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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/213,491	07/19/2016	Pellegrino J. Pisacreta	94118US01; 67097-3412 PUS	7039
54549	7590	03/20/2020	EXAMINER	
CARLSON, GASKEY & OLDS/PRATT & WHITNEY 400 West Maple Road Suite 350 Birmingham, MI 48009			BURKE, THOMAS P	
			ART UNIT	PAPER NUMBER
			3741	
			NOTIFICATION DATE	DELIVERY MODE
			03/20/2020	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte PELLIGRINO J. PISACRETA

Appeal 2019-005558
Application 15/213,491
Technology Center 3700

Before BENJAMIN D. M. WOOD, FRANCES L. IPPOLITO, and
MICHAEL L. WOODS, *Administrative Patent Judges*.

WOODS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1–20. Appeal Br. 4. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

¹ We use the word Appellant to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as United Technologies Corporation. Appeal Br. 1.

CLAIMED SUBJECT MATTER

The Specification is titled “Method and Apparatus for Variable Supplemental Airflow to Cool Aircraft Components.” Spec. 1, Title. Claims 1, 10, and 17 are independent. Appeal Br. 13–17 (Claims App.). We reproduce claim 1, below, with emphasis added to a particular limitation discussed in this Decision:

1. A cooling system for an aircraft comprising:
 - at least one moveable member configured to cover an opening formed within an aircraft outer skin;
 - an actuator to move the at least one moveable member between a fully open position where external atmosphere air can be directed through the opening to an internal passage enclosed by the aircraft outer skin and a fully closed position where the opening is covered; and
 - a controller that selectively controls the actuator to move the at least one moveable member between the fully open position and the fully closed position, and *wherein the controller opens the at least one moveable member to direct external atmosphere air through the internal passage and to a desired cooling location within an aircraft engine.*

Appeal Br. 13 (Claims App.) (emphasis added).

REFERENCE

The prior art relied upon by the Examiner is:

Name	Reference	Date
Klees	US 5,269,139	Dec. 14, 1993
Rudolph	US 5,826,794	Oct. 27, 1998
Sokhey	US 2014/0238043 A1	Aug. 28, 2014
Simmons	GB 2,001,136 A	Jan. 24, 1979

REJECTIONS

The following rejections are before us on appeal:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis
1, 3, 4, 6, 8–11, 15, 16	102	Rudolph
2, 13, 17–20	103	Rudolph, Sokhey
1, 4, 6, 7, 10, 14	103	Simmons, Rudolph
5, 12	103	Rudolph, Klees

Final Act. 2–14.

OPINION

I. Claims 1, 3, 4, 6, 8–11, 15, 16 – Rudolph

The Examiner rejects claims 1, 3, 4, 6, 8–11, 15, and 16 as anticipated by Rudolph. Final Act. 2.²

Appellant argues claims 1, 3, 4, 8, and 9 as a group. *See* Appeal Br. 4–5. We select claim 1 as the representative claim, with claims 3, 4, 8, and 9 standing or falling with claim 1. 37 C.F.R. § 41.37(c)(1)(iv).

Appellant also presents separate arguments for claims 6, 10, 11, 15, and 16. *See* Appeal Br. 6–7. We address these arguments separately.

a. Analysis Claims 1, 3, 4, 8, 9

The Examiner finds that Rudolph discloses the structure of claim 1, citing in part Rudolph’s Figure 3. Final Act. 2–3. We reproduce Rudolph’s Figure 3, below:

² The heading of the rejection lists claims 17–20 as also being rejected as anticipated by Rudolph. *See* Final Act 2. Upon reviewing the rejection, however, we understand this to be a harmless and inadvertent typographical error. *See id.* at 2–6 (rejecting only claims 1, 3, 4, 6, 8–11, 15, and 16).

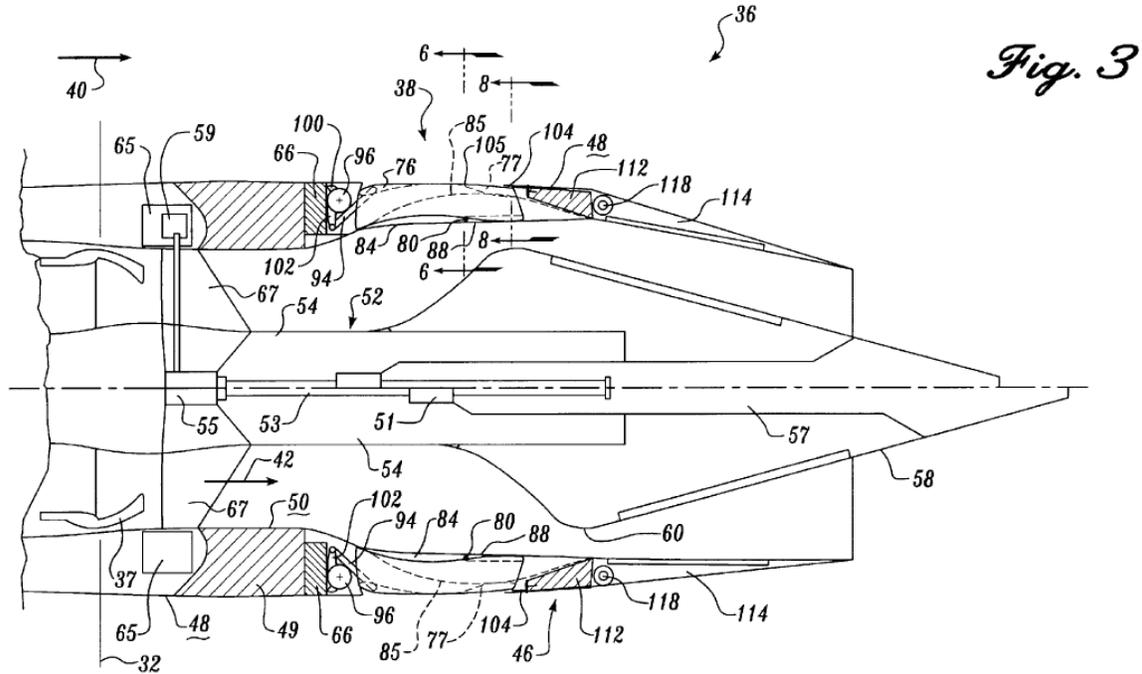


Figure 3 depicts a side view of a scoop ejector nozzle “configured for non-noise suppression.” Rudolph, 4:21–22. Rudolph discloses that ambient air 40 enters scoop ejectors 38 and the air is mixed with engine exhaust gases 42, which results in a lower combined airflow velocity, which in turn reduces jet exhaust noise. *Id.* at 5:8–17.

The Examiner finds that Rudolph’s ejector nozzle 38 satisfies the claimed “moveable member” and that it is “configured to cover an opening” (between Rudolph’s elements 66 and 113) and is “formed within an aircraft outer skin” (Rudolph’s element 46). Final Act. 2. The Examiner also finds that Rudolph discloses an “actuator” (element 94) that moves “moveable member” 38 between a fully open and closed position to direct air through the opening and “to an internal passage” (elements 73, 74, 75) enclosed by the aircraft’s outer skin. *Id.* at 2–3. The Examiner further finds that Rudolph discloses a controller that selectively controls the actuator between the fully open and fully closed position and that the controller “opens the at least one moveable member (38) to direct external atmosphere air (40)

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through internal passage (73, 74, 75) and to a desired cooling location (the location at 60) within an aircraft engine (10).” *Id.* at 3.

Appellant argues, “Rudolph does not disclose or teach using the external air for cooling purposes” (Appeal Br. 4) and that “there is nothing found in Rudolph to suggest that element 60 corresponds to a desired cooling location” (*id.* at 5).

Appellant’s argument is not persuasive.

Apparatus claims cover what a device is, not what a device does. *See Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469 (Fed. Cir. 1990); *see also* Ans. 5 (explaining the same). We agree with the Examiner’s finding that Rudolph discloses all of the structural limitations of the claim. *See* Ans. 5. Although the purpose of Rudolph’s scoop ejector 38 is to reduce noise (*see, e.g.*, Rudolph 5:8–17), it also reduces the temperature of the exhaust gases (*see, e.g., id.* at 1:28–31). In reducing the temperature of the exhaust gases, Rudolph’s ejector 38 also provides cooling to the exhaust system’s components that lie downstream of the mixed airflow. *See, e.g., id.* at 2:32–34 (“The increased bypass ratio also lowers the mixed flow gas temperature and makes the materials choice for the exhaust system simpler.”).

As to Appellant’s argument that Rudolph’s element 60 cannot be construed as the “desired cooling location” (Appeal Br. 5), we disagree. Element 60 is downstream and in fluid communication with the mixed ambient air/exhaust gas airflow. *See, e.g.*, Rudolph Figs. 2, 3. Rudolph also discloses a desirability for cooling the materials that make up these downstream components for simplifying material choice selection. *See, e.g., id.* at 2:32–34.

In its Reply Brief, Appellant further argues that claim 1 requires “the moveable member to direct air through an internal passage that is enclosed by the aircraft outer skin.” Reply Br. 2. Appellant contends that Rudolph does not disclose such structure. *See id.*

Appellant’s argument is not persuasive.

The Examiner finds that Rudolph’s elements 73, 74, and 75 satisfy the claimed “internal passage” (*see* Final Act. 2), and we are not persuaded that these elements are not enclosed by the aircraft outer skin, as required by claim 1. Appellant’s argument is premised on a narrow construction of “aircraft outer skin” that would exclude ejector 38 (and elements 73, 74, and 75), yet we find nothing in the record to support such a narrow construction.

Appellant’s arguments do not persuade us of Examiner error, and we affirm the rejection of claim 1, and each of claims 3, 4, 8, and 9, which fall with representative claim 1, as anticipated by Rudolph.

b. Analysis Claim 6

Claim 6 depends indirectly from claim 1 and further recites, *inter alia*, “wherein the internal passage comprises an aircraft engine interface duct that extends from an outlet of the at least one moveable member at the opening in the aircraft outer skin to an engine outer casing.” Appeal Br. 14 (Claims App.) (emphasis added).

To address this limitation, the Examiner finds that Rudolph’s “internal passage (73, 74, 75) comprises an aircraft engine interface duct (*see* Figures 2–3 and 7) that extends from an outlet of the at least one moveable member (38) at the opening in the aircraft outer skin (46) to an engine outer casing (114).” Final Act. 3.

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sides and walls (73, 74, 75) for satisfying the “internal passage.” *See* Final Act. 3. Yet under the Examiner’s findings, Rudolph’s “internal passage” (73, 74, 75) is itself the “moveable member” (38), and does not have a “duct” that “extends from an outlet of the . . . moveable member,” as required by claim 6.

Accordingly, we do not sustain the rejection of claim 6 as anticipated by Rudolph.

c. Analysis Claims 10, 11, 15, 16

Independent claim 10, and its dependent claims 11, 15, and 16, recite an aircraft engine comprising, *inter alia*, “at least one moveable member configured to cover an external opening configured to be formed within an aircraft outer skin” and “an aircraft engine interface duct in fluid communication with the at least one casing opening.” Appeal Br. 15 (Claims App.).

The Examiner finds that Rudolph discloses “moveable member” (38) and “aircraft engine interface duct” (73, 74, 75). Final Act. 4–5. In response to Appellant’s argument that the claim requires *two distinct components* (Appeal Br. 7), the Examiner apparently agrees, finding that “Rudolph’s duct within the moveable member (the airflow passageway defined within walls (73, 74, 75) *is distinct* from the outer structural surface of the moveable member (38).” *See* Ans. 6 (emphasis added).

Appellant reiterates its position that claim 10 requires two distinct components: (1) a moveable member; and (2) an aircraft engine interface duct. Reply Br. 4. Appellant argues that the Examiner erred in finding that Rudolph’s “moveable member” is distinct from its “interface duct” (73, 74, 75).

Appellant's argument is persuasive.

As discussed above in connection with claim 6, components 73, 74, 75 are simply the walls of "moveable member" 38. Rudolph, 6:56–60. We cannot support the Examiner's finding that components (73, 74, 75) are structurally distinct from ejector 38. *See* Ans. 6.

For the foregoing reasons, we do not sustain the rejection of claims 10, 11, 15, and 16 as anticipated by Rudolph.

II. Claims 2, 13, 17–20 – Rudolph, Sokhey

The Examiner rejects claims 2, 13, and 17–20 as obvious over Rudolph and Sokhey. Final Act. 6.

Appellant argues claims 2, 17, and 18 as a group. *See* Appeal Br. 8–9.³ We select claim 2 as the representative claim, with claims 17 and 18 standing or falling with claim 2. 37 C.F.R. § 41.37(c)(1)(iv).

Appellant also presents separate arguments for claims 19 and 20. *See* Appeal Br. 9–10. We address these arguments separately.

We also address claim 13 separately.

a. Analysis Claims 2, 17, 18

Claim 2 depends from claim 1 and further recites, "wherein the controller is configured to control the actuator to hold the at least one moveable member between a plurality of different positions between the

³ Although Appellant's Appeal Brief presents arguments under the heading "Claims 17, 18," we find that Appellant's argument under this heading is based on a misunderstanding of the rejection, namely, whether Rudolph anticipates these claims. *See* Appeal Br. 9 ("Thus, claim 17 and the associated dependent claims are not anticipated by Rudolph").

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fully open position and the fully closed position.” Appeal Br. 13 (Claims App.).

To address this limitation, the Examiner relies on Sokhey’s teaching of “moveable members” (variable-position doors 98) whose opened position “may vary with the needs of the application.” Final Act. 6–7 (citing Sokhey ¶ 29). Like Rudolph, Sokhey teaches that its doors 98 selectively vary the gap, or opening, to vary the amount of ambient air. Sokhey ¶ 29; *see also* Ans. 7.

In combining Rudolph with Sokhey, the Examiner reasons that a skilled artisan would have modified Rudolph’s ejector opening, as taught by Sokhey, in order to vary the amount and direction of air flow. *See* Final Act. 7.

Appellant argues that Rudolph *teaches away* from the proposed modification, citing Rudolph’s disclosure: “Because the scoops have only two basic positions, closed or open, modulation between positions is not a problem.” Rudolph, 8:42–43; *see also* Appeal Br. 8 (citing the same). Appellant argues that the Examiner’s modification would render Rudolph’s “synchronization of the plug and scoop infinitely more complicated” and that “there would be no reason to provide multiple positions as this would not confer any benefit to Rudolph.” Appeal Br. 8.

Appellant’s argument is not persuasive.

As to Appellant’s *teaching away* argument, a reference teaches away from a modification when the reference, taken as a whole, criticizes, discredits, or otherwise discourages the modification. *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). Although Rudolph cites a benefit to its specific design—easy modulation between the open and closed positions (Rudolph, 8:42–43)—we do not find this disclosure as criticizing, discouraging, or

otherwise discrediting the modification of providing variable opening positions.

As to Appellant's argument that modification would have added complexity and discouraged a skilled artisan from making the modification (*see* Appeal Br. 8), it is not sufficient to obviate a reason to combine when a different course of action would have advantages over another. *Winner Int'l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n.8 (Fed. Cir. 2000) ("The fact that the motivating benefit comes at the expense of another benefit, however, should not nullify its use as a basis to modify the disclosure of one reference with the teachings of another. Instead, the benefits, both lost and gained, should be weighed against one another"). In other words, *even if* the proposed modification would have added some complexity to Rudolph's system (*see* Appeal Br. 8), the modification would have improved Rudolph's system by providing for variable opening of ejector 38, allowing for reduction of varying noise levels, as taught by Sokhey (*see* Sokhey ¶ 29; *see also* Ans. 7). We find that the benefit provided by the modification outweighs the benefit lost.

Appellant's arguments do not persuade us of Examiner error, and we affirm the rejection of claim 2, and each of claims 17 and 18, which fall with representative claim 2, as unpatentable over Rudolph and Sokhey.

b. Analysis Claim 13

Although Appellant does not present separate arguments for claim 13 (*see* Appeal Br. 8–10), we do not sustain the rejection of this claim. Claim 13 depends from independent claim 10 and the rejection relies on the same unsupportable findings presented in rejecting claim 10 as anticipated by

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Rudolph. *See* Final Act. 6 (“Rudolph teaches the invention as claimed and as discussed above [in connection with independent claim 10]”).

Accordingly, for consistency in this Decision, we do not sustain the rejection of claim 13 as unpatentable over Rudolph and Sokhey.

c. Analysis Claim 19

Appellant argues that claim 19 is also allowable for the same reasons that claim 10 is allowable. Appeal Br. 9.

We are not persuaded. Claim 19 does not depend from claim 10 (*see* Appeal Br. 17 (Claims App.)) and Appellant’s arguments as to claim 10 do not appear to apply to claim 19 (*compare id.* at 7, *with id.* at 9). As distinguished from the rejection of claim 10, the Examiner does not rely on Rudolph’s ejector walls (73, 74, 75) for satisfying any structure of claim 19. *Compare* Final Act. 4–5, *with id.* at 9.

Appellant’s arguments do not persuade us of Examiner error, and we affirm the rejection of claim 19 as unpatentable over Rudolph and Sokhey.

d. Analysis Claim 20

Claim 20 depends from independent claim 17 and further recites the step of “directing the external atmosphere air into a dedicated cooling system *duct or ring* to be directed to a desired location within the aircraft.” Appeal Br. 17 (Claims App.).

To satisfy the claimed “dedicated cooling system duct or ring,” the Examiner finds that Rudolph teaches “directing the external atmosphere air (40) into a dedicated cooling system duct (at 85).” Final Act. 9 (citing Rudolph Figs. 1–8).

Appellant argues that Rudolph's element 85 does not satisfy the claimed "duct or ring." See Appeal Br. 9–10 (citing in part Rudolph, Figs. 4, 6, 8).

Appellant's argument is persuasive. To illustrate this point, we reproduce Rudolph's Figure 6, below.

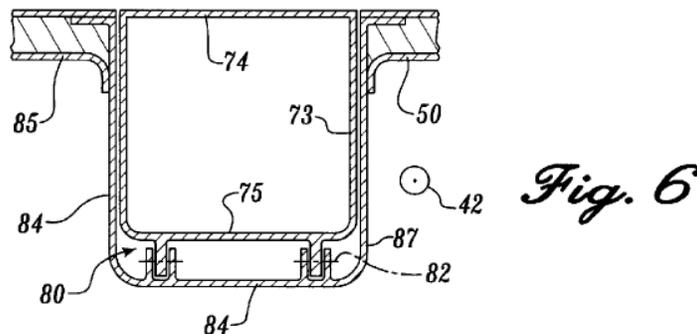


Figure 6 depicts outwardly bulged portions 85. Rudolph, 6:45–46.

Based on the record before us, the Examiner has not sufficiently explained the finding that Rudolph's outwardly-bulged portions 85 satisfies a dedicated cooling system duct. Final Act. 9.

For the foregoing reasons, we do not sustain the rejection of claim 20 as unpatentable over Rudolph and Sokhey.

III. Claims 1, 4, 6, 7, 10, 14 – Simmons, Rudolph

The Examiner rejects claims 1, 4, 6, 7, 10, and 14 as unpatentable over Simmons and Rudolph. Final Act. 9.

Appellant argues claims 1, 4, 6, 7, and 14 as a group.⁴ *See* Appeal Br. 10. We select claim 1 as the representative claim, with claims 4, 6, 7, and 14 as standing or falling with claim 1. 37 C.F.R. § 41.37(c)(1)(iv).

Appellant also presents separate arguments for claim 10. *See* Appeal Br. 11. We address these arguments separately.

a. Analysis Claims 1, 4, 6, 7, 14

In rejecting claim 1, the Examiner finds that Simmons discloses the structure of claim 1, with the exception of an actuator controlled by a controller to move the moveable member. Final Act. 9–10 (referencing in part Simmons’s Fig. 1). We reproduce Simmons’s Figure 1, below, to illustrate the Examiner’s findings:

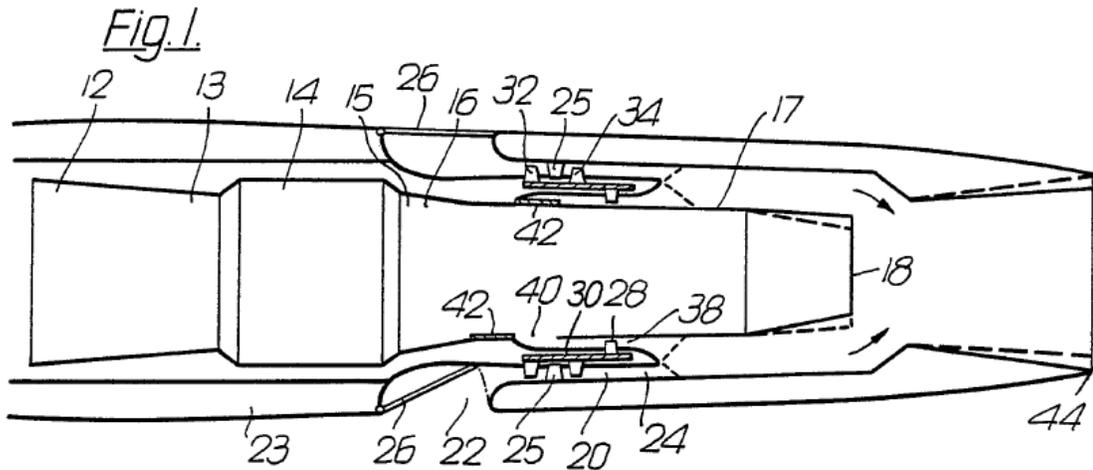


Figure 1 depicts a gas turbine powerplant with compressors 12, 13 and jet pipe 17. Simmons 1:81–86. Valves 26, 42 are provided to allow draw air into the engine and mix with the exhaust gases, thereby reducing noise. *See id.* at 2:10–35.

⁴ Although the heading of Appellant’s argument does not include claim 14 (*see* Appeal Br. 10), we understand Appellant’s arguments pertain to this claim.

The Examiner finds that Simmons discloses “moveable member” 26 configured to cover “opening” 22 in “aircraft outer skin” 26 and, when open, directs external atmosphere air through “internal passage” 25 to “desired cooling location” (the surface of 17). Final Act. 9–10.

The Examiner acknowledges that Simmons does not teach that the moveable member is moved by an actuator controlled by a controller, and cites to Rudolph’s teaching of this structure. *Id.* at 10 (citing Rudolph Figs. 1–8). The Examiner reasons that a skilled artisan would have added a controller-controlled actuator, as taught by Rudolph, to Simmons’s system in order “to modulate the moveable members between an open and closed position.” *Id.* (citing Rudolph, 10:35–47).

In contesting the rejection, Appellant argues that the “location of cooling surface 17 is not linked in any way to a desired cooling location” and a skilled artisan would not consider the location “to correspond to the claimed desired cooling area.” Appeal Br. 10.

Appellant’s argument is not persuasive. As discussed above in connection with the rejection of claim 1 as anticipated by Rudolph, apparatus claims cover what a device is, not what a device does. *Hewlett-Packard*, 909 F.2d at 1469. We agree with the Examiner that Simmons’s structure, as modified by Rudolph, satisfies all of the structural elements of claim 1. Final Act. 9–10. Furthermore, when Simmons’s “moveable member” 26 opens, ambient air will mix with the exhaust gases to cool the gas mixture, thereby cooling the surface of Simmons’s structure 17, as also found by the Examiner. *Id.* at 10.

Appellant’s arguments do not persuade us of Examiner error, and we affirm the rejection of claim 1, and each of claims 4, 6, 7, and 14, which fall with representative claim 1, as unpatentable over Simmons and Rudolph.

b. Analysis Claim 10

Appellant simply contends that “claim 10 is allowable as neither reference discloses a cooling circuit.” Appeal Br. 11.

Appellant’s argument is not persuasive. The Examiner relies on the space between Simmons’s structure 24 and 26 to satisfy the claimed “cooling circuit” (Final Act. 12) and Appellant does not explain why this structure fails to meet the claimed limitation (*see* Appeal Br. 11; *see also* Reply Br. 9).

Because Appellant’s argument does not persuade us of Examiner error, we affirm the rejection of claim 10 as unpatentable over Simmons and Rudolph.

IV. Claims 5, 12 – Rudolph, Klees

Claims 5 and 12 depend from claims 1 and 10, respectively, and further recite, “a plurality of moveable members that are axially spaced apart from each other along a length of the aircraft outer skin in one or more of a plurality of different locations dependent on where cooling flow is to be directed within an aircraft engine.” Appeal Br. 13–15 (Claims App.).

In addressing these limitations, the Examiner relies on Klees for teaching this structure (Final Act. 13 (citing Klees, Fig. 11, 8:22–34)) and reasons that a skilled artisan would have modified Rudolph—as discussed above in connection with Appellant’s anticipation argument—to include axially spaced apart moveable members (*id.*).

As to claim 5, Appellant argues that neither Rudolph nor Klees discloses “axially spacing apart movable members from each other along a

length of the aircraft in different locations dependent on where cooling flow is to be directed within an aircraft engine.” Appeal Br. 11.

Appellant’s argument is not persuasive. As explained correctly by the Examiner, one cannot show nonobviousness by attacking references individually where the rejection is based on a combination of references. Ans. 9 (citing in part *In re Keller*, 642 F.2d 413 (CCPA 1981)). The Examiner’s proposed modification of Rudolph, based on Klees’s teaching, satisfies the claimed limitation. See Final Act. 13.

For the foregoing reasons, we affirm the rejection of claim 5 as unpatentable over Rudolph and Klees.

As to claim 12, Appellant relies on the same argument presented in connection with independent claim 10 as anticipated by Rudolph. See Appeal Br. 12.

As discussed above, we do not sustain the rejection of independent claim 10 as anticipated by Rudolph. See *supra Part I.c.* For the same reasons, we do not sustain the rejection of dependent claim 12 as unpatentable over Rudolph and Klees.

CONCLUSION

The Examiner’s rejections of claims 1–10, 14, and 17–19 are affirmed. We reverse the rejections of claims 11–13, 15, 16, and 20.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Reversed	Affirmed
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1, 3, 4, 6, 8–11, 15, 16	102	Rudolph	6, 10, 11, 15, 16	1, 3, 4, 8, 9
2, 13, 17–20	103	Rudolph, Sokhey	13, 20	2, 17–19
1, 4, 6, 7, 10, 14	103	Simmons, Rudolph		1, 4, 6, 7, 10, 14
5, 12	103	Rudolph, Klees	12	5
Overall Outcome			11–13, 15, 16, 20	1–10, 14, 17–19

TIME PERIOD FOR RESPONSE

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

AFFIRMED-IN-PART