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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JEAN-FRANÇOIS CHARTREL,
CHRISTOPHE ROBERT, and MYRIAM GRISOT-SAULE

Appeal 2019-002378
Application 14/579,009
Technology Center 1700

Before GEORGE C. BEST, DEBRA L. DENNETT, and
JANE E. INGLESE, *Administrative Patent Judges*.

BEST, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1–21 of Application 14/579,009. Final Act. (April 9, 2018). We have jurisdiction under 35 U.S.C. § 6.

For the reasons set forth below, we *reverse*.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies Bostik, S.A. as the real party in interest. Appeal Br. 1.

I. BACKGROUND

Flexible packaging often consists of laminates of different materials which are glued together. Spec. 1. Polyurethanes are frequently used as adhesives in these materials. *Id.*

The process of manufacturing the laminates generally includes a step in which a layer of the polyurethane adhesive is deposited over the entire surface of a first film of material. *Id.* This step is followed by a step of glue laminating a second film of material to the first film. *Id.* at 1–2.

The '009 Application describes a gluing process using a gluing nozzle with an extrusion die for continuous extrusion of an adhesive compound onto a moving film substrate. *Id.* at 1. For the sake of convenience, we reproduce Figure 2 of the '009 Application below.

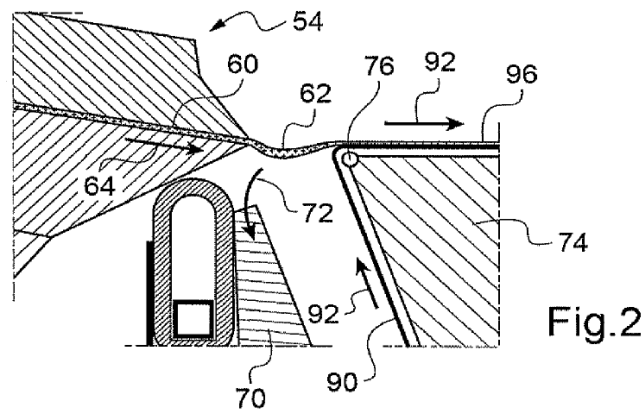


Figure 2 shows an enlarged view of a prior art extrusion die in a continuous gluing system.
Spec. 5.

In the gluing process, film substrate 90 moves at high speed in the direction of arrows 92. *Id.* at 2. Adhesive 60 passes through extrusion die 54, moving in the direction of arrow 64. *Id.* Extrusion die 54 does not contact film 90. Rather, extruded adhesive 62 is subjected to a draw ratio caused by the difference in the adhesive's extrusion speed and the speed of film 90. *Id.* This process subjects adhesive composition 62 to high shearing. *Id.*

Adhesive composition 60 may also be subjected to high shearing during extrusion within the gluing nozzle. *Id.* at 2. For convenience, we reproduce Figures 3 and 5 of the '009 Application below.

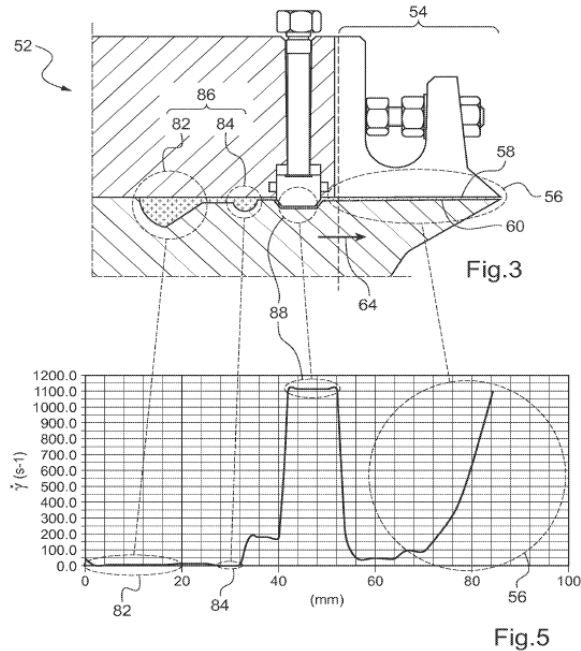


Figure 3 shows a transverse cross-sectional view of a prior art gluing nozzle. Spec. 5. Figure 5 shows a graph representing the shear rate during the flow of the adhesive composition in the gluing nozzle shown in Figure 3. *Id.*

Figure 3 shows a transverse cross-sectional view of gluing nozzle 52. *Id.* at 2. Thus, Fig. 3 shows a plane which is normal to the width of the gluing nozzle 52. *Id.* Adhesive composition 60 is supplied so as to flow in the direction of arrow 64. *Id.* Adhesive composition 60 flows from a supply opening of the gluing nozzle that is considerably narrower than the width of the extrusion die 54. *Id.*; see also Fig. 4 (not reproduced). As the adhesive composition 60 leaves the supply opening, it enters distribution zone 86, in which it spreads across the entire width of the extrusion die 54. *Id.* Restrictor bar 88 smooths out the flow velocity front of the adhesive composition, but induces a strong shear in adhesive composition 60. *Id.* Adhesive

composition 60 then flows through flow channel 58 and is applied to film 90. *Id.*

Figure 5 is a graph showing the shear rate during flow of adhesive composition 60 through gluing nozzle 52. *Id.* at 2–3. Extrusion die 54 includes channel 58 whose cross-section is reduced toward the extrusion end. Channel 58, therefore, induces additional shearing of the adhesive compound as shown in Figure 5. *Id.* at 3.

Importantly, many polyurethane adhesives have a shear-thinning nature. *Id.* at 3. Such materials lose cohesiveness when subjected to shear gradient. *Id.* The Specification explains that when the cohesion of the adhesive composition falls, it

may not be enough to maintain the homogeneity of the flow of the extruded adhesive composition 62 between the gluing nozzle 52 and the substrate film to be glued 90. The flow of the adhesive composition may then present certain instabilities of a nature so as to degrade the appearance of the gluing or even cause tears, which are then found on the glued substrate 96.

These instabilities and the tears in the coating of [the] adhesive composition on the glued substrate 96 increases [sic] with the decrease in the thickness of the layer of glued adhesive composition, and with the increase in speed of the gluing process. In other words, these instabilities and these tears or rips limit the speed of the gluing process and the fineness of the gluing. In particular[,] the fineness of the gluing may be limited to 5 g/m², and the speed of the gluing may be limited [to] 200 m/min.

Id.

The '009 Application's Specification describes an extrusion die for use in a gluing nozzle that is said to address these problems by increasing the cohesion of the adhesive composition to be glued. *Id.* The improved

extrusion die is depicted in Figure 8 of the '009 Application. For the sake of convenience, we reproduce Figure 8 below.

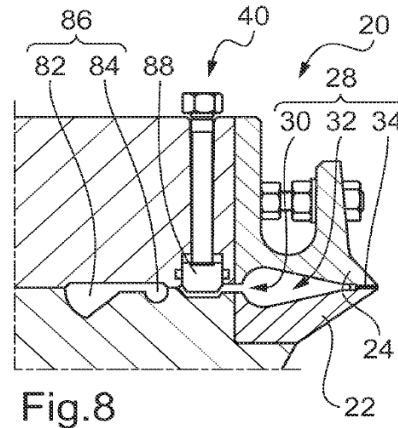


Figure 8 is a cross-sectional view of a gluing nozzle comprising an embodiment of the claimed invention. Spec. 6.

As shown in Figure 8, gluing nozzle 40 comprises extrusion die 20. *Id.* at 6. Extrusion die 20 comprises upper and lower lips 24 and 22. *Id.* Upper and lower lips 24 and 22 define flow channel 28. *Id.* Flow channel 28 extends from supply opening 30 to extrusion outlet 34. *Id.* at 7. Between supply opening 30 and extrusion outlet 34, flow channel 28 comprises concave volume 32. *Id.* The inclusion of concave volume 32 in flow channel 28 insures that the adhesive composition has a sufficient residence time in flow channel 28 that the adhesive composition can regain cohesiveness² prior to exiting flow channel 28 through extrusion outlet 34. *Id.* Thus the adhesive composition retains a good degree of cohesiveness when applied to substrate film 90. *Id.*

² The Specification refers to the process of regaining cohesiveness as “relaxation.” Spec. 7.

Claim 1 is representative of the '009 Application's claims and is reproduced below from the Claims Appendix of the Appeal Brief.

1. A continuous gluing process for continuous gluing of a film of substrate by making use of a gluing nozzle comprising an extrusion die for extrusion of an adhesive composition over a predetermined width, the extrusion die comprising a lower lip and an upper lip, the upper and lower lips extending parallel to one another so as to form a transverse channel for the longitudinal flow of the adhesive composition, the transverse channel extending longitudinally between:

- a supply opening for supplying the adhesive composition; and
- an extrusion outlet for extrusion of the adhesive composition;

the channel comprising a concave relaxation volume of the adhesive composition between the supply opening and the extrusion outlet; and

the process comprising:

- supplying an adhesive composition to the gluing nozzle with a flow rate, the adhesive composition having a viscous behaviour with a relaxation time period;
- adapting the relaxation volume of the die of the gluing nozzle to the relaxation time period and the flow rate of the supply of the adhesive composition, so that the relaxation volume of the die of the gluing nozzle is greater than the product of the relaxation time period and the flow rate of the supply of the adhesive composition;
- extruding the adhesive composition by making use of the gluing nozzle.

Appeal Br. 20.

II. REJECTIONS

On appeal, the Examiner maintains the following rejections:

1. Claims 1, 2, and 8 are rejected under 35 U.S.C. § 103 as unpatentable over the combination of Janssen,³ Kasamatsu,⁴ and Ouriev.⁵ Final Act. 2.
2. Claims 3, 19, and 21 are rejected under 35 U.S.C. § 103 as unpatentable over the combination of Janssen, Kasamatsu, Ouriev, and Karl.⁶ Final Act. 6.
3. Claim 4 is rejected under 35 U.S.C. § 103 as unpatentable over the accommodation of Janssen, Kasamatsu, Ouriev, and Sone.⁷ Final Act. 7.
4. Claims 5 and 6 are rejected under 35 U.S.C. § 103 as unpatentable over the combination of Janssen, Kasamatsu, Ouriev, and GB '782.⁸ Final Act. 8.
5. Claims 7 and 20 are rejected under 35 U.S.C. § 103 as unpatentable over the combination of Janssen, Kasamatsu, Ouriev, and Dukert.⁹ Final Act. 9.

³ US 6,843,874 B1, issued January 18, 2005.

⁴ US 4,708,629, issued November 24, 1987.

⁵ US 2006/0210666 A1, published September 21, 2006.

⁶ DE 3503721 A1, published August 7, 1986.

⁷ US 2006/0164740 A1, published July 27, 2006.

⁸ GB 732,782, published June 29, 1955.

⁹ US 3,680,997, issued August 1, 1972.

6. Claim 9 is rejected under 35 U.S.C. § 103 as unpatentable over the combination of Janssen, Kasamatsu, Ouriev, and Gartmann.¹⁰ Final Act. 11.
7. Claim 10 is rejected under 35 U.S.C. § 103 as unpatentable over the combination of Janssen, Kasamatsu, Ouriev, Karl, and Sone. Final Act. 11–12.
8. Claims 11–13 are rejected under 35 U.S.C. § 103 as unpatentable over the accommodation of Janssen, Kasamatsu, Ouriev, Karl, Sone, and GB '782. Final Act. 12.
9. Claims 14–18 are rejected under 35 U.S.C. § 103 as unpatentable over the common of Janssen, Kasamatsu, Ouriev, Karl, and GB '782. Final Act. 14.

III. DISCUSSION

A. Rejection of claims 1, 2, and 8 over Janssen, Kasamatsu, and Ouriev

For the reasons set forth below, we determine that Ouriev is non-analogous art and, therefore, is not available for use in an obviousness rejection. Thus, we reverse the rejection of claims 1, 2, and 8.

Appellant argues that “Ouriev is not analogous prior art to Janssen or Kasamatsu and is not combinable therewith.” Appeal Br. 11.

For a reference to be used as a basis for an obviousness rejection of Appellant’s claims, the reference must either be (1) in the field of the inventor’s endeavor or (2) reasonably pertinent to the particular problem with which the inventor was concerned. *In re Oetiker*, 977 F.2d 1443, 1447

¹⁰ US 5,443,638, issued August 22, 1995.

(Fed. Cir. 1992). The scope of analogous art is to be construed broadly. *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1238 (Fed. Cir. 2010).

Appellant argues that Ouriev is not analogous art because it does not relate to a gluing process or adhesives. Appeal Br. 10. Appellant concedes that Janssen and Kasamatsu disclose methods and apparatus for coating a substrate with an adhesive. *Id.* at 5. According to Appellant, “Ouriev discloses an extrusion die for viscoelastic material, i.e., pasta doughs or polymers, particularly pasta.” *Id.* at 6.

In response to this argument, the Examiner finds that Ouriev is directed to the control of viscoelastic effects during extrusion of polymers. Appellant is concerned with the control of viscoelastic effects during extrusion of adhesives. Therefore[,] Ouriev is in Appellant’s field of endeavor and is reasonably pertinent to the particular problem with which Appellant was concerned.

Answer 6.

We disagree with the Examiner that Ouriev is in Appellant’s field of endeavor.

We determine the inventor’s field of endeavor “by reference to explanations of the invention’s subject matter in the patent application, including the embodiments, function, and structure of the claimed invention.” *In re Bigio*, 381 F.3d 1320, 1326 (Fed. Cir. 2004); *see also In re Mettke*, 570 F.3d 1356, 1359 (Fed. Cir. 2009) (relying on specification to determine inventor’s field of endeavor).

In this case, the Specification is concerned with and discusses apparatus and processes for applying thin adhesive films to flexible film substrates for use in creating laminated films on an industrial scale. *See* Spec. 1–2. This is the inventor’s field of endeavor. Ouriev, on the other

hand, generally discusses strand extrusion of viscoelastic material and especially focuses on extruding pasta. Ouriev ¶¶ 1–3. Ouriev, therefore, is not in the inventor’s field of endeavor.

Thus, we must consider whether the Examiner erred by finding that Ouriev is reasonably pertinent to the particular problem with which the inventor was concerned. “A reference is reasonably pertinent if . . . it is one which, because of the matter with which it deals, logically would have commended itself to an inventor’s attention in considering his problem.” *In re Clay*, 966 F.2d 656, 659 (Fed. Cir. 1992).

According to the Specification, “[t]here is therefore a need to provide for improvements in terms of speed of gluing or fineness of the gluing” during the manufacture of the multi-film laminates. Spec. 3. The Specification describes problems encountered by those trying to increase the rate at which film is run through a continuous laminator or to reduce the thickness of the applied adhesive layer beyond a certain point. *Id.* at 1–3. According to the Specification, these problems are caused by the adhesive’s loss of cohesion due to shearing in the extrusion process. *Id.* at 2–3. The Specification then states that “the invention aims to increase the cohesion of the adhesive composition to be glued.” *Id.* at 3.

Ouriev, on the other hand, is concerned with reducing the effect of the elastic properties of viscoelastic material during extrusion. Ouriev, ¶ 3.

Ouriev states that

[d]ue to the elastic properties of the viscoelastic material, mechanical material stresses also arise in such a viscoelastic material in the forming and tearing process, which continue in the formed material. After the process of forming the material is complete, this can lead to additional, apparently spontaneous deformations. In this conjunction, reference is often made to “dimensional memory”, because the mechanical material

stresses of the material exiting the forming device give the impression that [the material] “remembers” a previous shape, and wants to return to it. While extruding strands of pastas or polymers [through a] die arrangement, this can lead to a crimping of the strands exiting the individual die canals.

Id.

Ouriev, therefore, would not reasonably commend itself to the attention of an inventor seeking to increase the cohesion, i.e. elasticity, of an adhesive after extrusion from a slot die.

Because Ouriev is not within the inventor’s field of endeavor nor reasonably pertinent to the particular problem facing the inventor, it is not analogous art and may not be used in an obviousness rejection of claim 1. We, therefore, reverse the rejection of independent claim 1 and also reverse the rejection of dependent claims 2 and 8.

B. Rejection of claims 3, 19, and 21 over Janssen, Kasamatsu, Ouriev, and Karl

As discussed above, we have determined that Ouriev is not analogous art and is not available for use in an obviousness rejection of the claims on appeal. We, therefore, reverse the rejection of claims 3, 19, and 21.

C. Rejection of claim 4 over Janssen, Kasamatsu, Ouriev, and Sone

As discussed above, we have determined that Ouriev is not analogous art and is not available for use in an obviousness rejection of the claims on appeal. We, therefore, reverse the rejection of claim 4.

D. Rejection of claims 5 and 6 over Janssen, Kasamatsu, Ouriev, GB '782

As discussed above, we have determined that Ouriev is not analogous art and is not available for use in an obviousness rejection of the claims on appeal. We, therefore, reverse the rejection of claims 5 and 6.

E. Rejection of claims 7 and 20 over Janssen, Kasamatsu, Ouriev, and Dukert

As discussed above, we have determined that Ouriev is not analogous art and is not available for use in an obviousness rejection of the claims on appeal. We, therefore, reverse the rejection of claims 7 and 20.

F. Rejection of claim 9 over Janssen, Kasamatsu, Ouriev, and Gartmann

As discussed above, we have determined that Ouriev is not analogous art and is not available for use in an obviousness rejection of the claims on appeal. We, therefore, reverse the rejection of claim 9.

G. Rejection of claim 10 over Janssen, Kasamatsu, Ouriev, Karl, and Sone

As discussed above, we have determined that Ouriev is not analogous art and is not available for use in an obviousness rejection of the claims on appeal. We, therefore, reverse the rejection of claim 10.

H. Rejection of claims 11–13 over Janssen, Kasamatsu, Ouriev, Karl, Sone, and GB '782

As discussed above, we have determined that Ouriev is not analogous art and is not available for use in an obviousness rejection of the claims on appeal. We, therefore, reverse the rejection of claims 11–13.

I. Rejection of claims 14–18 over Janssen, Kasamatsu, Ouriev, Karl, and GB '782

As discussed above, we have determined that Ouriev is not analogous art and is not available for use in an obviousness rejection of the claims on appeal. We, therefore, reverse the rejection of claims 14–18.

IV. CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1, 2, 8	103	Janssen, Kasamatsu, Ouriev		1, 2, 8
3, 19, 21	103	Janssen, Kasamatsu, Ouriev, Karl		3, 19, 21
4	103	Janssen, Kasamatsu, Ouriev, Sone		4
5, 6	103	Janssen, Kasamatsu, Ouriev, GB '782		5, 6
7, 20	103	Janssen, Kasamatsu, Ouriev, Dukert		7, 20
9	103	Janssen, Kasamatsu, Ouriev, Gartmann		9
10	103	Janssen, Kasamatsu, Ouriev, Karl, Sone		10
11–13	103	Janssen, Kasamatsu, Ouriev, Karl, Sone, GB '782		11–13
14–18	103	Janssen, Kasamatsu, Ouriev, Karl, GB '782		14–18
Overall Outcome				1–21

REVERSED