



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/735,530	05/03/2022	Jin Harrison Elkins	9679B-000725-US	3216
28997	7590	12/27/2024		
Harness Dickey (St. Louis) 7700 Bonhomme, Suite 400 St. Louis, MO 63105			EXAMINER GIORDANO, MICHAEL JAMES	
			ART UNIT	PAPER NUMBER
			3762	
			NOTIFICATION DATE	DELIVERY MODE
			12/27/2024	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

bkamer@hdp.com
stdockct@hdp.com

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Response to Arguments

2. Applicant's arguments with respect to claim(s) 1, 12 and 18 have been considered but are moot because the new ground of rejection does not rely on any reference applied in the prior rejection of record for any teaching or matter specifically challenged in the argument.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claim(s) 1-7, 10, 12-15 and 17-20 is/are rejected under 35 U.S.C. 103 as being unpatentable over Hruby (US 20080266789 A1) in view of Yin (US 5684674 A).**

5. Regarding claim 1, Hruby teaches of:
- **An electronics equipment cabinet** (Fig. 1, 10) comprising:
 - **a plurality of cabinet walls defining an interior enclosure space for housing electronic equipment** (Figs. 1-2, 10 has a plurality of walls including wall 52 on the side 22 and a further parallel wall on side 24); and
 - **an air management box coupled to an interior surface of at least one of the plurality of cabinet walls, and adjacent to at least one of a front area or a rear area of the electronics**

equipment cabinet, the air management box having a vertical footprint sufficient to cover all of the electronic equipment housed in the electronics equipment cabinet (Fig. 2, 50 is coupled to the interior surface of the wall 52 and with 62 and 60 define an air management box that has a vertical footprint extending from the bottom to the top of the cabinet and is further positioned at the rear area of the electronics as shown in Fig. 4);

- **the air management box including a plurality of walls and a plurality of plates detachably coupled to the walls** (Fig. 6-7, 62 defines a plurality of walls creating the air management box and the air management box has a plurality of detachable plates 60 coupled to the walls 62)
- **wherein the first and second plates are removably supported in the air management box in a vertical orientation** (Fig. 6-7, plates 60 are supported in the air management box in a vertical orientation

Hruby fails to explicitly teach:

- the plurality of plates including a first plate having one or more perforations defining a first perforation pattern and a second plate having one or more perforations defining a second perforation pattern to control a direction and/or volume of airflow to the electronic equipment in the interior enclosure space or from the electronic equipment in the interior enclosure space to the air management box, wherein the first perforation pattern is different than the second perforation pattern; and

Yin teaches of:

- **the plurality of plates including a first plate having one or more perforations defining a first perforation pattern and a second plate having one or more perforations defining a second perforation pattern to control a direction and/or volume of airflow to the electronic equipment in the interior enclosure space or from the electronic equipment in the interior enclosure space to the air management box**

- **wherein the first perforation pattern is different than the second perforation pattern** (Figs. 5A-5B, see each of the perforated plates 54 that have a variety of different patterns and densities)

The primary reference can be modified to meet this/these limitation(s) as follows:

- modify Hruby so that there is a set of solid plates 60 as shown in Figs. 6-7 and further so that there is a first set of plates not currently attached to Hruby but of the same attachment design as 60 of Hruby but with perforations of a pattern and density and a second set of plates of Hruby with a second perforation design and density

A person of ordinary skill in the art prior to the effective filing date of the claimed invention would have been motivated to make the above modification(s) because:

- different electronic equipment have different cooling requirements depending on their usage levels and shape, therefore, having panels with different perforation patterns and densities that can be situationally detached and rearranged allow for each of the electronic equipment to receive and exhaust adequate amounts of cooling air based on the airflow characteristics throughout the cabinet in the current arrangement (Yin, Col. 5, lines 31-41, *Alternatively, mounting bracket 54N has apertures non-uniformly distributed with more apertures near the bottom of the mounting bracket proximate the housing. The bottom of the channels tend to become stagnant with still hot air, and may need more convective air flow to carry the heat away. Mounting bracket 54B shows larger apertures near the bottom and smaller apertures near the top for increasing the bottom flow in the channel. Mounting bracket 54A has several connector access holes and no apertures.*)

6. Regarding claim 2, the combined teachings teach of the electronics equipment cabinet of claim 1, and the combined teachings further teach of:

- **wherein the interior enclosure space includes at least a first portion for housing a first electronic equipment and a second portion for housing a second electronic equipment** (Fig. 3,

see first electronic equipment 14 positioned above second electronic equipment 14, the first electronic equipment is positioned in a first portion and the second electronic equipment is positioned in a second portion), **wherein the first plate is positioned on the plurality of walls to align with the first portion of the interior enclosure space, and wherein the second plate is positioned on the plurality of walls to align with the second portion of the interior enclosure space** (see combination made in the rejection of claim 1 above, the plates as modified can be positioned at any of the locations of 60 shown in figs. 6-7 of Hruby which would be aligned with either the first or second portions).

7. Regarding claim 3, the combined teachings teach of the electronics equipment cabinet of claim 1, and the combined teachings further teach of:

- **wherein a density of the one or more perforations in the first perforation pattern is different than a density of the one or more perforations of the second perforation pattern** (Yin, Fig 5B, 54N and the plate to its right have different perforation densities and patterns)

8. Regarding claim 4, the combined teachings teach of the electronics equipment cabinet of claim 1, and the combined teachings further teach of:

- **wherein the first plate is a different size than the second plate** (see combination made in the rejection of claim 1 above, three sets of plates are made with different perforation patterns and densities that can be situationally applied to inlets of the air management box to correct airflow depending on the electronic equipment inside of the cabinet).

9. Regarding claim 5, the combined teachings teach of the electronics equipment cabinet of claim 1, and the combined teachings further teach:

- **wherein the first plate and the second plate are parallel to the one of the one or more plurality of cabinet walls** (Hruby, Figs. 1-3, wall 52 is on side 22 and plates 60 are parallel to wall 52 and further a second wall on side 24 is parallel to 52 and as such parallel to 60)

10. Regarding claim 6, the combined teachings teach of the electronics equipment cabinet of claim 1, and the combined teachings further teach:

- **wherein the first plate and the second plate are vertically-aligned with one another** (Hruby, Figs. 6-7, plates 60 are vertically aligned with one another).

11. Regarding claim 7, the combined teachings teach of the electronics equipment cabinet of claim 1, and the combined teachings further teach:

- **further comprising electronic equipment disposed in the interior enclosure space** (Hruby, Fig. 3, 14 is electronic equipment; ¶ [0024], *The equipment 14 can include active equipment, such as switching or patching equipment, for example. Active telecommunications equipment is equipment that utilizes electrical power and therefore generates heat during operation or use.*).

12. Regarding claim 10, the combined teachings teach of the electronics equipment cabinet of claim 1, and the combined teachings further teach of:

- **further comprising an exhaust system including an outlet for removing air from the interior enclosure space, wherein the air management box is in fluid communication between the electronic equipment in the interior enclosure space and the outlet of the exhaust system** (Hruby, Fig. 5, see 68 which is directs exhausted air that is received by the air management box 50 out of the system, the air management box is positioned between 14 and 68).

13. Regarding claim 12, Hruby teaches of:

- **An electronics equipment cabinet kit** (Fig. 1, 10) comprising:
- **a plurality of cabinet walls defining an interior enclosure space for housing electronic equipment at a plurality of vertically spaced apart equipment locations within the electronic equipment cabinet** (Figs. 1-3, 10 has a plurality of walls including wall 52 on the side 22 of the cabinet and a further wall on the side 24 of the cabinet and further there are vertically space electronic equipment 14 within the cabinet 10):

- **an air management box coupled to an interior surface of one of the cabinet walls, adjacent to one of a front area or a rear area of the electronics equipment cabinet;**
- **the air management box including:**
- **a plurality of walls, the air management box having a vertical footprint sufficient to cover all of the equipment locations** (Fig. 2, 50 is coupled to the interior surface of the wall 52 and with 62 and 60 define an air management box that has a vertical footprint extending from the bottom to the top of the cabinet and is further positioned at the rear area of the electronics as shown in Fig. 4); and
- **a plurality of plates each configured to detachably couple to the walls of the air management box** (Fig. 6-7, 62 defines a plurality of walls creating the air management box and the air management box has a plurality of detachable plates 60 coupled to the walls 62)
- **the air management box providing or receiving a first airflow configuration when a first set of the plurality of plates are coupled to the walls, and the air management box providing or receiving a second airflow configuration different than the first airflow configuration when a second set of the plurality of plates are coupled to the wall** (Figs. 6-7, a first set of plates 60 is shown that are solid and do not allow airflow through, see combination below for a second set of plates that introduce a second airflow)
- **wherein the first and second sets of plates are removably supported in the air management box in vertical orientations** (Figs. 6-7, all of the plates 60 are in a vertical orientation).

Hruby fails to explicitly teach:

- the plurality of plates each including one or more perforations to control a direction and/or volume of airflow to the electronic equipment in the interior enclosure space or from the electronic equipment in the interior enclosure space to the air management box,

Yin teaches of:

- **the plurality of plates each including one or more perforations to control a direction and/or volume of airflow to the electronic equipment in the interior enclosure space or from the electronic equipment in the interior enclosure space to the air management box** (Figs. 5A-5B, see each of the plates 54 having a plurality of different perforation patterns and densities)

The primary reference can be modified to meet this/these limitation(s) as follows:

- modify Hruby so that there is a set of solid plates 60 as shown in Figs. 6-7 and further so that there is a first set of plates not currently attached to Hruby but of the same attachment design as 60 of Hruby but with perforations of a first pattern and density and a second set of plates of Hruby with a second perforation design and density

A person of ordinary skill in the art prior to the effective filing date of the claimed invention would have been motivated to make the above modification(s) because:

- different electronic equipment have different cooling requirements depending on their usage levels and shape, therefore, having panels with different perforation patterns and densities that can be situationally detached and rearranged allow for each of the electronic equipment to receive and exhaust adequate amounts of cooling air based on the airflow characteristics throughout the cabinet in the current arrangement (Yin, Col. 5, lines 31-41, *Alternatively, mounting bracket 54N has apertures non-uniformly distributed with more apertures near the bottom of the mounting bracket proximate the housing. The bottom of the channels tend to become stagnant with still hot air, and may need more convective air flow to carry the heat away. Mounting bracket 54B shows larger apertures near the bottom and smaller apertures near the top for increasing the bottom flow in the channel. Mounting bracket 54A has several connector access holes and no apertures.*)

14. Regarding claim 13, the combined teachings teach of the electronics equipment cabinet kit of claim 12, and the combined teachings further teach:

- **wherein the first set of the plurality of plates includes a first plate and a second plate, wherein the interior enclosure space includes at least a first portion forming a first one of the equipment locations for housing a first electronic equipment, and a second portion forming a second one of the equipment locations for housing a second electronic equipment, wherein the first plate is positioned on the wall to align with the first portion of the interior enclosure space, and wherein the second plate is positioned on the wall to align with the second portion of the interior enclosure space** (Hruby, Figs. 3 and 6-7, there are a first and second electronic equipment 14 in a first and second portion of the cabinet, as shown in Figs. 6-7 a portion of the plates 60 including a first and second plate are aligned with the first and second portions of the cabinet, in the combination made in the rejection of claim 12 above there are now a first and second set of plates each with first and second plates of different perforation densities and patterns and therefore a first and second plate of a first set can be attached to the air management box to be aligned with a first and second portions of the interior enclosure).

15. Regarding claim 14, the combined teachings teach of the electronics equipment cabinet kit of claim 13, and the combined teachings further teach of:

- **wherein a density of perforations of the first plate is different than a density of perforations of the second plate** (Yin, figs. 5A-5B, the plates 54 have different densities and patterns).

16. Regarding claim 15, the combined teachings teach of the electronics equipment cabinet kit of claim 14, and the combined teachings further teach of:

- **wherein the first plate is a different size than the second plate** (Hruby, Figs. 6-7, in the combination made above multiple sets of the plates 60 are made, 60 has plates of different sizes and therefore the first plate of the first set would have a different size than a second plate of the first set).

17. Regarding claim 17, the combined teachings teach of the electronics equipment cabinet kit of claim 12, and the combined teachings further teach of:

- **further comprising an exhaust system including an outlet for removing air from the interior enclosure space, wherein the air management box is in fluid communication between the electronic equipment in the interior enclosure space and the outlet of the exhaust system** (Hruby, Fig. 5, see 68 which is directs exhausted air that is received by the air management box 50 out of the system, the air management box is positioned between 14 and 68).

18. Regarding claim 18, Hruby teaches of:

- **A method of controlling airflow in an electronic equipment cabinet including a plurality of cabinet walls defining an interior enclosure space for housing electronic equipment and an air management box coupled to an interior surface of one of the cabinet walls adjacent at least one of a front area or a rear area of the electronic equipment cabinet** (Figs. 1-3, 10 has a plurality of cabinet walls including wall 52 on the side 22 of the cabinet and a further wall on the side 24 of the cabinet and further there are vertically space electronic equipment 14 within the cabinet 10; 50 is coupled to the interior surface of 52 and with walls 62 and 60 create the air management box at the rear of the electronic equipment 14), **the air management box having a vertical footprint sufficient to cover all of a plurality of vertically spaced equipment locations for the electronic equipment, and further including a plurality of walls and a first set of plates coupled to at least one of the walls** (Figs. 3 and 6-7, the air management box has a plurality of detachable plates 60 that have a vertical footprint sufficient to cover all of the equipment 14; the first set of 60 are all of the plates covering electronic equipment 14 in a first portion of the cabinet that include plates of different sizes), the method comprising:
 - **removing at least a portion of the first set of plates from the wall of the air management box** (Figs. 6-7, see plates 60 being removed); and

- **wherein the first and second sets of plates are removably supported in the air management box in a vertical orientation** (see combination made below, all of the plates 60 are detachable and vertically oriented with respect to one another).

Hruby fails to explicitly teach:

- the first set of plates each including one or more perforations to control at least one of a direction or a volume of airflow to the electronic equipment in the interior enclosure space or from the electronic equipment in the interior enclosure space to the air management box
- coupling a second set of plates each including one or more perforations to the walls of the air management box to adjust at least one of the direction or the volume of airflow to the electronic equipment in the interior enclosure space or from the electronic equipment in the interior enclosure space to the air management box

Yin teaches of:

- **the first set of plates each including one or more perforations to control at least one of a direction or a volume of airflow to the electronic equipment in the interior enclosure space or from the electronic equipment in the interior enclosure space to the air management box**
- **coupling a second set of plates each including one or more perforations to the walls of the air management box to adjust at least one of the direction or the volume of airflow to the electronic equipment in the interior enclosure space or from the electronic equipment in the interior enclosure space to the air management box** (Figs. 5A-5B, see each of the plates 54 having a variety of different perforation densities and patterns for controlling the air volume out of the system)

The primary reference can be modified to meet this/these limitation(s) as follows:

- modify Hruby so that there is a set of solid plates 60 as shown in Figs. 6-7 and further so that there is a first set of plates not currently attached to Hruby but of the same attachment design

as 60 of Hruby but with perforations of a pattern and density and a second set of plates of

Hruby with a second perforation design and density

A person of ordinary skill in the art prior to the effective filing date of the claimed invention would have been motivated to make the above modification(s) because:

- different electronic equipment have different cooling requirements depending on their usage levels and shape, therefore, having panels with different perforation patterns and densities that can be situationally detached and rearranged allow for each of the electronic equipment to receive and exhaust adequate amounts of cooling air based on the airflow characteristics throughout the cabinet in the current arrangement (Yin, Col. 5, lines 31-41, *Alternatively, mounting bracket 54N has apertures non-uniformly distributed with more apertures near the bottom of the mounting bracket proximate the housing. The bottom of the channels tend to become stagnant with still hot air, and may need more convective air flow to carry the heat away. Mounting bracket 54B shows larger apertures near the bottom and smaller apertures near the top for increasing the bottom flow in the channel. Mounting bracket 54A has several connector access holes and no apertures.*)

19. Regarding claim 19, the combined teachings teach of the method of claim 18, and the combined teachings further teach of:

- **further comprising changing a stack of the electronic equipment housed in the interior enclosure space, wherein coupling the second set of plates includes coupling the second set of plates based on the change in the stack** (Hruby, ¶ [0031], *the height H3 of the plates 60, however, can vary. In the illustrated embodiment, plates are provides with two different heights. The differing plate heights aid a user in better adapting or customizing the airflow ducting arrangement to the particular requirements of the equipment;* the equipment within the system of Hruby can be changed and as such the plates can be removed to accommodate the different

equipment, within the combined teachings instead of just removing the plates, plates of different perforations can be installed to accommodate different airflow characteristics of different equipment).

20. Regarding claim 20, the combined teachings teach of the method of claim 18, and the combined teachings further teach of:

- **wherein the interior enclosure space includes at least a first portion for housing a first electronic equipment and a second portion for housing a second electronic equipment, and wherein coupling the second set of plates includes coupling a first plate of the second set of plates to the wall to align with the first portion of the interior enclosure space and coupling a second plate of the second set of plates to the wall to align with the second portion of the interior enclosure space** (see combination made in the rejection of claim 18 above, there are a first set of plates and a second set of plates, these plates have a first and second perforation density and pattern depending on the airflow characteristics of how the electronics cabinet is currently arranged, in the situation of electronics equipment of a first type and a second type that each of have different cooling requirements and airflow characteristics, a first set of plates with a first and second plate would be coupled to the air management box and aligned with the first portion of the interior enclosure and a second set of plates with a first and second plate would be coupled the air management box and aligned with a second portion of the interior enclosure).

21. **Claim(s) 9 and 16 is/are rejected under 35 U.S.C. 103 as being unpatentable over Hruby (US 20080266789 A1) in view of Yin (US 5684674 A) as presented in claim 1 and 12, and in further view of Chu (US 20050237716 A1).**

22. Regarding claim 9, the combined teachings teach of the electronics equipment cabinet of claim 1, however, the combined teachings fail to explicitly teach:

- further comprising a cooling system including a supply outlet for providing air into the interior enclosure space to cool the electronic equipment, wherein the air management box is in fluid communication between the supply outlet of the cooling system and the electronic equipment in the interior enclosure space.

Chu teaches of:

- **further comprising a cooling system including a supply outlet for providing air into the interior enclosure space to cool the electronic equipment** (Fig. 4, 130 has an outlet leading into 110 shown via arrows), **wherein the air management box is in fluid communication between the supply outlet of the cooling system and the electronic equipment in the interior enclosure space** (Fig. 4, 200b is positioned between 110 and the outlet of 130).

The combined teachings can be modified to meet this/these limitation(s) as follows:

- position the cabinet of the combined teachings in a room with raised floors for conveying airflow to electronics cabinets, further provide an air conditioner 130 in the room and have it supply cooled air into the raised floors and towards an inlet of the electronics cabinet of Hruby, modify the exhaust outlet 68 of Hruby so it flows air upwards and towards the inlet of 130 allowing for cycle to be formed between the cabinet of Hruby and air conditioner 130

A person of ordinary skill in the art prior to the effective filing date of the claimed invention would have been motivated to make the above modification(s) because:

- the air conditioner 130 would provide chilled air to the system of the combined teachings, improving the thermal control of the electronics within the cabinet and the cycle formed between the cabinet and 130 prevents the recirculation of heated air from the cabinets allowing for consistent cooled air to be flown into the system (¶ [0037], *Conditioned air unit 130 supplies chilled and conditioned air through one or more channels 124 in a raised floor of the data center.[...] This exhausted air is directed vertically upward, with a portion impinging upon a*

ceiling 320 of the data center. The exhausted air spreads out radially within the room and is drawn into one or more conditioned air units 130 to continue the air flow cycle)

23. Regarding claim 16, the combined teachings teach of the electronics equipment cabinet kit of claim 12, however, the combined teachings fail to explicitly teach:

- further comprising a cooling system including a supply outlet for providing air into the interior enclosure space to cool the electronic equipment, wherein the air management box is in fluid communication between the supply outlet of the cooling system and the electronic equipment in the interior enclosure space.

Chu teaches of:

- **further comprising a cooling system including a supply outlet for providing air into the interior enclosure space to cool the electronic equipment** (Fig. 4, 130 has an outlet leading into 110 shown via arrows), **wherein the air management box is in fluid communication between the supply outlet of the cooling system and the electronic equipment in the interior enclosure space** (Fig. 4, 200b is positioned between 110 and the outlet of 130).

The combined teachings can be modified to meet this/these limitation(s) as follows:

- position the cabinet of the combined teachings in a room with raised floors for conveying airflow to electronics cabinets, further provide an air conditioner 130 in the room and have it supply cooled air into the raised floors and towards an inlet of the electronics cabinet of Hruby, modify the exhaust outlet 68 of Hruby so it flows air upwards and towards the inlet of 130 allowing for cycle to be formed between the cabinet of Hruby and air conditioner 130

A person of ordinary skill in the art prior to the effective filing date of the claimed invention would have been motivated to make the above modification(s) because:

- the air conditioner 130 would provide chilled air to the system of the combined teachings, improving the thermal control of the electronics within the cabinet and the cycle formed

between the cabinet and 130 prevents the recirculation of heated air from the cabinets allowing for consistent cooled air to be flown into the system (¶ [0037], *Conditioned air unit 130 supplies chilled and conditioned air through one or more channels 124 in a raised floor of the data center.[...] This exhausted air is directed vertically upward, with a portion impinging upon a ceiling 320 of the data center. The exhausted air spreads out radially within the room and is drawn into one or more conditioned air units 130 to continue the air flow cycle*)

24. **Claim(s) 11 is/are rejected under 35 U.S.C. 103 as being unpatentable over Hruby (US 20080266789 A1) in view of Yin (US 5684674 A) as presented in claim 1, and in further view of Bishop (US 20020149911 A1) in view of Zushi (US 4739444 A).**

25. Regarding claim 11, the combined teachings teach of the electronics equipment cabinet of claim 1, and the combined teachings further teach:

- **wherein the air management box is a first air management box** (Hruby, Figs. 1-3, 50 teaches of a first air management box), **and an exhaust system including an outlet for removing air from the interior enclosure space** (Hruby, Fig. 5, see 68 which is directs exhausted air that is received by the air management box 50 out of the system, the air management box is positioned between 14 and 68), **and wherein the other one of the first air management box and the second air management box is in fluid communication between the electronic equipment in the interior enclosure space and the outlet of the exhaust system** (Hruby, Fig. 5, see 68 which is directs exhausted air that is received by the air management box 50 out of the system, the air management box is positioned between 14 and 68).

The combined teachings fail to explicitly teach:

- wherein the electronics equipment cabinet further comprises a second air management box including a wall and a plurality of plates detachably coupled to the wall of the second air

management box, a cooling system including a supply outlet for providing air into the interior enclosure space to cool the electronic equipment

- wherein one of the first air management box and the second air management box is in fluid communication between the supply outlet of the cooling system and the electronic equipment in the interior enclosure space

Bishop teaches of:

- **wherein the electronics equipment cabinet further comprises a second air management box including a wall, a cooling system including a supply outlet for providing air into the interior enclosure space to cool the electronic equipment** (Figs. 3-5, [0071], *an addition to member 140, assembly 118 also includes other components that cooperate to form the plenum including another wall member 142, a baffle wall 144, top and bottom plenum walls 146 and 148, respectively, and lateral plenum walls 150 and 152.; the plenum provides air into the electronics cabinet*)
- **wherein one of the first air management box and the second air management box is in fluid communication between the supply outlet of the cooling system and the electronic equipment in the interior enclosure space** (Figs. 1 and 5, a cooling air system 18 is provided in the system of Bishop that has an outlet to supply air through the elevated floors 70 through spaces 76 and into the cabinets via 89; ¶ [0063], *the floor 70 within environment 10 includes a bottom support member or assembly 72 and a top support assembly 74 that are separated by beam members 76 to form a gap or space 78 therebetween. The cooling air source 18 provides cool air within space 78. Support assembly 74 includes a plurality of support tiles collectively referred to by numeral 80, each tile 80 spanning the distance between two adjacent support beams 76 such that together the tiles 80 form a support surface 82 for supporting cabinet assemblies 14 thereabove.; ¶ [0080], specifically, referring again to FIGS. 3, 5 and 6, when door*

assembly 118 is closed, cool air from within space 78 is provided through controller 21 and conduit members 89 and 192 into the space 151 defined by plenum door assembly 118.;

therefore, the second air management box would be in fluid communication between the supply outlet of the cooling system 18 and the electronic equipment within the cabinet)

The combined teachings can be modified to meet this/these limitation(s) as follows:

- modify the system of Hruby so that there is a cooling air system that supplies cooling air to the electronic cabinet via an elevated floor and further include the second air management box of Bishop with all its components on the opposite side of the first air management box already present within the system of Hruby and connect the second air management box to the cooling air system of the combined teachings

A person of ordinary skill in the art prior to the effective filing date of the claimed invention would have been motivated to make the above modification(s) because:

- the cooling air system would allow for cooled air to be provided to the heat generating equipment within the air cabinet (Bishop, ¶ [0062], *An air source 18 is located inside environment 10 and provides cooling air to environment 10 in a manner which will be described in more detail below*) and further the second air management box of Bishop allows for air to be distributed directed towards the electronic equipment located within the cabinet (Bishop, ¶ [0071], *door assembly 118 includes a flat stiff planar member 140 which serves dual functions including closing a front side of housing 106 and forming a plenum wall to help direct cool air within housing 106*)

Zushi teaches of:

- **a plurality of plates detachably coupled to the wall of the second air management box** (Fig. 1, see plates 13 positioned on both the inlet and the outlet of the electronic components; Col. 3, lines 24-28, *In this embodiment, therefore, the cooling air flow rate 5 of each card can be freely*

adjusted by adjusting the pressure adjustment device 13 according to the pressure loss characteristics depending upon the average air-flow sectional area of the card.; the plates 13 of Zushi can be adjusted and as such must be detachable in order to be adjusted)

The combined teachings can be modified to meet this/these limitation(s) as follows:

- attach the detachable plates 13 of Zushi to the outlets of the second air management box of Bishop as needed depending on the airflow characteristics of the electronic components within the cabinets

A person of ordinary skill in the art prior to the effective filing date of the claimed invention would have been motivated to make the above modification(s) because:

- utilizing perforated plates on both of the air management boxes would allow for the air pressure through the system to be adjusted as needed depending on the electronic equipment within the cabinet (Zushi, Col. 3, lines 15-28, *Thus, the cards 3 having different pressure loss characteristics are mounted on the mother board 4. In order to attain a desired cooling air flow rate 5 for each card, a pressure adjustment device 13 shown in FIG. 6 is provided at a cooling air inlet 10 and/or a cooling air outlet 11 of each card for adjusting the pressure loss characteristics of the card. The pressure loss characteristics of each card can be freely adjusted by using the pressure adjustment device. In this embodiment, therefore, the cooling air flow rate 5 of each card can be freely adjusted by adjusting the pressure adjustment device 13 according to the pressure loss characteristics depending upon the average air-flow sectional area of the card.*)

Conclusion

26. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date

of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL J GIORDANO whose telephone number is (571)272-8940. The examiner can normally be reached M-Fr 8 AM - 5 PM EST.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edelmira Bosques can be reached on (571) 270-5614. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: <https://patentcenter.uspto.gov>. Visit <https://www.uspto.gov/patents/apply/patent-center> for more information about Patent Center and <https://www.uspto.gov/patents/docx> for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 17/735,530
Art Unit: 3762

Page 21

/M.J.G./
Examiner, Art Unit 3762

/JORGE A PEREIRO/
Primary Examiner, Art Unit 3799

<i>Notice of References Cited</i>	Application/Control No. 17/735,530		Applicant(s)/Patent Under Reexamination Elkins et al.	
	Examiner MICHAEL J GIORDANO		Art Unit 3762	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date YYYY-MM-DD	Name	CPC Classification	US Classification
*	A	US-20080266789-A1	2008-10-30	Hruby; Kevin L.	H05K7/20572	361/692
*	B	US-5684674-A	1997-11-04	Yin; Jim	H05K7/1429	361/825
*	C	US-20020149911-A1	2002-10-17	Bishop, Jerry L.	H05K7/20836	361/690
*	D	US-4739444-A	1988-04-19	Zushi; Shizuo	H05K7/20563	361/691
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date YYYY-MM-DD	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in YYYY-MM-DD format are publication dates. Classifications may be US or foreign.

U.S. Patent and Trademark Office
PTO-892 (Rev. 11-2023)

Notice of References Cited

Part of Paper No. 20241213