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(54) **DUALPOWER TEMPERATURE REGULATION SYSTEM**

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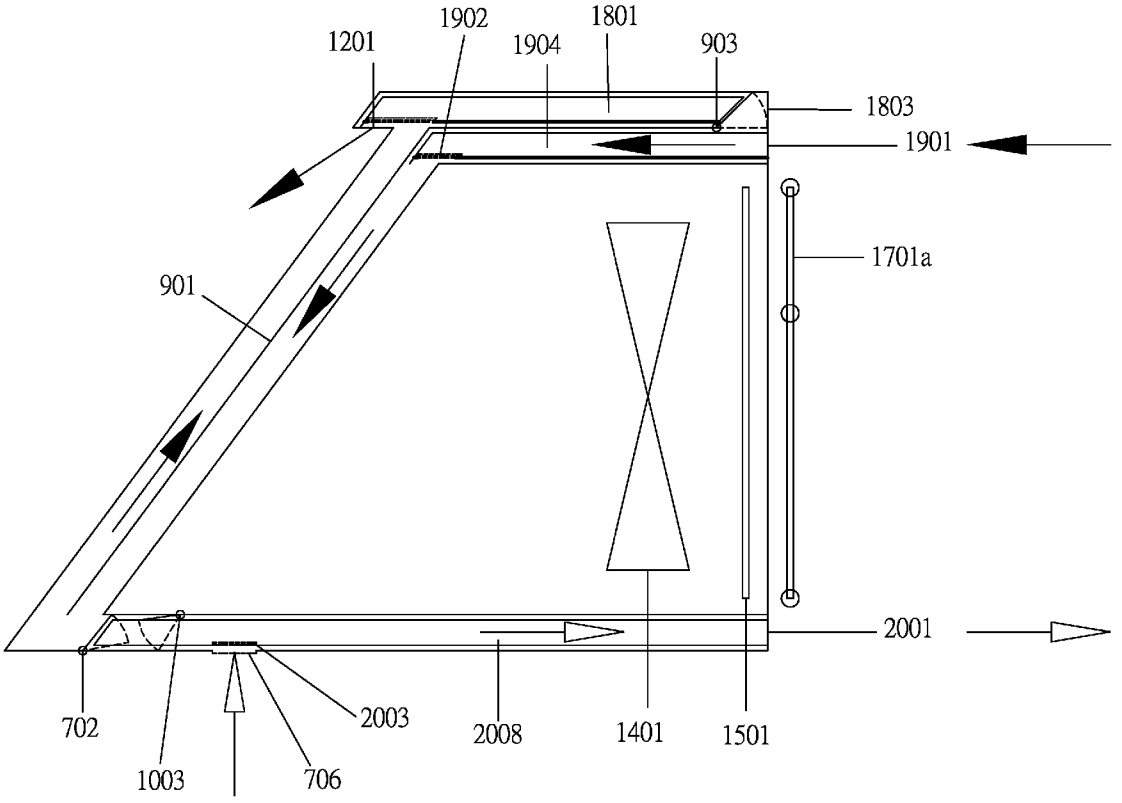
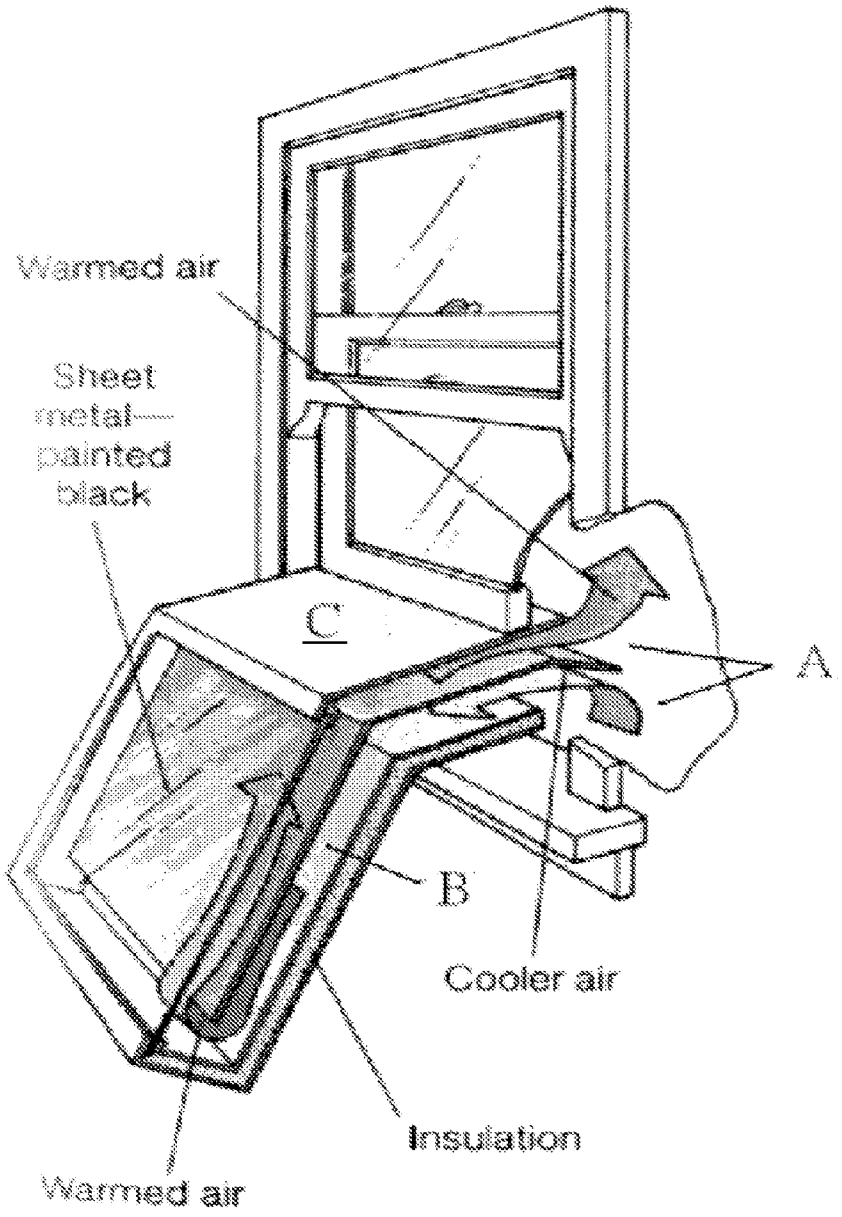
(52) **U.S. Cl.** **62/235.1**

(57) **ABSTRACT**

A temperature regulation system of the type utilizing free solar energy or electrical power, or both of them to heat up air and create thermo-siphoning effect and air driving force in order to regulate temperature, exchange air, and filter air. With the aids of electrical fan temperature regulation module to enhance its performance and support its functions while solar energy is not available or less. Three movable air flow channel units (**1801**, **1904**, and **2008**) that direct air flow directions in system to makes system functions controllable. A two-versioned bi-direction air flow channel extender (**2201***a* and **2201***b*) being attached to system to improve indoor heat convection, and air filters (**1806** and **2005**), fan filter (**1501**), and indoor air filter units (**2301** and **2302**) being equipped in or attached to system makes air filtration possible. A system framework (FIG. **7**) provides supporting mechanism for all system parts, aid, and attachments, and provides mechanism for mounting system to object.





(Note: This prior art drawing is scanned originally from Ortho's Home Improvement Encyclopedia at the page of 353, and A, B and C are added here as reference characters for this drawing)

FIG. 1

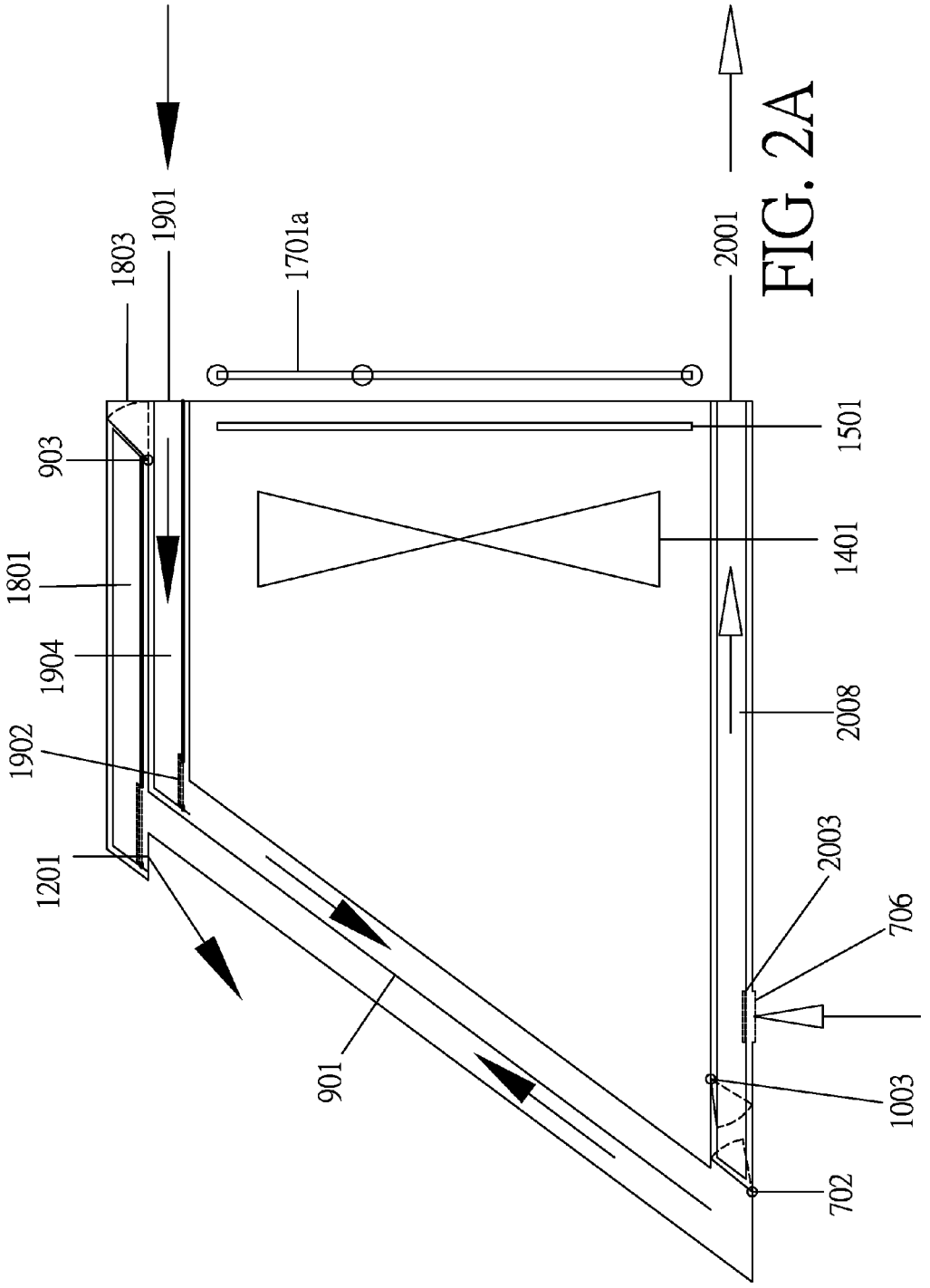

1803
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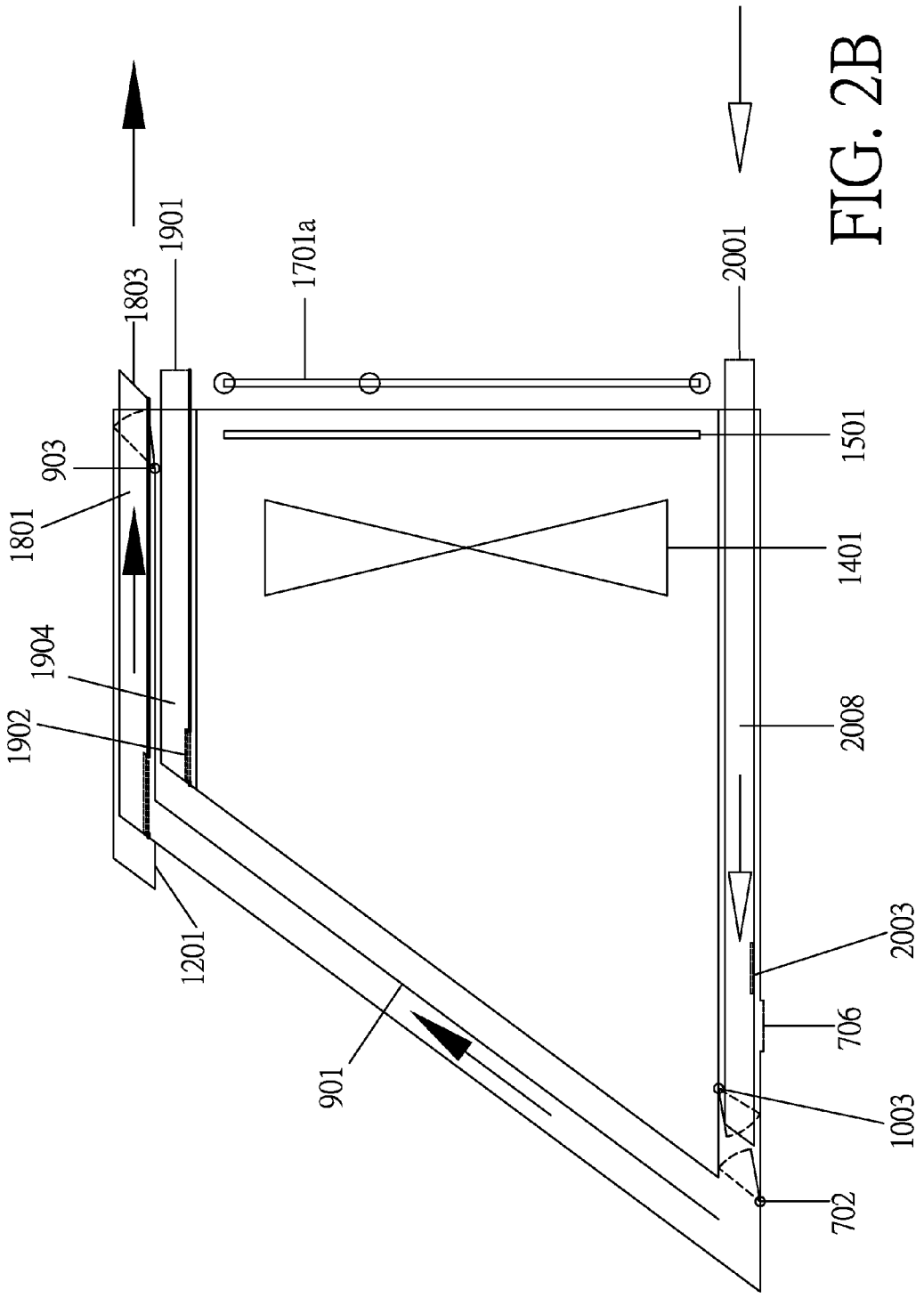
FIG. 2A


1901
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1003
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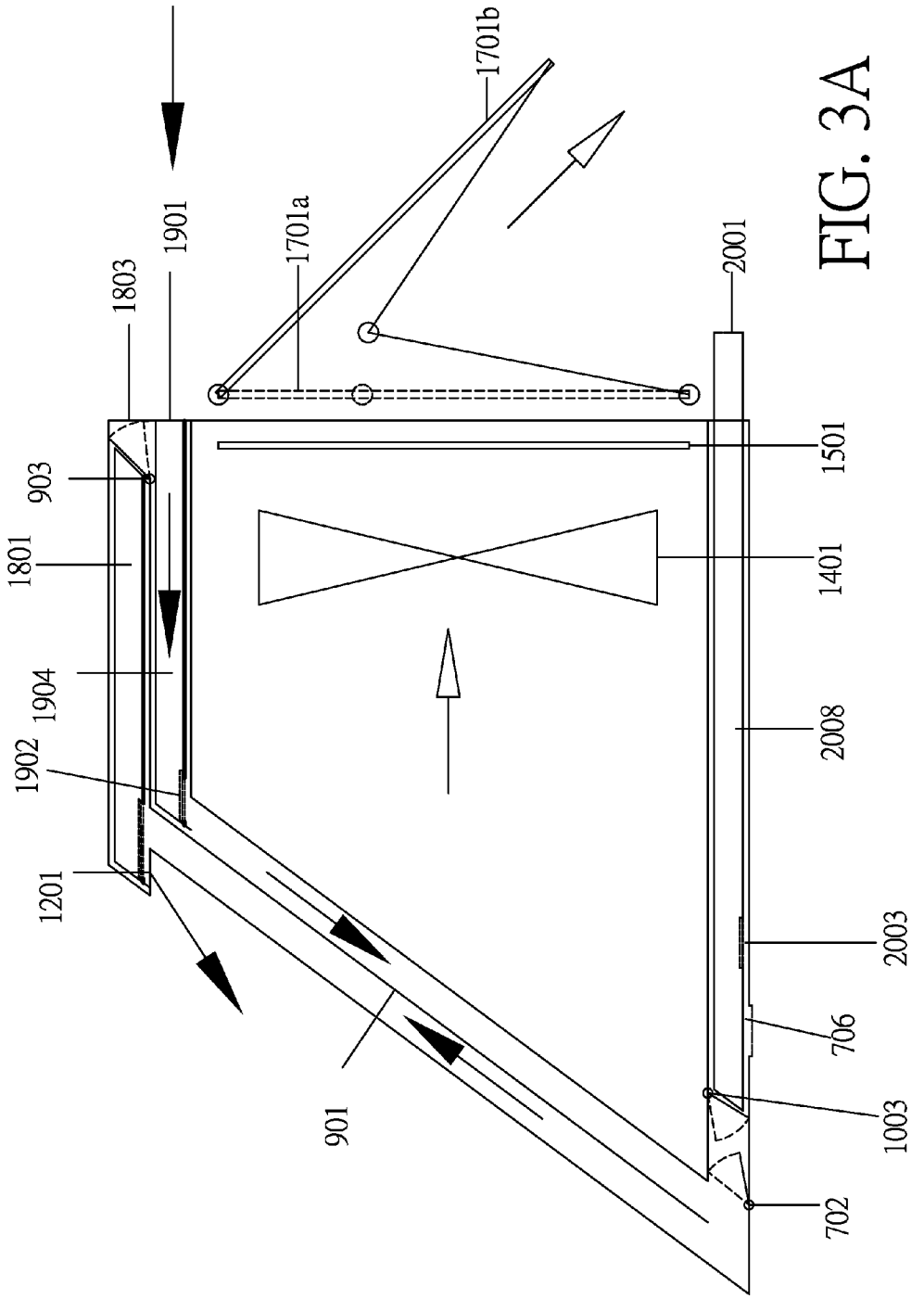
FIG. 2B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1901
1701a
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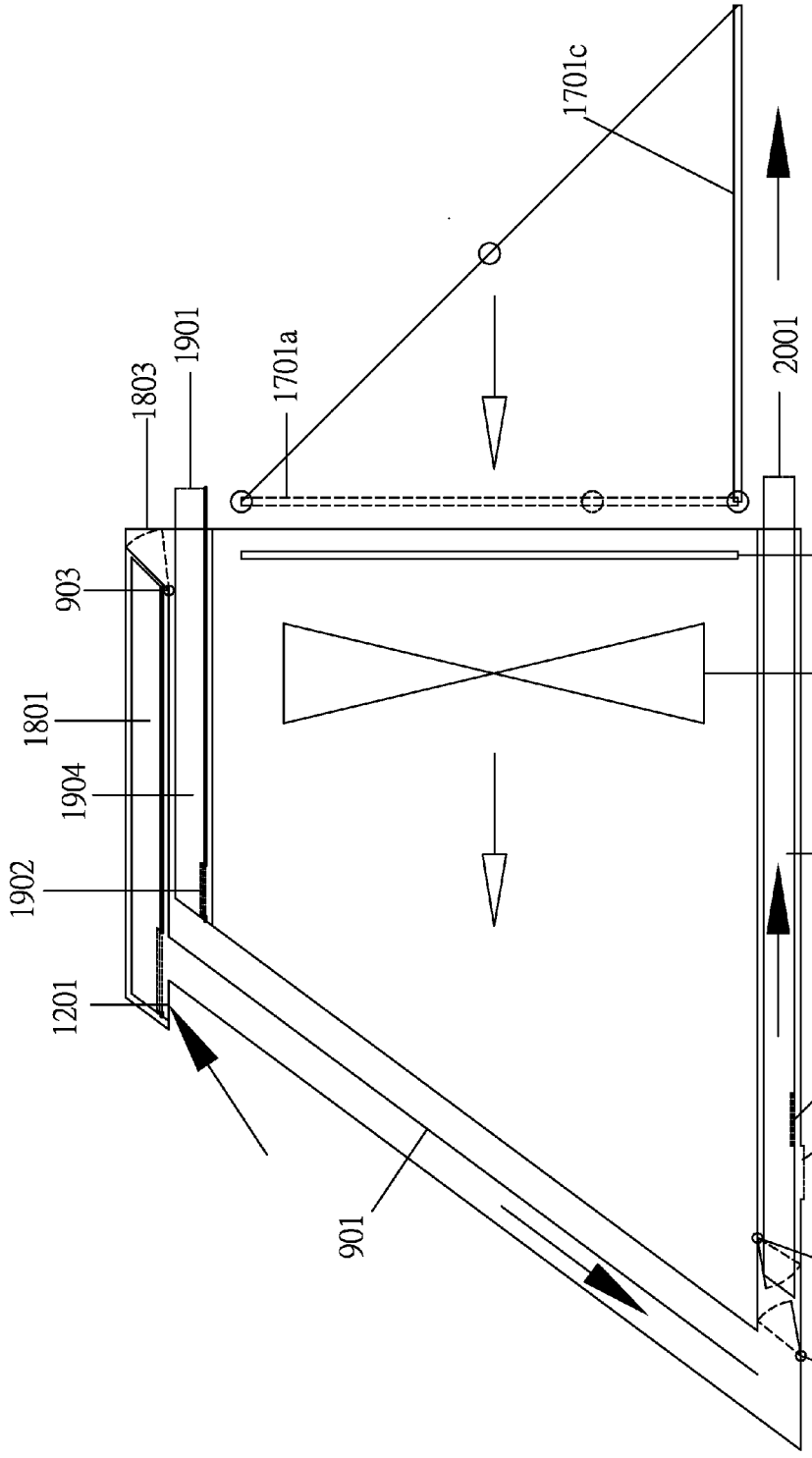
FIG. 3A


1701c
1803
1901
1701a
2001
903
1501
1801
1401
1904
2008
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1201
2003
706
901
1003
702

FIG. 3B

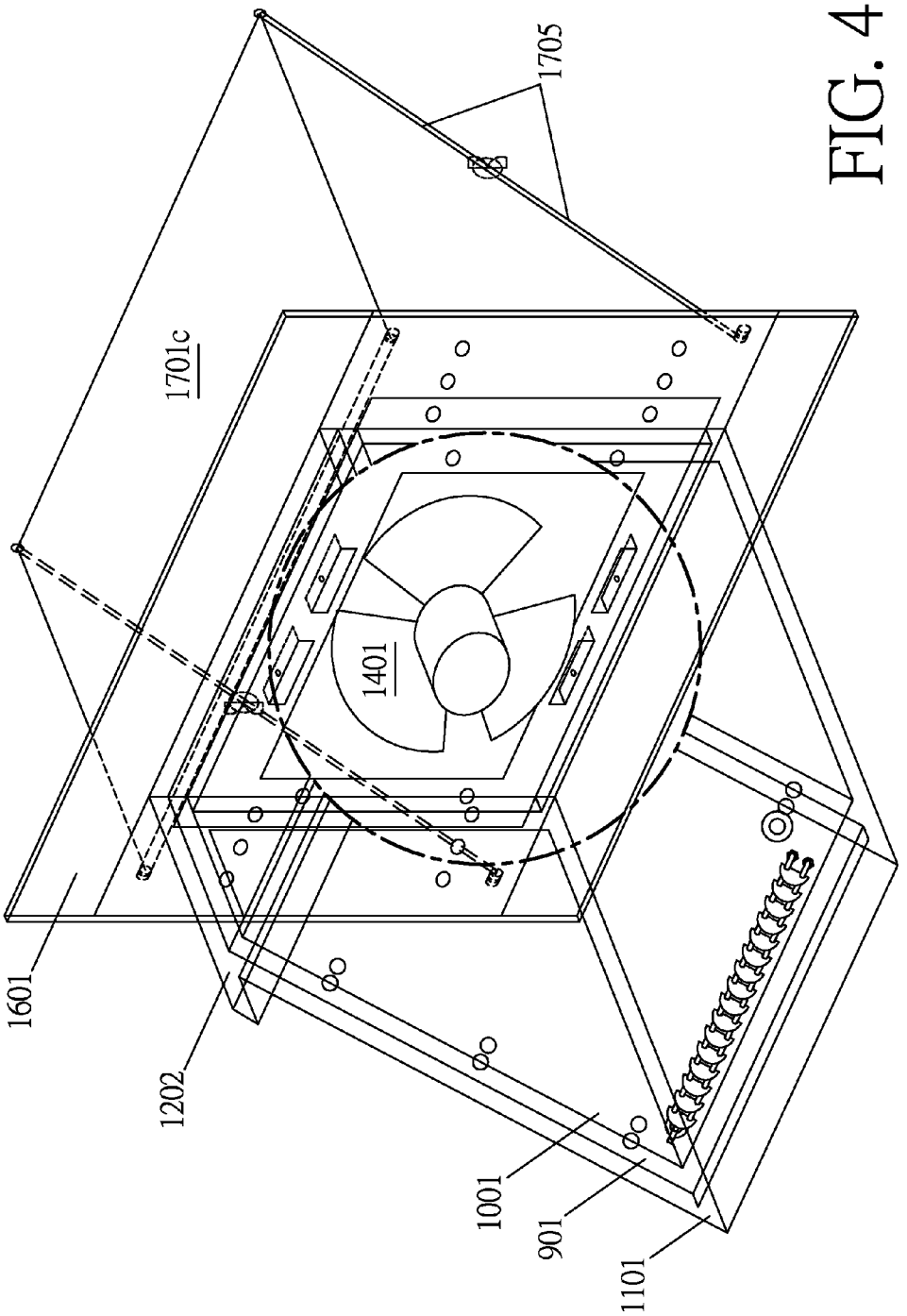

FIG. 4

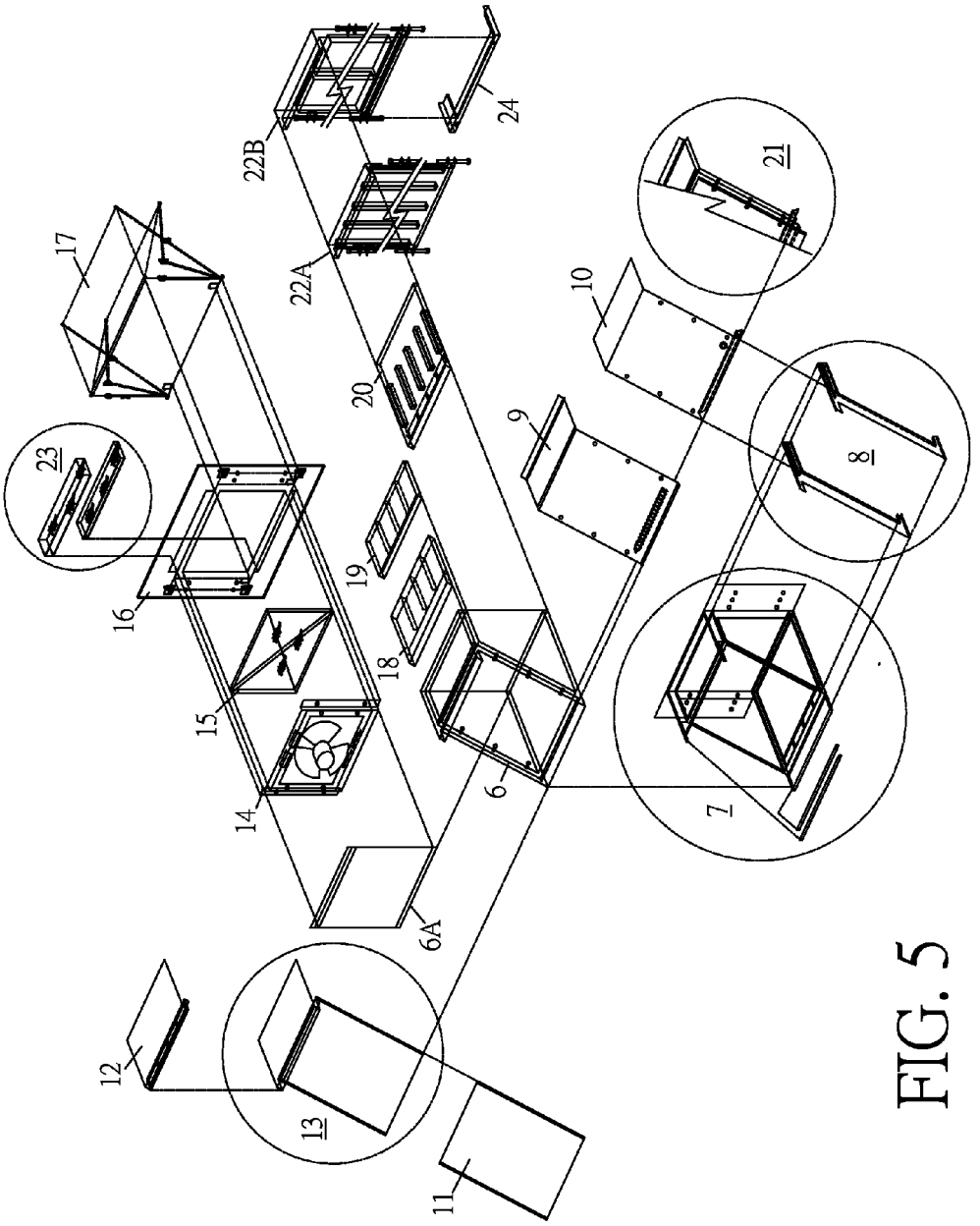

FIG. 5

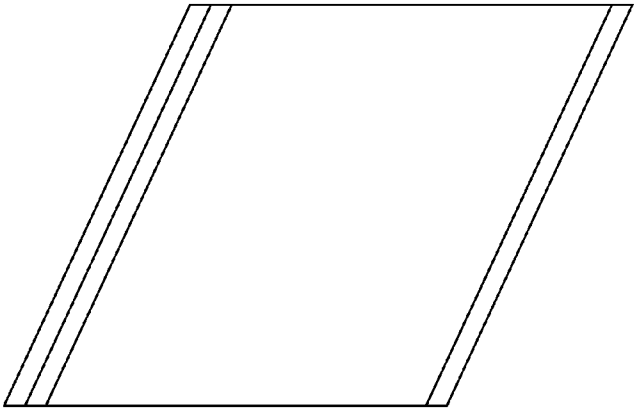

FIG. 6A

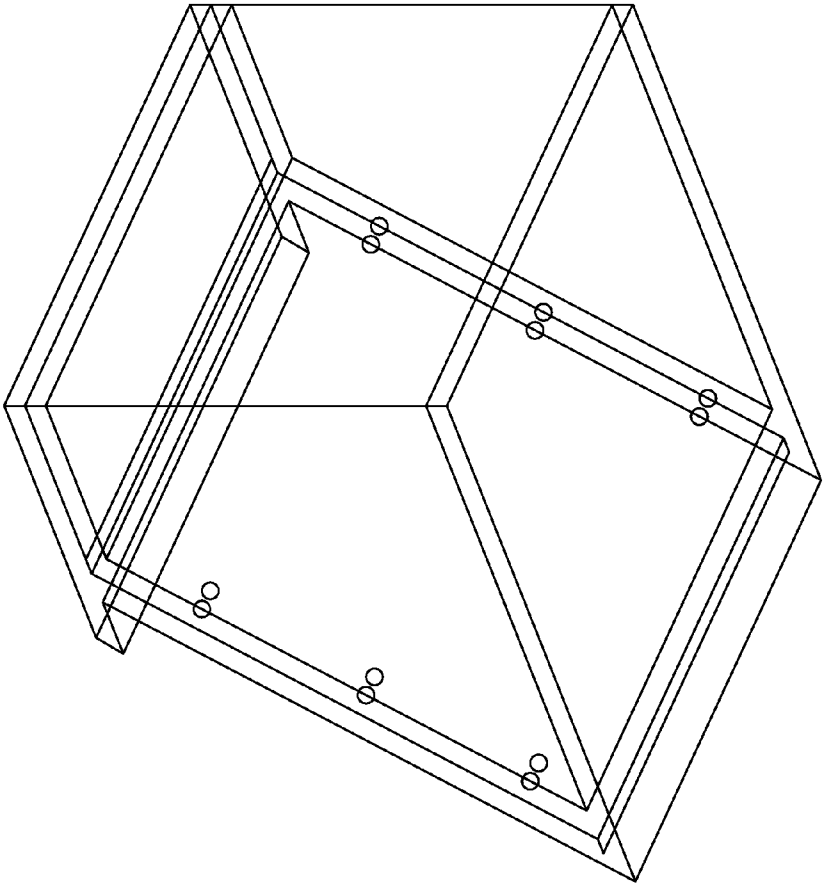

FIG. 6

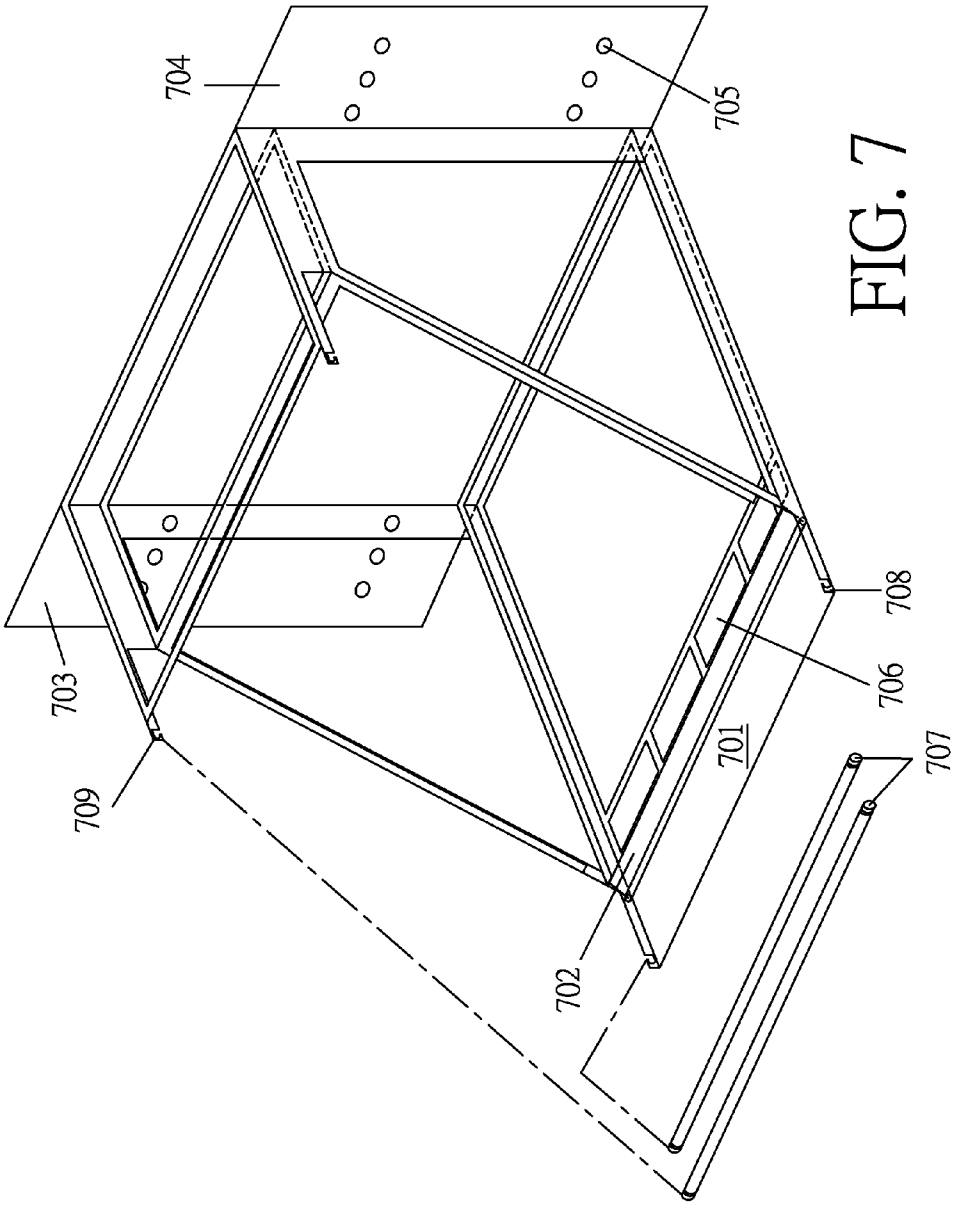

FIG. 7

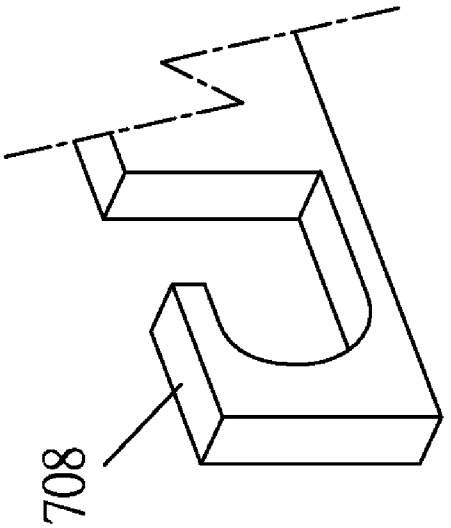

FIG. 7B

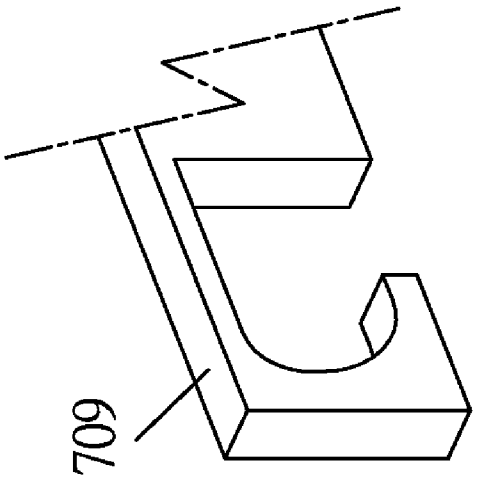

FIG. 7A

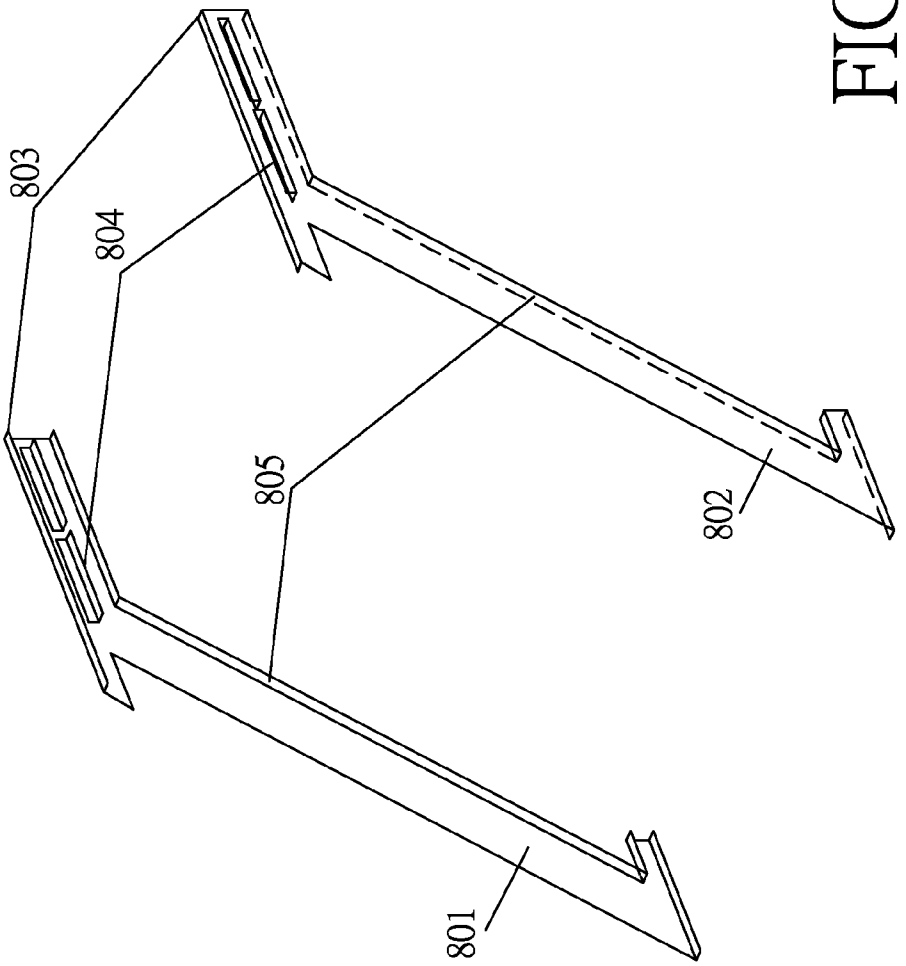

FIG. 8

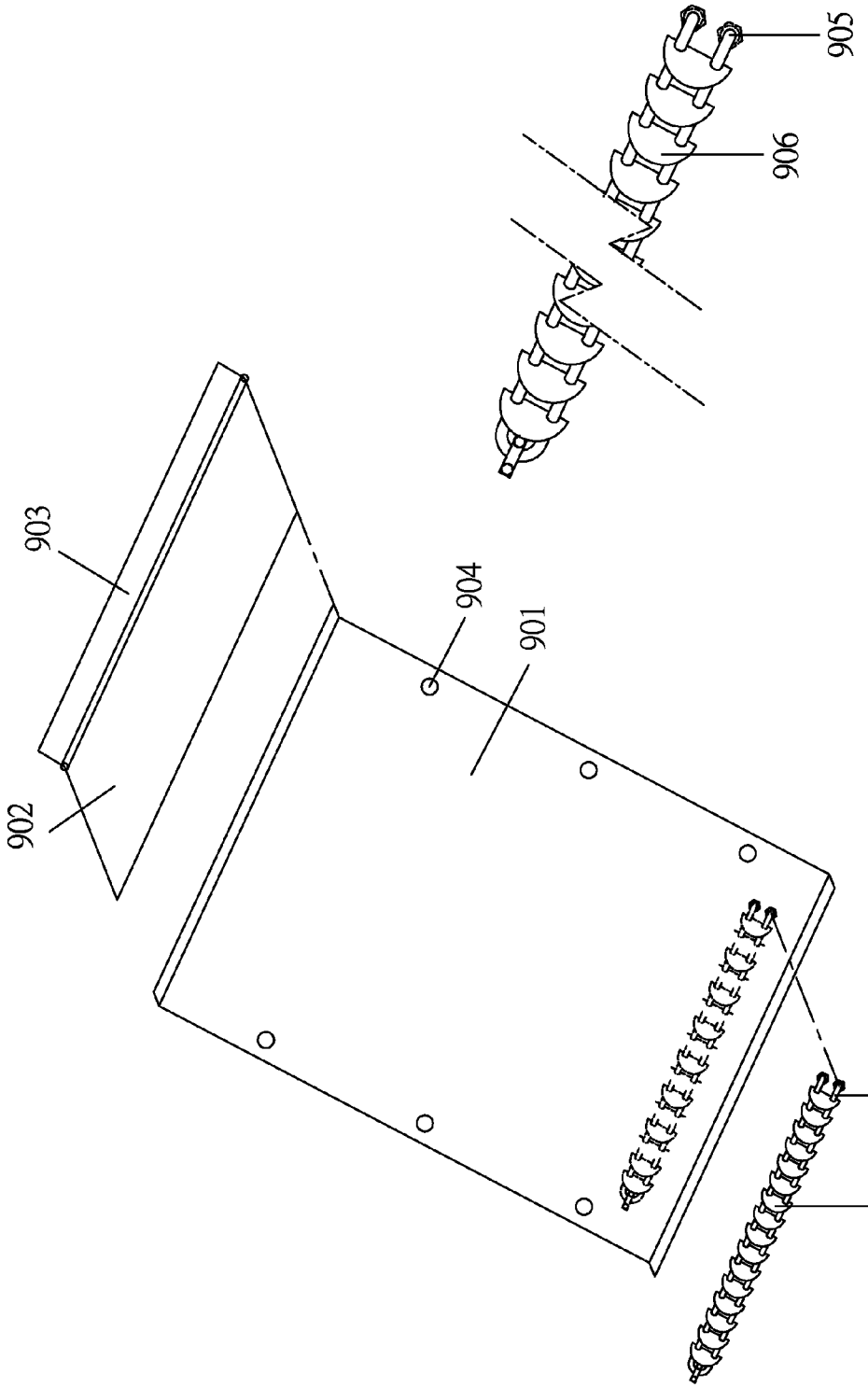

FIG. 9A

FIG. 9

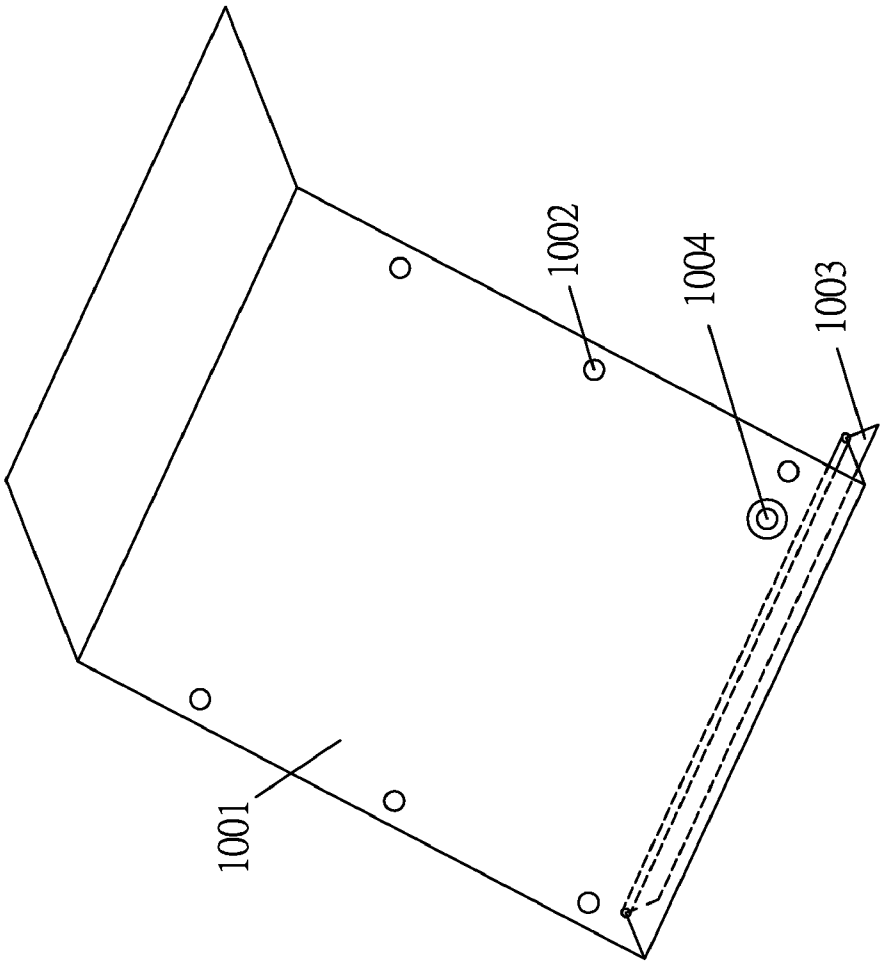

FIG. 10

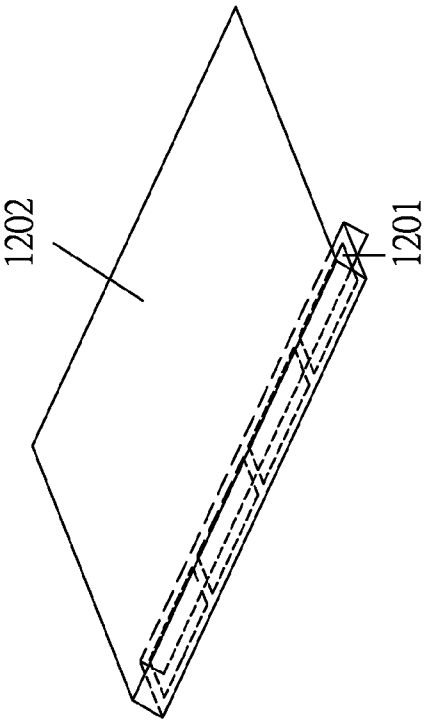

FIG. 12

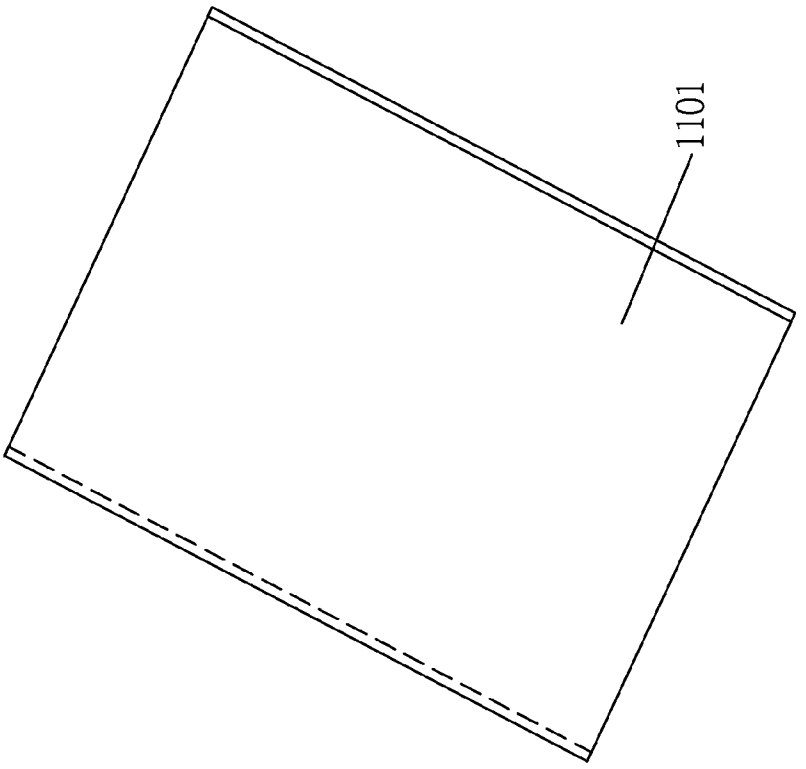

FIG. 11

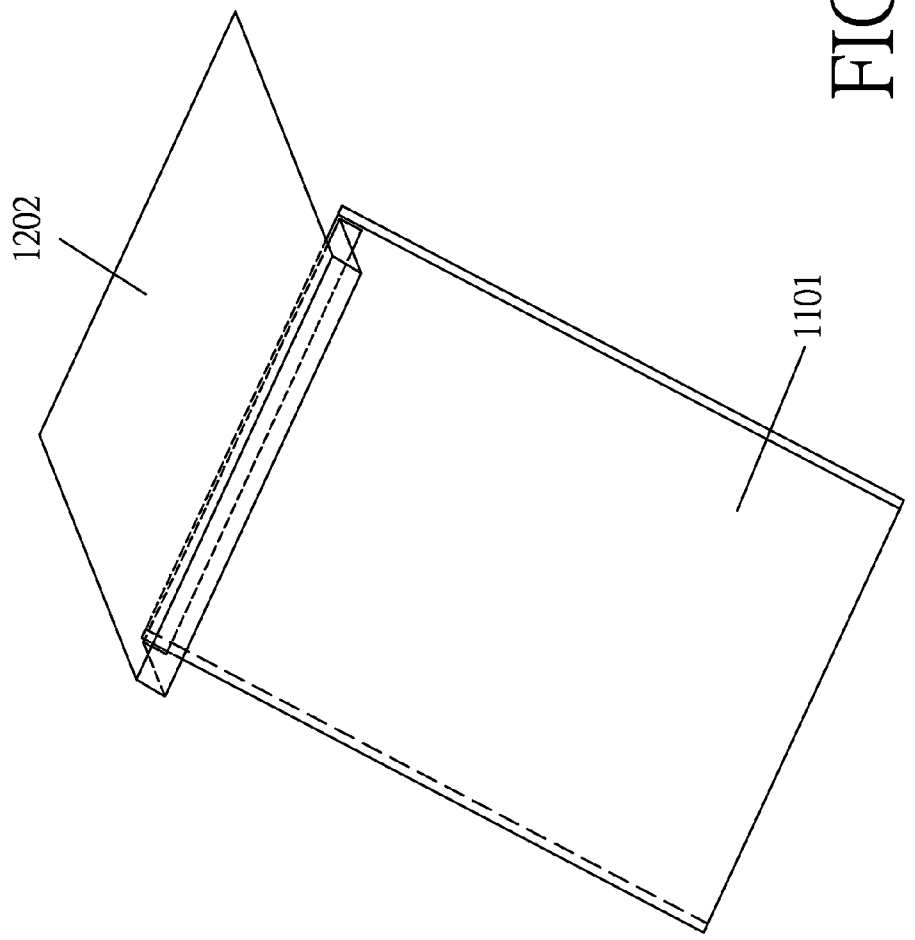

FIG. 13

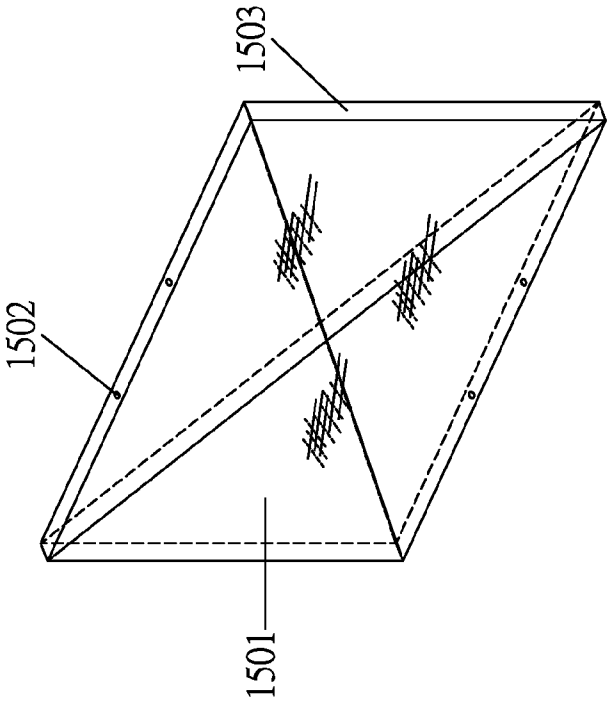

FIG. 15

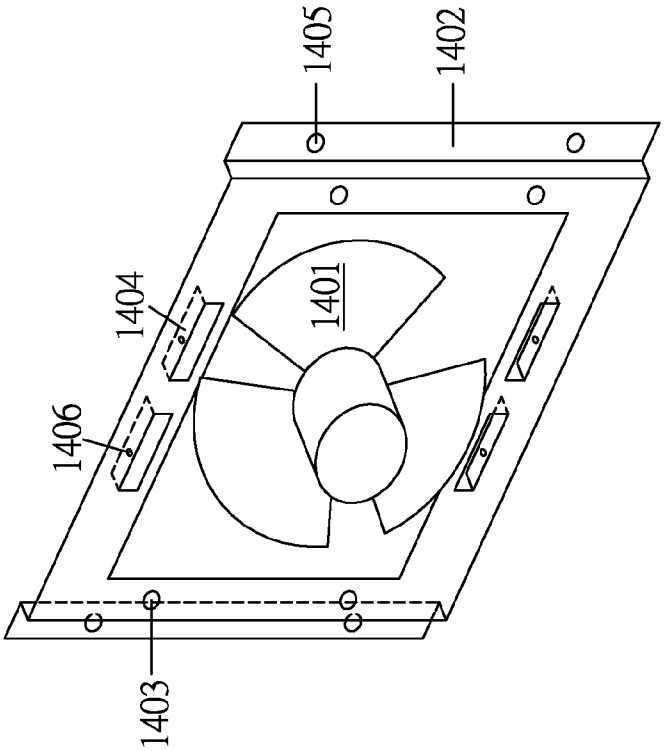

FIG. 14

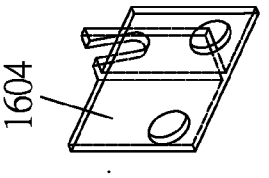

FIG. 16A

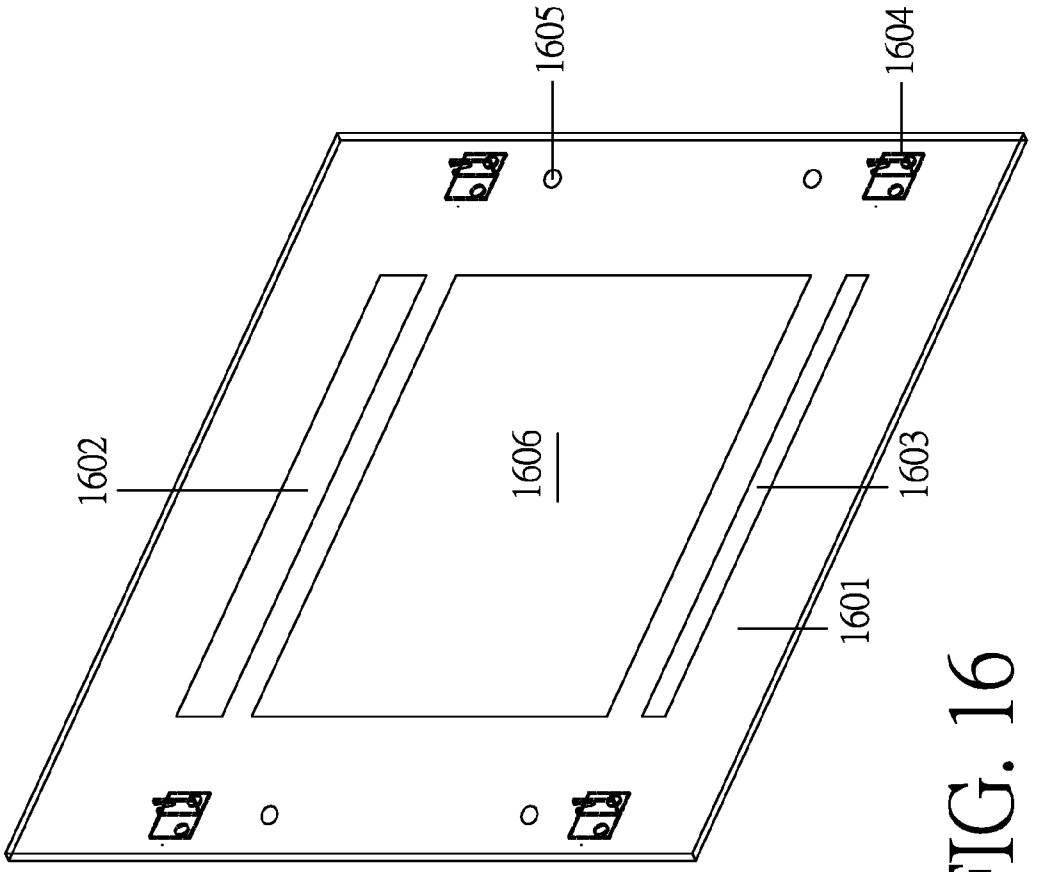

FIG. 16

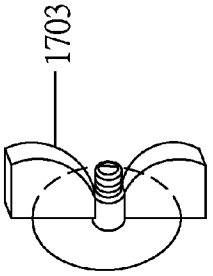

FIG. 17A

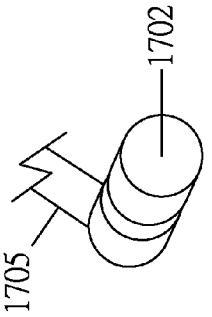

FIG. 17B

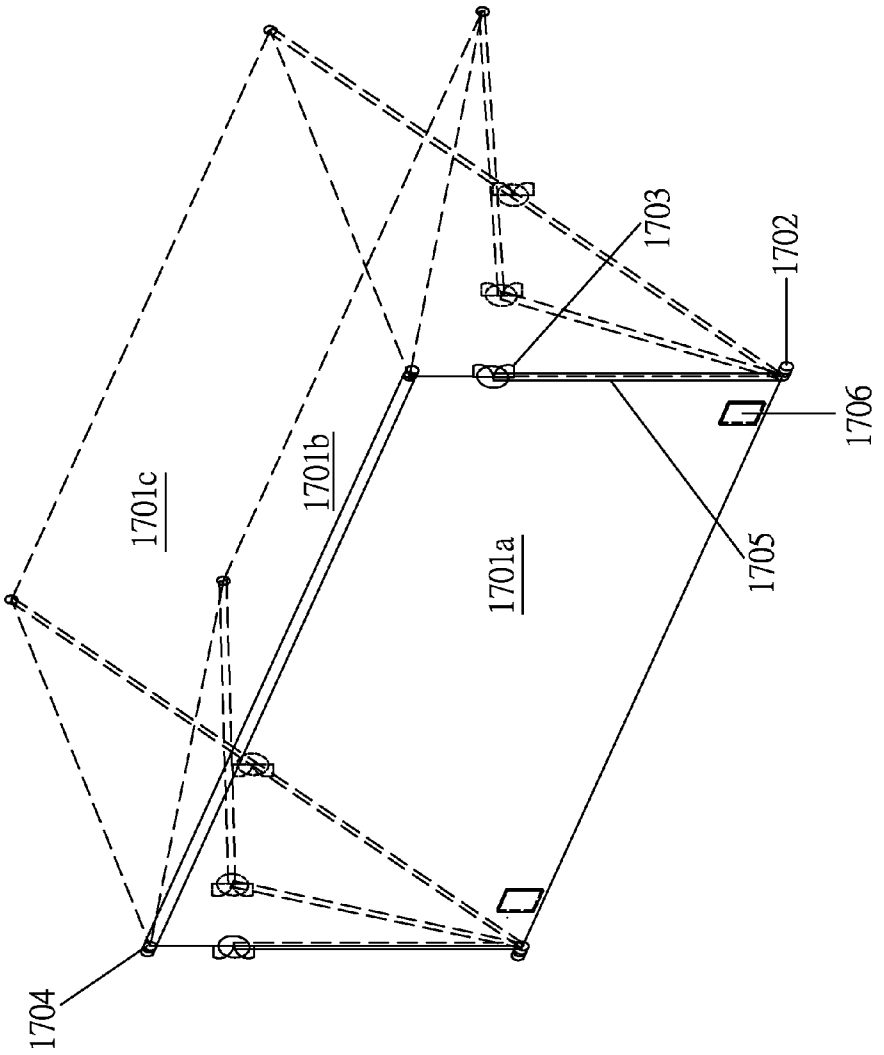

FIG. 17

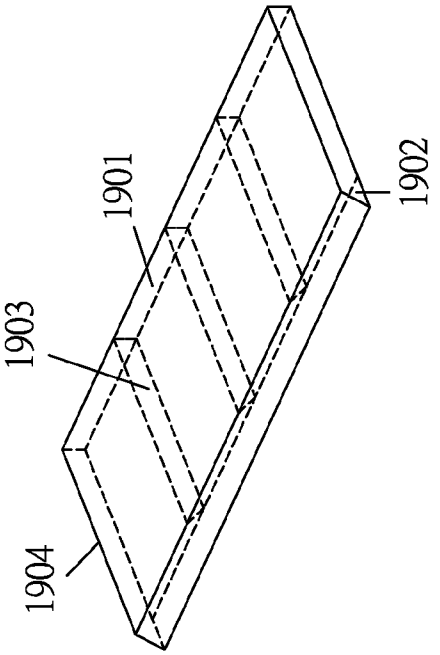

FIG. 19

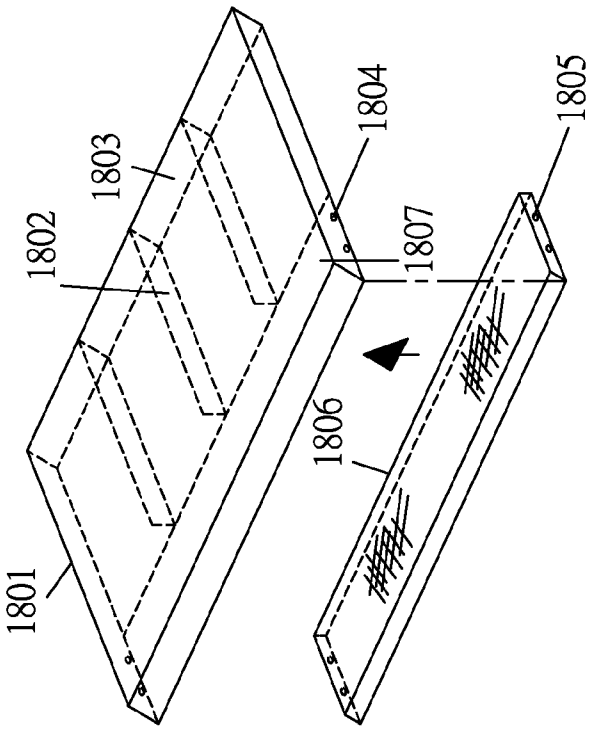

FIG. 18

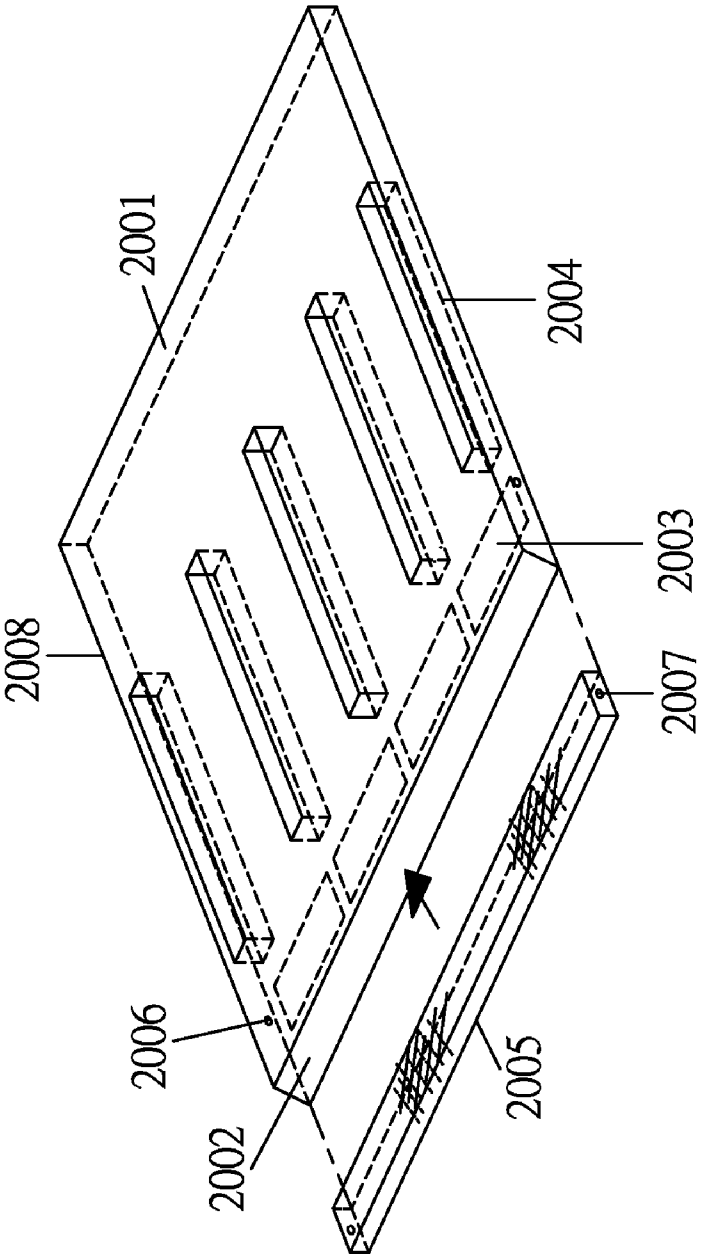

FIG. 20

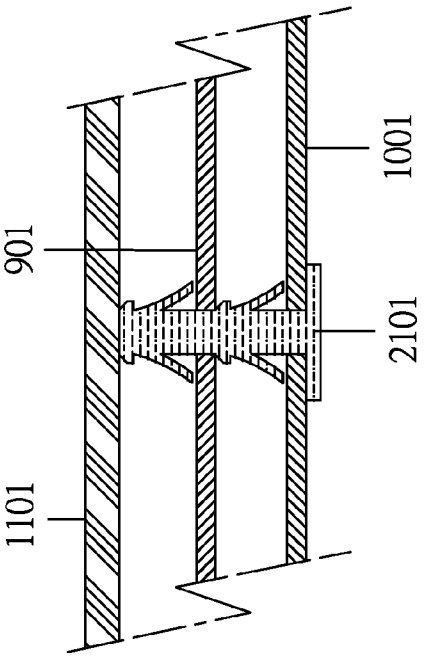

FIG. 21A

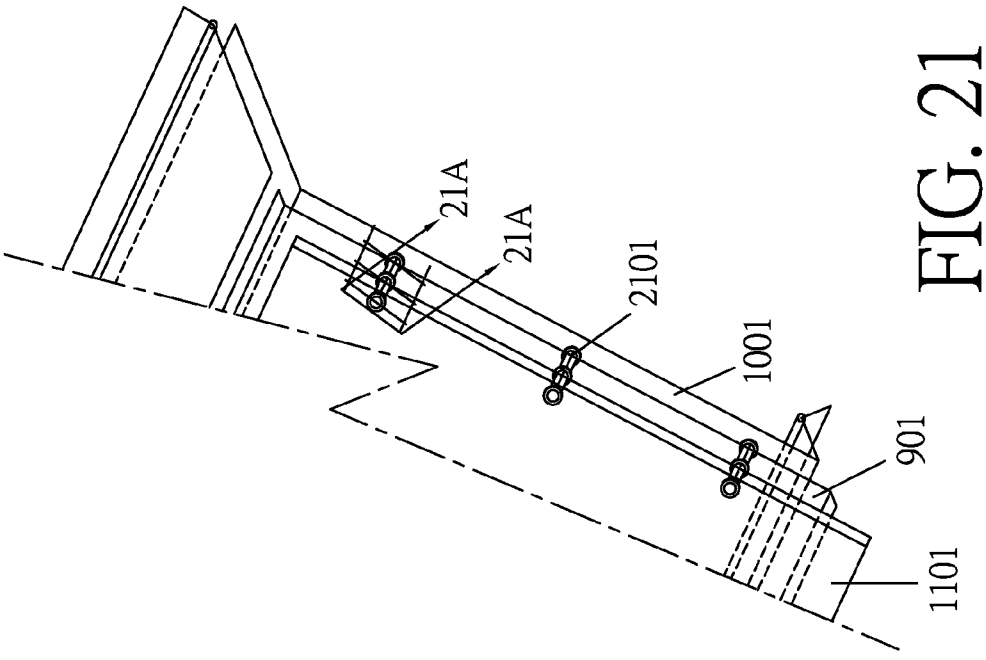

FIG. 21

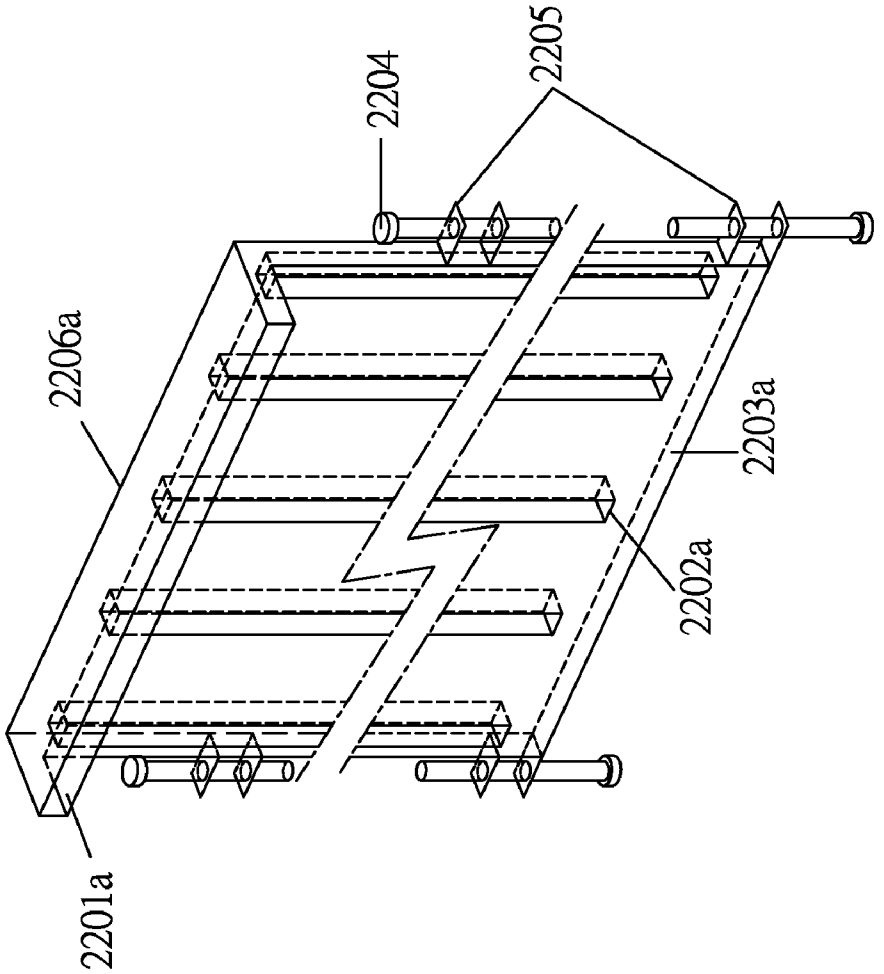

FIG. 22A

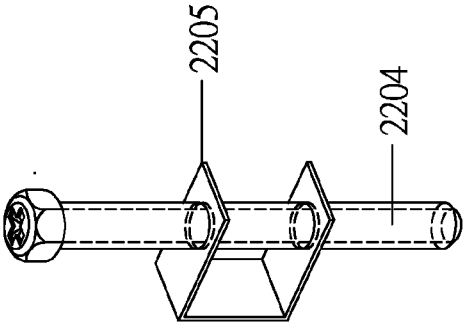

FIG. 22C

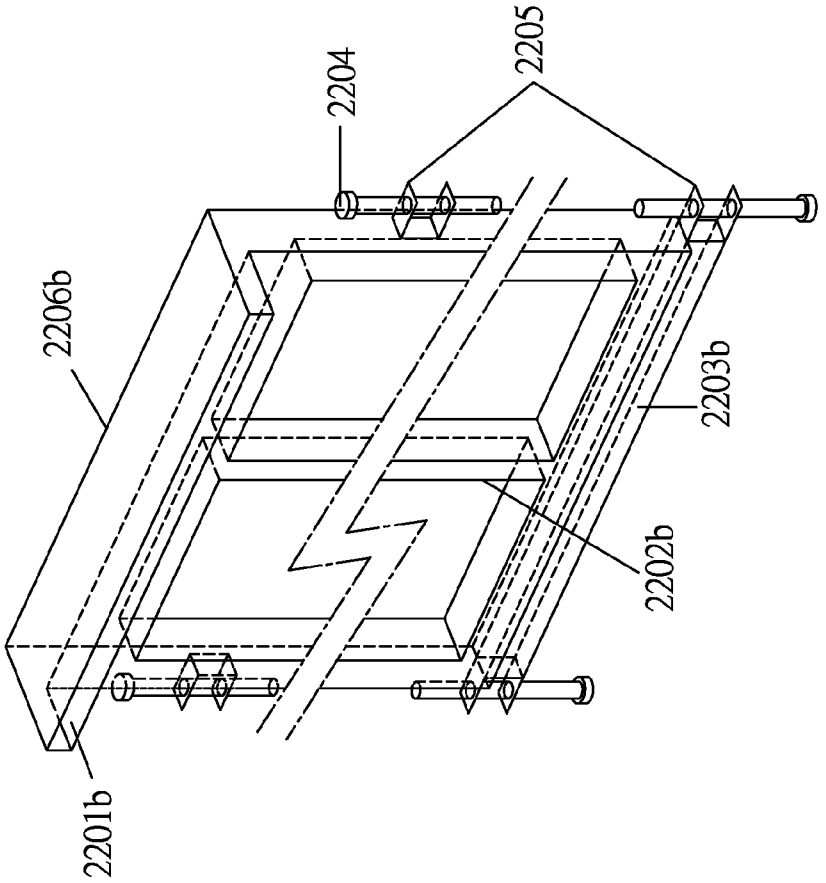

FIG. 22B

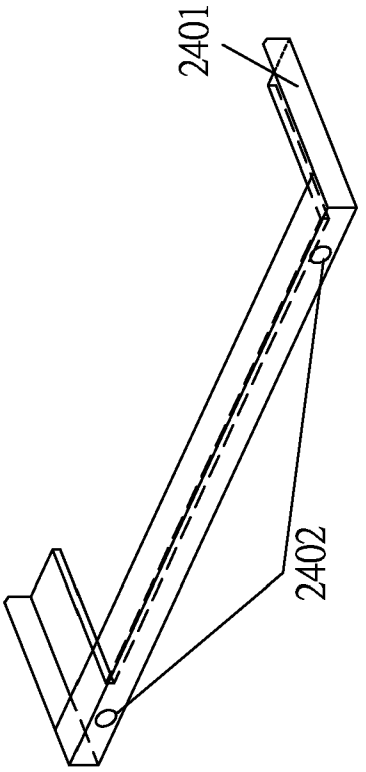

FIG. 24

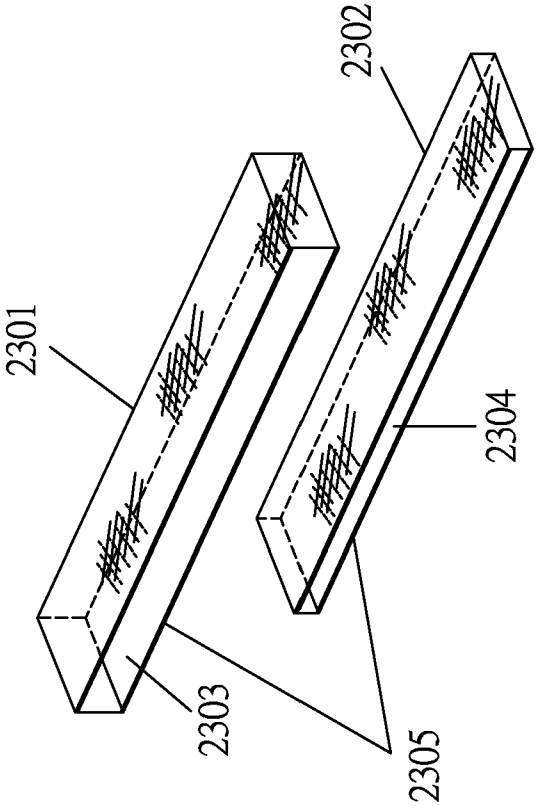

FIG. 23

DUALPOWER TEMPERATURE REGULATION SYSTEM

CROSS-REFERENCE TO RELATED APPLICATIONS:

[0001] Taiwan patent filing number: 095218967, filing date: Oct. 26, 2006

STATEMENT REGARDING FEDERAL R&D

[0002] Not applicable

BACKGROUND

[0003] 1. Field of Invention

[0004] This invention relates to temperature regulation systems, especially to such systems which mainly utilize free solar energy per energy saving consideration and secondly applies electrical power, or both of them to regulation temperature.

[0005] 2. Description of Prior Art

[0006] As shown in referred prior art drawing in FIG. **1**, this prior art with limited functions and some problems that we suffer as following.

Note: This referred prior art is referred from page 353 of "Ortho's home improvement encyclopedia", San Francisco, Calif. 94105, ISBN-098721-066-2 UPC 05620, first printing in July, 1985. And the prior art drawing in FIG. **1** was scanned originally from the page of 353 of the encyclopedia, with A, B, and C being added in FIG. **1** and hereafter as reference characters for depicting this prior art.

[0007] (1) There is only temperature raising function without temperature lowering.

[0008] (2) There is no air exchanging function.

[0009] (3) Refer to A in FIG. **1**, the air inlet and outlet of the referred prior art system are locations arranged too close, therefore; the indoor heat convection can only be taken effect well at the zone above air inlet.

[0010] (4) Refer to B in FIG. **1**, no heat insulation material being attached to the back of the solar heating plate of the prior art system makes the entering system indoor air being heated up before it reaches the main heating zone, and creating some sort of reverse thermo-siphoning effect there that impedes the air flow. And as some degree of heat energy being absorbed by this reverse thermo-siphoning, therefore deteriorates the desired thermo-siphoning effect at the heating zone and system performance.

[0011] (5) No aid to enhance system performance in shot time.

[0012] (6) Refer to C in FIG. **1**, no heat insulation material being attached to its top cover, and some degree of heat energy being absorbed by outdoor environment, therefore deteriorates the system performance.

[0013] (7) There is no air filtration function.

[0014] (8) System being halted or malfunction while solar energy is not available or less.

[0015] Refer to Operations section for the details of how the prior art problems each is solved by this invention.

SUMMARY

[0016] In accordance with the present invention a temperature regulation system comprises a hot air flow channel and an air flow channel that are interconnected and collaboratively working for system functions, with an electrical fan temperature regulation module being attached to system as an aid for performance enhancement and supporting system functions, and a bi-direction air flow channel extender and a set of indoor air filter units being attached as system attachments for bettering indoor heat convection and indoor air filtration.

ADVANTAGES

[0017] Accordingly, besides the advantages of the temperature regulation system described in my above patent, several advantages of the present invention are:

[0018] (a) to provide a system which can utilize free solar energy to regulate temperature;

[0019] (b) to provide a system which can utilize solar energy to exchange air indoor with outdoor;

[0020] (c) to provide a system which can filter air;

[0021] (d) to provide a system which can utilize electrical power to regulate temperature, exchange air and filter air, and alternatively substitute for solar energy or collaboratively work with it while solar energy is not available or less, or for system performance enhancement;

[0022] (e) to provide an aid of electrical fan temperature regulation module to system which can enhance system functions in short time, and support system functions while solar energy is not available or less;

[0023] (f) to provide a two-versioned bi-direction air flow channel extender to system which can improve indoor heat convection;

[0024] (g) to provide a set of indoor air filter units to system which can filter indoor air; and

[0025] (h) to provide a system whose air filters, and fan filter of its attachments can be replaced conveniently and rapidly.

[0026] Further advantages will become apparent from a consideration of the ensuing description and drawings.

DRAWING FIGURES

[0027] FIG. **1** shows the referred prior art.

[0028] FIG. **2**A shows the operation reference for lowering temperature with solar energy or electrical heating element, or both.

[0029] FIG. **2**B shows the operation reference for raising temperature with solar energy or electrical heating element, or both.

[0030] FIG. **3**A shows the operation reference for lowering temperature with the aid of electrical fan.

[0031] FIG. **3**B shows the operation reference for raising temperature with the aid of electrical fan.

[0032] FIG. **4** shows the main system assembly. It is the designating drawing for this invention.

[0033] FIG. **5** shows the overall system exploded drawing (includes the aid and attachments) with each reference numeral in it depicts the related drawing figure showing hereafter.

[0034] FIG. **6** shows the reference base of system exploded drawing.

[0035] FIG. **6**A shows the reference base of the rear end system interface.

[0036] FIG. **7** shows the details of the system framework

[0037] FIG. **7**A shows the enlarged figure of reference numeral **709**.

[0038] FIG. 7B shows the enlarged figure of reference numeral **708**.
[0039] FIG. **8** shows the details of the left and right hand side covers.
[0040] FIG. **9** shows the details of the solar heating plate with electrical heating element being attached
[0041] FIG. 9A shows the details of reference numeral **905** and **906**
[0042] FIG. **10** shows the details of the air guiding plate
[0043] FIG. **11** shows the details of the transparent plate.
[0044] FIG. **12** shows the details of the top cover.
[0045] FIG. **13** shows the assembly reference of top cover and transparent plate.
[0046] FIG. **14** shows the details of electrical fan module.
[0047] FIG. **15** shows the details of the fan filter.
[0048] FIG. **16** shows the details of the bezel
[0049] FIG. **16**A shows the enlarged figure of reference numeral **1604**.
[0050] FIG. **17** shows the details of the fan gate module.
[0051] FIG. **17**A shows the enlarged figure of reference numeral **1703**.
[0052] FIG. **17**B shows the enlarged figure of reference numeral **1702** with portion of **1705**.
[0053] FIG. **18** shows the details of the hot air flow channel unit.
[0054] FIG. **19** shows the details of the indoor hot air flow channel unit.
[0055] FIG. **20** shows the details of the bi-direction air flow channel unit.
[0056] FIG. **21** shows the assembly reference of air guiding plate, solar heating plate, and transparent plate with 3 level step-down stand-offs.
[0057] FIG. **21**A shows the detailed sectioned view of how the 3 level step-down stand-off is assembled.
[0058] FIG. **22**A shows the details of bi-direction air flow channel extender version A
[0059] FIG. **22**B shows the details of bi-direction air flow channel extender version B
[0060] FIG. **22**C shows the details of reference numeral **2204** and reference numeral **2205**
[0061] FIG. **23** shows the details of a set of indoor air filter units.
[0062] FIG. **24** shows the supporting bracket for bi-direction air flow channel extender

REFERENCE NUMERIALS IN DRAWINGS

[0063] FIG. **1** Prior art reference
[0064] A air inlet and outlet are locations being arranged too close
[0065] B no insulation material being attached to solar heating plate
[0066] C no insulation material being attached to top cover
[0067] FIGS. **2**A, **2**B, **3**A, and **3**B Operation reference figures
[0068] **702** front hinged gate
[0069] **706** base opening
[0070] **901** solar heating plate
[0071] **903** upper hinged gate
[0072] **1003** hinged gate for bi-direction air flow channel unit
[0073] **1201** top cover opening
[0074] **1401** electrical fan
[0075] **1501** fan filter
[0076] **1701***a* fan gate
[0077] **1701***b* and **1701***c* references for different fan gate opening angles
[0078] **1801** hot air flow channel unit
[0079] **1803** rear end opening of hot air flow channel unit
[0080] **1901** rear end opening of indoor hot air flow channel unit
[0081] **1904** indoor hot air flow channel unit
[0082] **2001** rear end opening of bi-direction air flow channel unit
[0083] **2003** front end bottom opening of bi-direction air flow channel unit
[0084] **2008** bi-direction air flow channel unit
[0085] FIG. **5** overall system exploded drawing (includes aid and attachments)
[0086] **6** system reference figure
[0087] **6**A reference for the rear end system interface
[0088] **7** system framework
[0089] **8** left and right hand side covers
[0090] **9** solar heating plate with electrical heating element being attached
[0091] **10** air guiding plate
[0092] **11** transparent plate
[0093] **12** top cover
[0094] **13** assembly reference of top cover and transparent plate
[0095] **14** electrical fan module
[0096] **15** fan filter
[0097] **16** bezel
[0098] **17** fan gate module
[0099] **18** hot air flow channel unit
[0100] **19** indoor hot air flow channel unit
[0101] **20** bi-direction air flow channel unit
[0102] **21** 3 level step-down stand-off assembly reference
[0103] **22**A bi-direction air flow channel extender version A
[0104] **22**B bi-direction air flow channel extender version B
[0105] **23** indoor air filter units
[0106] **24** supporting bracket for bi-direction air flow channel extender
[0107] FIG. **6** system reference figure
[0108] FIG. **6**A reference for the rear end system interface
[0109] FIG. **7** system framework
[0110] **701** base
[0111] **702** front hinged gate
[0112] **703** left hand side mounting plate
[0113] **704** right hand side mounting plate
[0114] **705** system framework hole
[0115] **706** base opening
[0116] **707** locking bolt
[0117] **708** bottom lock set
[0118] **709** upper lock set
[0119] FIG. 7A Enlarged figure for reference numeral **709**
[0120] FIG. 7B Enlarged figure for reference numeral **708**
[0121] FIG. **8** Left and right hand side covers
[0122] **801** left hand side cover
[0123] **802** right hand side cover
[0124] **803** supporting plate for top cover
[0125] **804** supporting plate for solar heating plate
[0126] **805** supporting plate for air guiding plate

[0127] FIG. **9** Solar heating plate with electrical heating element being attached

[0128] **901** solar heating plate

[0129] **902** rear guiding plate

[0130] **903** upper hinged gate

[0131] **904** solar heating plate hole

[0132] **905** electrical heating element

[0133] **906** heat dispersing fin

[0134] FIG. **9**A Enlarged view for **905** and **906**

[0135] FIG. **10** Air guiding plate

[0136] **1001** air guiding plate

[0137] **1002** air guiding plate hole

[0138] **1003** hinged gate for bi-direction air flow channel unit

[0139] **1004** hole with strain relief fitting for electrical heating element power cord

[0140] FIG. **11** Transparent plate

[0141] **1101** transparent plate

[0142] FIG. **12** Top cover

[0143] **1201** top cover opening

[0144] **1202** top cover

[0145] FIG. **13** Assembly reference of top cover and transparent plate

[0146] FIG. **14** Electrical fan module

[0147] **1401** electrical fan

[0148] **1402** fan module frame

[0149] **1403** electrical fan mounting hole

[0150] **1404** supporting plate for fan filter mounting

[0151] **1405** electrical fan module mounting hole

[0152] **1406** nipple for fan filter mounting

[0153] FIG. **15** Fan filter

[0154] **1501** fan filter

[0155] **1502** fan filter dimple

[0156] **1503** fan filter frame

[0157] FIG. **16** Bezel

[0158] **1601** Bezel

[0159] **1602** top opening

[0160] **1603** bottom opening

[0161] **1604** lock set

[0162] **1605** bezel hole

[0163] **1606** center opening

[0164] FIG. **16**A Enlarged figure for reference numeral **1604**

[0165] FIG. **17** Fan gate module

[0166] **1701***a* fan gate

[0167] **1701***b* and **1701***c* references for different fan gate opening angles

[0168] **1702** short 2 level step-down bolt

[0169] **1703** screw bolt and wing nut

[0170] **1704** long 2 level step-down bolt

[0171] **1705** fan gate supporting arm

[0172] **1706** magnet

[0173] FIG. **17**A Enlarged figure for reference numeral **1703**

[0174] FIG. **17**B Enlarged figure for reference numeral **1702**

[0175] FIG. **18** Hot air flow channel unit

[0176] **1801** hot air flow channel unit

[0177] **1802** supporting bracket of hot air flow channel unit

[0178] **1803** rear end opening of hot air flow channel unit

[0179] **1804** nipple for mounting the air filter of hot air flow channel unit

[0180] **1805** dimple of the air filter of hot air flow channel unit

[0181] **1806** air filter of hot air flow channel unit

[0182] **1807** front bottom opening of hot air flow channel unit

[0183] FIG. **19** Indoor hot air flow channel unit

[0184] **1901** rear end opening of indoor hot air flow channel unit

[0185] **1902** front end bottom opening of indoor hot air flow channel unit

[0186] **1903** supporting bracket of indoor hot air flow channel unit

[0187] **1904** indoor hot air flow channel unit

[0188] FIG. **20** Bi-direction air flow channel unit

[0189] **2001** rear end opening of bi-direction air flow channel unit

[0190] **2002** front end opening of bi-direction air flow channel unit

[0191] **2003** front end bottom opening of bi-direction air flow channel unit

[0192] **2004** slot frame of bi-direction air flow channel unit

[0193] **2005** air filter of bi-direction air flow channel unit

[0194] **2006** nipple for mounting the air filter of bi-direction air flow channel unit

[0195] **2007** dimple of the air filter of bi-direction air flow channel unit

[0196] **2008** bi-direction air flow channel unit

[0197] FIG. **21** 3 level step-down stand-off assembly reference

[0198] **901** solar heating plate

[0199] **1001** air guiding plate

[0200] **1101** transparent plate

[0201] **2101** 3 level step-down stand-off

[0202] FIG. **21**A Sectioned view of 3 level step-down stand-off assembly reference

[0203] FIGS. **22**A and **22**B Bi-direction air flow channel extender version A and version B

[0204] **2201***a* front end top opening of bi-direction air flow channel extender version A

[0205] **2201***b* front end top opening of bi-direction air flow channel extender version B

[0206] **2202***a* slot frame of bi-direction air flow channel extender version A

[0207] **2202***b* slot frame of bi-direction air flow channel extender version B

[0208] **2203***a* bottom opening of bi-direction air flow channel extender version A

[0209] **2203***b* bottom opening of bi-direction air flow channel extender version B

[0210] **2204** screw bolt

[0211] **2205** supporting bracket for screw bolt

[0212] **2206***a* Bi-direction air flow channel extender version A

[0213] **2206***b* Bi-direction air flow channel extender version B

[0214] FIG. **22**C Enlarged figure for reference numeral **2204** and **2205**

[0215] FIG. **23** Indoor air filter units

[0216] **2301** indoor air filter unit **1**

[0217] **2302** indoor air filter unit **2**

[0218] **2303** opening of unit **1**

[0219] **2304** opening of unit **2**

[0220] **2305** magnetic material

[0221] FIG. **24** Supporting bracket for bi-direction air flow channel extender

[0222] **2401** supporting bracket for bi-direction air flow channel extender

[0223] **2402** hole of supporting bracket mounting

DESCRIPTION—FIGS. **5-24**—First Embodiment

[0224] This embodiment of the system of the present invention is illustrated in FIG. **5**, the overall system exploded diagram of this invention which shows all of the main parts comprised and how each of them are interconnected to built up the system, and how system aid and attachments are connected to system for their purpose each, and each reference numeral in FIG. **5** depicts the related drawing figure, FIG. **6**-FIG. **24**, showing hereafter for all the details.

[0225] Two air flow channels are categorized to depict how the system is structured, and how system aid and attachments each is structured and connected to system as following.

[0226] (a). A dual power, solar energy and electrical power, temperature regulation system comprising 2 connected air flow channels, hot air flow channel and air flow channel, and the matched left and right hand side covers to build up the system in a system framework.

[0227] (a1). A system framework in FIG. **7** that structures, supports, and encloses all the main parts in this system, supports system attachments and aid directly or indirectly, and provides mechanism for mounting this system to its object. A base **701** with heat insulation material being attached on top is being arranged at its front bottom as the bottom base of hot air flow channel and air flow channel. A front hinged gate **702** is arranged above the base at the middle to match with the front end opening of bi-direction air flow channel unit **2002**, and several base openings **706** are arranged further behind on the base to match with the front end bottom opening of bi-direction air flow channel unit **2003**.

[0228] There are two bottom lock sets **708** and two upper lock sets **709** being arranged at the front tips of system framework for securing transparent plate **1101** and top cover **1202** with locking bolts **707** that are rubber rings being attached on to system framework. A left hand side mounting plate **703** and a right hand side mounting plate **704** with several system framework holes **705** formed on them each for screws securing system framework with electrical fan module in FIG. **14**, bezel **1601**, and its object. Sealing strips are attached to its **4** horizontal edges at its rear end to sealing contact with bezel. Refer to FIG. **7**A for enlarged figure for reference numeral **709** and FIG. **7**B for enlarged figure for reference numeral **708**

[0229] (a2). The hot air flow channel is the channel where solar energy is absorbed, flowing air is heated up, thermo-siphoning effect and air drive force are created, and the heated air flow is guided and controlled to exit outdoor or indoor, or outdoor air is guided to enter system through its outdoor interface, be heated up, and exit to air flow channel and indoor while electrical fan is in use for temperature rising, It comprising

[0230] (a21). A solar heating plate **901** in FIG. **9** is a formed metal plate with front side being black colored, heat insulation material being attached to its back, and sealing strips being attached to its edges at its rear top and left and right hand sides to sealing contact with its rear guiding plate **902**, left hand side cover **801**, and right hand side cover **802**. The rear guiding plate being arranged to the rear end top of solar heating plate, and an upper hinged gate **903** is arranged at the rear end edge of the rear guiding plate. Several solar heating plate holes **904** are formed on it for using 3 level step-down stand-offs **2101** (FIG. **21**) to secure it with air guiding plate **1001** (FIG. **21**) in a fixed distance to form the zone of air flow channel and support their assembly structure. An electrical heating element **905** with heat dispersing fins **906** being attached on it at the front bottom. Refer to FIG. **9**A for their enlarged view.

[0231] (a22). A transparent plate **1101** in FIG. **11** is location in system being arranged in front of solar heating plate at a fixed distance created by the 3 level step-down stand-offs **2101** to form the zone of hot air flow channel, and it is the system front cover and a front air flow guiding plate of hot air flow channel. Sealing strips are attached to its **4** edges to sealing contact with hot air flow channel unit **1801**, left hand side cover **801**, right hand side cover **802**, and base **701**

[0232] (a23). A top cover **1202** in FIG. **12** is a formed plate with front cover being tilt and protrusion designed, several top cover openings **1201** being arranged below the front tilted cover as system front outdoor interface, and one tilted plate being formed behind the openings for touching with the top edge of transparent plate **1101**. Heat insulation material is attached to its inside at top and front, and sealing strips are attached to its edges at the left and right hand sides and the bottom edge of the tilted plate to sealing contact with left hand side cover **801**, right hand side cover **802**, and transparent plate **1101**.

[0233] (a24). A hot air flow channel unit **1801** in FIG. **18** is a formed unit with its front cover being same tilt designed as top cover to match with each other, a front bottom opening of hot air flow channel unit **1807** being arranged below the front cover with the opening width being matched (about equal) to the width of top cover openings **1201** plus the top opening width of hot air flow channel. Several nipples for mounting the air filter of hot air flow channel **1804** are arranged inside this unit for matching with the dimples of the air filter of hot air flow channel unit **1805** of air filter of hot air flow channel unit **1806** that will be assembled to it from the front bottom opening. One tilted rear end opening of hot air flow channel unit **1803** is arranged at its rear end. There are several supporting brackets of hot air flow channel unit **1802** being arranged in it to support unit structure.

[0234] This unit is designed to be movable in system, its upper hinged gate **903** will be closed and its front bottom opening of hot air flow channel unit **1807** will match with the top cover openings **1201** and the top opening of hot air flow channel to enable heated air exiting outdoor through top cover openings **1201** while the unit is location in system being moved toward front. The upper hinged gate **903** will be opened, and the front bottom opening of hot air flow channel unit **1807** will match with the top opening of hot air flow channel to enable heated air entering indoor from the rear end opening of hot air flow channel unit **1803** while this unit is location in system being moved toward rear.

[0235] (a3). The air flow channel is a channel that guides indoor cool air entering system, and outdoor cool air entering indoor, or heated air entering indoor while electrical fan is in use for raising temperature. It comprising

[0236] (a31). An air guiding plate **1001** in FIG. **10** is a formed plate with heat insulation material being attached on its front side and bottom beneath, and sealing strips being attached to its edges at left and right hand sides, and the rear bottom to sealing contact with left hand side cover **801**, right hand side cover **802**, and bi-direction air flow channel unit

2008. Several air guiding plate holes **1002** are formed on it for using 3 level step-down stand-offs **2101** (FIG. **21**) to secure it with solar heating plate **901**. A hinged gate for bi-direction air flow channel unit **1003** is arranged at its rear bottom and a hole with strain relief fitting for electrical heating element power cord **1004** is arranged to it at front bottom. This air guiding plate is also treated as the rear cover of front system portion.

[0237] (a32). An indoor hot air flow channel unit **1904** in FIG. **19** is a formed unit with front end cover being tilt designed to match with the tilt of solar heating plate **901** and a sealing strip being attached to its front bottom edge. This unit is designed to be movable in system; its front end bottom opening of indoor hot air flow channel unit **1902** will be opened while this unit is location in system being moved toward front to enable indoor air entering system through its rear end openings of indoor hot air flow channel unit **1901**. The front end bottom edge will touch with air guiding plate at the top, and the front end bottom opening will be closed and no air flows in this unit while this unit is location in system being moved toward rear. Several supporting brackets of indoor hot air flow channel unit **1903** are arranged in it to support its structure.

[0238] (a33). A bi-direction air flow channel unit **2008** in FIG. **20** is a formed unit with rear end opening of bi-direction air flow channel unit **2001**, front end opening of bi-direction air flow channel unit **2002**, and front end bottom openings of bi-direction air flow channel unit **2003** being arranged in it. This unit is designed to be movable in system; the front end opening will close front hinged gate **702**, and the front end bottom openings will be opened while this unit is location in system being moved toward front. The front hinged gate **702** will be opened, and the front end bottom openings will be closed while this unit is location in system being moved to the middle. The hinged gate for bi-direction air flow channel unit **1003**, the front end opening, the front end bottom openings will be closed and no air flowing in this unit while this unit is location in system being moved toward rear.

[0239] There are several slot frames of bi-direction air flow channel unit **2004** arranged in it to support its structure and provide channels for outdoor air flow circulating while electrical fan **1401** is in use. Several nipples for mounting the air filter of bi-direction air flow channel unit **2006** are arranged in it on inner side walls above the front end bottom opening for matching with the dimples of air filter of bi-direction air flow channel unit **2007** to secure air filter of bi-direction air flow channel unit **2005** that is assembled from its front end opening. This unit is heat insulation material being attached or coated to its inside.

[0240] (a4). One set of left hand side cover **801** and right hand side cover **802** in FIG. **8** are two formed plates that are side covers for hot air flow channel and air flow channel, with supporting plate for top cover **803**, supporting plates for solar heating plates **804**, and supporting plate for air guiding plate **805** being arranged on them each to enable system framework (FIG. **7**) supporting them and all the fixed and movable parts that being jointed to them. Heat insulation material is attached at their inside wall each, and sealing strips are attached to each of their vertical edges at the rear end and rear bottom end.

[0241] (b). The electrical fan temperature regulation module is an aid to system to enhance system performance in short time and support system functions while solar energy is not available or less such as it is cloudy or at night time. It comprising

[0242] (b1). An electrical fan module in FIG. **14** that comprises an electrical fan **1401**, a fan hood, and a fan module frame **1402**. The electrical fan with blow-in and blow-out, and fan speed control mechanism, the fan hood (not shown in drawing) is being arranged to the surrounding of fan, sealing strips are attached at the rear end edges of the fan hood to sealing contact with fan module frame while they are assembled together with screws to the electrical fan mounting holes **1403** of fan module frame.

[0243] The fan module frame is a formed metal frame with an opening being arranged at the center to match with the electrical fan and fan filter **1501**, several supporting plates for fan filter mounting **1404** being arranged above the top and below the bottom of the center opening with the nipples for fan filter mounting **1406** being formed on supporting plates to match with the fan filter dimples **1502** for fixing and supporting fan filter **1501**. There are several electrical fan module mounting holes **1405** being arranged on left and right hand plates of fan module frame for screws securing this module to system framework in FIG. **7**.

[0244] (b2). A fan filter **1501** in FIG. **15** is an air filter with grid mesh covered on its fan filter frame **1503**, several fan filter dimples **1502** are arranged on its frame to match with the nipples for fan filter mounting **1406** of electrical fan module in FIG. **14**.

[0245] (b3). A bezel **1601** in FIG. **16** is a formed plate with several openings being arranged on it as system indoor interfaces; the top opening **1602** is the interface for hot air flow channel unit **1801** and indoor hot air flow channel unit **1904**, the central opening **1606** for electrical fan module in FIG. **14**, and the bottom opening **1603** for bi-direction air flow channel unit **2008**. Several lock sets **1604** are arranged on its back as the supporting and turning points for fan gate **1701***a* and fan gate supporting arms **1705**. There are several bezel holes **1605** being formed on it for screws securing it with system framework in FIG. **7**. Refer to FIG. **16**A for enlarged figure of lock set.

[0246] (b4). A fan gate module in FIG. **17** comprising a fan gate **1701***a* that is a formed plate with heat insulation material being attached on its front side, two magnets **1706** being attached at the bottom portion of the fan gate that locks fan gate with bezel while electrical fan is not in use, 2 pairs of fan gate supporting arms **1705** (total 4 fan gate supporting arms are used) are equipped with each pair being connected at one end, one far end of the paired fan gate supporting arms being attached to the bottom end corner of fan gate, and the other far end being attached to a short 2 level step-down bolts **1702**, a set of screw bolt and wing nut **1703** being assembled to the connected point of the paired fan gate supporting arms each, the short 2 level step-down bolts **1702** match with bottom lock sets **1604** of bezel in order to be supported by them. A long 2 level step-down bolt **1704** is attached to the top end of fan gate to match with top lock sets **1604** of bezel **1601** in order to be supported by them. Refer to references for different fan gate opening angles **1701***b* and **1701***c* for how the fan gate angle may be opened, FIG. **17**A for enlarged figure for reference numeral **1703**, and FIG. **17**B for enlarged figure for reference numeral **1702**

[0247] (c). One attachment, bi-direction air flow channel extender version A **2206***a* in FIG. **22**A or bi-direction air flow channel extender version B **2206***b* in FIG. **22**B, being attached to system for better indoor heat convection, each of them is a formed unit with front end top opening of bi-direction air flow channel extender version A **2201***a* or front

end top opening of bi-direction air flow channel extender version B **2201***b* being size and shape matched to the rear end opening of bi-direction air flow channel unit **2001** to extend this opening to lower portion of indoor at the bottom opening of bi-direction air flow channel extender version A **2203***a* or bottom opening of bi-direction air flow channel extender version B **2203***b*.

[0248] Each front end top opening of these two-versioned extenders is sealing strips being attached to sealing contact with the rear end opening of bi-direction air flow channel unit **2001**. These two-versioned extenders each with several slot frame of bi-direction air flow channel unit version A **2202***a* or slot frame of bi-direction air flow channel unit version B **2202***b* being arranged in respectively that are used to support extender structure. Several screw bolts **2204** each is equipped to supporting brackets for screw bolt **2205** each to support the extender to indoor ground.

[0249] These extenders can be upside down applied to system to let the front end top opening of bi-direction air flow channel extender version A **2201***a* or front end top opening of bi-direction air flow channel extender version B **2201***b* match with the rear end opening of indoor hot air flow channel unit **1901** to extend this opening to upper portion of indoor at the bottom opening of bi-direction air flow channel extender version A **2203***a* or bottom opening of bi-direction air flow channel extender version B **2203***b* while this system is being mounted to lower portion of indoor. Refer to FIG. **22**C for enlarged figure for reference numeral **2204** and reference numeral **2205**.

[0250] (d). One set of indoor air filter unit **1 2301** and indoor air filter unit **2 2302** in FIG. **23** each is a formed unit with air filter material being attached to its 5 inner sides and leave the opening of unit **1 2303**, the opening of unit **2 2304**, and the center of each units to be free to match with the location moving of hot air flow channel unit, indoor hot air flow channel unit, and bi-direction air flow channel unit, and magnetic material **2305** being attached to these two openings at **4** edges for securing them with bezel. The indoor air filter unit **1 2301** matches with the top opening **1602** of bezel **1601**, and the indoor air filter unit **2 2302** matches with the bottom opening **1603** of bezel.

[0251] The said indoor air filter unit **2 2302** can be alternatively attached to the bottom opening of bi-direction air flow channel extender version A **2203***a* or bottom opening of bi-direction air flow channel extender version B **2203***b* while either one of extenders is applied to system. Alternatively, the indoor air filter unit **1 2301** can be attached to the bottom opening **1603** of bezel **1601**, if the bi-direction air flow channel extender version A **2206***a* or bi-direction air flow channel extender version B **2206***b* is upside down applied to match with the rear end opening of indoor hot air flow channel unit **1901**,

[0252] (e) A supporting bracket for bi-direction air flow channel extender **2401** in FIG. **24** is a formed bracket frame for supporting bi-direction air flow channel extender version A **2206***a* or bi-direction air flow channel extender version B **2206***b*, this bracket can be attached to object at the place below system mounting location to allow either one of the extender to mount above it with the bottom opening of extender facing ground, and matching the top portion of upper supporting bracket for screw bolt **2005** with the bottom portion of this supporting bracket, then fastening screw bolts **2004** to consolidate the extender mounting structure from bracket to ground.

[0253] Alternatively, this bracket can be attached to object at the place above system mounting location while the extender is upside down applied to system, mounting the extender to bracket with the bottom opening of extender facing ceiling and the top of extender facing supporting bracket, fasten each screw bolt of the extender to consolidate the extender mounting structure from bracket to ceiling. Two holes for supporting bracket mounting **2402** are arranged on supporting bracket for screw securing it to object at the places mentioned above, Note: the screw bolt **2004** can be upside down applied to supporting bracket for screw bolt **2205** for open end wrench application easily.

FIGS. **11**, **13**, **15**, **21**, and FIG. **23**—Additional Embodiments

[0254] Additional embodiments are depicted as following

[0255] (f) The transparent plate **1101** in FIG. **11** can be substituted with transparent dome-shaped skylight cover that is generally used in roof engineering, and with a half convex lens being formed on it will be a plus for concentrating solar radiation heat onto solar heating plate, if the cost is compatible. Note: leave some bottom portion of the cover free of half convex lens in order not to concentrate solar radiation heat to the base **701** of system framework.

[0256] (g) FIG. **13** shows the assembly reference for how top cover **1202** and transparent plate **1101** are assembled and the assembly area is the location where locking bolt **707** will be applied for securing these two items with to system framework in FIG. **7**.

[0257] (h) 3 level step-down stand-off **2101** in FIG. **21**A is made of non-heat conductive and heat resistant material and being assembled with transparent plate **1101**, solar heating plate **901**, and air guiding plate **1001** at a fixed distance each to form two air flow channels.

[0258] (i) Fan filter **1501** in FIG. **15**, and air filter unit **1 2301** and air filter unit **2 2302** in FIG. **23** that can be air freshening material applied on their filters for that purpose.

FIGS. **22**A, **22**B, and FIG. **17**—Alternative Embodiments

[0259] (j) The Bi-direction air flow channel extender version A and version B in FIG. **22**A and FIG. **22**B can be alternatively substituted to each other, FIG. **22**A is an extender with slot frame opening being small and compact designed for mounting this system besides wall, and FIG. **22**B is an extender with slot frame opening being bigger designed and is good for mounting this system to window frame in order to get more see-through opening.

[0260] (k) The fan gate module in FIG. **17** can be alternatively mounted to bezel upside down if it is needed to guide fan air flow direction from or to upper portion of indoor. This is done by turning fan gate module upside down and having long 2 level step-down bolt **1704** mounted to the two lock sets **1604** located at the bottom of bezel **1601**, and having short 2 level step-down bolts **1702** mounted to the two lock sets located at the top of bezel.

Advantages

[0261] From the description above, accordingly one or more embodiments of the present invention of my dualpower temperature regulation system may have one or more of the following advantages:

[0262] (a) An air flow channel extender to separate system indoor air inlet and outlet farther apart, therefore; improve indoor heat convection and system performance.

[0263] (b) Heat insulation material is attached or coated to each of the main parts to prevent heat losing to outdoor or their surroundings that are not desired to; therefore, improve thermo-siphoning effect and system performance.

[0264] (c) Seal strips are attached to the major edges of main parts each for sealing contacts with other parts joined to it each to prevent air or heated air from escaping to outdoor or their surroundings that are not desired to, therefore; improve thermo-siphoning effect and system performance.

[0265] (d) Air filter being attached to two outdoor interfaced air flow channel units and fan filter being attached to electrical fan module each at the place around its outdoor interface to filter air and isolate system from outdoor insect and dust, and this arrangement also enables air filter and fan filter replacement indoor to be easy without disassembling the whole system.

[0266] (e) Two indoor air filter units are arranged to be attached to system for filtering indoor air and sticking air dust and oil fume to prevent them from polluting system.

[0267] (f) A fan gate module controls fan air flow direction to where it is desired at the range from 0 to 90 degree in a single way, it can also be upside down mounted to bezel if the fan air flow direction is desired to or from the upper portion of indoor for better heat convection, this is the other range from 91 to 180 degree in a single way if we round off the decimal.

[0268] (g) Most of the main parts surrounding outdoor are assembled by junction other than screw securing or welding, this prevents rust problems to some extent.

[0269] (h) Air flow directions can be easily controlled by the locations moving of movable air flow channel units; this design without complicated mechanical parts makes manufacturing to be easy.

[0270] (i) Electrical fan module being attached to system to enhance system performance in short time, and support most of system functions while solar energy is not available or less if electrical heating element is not in use.

[0271] (j) Electrical heating element being arranged in system that can work alone to substitute solar energy or collaboratively work with solar energy in order to enhance system performance in short time and support system function while solar energy is not available or less, it can also be used to melt the snow or frost covered on transparent plate that impedes sun beam passing through.

[0272] (k) This system can be used as a sun and rain shelter to the object, if it is mounted to upper portion of window frame.

[0273] (l) Air freshening material can be applied to indoor air filter units and fan filter for its purpose.

[0274] (m) The zone widths of air flow channel and hot air flow channel being fixed by applying 3 level step-down stand-offs for assembling with air guiding plate, solar heating plate and transparent plate together. This also making the assembly process much easier than screw bolt application.

Operations—FIGS. 2A, **2**B, **3**A, **3**B, and others

[0275] The system operations of this invention can be basically depicted by these 4 figures, and with some highlighted applications information hereafter depicting the solutions provided by this invention for the mentioned problems that suffered from referred prior art.

[0276] (1) FIG. **2**A shows how the temperature is being lowered with solar energy, electrical heating element, or both of them being applied. Indoor warm air enters system through the rear end opening of indoor hot air flow channel unit **1901**, and passes through indoor hot air flow channel unit **1904**, and further passes down to the bottom of the system, then flows up to the zone where solar heating plate **901** is located. The warm air is then being heated up there to be density smaller and therefore generates thermo-siphoning effect and creates air flow driving force to drive the heated air outdoor from top cover openings **1201**. As the warm air moving out from indoor, the left behind indoor room is then being supplied with outdoor cool air that entering system from the base openings **706** and the matched front end bottom opening of bi-direction air flow channel unit **2003**, and entering indoor through the rear end openings of bi-direction air flow channel unit **2001**. This cycle is then going on and makes the temperature lowering and air exchanging possible. Note: Under this operation mode, hot air flow channel unit **1801**, Indoor hot air flow channel unit **1904**, and bi-direction airflow channel unit **2008** are unit locations in system being moved toward front. This operation mode provides some solutions for the problem **1** and problem **2** that suffered from referred prior art.

[0277] (2) FIG. **2**B shows how the temperature is being raised with solar energy, electrical heating element, or both of them being applied. Indoor cool air entering system through the rear end opening of bi-direction air flow channel unit **2001** to the bottom of the zone where solar heating plate **901** is located, and flowing up, the cool air is then being heated up there to be density smaller and therefore generates thermo-siphoning effect and creates air flow driving force to exit heated air indoor through the rear end opening of hot air flow channel unit **1803**, and supplies heated air to the indoor room left behind by the indoor cool air moved to system. This cycle is then going on and makes the temperature raising possible (no air exchanging). Note: Under this operation mode, hot air flow channel unit **1801** and indoor hot air flow channel unit **1904** are locations in system being moved toward rear, and bi-direction airflow channel unit **2008** is location in system being moved to middle.

[0278] (3) FIG. **3**A shows how the temperature is being lowered with solar energy or electrical heating element, or both of them being applied with electrical fan being applied, open the fan gate **1701***a* to the referred angle of **1701***b* or any angle desired at the range from 0 to 90 degree, and turn on the electrical fan **1401** to drive outdoor cool air entering indoor, the indoor warm air that originally driven out by the thermo-siphoning effect made by solar energy or electrical heating element, or both of them from rear end opening of indoor hot air flow channel unit **1901** to top cover openings **1201** is then enhanced by the air pressure created by electrical fan and speeds up indoor warm air exiting outdoor and air exchanging. Temperature can be lowered optionally with electrical fan being applied alone while electrical heating element is off

and solar energy is not available such as it is cloudy or at night time and no thermo-siphoning effect is created. Note: Under this operation mode, hot air flow channel unit **1801** and indoor hot air flow channel unit **1904** are unit locations in system being moved toward front, and bi-direction airflow channel unit **2008** is closed and unit location in system being moved toward rear. This operation mode provides some solutions to the problem **5** suffered from the referred prior art.

[0279] (4) FIG. **3**B shows how the temperature is being raised with solar energy or electrical heating element, or both of them being applied with electrical fan being applied, opens the fan gate **1701***a* to the referred angle of **1701***c* or any angle desired at the range from 0 to 90 degree, and turns on the electrical fan **1401** to drive indoor cool air exiting outdoor, the air exiting creates an air sucking effect to the top cover openings **1201** to enable outdoor air entering system, the air is then being heated up at the zone where solar heating plate **901** is located, and entering indoor through the rear end openings of bi-direction air flow channel unit **2001**, this makes the temperature raising and air exchanging possible. Note: Under this operation mode, hot air flow channel unit **1801** is unit location in system being moved toward front, indoor hot air flow channel unit **1904** is closed and unit location in system being moved toward rear, and bi-direction air flow channel unit **2008** is unit location being moved to its middle location in system. This operation mode provides some solutions to the problem **5** suffered from the referred prior art.

[0280] (5) Refer to FIG. **2**A, FIGS. **22**A, and **22**B, the rear end openings of bi-direction air flow channel unit **2001** can be connected to front end top opening of bi-direction air flow channel extender version A **2201***a* or front end top opening of bi-direction air flow channel extender version B **2201***b* to extend its opening to lower portion of indoor, this farther separates indoor air inlet and outlet apart and therefore improves the indoor heat convection. This application solves the problem **3** suffered from referred prior art.

[0281] (6) Heat insulation material and sealing strips are attached to most of system parts to prevent heat from dissipating and air from escaping to outdoor or their surroundings that are not desired to for better thermo-siphoning effect and system performance. This application solves the problem **4** and problem **6** suffered from referred prior art.

[0282] (7) Indoor air filter units and fan filter being attached to system indoor interfaces for filtering indoor air and sticking oil fume. This application provides some solutions to the problem **7** suffered from referred prior art

[0283] (8) Air filter is applied to the outdoor interface of hot air flow channel unit and bi-direction air flow channel unit each to filter entering system outdoor air and isolate insects from system. This application provides some solutions to the problem **7** suffered from referred prior art.

[0284] (9) Applying electrical fan temperature regulation module or electrical heating element to support system to enhance performance in short time and also support system functions while solar energy is not available or less. The electrical heating element can also be used to melt snow or frost covered on transparent plate indirectly in order to enable sun beam passing through. This application provides some solutions to the problem **5** and solves the problem **8** suffered from referred prior art.

[0285] (10) Finally, applying some water to fan filter or the air filter of bi-direction air flow channel unit for lowering temperature if outdoor air is also hot.

Conclusion, Ramifications, and Scopes

[0286] Accordingly, the reader will see that the dualpower temperature regulation system of this invention can be installed to window frame or any wall opening of any object or embedded to equipment if it requires the stated functions, such as outdoor chamber for power or telecommunication, grain barn, garage, basement with window or opening above earth ground, gable of penthouse, factory, greenhouse, and any room of building, etc. to utilize free solar energy if the sun beam can reach. It also can be installed to trailer, container, or ship with some modification being applied on such object to fit it on.

[0287] Obviously, refer to item **1** and item **2** of Operation section (FIG. **2**A and FIG. **2**B), this system is working well while it is mounted to the upper portion of indoor for lowering temperature, and working well while it is mounted to the lower portion of indoor for raising temperature, but not so well if it is to be mounted reversely for that purpose per poor indoor heat convection; therefore, an attachment of bi-direction air flow channel extender being attached to system to get better indoor heat convection in spite of where this system is being mounted.

[0288] This system can be shut off and no air flowing in between indoor and outdoor while its indoor hot air flow channel units and bi-direction air flow channel unit are closed and are locations in system being moved toward rear, and hot air flow channel unit is opened and is unit location in system being moved toward front in order to meet the situation such as air conditioner is in use or others.

[0289] This system can also be used to expel indoor air outdoor without air exchanging with outdoor air by having hot air flow channel unit and indoor hot air flow channel unit to be unit locations in system being moved toward front, and bi-direction air flow channel unit to be location in system being moved to its middle location, the last two units will guide indoor air entering system and exit outdoor through hot air flow channel unit per thermo-siphoning effect. Certainly, we need to replenish air indoor from the other source to keep the air expelling going on, e.g. open indoor interfaced door or window to get air entering from the other indoor room or others.

[0290] The fan gate module can be alternatively attached to bezel upside down to guide the fan air flow direction from or to upper portion of indoor in order to enhance the indoor heat convection and system performance, and the fan gate can be opened to any angles (at the range from 0 to 90 degree) to guide air flow direction from or to where it is desired in a single way, and then the fan gate angle can be fixed by screw bolt and wing nut securing.

[0291] The bi-direction air flow channel extender can be alternatively installed up side down to match with the rear opening of indoor hot air flow channel to extend the opening to upper portion of indoor while this system is being mounted at the lower potion of indoor.

[0292] The air flow velocity can be controlled by offsetting indoor hot air flow channel unit location in system a little toward rear while indoor air is entering system through it, or offsetting bi-direction air flow channel unit location in system a little toward front while indoor air is entering system

through it, or outdoor air is entering system through top cover opening to indoor when electrical fan is in use for raising temperature.

[0293] This system is not suggested to be mounted to flat or titled roof without any modification being made onto the roof as rains may invade system and indoor, and hot air generated by roof may enter system to indoor while temperature lowering is being desired, a gable being built on such roof is a good way for this application

[0294] Although the description above contains many specificities, these should not be construed as limiting of the invention but as merely previous illustrations of some of the presently embodiments of this invention. For example, this invention can be formed the other shape or the other size to meet different requirement, or plurality of electrical fan or electrical heating element can be equipped to system, etc.

[0295] Thus the scope of the invention should be determined by the appended claims and their legal equivalents, rather than by the example given.

I claim:

1. A system for temperature regulation, air exchanging, and air filtration, comprising:

1a. a solar heating plate which is a formed metal plate with black colored on its front for absorbing solar energy and heat up the air flowing over it in order to create thermo-siphoning effect and air driving force, and one or plurality of electrical heating element and heat dispersing fins being attached to its front as the heating source of electrical power which having the same effect as solar energy, and

1b. a transparent plate or some sort of equivalents which enabling sun beam passing through in order to heat up solar heating plate, and is also used as an system front air guiding plate and front cover, and

1c. a top cover which is a formed plate with its front cover being protruded to prevent rains from invading system, several openings being arranged at its front bottom for guiding air flowing in and out, one protruded plate being formed behind said openings for securing transparent plate, it being used as system top cover, and

1d. a hot air flow channel unit which is a formed frame for guiding heated air exiting outdoor or indoor, or outdoor air entering system, and

1e. an indoor hot air flow channel unit which is a formed frame with openings being arranged at its front bottom and the rear end to guide and control indoor warm air entering system, and

1f. a bi-direction air flow channel unit which is a formed frame with rear end opening of bi-direction air flow channel unit, front end opening of bi-direction air flow channel unit, and front end bottom opening of bi-direction air flow channel unit being arranged to it for controlling air flow directions, it guiding outdoor cool air entering indoor, indoor cool air entering system, or heated air entering indoor, and

1g. an air guiding plate which is a formed plate for guiding air flow, and it is also used as the rear cover of front system portion, and

1h. a system framework which structuring, supporting, and enclosing most of the system parts, and provides mechanism for mounting system to its object, and

1i. a set of left and right hand side covers which being adjacent with the above said parts to form an air flow channel and a hot air flow channel that being connected to each other for all system air flowing, said side covers enabling system framework to support them and all the parts being adjacent to them, and isolating system from outdoor on their sides each, and

1j. Several 3 level step-down stand-offs that are made of heat resistant and non-heat conductive material is being used to secure with said solar heating plate and said air guiding plate,

Whereby said solar energy and said electrical power each can be applied alone or collaboratively for heating up air, creating thermo-siphoning effect, and generating air driving force to regulate temperature and exchange air,

2. The system of claim **1** wherein said solar heating plate with several solar heating plate holes being formed on it for assembly with said 3 level step-down stand-offs and said air guiding plate and said transparent plate to form said air flow channel and said hot air flow channel, one rear guiding plate being attached behind with an upper hinged gate being arranged at its rear end for control air flow direction of said hot air flow channel unit.

3. The system of claim **1** wherein said electrical heating element with heat dispersing fins being attached is the main item of said electrical power in system which can be applied to work alone while said solar energy is not available, or collaboratively work with the solar energy while it is less or for system performance enhancement.

4. The system of claim **1** wherein said hot air flow channel unit with a front bottom opening of hot air flow channel unit being arranged in it which is opening width being matched to the opening width of said top cover plus the width of said hot air flow channel in order to control heated air exiting outdoor or indoor, and a tilted rear end opening of hot air flow channel unit being arranged at its rear for controlling said upper hinged gate of said solar heating plate.

5. The system of claim **1** wherein said bi-direction air flow channel unit with several slot frames of bi-direction air flow channel unit being arranged in it for its structure supporting and providing channels for outdoor air flow circulation.

6. The system of claim **1** wherein said air guiding plate with several air guiding plate holes being formed on it for securing with said 3 level step-down stand-offs, a hole with strain relief fitting for electrical heating element power cord being arranged to its bottom for that purpose, a hinged gate for bi-direction air flow channel unit being attached to its rear bottom edge to control the air flow direction of said bi-direction air flow channel unit.

7. The system of claim **1** wherein said system framework with one base plate being arranged at its front bottom as the base of said air flow channels and said hot air flow channel, one front hinged gate being arranged at the middle portion of said base plate for controlling the air flow direction of said bi-direction air flow channel, and several bottom lock sets and upper lock sets being arranged at its front end tips for securing locking bolts that are used to fix and lock said top cover and said transparent plate to it, and there are several mounting plates being attached to its rear end for mounting system to object, and said electrical fan module and said bezel to it.

8. The system of claim **1** wherein said 3 level step-down stand-off assembling with said solar heating plate and said air guiding plate at the said holes of them to fix said two air flow channels in system and fix the widths of said two air flow channels with said transparent plate that jointed to it,

9. The system of claim **1** wherein said solar heating plate, said system framework, said air guiding plate, said left and

right hand side covers, said bi-direction air flow channel unit, and said top cover are heat insulation material being attached or coated to prevent heat from dissipating to outdoor or their surroundings that are not desired to.

10. The system of claim **1** wherein said solar heating plate, said air guiding plate, said left and right hand side covers, said top cover, said transparent plate, and said indoor hot air flow channel unit are sealing strips being attached to prevent air from escaping to outdoor or their surroundings that are not desired to.

11. The system of claim **1** wherein said hot air flow channel unit and said bi-direction air flow channel with nipples for mounting the air filter of hot air flow channel unit and nipples for mounting the air filter of bi-direction air flow channel unit being formed on them to match with dimples of the air filter of hot air flow channel unit and dimple of the air filter of bi-direction air flow channel unit each respectively in order to fix said air filters to them each for easy assembling and replacing the air filters without disassembling the whole system from object, these air filters filtering outdoor air that entering system and isolating insect from outdoor,

Whereby outdoor air that entering system or indoor can be filtered.

12. The system of claim **1**, wherein

12a. said hot air flow channel unit, said indoor hot air flow channel unit, and said bi-direction air flow channel unit each using the moving of their different locations in system each to control the air flow directions each in system to make system functions possible, and

12b. said indoor hot air flow channel unit can be location in system offset a little toward rear while air is flowing in it, and said bi-direction air flow channel unit can be location in system offset a little toward front while air is flowing in it from indoor to system, these making the related openings to be smaller in order to accelerate their air flow velocity.

13. An electrical fan temperature regulation module for supporting the system of claim **1** to enhance system performance in short time, and supporting system functions while solar energy is not available or less, it comprising

13a. an electrical fan module that comprises one or plurality of electrical fans with speed and blow in and blow out controllable mechanism to drive air entering indoor or outdoor, and a hood being attached around said fan to prevent rains from invading, a fan filter being arranged to it to isolate dust and insect from outdoor, and a formed fan module frame that providing assembling mechanism for said fan, providing assembling mechanism for said fan filter by nipples and dimples formed on them respectively, and providing mounting mechanism for this module to said system framework, air freshening material can be applied to the fan filter for that purpose, and

13b. a fan gate module is a formed fan gate to guide air flow direction from or to where it desires, with heat insulation material being attached to its front, several long 2 level step-down bolt and short 2 level step-down bolt that being attached to it and its two paired fan gate supporting arms for said fan gate supporting and turning, several screw bolt and wing nuts each is used at connected point of said paired fan gate supporting arms to fix the fan gate opening angle desired, and several magnetic material being attached to the bottom of fan gate to lock said fan gate when the fan gate is closed, this fan gate module can be alternatively mounted to system up side down to direct air flow to or from upper portion of indoor for better heat convection, and

13c. a bezel is a formed plate and being used as the system indoor interfaces with several openings arranged on it, and several lock sets being attached on its back to provide supporting and turning points for said fan gate and said fan gate supporting arms of the fan gate module,

Whereby said electrical fan temperature regulation module will enhance system performance in short time, and support system functions while solar energy is not available or less.

14. Several attachments for the system of claim **1** for improving indoor heat convection and filtering indoor air, comprising

14a. an bi-direction air flow channel extender version A or version B and a supporting bracket for bi-direction air flow channel extender version A or version B, said extender extending said rear end opening of said bi-direction air flow channel unit to lower potion of indoor for better indoor heat convection with the supporting from said supporting bracket that being mounted to object at the location below system, the extender is a formed unit with several slot frames being arranged in it for supporting its structure and providing openings for seeing through outdoor and air circulating while said system is mounted to window frame, several screw bolts being arranged to the extender for supporting it to indoor ground, and the extender can be up side down applied to system to match with the rear end opening of indoor hot air flow channel unit for extending the said opening to upper portion of indoor with said supporting bracket being mounted to object above system mounting location for supporting it while this system is installed to the lower potion of indoor for better indoor heat convection, and

14b. A set of indoor air filter unit **1** and indoor air filter unit **2** which being attached to the system for filtering indoor air, and sticking indoor air dust and oil fume for preventing them from polluting system, said units are formed frames with air filter being attached to their 5 inner sides to leave their opening of unit and opening of unit **2** and center free in order to match the location moving of each said air flow channel units in system, with some magnetic material being arranged to said openings each for attaching them to the matched said openings each of said bezel, alternatively said indoor air filter unit **2** can be attached to the bottom end opening of said bi-direction air flow channel extender while said extender is applied, and said indoor air filter units can be air freshening material applied on for that purpose,

Whereby said attachments will improve indoor heat convection for better performance, and filter indoor air and prevent air dust and oil fume from polluting system.

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