

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ceva Santé Animale S.A.,
Egg-Chick Automated Technologies S.A.S, and
Ceva Animal Health, LLC
Petitioners,

v.

Targan, Inc.,
Patent Owner.

Case IPR2024-00595

U.S. Patent No. 10,806,124

**PETITION FOR *INTER PARTES* REVIEW
OF CLAIMS 1-18 OF U.S. PATENT NO. 10,806,124
UNDER 35 U.S.C. § 312 AND 37 C.F.R. § 42.104**

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EXHIBIT LIST

- 1001 U.S. Patent No. 10,806,124 to Karimpour
- 1002 Prosecution history of Application No. 15/775,706, resulting in U.S. Patent No. 10,806,124
- 1003 Gershman, Y., “A simple way to determine the sex of one-day poultry chickens”; The Papers of Independent Authors [online]; vol. 28, DNA 2014, [<https://vixra.org/pdf/1405.0016v1.pdf>] (as cited by Applicant)
- 1004 FR Patent Publication No. 2909836 to Pierre et al., with Certified English Translation
- 1005 U.S. Patent Publication No. 2001/0035370 to Yavnai et al.
- 1006 U.S. Patent No. 6,396,938 to Tao et al.
- 1007 U.S. Patent No. 3,994,292 to Goodwin

I. Mandatory Notices—Rule 42.8(a)(1)

Ceva Santé Animale, S.A., Egg-Chick Automated Technologies S.A.S, and Ceva Animal Health, LLC (collectively, “Petitioners”) provide notice of the following:

Real Party-In-Interest: The real party-in-interest is Ceva Santé Animale, S.A., which is the sole owner of Egg-Chick Automated Technologies S.A.S. and Ceva Animal Health, LLC.

Related Matters: None.

Lead Counsel and Back-up Counsel:

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Petitioners consent to e-mail service at the above e-mail addresses.

The Office is authorized to charge the fee required by 37 C.F.R. § 42.15(a) for this Petition to Deposit Account No. 15-0030. Any additional fees that might be due are also authorized.

II. Certification of Grounds for Standing—Rule 42.104(a)

Petitioners certify that the ‘124 patent is available for *inter partes* review and that Petitioners are not barred or estopped from requesting review on the grounds identified in this Petition.

III. Overview of Challenge and Relief Requested—Rule 42.104(b)

Petitioners request *inter partes* review and cancelation of claims 1-18 of U.S. Patent No. 10,806,124 (“the ‘124 patent”). The ‘124 patent is subject to AIA 35 U.S.C. § 103.

A. Prior Art Patents and Printed Publications

Review of the ‘124 patent is requested in view of the following:

Ex. 1003 – “A simple way to determine the sex of one-day poultry chickens (basic principles)” by Yakov Gershman (“Gershman”), published May 3, 2014

(<https://vixra.org/pdf/1405.0016v1.pdf>)¹, is available as prior art under § 102(a)(1).

Gershman was cited during original prosecution.

Ex. 1004 – FR Patent Publication No. 2909836A1 to Pierre et al. (“Pierre”), published June 20, 2008, is available as prior art under 35 U.S.C. § 102(a)(1) & (2). Pierre was not cited during original prosecution. Certified English translation included.

Ex. 1005 – U.S. Patent Publication No. 2001/0035370 to Yavnai et al. (“Yavnai”), published November 1, 2001, is available as prior art under 35 U.S.C. § 102(a)(1) & (2). Yavnai was cited during original prosecution.

Ex. 1006 – U.S. Patent No. 6,396,938 to Tao et al. (“Tao”), issued May 28, 2002, is available as prior art under 35 U.S.C. § 102(a)(1) & (2). Tao was cited during original prosecution.

Ex. 1007 – U.S. Patent No. 3,994,292 to Goodwin (“Goodwin”), issued November 30, 1976, and is available as prior art under 35 U.S.C. § 102(a)(1) & (2). Goodwin was of record, but not cited, during original prosecution.

¹ Gershman was also submitted by Patent Owner in an IDS filed October 18, 2018 and in an IDS filed September 18, 2020. (Ex. 1002, p. 267.)

B. Grounds for Challenge

Petitioners request cancelation of the challenged claims under the following statutory grounds:

1. Claims 1 and 3 are unpatentable under 35 U.S.C § 103 as obvious over Gershman in view of Pierre.
2. Claims 1 and 3 are unpatentable under 35 U.S.C. § 103 as obvious over Yavnai in view of Pierre.
3. Claims 1, 6 and 7 are unpatentable under 35 U.S.C. § 103 as obvious over Pierre in view of Goodwin.
4. Claims 1, 6 and 7 are unpatentable under 35 U.S.C. § 103 as obvious over Pierre in view of Gershman.
5. Claim 2 is unpatentable under 35 U.S.C. § 103 as obvious over Pierre and Goodwin in view of Tao.
6. Claim 8 is unpatentable under 35 U.S.C. § 103 as obvious over Pierre and Gershman in view of Tao.
7. Claims 2, 4, 5, and 9-15 are unpatentable under 35 U.S.C. § 103 as obvious over Gershman in view of Pierre and Tao.
8. Claims 2, 4, 8, and 9-18 are unpatentable under 35 U.S.C. § 103 as obvious over Yavnai in view of Pierre and Tao.

Section VII demonstrates that there is a reasonable likelihood that

Petitioners will prevail for each of the statutory grounds. *See* 35 U.S.C. § 314(a).

IV. Overview of the ‘124 Patent and the Prior Art

A. The ‘124 Patent

The ‘124 patent describes acquiring images of chicks in order to automatically determine one or more characteristics of the chicks. (Ex. 1001, Abstract.) A chick is placed on one or more moving platforms and imaged by cameras. (*Id.*, 4:1-3.) At least one stimulus is applied to the chick, the at least one stimulus including the angle of the platform, vibration of the platform, moving air, or a light. (*Id.*, 6:10-19.) The at least one stimulus causes the chick to flap its wings while a camera captures an image of the chick. The image of the chick is compared to a database of images in order to determine a characteristic of the chick.

One aspect of the ‘124 patent is depicted in Figure 6, with the moving platform being an angled platform 26 and the at least one stimulus being generated by a vibrating mechanism 46 as well as lights 47 and fans 42 directed towards the platform 26. (Ex. 1001, 4:51-64.) A camera 18 captures an image of the chick with its wings spread on the angled platform 26. (*Id.*, 4:47-50). The image of the chick’s wings is compared to other images of chick wings to determine the sex of the chick. (*Id.*, 6:22-25.)

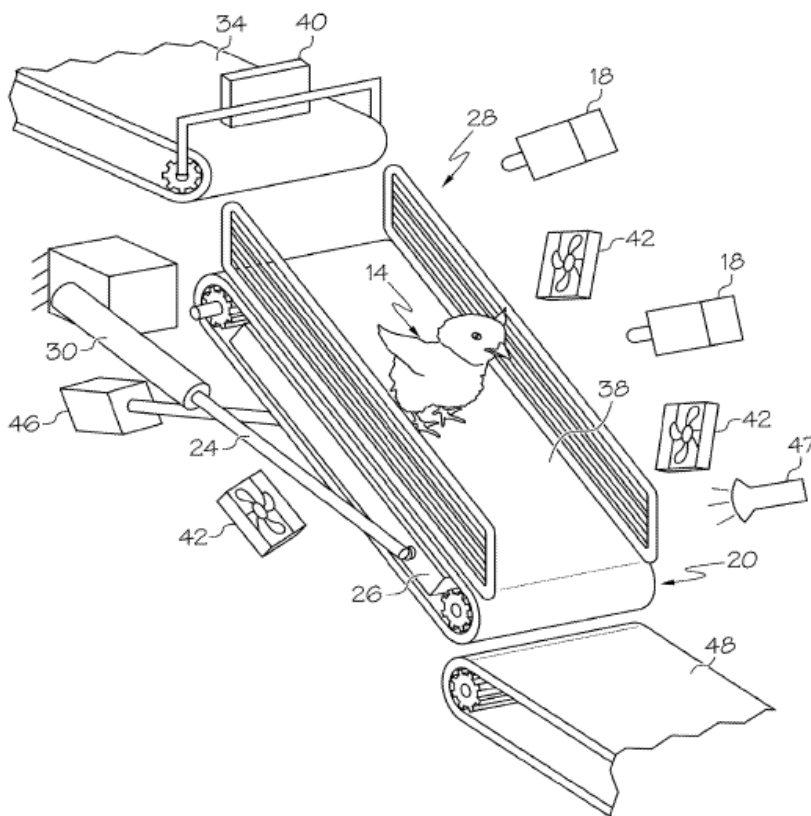


FIG. 6

The embodiment in claims 1-5 is a system comprising a moving platform, an image capture device, at least one stimuli to cause a chick on the moving platform to open its wings, and a computer processor having a database of images of male and female wing patterns for a breed of chick corresponding to a chick on the moving platform.

The embodiment in claims 6-8 is a system comprising a moving platform, an image capture device, and a computer processor having a database of images of healthy and unhealthy chicks of a breed corresponding to a chick on the moving platform.

The embodiment in claims 9-18 is a system comprising a moving platform, an image capture device, a computer processor having a database of images of a predetermined feature of a chick, and a removing means for removing a chick from the moving platform. The computer processor is in communication with the removing means to remove the chick from the moving platform when an image of the chick deviates from the database of images.

As demonstrated by the prior art discussed below, the claims of the ‘124 patent simply recite a combination of prior art elements that function predictably in their known manner.

B. Summary of ‘124 Prosecution History

Application No. 15/775,706 was filed on May 11, 2018, with 21 claims, including claims 1-3, 7-10, and 21-34. Claims 1, 9, and 21 were independent claims.

The Examiner issued the first substantive Office Action on November 5, 2019 and rejected Claims 1-3, 7-10 and 21-34 as failing to comply with the written description and enablement requirements under 35 U.S.C. § 112(a). Claims 1-3, 7-10 and 21-34 were further rejected as being indefinite under 35 U.S.C. § 112(b).

Claims 1-3 and 32 were rejected as being obvious over Tao et al. (U.S. 6,396,938, Ex. 1006) in view of Yavnai et al. (U.S. 2001/0035370, Ex. 1005) and Claims 7-8 and 31 were rejected as being obvious over Tao in view of Yavnai and

Gershman (“A simple way to determine the sex of one-day poultry chickens (basic principles),” Ex. 1003). Claims 9-10, 21, 24, 26 and 33-34 were rejected as being anticipated by Tao. Claims 27 and 28 were rejected as being obvious over Tao in view of Yavnai. Claims 22, 23, 25, 29, and 30 were rejected as being obvious over Tao in view of Gershman.

The Applicant filed a response and Amendment on February 5, 2020.

In response to the rejections of obviousness and anticipation, the Applicant amended independent claims 1, 9 and 21 to specify that the moving platform of the system supports an “unrestrained chick.” (Ex. 1002, pages 184-185.) The Applicant argued that both Tao and Yavnai teach away from the amended claims because each reference describes an embodiment where a chick is restrained. (*Id.*, page 196.)

The Applicant further amended independent claims 9 and 21 to recite that the processor of the system has access to a database of images of chicks and determines a deviation of a captured image from the database of images. The Applicant argued that Tao does not describe the use of a database of images.

The Applicant held a telephone interview with the Examiner on February 28, 2020 and agreed to an Examiner’s Amendment correcting antecedent basis issues and typographical errors.

A Notice of Allowance issued on March 6, 2020. The Examiner stated in the

reasons for allowance that Tao, Yavnai, and/or Gershman do not disclose, teach, or suggest a moving platform to support an “unrestrained” chick of a particular breed and a computer processor having a database of images, the computer processor in communication with the image capture device, whereby the image capture device captures at least one image of the chick and transmits it to the computer processor where the image is processed and compared to the database to determine the sex or to determine a deviation from the database of images. (Ex. 1002, pages 129-130.)

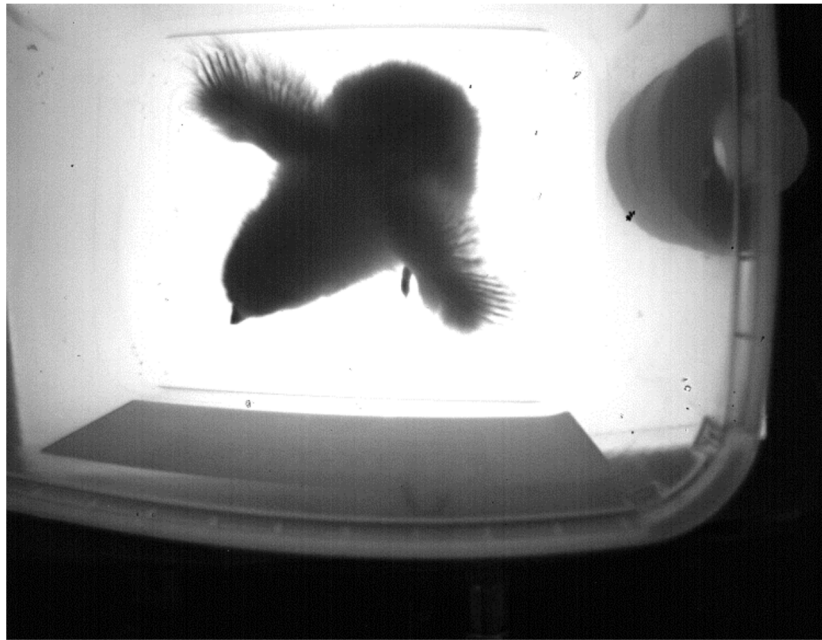
The Examiner underlined in particular that Tao, Yavnai, and Gershman do not disclose, teach or suggest a moving platform to support an unrestrained chick (Ex. 1002, pages 129-130.)

C. Summary of Gershman

Gershman is directed to a system for capturing images of chick wings and analyzing the images to determine the sex of the chick. The system includes a moving plate on which a chick is placed. (Ex. 1003, page 3 (1 stage).) An example of the moving plate is shown in Figure 3 below.



The moving plate is pushed downwards via a mechanical activator to induce the chick to “lose its equilibrium and voluntarily spread its wings.” (Ex. 1003, pages 2, 5.) The plate can be pushed at an initial acceleration that is greater than gravitational acceleration to ensure that the chick opens its wings during the fall. The chick is then photographed with visibly spread wings, as seen in Figure 5 of Gershman below.



As can be seen in the above figures, the chick is not restrained other than being supported by the moving platform.

Gershman concludes that “[i]t is obvious, that this idea can simply [be] adapted on to the lines that are wide[ly] used for counting and packaging hatchling chicks in industrial incubators.” (Ex. 1003, page 10.)

Gershman teaches that an image of a chick’s wings can be analyzed to

determine whether a chick is a male or a female for industrial chick sexing. (Ex. 1003, page 4.)

D. Summary of Pierre

Pierre is directed to automatic, image-based chick sexing for industrial poultry farming. (Ex. 1004, page 3.) Pierre describes a system that places each bird, in turn, in front of a camera. (*Id.*) Each bird is stimulated to deploy its wings naturally. The image is captured by “putting each bird into a situation where it is falling” such that the wing feathers are visible. (*Id.*, page 2.) In other words, Pierre teaches giving the birds a stimulus (putting them in a falling situation) where they are unrestrained to open their wings. Pierre does not specifically describe structures for putting the bird in a falling situation.

Pierre discloses a computer processing method for comparing the image of the bird with reference images in order to determine a characteristic such as “the state of the bird’s health, the sex [...] or their age.” (Ex. 1004, page 3.) The reference images “[record] a specific state” of a bird. (*Id.*)

E. Summary of Yavnai

Yavnai is directed to automatic sexing of a chick. A stimulus is applied to cause the chick to automatically spread its wings and expose its tip wing feathers in a state of disequilibrium.

Yavnai teaches a number of ways to cause chick disequilibrium, including

“removing a chick’s foot support, placing the chick on a moving, vibrating or unstable surface, causing the chick to jump, shaking the chick, shocking the chick with an electric voltage or acoustic noise, and warming the chick” (Ex. 1005, ¶ 12.)

Figure 5A of Yavnai illustrates a conveyor belt 50 supporting a chick 10. A mechanical vibrator 58 can vibrate the surface 60 of the conveyor belt. “Due to the vibrating motion of upper surface 60, chick 10 loses its equilibrium, jumps up and spreads its wings.” (Ex. 1005, ¶ 42.) A camera can be used to photograph the chick when its wings are open. (*Id.*)

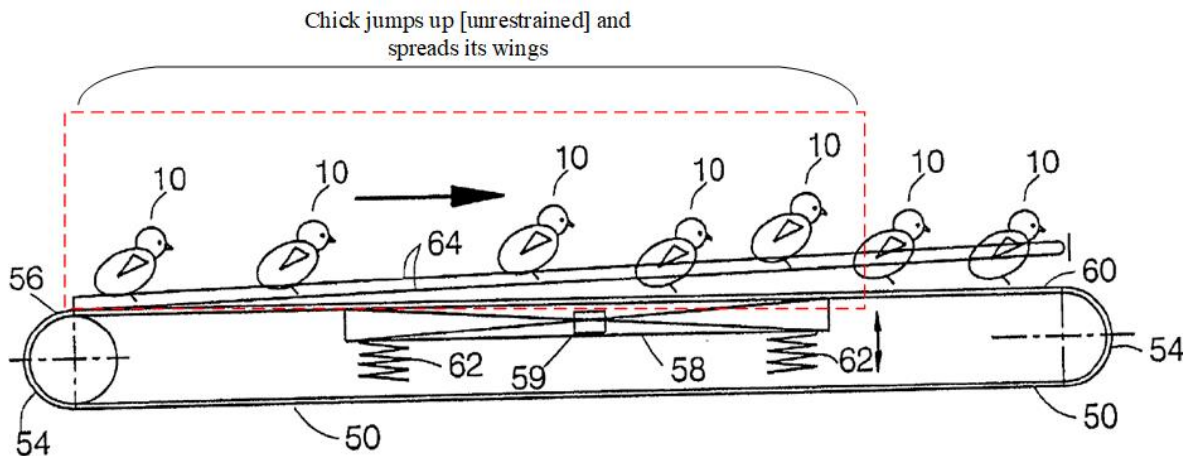


FIGURE 5A

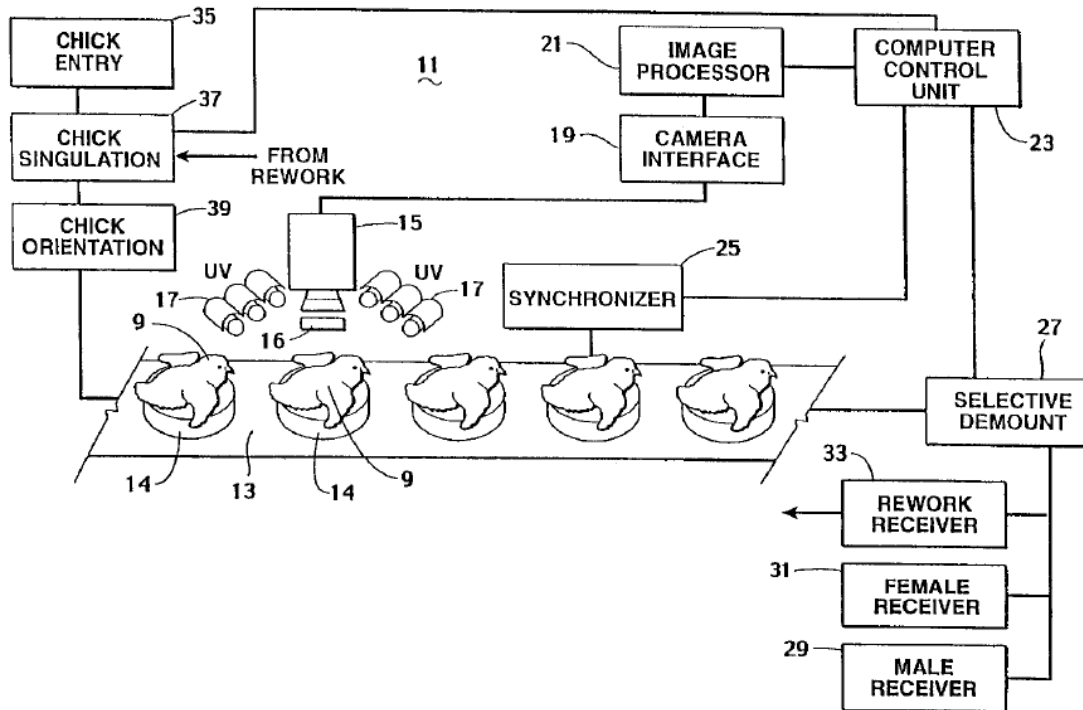
Yavnai further explains that “[t]wo poles, 64, parallel to the conveyor belt 50, extend along the length of conveyor belt upwards to the right.” (Ex. 1005, ¶ 42.) As can be seen in Figure 5A, for most of the extent of the vibrating conveyor the chicks can jump freely up and down unrestrained until the end of the vibrating conveyor (pictured on the right) where the sloped poles are briefly depicted as high

enough to support the wings of the chick. Thus, Yavnai discloses a system having a moving platform supporting an unrestrained chick even if one end of the platform may also support the wings of a chick.

The image is processed to determine the sex of the chick based on sex distinguishable wing feather patterns. (Ex. 1005, ¶ 39.) Yavnai further describes depositing a chick in an appropriate container after determining the sex based on the image. (*Id.*, ¶ 40.)

F. Summary of Tao

Tao is directed to a system for automatic sexing and sorting of chicks. Figure 1 of Tao shows a moving conveyor 13 upon which chicks are placed in “appropriate chick retainers 14.” (Ex. 1006, 3:62-67.) No further explanation of the chick retainers is provided other than noting the chicks are positioned on the retainer units 14 by chick orientation unit 39. (*Id.*, 6:17-21.) A video camera 15 captures images or video of each chick on the conveyor 13. The lengths and variation of wing feathers in the images are analyzed to determine whether each chick is a male or female. (*Id.*, 5:52-6:1.)

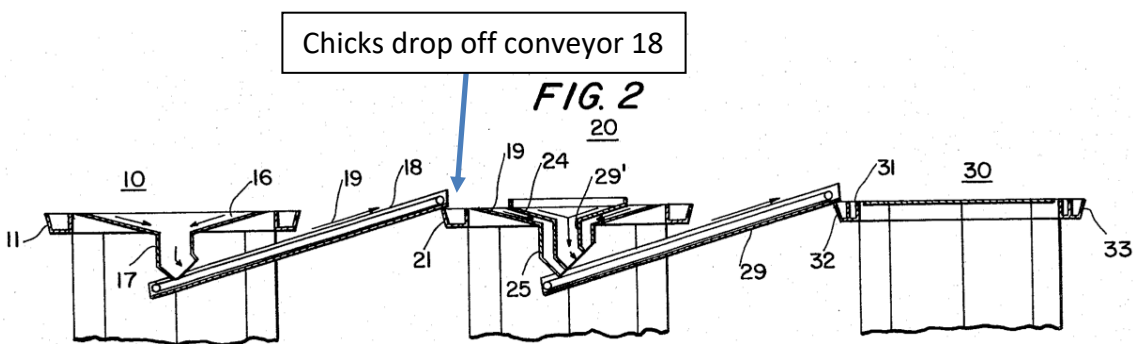


Tao teaches that a chick is sorted according to its sex. Computer control unit 23 provides a signal to operate (activate) a selective demount apparatus 27 based on the sex of the chick. (Ex. 1006, 6:1-6.) The selective demount apparatus routes female chicks to a female receiver and male chicks to a male receiver. (*Id.*, 6:4-9.)

G. Summary of Goodwin

Goodwin is directed towards an automated chick processing system for newly hatched chicks using angled conveyors to transport chicks through the system. (Ex. 1007, 1:31-32.). As shown in Figure 2 below, Goodwin explains “[t]he debeaked chick is placed in conical trough 16 and passes by gravity into chute 17 to drop on upwardly inclined and driven linear belt conveyor 18 whose

direction of motion is shown by arrow 19... The chicks on conveyor belt 18 are carried upward to the sexing station 20 where they drop into a rotary annular conveyor trough 21.” (Ex. 1007, 2:13-20.) (See arrow added to Figure 2 below indicating where chicks drop (i.e., fall) from angled conveyor 18 (moving platform) into sexing station 20).

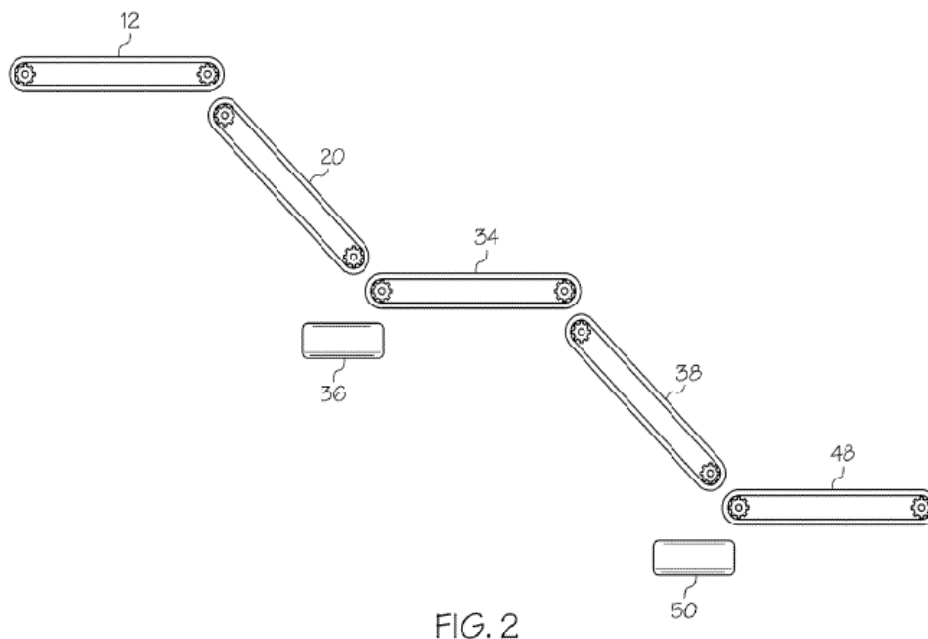


The chicks in the sexing station are manually inspected to determine the sex by various means including inspection of the wing feathers. (Ex. 1007, 2:22-32). Goodwin does not disclose any chick restraints on the angled conveyor belt 18.

V. Claim Construction

This Petition shows that the challenged claims are unpatentable when construed in accordance with the ordinary and customary meaning as understood by a person of ordinary skill in the art (POSITA) after reading the patent specification and prosecution history. (37 C.F.R. § 42.100(b).) See *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005).

“*Moving platform*” (Claims 1, 6, 9): The ‘124 patent states that “[t]he term conveyor is understood to mean any type of handling mechanism capable of transporting [...] an animal [...] from a first location to a second location. The term conveyor shall include ... moving platforms[.]” (Ex. 1001, 3:62-67.) Figure 2 shows an example of moving platforms.



Accordingly, the inventors of the ‘124 patent acted as their own lexicographer and expressly and broadly defined “moving platform” as “a platform that transports a chick from a first location to a second location.”

“*Unrestrained chick*” (Claims 1, 6, 9): The ‘124 patent does not expressly define or describe an unrestrained chick. In fact, the ‘124 patent specification and original claims never use the word “unrestrained.” The ‘124 patent describes a

conveyor having rails “that prevent the chick from falling off” of the conveyor.

(Ex. 1001, 4:20-21.) Figure 6 illustrates the rails 28, which are located on either side of the chick on the conveyor.

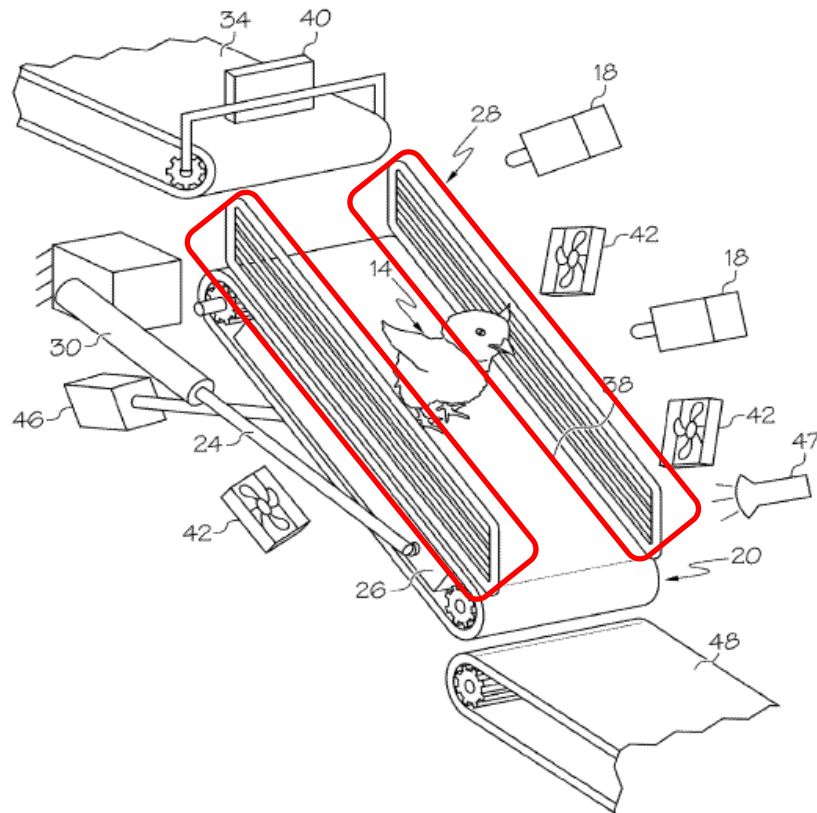
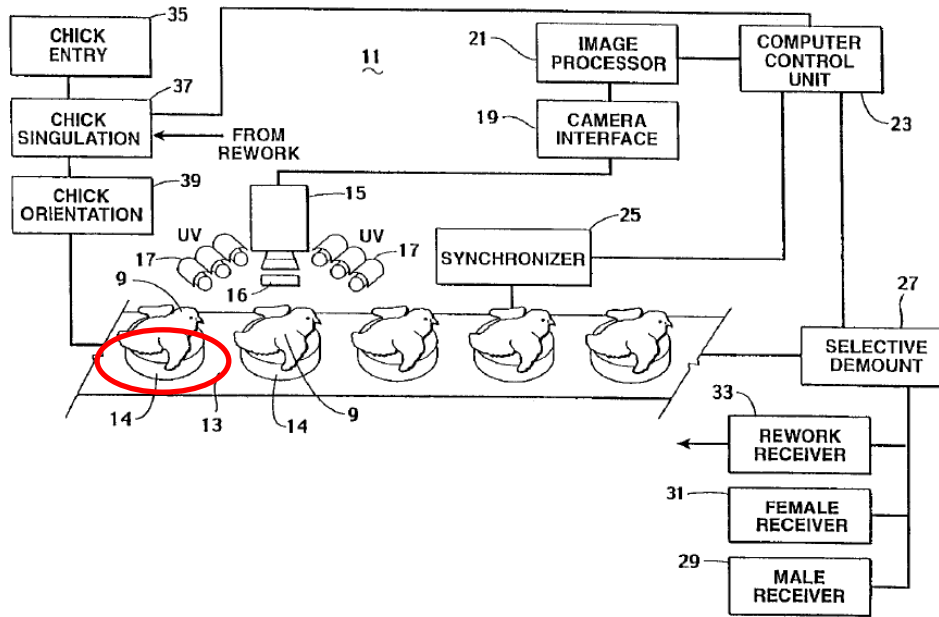


FIG. 6

A similar conveyor with rails is illustrated in Figure 3. The ‘124 patent describes the chick lifting and flapping its wings while between the rails of the conveyors. (Ex. 1001, 6:18-19.)

During prosecution of the ‘124 patent, the Applicant stated that the system of Tao includes a chick that is restrained on a chick retainer unit. (Ex. 1002, page 196.) The chick retainer unit 14 of Tao is illustrated in Figure 1.



The Applicant argued that “because Tao et al. teaches that in order to obtain a proper image of a chick’s wing pattern, the chick must be restrained, Tao et al. teaches away from claim 1 of the present invention.” (Ex. 1002, page 196.)

The Applicant also argued that Yavnai teaches restraining a chick using poles 64 or cups 40. (Ex. 1002, page 196.) Thus, Applicant argued that an “unrestrained chick” is not present in the prior art when a chick is placed on a retainer (Tao) or when a chick has its wings supported by poles or is in a cup (Yavnai).

The Applicant also argued that a POSITA would be discouraged from pursuing a system that “allows a chick to be moved unrestrained through the system” on the basis of the teachings of Tao and Yavnai. (Ex. 1002, page 196.)

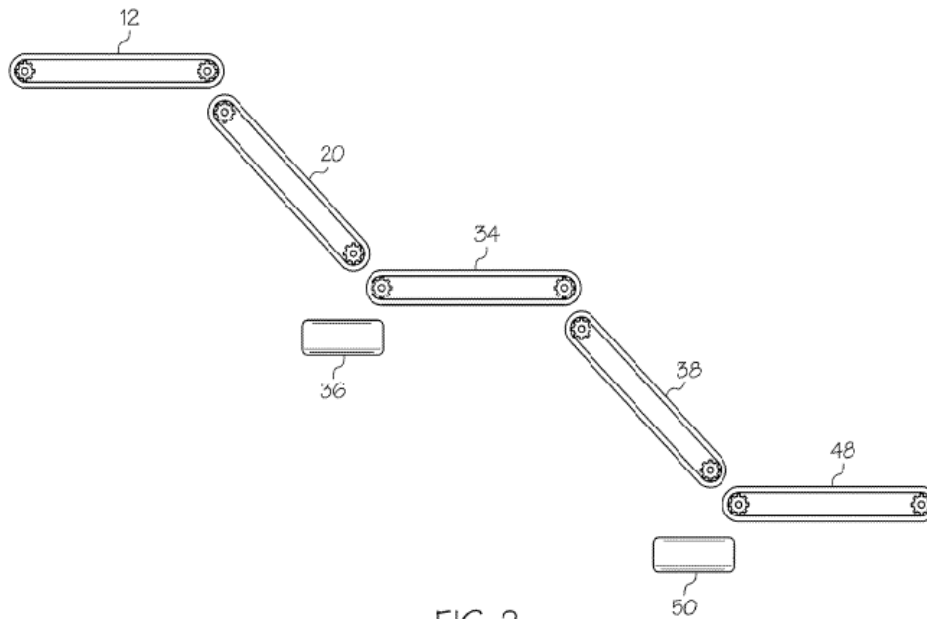
Petitioner notes that the ‘124 patent nowhere claims a chick being moved

unrestrained *through the system*. Instead, the ‘124 patent claims require only the presence of a “moving platform to support an unrestrained chick.”

Based on the description provided in the ‘124 patent and the Applicant’s arguments during prosecution of the ‘124 patent, for the purposes of this proceeding only², the “unrestrained chick” may be understood to be a chick that is able to freely move its wings while on the moving platform.

“*Removing means for removing a chick from the moving platform*” (Claim 9). The limitation of “removing means for removing a chick from the moving platform” is subject to interpretation under 35 U.S.C. § 112(f). During prosecution, the Examiner reached the same conclusion. (Ex. 1002, pages 124-127.) The angled conveyors 20, 38 shown in Figure 2 were interpreted by the Examiner as the structures in the ‘124 patent corresponding to the removing means of Claim 9. (*Id.*) The function associated with the claimed structures is recited in claim 9 as “for removing a chick from the moving platform.” This interpretation was not disputed by the Applicant.

² While not the subject of this proceeding, Petitioners maintain that the ‘124 patent does not have written description support for an “unrestrained” chick under 35 U.S.C. § 112(a) and that the word “unrestrained” added to the independent claims during prosecution renders the claims indefinite under 35 U.S.C. § 112(b).



As shown above in Figure 2, if conveyor 20 moves such that the angle of conveyor 20 changes, the chick drops off of the angled conveyor 20 and is removed from the series of conveyors via conveyor 36. (Ex. 1001, 5:50-57.)

Similarly, the chick drops off of the angled conveyor 38 and is removed from the series of conveyors via conveyor 50. (*Id.*, 6:10-36.)

Accordingly, the structure corresponding to the “removing means for removing a chick from the moving platform” should be interpreted as “a movable angled conveyor capable of transporting the chick off of the moving platform and equivalents.”

VI. Level of Ordinary Skill in the Art

The level of skill in the art is apparent from the cited art. See *In re GPAC*

Inc., 57 F.3d 1573, 1579 (Fed. Cir. 1995). Petitioner submits that a person of ordinary skill in the art (POSITA) for the ‘124 patent would be familiar with techniques for assessing and transporting poultry in an industrial setting and would be familiar with visual and/or anatomical indicators of characteristics of a chick. (Ex. 1001, 2:6-16.) A POSITA would further be aware of image acquisition and processing techniques for automating chick assessment and chick sexing or have access to team members with this image processing knowledge. (See, e.g., Ex. 1006, 3:1-11.)

VII. Identification of How the Challenged Claims Are Unpatentable

Pursuant to Rule 42.104(b), this section demonstrates that the challenged claims are unpatentable.

A. Ground 1: Claims 1 and 3 are Obvious Over Gershman in View of Pierre

Claims 1 and 3 of the ‘124 patent would have been obvious under 35 U.S.C. § 103 over Gershman in view of Pierre.

Claim [1.0]: A system for determining the sex of a chick comprising:

Gershman is directed to a computerized optical separator for determining the sex of one-day chickens, i.e., a system. (Ex. 1003, page 1 (Abstract).)

Claim [1.1]: a moving platform to support an unrestrained chick of a particular breed;

Gershman discloses a moving plate with a surface upon which a chick is placed. The movement of the plate transports the chick from a first location to a second location via a mechanical activator. (Ex. 1003, page 5 (Materials and Methods).) The movement and position of the chick are not restrained on the moving plate. The chicks are able to “reflexively [...] open their wings” as a result of the movement of the plate. (*Id.*, page 6 (Materials and Methods).)

Gershman teaches the chick being a particular breed having a genetic factor resulting in sex-based differences in feather patterns. (Ex. 1003, page 1 (Introduction).)

Petitioner also notes that while Gershman was cited during prosecution as describing a library of images and related software and processing (Ex. 1002, pages 220-221, 226-228), the Examiner and the Applicant never discussed the fact that Gershman also teaches a moving platform supporting an unrestrained chick for use in a chick imaging and sexing system.

Claim [1.2]: at least one stimuli to cause the chick to open its wings;

Gershman teaches an acceleration of the moving plate in order to induce “reflex opening of the wings.” (Ex. 1003, page 3 (Prerequisites solutions).) The acceleration of the moving plate and the chick is a stimulus causing the chick to open its wings. (*Id.*, page 6 (Results).)

Claim [1.3]: an image capture device to capture at least one image of the chick; and

Gershman discloses a chick photographed with a digital camera. (Ex. 1003, page 2 (Introduction).) Specifically, Gershman describes a black and white charge-coupled device camera. (*Id.*, page 5 (Materials and methods).)

Claim [1.4]: a computer processor having a database of images of male and female wing patterns for the particular breed, the computer processor in communication with the image capture device,

Gershman teaches a computer having a computer processor (“PC Pentium-4 under Windows 7”). (Ex. 1003, page 5 (Materials and methods).) Data is transmitted from a digital camera to the computer. (*Id.*, page 2 (Introduction).) The computer of Gershman would necessarily be in communication with the camera to receive the image. Gershman teaches that the computer compares the chick’s wing feathers to those of other chicks to determine the sex of the chick. (*Id.*, page 4.)

Gershman does not explicitly teach that the computer includes a database of images of male and female wing patterns. However, Pierre teaches the use of “reference images recording a specific state” of a bird. (Ex. 1004, page 3.) It would have been obvious to store a collection of reference images in a database in order to organize the collection of reference images. The reference images demonstrate variations in feathers that are attributed to the sex of a chick. (*Id.*, page 3.)

Specifically, Pierre discloses that the differences in plumage between a rooster (male) and a hen (female) are visible in the reference images. (*Id.*)

It would have been obvious to a POSITA to store the reference images of male and female wing patterns taught by Pierre in a database in the computer of Gershman as an alternative or additional means of analyzing the image of the chick to determine the sex of the chick with a reasonable expectation of success.

Claim [1.5]: whereby the image capture device captures at least one image of the chick and transmits it to the computer processor where the image is processed and compared to the database to determine the sex.

Gershman discloses that a chick is photographed, and the image is transmitted to the computer for processing. (Ex. 1003, page 2, page 3 (1 stage).)

Pierre teaches that a digital image is compared with reference images to determine the sex of a chick. (Ex. 1004, page 5.)

It would have been obvious to a POSITA to use the computer of Gershman to compare the image with the database of reference images of male and female wing patterns in order to determine the sex of the chick, as taught by Pierre, with a reasonable expectation of success.

Accordingly, Gershman in view of Pierre renders obvious Claim 1.

Claim 3: The system of claim 1 wherein the stimuli may be one or more of the following group: an angled conveyor, a vibrating conveyor, a strobe light, or a stream of air blowing on the chick.

Gershman teaches blowing compressed air on a chick. (Ex. 1003, page 4 (2 stage), page 6 (Results).) As implied in Claim 3, it is understood that blowing air on a chick is a stimulus that can cause chicks to open their wings.

Thus, Gershman in view of Pierre renders obvious Claim 3.

B. Ground 2: Claims 1 and 3 Are Obvious Over Yavnai in View of Pierre

Claims 1 and 3 of the '124 patent are obvious under 35 U.S.C. § 103 over Yavnai in view of Pierre.

Claim [1.0]: A system for determining the sex of a chick comprising:

Yavnai is directed to a method of sexing a one-day-old chick which allows for automated chick sexing, i.e., a system. (Ex. 1005, Abstract, ¶ 11.)

Claim [1.1]: a moving platform to support an unrestrained chick of a particular breed;

Yavnai teaches a conveyor belt as a moving platform transporting a chick. (Ex. 1005, ¶ 42.) The chick is able to jump and spread its wings while on the conveyor belt. (*Id.*) The chick can also move backwards and forwards along the conveyor belt.

Figure 5A shows that poles 64 initially touch the surface of the conveyor belt and slowly rise towards the far side (end) of the conveyor. The chicks' wings are not in contact with the poles on either side of the conveyor until the end of the conveyor.

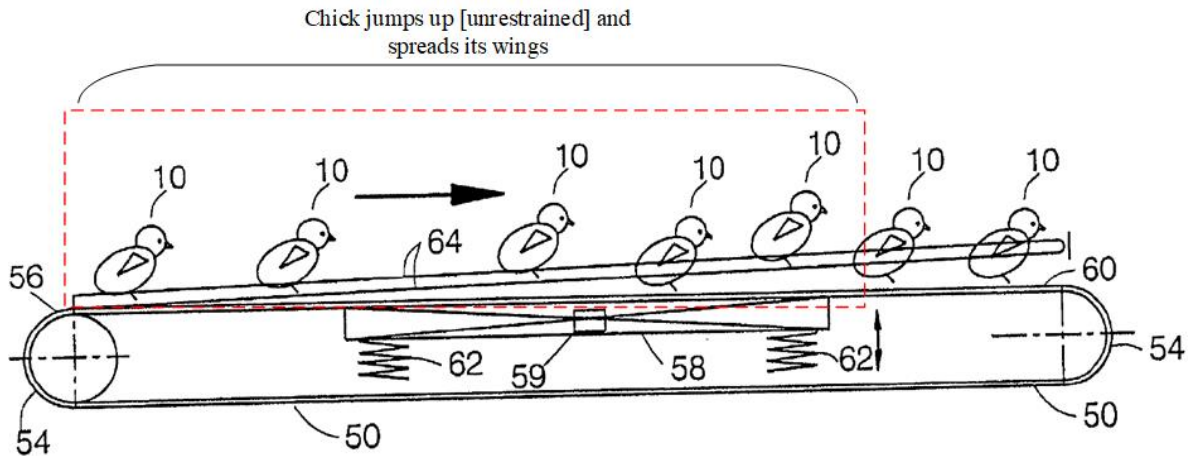


FIGURE 5A

The chick is stimulated to jump and is free to continue jumping and spreading its wings (i.e., the chick is unrestrained) until the far right end of the conveyor, where the ends of the sloped poles finally reach a height sufficient to support the wings of the chick. Thus, Yavnai Figure 5A shows a moving platform supporting an unrestrained chick because the chick is unrestrained over a substantial portion of the platform.

Any chick on the moving platform of Yavnai would inherently be a chick of a particular breed.

Petitioner also notes that while Yavnai was discussed during prosecution as not disclosing a moving platform supporting an unrestrained chick, the Examiner and the Applicant never discussed the fact that in Yavnai Figure 5A the chicks are unrestrained over most of the length of the conveyor.

Claim [1.2]: at least one stimuli to cause the chick to open its wings;

Yavnai teaches that a chick can be prompted to spread its wings by “removing the chick’s foot support, placing the chick on a moving, vibrating, or unstable surface, inducing the chick to jump, shaking the chick, shocking the chick with an electric voltage or acoustic noise, and warming the chick.” (Ex. 1005, ¶ 33-36.)

Claim [1.3]: an image capture device to capture at least one image of the chick; and

Yavnai teaches a digital camera used to take a picture of a chick. (Ex. 1005, ¶ 38.)

Claim [1.4]: a computer processor having a database of images of male and female wing patterns for the particular breed, the computer processor in communication with the image capture device,

Yavnai teaches that the image taken by the camera 48 is processed and the sex is determined based on sex distinguishable wing patterns. (Ex. 1005, ¶ 39.)

Yavnai does not expressly teach the claimed database of images.

Pierre teaches a computer processing method where an image is captured by a camera and submitted for image processing. (Ex. 1004, page 4.) Pierre also teaches the use of “reference images recording a specific state” of a bird. (*Id.*, page 1.) It would have been obvious to store a collection of reference images in a database to organize the collection of reference images. The reference images demonstrate variations in feathers that are attributed to the sex of a chick. (*Id.*, page 3.) Specifically, Pierre discloses that the differences in plumage between a rooster (male) and a hen (female) are visible in the reference images. (*Id.*)

It would have been obvious to a POSITA that the camera of Yavnai is in communication with a computer processor having the database of reference images so that an image captured by the camera can be processed in the computer processing method taught by Pierre to determine the sex of a chick with a reasonable expectation of success.

Claim [1.5]: whereby the image capture device captures at least one image of the chick and transmits it to the computer processor where the image is processed and compared to the database to determine the sex.

Yavnai teaches analysis of images of a bird’s wings to determine the sex of a chick. (Ex. 1005, ¶ 39.)

Pierre teaches that a digital image is compared with reference images to determine the sex of a chick. (Ex. 1004, page 5.)

It would have been obvious to a POSITA that the camera of Yavnai can transmit an image to a computer processor having the database of reference images so that the image can be compared with reference images in the computer processing method taught by Pierre to determine the sex of a chick with a reasonable expectation of success.

Accordingly, Yavnai in view of Pierre renders obvious Claim 1.

Claim 3: The system of claim 1 wherein the stimuli may be one or more of the following group: an angled conveyor, a vibrating conveyor, a strobe light, or a stream of air blowing on the chick.

Yavnai teaches that a chick can be prompted to spread its wings by “placing the chick on a moving, vibrating, or unstable surface.” (Ex. 1005, ¶ 36.) The vibrating motion of the conveyor belt causes the chick to jump and spread its wings. (*Id.*, ¶ 42).

Thus, Yavnai in view of Pierre renders obvious Claim 3.

C. Ground 3: Claims 1, 6 and 7 Are Obvious Over Pierre in View of Goodwin

Claims 1, 6 and 7 of the ‘124 patent would have been obvious under 35 U.S.C. § 103 over Pierre in view of Goodwin.

Claim [1.0]: A system for determining the sex of a chick comprising:

Pierre is directed to determining the sex of chicks and an installation for making this determination. (Ex. 1004, page 4.)

Claim [1.1]: a moving platform to support an unrestrained chick of a particular breed;

Pierre discloses a system for determining the sex of a batch of chicks for industrial poultry breeding. (Ex. 1004, page 4.) Pierre teaches that an industrial poultry installation includes “means for placing each bird, one at a time, under conditions in which it will open its wings, across from a digital imaging camera.” (*Id.*) Pierre similarly teaches means for implementing “deployment of the bird’s wings, which consists preferably of placing each bird from a batch of successive birds, one at a time, under conditions where it will deploy its wings naturally.” (*Id.*) Pierre explains that a bird will spread its wing naturally when in a falling position which allows capturing an image of the bird’s wings. (*Id.*)

Goodwin teaches that, in industrial processing, a common means for bringing each bird successively in turn to a location for chick sexing is by a conveyor (i.e., a moving platform). (Ex. 1007, Figure 2, element 18). Goodwin does not teach any restraints on the chicks on the conveyor and thus the chicks are understood to be unrestrained on the conveyor. Goodwin further teaches dropping the chicks into a sexing station. (Ex. 1007, Figure 2 where chicks drop off of conveyor into trough 21, 2:13-20.) Pierre teaches that the birds open their wings naturally when in the falling position which allows capturing an image of the bird’s wings and then determining the sex. (Ex. 1004, page 4.)

It would have been obvious to a POSITA to replace the manual chick sexing station of Goodwin with the automated chick sexing station of Pierre by placing Pierre's image capture device at the upper end of Goodwin's conveyor 18 and capturing an image of each chick when it drops off the end of the conveyor in order to further automate the Goodwin system and reduce the number of personnel required to perform chick sexing with a reasonable expectation of success.

Claim [1.2]: at least one stimuli to cause the chick to open its wings;

Pierre teaches causing a chick to fall so that the chick naturally deploys its wings. (Ex. 1004, Claims 3 and 4.)

Claim [1.3]: an image capture device to capture at least one image of the chick; and

Pierre teaches a camera to capture digital images. (Ex. 1004, page 3.)

Claim [1.4]: a computer processor having a database of images of male and female wing patterns for the particular breed, the computer processor in communication with the image capture device,

Pierre teaches a computer process where an image is captured by a camera and used for image processing. (Ex. 1004, page 3.) It is understood in Pierre that the computer processor is in communication with the image capture device or, at the very least, that it would have been obvious to communicate with the image capture device.

Pierre also teaches the use of “reference images recording a specific state” of a bird. (Ex. 1004, page 3.) It would have been obvious to store a collection of reference images in a database to organize the collection of reference images. The reference images demonstrate variations in feathers that are attributed to the sex of a chick. (*Id.*, page 2.) Specifically, Pierre discloses that the differences in plumage between a rooster (male) and a hen (female) are visible in the reference images. (*Id.*)

Claim [1.5]: whereby the image capture device captures at least one image of the chick and transmits it to the computer processor where the image is processed and compared to the database to determine the sex.

Pierre teaches that a digital image is compared with reference images to determine the sex of a chick. (Ex. 1004, page 4.)

Accordingly, Pierre in view of Goodwin renders obvious Claim 1.

Claim [6.0]: A system for determining the health of a day old chick comprising:

Pierre teaches a system for processing images of a young chick to deduce “the state of the bird’s health.” (Ex. 1004, page 3.)

Claim [6.1]: a moving platform upon which an unrestrained chick is supported;

Pierre discloses a system for determining the sex of a batch of chicks for industrial poultry breeding. (Ex. 1004, page 4.) Pierre teaches that an industrial poultry installation includes “means for placing each bird, one at a time, under conditions in which it will open its wings, across from a digital imaging camera.” (*Id.*) Pierre similarly teaches means for implementing “deployment of the bird’s wings, which consists preferably of placing each bird from a batch of successive birds, one at a time, under conditions where it will deploy its wings naturally.” (*Id.*) Pierre explains that a bird will spread its wing naturally when in a falling position, which allows capturing an image of the bird’s wings. (*Id.*)

Goodwin teaches that, in industrial processing, a common means for bringing each bird successively in turn to a location for chick sexing is by a conveyor (i.e., a moving platform). (Ex. 1007, Figure 2, element 18). Goodwin does not teach any restraints on the chicks on the conveyor and thus the chicks are understood to be unrestrained. Goodwin further teaches dropping the chicks into a sexing station. (Ex. 1007, Figure 2 where chicks drop off of conveyor into trough 21, 2:13-20.) Pierre teaches that the birds open their wings naturally when in the falling position which allows capturing an image of the bird’s wings and then determining the sex. (Ex. 1004, page 4.)

It would have been obvious to a POSITA to replace the manual chick sexing station of Goodwin with the automated chick sexing station of Pierre by placing

Pierre's image capture device at the end of Goodwin's conveyor 18 and capturing an image of each chick when it drops off the end of the conveyor in order to further automate the Goodwin system and reduce the number of personnel required to perform chick sexing with a reasonable expectation of success.

Claim [6.2]: image capturing device to capture at least one electronic image of the chick;

Pierre teaches a camera to capture digital images. (Ex. 1004, page 4.)

Claim [6.3]: computerized image processor in communication with the image capture device, the computerized image processor having access to a database of images of healthy and unhealthy chicks of the same breed,

Pierre teaches a computer process where an image is captured by a camera and used for image processing. (Ex. 1004, page 4.) It is understood in Pierre that the computer processor is in communication with the image capture device or, at the very least, that it would have been obvious to communicate with the image capture device.

Pierre also teaches the use of "reference images recording a specific state" including the health of a bird. (Ex. 1004, page 3.) It would have been obvious to store a collection of reference images in a database to organize the collection of reference images. It also would have been obvious to a POSITA to include

reference images for chicks of the same breed to make the comparison to the images of the chick meaningful.

Claim [6.4]: whereby the image capture device captures at least one image of the chick, and it is transmitted to the computerized image processor where the computerized image processor compares the at least one image of the chick to the database of images to detect a deviation from the database of images.

Pierre teaches that a digital image is captured and compared with reference images to determine a characteristic of a chick. (Ex. 1004, page 4.) It would have been obvious to a POSITA that comparison of an image of the chick with reference images can reveal a deviation between the image and the reference images.

Accordingly, Pierre in view of Goodwin renders obvious Claim 6.

Claim 7: The system of claim 6 wherein the image is that of the feet, face, abdomen, wing or legs.

Pierre teaches an image of open wings. (Ex. 1004, page 4.)

Accordingly, Pierre in view of Goodwin renders obvious Claim 7.

D. Ground 4: Claims 1, 6 and 7 Are Obvious Over Pierre in View of Gershman

Claims 1, 6 and 7 of the '124 patent would have been obvious under 35 U.S.C. § 103 over Pierre in view of Gershman.

Claim [1.0]: A system for determining the sex of a chick comprising:

Pierre is directed to determining the sex of chicks and an installation for making this determination. (Ex. 1004, page 4.)

Claim [1.1]: a moving platform to support an unrestrained chick of a particular breed;

Pierre discloses a system for determining the sex of a batch of chicks for industrial poultry breeding. (Ex. 1004, page 4.) Pierre teaches that an industrial poultry installation includes “means for placing each bird, one at a time, under conditions in which it will open its wings, across from a digital imaging camera.” (*Id.*) Pierre similarly teaches means for implementing “deployment of the bird’s wings, which consists preferably of placing each bird from a batch of successive birds, one at a time, under conditions where it will deploy its wings naturally.” (*Id.*) Pierre explains that a bird will spread its wing naturally when in a falling position, which allows capturing an image of the bird’s wings. (*Id.*)

Gershman discloses a moving plate with a surface upon which a chick is placed. The movement of the plate transports the chick from a first location to a second location via a mechanical activator. (Ex. 1003, page 5 (Materials and Methods).) The movement and position of the chick are not restrained on the moving plate. The chicks are able to “reflexively [...] open their wings” as a result of the movement of the plate. (*Id.*, page 6 (Materials and Methods).) It would have been obvious to use the moving plate of Gershman as the means of causing the

chicks to fall and reflexively open their wings for imaging and subsequent sex determination in the Pierre system because both Pierre and Gershman are in the same field and directed to solving the same problem, namely, automating assessment of chicks by imaging their wings.

Gershman teaches the chick being a particular breed having a genetic factor resulting in sex-based differences in feather patterns. (Ex. 1003, page 1 (Introduction).)

Claim [1.2]: at least one stimuli to cause the chick to open its wings;

Pierre teaches causing a chick to fall so that the chick naturally deploys its wings. (Ex. 1004, Claims 3 and 4.)

Claim [1.3]: an image capture device to capture at least one image of the chick; and

Pierre teaches a camera to capture digital images. (Ex. 1004, page 3.)

Claim [1.4]: a computer processor having a database of images of male and female wing patterns for the particular breed, the computer processor in communication with the image capture device,

Pierre teaches a computer process where an image is captured by a camera and used for image processing. (Ex. 1004, page 3.) It is understood in Pierre that the computer processor is in communication with the image capture device or, at

the very least, that it would have been obvious to communicate with the image capture device.

Pierre also teaches the use of “reference images recording a particular state” of a bird. (Ex. 1004, page 3.) It would have been obvious to store a collection of reference images in a database to organize the collection of reference images. The reference images demonstrate variations in feathers that are attributed to the sex of a chick. (*Id.*, page 2) Specifically, Pierre discloses that the differences in plumage between a rooster (male) and a hen (female) are visible in the reference images. (*Id.*)

Claim [1.5]: whereby the image capture device captures at least one image of the chick and transmits it to the computer processor where the image is processed and compared to the database to determine the sex.

Pierre teaches that a digital image is compared with reference images to determine the sex of a chick. (Ex. 1004, page 4.)

Accordingly, Pierre in view of Gershman renders obvious Claim 1.

Claim [6.0]: A system for determining the health of a day old chick comprising:

Pierre teaches a system for processing images of a baby bird to deduce “the state of the bird’s health.” (Ex. 1004, page 3.)

Claim [6.1]: a moving platform upon which an unrestrained chick is supported;

Pierre discloses a system for determining the sex of a batch of chicks for industrial poultry breeding. (Ex. 1004, page 4.) Pierre teaches that an industrial poultry installation includes “means for placing each bird, one at a time, under conditions in which it will open its wings, across from a digital imaging camera.” (*Id.*) Pierre similarly teaches means for implementing “deployment of the bird’s wings, which consists preferably of placing each bird from a batch of successive birds, one at a time, under conditions where it will deploy its wings naturally.” (*Id.*) Pierre explains that a bird will spread its wing naturally when in a falling position which allows capturing an image of the bird’s wings. (*Id.*)

Gershman discloses a moving plate with a surface upon which a chick is placed. The movement of the plate transports the chick from a first location to a second location via a mechanical activator. (Ex. 1003, page 5 (Materials and Methods).) The movement and position of the chick are not restrained on the moving plate. The chicks are able to “reflexively [...] open their wings” as a result of the movement of the plate. (*Id.*, page 6 (Materials and Methods).) It would have been obvious to use the moving plate of Gershman as the means of causing the chicks to fall and reflexively open their wings for imaging and subsequent assessment of the health of the chick as in the Pierre system because both Pierre

and Gershman are in the same field and directed to solving the same type of problem, namely, automating assessment of chicks by imaging their wings.

Gershman teaches the chick being a particular breed having a genetic factor resulting in sex-based differences in feather patterns. (Ex. 1003, page 1 (Introduction).)

Claim [6.2]: image capturing device to capture at least one electronic image of the chick;

Pierre teaches a camera to capture digital images. (Ex. 1004, page 4.)

Claim [6.3]: computerized image processor in communication with the image capture device, the computerized image processor having access to a database of images of healthy and unhealthy chicks of the same breed,

Pierre teaches a computer process where an image is captured by a camera and used for image processing. (Ex. 1004, pages 3-4.) Pierre also teaches the use of “reference images recording a specific state” including the health of a bird. (*Id.*) It would have been obvious to store a collection of reference images in a database to organize the collection of reference images. It is understood in Pierre that the computer processor is in communication with the image capture device or, at the very least, that it would have been obvious to communicate with the image capture device.

Claim [6.4]: whereby the image capture device captures at least one image of the chick, and it is transmitted to the computerized image processor where the computerized image processor compares the at least one image of the chick to the database of images to detect a deviation from the database of images.

Pierre teaches that a digital image is captured and compared with reference images to determine a characteristic of a chick. (Ex. 1004, page 4.) It would have been obvious to a POSITA that comparison of an image of the chick with reference images can reveal a deviation between the image and the reference images.

Accordingly, Pierre in view of Gershman renders obvious Claim 6.

Claim 7: The system of claim 6 wherein the image is that of the feet, face, abdomen, wing or legs.

Pierre teaches an image of open wings. (Ex. 1004, page 4.)

Thus, Pierre in view of Gershman renders obvious claim 7.

E. Ground 5: Claim 2 is Obvious Over Pierre and Goodwin in View of Tao

Claim 2 of the '124 patent would have been obvious under 35 U.S.C. § 103 over Pierre in view of Goodwin and Tao (see also discussion of claim 1 in Ground 3).

Claim 2: The system of claim 1 further comprising a master control system in communication with the image capture device, the moving platform, and the computer processor.

Tao discloses an automatic feather sexing apparatus having a computer control unit 23. (Ex. 1006, 6:1-5.) The computer control unit 23 is in communication with the camera 15 via the camera interface 19 and the image processor 21. (*Id.*, 5:36-38, Figure 1.) Tao teaches a moving conveyor 13 that transports chicks. Tao discloses that the computer control unit 23 is in communication with the moving conveyor 13. (*Id.*, 6:1-5.) Tao also discloses that the control unit 23 is in communication with the image processor 21. (*Id.*, 6:1-4.)

It would have been obvious to a POSITA to use a computer control unit as in Tao as a master control unit in the Pierre/Goodwin system to communicate with a conveyor, image capture device, and processor in the system in order to efficiently control the system.

Thus, Pierre in view of Goodwin and Tao renders obvious Claim 2.

F. Ground 6: Claim 8 is Obvious Over Pierre and Gershman in View of Tao

Claim 8 of the '124 patent would have been obvious under 35 U.S.C. § 103 over Pierre and Gershman in view of Tao (see also discussion of claim 6 in Ground 4).

Claim 8: The system of claim 6 further comprising a removing device in communication with the computerized image processor, whereby when the deviation is detected, the removing device is activated and removes a chick having the detected deviation from the moving platform.

Tao discloses that the computer control unit 23 provides a signal to operate (activate) the selective demount apparatus 27 based on the sex of the chick. (Ex. 1006, 6:1-6.) The selective demount apparatus routes female chicks to a female receiver and male chicks to a male receiver. (*Id.*, 6:4-9.)

It would have been obvious to a POSITA to use the routing system taught by Tao to remove a chick from the Gershman plate according to a deviation of the chick. The deviation can be related to any characteristic of the chick including the sex of the chick, as taught by Pierre.

Thus, Pierre in view of Gershman and Tao renders obvious Claim 8.

G. Ground 7: Claims 2, 4, 5 and 9-15 Are Obvious Over Gershman in View of Pierre and Tao

Claims 2, 4, 5 and 9-15 of the '124 patent would have been obvious under 35 U.S.C. § 103 over Gershman in view of Pierre and Tao (see also discussion of claim 1 in Ground 1).

Claim 2: The system of claim 1 further comprising a master control system in communication with the image capture device, the moving platform, and the computer processor.

Tao discloses an automatic feather sexing apparatus having a computer control unit 23. (Ex. 1006, 6:1-5.) The computer control unit 23 is in communication with the camera 15 via the camera interface 19 and the image processor 21. (*Id.*, 5:36-38, Figure 1.) Tao teaches a moving conveyor 13 that transports chicks. Tao discloses that the computer control unit 23 is in communication with the moving conveyor 13. (*Id.*, 6:1-5.) Tao also discloses that the control unit 23 is in communication with the image processor 21. (*Id.*, 6:1-4.)

It would have been obvious to a POSITA to use a computer control unit as in Tao as a master control unit in the Gershman/Pierre system to communicate with a moving plate, image capture device, and processor in the Gershman/Pierre system in order to efficiently control the system.

Thus, Gershman in view of Pierre and Tao renders obvious Claim 2.

Claim [4.1]: The system of claim 1 further comprising a removing device in communication with the computer processor,

Tao teaches a selective demount apparatus to remove chicks from the conveyor in a sorting process. (Ex. 1006, 6:1-6.) It would have been obvious for a POSITA to include a removing device in the system of Gershman/Pierre/Tao so that the chicks can be removed and sent to the appropriate location in the system after their gender has been determined.

Claim [4.2]: whereby when the computer processor determines the chick's sex and determines which sex will remain on the moving platform, the removing device is activated and removes a chick having a sex determination different from the determined sex remaining on the moving platform.

Tao discloses determining the sex of a chick. (Ex. 1006, 5:52-59; 5:66-6:1.) Tao discloses that the computer control unit 23 provides a signal to operate (activate) the selective demount apparatus 27 based on the sex of the chick. (*Id.*, 6:1-6.) The selective demount apparatus routes female chicks to a female receiver and male chicks to a male receiver. (*Id.*, 6:4-9.)

Tao does not explicitly disclose that the computer processor determines which sex will remain on the moving platform. However, allowing a chick of a certain sex to remain on the moving platform of Gershman while removing a chick of a different sex from the moving platform is an obvious modification of Gershman because selectively removing a chick having a certain sex from the platform is an obvious method of routing male and female chicks into separate locations.

Thus, Gershman in view of Pierre and Tao renders obvious Claim 4.

Claim 5: The system of claim 4 wherein the removing device comprises a moving platform position altering device.

Gershman discloses that a chick is automatically sorted based on its sex into an appropriate bin. (Ex. 1003, page 4 (2 stage).) Gershman further teaches that a chick can be sorted after sex determination using equipment such as “moving plates with corresponding springs.” (*Id.*, page 4 (2 stage).) The spring alters the position of the moving platform. It would have been obvious to a person of ordinary skill in the art move the Gershman plate supporting the chick using the springs to facilitate removing the chick into the appropriate area corresponding to the determined sex of the chick.

Thus, Gershman in view of Pierre and Tao renders obvious Claim 5.

Claim [9.0]: A system of sorting chicks on the basis of a predetermined feature of a chick comprising:

Gershman is directed to an optical separator for determining the sex (a predetermined feature) of one-day chickens. (Ex. 1003, page 1 (Abstract).)

Claim [9.1]: a moving platform to support an unrestrained chick of a particular breed;

Gershman discloses a moving plate with a surface upon which a chick is placed. The movement of the plate transports the chick from a first location to a second location via a mechanical activator. (Ex. 1003, page 5 (Materials and Methods).) The movement and position of the chick are not restrained on the

moving plate. The chicks are able to “reflexively [...] open their wings” as a result of the movement of the plate. (*Id.*, page 6 (Materials and Methods).)

Gershman teaches the chick being a particular breed having a genetic factor resulting in sex-based differences in feather patterns. (Ex. 1003., page 1 (Introduction).)

Claim [9.2]: an image capture device positioned proximate to the moving platform to capture at least one image of the chick as it passes on the moving platform;

Gershman discloses that a chick is photographed with a digital camera as the chick drops on the moving plate. (Ex. 1003, pages 2-3.) Specifically, Gershman describes a black and white charge-coupled device camera. (*Id.*, page 5 (Materials and methods).)

Claim [9.3]: a computer processor in communication with the image capture device, the computer processor having a database of images of a predetermined feature of a chick therein,

Gershman teaches a computer having a computer processor (“PC Pentium-4 under Windows 7”). (Ex. 1003, page 5 (Materials and methods).) Data is transmitted from the digital camera to the computer. (*Id.*, page 2 (Introduction).) The computer of Gershman would necessarily be in communication with the camera to receive the image. Gershman teaches that the computer compares the

chick's wing feathers to those of other chicks in to determine the sex of the chick.

(*Id.*, page 4.)

Gershman does not explicitly teach that the computer includes a database of images. However, Pierre teaches the use of “reference images recording a particular state” corresponding to a characteristic of a bird. (Ex. 1004, page 3.) It would have been obvious to store a collection of reference images in a database in order to organize the collection of reference images. The characteristic can include species, health, sex, and age. (*Id.*) The reference images also demonstrate variations in feathers that are attributed to the sex of a chick. (*Id.*, page 2.) Specifically, Pierre discloses that the differences in plumage between a rooster (male) and a hen (female) are visible in the reference images. (*Id.*)

It would have been obvious to a POSITA to store the reference images of a predetermined feature taught by Pierre in a database in the computer of Gershman as an alternative or additional means of analyzing the image of the chick to determine the sex of the chick with a reasonable expectation of success.

Claim [9.4] the computer processor capable of processing images and determining deviation from the database of images; and

Gershman discloses that a chick is photographed, and the image is passed to the computer for processing. (Ex. 1003, page 3 (1 stage).)

Pierre teaches that a digital image is compared with reference images to determine a characteristic of a chick. (Ex. 1004, page 4.) The comparison can reveal a deviation between the image and the reference images. For example, it is well-known that male and female chicks have different feather patterns. (Ex. 1003, page 1 (Introduction).) Comparing an image of a male chick with an image of a female chick reveals a deviation between the images.

It would have been obvious to a POSITA to compare images taken in the Gershman system as modified by Pierre to determine deviations from the database of reference images (e.g., which chicks did not correspond to an image of a particular sex) in order to sort the chicks into appropriate groups.

Claim [9.5] removing means for removing a chick from the moving platform, the removing means in communication with the computer processor,

As discussed above, the claimed removing means is interpreted under 35 USC § 112(f) as a movable angled conveyor capable of transporting the chicks off of the moving platform and equivalents.

Gershman discloses that a chick is sorted into a bin corresponding to its sex after image evaluation. (Ex. 1003, page 4 (2 stage).)

Tao discloses a conveyor connected to a female receiver, a male receiver, and a rework receiver via a selective demount device 27. (Ex. 1006, 6:1-16, Figure

2.) The computer control unit of Tao is in communication with the conveyor and each of the receivers.

It would have been obvious to a POSITA to move the movable plate supporting the chick in the Gershman/Tao system at an angle to facilitate removing the chick into the appropriate area corresponding to the determined sex of the chick. Choosing to have the movable plate at an angle is merely a design choice that depends on the elevation of the two endpoints in the system.

Claim [9.6] whereby when the image capture device takes an image of the chick and transmits it to the computer processor, the computer processor processes the image and determines any deviation of the image from the database of images,

Gershman discloses that a chick is photographed, and the image is passed to the computer for processing. (Ex. 1003, page 3 (1 stage).)

Pierre teaches that an image is captured and compared with reference images to determine a characteristic of a chick. (Ex. 1004, page 4.) The comparison can reveal a deviation between the image and the reference images.

Claim [9.7] if a deviation is detected, the computer processor communicates with the removing means to remove the chick from the moving platform.

Tao discloses determining the sex of a chick. (Ex. 1006, 5:52-59; 5:66-6:1.)

Tao discloses that the computer control unit 23 provides a signal to operate (activate) the selective demount apparatus 27 based on the sex of the chick. (*Id.*, 6:1-6.) The selective demount apparatus routes female chicks to a female receiver and male chicks to a male receiver. (*Id.*, 6:4-9.)

Tao does not explicitly disclose that the computer processor determines which sex will remain on the moving platform. However, allowing a chick of a certain sex to remain on the moving platform of Gershman while removing a chick of a different sex (the deviation) from the moving platform is an obvious modification of Gershman because selectively removing a chick having a certain sex from the platform is an obvious method of routing male and female chicks into separate locations. Thus, it would have been obvious to a POSITA to design the system of Gershman to include the removing means of Tao such that the processor would instruct the removing of the chick from the Gershman moving platform.

Accordingly, Gershman in view of Pierre and Tao renders obvious Claim 9.

Claim 10: The system of claim 9 wherein the predetermined feature is the wing, face, abdomen, or the foot.

Gershman teaches photographing a wing. (Ex. 1003, page 3 (Prerequisites solutions).)

Accordingly, Gershman in view of Pierre and Tao renders obvious Claim 10.

Claim 11: The system of claim 9 wherein the database of images is limited to those of the chick's breed.

Gershman teaches a chick being a particular breed having sex-based differences in feather patterns. (Ex. 1003, page 1 (Introduction).)

It would have been obvious to a POSITA to use the reference images of a particular breed to ensure that the reference images include the sex-based differences in feather patterns that are specific to the breed.

Thus, Gershman in view of Pierre and Tao renders obvious Claim 11.

Claim 12: The system of claim 9 further comprising a removing device in communication with the computer processor and activated when the computer processor determines the deviation of the image of the chick exceeds a predetermined range, the removing device removes a chick having a variance exceeding the predetermined range from the moving platform.

Tao teaches a selective demount apparatus 27 to remove chicks from the conveyor 13. The computer control unit 23 provides a signal to operate (activate) the selective demount apparatus 27 based on the sex of the chick. (Ex. 1006, 6:1-6.) The selective demount apparatus routes female chicks to a female receiver and male chicks to a male receiver. (*Id.*, 6:4-9.)

Gershman teaches predetermined ranges of values for wing compactness and roughness corresponding to male and female chicks. The values corresponding to a

male chick fall within an area of first polygon. The values corresponding to a female chick fall within an area of a second polygon. (Ex. 1003, page 4 (1 stage); Figure 11.)

Gershman teaches determining the sex of a chick based on whether the chick's wing compactness and roughness fall within the range of a first or second polygon. (Ex. 1003, page 4 (2 stage).) It would have been obvious to a POSITA to determine the sex of a chick based on a variance using Gershman and remove the chick based on its sex using the routing system of Tao with a reasonable expectation of success.

Thus, Gershman in view of Pierre and Tao renders obvious Claim 12.

Claim 13: The system of claim 12 wherein the removing device comprises a moving platform position altering device.

Gershman discloses that a chick is sorted into a bin corresponding to its sex. (Ex. 1003, page 4 (2 stage).) Gershman further teaches that a chick can be removed after sex determination by “moving plates with corresponding springs.” (*Id.*, page 4 (2 stage).) The spring alters the position of the moving platform to remove the chick. It would have been obvious to a POSITA to alter the position of the Gershman plate supporting the chick to facilitate removing the chick into the appropriate area corresponding to the determined sex of the chick.

Thus, Gershman in view of Pierre and Tao renders obvious Claim 13.

Claim 14: The system of claim 9 further comprising at least one stimuli proximate to the moving platform.

Gershman teaches air ejectors for blowing chickens on the moving plate. (Ex. 1003, page 4 (2 stage).) Gershman also teaches electrization to cause feathers to stand up (*Id.*, page 3). It would have been obvious to a POSITA to place the source of the electrization proximate to the moving platform.

Thus, Gershman in view of Pierre and Tao renders obvious Claim 14.

Claim 15: The system of claim 14 wherein the stimuli may be one or more of the following group: an angled conveyor, a vibrating conveyor, a strobe light or a stream of air blowing on the chick.

Gershman teaches blowing compressed air on a chick. (Ex. 1003, page 4 (2 stage), page 6 (Results).) As implied in Claim 15, it is understood that blowing air on a chick is a stimulus that can cause chicks to open their wings.

Thus, Gershman in view of Pierre and Tao renders obvious Claim 15.

H. Ground 8: Claims 2, 4, and 9-11 and 14-18 Are Obvious Over Yavnai in View of Pierre and Tao

Claims 2, 4, 9-11, and 14-18 of the '124 patent would have been obvious under 35 U.S.C. § 103 over Yavnai in view of Pierre and Tao (see also discussion of claim 1 in Ground 2).

Claim 2: The system of claim 1 further comprising a master control system in communication with the image capture device, the moving platform, and the computer processor.

Tao discloses an automatic feather sexing apparatus having a computer control unit 23. (Ex. 1006, 6:1-5.) The computer control unit 23 is in communication with the camera 15 via the camera interface 19 and the image processor 21. (*Id.*, 5:36-38, Figure 1.) Tao teaches a moving conveyor 13 that transports chicks. Tao discloses that the computer control unit 23 is in communication with the moving conveyor 13. (*Id.*, 6:1-5.) Tao also discloses that the control unit 23 is in communication with the image processor 21. (*Id.*, 6:1-4.)

It would have been obvious to a POSITA to use a computer control unit as in Tao as a master control unit in the Yavnai/Pierre system to communicate with a conveyor, image capture device, and processor in the system in order to efficiently control the system.

Thus, Yavnai in view of Pierre and Tao renders obvious Claim 2.

Claim [4.1]: The system of claim 1 further comprising a removing device in communication with the computer processor,

Tao teaches a selective demount apparatus to remove chicks from the conveyor in a sorting process. (Ex. 1006, 6:1-6.) It would have been obvious for a POSITA to include a removing device in the system of Yavnai/Pierre/Tao so that

the chicks can be removed and sent to the appropriate location in the system after their gender has been determined.

Claim [4.2]: whereby when the computer processor determines the chick's sex and determines which sex will remain on the moving platform, the removing device is activated and removes a chick having a sex determination different from the determined sex remaining on the moving platform.

Tao discloses determining the sex of a chick. (Ex. 1006, 5:52-59; 5:66-6:1.) Tao discloses that the computer control unit 23 provides a signal to operate (activate) the selective demount apparatus 27 based on the sex of the chick. (*Id.*, 6:1-6.) The selective demount apparatus routes female chicks to a female receiver and male chicks to a male receiver. (*Id.*, 6:4-9.)

Tao does not explicitly disclose that the computer processor determines which sex will remain on the moving platform. However, allowing a chick of a certain sex to remain on the moving platform while removing a chick of a different sex from the moving platform is an obvious modification of Yavnai because selectively removing a chick having a certain sex from the platform is an obvious method of routing male and female chicks into separate locations in an industrial setting.

Thus, Yavnai in view of Pierre and Tao renders obvious Claim 4.

Claim [9.0]: A system of sorting chicks on the basis of a predetermined feature of a chick comprising:

Yavnai is directed to a method of automated chick sexing, i.e., a system.

(Ex. 1005, ¶ 40.)

Claim [9.1]: a moving platform to support an unrestrained chick of a particular breed;

Yavnai teaches a conveyor belt as a moving platform transporting a chick.

(Ex. 1005, ¶ 42.) The chick is able to jump and spread its wings while on the conveyor belt. (*Id.*) The chick can also move laterally along the conveyor belt.

Figure 5A shows that poles 64 initially touch the surface of the conveyor belt and slowly rise towards the far side (end) of the conveyor. The chicks' wings are not in contact with the poles on either side of the conveyor until the end of the conveyor.

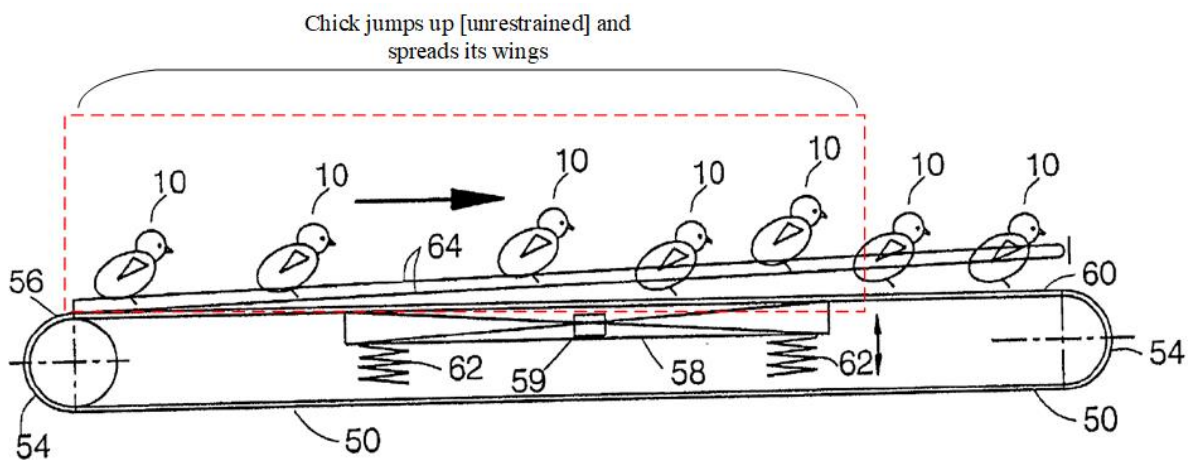


FIGURE 5A

The chick is stimulated to jump and is free to continue jumping and spreading its wings (i.e., the chick is unrestrained) until the far right end of the conveyor, where the ends of the sloped poles finally reach a height sufficient to support the wings of the chick. Thus, Yavnai Figure 5A shows a moving platform supporting an unrestrained chick because the chick is unrestrained over a substantial portion of the platform.

Any chick on the moving platform of Yavnai would inherently be a chick of a particular breed.

Claim [9.2]: an image capture device positioned proximate to the moving platform to capture at least one image of the chick as it passes on the moving platform;

Yavnai teaches a digital camera used to take a picture of a chick on the moving platform. (Ex. 1005, ¶ 38.)

Claim [9.3]: a computer processor in communication with the image capture device, the computer processor having a database of images of a predetermined feature of a chick therein,

Yavnai teaches that the image taken by the camera 48 is processed and the sex is determined based on sex distinguishable wing patterns. (Ex. 1005, ¶ 39.)

Yavnai does not expressly teach the claimed database of images.

Pierre teaches a computer process where an image is captured by a camera and used for image processing. (Ex. 1004, pages 3-4.) Pierre also teaches the use of “reference images recording a particular state” of a bird. (*Id.*) It would have been obvious to store a collection of reference images in a database to organize the collection of reference images. The reference images demonstrate variations in feathers that are attributed to the sex of a chick. (*Id.*, page 3.) Specifically, Pierre discloses that the differences in plumage between a rooster (male) and a hen (female) are visible in the reference images. (*Id.*)

It would have been obvious to a POSITA to store the reference images of male and female wing patterns taught by Pierre in the computer system of Yavnai, which would necessarily be in communication with the image capture device, in order to determine the sex of the chick with a reasonable expectation of success.

Claim [9.4] the computer processor capable of processing images and determining deviation from the database of images; and

Yavnai teaches that the image taken by the camera 48 is processed and the sex is determined based on sex distinguishable wing patterns. (Ex. 1005, ¶ 39.)

Pierre teaches that a digital image is compared with reference images to determine a characteristic of a chick. (Ex. 1004, page 3.) The comparison can reveal a deviation between the image and the reference images.

It would have been obvious to a POSITA to compare images taken in the Yavnai system as modified by Pierre and look for deviations from the database of reference images (e.g., which chicks did not correspond to an image of a particular sex) in order to sort the chicks into appropriate groups with a reasonable expectation of success.

Claim [9.5] removing means for removing a chick from the moving platform, the removing means in communication with the computer processor,

As discussed above, the claimed removing means is interpreted under 35 USC § 112(f) as a movable angled conveyor capable of transporting the chicks off of the moving platform and equivalents.

Yavnai discloses that a chick is directed into a container corresponding to its sex after image evaluation. (Ex. 1005, ¶ 40.)

Tao discloses a conveyor connected to a female receiver, a male receiver, and a rework receiver via a selective demount device 27. (Ex. 1006, 6:1-16, Figure 2.). The computer control unit of Tao is in communication with the conveyor and each of the receivers.

It would have been obvious to a POSITA to move the Yavnai conveyor supporting the chick at an angle to facilitate removing the chick into the appropriate area corresponding to the determined sex of the chick as proposed by

Tao. Choosing to have the conveyor at an angle is merely a design choice that depends on the elevation of the two endpoints of the conveyor in the system.

Claim [9.6] whereby when the image capture device takes an image of the chick and transmits it to the computer processor, the computer processor processes the image and determines any deviation of the image from the database of images,

Yavnai teaches that the image taken by the camera 48 is processed and the sex is determined based on sex distinguishable wing patterns. (Ex. 1005, ¶ 39.)

Pierre teaches that an image is captured and compared with reference images to determine a characteristic of a chick. (Ex. 1004, page 4.) The comparison can reveal a deviation between the image and the reference images.

It would have been obvious to a POSITA that the camera of Yavnai can transmit an image to a computer processor having the database of reference images so that the image can be compared with reference images in the computer processing method taught by Pierre to determine the sex of a chick with a reasonable expectation of success.

Claim [9.7] if a deviation is detected, the computer processor communicates with the removing means to remove the chick from the moving platform.

Tao discloses determining the sex of a chick. (Ex. 1006, 5:52-59; 5:66-6:1.)

Tao discloses that the computer control unit 23 provides a signal to operate (activate) the selective demount apparatus 27 based on the sex of the chick. (*Id.*, 6:1-6.) The selective demount apparatus routes female chicks to a female receiver and male chicks to a male receiver. (*Id.*, 6:4-9.)

Tao does not explicitly disclose that the computer processor determines which sex will remain on the moving platform. However, allowing a chick of a certain sex to remain on the conveyor while removing a chick of a different sex (the deviation) from the conveyor is an obvious modification of Yavnai because selectively removing a chick having a certain sex from the conveyor is an obvious method of routing male and female chicks into separate locations. Thus, it would have been obvious to a POSITA to design the system of Yavnai to include the removing means of Tao such that the processor would instruct the removing of the chick from the Yavnai conveyor.

Accordingly, Yavnai in view of Pierre and Tao renders obvious Claim 9.

Claim 10: The system of claim 9 wherein the predetermined feature is the wing, face, abdomen, or the foot.

Yavnai teaches an image of spread wing tips of a chick. (Ex. 1005, ¶ 38.)

Accordingly, Yavnai in view of Pierre and Tao renders obvious Claim 10.

Claim 11: The system of claim 9 wherein the database of images is limited to those of the chick's breed.

Pierre teaches that the reference images can include a species or a breeding line of a chick. (Ex. 1004, page 3.)

Thus, Yavnai in view of Pierre and Tao renders obvious Claim 11.

Claim 14: The system of claim 9 further comprising at least one stimuli proximate to the moving platform.

Yavnai teaches that a chick can be prompted to spread its wings by vibration, acoustic noise, and warming the chick. (Ex. 1005, ¶ 33-36.) These stimuli such as the vibration source, the acoustic noise, and warmth would be proximate to the moving platform.

Thus, Yavnai in view of Pierre and Tao renders obvious Claim 14.

Claim 15: The system of claim 14 wherein the stimuli may be one or more of the following group: an angled conveyor, a vibrating conveyor, a strobe light or a stream of air blowing on the chick.

Yavnai teaches a vibrating conveyor. (Ex. 1005, ¶ 36.)

Thus, Yavnai in view of Pierre and Tao renders obvious claim 15.

Claim 16: The system of claim 15 wherein the angled conveyor has a near end and a far end and the far end is lower than the near end.

It is well known to a POSITA that a system for transporting live chicks can include an angled conveyor depending on the desired endpoint of the conveyor. An angled conveyor inherently has a near end and a far end with one end being lower than the other. It would have been obvious to a POSITA to use an angled conveyor having a downward incline to cause successive chicks to fall and open their wings on their own, as taught by Pierre. It also would have been obvious to a POSITA to use an angled conveyor having a downward incline as an unstable surface to cause a chick to jump and spread its wings, as taught by Yavnai.

Thus, Yavnai in view of Pierre and Tao renders obvious Claim 16.

Claim 17: The system of claim 16 wherein the angled conveyor is oriented at an angle θ to the horizon.

It would have been obvious to a POSITA that an angled conveyor of claim 16 would form an angle with the horizon.

Thus, Yavnai in view of Pierre and Tao renders obvious Claim 17.

Claim 18: The system of claim 17 wherein the angle θ is between 0 and 90.

It would have been obvious to a POSITA to angle a conveyor between 0 and 90 degrees to the horizon in order to achieve an angled conveyor having a far end lower than a near end or an angle with the horizon as discussed above for claims 16 and 17.

Thus, Yavnai in view of Pierre and Tao renders obvious Claim 18.

VIII. The Board Should Not Exercise its Discretion under Section 325(d)

Section 325(d) provides that, in determining whether or not to institute a trial, “the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office.” 35 U.S.C. § 325(d). In making this determination, the Board weighs a number of factors. *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 at 17–18, (PTAB Dec. 15, 2017) (precedential).

Each of these factors is discussed below.

Several of the references relied on in this petition were also of record during prosecution of the ’124 patent, including Gershman, Yavnai, Tao, and Goodwin. However, the Examiner did not consider the arguments made in the present petition and did not consider on important aspects of the prior art references. Factors (c), (d), (e), and (f) counsel strongly in favor of the Board not exercising its discretion as provided below.

Factor (a) the similarities and material differences between the asserted art and the prior art involved during examination;

Factor(b) the cumulative nature of the asserted art and the prior art evaluated during examination;

While there is overlap between the prior art of record during examination and the prior art presented in this Petition, the arguments and the combinations of prior art presented here are entirely new with respect to the critical points which led to allowance of the '124 patent and were not considered by the Examiner during examination.

Factor (c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection;

Although Gershman was discussed during prosecution, it was only evaluated in the rejections for purposes related to the library of images and related communications and software. The chick moving structures of Gershman were not discussed in the office actions or amendments. Goodwin was not discussed at all during prosecution and was not the basis for any rejections. Yavnai was discussed more extensively, but incorrectly. Tao is only relied upon for secondary features in the present analysis.

Factor (d), the extent of the overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art

The key argument that led to issuance of the '124 patent was Patent Owner's assertion that chick sex identification systems in the prior art did not disclose or suggest a moving platform supporting an *unrestrained* chick. In fact, both the prior art of record and newly presented prior art showed and suggested this feature.

(1) Gershman. During prosecution, the Examiner rejected pending claims 7, 8 and 31 under 35 U.S.C. § 103 as unpatentable over Tao in view of Yavnai and further in view of Gershman. (Ex. 1002, pages 220-221.) Similarly, the same Office Action rejected pending claims 22, 23, 25, 29, and 30 under 35 U.S.C. § 103 as unpatentable over Tao in view of Gershman. (*Id.*, pages 226-228.) In all of these rejections, Gershman was cited by the Examiner solely for features related to Gershman's disclosure of a library of images.

The Examiner ultimately allowed the claims of the '124 patent asserting that the cited references including Gershman did not disclose "a moving platform to support an unrestrained chick." (Ex. 1002, page 129 (emphasis by Examiner in original)). The Patent Owner did not have to distinguish over Gershman on the basis that Gershman discloses a moving platform to support an unrestrained chick during prosecution of '124 patent. The argument that Gershman clearly does disclose a moving platform with an unrestrained chick is nowhere found in the '124 patent's prosecution history.

(2) Yavnai. During prosecution, Patent Owner argued that "Yavnai teaches restraining the chick through the use of poles 64 or cups 40 to restrain the chick in order to cause the chick to open its wings." (Ex. 1002, page 196.) The Examiner accepted this argument and allowed the '124 patent.

However, the Patent Owner did not have to distinguish over Yavnai on the basis that on a substantial part of the conveyor shown in Yavnai Figure 5A the poles do not restrain the chick, especially its wings, and the chick is free to jump up and down. Thus, despite Patent Owner's arguments, Yavnai discloses a "system having a moving platform to support an unrestrained chick" as recited in the independent claims. This argument was not addressed during prosecution of the '124 patent.

Factor (e), whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art

(1) Gershman. As discussed in the proposed grounds of rejection above, Petitioner has pointed out that Gershman in fact clearly does disclose a moving platform to support an unrestrained chick. An example of the moving platform is shown in Figure 3 below.



The moving platform is pushed downwards via a mechanical activator to induce the chick to “lose its equilibrium and voluntarily spread its wings.” (Ex. 1003, page 2.)

(2) Yavnai. As discussed in the proposed grounds of rejection above, Petitioner has pointed out that Yavnai in fact clearly does disclose the chicks are free to move unrestrained over most of the conveyor in Figure 5A.

(3) Goodwin. As discussed above, Petitioner has pointed out that Goodwin clearly shows angled conveyors with no discussion of chick restraints delivering chicks to a chick gender identification area. Thus, Petitioner has shown how the Examiner clearly erred.

Factor (f) the extent to which additional evidence and facts presented in the Petition warrant reconsideration of the prior art or arguments

In addition to the important new arguments presented with respect to Yavnai and Gershwin, Applicant has also introduced new prior art in Pierre relying on chick sex identification involving taking images of unrestrained chicks placed in a falling position. Combined with Goodwin which shows an angled conveyor taking chicks to the gender identification area and then dropping so they fall off the conveyor, Petitioner presents still another new argument directed at the central reason for allowance of the ‘124 patent.

Because *Becton Dickinson* factors (b) – (d) do not support the Board exercising its discretion and in view of the entirety of the new arguments presented in this Petition, Petitioner requests that the Board institute an *Inter Partes* Review against the claims of the ‘124 patent.

IX. CONCLUSION

For the foregoing reasons, Petitioners ask that *inter partes* review of the ‘124 patent be instituted and that claims 1-18 be canceled.

Dated: February 20, 2024

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

The undersigned certifies this document complies with the type-volume limitation of 37 C.F.R. § 42.24. The petition contains 13,953 words, as calculated by the Microsoft Word program excluding the parts of the brief exempted by 37 C.F.R. § 42.24(a).

Dated: February 20, 2024

Respectfully submitted,

/s/ Andrew M. Ollis

CERTIFICATE OF SERVICE

The undersigned certifies service pursuant to 37 C.F.R. §§ 42.6(e) and 42.105(b) on Patent Owner by USPS Express Mail, of a copy of this Petition for *Inter Partes* Review and supporting materials at the correspondence address of record for the '124 patent:

Law Office of Kathleen Lynch PLLC
104 Bronzewood Court
Cary, NC 27518

Respectfully submitted,

Dated: February 20, 2024

/s/ Diana Bowen