and Chae, and claim 19² over Price, Eriksson, Kimura and Rydholm (WO 02/14572 A1). App. Br. 9;

¹ We refer to the machine translation of Chae prepared by the Korean Intellectual Property Office of record.

² Canceled claim 18 is erroneously included in the rejection. *See* Amendment filed November 4, 2010; Ans. 3, 14; App. Br. 2, 9, 16.

Ans. 5, 8, 13, 14. We have jurisdiction. 35 U.S.C. § 6(b).

We affirm the decision of the Primary Examiner.

Claim 1, with reference to Specification Figure 1, illustrates Appellants' invention of a device for stabilizing an elongated metallic strip of magnetic material by a process in which the strip is continuously coated, and is representative of the claims on appeal:

1. A device for stabilizing an elongated metallic strip (1) of magnetic material when coating the strip with a metallic layer by continuously transporting the strip (1) through a bath of molten metal (2), wherein the strip (1) is intended to be transported from the bath (2) in a transport direction (16) along a predetermined transport path (x), the device comprising:

a wiping device (4) for wiping off superfluous molten metal from the strip (1) by applying an air flow in a line across the strip (1), wherein the wiping device (4) comprises at least one pair of air-knives (5, 6) arranged with one air-knife (5, 6) on each side of the strip (1),

an electromagnetic stabilizing device (7) which is arranged adjacent to the wiping device (4) to stabilize the position of the strip (1) with respect to the predetermined transport path (x) and which comprises at least one electromagnetic stabilizing member (8, 9) on each side of the strip (1) such that the electromagnetic stabilizing members (8, 9) are opposite each other, each electromagnetic stabilizing member (8, 9) comprising an iron core (10, 11) and a coil (12a-b, 13a-b), wherein the coils (12a-b, 13a-b) are movably arranged with respect to the strip (1) and the wiping device (4), and

a sensor (14, 15) arranged to detect the position of the strip (1) in relation to the predetermined transport path (x) in a region adjoining the line where the air flow from the air-knives (5, 6) hits the strip (1), wherein the sensor comprises at least one pair of sensors (14, 15) arranged with one sensor on each side of the strip (1) such that the sensors (14, 15) are opposite each other, and

wherein the electromagnetic stabilizing members (8, 9) are arranged adjacent to the air-knives (5, 6) and are arranged to apply a varying stabilizing magnetic force to the strip (1) in dependence on the measured position and in a direction substantially perpendicular to the predetermined

transport path (x), thereby damping vibrations in the metallic strip (1), wherein the force is varied by varying a current supplied to the electromagnetic stabilizing members (8, 9).

App. Br. 20-21 (App'x A Claims On Appeal). Spec. 9:22-11:5.

Appellants argue the first three grounds of rejection of the claims as a whole. *See generally* App. Br. Thus, we decide this appeal based on claims 1, 8 and 19.³ 37 C.F.R. § 41.37(c)(1)(vii).

OPINION

We do not find Appellants' arguments persuasively establish reversible error on the part of the Examiner. *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011) (explaining that even if the examiner had failed to make a prima facie case, the Board would not have erred in framing the issue as one of reversible error because it has long been the Board's practice

³ We have not considered the arguments, all of which address only the first ground of rejection, raised for the first time in the Reply Brief. *See generally* Reply Brief. Indeed, the Examiner's first ground of rejection in the Answer was stated in the Final Office Action mailed June 17, 2011, and in the Answer, the Examiner addressed Appellants' arguments in the Appeal Brief, directed to the so rejected claims as a group, in that context. Ans. 5-8, 14-17. Thus, Appellants' arguments in the Reply Brief, including arguments presented with respect to claims 12 and 5, are considered waived because Appellants have not explained why the arguments which could have been raised in the Appeal Brief were not raised therein. 37 C.F.R. § 41.37(c)(1)(vii)(second sentence); *see also In re Hyatt*, 211 F.3d 1367, 1373 (Fed. Cir. 2000) (an argument not first raised in the brief to the Board is waived on appeal); *cf. Ex parte Nakashima*, 93 USPQ2d 1834 (BPAI 2010) (informative) (explaining that arguments and evidence not timely presented in the principal Brief will not be considered when filed in a Reply Brief, absent a showing of good cause explaining why the argument could not have been presented in the Principal Brief); *Ex parte Borden*, 93 USPQ2d 1473, 1477 (BPAI 2010) (non-precedential) ("Properly interpreted, the Rules do not require the Board to take up a belated argument that has not been addressed by the Examiner, absent a showing of good cause.").

to require an appellant to identify the alleged error in the examiner's rejections) (citing *Ex parte Frye*, Appeal No. 2009-006013, at 9-10 [94 USPQ2d 1072, 1075] (BPAI Feb. 26, 2010) (precedential) ("The panel then reviews the obviousness rejection for error based upon the issues identified by appellant, and in light of the arguments and evidence produced thereon.")); .*cf.*, *e.g.*, *In re Baxter Travenol Labs.*, 952 F.2d 388, 392 (Fed. Cir. 1991) ("It is not the function of this court to examine the claims in greater detail than argued by an appellant, looking for nonobvious distinctions over the prior art.").

We determine that the plain language of claim 1, as illustrated by Specification Figure 1, specifies a device for stabilizing an elongated metallic strip of magnetic material 1 after coating with a metallic layer by continuous transporting strip 1 through a bath of molten metal 2 and then along a predetermined transport path x, comprising at least wiping device 4 comprising at least air-knives 5, 6 arranged on opposite sides of strip 1 to remove excess molten material; electromagnetic stabilizing device 7 comprising at least two electromagnets 8, 9, each comprising at least iron core 10, 11 and a coil 12a, 13a, arranged adjacent to air-knives 5, 6 directly opposite each other on respective sides of strip 1; and at least sensors 14, 15 arranged in a region adjoining the line where the air flow from air-knives 5, 6 hits strip 1 and directly opposite each other on respective sides of the strip 1, wherein vibrations in strip 1 are dampened by the magnetic force applied by electromagnets 8, 9 in a direction substantially perpendicular to the predetermined transport path x and varied by varying current supplied in dependence on the measured position of strip 1.

Turning first to the rejection of claim 1 over Chae, Eriksson and

Kimura, there is no dispute that Chae would have disclosed to one of ordinary skill in the art, among other things, a deflexed protecting control device, illustrated in Chae's Figure 1, for a metallic metal strip in a coating process which includes air-knives 3, 3', wherein the deflexed steel sheet 1 is shown at 9. Chae abstract, 2, 3. As illustrated in Chae's Figure 4, the deflexed protecting control device has eddy-current displacement distance sensors 21a-c and electromagnets 22a-c positioned on air-knives 3, 3', wherein sensors 21a-c are arranged sequentially on air-knife 3, electromagnets 22a, 22c are arranged on air-knife 3' directly opposite sensors 21a, 21c, and electromagnetic 22b is arranged "in the same location," that is, on top, of sensor 21b on air-knife 3, wherein sensors 21a-c and electromagnets 22a-c are interlinked and controlled by deflexed operator 23 and deflexed controller 24. Chae abstract, 2, 3, 4. Chae describes the operation of the deflexed protecting control device in controlling deflexation with equations based on measured distances of points along the deflexed sheet 1 by sensors 21a-c to determine the magnetic force applied by electromagnets 22a-c, as illustrated in Chae's Figure 5. Chae abstract, 2, 4-5. Ans. 5-7, 14-17; App. Br. 9-12.

There is also no dispute that Eriksson would have disclosed to one of ordinary skill in the art, among other things, a device, illustrated in Eriksson's Figure 1, for stabilizing an elongated metallic strip of magnetic material 1 during continuous transporting of strip 1 along a predetermined path 4 in plane x, having sensors 5, 6, arranged directly opposite each other on respective sides of strip 1, for sensing a value of a parameter depending on the position of strip 1, and electromagnets 7, 8, arranged directly opposite each other on respective sides of strip 1, to apply magnetic force to strip 1 in

response to the sensed position of the strip, and control unit 13 which applies voltage to the electromagnetic in response to the sensed position parameter, wherein electromagnetics 7, 8 have cores 9', 9" and windings or coils 11', 11". Eriksson abstract, 2-8. Ans. 5-6; App. Br. 11. We find that Eriksson would have disclosed that the stabilizing device can be used in metal coating applications involving continuous transport of a metallic strip. Eriksson 1:25-32.

There is no dispute that Kimura would have disclosed to one of ordinary skill in the art an apparatus for controlling vibration in a steel sheet along the running surface of a surface treating line in a steel mill which can include, among other things, electromagnets 52A, 52B arranged directly opposite each other on respective sides of strip, wherein either electromagnet 52A, 52B alone contains sensor 57A, such as illustrated in Kimura's Figure 23, or both electromagnets 52A, 52B contain sensors 57A, 57B, such as illustrated in Kimura's Figure 24, and a control device which controls the current to the electromagnets 52A, 52B in response to the separation distance detected by the sensors 57A, 57B. Kimura, abstract, col.1 ll.7-10, col.3 ll,19-37, col.13 l.31 to col.14 l.26. Ans. 6; App. Br. 11, 12.

There is no dispute that neither Eriksson nor Kimura discloses that the coating or surface treating operations include air-knives. Ans. 15; App. Br. 11.

The Examiner submits that the combination of Chae, Eriksson and Kimura would have led one of ordinary skill in the art to use Eriksson's stabilizing arrangement of opposite sensors and electromagnets on each side of the magnetic metal strip in place of Chae's arrangement of sensors on one side and electromagnets on the other arranged adjacent to air-knives because

Eriksson and Kimura would have established that the opposing arrangements of sensors and electromagnets will work, that the references establish that one of ordinary skill in the art would have been familiar with the interaction of sensors and electromagnets in stabilizing a metal strip and that a workable arrangement of the sensors and electromagnets is a result effective variable which one of ordinary skill in the art would arrive at workable or optimum arrangements of sensors and electromagnetics by routine experimentation, thus arriving at a stabilizing device falling within claim 1. Ans. 5-6, 14-17.

We are not convinced by Appellants that the Examiner erred in these respects. We cannot agree with Appellants that the modification of Chae's deflexed protecting control device by using opposing arrangements of sensors and electromagnets as shown by Eriksson and Kimura, which do not disclose air-knives, would have required more than routine experimentation and thus would have predictably resulted in non-functional sensors and electromagnets that change the function of Chae's sensors and electromagnets and thus of the deflexed protecting control device. App. Br. 9-13. Indeed, each of Chae, Eriksson and Kimura would have disclosed to one of ordinary skill in the art that various combinations of sensors and electromagnets arranged on both sides of the strip and controlled by a controller are effective in controlling the magnetic metal strip in continuous coating and surface treating processes, and in this respect, each of Eriksson and Kimura show that sensors and electromagnets arranged together on opposite sides are effective for this purpose. We are not dissuaded by the absence of any disclosure of air-knives in Eriksson and Kimura. We determine that one of ordinary skill in the art would have recognized from Chae that air-knives affect the stability of the magnetic metal strip, and

would have followed the teachings of Chae, in this respect, to arrive at control parameters based on equations similar to those in Chae for a desired arrangement of sensors and electromagnetics in controlling the stability of the magnetic metal strip. Appellants have not supported the contention that modifying Chae's equations to accommodate the control of other arrangements of sensors and electromagnets would have been "well beyond any routine experimentation" by one of ordinary skill in this art, and particularly in view of the disclosure of control devices for other arrangements of sensors and electromagnets by Eriksson and Kimura.

We agree with the Examiner that Appellants' argument that the claimed arrangement of sensors and electromagnets "provides superior stabilization[] as described in the specification" is not supported by factual evidence. Ans. 16; App. Br. 12 (citing Spec. 5:9-13). *See, e.g., In re Geisler*, 116 F.3d 1465, 1470 (Fed. Cir. 1997) ("[I]t is well settled that unexpected results must be established by factual evidence."); *In re Hoch*, 428 F.2d 1341, 1343-44 (CCPA 1970) (evidence must provide an actual comparison of the properties of the claimed invention with the disclosure of the reference); *cf., e.g., Baxter Travenol Labs.*, 952 F.2d at 392.

Accordingly, on this record, we affirm the ground of rejection of claims 1-5, 8, 12-14, 16 and 17 over Chae, Eriksson and Kimura under 35 U.S.C. § 103(a).

With respect to the grounds of rejection of claims 1, 8 and 19 based on the principal combination of Price, Eriksson and Kimura, we set forth above the undisputed teachings of Eriksson and Kimura. *See above* pp. 5-6. We cannot agree with Appellants' contentions that Price would not have disclosed to one of ordinary skill in the art "the arrangement of the position

sensors or electromagnetic stabilizers” which are “magnetic actuators,” “other than they are arranged in banks.” App. Br. 13-14, 15.

We find that Price would have disclosed to one of ordinary skill in the art a device for controlling a strip of magnetic metal that is continuously transported through a coating bath and then from the bath along a predetermined transport path which is subject to vibration as it passes between a pair of gas-knives 20 as illustrated in Price’s Figure 1. Price 1:2-16, 2:13-20, 2:26-3:5. Price discloses that the device includes electromagnetic actuators 112, which have operating parameters based on coil resistance and coil inductance, and sensors 110, which function with a controller 118, that are arranged in control banks 108 located on opposite sides of strip 100, that rises from the molten metal bath 102, above and below gas-knives 104, 106. Price 5:15-17, 6:17-23, 8:11-25, Figs 1, 6-8; *see* Fig. 1, 1:2-16. Price discloses that “each [of banks 108] comprise position sensors 110 and magnetic actuators 112,” and controller 118 “sends control signals to [magnetic] actuators 112,” such that the strip 100 “can be carefully guided during its passage between the gas [knives] 104, 106.” Price 8:17-25.

We further find that Price describes to one of ordinary skill in the art, in Figures 7 and 8, banks 108 each of which has alternating position sensors 110 and magnetic actuators 112, and can have magnetic actuators arranged directly opposite each other on respective sides of strip 100. We determine that one of ordinary skill in the art would have reasonably inferred from Price’s disclosure and Figures that banks 108 of alternating position sensors 110 and magnetic actuators 112, can be arranged directly opposite each other on respective sides of strip 100, such that position sensors 110 and the

magnetic actuators 112 of each bank are arranged directly opposite the position sensors 110 and the magnetic actuators 112 of the bank on the other side of strip 100.⁴

On this record, we further cannot agree with Appellants that the Examiner erred in determining that the combination of Price, Eriksson and Kimura would have led one of ordinary skill in the art to modify Price's banks of sensors and magnetic actuators by using iron core and coil magnetic actuators, and to arrange the sensors and the magnetic actuators of each bank directly opposite the sensors and the magnetic actuators, respectively, of the bank on the other side of magnetic metal strip, as suggested by Eriksson and Kimura, in the reasonable expectation of dampening vibrations of the magnetic metal strip by varying the magnetic force applied by the magnetic actuators on opposite sides of the strip, which is all that claim 1 requires. Ans. 8-10, 17-19; App. Br. 13-15.

We determine that claim 8 modifies claim 1 by specifying that "the sensor is secured to the air-knife." On this record, we cannot agree with Appellants that the Examiner erred in determining that the combination of Price, Eriksson, Kimura and Chae would led one of ordinary skill in the art to modify Price's banks of sensors and magnetic actuators by securing the

⁴ It is well settled that a reference stands for all of the specific teaching thereof as well as the inferences one of ordinary skill in the art would have reasonably been expected to draw therefrom. *See, e.g., In re Fritch*, 972 F.2d 1260, 1264-65 (Fed. Cir. 1992); *In re Preda*, 401 F.2d 825, 826-27 (CCPA 1968) ("[I]n considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom." (citation omitted)), presuming skill on the part of this person. *In re Sovish*, 769 F.2d 738, 743 (Fed. Cir. 1985).

same to the air-knives as suggested by Chae with a reasonable expectation of success because Chae discloses sensors and magnets secured to air-knives. Ans. 13, 19-20; App. Br. 15-16. Indeed, we found that Price teaches that the banks of sensors and magnetic actuators are arranged above and below the air-knives.

With respect to claim 19, Appellants' contention directed to the "shortcomings of all of the references and their combinations . . . discussed above" does not constitute a specific argument with respect to error in the Examiner's position. Ans. 14; App. Br. 16-17.

Accordingly, on this record, we affirm the grounds of rejection of claims 1-17 and 19 over Price, Eriksson and Kimura alone and as further taken with Chae and with Rydholm under 35 U.S.C. § 103(a).

The Primary Examiner's decision is affirmed.

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).

AFFIRMED

tc/sl