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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* JARMO HELASUO and ARTO HUOTARI

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Appeal 2019-003355
Application 14/376,208
Technology Center 3700

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Before MICHAEL L. HOELTER, ANNETTE R. REIMERS, and LISA M. GUIJT, *Administrative Patent Judges*.

REIMERS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to reject claims 1–3, 6–8, 12–14, 16, and 19–23. Claims 4, 5, and 9–11 have been withdrawn from consideration. Claims 15, 17, and 18 have been canceled. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

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[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 "Marioff Corporation OY, which is owned by United Technologies Corporation." Appeal Brief ("Appeal Br.") 1, filed Oct. 23, 2018.

## CLAIMED SUBJECT MATTER

The claimed subject matter relates to "sprinklers [that are] positioned strategically within an area where fire protection is desired." Spec. ¶ 2. Claims 1 and 20 are independent.

Claim 1 is illustrative of the claimed subject matter and recites:

> 1. A fire suppression sprinkler, comprising:
>
> a housing that establishes a flow path for discharging fire suppression fluid;
>
> a water seat that is configured to close off the flow path;
>
> a polymer seal supported within the housing and engaging the water seat for sealing an interface between the flow path and the water seat, the seal being supported within the housing in a manner that the seal remains in the housing in a condition in which fire suppression fluid flows out of the fire suppression sprinkler;
>
> a spring that biases the polymer seal into engagement with the water seat, the spring being upstream of the polymer seal and the water seat; and
>
> an activation bulb that is breakable responsive to a condition in which fire suppression is desirable, the water seat having a first end received against the seal and a second end received against the bulb.

## THE REJECTIONS

I. Claims 1–3, 6–8, 12–14, 16, and 19–23[2] stand rejected under 35 U.S.C. § 103(a) as unpatentable over Silva (US 2006/0113093 A1, published

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[2] The Examiner omits claims 20–23 in the header for this rejection. *See* Final Office Action ("Final Act.") 5, dated May 16, 2018. However, we understand claims 20–23 are also rejected because these claims are discussed in the body of the rejection. *See id.* at 11–14.

June 1, 2006), Ondracek[3] (US 5,775,431, issued July 7, 1998), and Wotton (US 4,217,961, issued Aug. 19, 1980).

II. Claims 1–3, 6–8, 12, 13, 16, and 19–22[4] stand rejected under 35 U.S.C. § 103(a) as unpatentable over Ondracek and Wotton.

## ANALYSIS

### *Rejection I – Obviousness over Silva, Ondracek, and Wotton*

As to independent claims 1 and 20, the Examiner finds that Silva discloses a fire suppression sprinkler comprising a seal (guide tube 56) supported within a housing and engaging a water seat (trigger seat 62). Final Act. 5–7, 11–12 (citing Silva Figs. 1A, 1D). The Examiner acknowledges that Silva does not disclose that "seal 56 is a polymer seal or includes [a] polymer." *Id.* at 8, 12. The Examiner, however, finds that

> Wotton teaches another fire sprinkler having a water seat 40 engaging a seal at 47 and 49. Wotton further teaches that a low friction material like Teflon (Teflon is known by other names including polytetrafluoroethylene or synthetic fluoropolymer) can be coated onto a sealing surface to provide for a smooth stick-slip free surface for quick expelling of the water seat when the glass bulb shatter and present only minimum interference to the flow of the extinguishing fluid (Col. 3, ln 55–Col. 4, ln 1).

*Id.* at 8, 12–13; *see also* Wotton, Fig. 3. The Examiner concludes that it would have been obvious to modify the fire suppression sprinkler of Silva to

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[3] The Examiner omits Ondracek in the header for this rejection. *See* Final Act. 5. However, Ondracek is discussed in the body of the rejection. *See id.* at 8.

[4] The Examiner lists claim 14 in the header for this rejection. *See* Final Act. 14. However, claim 14 is not discussed in the body of the rejection. *See id.* at 14–19.

"incorporate the teachings of Wotton to provide a polymer coating at the sealing surfaces at [guide tube] 56 [of Silva]" because "[d]oing so would provide a stick-slip free engagement with the water seat to minimize accidental leakage prior to activation, and to minimize interference of the fluid flow, as taught by Wotton in Column 3, line 55 – Column 4, line 1." Final Act. 8–9, 13.[5]

Appellant contends that the Examiner's rationale as to Wotton "teaching that Teflon will contribute to the plug 20 being expelled from the fluid passage to 'present only the minimum interference' to the flow of extinguishing fluid as a supposed basis to make *Silva's* metal guide tube out of a polymer such as Teflon" "fails to have the required rational underpinnings" because "the guide tube 56 of the *Silva* reference is never expelled from the sprinkler and has a central opening through which fluid flows unhindered." Appeal Br. 5.

The Examiner responds that "Wotton was relied upon to teach that a coating of polymer (Teflon) at a sealing surface of metal, provide[s] a stick-slip free for when the engagement between two parts need to be detached (col. 3, line 56–67)" to provide the advantage of "easy detachment when adding the polymer (Teflon) coating to the sealing surface between [Silva's guide tube] 56 and [trigger seat] 62" because guide tube 56 "in Silva is compressed onto seat 62 for an extended period of time and when there is a fire emergency, it is crucial that [guide tube] 56 and [trigger] seat 62 be detached for the sprinkler to operate." Ans. 5.[6]

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[5] In this rejection, the Examiner relies on the teachings of Ondracek for disclosing a water seat that closes off the flow path. Final Act. 8, 12.
[6] Examiner's Answer ("Ans."), dated Feb. 1, 2019.

Appellant has the better position here. Wotton discloses that in an alternative construction, low friction material, such as Fluon or Teflon, "may be provided merely as a coating on a rubber or metal core of the plug at least at that surface which constitutes the sealing surface." *See* Wotton 3:55–62. Wotton also discloses "[a] further advantage of using the low friction material in this manner" is that "in the event that the glass bulb shatters[,] the plug will be expelled quickly from the fluid passage and present only the minimum interference to the flow of extinguishant fluid." *See id.* at 3:62–4:1.

The Examiner proposes modifying Silva's guide tube 56 to have a polymer coating at its sealing surfaces and reasons that "[d]oing so would provide a stick-slip free engagement with the water seat to minimize accidental leakage prior to activation, and to minimize interference of the fluid flow." Final Act. at 8–9, 13 (citing Wotton 3:55–4:1). Based on our understanding, the Examiner's position is that modifying Silva's guide tube (seal) 56 to have a polymer coating at its sealing surfaces would aid in detaching guide tube (seal) 56 from trigger (water) seat 62 and/or aid in expelling trigger (water) seat 62. *See* Final Act. 8–9, 12–13; *see also* Ans. 5. However, the Examiner does not direct us to any discussion in Silva to show that there is a need to facilitate separating guide tube (seal) 56 from trigger (water) seat 62 or that there is a need to facilitate expelling trigger (water) seat 62. *See* Final Act. 5–9, 11–13; *see also* Ans. 5.

In fact, Silva discloses that assisting spring 55 "assist[s] movement" of locator 50 from its unactuated position (i.e., guide tube 56 is coupled to trigger seat 62) in Figure 1A to its actuated position (i.e., guide tube 56 is detached from trigger seat 62 and trigger seat 62 is expelled) in Figure 1D.

*See* Silva ¶ 27, Figs. 1A, 1D. The Examiner fails to apprise us *how* "adding the polymer (Teflon) coating [of Wotton] to the sealing surface between [Silva's guide tube] 56 and [trigger seat] 62" would make detachment between guide tube (seal) 56 and trigger (water) seat 62 *easier* or would result in quicker expulsion of trigger (water) seat 62. *See* Final Act. 8–9, 12–13; *see also* Ans. 5. Additionally, the Examiner does not direct us to any discussion in Wotton that providing stick-slip free engagement between guide tube (seal) 56 and trigger (water) seat 62 of Silva would "minimize accidental leakage prior to activation." *See* Final Act. 8–9, 12–13; *see also* Ans. 5; Wotton 3:55–4:1.

As to the Examiner's position that providing stick-slip free engagement between guide tube (seal) 56 and trigger (water) seat 62 of Silva would "minimize interference of the fluid flow" (*see* Final Act. 8–9, 13), Wotton illustrates that glass bulb 43 is located *above* plug (water seat) 40 and O-ring (seal) 47 (*see* Wotton Fig 3) and discloses that "in the event that the glass bulb shatters[,] the plug will be expelled quickly from the fluid passage and present only the minimum interference to the flow of extinguishant fluid." Wotton 3:62–4:1. In contrast, Silva illustrates that glass bulb 61 is located *below* guide tube (seal) 56 and trigger (water) seat 62. Silva, Figs. 1A, 1D. Given that Silva's glass bulb 61 is located below, not above, guide tube (seal) 56 and trigger (water) seat 62, we fail to see and the Examiner fails to adequately explain how providing stick-slip free engagement between guide tube 56 and trigger seat 62 would "minimize interference of the fluid flow" of the extinguishing fluid. *See* Final Act. 8–9; *see also* Appeal Br. 5–6. As correctly pointed out by Appellant, Silva's guide tube 56 "has a central opening through which fluid flows unhindered."

Appeal Br. 5; *see also* Silva ¶¶ 26, 27 (Describing that "fluid flows through" inner assembly 501, which includes guide tube 56, trigger seat 62, and trigger 61), Fig. 1D.

For these reasons, the Examiner's proposed reasoning for modifying Silva's guide tube to include a polymer coating at its sealing surfaces lacks rational underpinnings. As such, the Examiner fails to establish by a preponderance of the evidence that the combined teachings of Silva, Ondracek, and Wotton disclose the fire suppression sprinkler of claims 1 and 20.

Accordingly, we do not sustain the Examiner's rejection of claims 1 and 20, and claims 2, 3, 6–8, 12–14, 16, 19, and 21–23 depending therefrom as unpatentable over Silva, Ondracek, and Wotton.

*Rejection II – Obviousness over Ondracek and Wotton*

As to independent claims 1 and 20, the Examiner finds that Ondracek discloses a fire suppression sprinkler comprising a seal (inner tube 152) supported within a housing and engaging a water seat (cap 156 or a combination of cap 156 and split ring parts 190, 192). Final Act. 14, 17 (citing Ondracek Figs. 8–14). The Examiner acknowledges that Ondracek does not disclose that "seal 152 is a polymer seal or includes polymer." *Id.* at 15, 18. The Examiner, however, finds that

> Wotton teaches another fire sprinkler having a water seat 40 engaging a seal at 47 and 49. Wotton further teaches that a low friction material like Teflon (Teflon is known by other names including polytetrafluoroethylene or synthetic fluoropolymer) can be coated onto a sealing surface to provide for a smooth stick-slip free surface for quick expelling of the water seat when

> the glass bulb shatter and present only minimum interference to the flow of the extinguishing fluid (Col. 3, ln 55–Col. 4, ln 1).

*Id.* at 16, 18; *see also* Wotton Fig. 3; Ans. 9–10 ("Wotton discloses a solution to improve a design criteria that is crucial to almost every sprinkler: ensuring detachment of essential valving components so that water flows as intended, without interference."). The Examiner concludes that it would have been obvious to modify the fire suppression sprinkler of Ondracek to "incorporate the teachings of Wotton to provide a polymer coating at the sealing surfaces at [inner tube] 152 [of Ondracek]" because "[d]oing so would provide a stick-slip free engagement with the water seat to minimize accidental leakage prior to activation, and to minimize interference of the fluid flow, as taught by Wotton in Column 3, line 55 – Column 4, line 1." Final Act. 15, 18.

The Examiner proposes modifying Ondracek's inner tube 152 to have a polymer coating at its sealing surfaces and reasons that "[d]oing so would provide a stick-slip free engagement with the water seat to minimize accidental leakage prior to activation, and to minimize interference of the fluid flow." Final Act. at 15, 18 (citing Wotton 3:55–4:1). Based on our understanding, the Examiner's position is that modifying Ondracek's inner tube (seal) 152 to have a polymer coating at its sealing surfaces would aid in detaching inner tube (seal) 152 from cap (water seat) 156 with or without the incorporation of half rings 190, 192 and/or aid in expelling cap (water seat) 156 with or without the incorporation of half rings 190, 192. *See* Final Act. 14–15, 17–18; *see also* Ans. 9–10. However, the Examiner does not direct us to any discussion in Ondracek to show that there is a need to facilitate separating inner tube (seal) 152 from cap (water seat) 156 with or without the incorporation of half rings 190, 192 or that there is a need to facilitate

expelling cap (water seat) 156 with or without the incorporation of half rings 190, 192. *See* Final Act. 14–15, 17–18; *see also* Ans. 9–10.

In fact, Ondracek discloses that upon actuation of the sprinkler, spring 168 forces inner tube 152 downwardly, ejecting structure 158 and cap 156 from the sprinkler head and moving downwardly until outwardly projecting tabs 171 engage inner end 172 of the sprinkler head. Ondracek 6:32–37, Fig. 9; *see also id.* at 7:1–9 (Describing that other than half rings 190, 192 being interposed between the lower end of inner tube 152 and cap 156, the structure of Figures 13 and 14 is "otherwise the same as" that described in Figures 8 through 11 and that as illustrated in Figure 14, half rings 190 and 192 separate when the sprinkler is actuated and are therefore ejected from the sprinkler head along with cap 156 and thermally responsive structure 158), Figs. 8, 9, 13, 14. The Examiner fails to apprise us *how* "adding the polymer (Teflon) coating [of Wotton] to the sealing surface between [Ondracek's inner tube] 152 and [cap] 156" would make detachment between inner tube (seal) 152 and cap (water seat) 156 with or without the incorporation of half rings 190, 192 *easier* or would result in quicker expulsion of cap (water seat) 156 with or without the incorporation of half rings 190, 192. *See* Final Act. 15, 18; *see also* Ans. 9. Additionally, the Examiner does not direct us to any discussion in Wotton that providing stick-slip free engagement between inner tube (seal) 152 and cap (water seat) 156 of Ondracek would "minimize accidental leakage prior to activation." *See* Final Act. 15, 18; *see also* Ans. 9; Wotton 3:55–4:1.

As to the Examiner's position that providing stick-slip free engagement between inner tube (seal) 152 and cap (water seat) 156 of Ondracek would "minimize interference of the fluid flow" (*see* Final Act.

15, 18), Wotton illustrates that glass bulb 43 is located *above* plug (water seat) 40 and O-ring (seal) 47 (*see* Wotton Fig 3) and discloses that "in the event that the glass bulb shatters[,] the plug will be expelled quickly from the fluid passage and present only the minimum interference to the flow of extinguishant fluid." Wotton 3:62–4:1. In contrast, Ondracek illustrates that thermally responsive structure (activation bulb) 158 is located *below* inner tube (seal) 152 and cap (water seat) 156 with or without the incorporation of half rings 190, 192. Ondracek, Figs. 8, 13. Given that Ondracek's thermally responsive structure (activation bulb) 158 is located below, not above, inner tube (seal) 152 and cap (water seat) 156 with or without the incorporation of half rings 190, 192, we fail to see and the Examiner fails to adequately explain how providing stick-slip free engagement between inner tube (seal) 152 and cap (water seat) 156 with or without the incorporation of half rings 190, 192 would "minimize interference of the fluid flow" of the extinguishing fluid. *See* Final Act. 15, 18; *see also* Ans. 9–10; Appeal Br. 11–12. As correctly pointed out by Appellant, Ondracek's inner tube 152 "has a central opening through which fluid flows unhindered." Appeal Br. 11; *see also* Ondracek 6:48–51 (Describing that water "follows an unobstructed path" between opening 142 in installation head 138 through inner tube 152 and toward deflector 160 at the outer end of sprinkler head 136), Fig. 9. Additionally, in the description of Figures 13 and 14, Ondracek discloses that inner tube 152 does not project beyond passage 154 in the sprinkler head when the sprinkler is actuated, "thereby *avoiding interference with the flow of water*" through inner tube 152 toward deflector 168. Ondracek 7:9–13 (emphasis added), Figs. 13, 14.

For these reasons, the Examiner's proposed reasoning for modifying Ondracek's inner tube to include a polymer coating at its sealing surfaces lacks rational underpinnings. As such, the Examiner fails to establish by a preponderance of the evidence that the combined teachings of Ondracek and Wotton disclose the fire suppression sprinkler of claims 1 and 20.

Accordingly, we do not sustain the Examiner's rejection of claims 1 and 20, and claims 2, 3, 6–8, 12, 13, 16, 19, 21, and 22 depending therefrom as unpatentable over Ondracek and Wotton.

## CONCLUSION

In summary:

| Claims Rejected | 35 U.S.C. § | Basis | Affirmed | Reversed |
|---|---|---|---|---|
| 1–3, 6–8, 12–14, 16, and 19–23 | 103(a) | Silva, Ondracek, and Wotton | | 1–3, 6–8, 12–14, 16, and 19–23 |
| 1–3, 6–8, 12, 13, 16, and 19–22 | 103(a) | Ondracek and Wotton | | 1–3, 6–8, 12, 13, 16, and 19–22 |
| **Overall Outcome** | | | | 1–3, 6–8, 12–14, 16, and 19–23 |

REVERSED