US 20140251307A1

(19) **United States**

(12) **Patent Application Publication**

Nix

(10) **Pub. No.: US 2014/0251307 A1**

(43) **Pub. Date: Sep. 11, 2014**

(54) **TILT-ABLE PLANAR REFLECTORS TO HEAT A SOLAR SMELTER'S THERMAL MASS**

(71) Applicant: **Martin E. Nix**, Seattle, WA (US)

(72) Inventor: **Martin E. Nix**, Seattle, WA (US)

(21) Appl. No.: **13/815,583**

(22) Filed: **Mar. 11, 2013**

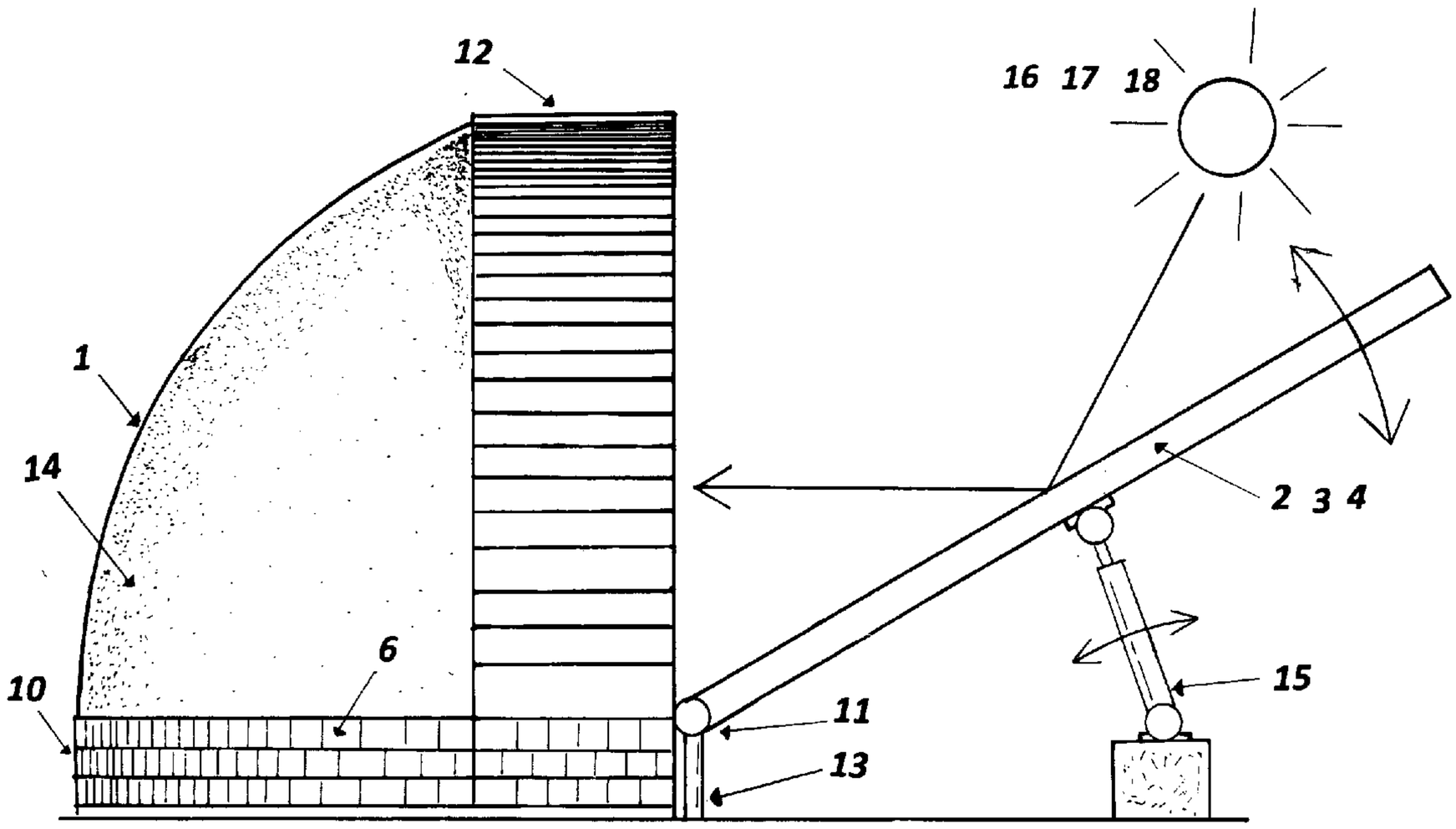
Publication Classification

(51) **Int. Cl.**
F24J 2/38 (2006.01)
F24J 2/02 (2006.01)

(52) **U.S. Cl.**
CPC ***F24J 2/38*** (2013.01); ***F24J 2/02*** (2013.01)
USPC **126/600**; 126/681

(57) **ABSTRACT**

A tilt-able-central-planar-reflector, a tilt-able-auxiliary-left-planar-reflector, and a tilt-able-auxiliary-right-planar-reflector are hingely attached to a solar-absorbing-thermal-mass. The sun's light is made horizontal to reflect to the interior wall of a reflecting-curved-overhang, capturing the sun's sunrise light and sun's sunset light, and to reflect to the interior wall of a reflecting-parabolic-half-shell capturing the sun's noon light, so as to redirect the sun's light to a solar-absorbing-thermal-mass. The net result provides heat 24 hours a day, 7 days a week for utilization.



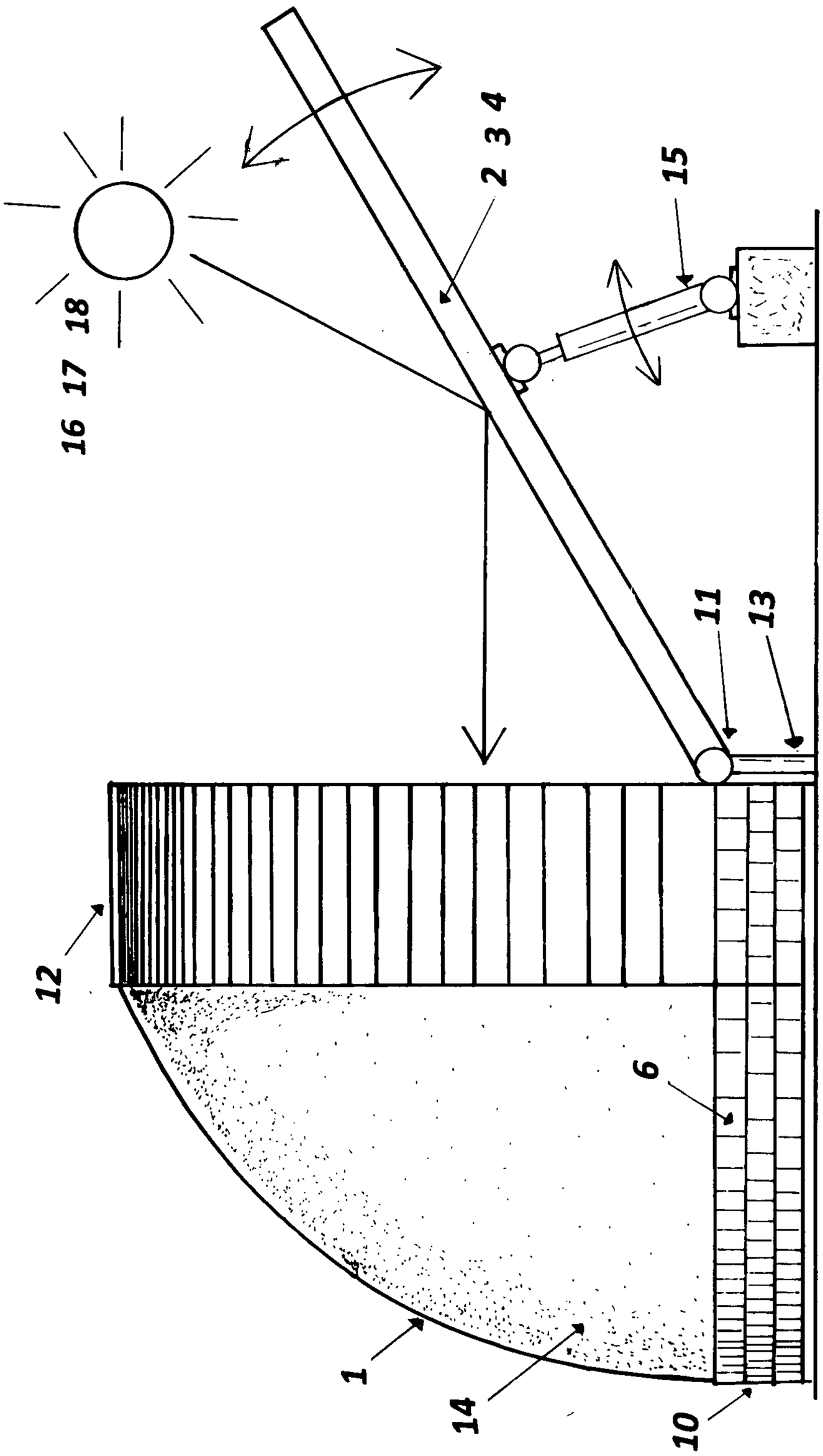


FIG. 1

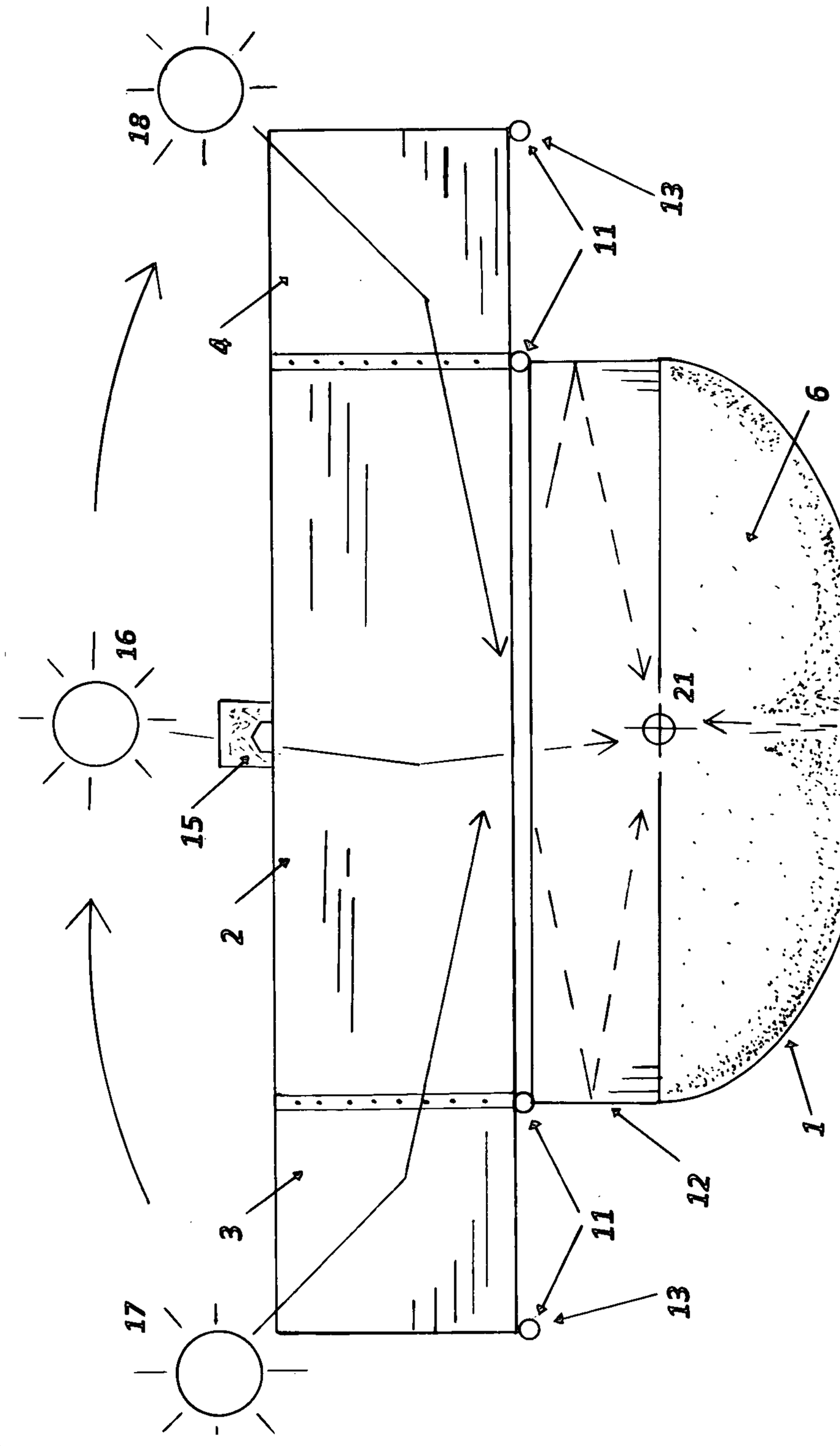


FIG. 2

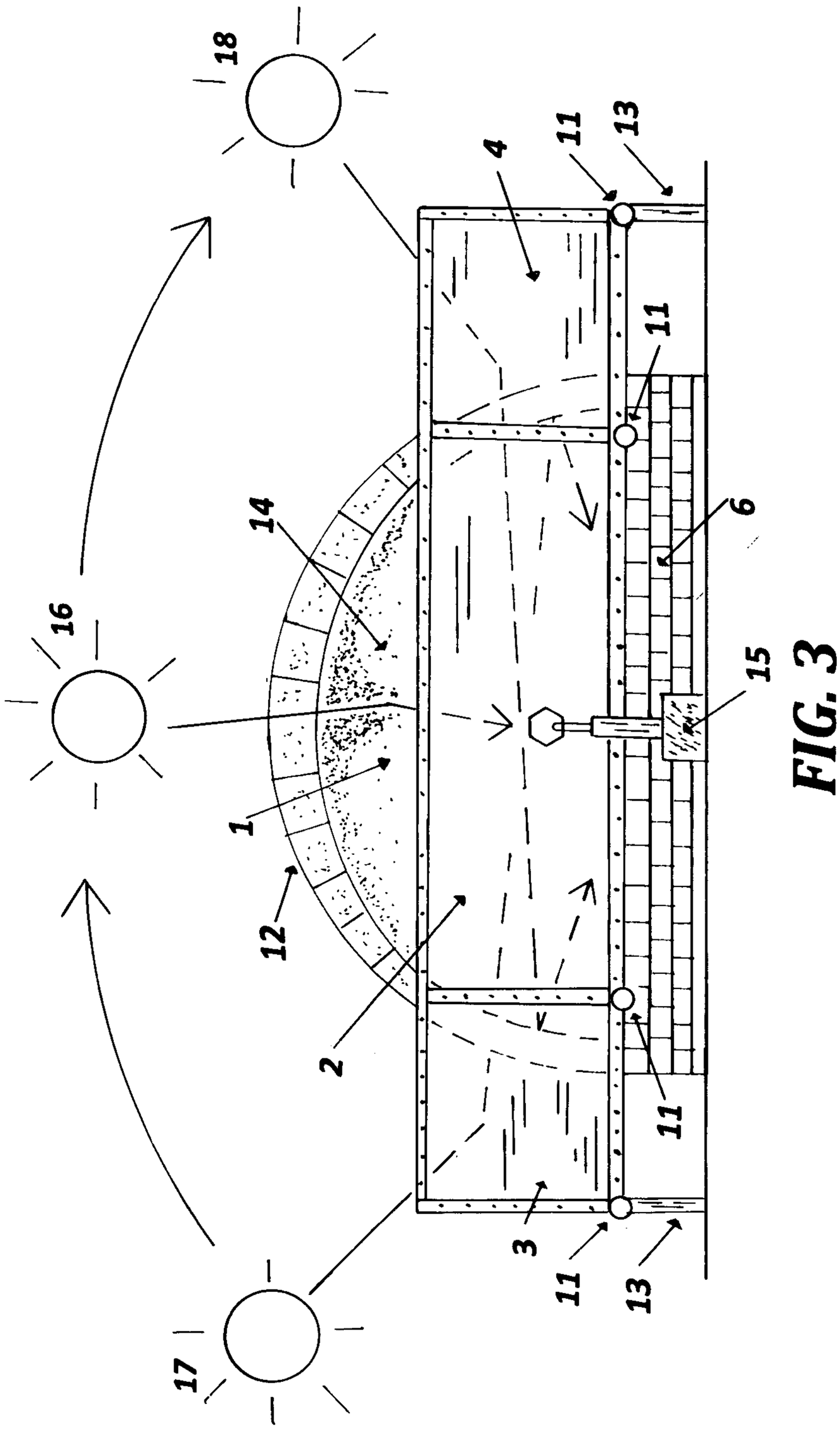


FIG. 3

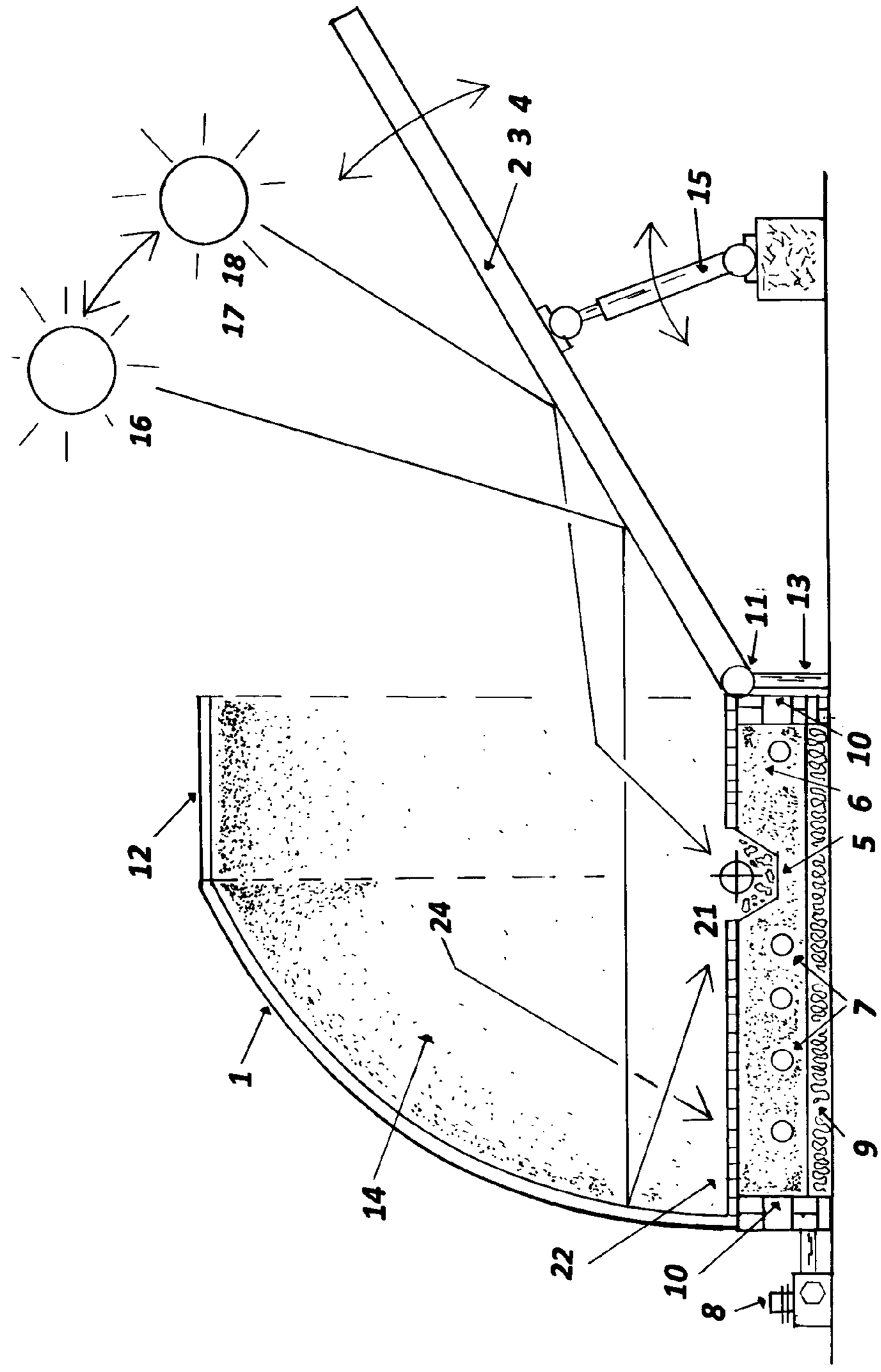


FIG. 4

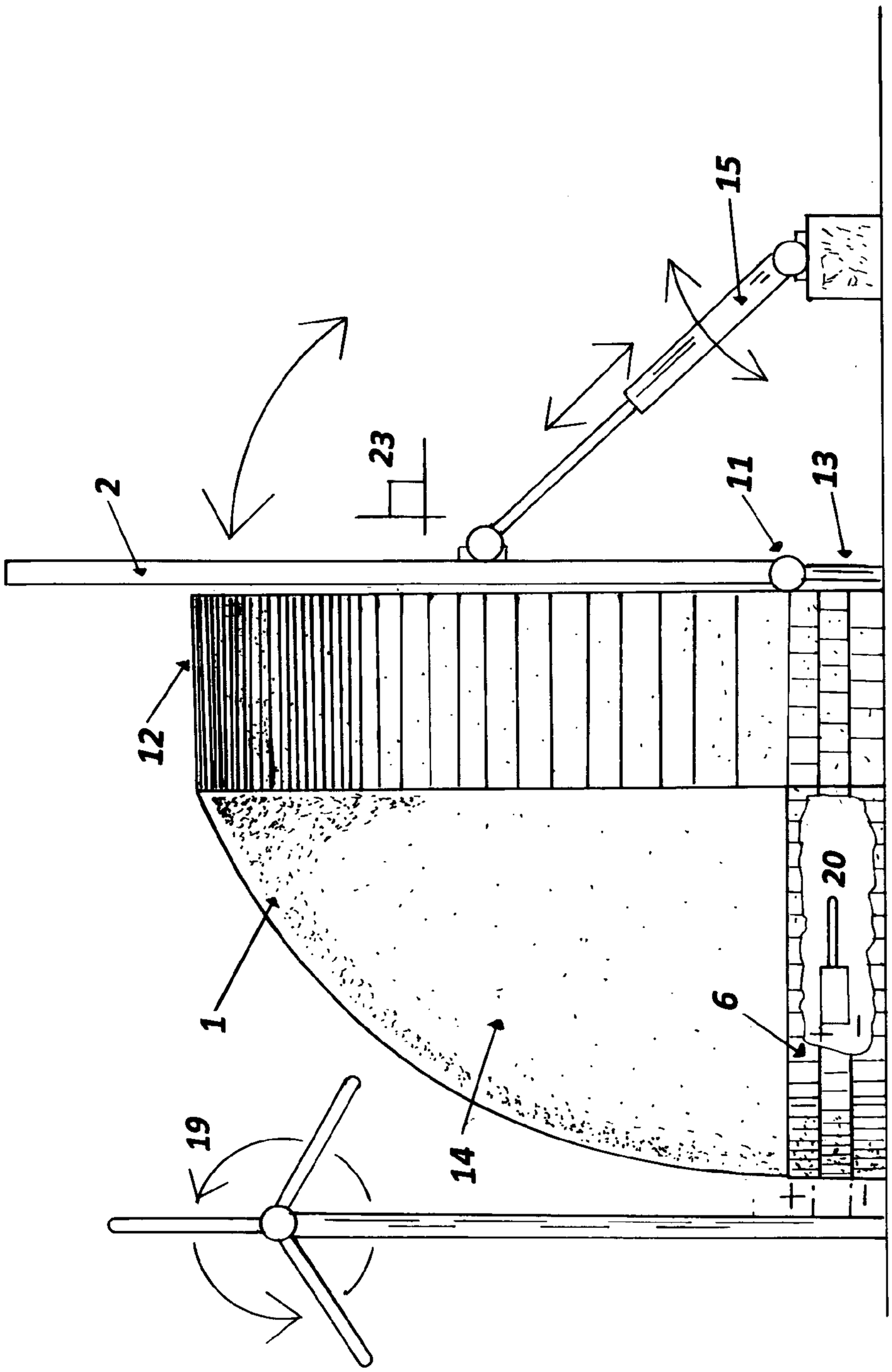


FIG. 5

TILT-ABLE PLANAR REFLECTORS TO HEAT A SOLAR SMELTER'S THERMAL MASS

FIELD OF INVENTION

[0001] A tilt-able-central-planar-reflector, a tilt-able-auxiliary-left-planar-reflector, and a tilt-able-auxiliary-right-planar-reflector are utilized to reflect the sun's light to the interior wall of a reflecting-curved-overhang, and a reflecting-parabolic-half-shell, so as to redirect the sun's light to heat a solar-absorbing-thermal-mass.

PRIOR ART

[0002] The invented device improves upon existing art.

[0003] Nix (U.S. patent application Ser. No. 12/459,719 Filing date Jul. 7, 2009) illustrates a reflecting-parabolic-half-shell with a reflecting-curved-overhang. Positioned from the open-void created by the interior wall of the reflecting-parabolic-half-shell and the interior wall of the reflecting-curved-overhang is a heliostat or a tilt-able-planar-reflector rotating on a turntable. The result is the sun's light is redirected to a solar-absorbing-thermal-mass. The solar-absorbing-thermal-mass contains embedded pipe, which heat a working fluid as air, gas or a transfer fluid. Nix does not show a tilt-able-central-planar-reflector, a tilt-able-auxiliary-left-planar-reflector, or a tilt-able-auxiliary-right-planar-reflector, hinged, adjacent and attached to the solar-absorbing-thermal-mass. While Nix moves in four degrees of freedom, the invented device moves in two degrees of freedom.

[0004] Nix (U.S. Pat. No. 8,360,052, issued Jan. 29, 2013) illustrates a reflecting-parabolic-half-shell with a tilt-able-planar-reflector, which is round in shape, and rotating about a central axis. The tilt-able-planar-reflector is hinged, adjacent and attached to the reflecting-parabolic-half-shell. Nix does not show a tilt-able-central-planar-reflector that is centrally located, hinged, adjacent and attached to a solar-thermal-absorbing-thermal-mass. Nor does Nix show a tilt-able-central-planar-reflector, a tilt-able-auxiliary-left-planar-reflector nor a tilt-able-auxiliary-right-planar-reflector, hinged, adjacent and attached, to a solar-absorbing-thermal-mass, moving in unison. Nor does Nix show a reflecting-curved-overhang. While Nix moves in four degrees of freedom, the invented device moves in two degrees of freedom.

[0005] Nix (U.S. patent application Ser. No. 11/634,312, Filing date Dec. 5, 2006) illustrates the use of various renewable energy sources to convert a fossil fuel burner firebox. Combustion air is preheated by renewable energy sources. FIG. 11 and Paragraph [0211] illustrate the use of wind energy to heat a hot air oven. The wind turbines power a heating element embedded in an underground oven. FIG. 9A and FIG. 9B and Paragraph [0209] illustrate a reflecting-parabolic-half-shell with a tilt-able-planar-reflector hinged, attached, and rotatable about a central axis on a turntable that moves in four degrees of freedom. The invented device moves in two degrees of freedom.

[0006] The above art illustrate the concept of a tilt-able-central-planar-reflector adjacent and attached to a tilt-able auxiliary-left-planar-reflector, and a tilt-able-central-planar-reflector adjacent and attached to a tilt-able-auxiliary-right-planar-reflector, so as to reflect the sun's light to a reflecting-curved-overhang and to a reflecting-parabolic-half-shell, thus redirecting the sun's light to a solar-absorbing-thermal-mass, is new and novel. While Nix, Nix, and Nix move in four degrees of freedom, the invented device moves in two degrees of freedom.

SUMMARY OF THE INVENTION

[0007] An assembly comprising of a tilt-able-planar-reflector, a tilt-able-auxiliary-left-planar-reflector, a tilt-able-auxiliary-right-planar-reflector is described.

[0008] The tilt-able-central-planar-reflector is hingely, adjacent and attached to a solar-absorbing-thermal-mass. The tilt-able-central-planar-reflector is adjustable in tilt to adjust to the elevation of the sun's noon light above the horizon. Thus, the tilt-able-central-planar-reflector reflects the sun's noon light, so it is horizontal. The net result is the sun's noon light is reflected to the reflecting-half-shell-parabolic and thus redirected to the solar-absorbing-thermal-mass. The tilt-able-central-planar-reflector moves in two degrees of freedom.

[0009] The tilt-able-central-planar-reflector has adjacent and attached a tilt-able-auxiliary-left-planar-reflector. The tilt-able-auxiliary-left-planar-reflector is adjustable in tilt to the elevation of the morning sunrise above the horizon. Thus, the morning sun's sunrise light is made horizontal. The net result is the sun's sunrise light is reflected to the reflecting-curved-overhang and thus redirected to the solar-absorbing-thermal-mass. The tilt-able-auxiliary-left-planar-reflector move in unison with the tilt-able-central-planar-reflector. The tilt-able-auxiliary-left-planar-reflector moves in two degrees of freedom.

[0010] The tilt-able-central-planar-reflector is adjacent and attached a tilt-able-auxiliary-right-planar-reflector. The tilt-able-auxiliary-right-planar-reflector is adjustable in tilt to the elevation of the afternoon sunset above the horizon. Thus, the afternoon sun's sunset light is made horizontal. The net result is the sun's sunset light is reflected to the reflecting-curved-overhang and thus redirected to the solar-absorbing-thermal-mass. The tilt-able-auxiliary-right-planar-reflector move in unison with the tilt-able-central-planar-reflector. The tilt-able-auxiliary-right-planar-reflector moves in two degrees of freedom.

[0011] The tilt-able-central-planar-reflector, the tilt-able-auxiliary-left-planar-reflector, the tilt-able-auxiliary-right-auxiliary-planar-reflector are tilt-able in unison. All three tilt together, thus are able to adjust to the height of the morning, noon, and afternoon sun's elevation. Thus, are able to make the sun's light horizontal in unison. To control the tilt angle, actuators are used. These actuators can be mechanical, electrical, hydraulic, compressed air, or manual. These actuators move according to the sun's elevation in the sky, so as to make the sun's light horizontal. The tilt-able-central-planar-reflector, the tilt-able-auxiliary-left-planar-reflector, and tilt-able-auxiliary-right-planar-reflector move in two degrees of freedom.

[0012] A reflecting-curved-overhang forming a curved half circle is located centrally, above, adjacent and attached to a solar-absorbing-thermal-mass. The reflecting-parabolic-half-shell is located centrally, adjacent and attached to the reflecting-curved-overhang, creating an open-void. Both the reflecting-curve-overhang and the reflecting-parabolic-half-shell are located centrally, above, adjacent and attached to the solar-absorbing-thermal-mass. The assembly of the tilt-able-central-planar-reflector, tilt-able-auxiliary-left-planar-reflector, and the tilt-able-auxiliary-right-planar-reflector reflect the sun's light horizontally into the open-void created by the

interior wall of the reflecting-curved-overhang and the interior wall of the reflecting-parabolic-half-shell.

[0013] As an alternative, the tilt-able-central-planar-reflector can be tilted in the approximately 90 degree angle, enclosing the open-void at night, in winter, in storms, and like. The open-void is created by the interior wall of the reflecting-parabolic-half-shell and the interior wall of the reflecting-curved-overhang. Thus, enclosing the open-void, and thus helping to keep wind from cooling the solar-absorbing-thermal-mass, and thus helping to keep the solar-absorbing-thermal-mass hot. In the alternative, when the tilt-able-central-planar-reflector is in the approximately 90 degree angle, a wind turbine can generate electricity to heat an embedded-heating-element. This embedded-heating-element can add heat to the solar-absorbing-thermal-mass at night, in winter, or storms, and like. The embedded-heating-element adds addition heat for utilization. Placing the tilt-able-central-planar-reflector in the approximately 90 degree angle helps to keep the wind from cooling the solar-absorbing-thermal-mass, and helps to trap the heat from the embedded-heating-element.

[0014] The solar-absorbing-thermal-mass receives and captures the sun's light redirected from the reflecting-curved-overhang interior wall and the reflecting-parabolic-half-shell interior wall, thus heating the solar-absorbing-thermal-mass. The solar-absorbing-thermal-mass contains embedded-pipe to heat a working fluid, as air, gas, water, or a transfer fluid. The solar-absorbing-thermal-mass is surrounded by an insulating-foundation, topped by a transparent-and-insulating-floor, and underplayed by an insulating-layer, so as to better absorb the sun's light.

[0015] The solar-absorbing-thermal-mass contains a centrally located crucible for capturing the sun's concentrated light redirected from the interior wall of the reflecting-curved-overhang and from the interior wall of the reflecting-parabolic-half-shell. The crucible is located at the foci of the reflecting-curved-overhang and the reflecting-parabolic-half-shell.

[0016] The tilt-able-central-planar-reflector reflects the sun's noon light horizontally to the reflecting-parabolic-half-shell. The tilt-able-auxiliary-left-tilt-able-planar-reflector reflects the sun's sunrise light horizontally to the reflecting-curved-overhang. The tilt-able-auxiliary-right-planar-reflector reflects the sun's sunset light horizontally to the reflecting-curved-overhang. In turn, the reflecting-curved-overhang and the reflecting-parabolic-half-shell redirect the sun's noon light, sun's sunrise light, and sun's sunset light to the solar-absorbing-thermal-mass and to the centrally located crucible.

[0017] It should be noted that when the sun's sunrise light is directly East, and when the sun's sunset light is directly West, none of the sun's light will enter the open-void. None of the sun's light will reflect to the reflecting-curved-overhang. This is not disadvantageous. The tilt-able-auxiliary-left-planar-reflector will capture the sun's sunrise light, when the sun is at the late morning elevation. The tilt-able-auxiliary-right-planar-reflector will capture the sun's sunset light, when the sun is at the early afternoon elevation. When the sun's elevation is directly behind the invented device, the tilt-able-central-planar-reflector will start closing to the 90 degree tilt, in unison with the tilt-able-auxiliary-left-planar-reflector and in unison with the tilt-able-auxiliary-right-planar-reflector. Thus, closing for the night.

[0018] The assembly of the tilt-able-central-planar-reflector, the tilt-able-auxiliary-left-planar-reflector, and the tilt-able-auxiliary-right-planar-reflector are means to heat a solar-absorbing-thermal-mass. The solar-absorbing-thermal-mass contains embedded-pipe, which heat a working fluid, as air, gas, water or transfer fluid for utilization. The assembly of the tilt-able-central-planar-reflector, the tilt-able-auxiliary-left-planar-reflector, and the tilt-able-auxiliary-right-planar-reflector are means to heat a working fluid, as air, gas or water or means to smelt metals, glass and rock or to process chemicals, or to process human or animal waste, as from a toilet.

BRIEF DESCRIPTION OF DRAWINGS

[0019] FIG. **1** illustrates a side view of the invented device. Shown are the tilt-able-central-planar-reflector, tilt-able-auxiliary-left-planar-reflector, and tilt-able-auxiliary-right-planar-reflector assembly. An actuator adjusts the angle of the assembly to the desired tilt, so as to make the sun's light from noon, sunrise, and sunset angles horizontal. The horizontal light then enters the open-void created by the interior wall of the reflecting-curved-overhang and the open-void created by the interior wall of the reflecting-parabolic-half-shell, which in turn redirect the sun's light to the solar-absorbing-thermal-mass.

[0020] FIG. **2** illustrates an overhead view of the invented device. Shown are the tilt-able-central-planar-reflector, tilt-able-auxiliary-left-planar-reflector, and tilt-able-auxiliary-right-planar-reflector assembly. The angle of the assembly is adjusted to the desired tilt, so as to make the sun's light from noon, sunrise, and sunset angles horizontal. The horizontal light then enters the open-void created by the interior wall of the reflecting-curved-overhang and the open-void created by the interior wall of the reflecting-parabolic-half-shell, which in turn redirect the sun's light to the solar-absorbing-thermal-mass.

[0021] FIG. **3** illustrates a frontal view of the invented device. Shown are the tilt-able-central-planar-reflector, tilt-able-auxiliary-right-planar-reflector, and the tilt-able-auxiliary-right-planar-reflector assembly. An actuator adjusts the angle of the assembly to the desired tilt, so as to make the sun's light from noon, sunrise, and sunset angles horizontal. The horizontal sun's light then enters the open-void created by the interior wall of the reflecting-curved-overhang and the open-void created by the interior wall of the reflecting-parabolic-half-shell, which in turn redirect the sun's light to the solar-absorbing-thermal-mass.

[0022] FIG. **4** illustrates a functional side view of the invented device. Shown are the tilt-able-central-planar-reflector, tilt-able-auxiliary-left-planar-reflector, and the tilt-able-auxiliary-right-planar-reflector assembly. An actuator adjusts the angle of the assembly to the desired tilt, so as to make the sun's light from noon, sunrise, and sunset angles horizontal. The horizontal sun's light then enters the open-void created by the interior wall of the reflecting-curved-overhang and the open-void created by the interior wall of the reflecting-parabolic-half-shell, which in turn redirects the sun's light to the solar-absorbing-mass. The solar-absorbing-thermal-mass contains a crucible for capturing the sun's concentrated light. The crucible is located at the foci of reflecting-curved-overhang and the foci of the reflecting-half-shell-parabolic. Thus the crucible is capable of smelting rocks, glass and metals, and to process chemicals, or to process human or animal waste, as from a toilet. The solar-absorbing-thermal-mass contains embedded-pipe to heat a working fluid, as air, gas, water, or a transfer fluid.

[0023] FIG. **5** illustrates the use of a wind turbine to heat the solar-absorbing-thermal-mass. When the tilt-able-central-planar-reflector is placed in the approximately 90 degree angle, it encloses the open-void created by interior wall of the reflecting-parabolic-half-shell and the interior wall of the reflecting-curved-overhang. The wind turbine generates electricity, which powers an embedded-heating-element, which in turn makes the solar-absorbing-thermal-mass hot. Thus, heat can be stored in the solar-absorbing-thermal-mass at night, in winter, in storms, and like. The approximately 90 degree angle of the tilt-able-central-planar-reflector helps to keep wind from cooling the solar-absorbing-thermal-mass, and helps to trap the heat from the embedded-heating-element.

DETAILED DESCRIPTION OF THE INVENTION

[0024] FIG. **1** shows a side view of the invented device. Shown are a reflecting-curved-overhang (**12**), and a reflecting-parabolic-half-shell (**1**). Shown is a tilt-able-central-planar-reflector (**2**), a tilt-able-auxiliary-left-planar-reflector (**3**) and a tilt-able-auxiliary-right-planar-reflector (**4**), which are adjustable to the sun's noon light (**16**), sun's sunrise light (**17**), and the sun's sunset light (**18**), making the sun's light (**16**, **17**, **18**) horizontal. The sun's light (**16**, **17**, **18**) then enters the open-void (**14**) created by the interior wall of the reflecting-curved-overhang (**12**) and the interior wall of the reflecting-parabolic-half-shell (**1**). The sun's light (**16**, **17**, **18**) is then redirected to the solar-absorbing-thermal-mass (**6**), which is bounded by an insulating-foundation (**10**). Shown are the hinges (**11**) that support the structural weight of the tilt-able-central-planar-reflector (**2**), the tilt-able-auxiliary-left-planar-reflector (**3**), and the tilt-able-auxiliary-right-planar-reflector (**4**). The hinges (**11**) can be attached to the lower body of the reflecting-curved-overhang (**12**), or to the solar-absorbing-thermal-mass (**6**), or to a post (**13**), which bears the structural weight of the tilt-able-central-planar-reflector (**2**), the tilt-able-auxiliary-left-planar-reflector (**3**) and the tilt-able-auxiliary-right-planar-reflector (**4**). An actuator (**15**) adjusts the tilt of the tilt-able-central-planar-reflector (**2**), the tilt-able-auxiliary-left-planar-reflector (**3**), and the tilt-able-auxiliary-right-planar-reflector (**4**). The tilt-able-central-planar-reflector (**2**), the tilt-able-auxiliary-left-planar-reflector (**3**), and the tilt-able-auxiliary-right-planar-reflector (**4**), all tilt in two degrees of freedom.

[0025] FIG. **2** illustrates an overhead view of the invented device. Shown is a tilt-able-central-planar-reflector (**2**) that is adjustable to the sun's noon light (**16**) elevation. The tilt-able-central-planar-reflector (**2**) reflects the sun's noon light (**16**) to the interior wall of the reflecting-parabolic-half-shell (**1**). Also shown is the tilt-able-auxiliary-left-planar-reflector (**3**) that is adjustable to the sun's sunrise light (**17**). The tilt-able-left-planar-reflector (**3**) reflects the sun's sunrise light (**17**) to the interior wall of the reflecting-curved-overhang (**12**). Shown is the foci (**21**) of the reflecting-curved-overhang (**12**), and the reflecting-parabolic-half-shell (**1**).

[0026] FIG. **2** also shows the tilt-able-auxiliary-right-planar-reflector (**4**) that is adjustable to the elevation of the sun's sunset light (**18**). The tilt-able-auxiliary-right-planar-reflector (**4**) reflects the sun's sunset light (**18**) to the interior wall of the reflecting-curved-overhang (**12**). Shown are the hinges (**11**), which can be attached hingely to the lower body of the reflecting-curved-overhang (**12**) or to a solar-absorbing-thermal-mass (**6**) or to a post (**13**), which bears the structural weight of the tilt-able-central-planar-reflector (**2**), the tilt-able-auxiliary-left-planar-reflector (**3**), and the tilt-able-auxiliary-right-planar-reflector (**4**). An actuator (**15**) adjusts the tilt of the tilt-able-central-planar-reflector (**2**), the tilt-able-auxiliary-left-planar-reflector (**3**), and the tilt-able-auxiliary-right-planar-reflector (**4**). The tilt-able-central-planar-reflector (**2**) the tilt-able-auxiliary-left-planar-reflector (**3**), and the tilt-able-auxiliary-right-planar-reflector (**4**), all tilt in two degrees of freedom.

[0027] FIG. **3** illustrates a frontal view of the invented device. Shown is an integrated and attached reflecting-curved-overhang (**12**) and a reflecting-parabolic-half-shell (**1**), creating an open-void (**14**). Shown is a tilt-able-central-planar-reflector (**2**), which is adjustable to the sun's noon light (**16**). When adjusted to the proper tilt angle, the tilt-able-central-planar-reflector (**2**) makes the sun's noon light (**16**) horizontal and reflects into the open-void (**14**), where the reflecting-parabolic-half-shell (**1**) redirects the sun's noon light (**16**) to the solar-absorbing-thermal-mass (**6**).

[0028] FIG. **3** also shows the tilt-able-auxiliary-left-planar-reflector (**3**), which is attached and adjacent to the tilt-able-central-planar-reflector (**2**). The auxiliary-left-tilt-able-planar-reflector (**3**) tilt angle is adjustable to sun's sunrise light (**17**). The tilt-able-auxiliary-left-planar-reflector (**3**) makes the sun's sunrise light (**17**) horizontal, which reflects from the interior wall of the reflecting-curved-overhang (**12**), which in turn redirects the sun's sunrise light (**17**) to the solar-absorbing-thermal-mass (**6**).

[0029] FIG. **3** also shows the tilt-able-auxiliary-right-planar-reflector (**4**), which is attached and adjacent to the tilt-able-central-planar-reflector (**2**). The tilt-able-auxiliary-auxiliary-right-planar-reflector (**4**) tilt angle is adjustable to the sun's sunset light (**18**). The tilt-able-auxiliary-right-planar-reflector (**4**) makes the sun's sunset light (**18**) horizontal, which then reflects the sun's sunset light (**18**) to the interior wall of the reflecting-curved-overhang (**12**) and reflecting-parabolic-half-shell (**1**), which in turn redirects the sun's sunset light (**18**) to the solar-absorbing-thermal-mass (**6**). The tilt-able-central-planar-reflector (**2**), the tilt-able-auxiliary-left-planar-reflector (**3**), and the tilt-able-auxiliary-right-planar-reflector (**4**) are moveable by an actuator (**15**). The tilt-able-central-planar-reflector (**2**), the tilt-able-auxiliary-left-planar-reflector (**3**), and the tilt-able-right-planar-reflector (**4**), all tilt in two degrees of freedom. The tilt-able-central-planar-reflector (**2**) is attached hingely (**11**) to the solar-absorbing-thermal-mass (**6**), or may in the alternative be attached hingely to a post (**13**). The tilt-able-auxiliary-left-planar-reflector (**3**) may be attached hingely (**11**) to the solar-absorbing-thermal-mass (**6**), or may in the alternative be attached hingely to a post (**13**). The tilt-able-auxiliary-right-planar-reflector (**4**) may be attached hingely (**11**) to the solar-absorbing-thermal-mass (**6**), or may in the alternative be attached hingely to a post (**13**). There can be several posts (**13**).

[0030] FIG. **4** shows a functional view of the invented device. Shown is a centrally located tilt-able-central-planar-reflector (**2**) that is adjustable to the elevation of the sun's noon elevation (**16**). The tilt-able-central-planar-reflector (**2**) makes the sun's noon light (**16**) horizontal, and reflects the sun's noon light (**16**) to the interior wall of the reflecting-parabolic-half-shell (**1**), which in turn redirects the sun's noon light (**16**) to the solar-absorbing-thermal-mass (**6**) and to the crucible (**5**). The crucible (**5**) is capable of smelting materials and making them molten, and is located at the foci (**21**) of the reflecting-parabolic-half-shell (**1**), and is also

located at the foci (**21**) of the reflecting-curved-overhang (**12**). The residual heat of the crucible (**5**) helps to heat the solar-absorbing-thermal-mass (**6**). Embedded in the solar-absorbing-thermal-mass (**6**) is embedded-pipe (**7**) that heats a working fluid, as air, gas, water or a transfer fluid. A blower or pump (**8**) is illustrated to show the movement of the working fluid in the embedded-pipe (**7**). Surrounding the solar-absorbing-thermal-mass (**6**) is an insulating-foundation (**10**), on top is an insulating-and-transparent-floor (**22**) and underneath is an insulating-layer (**9**), helping to trap the heat inside the solar-absorbing-thermal-mass (**6**).

[0031] FIG. **4** also shows hinges (**11**) which bear the structural weight of the tilt-able-central-planar reflector (**2**), the tilt-able-auxiliary-left-planar-reflector (**3**), and the right-auxiliary-tilt-able-auxiliary-right-planar-reflector (**4**). The tilt-able-central-planar-reflector (**2**), the tilt-able-auxiliary-left-planar-reflector (**3**), and the tilt-able-auxiliary-right-planar-reflector (**4**) can be attached hingely to the solar-absorbing-thermal-mass (**6**). In the alternative, the tilt-able-central-planar-reflector (**2**), the tilt-able-auxiliary-left-planar-reflector (**3**), and the tilt-able-auxiliary-right-planar-reflector (**4**) can be attached hingely to a post (**13**). There can be several posts (**13**).

[0032] FIG. **4** also shows the functional view of the tilt-able-auxiliary-left-planar reflector (**3**). The tilt-able-auxiliary-left-planar-reflector (**3**) is adjustable to the sun's sunrise light (**17**). The tilt-able-auxiliary-left-planar-reflector (**3**) makes the sun's sunrise light (**17**) horizontal. The sun's sunrise light (**17**) is directed to the interior wall of the reflecting-curved-overhang (**12**), which redirects the sun's sunrise light (**17**) to the solar-absorbing-thermal-mass (**6**). An open-void (**14**) is created by the boundaries of the interior wall of the reflecting-curved-overhang (**12**), the interior wall of the reflecting-parabolic-half-shell (**1**), and the solar-absorbing-thermal-mass (**6**).

[0033] FIG. **4** also shows the functional view of the tilt-able-auxiliary-right-planar-reflector (**4**). The tilt-able-auxiliary-right-planar-reflector (**4**) is adjustable to the sun's sunset light (**18**). The tilt-able-auxiliary-right-planar-reflector (**4**) makes the sun's sunset light (**18**) horizontal. The sun's sunset light (**18**) is reflected to the interior wall of the reflecting-curved-overhang (**12**) which redirects the sun's sunset light (**18**) to the solar-absorbing-thermal-mass (**6**). The tilt-able-central-planar-reflector (**2**), the tilt-able-auxiliary-left-planar-reflector (**3**), and the tilt-able-auxiliary-right-planar-reflector (**4**) tilt in unison to the desired angle. The tilt-able-central-planar-reflector (**2**), the tilt-able-auxiliary-left-planar-reflector (**3**), and the tilt-able-right-planar-reflector (**4**) are moveable by an actuator (**15**). The tilt-able-central-planar-reflector (**2**), the tilt-able-auxiliary-left-planar-reflector (**3**), and the tilt-able-right-planar-reflector (**4**), all tilt in two degrees of freedom. An insulating-and-transparent floor (**22**) captures any stray rays (**24**) not captured by the focal (**21**) inside the crucible (**5**).

[0034] FIG. **5** shows a wind turbine (**19**) that powers an embedded-heating-element (**20**) using electricity generated by the wind turbine (**19**), which is embedded inside the solar-absorbing-thermal-mass (**6**). The wind turbine (**19**) heats the solar-absorbing-thermal-mass (**6**). The tilt-able-central-planar-reflector (**2**) is shown in the approximately 90 degree angle (**23**), moved by an actuator (**15**). Thus the open-void (**14**) created by the boundaries of the interior wall of the reflecting-curved-overhang (**12**), the interior wall of the reflecting-parabolic-half-shell (**1**), and the solar-absorbing-thermal-mass (**6**) is enclosed by the tilt-able-central-planar-reflector (**2**). Shown are a hinge (**11**) and a post (**13**) to support the structural weight of the tilt-able-central-planar-reflector (**2**). Thus the tilt-able-central-planar-reflector (**2**) helps to keep the wind from cooling the solar-thermal-absorbing-mass (**6**), and helps to trap the heat from the embedded-heating-element (**20**). Thus, heat is created at night, in winter, in storms and like.

1. An assembly comprising of a tilt-able-central-planar-reflector, a tilt-able-auxiliary-left-planar-reflector, tilt-able-auxiliary-right-planar-reflector;

said tilt-able-central-planar-reflector hingely, adjacent and attached to a solar-absorbing-thermal-mass or to post;

said tilt-able-auxiliary-left-planar-reflector hingely, adjacent and attached to said solar-absorbing-thermal-mass or to other post;

said tilt-able-auxiliary-right-planar-reflector hingely, adjacent and attached to the solar-absorbing-thermal-mass or to other post;

the tilt-able-auxiliary-left-planar-reflector, adjacent and attached to the tilt-able-central-planar-reflector;

the tilt-able-auxiliary-right-planar-reflector, adjacent and attached to the tilt-able-central-planar-reflector;

the tilt-able-central-planar-reflector, the tilt-able-auxiliary-left-planar-reflector, the tilt-able-auxiliary-right-planar-reflector adjustable in tilt via an actuator;

the tilt-able-central-planar-reflector, the tilt-able-auxiliary-left-planar-reflector, the tilt-able-auxiliary-right-planar-reflector adjustable in tilt in two degrees of freedom;

the tilt-able-central-planar-reflector, the tilt-able-auxiliary-left-planar-reflector, the tilt-able-auxiliary-right-planar-reflector adjustable in tilt according to the elevation of the sun;

the tilt-able-central-planar-reflector, the tilt-able-auxiliary-left-planar-reflector, the tilt-able-auxiliary-right-planar-reflector movable in unison;

the tilt-able-central-planar-reflector making the sun's noon light horizontal;

said sun's noon light reflecting to a interior wall of a reflecting-half-shell-parabolic;

the tilt-able-left-planar-reflector making the sun's sunrise light horizontal;

said sun's sunrise light reflecting to said interior wall of a reflecting-curved-overhang;

the tilt-able-right-planar-reflector making the sun's sunset light horizontal;

said sun's sunset light reflecting to the interior wall of said reflecting-curved-overhang.

2. A tilt-able-central-planar-reflector of claim **1** in the approximately upright 90 degree position;

said tilt-able-central-planar-reflector of claim **1** enclosing a open-void created by the boundaries of a interior wall of claim **1** of a reflecting-curved-overhang of claim **1**, said interior wall of claim **1** of a reflecting-parabolic-half-shell of claim **1**, and a solar-absorbing-thermal-mass of claim **1**;

the tilt-able-central-planar-reflector of claim **1** helping to keep wind from cooling said solar-absorbing-thermal-mass of claim **1**:

the solar-absorbing-thermal-mass of claim **1** containing a embedded-heating-element powered by electricity from a wind turbine;

the tilt-able-central-planar-reflector of claim **1** means to trap the heat of said embedded-heating-element.

* * * * *