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(54) **STIRRING APPARATUS FOR SYNTHETIC PARTICLES AND HEATING METHOD THEREFOR**
RÜHRVORRICHTUNG FÜR SYNTHETISCHE TEILCHEN UND ERWÄRMUNGSVERFAHREN
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Description

TECHNICAL FIELD

[0001] The present disclosure relates to a heating and mixing technology for composite particles, and more particularly, relates to a mixing plant for composite particles and a heating method of the mixing plant.

BACKGROUND

[0002] In the present global power stations, a requirement of the coal for the power generating boiler is extreme greater. However, when burning, the fossil fuel such as coal discharges a large quantity of gas which causes a greenhouse effect and a large quantity of dust which cannot be eliminated. Therefore, a new green power "biofuel" is adopted to replace the fossil fuel such as the traditional coal. The biofuel is transferred from condensed residual waste plant fiber of plants in general or commercial crops, such as halm, straw, weed tree, palm kernel shell, or coconut shell.

[0003] However, a conventional plant for composite particles generally requires a heating to the material therein. The conventional heating methods includes: providing an electric heating tube in the mixing tank, performing a steaming and baking treatment to the whole mixing tank, and so on. However, such treatments may results problems such as a poor temperature controllability, an uneven heat to the material in the mixing tank, and a high improvement cost. Therefore, the prior mixing plant for composite particles requires a further improvement to the heating method.

[0004] EP 2 418 075 A2 discloses a device for producing biomass pellets that comprises a mixer. The mixer comprises an open top vessel having a hollow shaft agitator rotatably mounted therein. The hollow shaft agitator has a plurality of nozzles on its shaft from which hot air is injected into the vessel.

[0005] US 2015/0138908 A1 discloses a kneading device having a hopper that includes a stirring device and a temperature controlled air supply device for supplying air into the hopper body.

[0006] DE 2 102 328 discloses a mixing apparatus in which a bituminous-mineral mix is produced in a rotary furnace having a burner at one end firing into a first zone to which a mineral filler is delivered.

SUMMARY

[0007] Accordingly, it is necessary to provide a mixing plant for composite particles and a heating method of the mixing plant, which are directed to solve the problem of an uneven heating of the material in the mixing tank in the prior art.

[0008] Aspects of the invention are set out in the appended claims.

[0009] In a mixing plant for composite particles as per

the subject-matter of claim 1, a heat conductive pipe which defines a plurality of hot air entrance holes operates to inhale hot air close to a heat source into an air communication passage constituted by a primary heat conductive pipe and the heat conductive pipe. When the primary heat conductive pipe is in communication with an inner chamber of a mixing tank, the hot air is introduced into the rotatable mixing tank by the primary heat conductive pipe, thereby achieving a heating, the heating method can provide a more homogeneous heating, and further causes the temperature in the mixing tank to be raised gradually, and enhances a controllability of the temperature in the mixing tank without additionally adding an electric heat tube circuit. An improvement cost for adding a heating function to the plant which does not have a heating function is low. In addition, a heat conduction and heat treatment of the whole mixing tank is eliminated, thereby a negative effect that causes damage to the housing of the mixing tank is avoided.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] To illustrate the technical solutions according to the embodiments of the present invention or in the prior art more clearly, the accompanying drawings for describing the embodiments or the prior art are introduced briefly in the following. Apparently, the accompanying drawings in the following description are only some embodiments of the present invention, and persons of ordinary skill in the art can derive other drawings from the accompanying drawings without creative efforts.

FIG. 1 is a perspective view of a plant according to one embodiment;

FIG. 2 is a plan view of a plant according to one embodiment;

FIG. 3 is a side view of a plant according to one embodiment;

FIG. 4 is a cross-sectional view, taken along line A-A of FIG. 3;

FIG. 5 is a cross-sectional view, taken along line B-B of FIG. 3;

FIG. 6 is a perspective view showing an internal of a mixing tank according to one embodiment;

FIG. 7 is a side view of a mixing tank according to an embodiment;

FIG. 8 is a top view of a plant according to an embodiment; and

FIG. 9 is a cross-sectional view, taken along line A-A of FIG. 8.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0011] Embodiments of the invention are described more fully hereinafter with reference to the accompanying drawings, in which preferred embodiments of the invention are shown.

[0012] It will be understood that when an element is

referred to as being "fixed" to another element, it can be directly fixed to the other element or intervening elements may be present. When an element is referred to as being "connected" or "coupled" to another element, it can be directly connected or coupled to the other element or intervening elements may be present. The terminology "perpendicular", "horizontal", "left", "right" and similar expressions herein are for the purpose of illustration, and not for a unique implemented mode.

[0013] Unless otherwise defined, all terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this invention belongs. Terms in the description of the connector are for the purpose of describing specific embodiments, and are not intended to limit the invention. As used herein, the term "and/or" includes any and all combinations of one or more of the associated listed items.

[0014] As shown in FIG. 1, a mixing plant 200 for composite particles is provided. The plant 200 includes a rotatable mixing tank 230, a fixing bracket 240 for supporting aforementioned mixing tank 230, at least one heat conductive pipe 210, a primary heat conductive pipe 220, and a pneumatic valve 250.

[0015] The mixing tank 230 can be driven to rotate by a motor. For example, in one embodiment, opposite ends of the mixing tank 230 are provided with tooth discs 231. The tooth disc 231 is arranged along a peripheral direction of the end of the mixing tank 230. The tooth disc 231 is connected to the motor via a gear transmission mechanism. After an electric drive, the mixing tank 230 is driven by the gear transmission mechanism to realize a rotation around a central axis of the mixing tank 230, thereby accomplishing a stirring of the materials in an inner chamber of the mixing tank.

[0016] In the illustrated embodiment, aforementioned heat conductive pipe 210 defines a plurality of hot air entrance holes 211 on a sidewall thereof facing a heat source. The primary heat conductive pipe 220 is in communication with an inner chamber of the mixing tank 230. The primary heat conductive pipe 220 is in communication with the heat conductive pipe 210, the primary heat conductive pipe 220 and the heat conductive pipe 210 constitute an air communication passage. The pneumatic valve 250 is located in the air communication passage. The pneumatic valve 250 is configured to control an atmospheric pressure. When the atmospheric pressure in the air communication passage is too great, it can be detected by the pneumatic valve 250, and the pneumatic valve 250 is initiated to perform a decompression to the atmospheric pressure.

[0017] It shows that, in one embodiment, hot air close to a heat source can be inhaled into the air communication passage by the heat conductive pipe, and is introduced into the rotatable mixing tank by the primary heat conductive pipe, thereby achieving a heating, such heating method can provide a more homogeneous heating, and provide a drying treatment for the wet materials in the mixing tank. The heat source mentioned here can be

any devices which can provide a high temperature gas, such as a heating furnace.

[0018] As shown in FIG. 1 and FIG. 2, on basis of the structural foundation of above embodiment, in one embodiment, the fixing bracket 240 includes at least two supporting walls 241, the supporting wall 241 defines a fixing hole which is provided for the at least one heat conductive pipe 210 extending through and fixing the heat conductive pipe to the fixing bracket 240. The plurality of hot air entrance holes 211 are defined on a portion of the heat conductive pipe 210 which is located between the two supporting walls 241. The two supporting walls 241 support the mixing tank 230 to create a distance from a supporting surface (e.g. the ground surface), the heat source (e.g. the heating furnace) is located within the distance, an occupying space can be saved, causing the plant to have a more compact structure.

[0019] In addition, in order to conveniently inhale the air or diffuse the air in the air communication passage, in one embodiment, both the primary heat conductive pipe 220 and the heat conductive pipe 210 have hollow tubular shapes. The primary heat conductive pipe 220 and the heat conductive pipe 210 are parallel arranged, and arranged in parallel to an axis of the mixing tank 230. The hollow tubular shape mentioned here in the illustrated embodiment can be a hollow tubular structure which has a cross-section of any shape, such as a hollow circular tube, a hollow tube having a trapezoidal cross-section, a hollow elliptical tube, a hollow square tube.

[0020] In order to accelerate a diffusion of the hot air in the mixing tank, as shown in FIG. 1 through FIG. 3, in one embodiment, both the primary heat conductive pipe 220 and the heat conductive pipe 210 are hollow circular tubes. A diameter of the primary heat conductive pipe 220 is greater than a diameter of the heat conductive pipe. Apparently, the primary heat conductive pipe 220 can also adopt a structure which has a plurality of heat exchange tubes. For example, a plurality of heat exchange tubes are located in the mixing tank to form a primary radiating tube, the plurality of heat exchange tubes are in communication with the heat conductive pipe 210 to form the air communication passage.

[0021] In addition, in order to constantly heat the material in the mixing tank in a rotation process of the mixing tank, as shown in FIG. 3 through FIG. 5, in one embodiment, an end of the mixing tank 230 is provided with a sealing cover 280. The sealing cover 280 defines a through hole thereon. The primary heat conductive pipe 220 extends through the through hole and into the mixing tank 230. The through hole of the sealing cover 280 is connected to the primary heat conductive pipe 220 via a bearing 270. In the illustrated embodiment, when the mixing tank 230 rotates, a rotation of the mixing tank 230 can be separated from the primary heat conductive pipe 220 by a limitation of the bearing 270, a following movement of the primary heat conductive pipe 220 accompanying to the mixing tank 230 can be avoided. Apparently, in other embodiments, the primary heat conductive pipe

is linked to the sealing cover 280 of the mixing tank for moving.

[0022] As shown in FIG. 4 through FIG. 6, on basis of the structural foundation of any one aforementioned embodiment, in one embodiment, an end of the primary heat conductive pipe 220 extends into the mixing tank 230, and a portion of the primary heat conductive pipe 220 which extends into the mixing tank 230 defines at least one row of hot air exhaust holes 221 along a longitudinal direction. The at least one row of hot air exhaust holes 221 is arranged along a longitudinal direction of the primary heat conductive pipe 220. Apparently, the portion of the primary heat conductive pipe 220 which extends into the mixing tank 230 can also define at least one loop of hot air exhaust holes 221 along a peripheral direction. The pluralities of hot air exhaust holes 221 are mainly arranged to diffuse the hot air into the mixing tank rapidly, causing a heating to be more homogeneous.

[0023] As shown in FIG. 1 through FIG. 9, a vertical height of the at least one heat conductive pipe is less than a vertical height of the primary heat conductive pipe. The vertical height mentioned here indicates a distance between an axis of the heat conductive pipe or an axis of the primary heat conductive pipe and the supporting surface (e.g. the ground surface). In the illustrated embodiment, a hot air self-diffusion principle can be utilized to enable the hot air to be delivered and diffused automatically in the air communication passage, without adopting external force to diffuse the hot air in the air communication passage.

[0024] As shown in FIG. 5 through FIG. 9, on basis of the structural foundation of any one aforementioned embodiment, in one embodiment, the air communication passage defines an exhaust through hole 291 and includes a first connecting tube 293, a second connecting tube 292, the at least one heat conductive pipe 210, and the primary heat conductive pipe 220. The at least one heat conductive pipe 210 is in communication with the first connecting tube 293. The first connecting tube 293 is in communication with the exhaust through hole 291. The first connecting tube 293 is further in communication with the primary heat conductive pipe 220 via the second connecting tube 292. The pneumatic valve 250 is positioned on the second connecting tube 292. The first connecting tube 293 is a four-way adapter coupling, or a multi-way adapter coupling. In addition, as shown in FIG. 9, the first connecting tube 293 and the second connecting tube 292 can be fixed or supported by the bracket 260, so as to fixedly support an air communication passage assembly outside of the mixing tank 230.

[0025] As shown in FIG. 5 and FIG. 6, on basis of the structural foundation of any one aforementioned embodiment, in one embodiment, in order to accelerate a flowing of the hot air in the air communication passage, the plant further includes an air pump (not shown), the air pump is connected to the air communication passage, and configured to pump the hot air close to the heat source into the at least one heat conductive pipe via the hot air en-

trance holes, i.e. a negative pressure can be generated in the at least one heat conductive pipe by the air pump, thereby causing the hot air close to the heat source to be quickly inhaled into the at least one heat conductive pipe.

[0026] As shown in FIG. 4 and FIG. 5, on basis of the structural foundation of any one aforementioned embodiment, in one embodiment, the mixing tank 230 further includes a plurality of elongated members 232. The plurality of elongated members 232 are arranged along an inner wall of the mixing tank 230 and spaced from each other, and the plurality of elongated members 232 are arranged in a spiral shape. Angles between each elongated member 232 and the axis of the mixing tank 230 are the same. Each elongated member 232 extends from an end of the mixing tank 230 to an opposite end of the mixing tank 230. When the mixing tank 230 rotates, the elongated member 232 follows and rotates to generate a wind force which blows into an inner of the mixing tank 230 and inhales composite particles from the entrance holes into the inner. When the mixing tank 230 rotates reversely, the elongated member 232 follows and rotates to generate a wind force which blows outside the mixing tank 230, and composite particles are outputted from outlets.

[0027] In order to solve the problem of an uneven heat of the material in the mixing tank in the prior art, in one embodiment, a mixing plant for composite particles is provided. By providing a heat conductive pipe which defines a plurality of hot air entrance holes, the hot air close to a heat source is inhaled into an air communication passage constituted by the primary heat conductive pipe and the heat conductive pipe. When the primary heat conductive pipe is in communication with an inner chamber of the mixing tank, the hot air is introduced into the rotatable mixing tank by the primary heat conductive pipe, thereby achieving a heating, the heating method can provide a more homogeneous heating, and further causes the temperature in the mixing tank to be raised gradually, and enhances a controllability of the temperature in the mixing tank without additionally adding an electric heat tube circuit. An improvement cost for adding a heating function to the plant which does not have a heating function is low. In addition, a heat conduction and heat treatment of the whole mixing tank is eliminated, thereby a negative effect that causes damage to the housing of the mixing tank is avoided.

[0028] Technical features of above embodiments can be combined arbitrarily, for simple, any combination of every technical feature in above embodiments is not all illustrated. However, the technical features which are not contradicted to each other may fall into the scope of the specification.

[0029] Based upon aforementioned plant, in one embodiment, a heating method of a mixing tank for composite particles is provided, which includes: hot air close to the heat source is sucked into an air communication passage constituted by the primary heat conductive pipe and

the heat conductive pipe, by providing a heat conductive pipe which defines a plurality of hot air entrance holes; the primary heat conductive pipe is in communication with an inner chamber of the mixing tank, thereby the hot air is introduced into the rotatable mixing tank by the primary heat conductive pipe. The structural configuration of the heat conductive pipe and the primary heat conductive pipe can be referred from aforementioned related illustration, and is not specific illustrated herein.

[0030] The above are several embodiments of the present invention described in detail, and should not be deemed as limitations to the scope of the present invention. It should be noted that variations and improvements will become apparent to those skilled in the art to which the present invention pertains without departing from the scope of the present invention as defined by the appended claims.

Claims

1. A mixing plant (200) for composite particles, comprising:

a mixing tank (230) having an inner chamber;
a fixing bracket (240) for supporting the mixing tank;

at least one heat conductive pipe (210); and
a primary heat conductive pipe (220) in communication with the inner chamber, wherein the primary heat conductive pipe is in communication with the heat conductive pipe to form an air communication passage, and wherein the mixing tank (230) is drivable to rotate around the primary heat conductive pipe;

characterised in that:

the heat conductive pipe (210) defines a plurality of hot air entrance holes (211) on a sidewall thereof facing a heat source;

the mixing plant further comprises a pneumatic valve (250) located in the air communication passage; and

both the heat conductive pipe (210) and the primary heat conductive pipe (220) are arranged to lie parallel to a horizontal axis of the mixing tank (230), wherein a vertical height of the at least one heat conductive pipe (210) is less than a vertical height of the primary heat conductive pipe (220).

2. The plant according to claim 1, wherein the fixing bracket (240) has at least two supporting walls (241), the supporting wall defines a fixing hole which is provided for the at least one heat conductive pipe (210) extending through and fixing the heat conductive pipe to the fixing bracket, and the plurality of hot air entrance holes (211) are defined on a portion of the

heat conductive pipe which is located between the two supporting walls.

3. The plant according to claim 1, wherein both the primary heat conductive pipe (22) and the heat conductive pipe (210) have hollow tubular shapes.

4. The plant according to claim 1, wherein a diameter of the primary heat conductive pipe (220) is greater than a diameter of the heat conductive pipe (210).

5. The plant according to claim 1, wherein an end of the mixing tank is provided with a sealing cover (280), the sealing cover defines a through hole thereon, the primary heat conductive pipe (220) extends through the through hole and into the mixing tank, the primary heat conductive pipe is located in the through hole of the sealing cover via a bearing (270).

6. The plant according to claim 1, wherein an end of the primary heat conductive pipe extends into the mixing tank, and a portion of the primary heat conductive pipe which extends into the mixing tank defines at least one row of hot air exhaust holes (221) arranged along a longitudinal direction, or a portion of the primary heat conductive pipe which extends into the mixing tank defines at least one loop of hot air exhaust holes along a peripheral direction.

7. The plant according to claim 1, wherein the air communication passage further defines an exhaust through hole (291), the at least one heat conductive pipe is in communication with a first connecting tube (293), the first connecting tube is in communication with the exhaust through hole, and the first connecting tube is further in communication with the primary heat conductive pipe (220) via a second connecting tube (292), the pneumatic valve (250) is located on the second connecting tube.

8. The plant according to claim 1, further comprising an air pump, wherein the air pump is connected to the air communication passage, and configured to pump hot air close to a heat source into the at least one heat conductive pipe via the hot air entrance holes

9. A heating method of a mixing tank (230) for composite particles, the method comprising:

inhaling hot air close to a heat source into an air communication passage which is constituted by a primary heat conductive pipe (220) and a heat conductive pipe (210), by providing a heat conductive pipe which defines a plurality of hot air entrance holes (211);

communicating the primary heat conductive pipe (220) with an inner chamber of the mixing

tank, thereby introducing the hot air into the mixing tank by the primary heat conductive pipe; and driving the mixing tank to rotate around the primary heat conductive pipe, wherein both the heat conductive pipe (210) and the primary heat conductive pipe (220) are arranged to lie parallel to a horizontal axis of the mixing tank (230), wherein a vertical height of the at least one heat conductive pipe (210) is less than a vertical height of the primary heat conductive pipe (220).

Patentansprüche

1. Mischanlage (200) für Verbundteilchen, Folgendes umfassend:

einen Mischtank (230) mit einer Innenkammer; eine Befestigungshalterung (240) zum Halten des Mischtanks;

zumindest ein wärmeleitendes Rohr (210); und ein primäres wärmeleitendes Rohr (220) in Kommunikation mit der Innenkammer, wobei das primäre wärmeleitende Rohr in Kommunikation mit dem wärmeleitenden Rohr steht, um einen Luftkommunikationsdurchgang auszubilden, und wobei der Mischtank (230) antreibbar ist, um sich um das primäre wärmeleitende Rohr zu drehen;

dadurch gekennzeichnet, dass

das wärmeleitende Rohr (210) eine Vielzahl von Heißlufteingangslöchern (211) auf einer einer Wärmequelle zugewandten Seitenwand desselben definiert;

die Mischanlage ferner ein Pneumatikventil (250) umfasst, das im Luftkommunikationsdurchgang angeordnet ist; und

sowohl das wärmeleitende Rohr (210) und das primäre wärmeleitende Rohr (220) so angeordnet sind, dass sie parallel zu einer horizontalen Achse des Mischtanks (230) liegen, wobei die vertikale Höhe des zumindest einen wärmeleitenden Rohrs (210) kleiner ist als die vertikale Höhe des primären wärmeleitenden Rohrs (220).

2. Anlage nach Anspruch 1, wobei die Befestigungshalterung (240) zumindest zwei Stützwände (241) umfasst, wobei die Stützwände ein Befestigungsloch definieren, das für das zumindest eine wärmeleitende Rohr (210) bereitgestellt ist und sich durch das wärmeleitende Rohr hindurch erstreckt und es auf der Befestigungshalterung befestigt, und wobei die Vielzahl von Heißlufteingangslöchern (211) auf einem Abschnitt des wärmeleitenden Rohrs, der zwischen den zwei Stützwänden angeordnet ist, definiert sind.

niert sind.

3. Anlage nach Anspruch 1, wobei sowohl das primäre wärmeleitende Rohr (22) als auch das wärmeleitende Rohr (210) eine hohle, rohrförmige Form aufweisen.

4. Anlage nach Anspruch 1, wobei der Durchmesser des primären wärmeleitenden Rohrs (220) größer als der Durchmesser des wärmeleitenden Rohrs (210) ist.

5. Anlage nach Anspruch 1, wobei ein Ende des Mischtanks mit einer Dichtungsabdeckung (280) bereitgestellt ist, wobei die Dichtungsabdeckung ein Durchgangsloch darin definiert, wobei sich das primäre wärmeleitende Rohr (220) durch das Durchgangsloch hindurch und in den Mischtank hinein erstreckt, wobei das primäre wärmeleitende Rohr über ein Lager (270) im Durchgangsloch der Dichtungsabdeckung angeordnet ist.

6. Anlage nach Anspruch 1, wobei ein Ende des primären wärmeleitenden Rohrs sich in den Mischtank hinein erstreckt und ein Abschnitt des primären wärmeleitenden Rohrs, der sich in den Mischtank hinein erstreckt, zumindest eine Reihe von Heißluftauslasslöchern (221), die entlang einer Längsrichtung angeordnet sind, definiert, oder wobei ein Abschnitt des primären wärmeleitenden Rohrs, der sich in den Mischtank hinein erstreckt, zumindest eine Schleife von Heißluftauslasslöchern entlang einer Umfangsrichtung definiert.

7. Anlage nach Anspruch 1, wobei der Luftkommunikationsdurchgang ferner ein Auslassdurchgangsloch (291) definiert, wobei das zumindest eine wärmeleitende Rohr in Kommunikation mit einem ersten Verbindungsrohr (293) steht, wobei das erste Verbindungsrohr in Kommunikation mit dem Auslassdurchgangsloch steht und das erste Verbindungsrohr ferner über ein zweites Verbindungsrohr (292) mit dem primären wärmeleitenden Rohr (220) in Kommunikation steht, wobei das Pneumatikventil (250) auf dem zweiten Verbindungsrohr angeordnet ist.

8. Anlage nach Anspruch 1, ferner umfassend eine Luftpumpe, wobei die Luftpumpe mit dem Luftkommunikationsdurchgang verbunden ist und dazu ausgelegt ist, Heißluft nahe einer Wärmequelle über die Heißlufteingangslöcher in das zumindest eine wärmeleitende Rohr zu pumpen.

9. Heizverfahren eines Mischtanks (230) für Verbundteilchen, wobei das Verfahren Folgendes umfasst:

Einsaugen von Heißluft nahe einer Wärmequelle

le in einen Luftkommunikationsdurchgang, der durch ein primäres wärmeleitendes Rohr (220) und ein wärmeleitendes Rohr (210) gebildet ist, durch Bereitstellen eines wärmeleitenden Rohrs, das eine Vielzahl von Heißlufteingangslöchern (211) definiert;

Verbinden des primären wärmeleitenden Rohrs (220) mit einer Innenkammer des Misch tanks, wodurch die Heißluft durch das primäre wärmeleitende Rohr in den Misch tank eingebracht wird; und

Antreiben des Misch tanks, sodass er sich um das primäre wärmeleitende Rohr dreht, wobei sowohl das wärmeleitende Rohr (210) und das primäre wärmeleitende Rohr (220) so angeordnet sind, dass sie parallel zu einer horizontalen Achse des Misch tanks (230) liegen, wobei die vertikale Höhe des zumindest einen wärmeleitenden Rohrs (210) kleiner ist als die vertikale Höhe des primären wärmeleitenden Rohrs (220).

Revendications

1. Installation de mélange (200) pour des particules composites, comprenant :

un réservoir de mélange (230) présentant une chambre interne ;

un support de fixation (240) pour supporter le réservoir de mélange ;

au moins un tube thermoconducteur (210) ; et un tube thermoconducteur principal (220) en communication avec la chambre interne, dans laquelle le tube thermoconducteur principal est en communication avec le tube thermoconducteur pour former un passage de communication d'air, et dans laquelle le réservoir de mélange (230) peut être entraîné pour tourner autour du tube thermoconducteur principal ;

caractérisée en ce que :

le tube thermoconducteur (210) définit une pluralité de trous d'entrée d'air chaud (211) sur une paroi latérale de celui-ci faisant face à une source de chaleur ;

l'installation de mélange comprend en outre une vanne pneumatique (250) située dans le passage de communication d'air ; et

le tube thermoconducteur (210) et le tube thermoconducteur principal (220) sont agencés pour être parallèles à un axe horizontal du réservoir de mélange (230), dans laquelle une hauteur verticale du au moins un tube thermoconducteur (210) est inférieure à une hauteur verticale du tube thermoconducteur principal (220).

2. Installation selon la revendication 1, dans laquelle le support de fixation (240) présente au moins deux parois de support (241), la paroi de support définit un trou de fixation qui est prévu pour le au moins un tube thermoconducteur (210) s'étendant à travers et fixant le tube thermoconducteur au support de fixation, et la pluralité de trous d'entrée d'air chaud (211) sont définis sur une partie du tube thermoconducteur qui est située entre les deux parois de support.

3. Installation selon la revendication 1, dans laquelle à la fois le tube thermoconducteur principal (22) et le tube thermoconducteur (210) présentent des formes tubulaires creuses.

4. Installation selon la revendication 1, dans laquelle un diamètre du tube thermoconducteur principal (220) est supérieur à un diamètre du tube thermoconducteur (210).

5. Installation selon la revendication 1, dans laquelle une extrémité du réservoir de mélange est munie d'un couvercle d'étanchéité (280), le couvercle d'étanchéité définit un trou traversant sur celui-ci, le tube thermoconducteur principal (220) s'étend à travers le trou traversant et dans le réservoir de mélange, le tube thermoconducteur principal est situé dans le trou traversant du couvercle d'étanchéité via un palier (270).

6. Installation selon la revendication 1, dans laquelle une extrémité du tube thermoconducteur principal s'étend dans le réservoir de mélange, et une partie du tube thermoconducteur principal qui s'étend dans le réservoir de mélange définit au moins une rangée de trous d'échappement d'air chaud (221) agencés le long d'une direction longitudinale, ou une partie du tube thermoconducteur principal qui s'étend dans le réservoir de mélange définit au moins une boucle de trous d'échappement d'air chaud le long d'une direction périphérique.

7. Installation selon la revendication 1, dans laquelle le passage de communication d'air définit en outre un trou traversant d'échappement (291), le au moins un tube thermoconducteur est en communication avec un premier tube de connexion (293), le premier tube de connexion est en communication avec le trou traversant d'évacuation, et le premier tube de connexion est en outre en communication avec le tube thermoconducteur principal (220) via un second tube de connexion (292), la vanne pneumatique (250) est située sur le second tube de connexion.

8. Installation selon la revendication 1, comprenant en outre une pompe à air, dans laquelle la pompe à air est connectée au passage de communication d'air, et configurée pour pomper de l'air chaud à proximité

d'une source de chaleur dans le au moins un tube thermoconducteur via les trous d'entrée d'air chaud

9. Procédé de chauffage d'un réservoir de mélange (230) pour des particules composites, le procédé 5
comprenant les étapes consistant à :

inhaler de l'air chaud à proximité d'une source
de chaleur dans un passage de communication
d'air qui est constitué d'un tube thermoconduc- 10
teur principal (220) et d'un tube thermoconduc-
teur (210), en fournissant un tube thermocon-
ducteur qui définit une pluralité de trous d'entrée
d'air chaud (211) ;
mettre en communication le tube thermocon- 15
ducteur principal (220) avec une chambre inter-
ne du réservoir de mélange, en introduisant ainsi
l'air chaud dans le réservoir de mélange par l'in-
termédiaire du tube thermoconducteur
principal ; et 20
entraîner le réservoir de mélange à tourner
autour du tube thermoconducteur principal,
dans lequel le tube thermoconducteur (210) et
le tube thermoconducteur principal (220) sont
agencés pour être parallèles à un axe horizontal 25
du réservoir de mélange (230), dans lequel une
hauteur verticale du au moins un tube thermo-
conducteur (210) est inférieure à une hauteur
verticale du tube thermoconducteur principal
(220). 30

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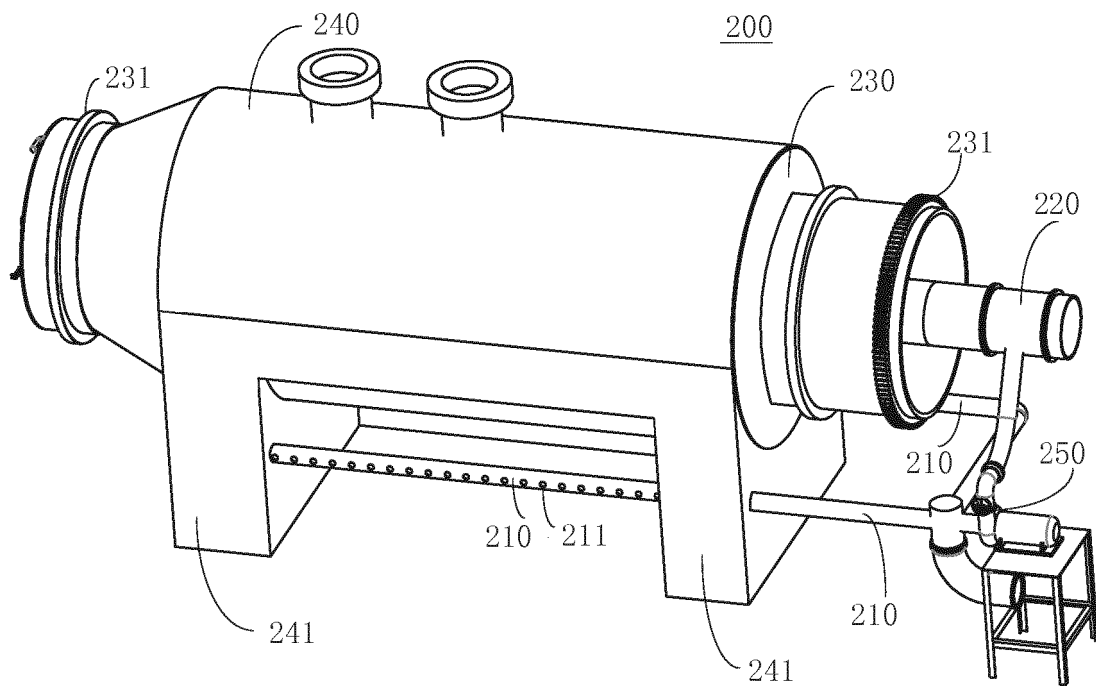


FIG. 1

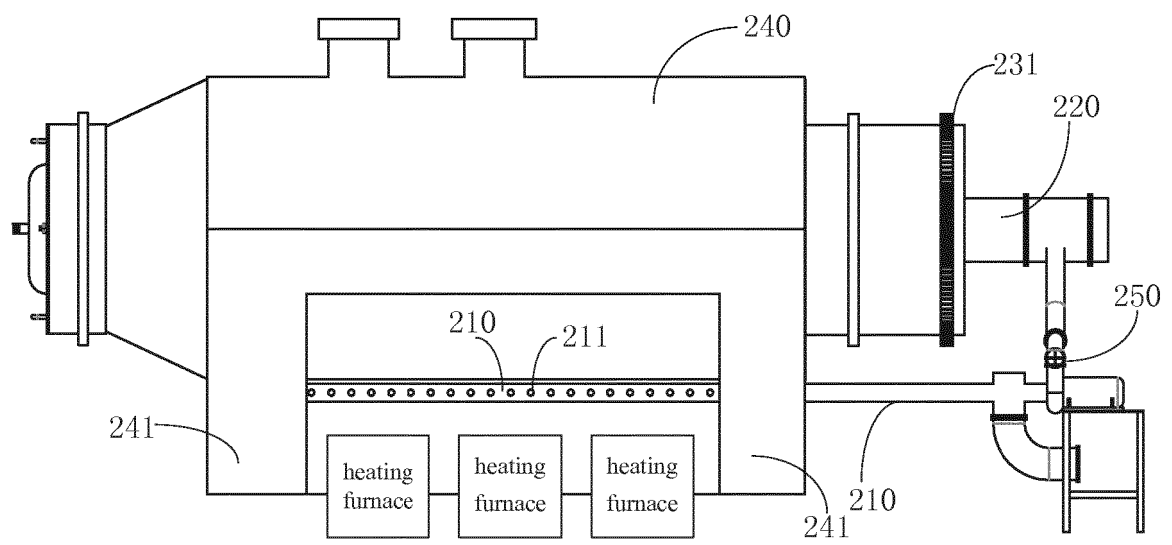


FIG. 2

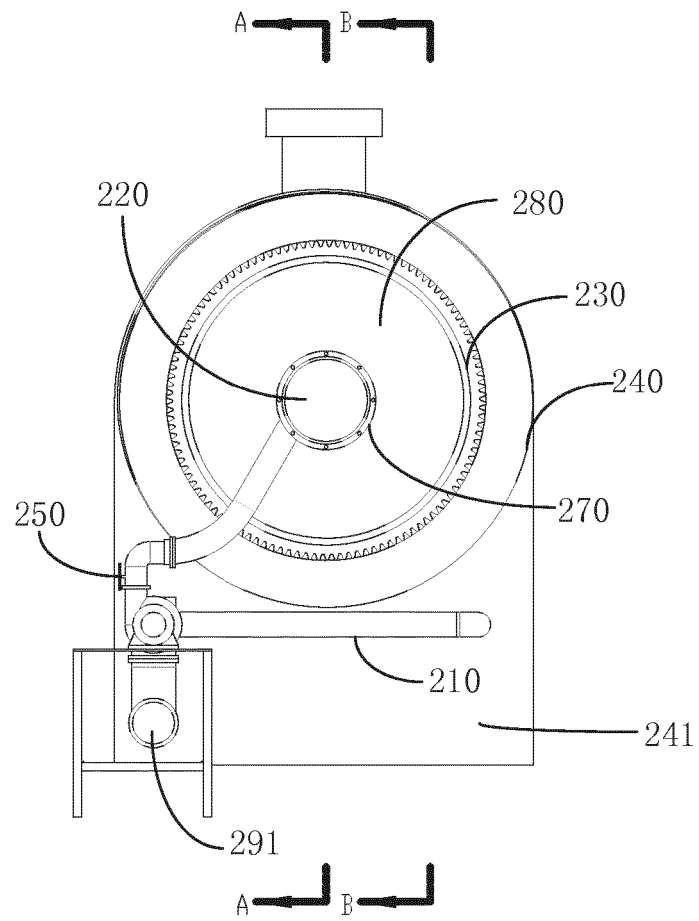


FIG. 3

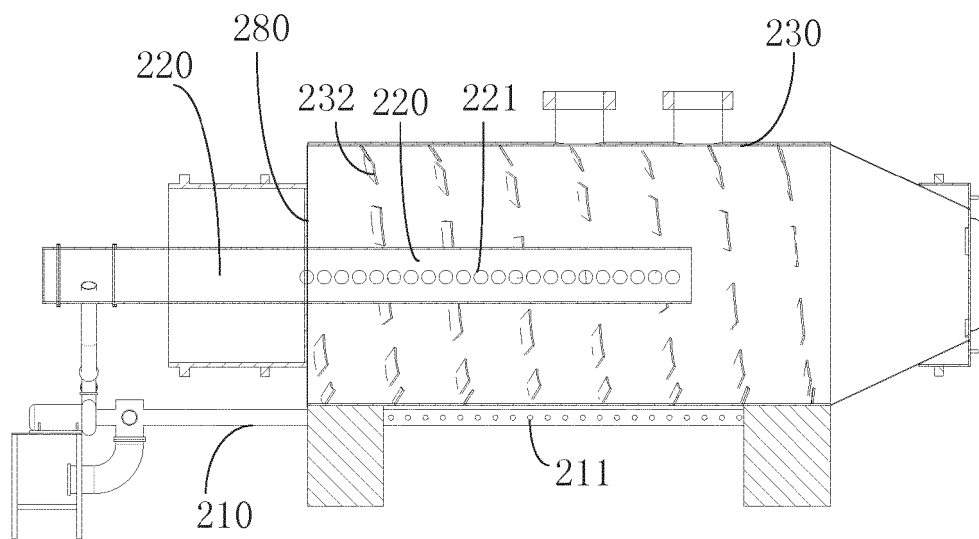


FIG. 4

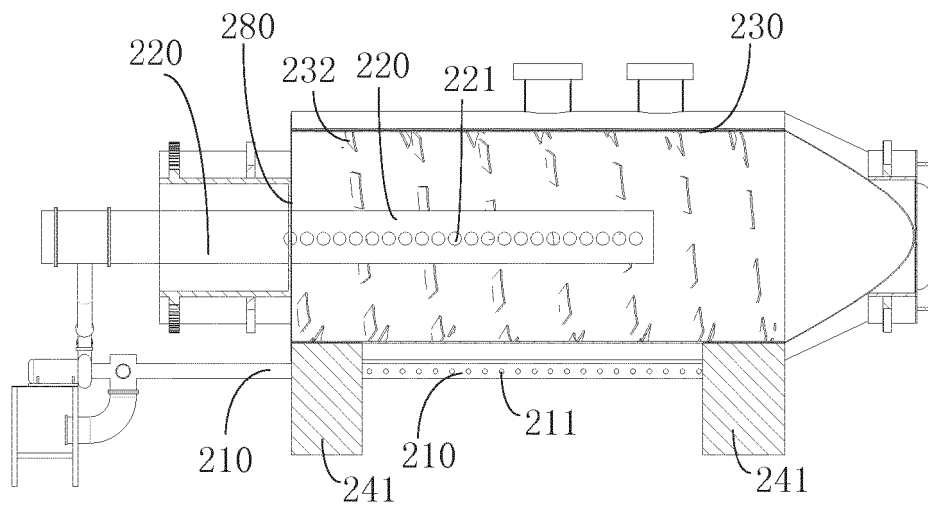


FIG. 5

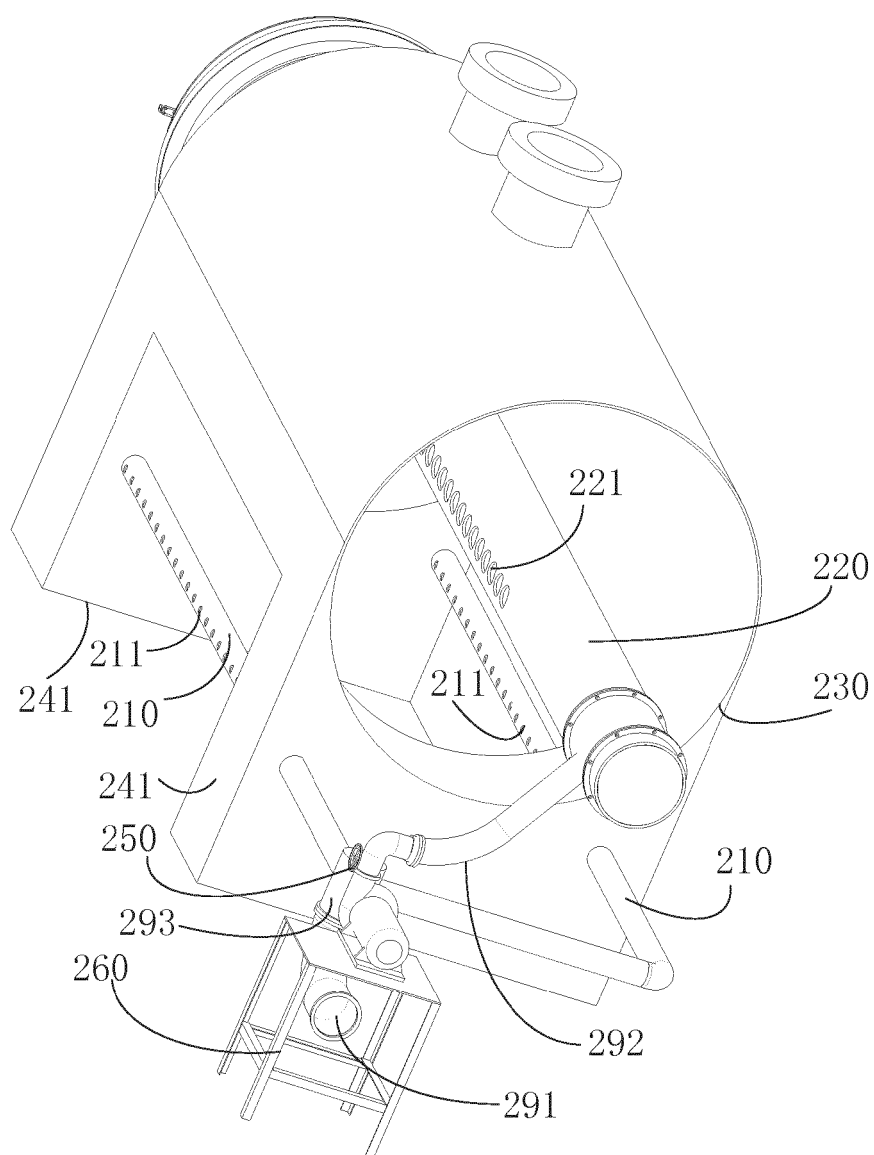


FIG. 6

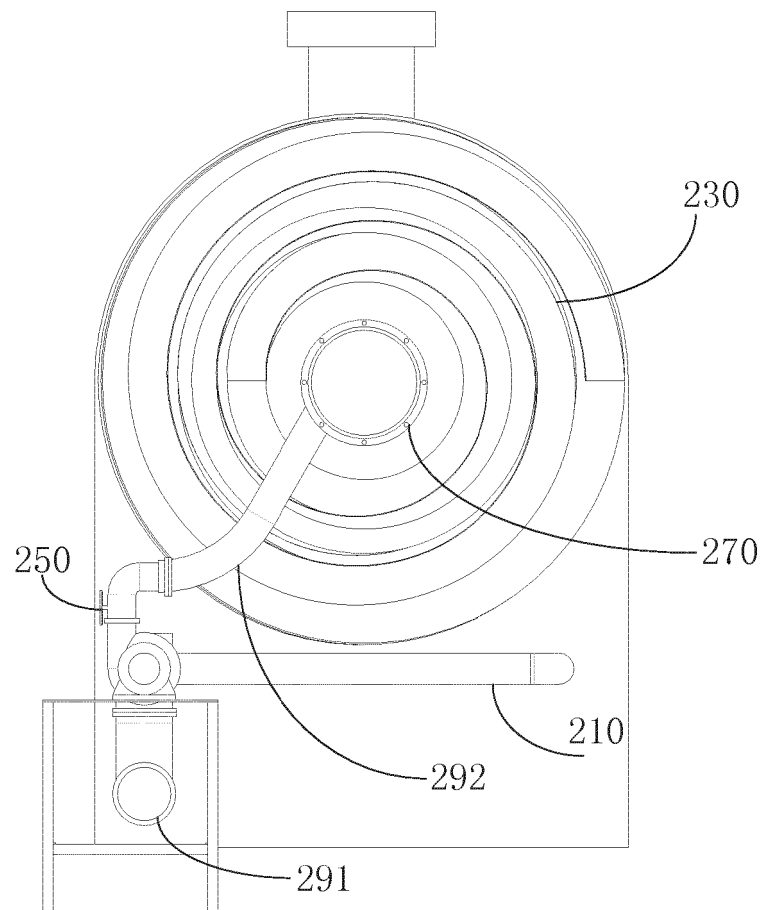


FIG. 7

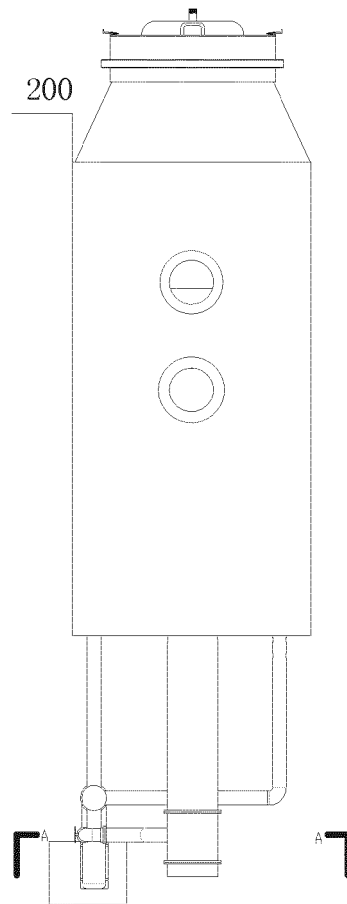


FIG. 8

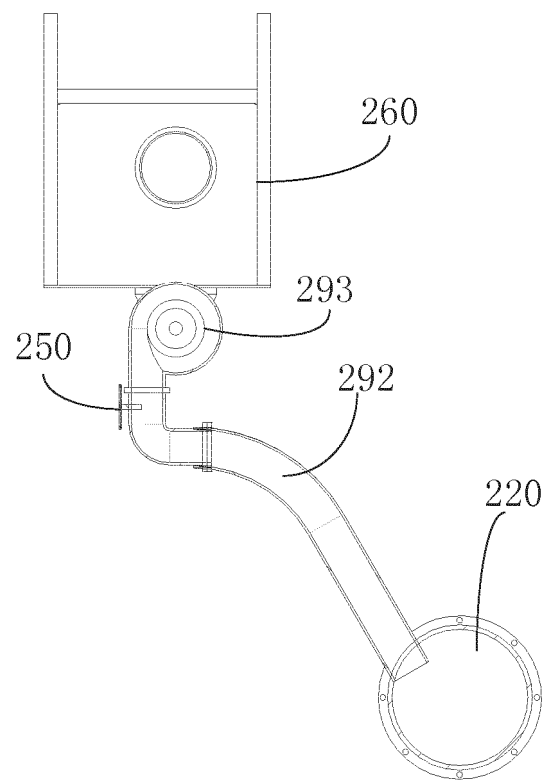


FIG. 9

REFERENCES CITED IN THE DESCRIPTION

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