

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

**DECLARATION OF SHAWN LECROY
IN SUPPORT OF PETITIONERS' REPLY CONCERNING
U.S. PATENT NO. 10,806,124**

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I, Shawn LeCroy, based upon my personal knowledge, do hereby declare and affirm as follows:

V. INTRODUCTION

1. I have been retained by Petitioners as an independent expert in this proceeding before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I am being compensated at my usual and customary rate of \$300 per hour. No part of my compensation depends on the outcome of this proceeding, and I have no other interest in this proceeding.

2. I have reviewed several documents that I understand are involved in this proceeding, including the following:

- A. Exhibit 1001. U.S. Patent No. 10,806,124 (the ‘124 patent).
- B. Exhibit 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>] (Gershman)
- C. Exhibit 1004. FR Patent Publication No. 2909836 to Pierre et al. with certified English translation. (“Pierre”)
- D. Exhibit 1005. U.S. Patent Publication No. 2001/0035370 to Yavnai et al. (“Yavnai”)
- E. Exhibit 1007. U.S. Patent No. 3,994,292 to Goodwin (“Goodwin”)

3. I have been asked to consider certain aspects of these documents and how a person working in the field of hatchery automation would have understood them as of November 2015, as discussed further below.

VI. PROFESSIONAL BACKGROUND

4. I believe I am well qualified to serve as a technical expert in this matter based on my work experience, and specifically my experience in the field of hatchery automation which dates back to 2005. I understand that a copy of my resume will be submitted in this proceeding as EX. 1009.

5. I earned my Bachelor of Science in Animal Science from Berry College in 2002.

6. From March 2005 to July 2022, I worked for Embrex/Zoetis/Hatchery Planning (corporate ownership of the business changed several times during this period). During this 17 year period I worked regularly in hatcheries, often on a weekly basis. During this time I have personally installed manual gender identification tables in hatcheries. I have also personally performed some chick gender sexing by looking at the wings of the chicks.

7. From March 2005 to January 2008 I served as a Field Service Technician in hatcheries. Among other duties, I performed routine maintenance

and repairs on chicken hatchery in ovo vaccination automation equipment. I also collaborated with engineering teams to test and evaluate equipment prototypes.

8. From January 2008 to August 2009, I served as a Technical Service Specialist. My responsibilities included managing biological processes related to in ovo vaccination automation equipment. This included vaccine system protocols, sanitation protocols, microbial sampling, and monitoring chick quality on day of hatching. In the event of chick mortality incidents, I was also responsible for investigating the possible cause of the mortality and to recommend best practices to prevent future mortality issues.

9. From August 2009 to January 2017, I served as a Field Service Territory Manager. My responsibilities included managing the company's customer base related to in ovo vaccination equipment. I also provided technical support and training to customers and field service technicians on products and services related to hatchery processes and in ovo vaccination automation equipment and processes. This work included monitoring the automated systems including conveyors involved in transporting chicks from the hatcher trays in the take-off room (where the chick is separated from remnants of the egg) to chick counters and then to trays in which the chicks would be shipped to farms on the day the chick hatched.

10. From January 2017 to July 2022, I worked as an Advanced Technology Specialist. As part of my job, I developed and implemented automated solutions for poultry hatchery processes. During this time I stopped working on the in ovo machinery in hatcheries and worked exclusively on machinery for processing chicks in hatcheries. This work included designing and programming robotic systems for hatchery applications. I also managed and maintained automated hatchery equipment and performed trouble shooting and maintenance of robotic systems in hatcheries.

11. Since mid 2022 I have served as a consultant in hatchery automation including hatchery automation layouts, design, installation, set-up, maintenance, troubleshooting and diagnostics.

VII. GENERAL COMMENTS RELATED TO CHICK HATCHERIES

12. Commercial hatcheries process chicks quickly after they have hatched. In 2015 (and today), hatcheries generally aim to have the chicks processed and leave the hatchery to be transported to farms within one day of hatching. Depending on the breed, a one-day old chick is typically between 3 and 4 inches tall when standing up.

13. In larger hatcheries, eggs are moved from an egg cooling room to an incubation room where they remain until about days 17-19 of incubation when

they may be transferred from egg flats to hatcher trays and may receive injections during this transition. Eggs are then placed in another room where the eggs will remain until they hatch at 21 days of incubation. The chicks are then taken to a take-off room where they may be placed on a conveyor so that they can be removed from the hatcher trays and separated from the shells. This separation process often takes place in two steps. First, the chicks are placed onto a roller/shaker bed that allows the chicks to fall between the rollers or shaker bars onto a conveyor. The large shell pieces then either roll off the rollers or are shaken off the end of the shaker bars into a vacuum waste hopper for disposal. But there may be some small shell pieces that fall onto the conveyor with the chicks. The chicks are then exposed to a “cyclone” that lifts the chicks 6 to 18 inches off of a conveyor and swirls them around to blow the loose pieces of eggshell that fell onto the conveyor with the chicks into the vacuum system for disposal. The picture depicted below is of an inspection window on a “cyclone” showing chicks being elevated. This part of the cyclone is sitting over the conveyor. Depending on the brand of equipment, this particular inspection window may be about 15 – 18 inches above the conveyor. Once chicks move out of the airflow inside of the cyclone, the chick will fall back to the conveyor and exit the cyclone.



This is done by having both a vacuum above the conveyor sucking the chicks upwards and by having air blown from below the conveyor to lift the chicks up. Once the chicks reach the end of the cyclone they literally drop from the air onto conveyor.

14. In the 2015 timeframe all US hatcheries using a cyclone would have had the chicks at least 12 inches in the air and sometimes 18 inches or more in the cyclone. This process was often not very well regulated so some of the chicks were probably higher up above than conveyor than 18 inches in 2015.

15. A drop of 12 to 18 inches rarely harms the chicks. This is because chicks are more durable than people might think. Keep in mind, for example, that

in nature most young birds are durable enough to fall out of a nest in a tree or bush without being injured. Where chicks can be vulnerable is if the chicks are pinched.

16. Many hatcheries still drop the chicks from 12 inches or more onto the conveyor at the end of the cyclone even today. However, in view of animal rights considerations there are more regulations in some places today than there were in 2015. For this reason chicks are more often 8 to 12 inches in the air above the conveyor in the cyclone today and sometimes even more.

17. After separating the egg remnants from chicks, the chicks sometimes go into a sorter where they have traditionally been manually sorted, although for many years gender sorting in many hatcheries was not required. If a manual gender sorting station is present the operators always have the ability to slow down or even pause the conveyors if the chicks start coming in faster than they can be counted.

18. After the chicks are sorted (or directly from the take-off room) almost all hatcheries will count the chicks. Large hatcheries have chick counters that can count between 60,000 and 75,000 chicks per hour. These chick counters work by taking a large flow of chicks with many chicks on the conveyor together and dividing them up into multiple lanes. A typical chick counter in an average commercial hatchery has four to five lanes. Two lanes are common in smaller

hatcheries and the chicks may be divided into as many as seven lanes in chick counters in larger hatcheries. In each lane the chicks are arranged in single file so they can be individually counted. The dividing process also orients the chicks to be facing either forwards or backwards so that they can be more accurately counted. Once the chicks leave the counter they would typically then experience another drop of 8 to 12 inches today as they land in baskets or boxes to be shipped into farms. The speed of the conveyors could be regulated as needed to ensure accurate counting. Larger hatcheries have more than one multilane chick counter.

19. The dividing devices for separating the chicks into lanes have been in use for a long time and had already been in use for many years as of 2015.

20. When the chicks are arranged in single file to be counted the speed and spacing of the chicks can be controlled. Typically the chicks would be anywhere from almost touching each other to up to 12 inches part. This was true in 2015 and today.

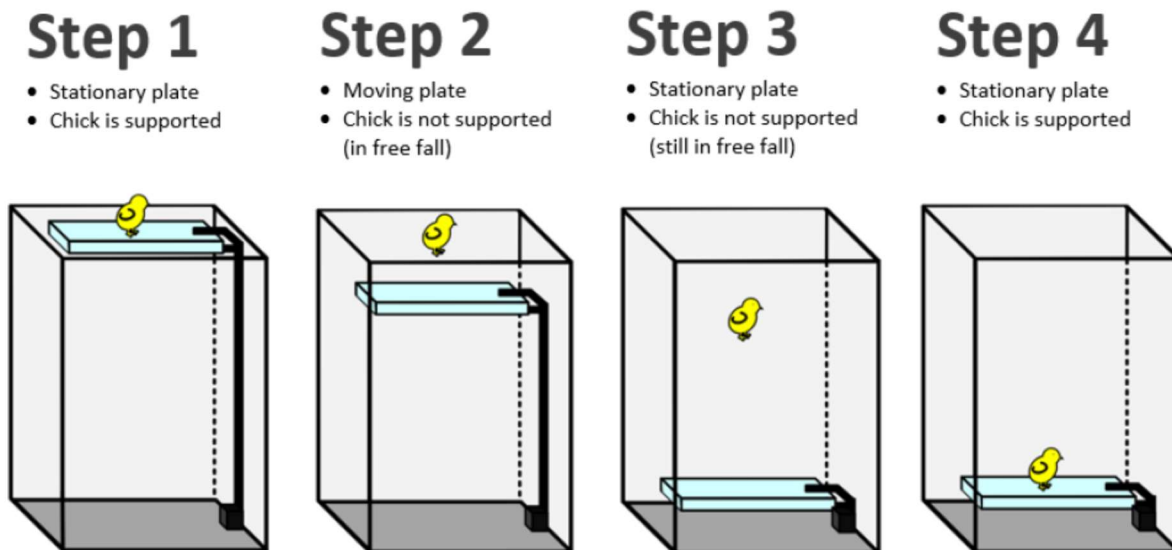
21. Organizing the chicks to be counted by the chick counter and other chick processing in hatcheries routinely created brief bottlenecks around the chick dividers where there would be small chick traffic jams. Today and in 2015 it was well known how to manage the flow of chicks as needed to deal with traffic jams and other junctions where chicks were routed to different locations. In short,

dividing chicks up so that they would form lines one at a time at any desired speed was well known and within the skill of those in the hatchery automation art by 2015.

VIII. COMMENTS ON SPECIFIC DOCUMENTS

D. Gershman

22. I understand that the following diagram has been introduced in this proceeding as representative of the Gershman system.



EX. 2002¹, ¶ 40.

¹ I have not seen or reviewed EX 2002. Citations to EX 2002 were provided by counsel.

23. I have reviewed Gershman and I do not believe that the above diagram accurately depicts Gershman's system.

24. First, unlike the diagrams above, each chick in Gershman's system would never be very far removed from the plate. As I noted above, a one-day old chick is only about 3 to 4 inches tall. Gershman explains that "Chickens were placed on plate manually and was [sic] pushed down from a height of 20 cm on the shock absorbers (Fig. 3)." EX 1003, 5. A 20 cm drop is only about 8 inches. In other words, the total drop of the plate in Gershman's example was approximately twice the height of a standing chick. For this reason alone, the diagrams showing Steps 1-4 of Gershman above are not accurate because they show a chick dropping many times the chick's height and being many times its height above the plate.

25. Second, Gershman states:

As we observed in our fast filming, reaction of chicken libs irritation occurs very quickly, approximately 30-40 msec. If we assume that, the claws can pubescent 10 mm and this movement is uniformly accelerated, can be calculated that, acceleration of plate must be equal 12-15 m/sec². ***It is only a little more than free-fall acceleration*** and easily imitated by sharp lowering his human hands.

To ensure sharp fall of plate it is possible to use mechanical activator (for example, a cylinder with a flexible wheel at the end

of the pusher), which will provide the *initial acceleration, a little more than g*.

EX. 1003, 3, 5; emphasis added.

From the above quotes and my review of Gershman I understand Gershman to be explaining that the *initial* acceleration of the plate is slightly more than gravity or free fall acceleration. This confirms my understanding that in Gershman's system the chick should never be very far above the plate.

26. Finally, any person working in the field of automated chick transport and processing would naturally want to minimize the amount the chick dropped even though an eight inch drop would not hurt the chick. For the same reason, it makes sense that Gershman wanted to cushion the bottom of the plate's movement with shock absorbers and/or springs.

27. The 4-step diagram above also shows the chick only standing on the moving plate when the plate is stationary in Step 1 and when the plate is at the bottom in Step 4. I also understand that it has been stated in this proceeding that:

Gershman discloses using a plate that is stationary in some stages of operation, and moving in other stages of operation. When stationary, the plate is supporting a chick. When put into motion, it is specifically designed to move downward so quickly that it will not support the chick at any moment. Those are the only two options for Gershman's plate; it is either stationary and

supporting a chick or moving and not supporting the chick, **but never moving and supporting a chick.**

EX 2002, ¶ 40. I am informed that the underlining and bold were in the original quote. I also understand it has been stated with respect to the chick in Gershman that “The chick is in free fall any time the plate is moving.” EX 2002, ¶ 42.

28. I disagree that the plate in Gershman is “never moving and supporting a chick” and that the “chick is in free fall any time the plate is moving” for several reasons. I also believe a person in the hatchery automation art in 2015 would have shared my understanding. First, Gershman says in the second step of the first stage of his process “Chicken are placed on a moving plate.” EX 1003, 3. Next, Gershman states “Chickens were placed on plate manually and was pushed down from a height of 20 cm on the shock absorbers (Fig. 3).” EX 1003, 5. Fig. 3 is reproduced below.



Gershman also proposed that his system could be incorporated into lines in use for counting and packaging hatching chicks by including “moving plates with corresponding springs.” EX 1003, 4. The shock absorbers and the moving plates with corresponding plates indicate that the chick would be cushioned by the moving plate as it decelerates towards the end of the plate’s descent. More generally, in order to minimize stress to the chick, a person of ordinary skill in the art of hatchery automation would want to cushion the chick’s landing with the moving plate. For all of these reasons, regardless of whether or not the chick briefly separates from the plate in Gershman’s system, I would have expected the chick to be supported by Gershman’s moving plate at least part of the time the plate was moving.

29. I understand that it has been stated in this proceeding that “Gershman would introduce a full stop in any lateral conveyance system, effectively pausing the lateral conveyance of the chick so that a sexing process can be completed, but only in a vertical direction.” EX 2002, ¶ 58.

30. I disagree that Gershman’s system would have required introducing a full stop for each chick aside from the normal ability to pause a conveyor for safety or other routine operational reasons. Instead, I would have expected that a system built around Gershman’s moving plate design would have controlled the speed of

the conveyor supplying chicks to the plate. That was in 2015, and remains today, a basic technique for controlling chick flow on conveyor systems.

31. I understand that it has been stated in this proceeding that:

the Gershman reference does not contain any discussion or disclosure of how chicks can be moved, one at a time, onto the movable plate in a manner that does not injure the chicks and/or does not overload the drop plate with more than one chick at a time.

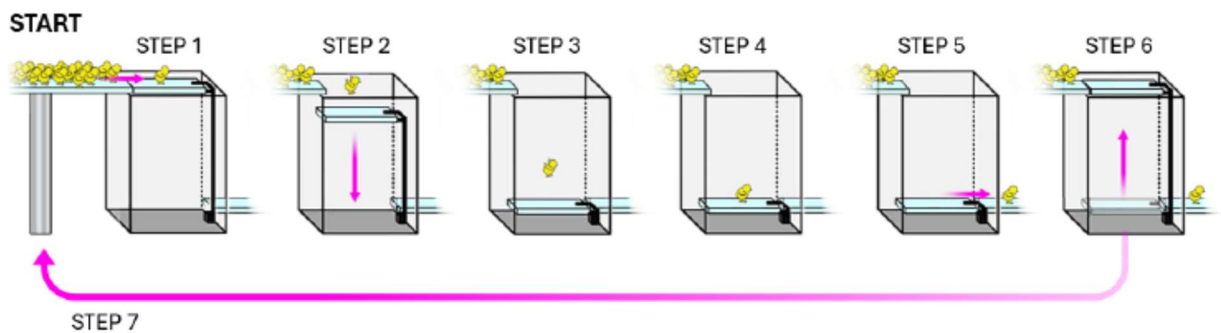
Similarly, a POSITA [Person of Ordinary Skill in the Art] would have realized there is no discussion or disclosure of what happens to the chicks that are waiting for the movable plate to return, and how they ensure that those chicks that are waiting do not fall down the movable plate shaft while in operation. Again, a POSITA would have understood that without a solution for this problem the Gershman-Pierre combination is not feasible because it would injure the chicks.

EX 2002, ¶ 174.

32. In 2015 it was well within the skill of those in the hatchery automation art to design a system to supply chicks one at a time to a plate as contemplated in Gershman without injuring or losing chicks. Because controlling chick traffic and dividing chicks into single file was well known in the hatchery art

in 2015, there should not have been a significant risk of chicks being injured or in traffic jams in a system designed to feed into the plate of Gershman.

33. I understand that the following figure of Gershman has also been introduced as representative of Gershman's process.



EX. 2002, ¶ 169.

34. As I explained above, these figures do not accurately depict Gershman because they show the chicks high above the plate. I also do not believe these figures are realistic because they show a crowd of chicks grouped together at the "START" before "STEP 1." Instead, I would have expected chicks to have already been divided and fed onto the plate in single file spaced apart on a conveyor. Also, at Step 6 these figures show the chick exiting the platform at its lowest point. That is one possible application of Gershman's design. However, Gershman also describes the idea of having "moving plates with corresponding springs" and that he would "push the plate down." EX 1003, 3, 4. These statements suggest to me

that Gershman also considered that the spring would raise the plate and the chick (i.e., be a moving platform supporting and lifting the chick) back up to its original level. The chick would then leave the plate at the level it started instead of at the lowest point reached by the plate.

35. I understand that it has been stated in this proceeding that:

A POSITA would further realize that if chicks were to be held in a holding area to wait for their turn on the manual platform of Gershman, there would be a problem with chick droppings building up on the platform or holding area. In my opinion, a POSITA would understand that accumulation of chick droppings would be particularly problematic for Gershman because Gershman requires a clean transparent plate that is illuminated, and which serves as a backdrop against which to capture images of the chick from above the movable plate. Gershman does not address or even acknowledge these problems, and similarly does not provide a solution to them.

EX 2002, ¶ 60.

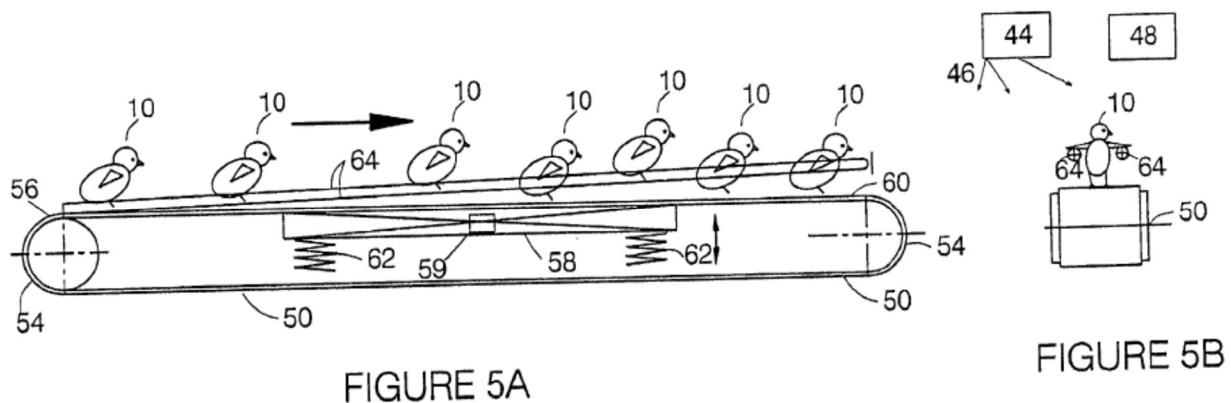
36. As I explained above, I do not think a person in the hatchery automation art would have designed a holding area next to the platform. Instead, I would expect that chicks would be fed single file to the plate.

37. I also do not agree that “accumulation of chick droppings would be particularly problematic for Gershman.” Managing chick droppings and other

chick waste was well known in conveyor systems in chick hatcheries in 2015 and today. Conveyor systems already have to be cleaned periodically. Chick waste also can cover sensors in chick counters and these sensors are regularly wiped down during hatchery operations today and in 2015. More generally, the chick counters and processing systems in most hatcheries stop 10 to 15 times a day or more between flocks, to reload vaccines, for operator breaks, etc. Depending on the design, periodic plate cleaning would not be hard to manage. In other words, I do not believe that chick droppings on Gershman's plate would have prevented the system from being usable in a hatchery operation.

E. Yavnai

38. I have also reviewed Yavnai, including Fig. 5 and the part of Yavnai discussing Fig. 5 (EX 1005, ¶ [0041]). Yavnai Figs. 5A and 5B are reproduced below.

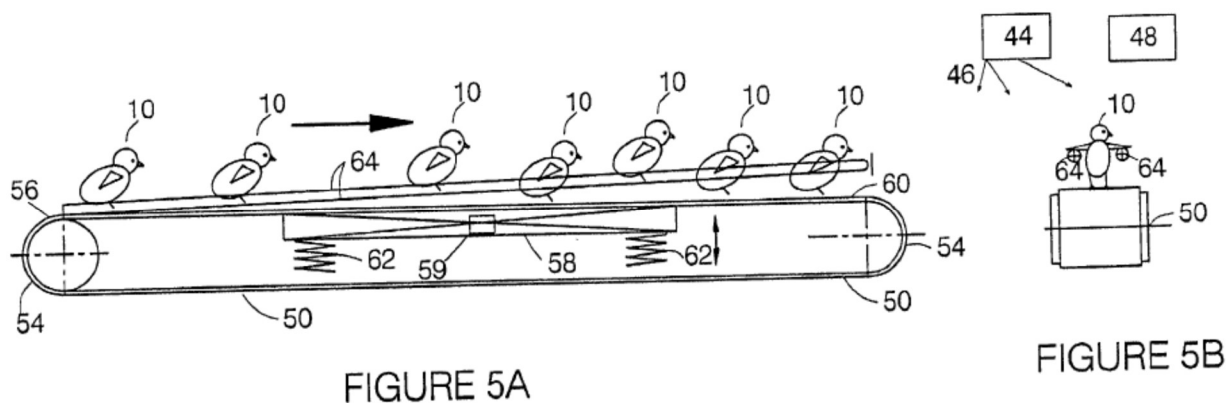


39. I understand that it has been stated in this proceeding that “the narrow and constricting poles of Yavnai must be configured to restrain the chick from lateral movement for the duration the chicks are on the moving platform, or they would potentially fall off.” EX 2002; ¶ 54. I further understand it was stated that “A POSITA would have understood this to be necessary to prevent chicks from falling off the moving platform.” EX 2002; ¶ 54. These statements are not how I understand the poles of Yavnai would be likely to operate.

40. As a practical matter, as shown in Fig. 5A, the poles of Yavnai would not be able to keep the chicks on the conveyor. Yavnai shows the chicks jumping and at least at first the chicks might be able to jump over the poles. Assuming Yavnai wished to ensure the chicks stayed on the conveyor, it would also have been necessary to have had side walls which are not shown to also keep the chicks on the conveyor. For the same reason, a person in the field of hatchery automation would have also expected that side walls would have to have been added to the plate of Gershman to keep the chicks on the moving plate.

41. I understand that it has been stated in this proceeding that “for the Yavnai system to work, the risk of injury to the chick is greatly increased as the chick is moved forward against the poles and held in place.” EX 2002, ¶ 101.

42. I disagree with several parts of this statement. First, the poles in Yavnai are not shown as holding the chick in place. The chick can still move and move its wings even when the poles support the wings. Second, I do not believe that the chicks in Yavnai have a greatly increased risk of injury as the chicks move forward between the poles. Instead, chicks are mostly vulnerable if there is a pinch point in the system. In the Yavnai pole design there could be a pinch point where the poles are first in contact with the conveyor on the left side of Fig. 5A. However, as shown by the arrow, the chicks move *away* from the pinch point and so this does not create a risk of injury to the chicks.



43. I understand that it has been stated in this proceeding that:

Yavnai's system requires chicks to be highly restrained with poles. In Yavnai, chicks are restrained from lateral movement when they step on the conveyor, and the poles restrain the chick's wings with poles leading up to the point of imaging. However, a POSITA would have understood that Yavnai's

system fails to account for the risk that its restraint system (the poles) may also fail to keep the chick facing forward and therefore may not effectively restrain the chicks as needed to practice the invention. The chicks could rotate around in place before their wings are restrained, as I've illustrated in Fig. 5A below:

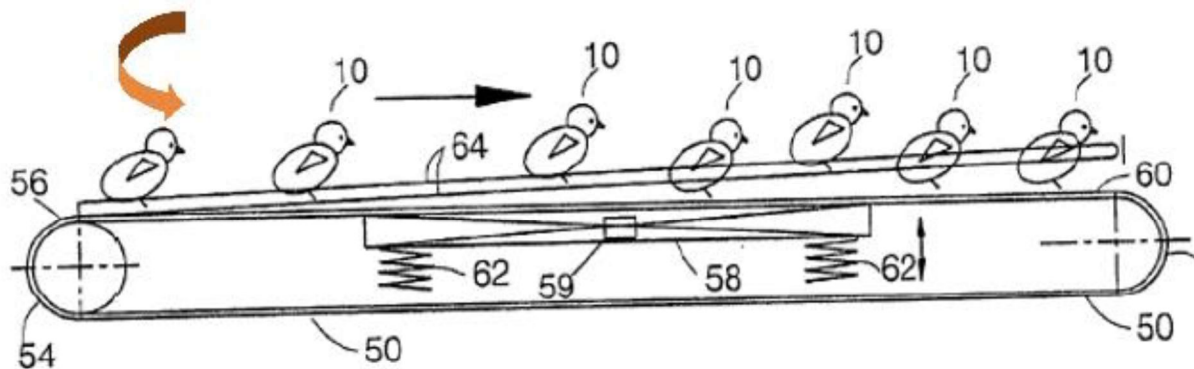


FIGURE 5A

If the chick rotates around in place before its wings are restrained, then by the time it gets to the end of the conveyor it will be in an undesired (and harmful) position. The chick is still restrained, but in the wrong configuration for imaging.

EX 2002, ¶ 178.

44. I disagree with several observations in the above quote. First, I believe the Yavnai poles are designed to guide the chicks and eventually support their wings, not restrain the chicks. I understand that the '124 patent claims refer to an "unrestrained chick." I do not have an opinion on what is meant by an

“unrestrained chick” in the ‘124 patent. However, as one who has worked in the hatchery field for two decades, I would generally understand a restrained to chick to be one that is physically held in place, such as by hand, so that it cannot run away. In other words, I would generally understand an unrestrained chick to be one that is not physically held in place. From my perspective, the chicks shown and discussed in the ‘124 patent, Yavnai, and Gershman are all unrestrained chicks.

45. Next, once chicks are single file on conveyors facing a desired direction they are not very likely to completely change direction and rotate direction 180 degrees once the conveyor is moving. Typically, once the chick is moving on the conveyor they will not rotate unless they are acted upon by something, a drop, an obstruction, etc. On a moving conveyor, you would rarely see a chick rotating. Most of the time they just stand in place and are trying to stay balanced. Think of how you feel when you initially step on a moving sidewalk. I would not expect chick rotation to be a major concern in the Yavnai system.

46. Next, as a practical matter the images taken in each of the documents I reviewed (the ‘124 patent, Yavnai, Gershman, and Pierre) will all have to be rotatable to at least some extent. For example, the chicks coming down the ‘124 platform may not be facing exactly forward and may be facing at an angle when

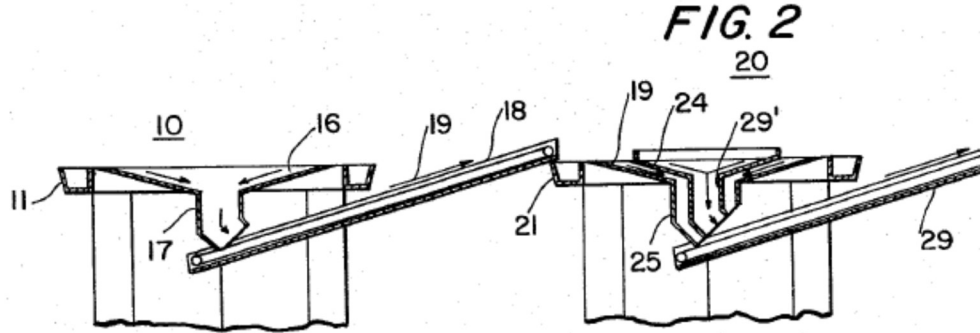
opening their wings. The chicks could be facing at an angle as a practical matter in any of these systems. It is my understanding that rotating an image to a desired position could have been readily done and would not have prevented Yavnai from operating.

47. Finally, even if a chick did rotate in between the Yavnai poles, I do not believe they would be injured. As I explained above, the chicks in Yavnai move away from the only apparent pinch point created by the poles and are strong enough that they should not be harmed by bumping into the poles.

F. Goodman-Pierre

48. I understand that in this proceeding it has been proposed that a camera as discussed in Pierre could be added to the end of the conveyor 18 in Goodman where the chick is shown to drop off the chicks into a trough 21.

49. Goodwin states that 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, col. 2, lines 18-20. A portion of Goodwin Fig. 2 is shown below for reference.



50. I further understand that in this proceeding it has been asserted that:

Petitioner again fails to account for the harm that may be caused to chicks by having those chicks dropped off from the conveyor 18. A POSITA would have been aware of the risk, and would have understood that *because the conveyor 18 is substantially higher off the ground than a chick is expected to be able to fall without injury, chicks would likely be injured by such a drop.*”

EX. 2002, ¶ 184; emphasis added.

51. I disagree with the above conclusion. A person in the art of hatchery automation in 2015 would have also disagreed. Neither Goodwin or Pierre state how far they would drop the chicks. As explained above in my general discussion of commercial hatcheries in the U.S. in 2015, chicks were routinely dropped 12 inches or more during processing after hatching and can generally withstand much larger drops without injury. There is nothing in Goodwin Fig. 2 that indicates to me that the conveyor 18 is substantially higher off the ground than a chick is expected to be able to fall without injury. More generally, if a person in the

hatchery automation art were asked to incorporate the gender identification technology that requires causing a chick to fall and have a picture of their wings taken as described in Pierre, it would be common sense for them to select a distance for the chicks to fall that would not injure the chick.

IX. CONCLUSION

52. I declare that all statements made in this declaration to my knowledge are true, that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.



Shawn LeCroy

2/9/2025

Date