

UNITED STATES PATENT AND TRADEMARK OFFICE

ROBE LIGHTING S.R.O.,
Petitioner,

v.

GUANGZHOU HAORYANG ELECTRONIC CO., LTD.,
Patent Owner.

IPR2025-01016
U.S. Patent No. 11,988,373 B1



Petitioner's Demonstratives

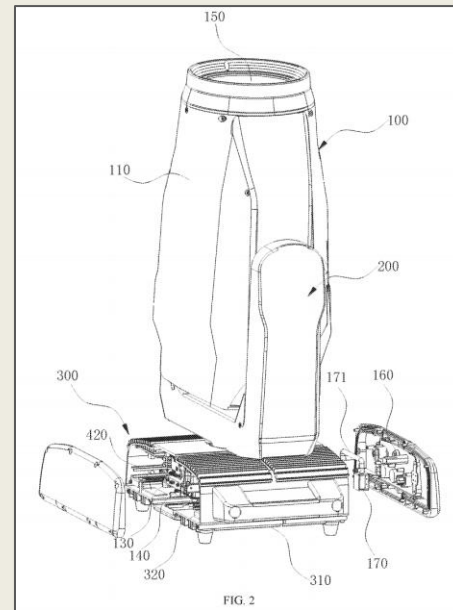


Technology Overview

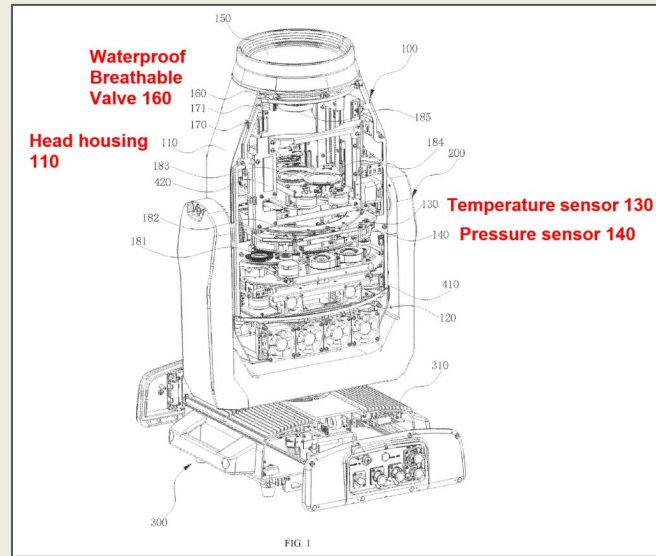
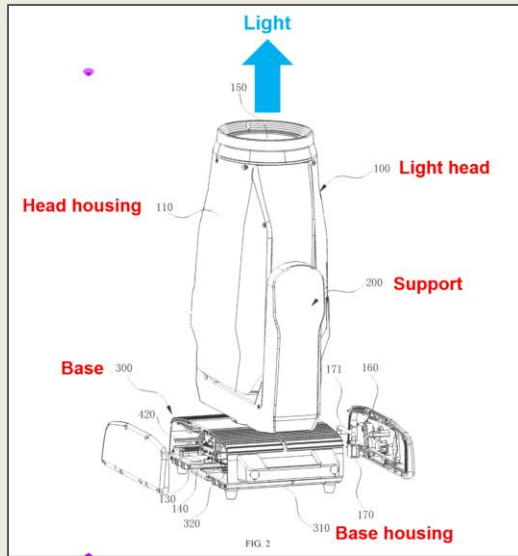
- Stage lights (“fixture” or “luminaire”)
- Use sealed housings for use outdoors
- Housing seals periodically checked by pressure testing
- ‘373 Patent focused on ability to self-test housing seals

(Paper 1 at 4-6, 12)

(Ex. 1001, Fig. 2)



'373 Patent

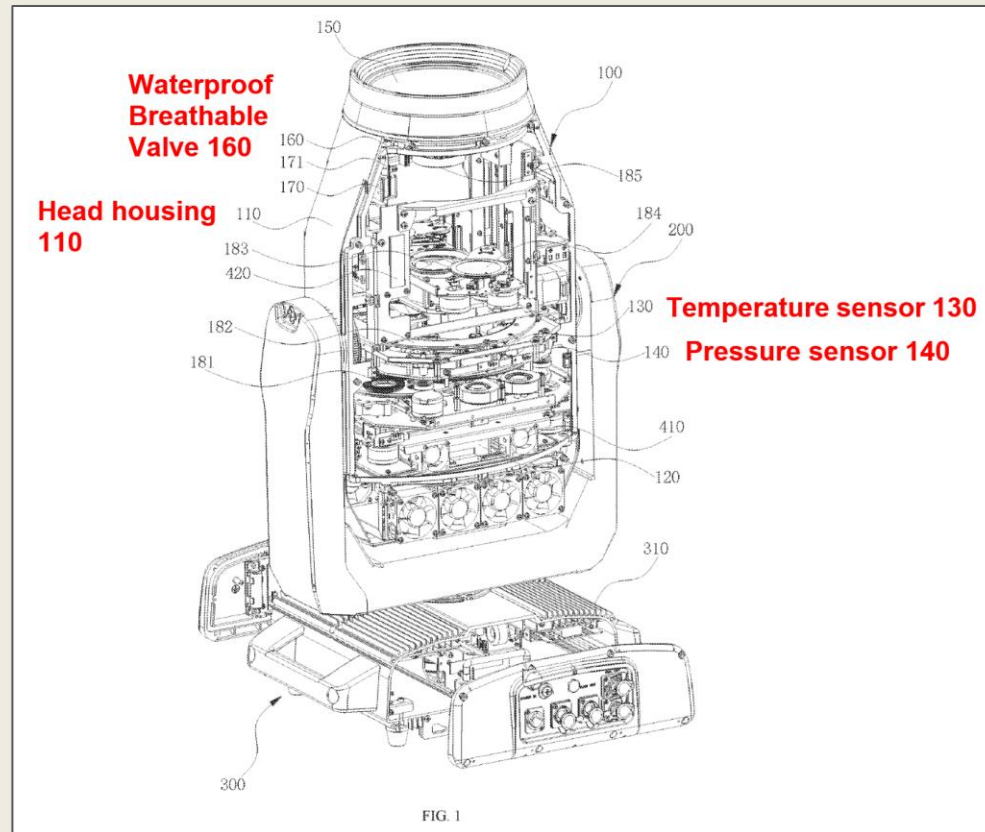


- Filed March 30, 2023 based on CN application
- Prosecution not at issue (9 months, minor amendments, no IDS filed)
- All of the prior art qualifies, not disputed

(Paper 1 at 4-7, Ex. 1001 Figs. 1, 2)

'373 Patent

- 13 claims, only claim 1 is independent



(Ex. 1001 Fig. 1

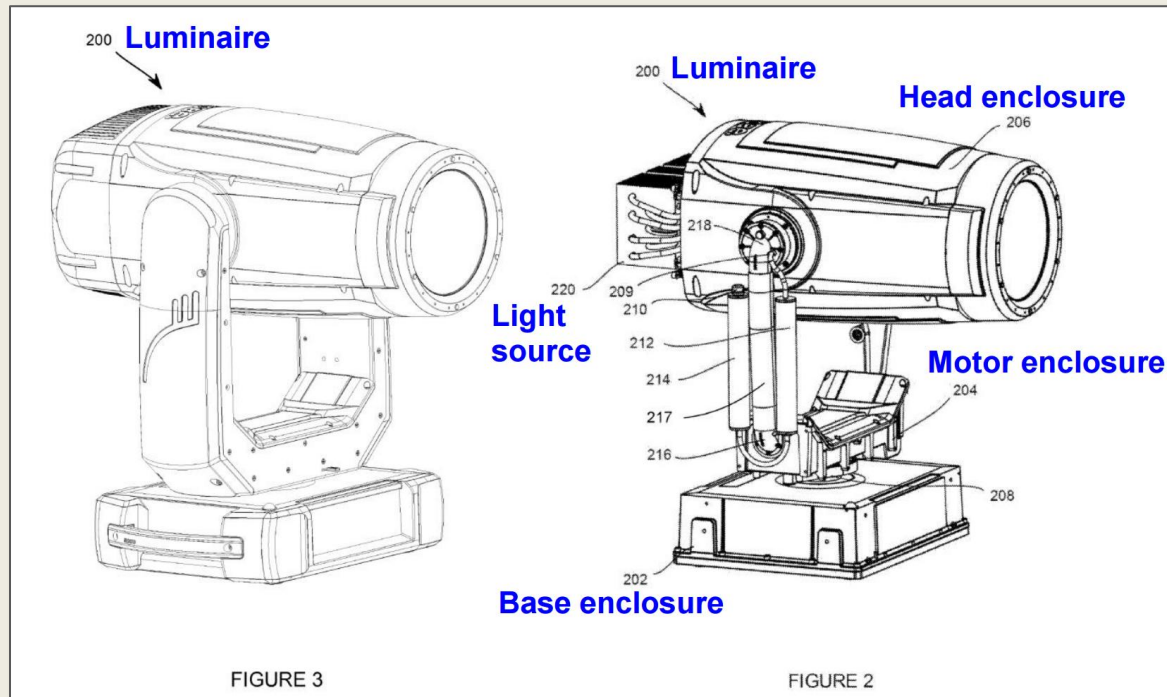
Overview of IPR

Claim(s)	Ground	Disputed
1-4, 6, 10, and 11	1: Anticipated by Jurik (USPN 12,085,267)	No
5, 12, and 13	2: Obvious over Jurik, or alternatively, obvious over Jurik in view of Johansen (USPN 9,777,917)	Yes
7 and 8	3: Obvious over Jurik	Yes
9	4: Anticipated by Jurik, or alternatively, obvious over Jurik in view of Jurik 2 (USPUB 2015/0103553)	No

(Pet. at 3)

Jurik

- Pressure testing seals on housing (same as '373 Patent)



(Ex. 1005 Figs. 2-3)

Claim 5

- Separately testing the base and head housing

5. The light fixture according to claim 4, wherein the base further comprises
a switching mode power supply arranged inside the base housing for supplying power and generating heat; and
an **additional temperature sensor** and an **additional air pressure sensor** for respectively detecting the temperature and air pressure inside the base housing,
wherein the base housing is provided with an **additional waterproof breathable valve** allowing an internal space of the base housing in air communication with the external space of the light fixture; and a switch is further provided, which is capable of switching between two states by unblocking/blocking the additional waterproof breathable valve to make the internal space of the base housing in air communication with the external space of the light fixture or not.

(Ex. 1001 Claim 5)

Claim 5(a)

- Obvious over Jurik, or
- Obvious over Jurik and Johansen

5. The light fixture according to claim 4, wherein the base further comprises
a switching mode power supply arranged inside the base housing for supplying power and generating heat; and
an additional temperature sensor and an additional air pressure sensor for respectively detecting the temperature and air pressure inside the base housing,
wherein the base housing is provided with an additional waterproof breathable valve allowing an internal space of the base housing in air communication with the external space of the light fixture; and a switch is further provided, which is capable of switching between two states by unblocking/blocking the additional waterproof breathable valve to make the internal space of the base housing in air communication with the external space of the light fixture or not.

a switching mode power supply arranged inside the base housing for supplying power and generating heat; and

- Obvious as most common type of power supply (EX1004 ¶¶ 119-29.)
- Not disputed by PO

(Ex. 1001 Claim 5)

Claim 5(b)

5. The light fixture according to claim 4, wherein the base further comprises
a switching mode power supply arranged inside the base housing for supplying power and generating heat; and
an additional temperature sensor and an additional air pressure sensor for respectively detecting the temperature and air pressure inside the base housing,
wherein the base housing is provided with an additional waterproof breathable valve allowing an internal space of the base housing in air communication with the external space of the light fixture; and a switch is further provided, which is capable of switching between two states by unblocking/blocking the additional waterproof breathable valve to make the internal space of the base housing in air communication with the external space of the light fixture or not.

(Ex. 1001 Claim 5)

an additional temperature sensor and an additional air pressure sensor for respectively detecting the temperature and air pressure inside the base housing,

- Expert Mike Wood (45 years experience) (EX. 1004)
- PHOSITA:
 - BSME / BSEE + 2 years designing
 - 2-years science + 4 years designing
- Obvious to add second sensors, second valve, and second switch to separately to test head and base

(Ex. 1004 at ¶¶ 130-40)

Claim 5(b)

5. The light fixture according to claim 4, wherein the base further comprises
a switching mode power supply arranged inside the base housing for supplying power and generating heat; and
an additional temperature sensor and an additional air pressure sensor for respectively detecting the temperature and air pressure inside the base housing,
wherein the base housing is provided with an additional waterproof breathable valve allowing an internal space of the base housing in air communication with the external space of the light fixture; and a switch is further provided, which is capable of switching between two states by unblocking/blocking the additional waterproof breathable valve to make the internal space of the base housing in air communication with the external space of the light fixture or not.

(Ex. 1001 Claim 5)

an additional temperature sensor and an additional air pressure sensor for respectively detecting the temperature and air pressure inside the base housing,

- Jurik discloses second sensor in base

The head enclosure 406 includes a sensor 424 that measures one or more parameters such as air pressure, air humidity, or air temperature. In other embodiments, one or more of such sensors 424 may be included in the enclosures 402 and/or 404. In some embodiments, a plurality of such sensors 424 may be included in one or more of the enclosures 402, 404, and 406.

(Ex. 1005 at 7:41-47)

Claim 5(c)

5. The light fixture according to claim 4, wherein the base further comprises
a switching mode power supply arranged inside the base housing for supplying power and generating heat; and
an additional temperature sensor and an additional air pressure sensor for respectively detecting the temperature and air pressure inside the base housing,
wherein the base housing is provided with an additional waterproof breathable valve allowing an internal space of the base housing in air communication with the external space of the light fixture; and a switch is further provided, which is capable of switching between two states by unblocking/blocking the additional waterproof breathable valve to make the internal space of the base housing in air communication with the external space of the light fixture or not.

(Ex. 1001 Claim 5)

wherein the base housing is provided with an additional waterproof breathable valve allowing an internal space of the base housing in air communication with the external space of the light fixture;

- Jurik only discloses **one** waterproof valve
- Because all enclosures are connected
- Expert Wood says adding a second is **obvious because . . .**
 - Adds venting capacity
 - Redundancy in case of failure / blockage
 - Isolate and test seals of different enclosures
 - Separately test seals in base enclosure

(Ex. 1004 at ¶¶ 132-35)

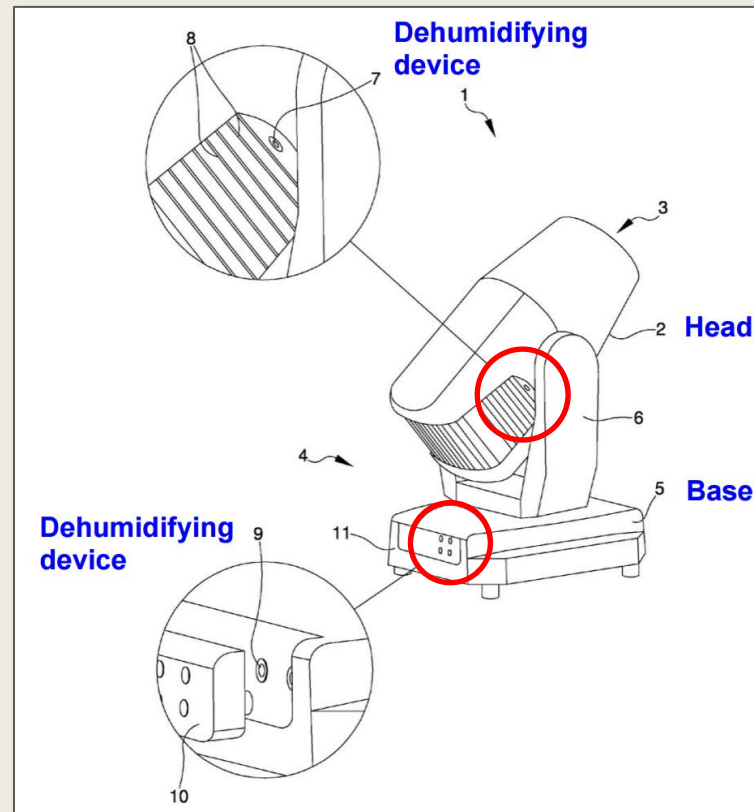
Claim 5(c)

5. The light fixture according to claim 4, wherein the base further comprises
a switching mode power supply arranged inside the base housing for supplying power and generating heat; and
an additional temperature sensor and an additional air pressure sensor for respectively detecting the temperature and air pressure inside the base housing,
wherein the base housing is provided with an additional waterproof breathable valve allowing an internal space of the base housing in air communication with the external space of the light fixture; and a switch is further provided, which is capable of switching between two states by unblocking/blocking the additional waterproof breathable valve to make the internal space of the base housing in air communication with the external space of the light fixture or not.

(Ex. 1001 Claim 5)

(Ex. 1004 at ¶ 136-38;
Ex. 1013 at Fig. 1, 3:11 – 4:9)

... and Johansen is Example



Claim 5(d)

5. The light fixture according to claim 4, wherein the base further comprises
a switching mode power supply arranged inside the base housing for supplying power and generating heat; and
an additional temperature sensor and an additional air pressure sensor for respectively detecting the temperature and air pressure inside the base housing,
wherein the base housing is provided with an additional waterproof breathable valve allowing an internal space of the base housing in air communication with the external space of the light fixture; **and a switch is further provided, which is capable of switching between two states by unblocking/blocking the additional waterproof breathable valve to make the internal space of the base housing in air communication with the external space of the light fixture or not.**

(Ex. 1001 Claim 5)

and a switch is further provided, which is capable of switching between two states by unblocking/blocking the additional waterproof breathable valve to make the internal space of the base housing in air communication with the external space of the light fixture or not.

- Jurik only discloses **one** switch in head (electromagnetic valve 719 / 819)
- Obvious to add second switch to accompany second waterproof breathable valve

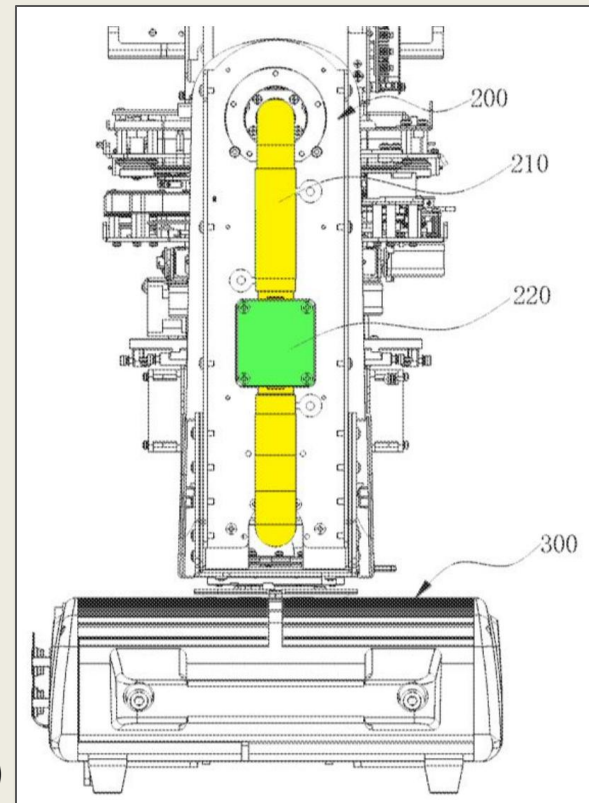
(Ex. 1004 at ¶¶ 139-40)

Claim 7

6. The light fixture according to claim 4, wherein a pipeline is configured to communicate the head housing with the base housing, with a joint therebetween sealed.

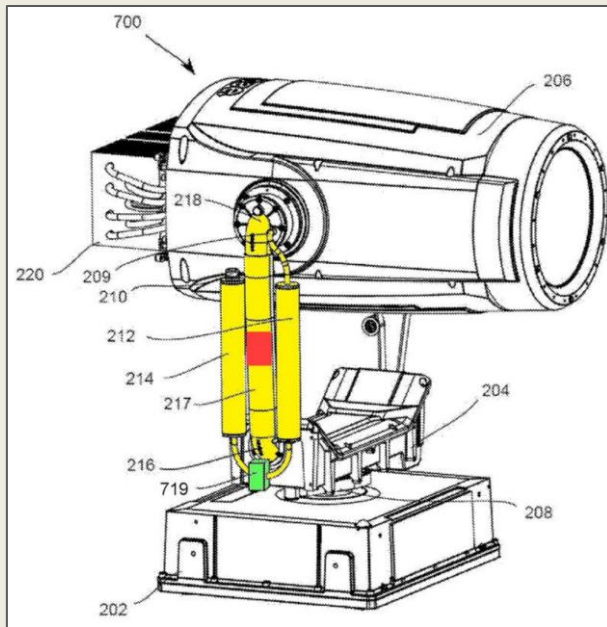
7. The light fixture according to claim 6, wherein the pipeline is provided with a blocking device for selectively blocking mutual air flow between the head housing and the base housing.

(Ex. 1001 Claim 7)



(Ex. 1001 Fig. 3)

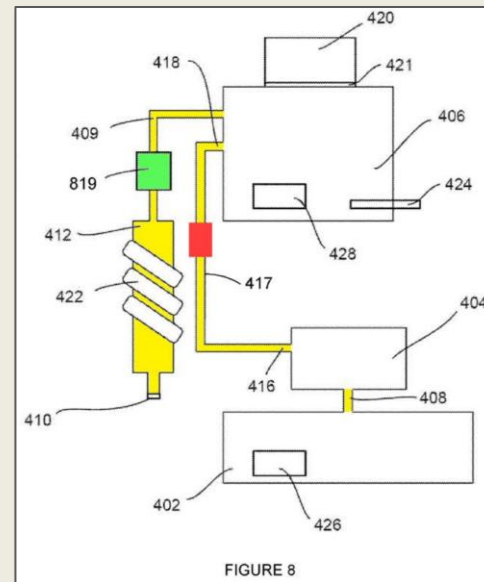
Claim 7



(Ex. 1005 Fig. 7)

- Jurik discloses claim 6 “pipeline” [417] and
- Discloses blocking device for blocking all airflow
- Adding blocking device on pipeline 417 is obvious

(Ex. 1004 at ¶¶ 151-53)



(Ex. 1005 Fig. 8)

Claim 8

8. The light fixture according to claim 6, further comprising a temperature control system for synchronously increasing the temperature inside the head housing and the base housing.

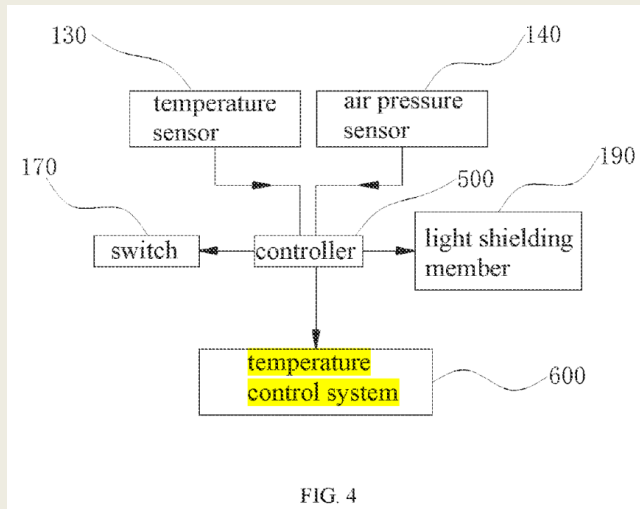


FIG. 4

(Ex. 1001 Fig. 4)

In a case that the base housing 310 is provided with the sealing self-test assembly, including the temperature sensor 130, the air pressure sensor 140, and a heating member, the temperature control system 600 includes a microprocessor (which may be replaced by a controller) that coordinates the heating power of heating elements inside the head housing 110 and the base housing 310, and the temperature sensor 130. In such configuration, the temperature detected by the temperature sensor 130 can synchronously increase by controlling the heating power of the respective heating elements, thus achieving both synchronously change of the temperature and air pressure inside the head housing 110 and

(Ex. 1001 at 8:4-16)

Claim 8

synchronously

adverb

US  /ˈsɪŋ.krə.nəs.li/ UK  /ˈsɪŋ.krə.nəs.li/

Add to word list 

formal

in a way that involves things happening or being done at the same time or speed:

- *Dragonflies beat their two sets of wings synchronously.*
- *The predator eggs hatch synchronously with the emergence of the wasp larvae.*

(Ex. 2002)

synchronously *adverb*

syn·chro·nous·ly

1 : at the same time : **SIMULTANEOUSLY**, **CONTEMPORANEOUSLY**

1

2 : at the same speed or frequency

(Ex. 2003)

Claim 8

According to a preferred embodiment of the present disclosure, in combination with FIG. 4, a temperature control system 600 for **synchronously** increasing the temperature inside the head housing 110 and the base housing 310 is further provided. For the situation of taking the head housing and the base housing as a whole system, in order to conduct sealing testing of the whole system, the temperature control system 600 is configured to coordinately control the temperature inside the head housing 110 and the base housing 310 to keep the temperature therein consistent, thus avoiding temperature asynchronous due to mutual influence of air pressure of the head housing and the base housing, such temperature asynchronous may result in inaccurate determination, according to the temperature and air pressure on the sealing performance of the whole system. With reference to FIG. 4, the temperature control system can be, but not limited to, controlled by the controller 500.

(Ex. 1001 at 7:43-59)

Claim 8

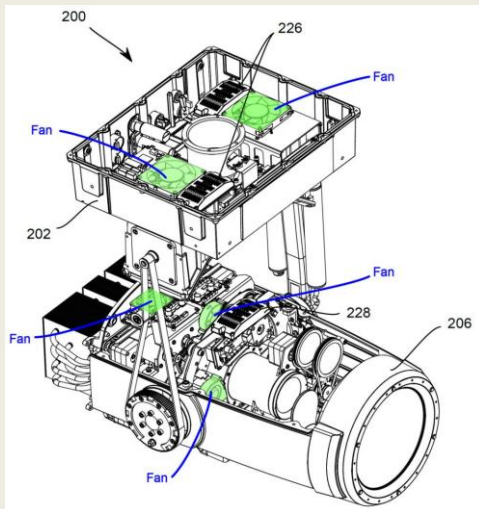
8. The light fixture according to claim 6, further comprising a temperature control system for synchronously increasing the temperature inside the head housing and the base housing.

- Jurik discloses control system 600 that coordinates operation and testing
- Connects processor 602 to temperature sensor, pressure sensor, heater, and electromagnetic valve
- Runs testing procedure by activating “any or all” of the heating elements, light source 220 in head housing and power supply in base housing
- Obvious to activate both at same time to reduce testing time, more even heating, and avoid hot spots

(Ex. 1004 at ¶¶ 158-60)

Claims 12 and 13

- PO offers no additional argument for patentability
- Both depend from claim 5
- Claim 12 adds a “heat homogenizing assembly” (fan) in the base housing
- Claim 13 adds an auxiliary heating assembly in the base housing



4. Increase the temperature within the connected enclosures 202, 204, and 206 by activating one or more heat-generating components of the luminaire 700. The temperature may be increased by performing any or all of the following actions: activating the light source 220, applying a holding current to motors in the motor enclosure 204, activating electronic circuits on printed circuit boards in the connected enclosures, activating power supplies in the base enclosure 202, or activating a standalone heating element located in any or all of the connected enclosures. In some embodiments, a framing shutter or other light-blocking optical device may be engaged to prevent the luminaire 700 from projecting a light beam during this step of the process.

(Ex. 1004 at ¶¶ 142-48)