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(73) The patentee Guangxi Gaoqualcomm Food Technology Co., LTD

Address: Liujiang, Liuzhou City, Guangxi Zhuang Autonomous Region 545000
No. 5, Gaodao Road, Chuanshan Town, District

(72) The inventor Zhao Hainan Li Yuanzhi Zhu Yonghong Yin Kaiyu

Meng Yao Jia Haiying Pottery Jianxiao

(74) Patent agency Shenzhen Xingkeda Intellectual property Agency
Co., LTD 44260

Patent agent Yuan Shilin

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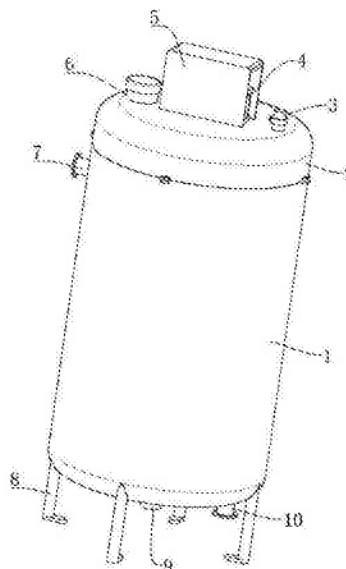
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(54) Name of utility model

Solvent pretreatment tank

(57) Abstract

The utility model relates to the technical field of sucrose fatty acid ester, in particular to a solvent pretreatment tank, which comprises a tank body. The top of the circumference wall of the tank body is fixed with a funnel, and the top of the tank body is fixed with a tank cover, and the middle position of the tank cover is provided with a through hole. The inner wall of the through hole is inserted with a central shaft, the top of the central shaft is provided with a lifting component, and the top of the outer wall of the central shaft is provided with a rotating mechanism, and the outer wall of the central shaft is fixed with a grinding knife with a circular distribution of many miles equal distance. The utility model forms a crushing structure of raw materials. On the one hand, the raw materials can be fully crushed through the crushing process, so that the raw materials are pre-mixed in the funnel, on the other hand, the subsequent mixing time is shortened, the pretreatment efficiency is improved, and the mixed liquid is stirred through the spiral blade and the agitation component, and the heat conduction component is heated inside the tank. Improve the pre-mixing effect of raw materials during the whole synthesis of sucrose fatty acid lipid.



1. A solvent pretreatment tank, including a tank body (1), is characterized in that a funnel (11) is fixed on the top of the circumference inner wall of the tank body (1), and a tank cover (2) is fixed on the top of the tank body (1), and the middle position of the tank cover (2) is provided with a through hole (25), and the inner wall of the through hole (25) is inserted with a central shaft (17). The top of the central shaft (17) is provided with a lifting component, and the top of the outer wall of the central shaft (17) is provided with a rotating mechanism, the outer wall of the central shaft (17) is fixed with a grinding knife (18) with a circular distribution of more than one mile equal distance., and the grinding knife (18) is located in the interior of the funnel (11), the outer wall of the central axis (17) near the middle position is fixed in the bottom of the funnel (11) of the gasket (13), the bottom of the central axis (17) is provided with a stirring component, the tank (1) is provided with an internal thermal conductivity component.

2. According to the claim 1, a solvent pretreatment tank is characterized in that the top middle position of the tank cover (2) is fixed with a door plate (5), and the rotating mechanism includes a long gear (19) fixed on the top of the outer wall of the central shaft (17), and one side of the long gear (19) is meshed with a short gear (21). The top inner wall of the door plate (5) is fixed on one side of the motor (20) for driving the rotation of the short gear (21).

3. The solvent pretreatment tank described in claim 2 is characterized in that the lifting assembly comprises a hydraulic cylinder (4) fixed on the top side of the lid (2) of the tank, and the piston end of the hydraulic cylinder (4) is fixed on the lifting plate (22). The lifting plate (22) and the hydraulic cylinder (4) are located inside the door plate (5), and the bottom side of the lifting plate (22) is rotated between the top of the central shaft (17).

4. According to claim 3, a solvent pretreatment tank is characterized in that the thermal conductivity component comprises a heat flow inlet tube (7) and a heat flow outlet tube (10) that extend out of the tank body (1) and an inner wall of the tank body (1) and a sandwich (12) on the top and bottom sides of the sandwich (12), respectively.

5. According to the claim 4, a solvent pretreatment tank is characterized in that the agitation component comprises an installation disc (23) fixed at the bottom of the central axis (17), and the installation disc (23) is provided with an equidistant annular distribution of the installation groove at the corner of the circumference of the outer wall, and the inner wall of the installation groove is rotated and connected with the agitation sheet (16). The bottom end of the stirring plate (16) is rotated and connected with a rolling ball (24), and the rolling ball (24) is affixed to the inner wall of the sandwich (12).

6. According to claim 5, the solvent pretreatment tank is characterized in that the top side of the tank cover (2) is fixed with a feed pipe (6), and the feed pipe (6) is provided with a sealing cover, the other side of the top of the tank cover (2) is fixed with an exhaust pipe (3), and the bottom middle of the tank body (1) is fixed with a discharge pipe (9)., and the discharge pipe (9) and the exhaust pipe (3) are provided with a valve, the tank (1) at the bottom of the four corners are fixed with support legs (8).

7. According to the claim 1, a solvent pretreatment tank is characterized in that the outer wall of the central shaft (17) is fixed with a spiral blade (14), and the spiral blade (14) is located inside the sandwich (12), the outer wall of the central shaft (17) is fixed with a scraper rod (15), and the scraper rod (15) is attached to the inner wall of the sandwich (12).

-- A solvent pretreatment tank

Technical field

[0001] The utility model relates to the field of sucrose fatty acid ester, in particular to a solvent pretreatment tank.

Background technology

[0002] Sucrose ester, also known as sucrose fatty acid ester, is a non-toxic, biodegradable, non-ionic surfactant with good surface activity, and has a wide range of applications. Sucrose ester in the food industry can be used as emulsifier, foaming agent, viscosity regulator, lubricating gloss agent, anti-aging agent, wetting and dispersing agent, antibacterial agent; In the daily chemical industry as a cleaning agent and cosmetics; In the pharmaceutical industry as solubilizer, dispersant, penetrant, emulsifier, coating agent, disintegrant, etc. So far, the synthesis of sucrose ester has been solvent method, solvo-free method, microemulsification method and phase transfer catalytic method and other methods. The surfactant sucrose ester synthesized by solvent method is the first batch of products in this field. It mainly uses dimethylformamide or dimethyllylidene as a solvent and potassium carbonate as a catalyst to esterify sucrose and fatty acid ester to produce sucrose ester.

[0003] At present, in solvent synthesis of sucrose fatty acid fat need to be pre-mixed processing operation, because the catalyst, sucrose and other raw materials are mostly crystalline existence, its mixing treatment, the inside of the treatment tank is not set with a good crushing structure, at this time, it takes a certain time to complete the mixing operation, thus reducing the pretreatment efficiency, prolong the pretreatment time, so it is urgent to design A solvent pretreatment tank to solve the above problems.

Contents of utility model

[0004] The utility model aims to provide a solvent pretreatment tank to solve the problems raised in the background technology.

[0005] In order to realize the above purposes, the utility model provides the following technical schemes:

[0006] A solvent pretreatment tank comprises a tank body, wherein a funnel is fixed on the top of the circumference wall of the tank body, and the top of the tank body is fixed with a tank cover, the middle position of the tank cover is provided with a through hole, the inner wall of the through hole is inserted with a central shaft, the top of the central shaft is provided with a lifting assembly, and the top of the outer wall of the central shaft is provided with a rotating mechanism, and the outer wall of the central shaft is solid. There are many miles equal distance is annular distribution of the grinding knife, and the grinding knife is located in the inside of the funnel, the center axis near the middle of the external wall is fixed affixed to the bottom of the funnel gasket, the bottom of the central axis is provided with agitation components, the tank is provided with internal thermal conductivity components.

[0007] Further, the top middle position of the tank cover is fixed with a door plate, and the rotating mechanism includes a long gear fixed on the top of the outer wall of the central shaft, one side of the long gear is meshed with a short gear, and the top inner wall of the door plate is fixed with a motor for driving the rotation of the short gear.

[0008] Further, the lifting assembly comprises a hydraulic cylinder fixed on the top side of the can cover, and the piston end of the hydraulic cylinder is fixed with a lifting plate, the lifting plate and the hydraulic cylinder are located in the interior of the door plate, the bottom side of the lifting plate and the top of the central shaft rotation connection.

[0009] Further, the thermal conductivity assembly comprises a heat flow inlet tube and a heat flow outlet tube extending out of the tank on the top side and the bottom side of the sandwich respectively.

[0010] Further, the agitation component comprises an installation disc fixed at the bottom end of the central shaft, and an equidistant annular distribution of the installation groove is arranged at the corner of the circumference of the outer wall of the installation disc, and the inner wall of the installation groove is rotated and connected with the agitation sheet and the agitation sheet

The bottom end is rotated and connected with a rolling ball, which is attached to the inner wall of the sandwich.

[0011] Further, the top side of the tank cover is fixed with a feed pipe, and the feed pipe is provided with a sealing cover, the other side of the top of the tank cover is fixed with an exhaust pipe, the bottom middle position of the tank body is fixed with a discharge pipe, and the discharge pipe and the exhaust pipe are provided with a valve, the bottom four corners of the tank body are fixed with a support leg.

[0012] Further, the outer wall of the central shaft is fixed with a spiral blade, and the spiral blade is located inside the sandwich, the outer wall side of the central shaft is fixed with a scraper rod, and the scraper rod is attached to the inner wall of the sandwich.

[0013] Compared with the prior art, the utility model has the following advantages:

[0014] In the utility model, the crystal raw material required for the synthesis of sucrose fatty acid fat is sent into the tank body by the feeding tube, which falls in the funnel due to the sealing effect of the sealing pad. At this time, the crushing structure of the raw material is formed by the rotating mechanism, the central shaft and the crushing knife. On the one hand, the raw material can be fully crushed through the crushing process, so that the raw material can be pre-mixed in the funnel. On the other hand, the subsequent mixing time is shortened and the pretreatment efficiency is improved;

[0015] In the utility model, the lifting component is used to reduce the height of the central shaft, the sealing pad, the spiral blade and the stirring component, so that the crushed raw materials fall into the sandwich under their own gravity and centrifugal force, and then the solvent is injected through the feed pipe, so that the raw materials such as solvent, catalyst and sucrose are stirred by the spiral blade and the stirring component in the sandwich, and the tank body is combined with the thermal conductivity component. The internal heating operation improves the raw material pre-mixing effect of the whole sucrose fatty acid fat synthesis, and improves the working efficiency of the whole device.

Illustration with picture

[00161] Figure 1 is a schematic diagram of the overall structure of a solvent pretreatment tank.

[0017] Figure 2 shows an overall cutaway view of a solvent pretreatment tank.

[0018] Figure 3 shows the structure diagram of the center shaft and lifting plate of a solvent pretreatment tank.

[0019] FIG. 4 shows the structure diagram of mounting plate and rolling ball of a solvent pretreatment tank.

[0020] Figure 5 shows the structure diagram of the lid and through-hole of a solvent pretreatment tank.

[0021] In the figure :1, tank body;2, tank cover;3, tail pipe;4, hydraulic cylinder;5, door plate;6, feed pipe;7, heat flow into pipe;8, support leg ;9, discharge pipe;10, heat flow out pipe;11, funnel;12, sandwich;13, gasket;14, spiral blade; 15, scraper rod; 16, stirring plate; 17, center shaft;18, grinding knife;19, long gear;20, motor;21, short gear;22, lifting plate;23, installation disc;24, rolling ball; 25, through hole.

Specific implementation mode

[0022] The technical scheme in the embodiments of the utility model is described clearly and completely in combination with the drawings attached to the embodiments of the utility model. Obviously, the embodiments described are only part of the embodiments of the utility model, but not all embodiments. Based on the embodiments of the utility model, all other embodiments obtained by ordinary technical personnel in the field without making creative labor belong to the scope of protection of the utility model.

[0023] Example 1

[0024] Please refer to FIG. 1-Fig. 5. In the embodiment of the utility model, a solvent pretreatment tank comprises a tank body 1, a funnel 11 is fixed on the top of the circumference inner wall of the tank body 1, and a tank cover 2 is fixed on the top of the tank body 1, a through hole 25 is arranged in the middle position of the tank cover 2, and the inner wall of the through hole 25 is inserted with a central shaft 17, and the top of the central shaft 17 is arranged with a lifting component. The top of the outer wall of the mandrel 17 is provided with a rotating mechanism, and the middle position of the top of the can cover 2 is fixed with a door plate 5, and the rotating mechanism includes a long gear 19 fixed on the top of the outer wall of the central shaft 17, and one side of the long gear 19 is meshed with a short gear 21, and the top of the door plate 5

One side of the wall is fixed to drive the short gear 21 rotation motor 20, lifting assembly includes a hydraulic cylinder 4 fixed on the top side of the tank cover 2, and the piston end of the hydraulic cylinder 4 is fixed with lifting plate 22, lifting plate 22 and hydraulic cylinder 4 are located in the interior of the door plate 5, the bottom side of the lifting plate 22 and the top of the central shaft 17 rotation connection, the central shaft 17 The outer wall of 7 is fixed with more than miles of annular distribution of grinding knife 18, and grinding knife 18 is located in the interior of the funnel 11, the center shaft 17 near the middle of the outer wall is fixed affixed to the bottom of the funnel 11 gasket 13, through the rotating mechanism, the center shaft 17 and grinding knife 18 to form a crushing structure of raw materials, on the one hand, the raw materials can be fully pulverized through the crushing process Crushing treatment, so that the raw materials in the funnel 11 pre-mixing operation, on the other hand to shorten the subsequent mixing time, improve the efficiency of pretreatment.

[0025] Specifically, the interior of tank 1 is provided with a heat conduction component, which comprises a heat flow inlet pipe 7 and a heat flow outlet pipe 10 extending out of tank 1 on the top and bottom sides of one side of the sandwich 12, and the bottom of the central shaft 17 is provided with a stirring component, which comprises a mounting disc 23 fixed at the bottom of the central shaft 17, and is installed Disc 23 circumference of the outer wall corner is provided with equidistant annular distribution of the installation groove, the inner wall of the installation groove are rotated connected with the agitation piece 16, the bottom of the agitation piece 16 are rotated connected with the rolling ball 24, the rolling ball 24 is attached to the inner wall of the sandwich 12, the use of spiral blade 14 and agitation component of the tank 1 internal mixed liquid agitation, with the heat conduction component of the tank 1 internal The heating operation is carried out to improve the raw material pre-mixing effect of the whole sucrose fatty acid fat synthesis and improve the working efficiency of the whole device.

[0026] Specifically, the top side of the tank cover 2 is fixed with a feed pipe 6, and the feed pipe 6 is provided with a sealing cover, the other side of the top of the tank cover 2 is fixed with a exhaust pipe 3, the bottom middle position of the tank body 1 is fixed with a discharge pipe 9, and the discharge pipe 9 and the exhaust pipe 3 are provided with valves, the bottom four corners of the tank body 1 are fixed with a support leg 8, through the exhaust pipe 3 can be heated exhaust Operation of discharge.

[0027 Embodiment 2

[0028] Please refer to FIG. 1 and FIG. 4. The difference from Embodiment 1 is that the outer wall of the central axis 17 is fixed with spiral blade 14, and the spiral blade 14 is located inside sandwich 12, and the outer wall of the central axis 17 is fixed with scraper rod 15, and the scraper rod 15 is affixed to the inner wall of sandwich 12, and the spiral blade 14 is used to change the up and down flow state of the mixed liquid in sandwich 12 to improve The mixing effect of the whole pretreatment operation is achieved, and the scraper rod 15 is used to scrape the inner wall of sandwich 12 to avoid the adhesion of raw materials to the inner wall of sandwich 12.

[0029] The working principle of the utility model is as follows: when in use, the feedpipe 6 is used to feed the crystalline raw material required for the synthesis of sucrose fatty acid fat into the tank body 1, and the motor 20 in the rotating mechanism drives the short gear 21, the long gear 19, the central shaft 17 and the grinding knife 18 to form the crushing structure of the raw material, and the raw material is fully crushed, so that the raw material is pre-mixed in the funnel 11 Operation, the user uses the hydraulic cylinder 4 in the lifting component to reduce the lifting plate 22, the central axis 17, the sealing gasket 13, the spiral blade 14 and the height of the stirring component, so that the raw materials after crushing fall into the sandwich 12 under its own gravity and centrifugal force, and the solvent is injected through the feed tube 6, so that the solvent, catalyst, sucrose and other raw materials are helical leaves in the sandwich 12 The plate 14 is stirred with the agitation component, and the heat conduction component is used to heat the inside of the tank 1, so that the raw materials used in the synthesis of sucrose fatty acid lipid can be fully pre-mixed.

[0030] To persons skilled in the art, it is obvious that the utility model is not limited to the details of the above-mentioned exemplary embodiments, and can be realized in other specific forms without deviating from the spirit or basic features of the utility model.

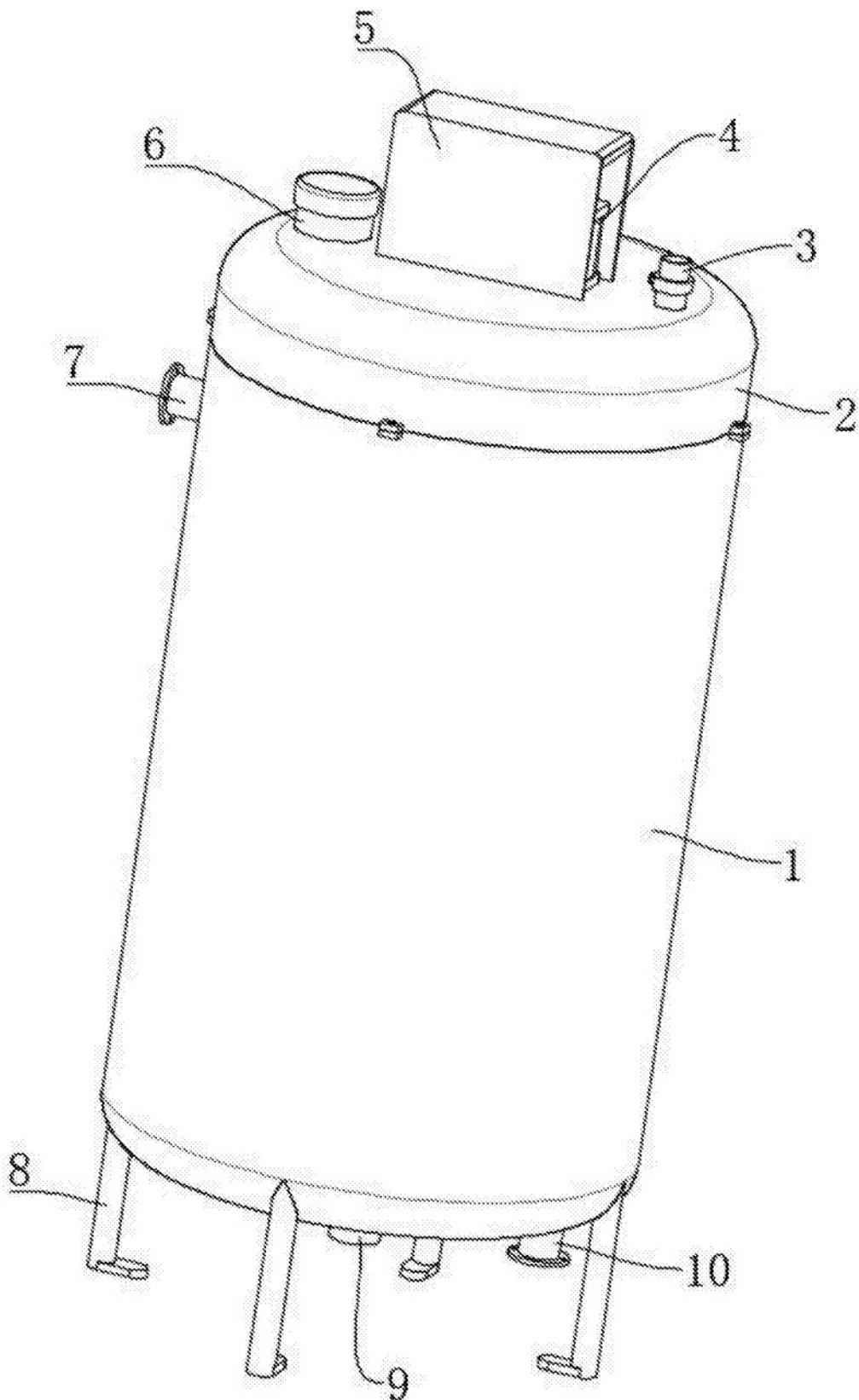


图1

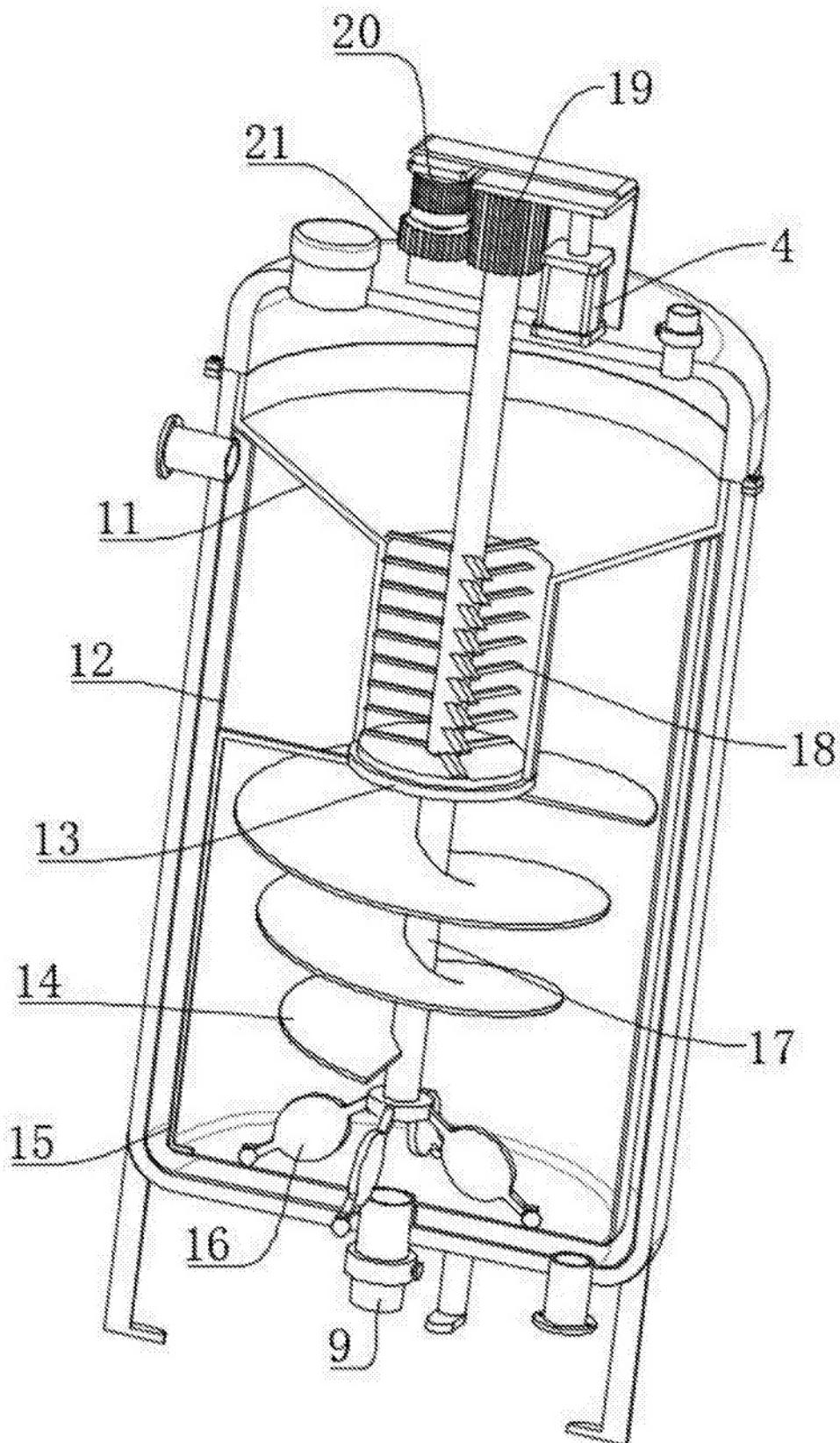


FIG. 2

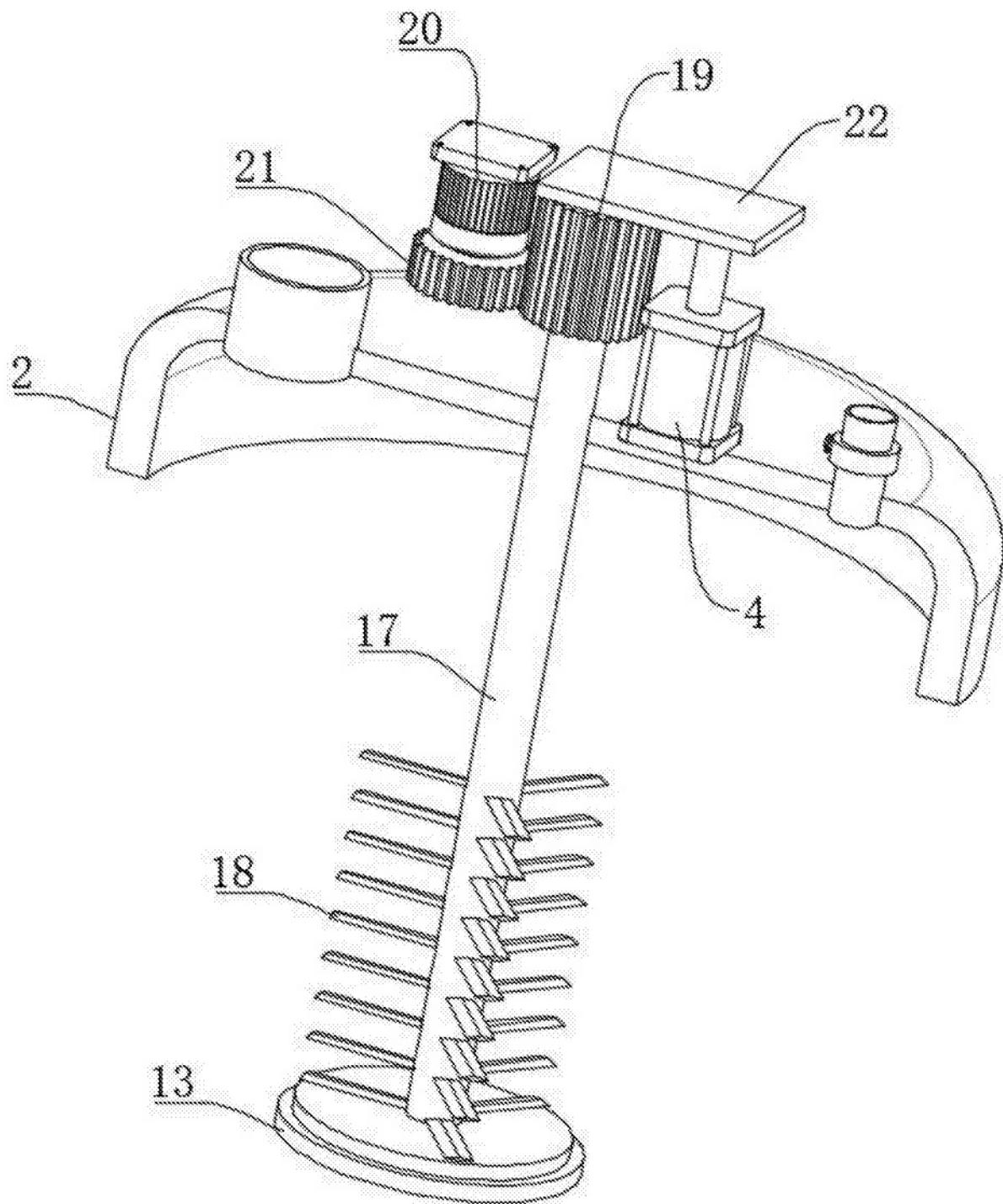


Figure 3

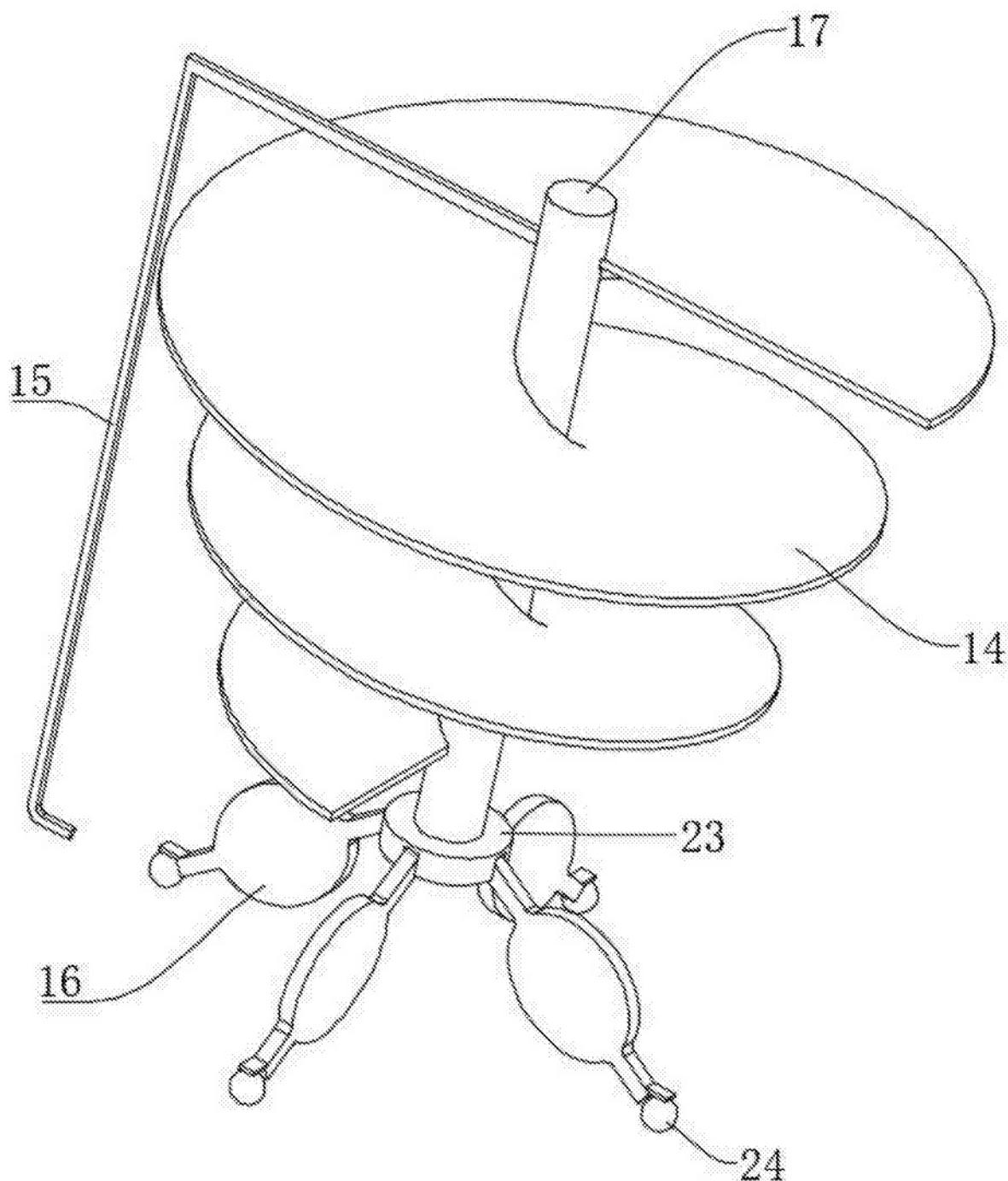


图4

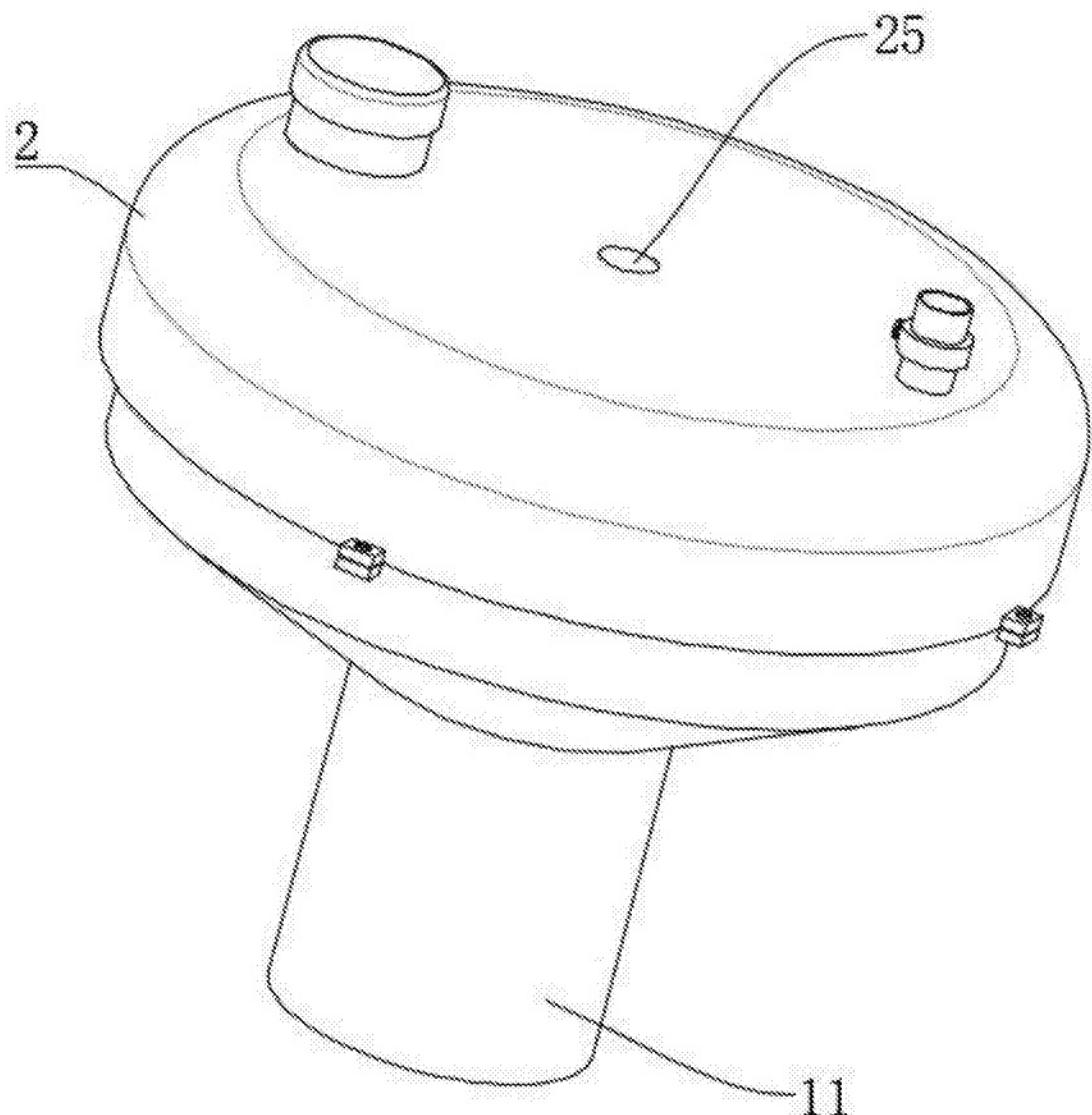


Figure 5



(12) Utility model patent

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(73) The patentee Guangxi Gaoqualcomm Food Technology Co., LTD

Address: Liujiang, Liuzhou City, Guangxi Zhuang Autonomous Region 545000
No. 5, Gaodao Road, Chuanshan Town, District

(72) Inventor Zhao Hainan Li Yuanzhi Zhu Yonghong Wu Xinru

Meng Yao Jia Haiying Pan Xia

(74) Patent agency Shenzhen Xingkeda Intellectual property Agency
Co., LTD 44260

Patent agent Yuan Shilin

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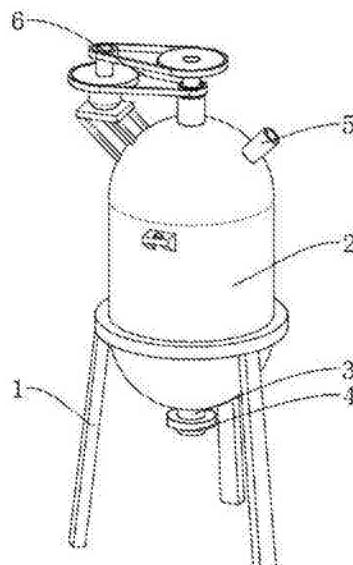
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(54) Utility model name

Plant sugar butter ester synthesis reactor

(57) Abstract

The utility model relates to the technical field of a reaction kettle, in particular to a sucrose tallow ester synthesis reaction kettle, which comprises a kettle body, and also comprises: a driving component, the driving component is arranged on the outside of the kettle body; Stirring mechanism, the stirring mechanism comprises a rotating cylinder, a rotating rod, a spiral blade, a middle cylinder, a plurality of connecting rods and a plurality of stirring plates, the top of the kettle body is located in the central axis position is provided with a rotating hole, the rotating cylinder through the bearing rotation is installed in the rotating hole, the rotating rod through the bearing rotation is installed in the rotating cylinder, the spiral blade and the rotating rod coaxial fixed. The raw materials in the utility model can circulate up and down in the kettle body, so as to prevent the problem of layering up and down due to deposition, so as to improve the mixing efficiency, by setting the toggle plate, the toggle plate will be transported to the top of the material spread, thereby expanding the contact area between the material and the material, and further improve the mixing efficiency.



1. A sucrose tallow ester synthetic reaction kettle, including a kettle body (2), is characterized in that it also includes:
A dynamic component (6), the driving component (6) is arranged on the outside of the kettle body (2);

Stirring mechanism (7), the stirring mechanism (7) comprises a rotating cylinder (19), a rotating rod (20), a spiral blade (22), an intermediate cylinder (17), a plurality of connecting rods (18) and a plurality of stirring plates (16). The top of the kettle body (2) is located in the central axis position is provided with a rotating hole, the rotating cylinder (19) through the bearing rotation installed in the rotating hole, the rotating rod (20) through the bearing rotation installed in the rotating cylinder (19), the spiral blade (22) and the rotating rod (20) coaxial fixed, the middle cylinder (17) is arranged in the kettle body (2) and with the kettle body (2) is coaxial, the spiral blade (22) is arranged in the middle cylinder (17), one end of the connecting rod (18) is fixed on the top of the middle cylinder (17), the other end of the connecting rod (18) is fixed in the kettle body (2), one end of the stirring plate (16) is fixed on the bottom end of the rotating rod (20), wherein the rotating cylinder (19) and turn The moving rod (20) is connected with the driving assembly (6), and the driving assembly (6) drives the rotating cylinder (19) and the rotating rod (20) to rotate.

2. According to the claim 1, a sucrose butter ester synthesis reactor is characterized in that a plurality of towing plates (21) are fixed on the outer wall of the rotating rod (20), and the towing plate (21) is located at the top of the middle cylinder (17).

3. According to the claim 1, a sugar butter ester synthesis reactor is characterized in that the drive assembly (6) includes a fixed frame (8), servo motor (9), the first transmission group and the second transmission group, the fixed frame (8) and the kettle body (2) phase fixed, the servo motor (9) and the fixed frame (8) phase fixed, the first transmission group comprises a first drive wheel (11), the second drive wheel (12) and set in the first drive wheel (11) and the second drive wheel (12) on the first drive belt (8) 10, the first drive wheel (11) is coaxial fixed with the output shaft of the servo motor (9), the second drive wheel (12) is coaxial fixed with the rotating cylinder (19), the second drive group comprises the third drive wheel (13), the fourth drive wheel (15) and the second drive belt (14) on the third drive wheel (13) and the fourth drive wheel (15). The third drive wheel (13) is coaxial fixed with the rotating rod (20), and the fourth drive wheel (15) is coaxial fixed with the output shaft of the servo motor (9).

4. According to the claim 1 of a sucrose butter ester synthesis reactor, which is characterized in that the outside wall of the kettle body (2) is fixed with a support (1).

A sucrose butter ester synthesis reactor described in claim 1 is characterized in that a plurality of hanging rings are welded and fixed at the top position of the outer side wall of the kettle body (2).

6. According to the claim 1, a sucrose butter ester synthesis reactor is characterized in that the bottom central axis of the kettle body (2) is fixed with a discharge tube (3) connected with it, and the top position of the kettle body (2) is fixed with a feed tube (5) connected with it.

7. According to the claim 6, a sucrose butter ester synthesis reactor is characterized in that the discharge pipe (3) is installed on the electromagnetic valve (4).

- A sucrose butter ester synthesis reaction

Technical fields

[0001] The utility model relates to the technical field of a reaction kettle, in particular to a sucrose butter ester synthesis reaction kettle.

Background technology

[0002] Sucrose oil ester is a condensation reaction product of sucrose and oleic acid, due to the rich raw material resources, and harmless to the human body, does not stimulate the skin and mucous membranes, non-toxic and other advantages, it has a wider range of uses. The product has good emulsification, dispersion, wetting, decontamination, foaming, viscosity regulation, prevent aging, prevent crystallization and other effects, has been used in food emulsifier, fruit preservative and so on. There are many synthesis methods of sucrose ester, transesterification method, microemulsification method, water solvent method, melting method, cabinet solution method and many other methods.

[0003] The raw materials of sucrose oil ester generally use the reactor to mix, the general stirring mechanism in the reactor is a single-axis stirring structure (a rotating rod and a plurality of stirring plates fixed on the rotating rod), the raw materials are easy to deposit at the bottom, the material in the reactor will still appear up and down stratification, resulting in uneven material mixing.

Utility model content

[0004] Based on the shortcomings of the prior art mentioned in the background technology, the utility model provides a sucrose butter ester synthesis reaction kettle.

[0005] The utility model overcomes the above technical problems by adopting the following technical schemes, in particular:

[0006] A sucrose butter ester synthesis reaction kettle comprises a kettle body, and also comprises:

[0007] A driving assembly, the driving assembly is arranged on the outside of the kettle body;

[0008] Stirring mechanism, the stirring mechanism comprises a rotating cylinder, a rotating rod, a spiral blade, an intermediate cylinder, a plurality of connecting rods and a plurality of stirring plates, the top of the kettle body is located in the central axis position is provided with a rotating hole, the rotating simple is installed in the rotating hole through the bearing rotation, the rotating rod is installed in the rotating simple through the bearing rotation, the spiral blade and the rotating rod coaxial fixed, the said The middle cylinder is arranged in the kettle body and the kettle body is coaxial, the spiral blade is arranged in the middle cylinder, one end of the connecting rod is fixed on the top of the middle cylinder, the other end of the connecting rod is fixed in the kettle body, one end of the stirring plate is fixed on the bottom end of the rotating rod, wherein the rotating cylinder and the rotating rod are connected with the drive assembly, the drive assembly drives the rotating cylinder and rotation The rod is rotated.

[0009] As a further scheme of the utility model, a plurality of toggle plates are fixed on the outer wall of the rotating rod, and the toggle plate is located at the top of the middle cylinder.

[0010] As a further scheme of the utility model, the drive assembly comprises a fixing frame, a servo motor, a first transmission group and a second transmission group, the fixing frame is fixed with the tank body, the servo motor is fixed with the fixing frame, the first transmission group comprises a first transmission wheel, a second transmission wheel and a first transmission belt arranged on the first transmission wheel and the second transmission wheel The drive wheel and the servo motor output shaft is fixed coaxial, the second drive wheel is fixed coaxial with the rotating cylinder, the second drive group includes the third drive wheel, the fourth drive wheel and the second drive belt set on the third drive wheel and the fourth drive wheel, the third drive wheel and the rotating rod are fixed coaxial, the fourth drive wheel and the servo motor output shaft is fixed coaxial.

[0011] As a further scheme of the utility model, the outer side wall of the kettle body is fixed with a bracket.

[0012] As a further scheme of the utility model, a plurality of hanging rings are welded and fixed at the top position of the outer side wall of the kettle body.

[0013] As a further scheme of the utility model, the bottom central axis of the kettle body is fixed with a discharge pipe connected with it, and the top position of the kettle body is fixed with a feed pipe connected with it.

[0014] As a further scheme of the utility model, an electromagnetic valve is installed on the discharge pipe.

[0015]

After adopting the structure, compared with the prior art, the utility model has the following advantages:

[0016] The raw materials in the reactor can circulate up and down in the reactor, so as to prevent the problem of layering up and down due to deposition, so as to improve the mixing efficiency. By setting a toiling plate, the toiling plate will spread the materials transported to the top, thus expanding the contact area between the materials and the materials, and further improving the mixing efficiency.

Illustration with drawings

[0017] FIG. 1 is a schematic diagram of the overall structure of the utility model.

[0018] FIG. 2 is a schematic diagram of the internal structure of the kettle body of the utility model.

[0019] FIG. 3 is a schematic diagram of the driving component structure of the utility model.

[0020] FIG. 4 is the structure diagram of the stirring mechanism of the utility model.

[0021] In the figure :1. Bracket; 2. Kettle body; 3, discharge tube; 4, electromagnetic valve; 5, feed pipe; 6, drive components; 7, mixing mechanism; 8, fixed frame; 9, servo motor; 10, the first drive belt; 11, the first drive wheel; 12, the second driving wheel; 13, the third driving wheel; 14, second drive belt; 15, the fourth drive wheel; 16, mixing plate; 17, middle cylinder; 18, connecting rod; 19, rotating cylinder; 20, turn the rod; 21, toggle plate; 22, spiral blade.

Specific implementation mode

[0022] The technical scheme in the embodiments of the utility model is described clearly and completely in combination with the drawings attached to the embodiments of the utility model. Obviously, the embodiments described are only part of the embodiments of the utility model, but not all embodiments. Based on the embodiments of the utility model, all other embodiments obtained by ordinary technical personnel in the field without making creative labor belong to the scope of protection of the utility model.

[0023] Please refer to Figures 1-4. In the embodiment of the utility model, a sucrose butter ester synthesis reaction kettle comprises a kettle body 2, and also comprises:

[0024] a driving component 6, the driving component 6 is arranged on the outside of the kettle body 2;

[0025] Stirring mechanism 7 comprises a rotating barrel 19, a rotating rod 20, a spiral blade 22, an intermediate barrel 17, a plurality of connecting rods 18 and a plurality of mixing plates 16. The top of the kettle body 2 is provided with a rotating hole at the center shaft position, the rotating barrel 19 is installed in the rotating hole through the bearing rotation, the rotating rod 20 is installed in the rotating barrel 19 through the bearing rotation, and the spiral blade 22 is coaxial fixed with the rotating rod 20, the middle barrel 17 is arranged in the kettle body 2 and is coaxial with the kettle body 2, the spiral blade 22 is arranged in the middle barrel 17, one end of the connecting rod 18 is fixed in the top of the middle barrel 17, the other end of the connecting rod 18 is fixed in the kettle body 2, one end of the mixing plate 16 is fixed in the bottom end of the rotating rod 20, wherein the rotating barrel 19 and the rotating rod 20 are connected with the drive assembly 6, the drive assembly 6 drives the rotating barrel 19 and the rotating rod 20 to rotate, through the connection relationship above, the rotating rod 20 rotates, the stirring plate 16 on the rotating rod 20 to stir the material, the spiral blade 22 on the rotating rod 20 transported the bottom material to the top, and spilt from the top of the middle barrel 17, the up and down cycle Flow, so as to prevent the occurrence of the problem of upper and lower stratification due to deposition.

[0026] Specifically, a plurality of toggle plates 21 are fixed on the outer wall of the rotating rod 20, and the toggle plate 21 is located at the top of the middle barrel 17.

[0027] Specifically, the drive assembly 6 comprises a fixing frame 8, a servo motor 9, a first transmission group and a second transmission group, the fixing frame 8 is fixed with the kettle body 2, the servo motor 9 is fixed with the fixing frame 8, the first transmission group comprises a first transmission wheel 11 and a second transmission wheel

12 and set in the first drive wheel 11 and the second drive wheel 12 on the first drive belt 10, the first drive wheel 11 and the output shaft of the servo motor 9 coaxial fixed, the second drive wheel 12 and rotating cylinder 19 coaxial fixed, the second drive group includes the third drive wheel 13, the fourth drive wheel 15 and set in the third drive wheel 13 and the fourth drive wheel 15 on the second drive Belt 14, the third drive wheel 13 and rotating rod 20 coaxial fixed, the fourth drive wheel 15 and servo motor 9 output shaft coaxial fixed;

[0028] To supplement the above, the diameter of the first drive wheel 11, the second drive wheel 12, the third drive wheel 13 and the fourth drive wheel 15 are not limited, FIG. 3 is for reference only;

[0029] Through the above connection, it can be seen that the servo motor 9 drives the first transmission wheel 11 and the fourth transmission wheel 15 to rotate through the output shaft, the first transmission wheel 11 drives the second transmission wheel 12 to rotate through the first transmission belt 10, and the second transmission wheel 12 drives the rotating cylinder 19 to rotate, similarly, the fourth transmission wheel 15 drives the third transmission wheel 13 through the second transmission belt 14 to rotate, the third transmission wheel 13 drives the rotating rod 20 to rotate.

[0030] Specifically, the outer side wall of the kettle body 2 is fixed with a bracket 1 for support.

[0031] Specifically, a plurality of hanging rings for crane suspension are welded and fixed at the top position of the outer side wall of the kettle body 2.

[0032] Specifically, a discharge pipe 3 connected with it is fixed at the bottom central axis of the kettle body 2, and a feed pipe 5 connected with it is fixed at the top position of the kettle body 2.

[0033] Specifically, the discharge pipe 3 is provided with an electromagnetic valve 4 for opening and closing.

[0034] Working principle: servo motor 9 drives the first transmission wheel 11 and the fourth transmission wheel 15 to rotate through the output shaft, the first transmission wheel 11 drives the second transmission wheel 12 to rotate through the first transmission belt 10, the second transmission wheel 12 drives the rotating cylinder 19 to rotate, similarly, the fourth transmission wheel 15 drives the third transmission wheel 13 to rotate through the second transmission belt 14, The third transmission wheel 13 drives the rotating rod 20 to rotate, the rotating rod 20 rotates, the stirring plate 16 on the rotating rod 20 to stir the material, the spiral blade 22 on the rotating rod 20 will transport the bottom material to the top, and overflow from the top of the middle Jane 17, the upper and lower circulation flow, so as to prevent the problem of the upper and lower stratification due to deposition, the rotating cylinder 19 Rotation occurs, and the toggle plate 21 on the rotating cylinder 19 rotates accordingly, and the toggle plate 21 spreads the material transported to the top, thus expanding the contact area between the material and the material, and further improving the mixing efficiency.

[0035] To persons skilled in the art, it is obvious that the utility model is not limited to the details of the above-mentioned exemplary embodiments, and can be realized in other specific forms without deviating from the spirit or basic features of the utility model.

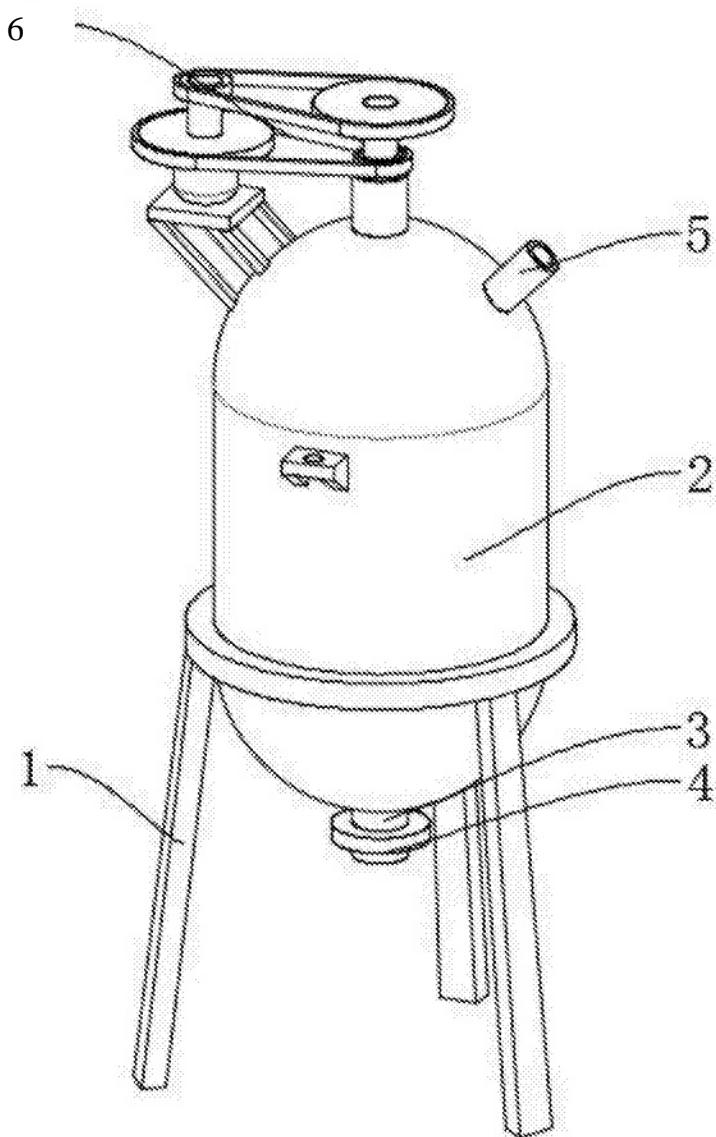


图1

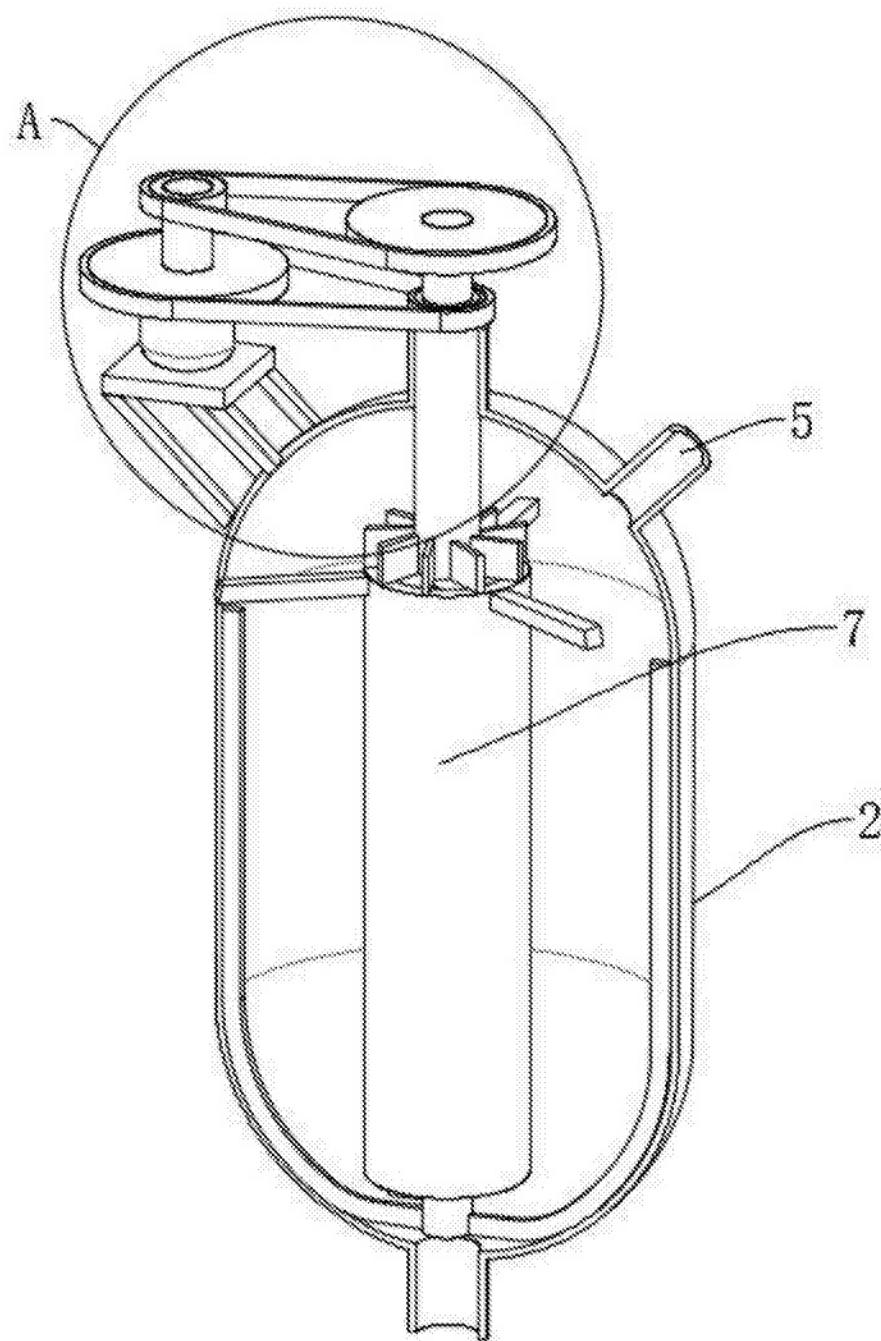


Figure 2

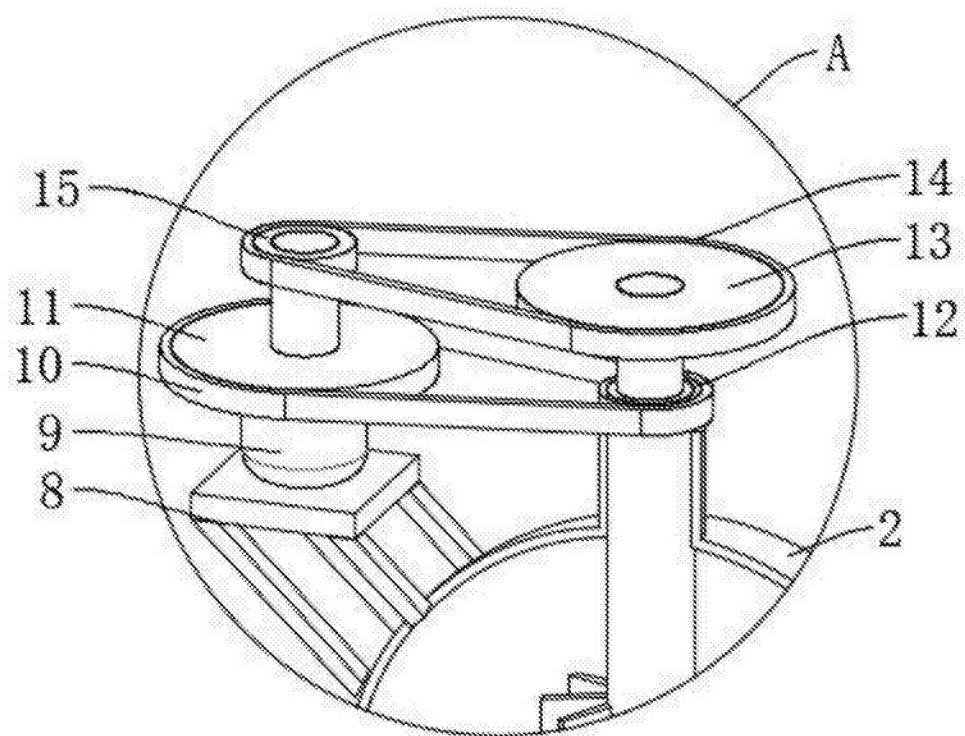


Figure 3

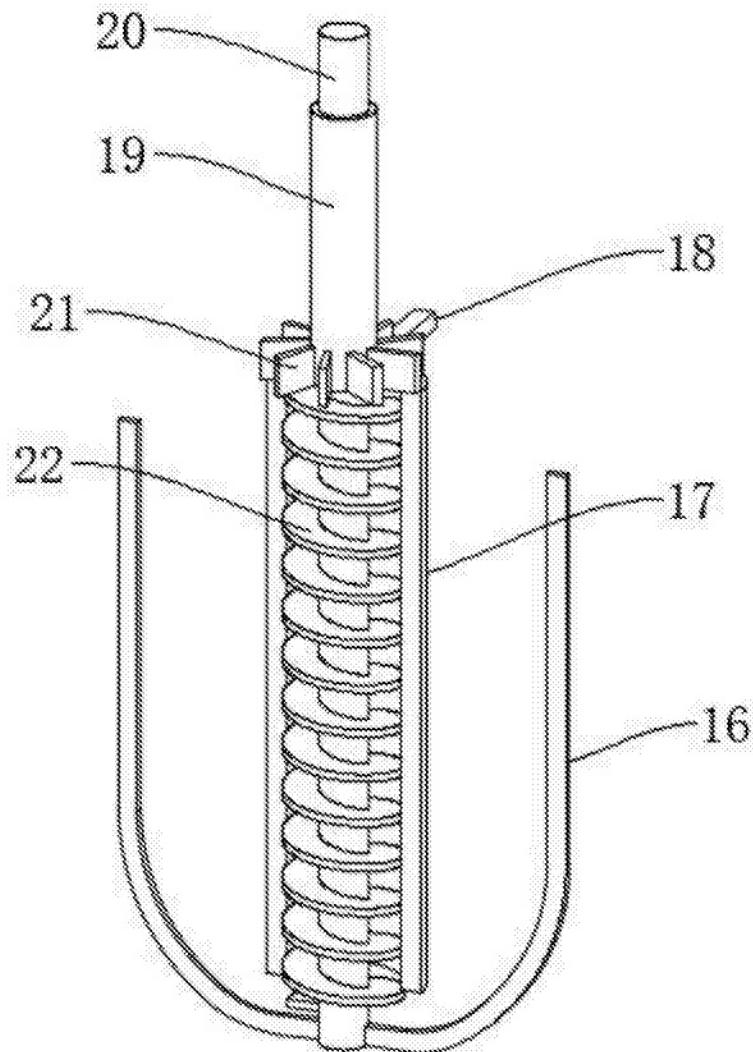


Figure 4



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(73) 专利权人 广西高通食品科技有限公司

B01F 35/41 (2022.01)

地址 545000 广西壮族自治区柳州市柳江区穿山镇高通路5号

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(72) 发明人 朱泳宏 赵海南 李源志 尹开昱
陶剑箫 潘霞 吴心如

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(74) 专利代理机构 深圳市兴科达知识产权代理有限公司 44260

专利代理人 袁士林

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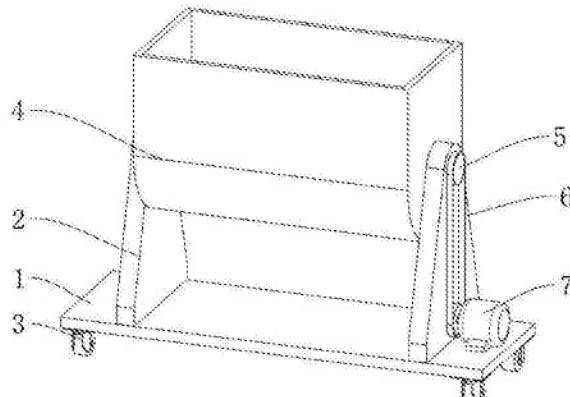
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(54) Name of utility model

The mixing mechanism of a trough mixer

(57) Abstract

The utility model relates to the technical field of a mixing mechanism, in particular to a mixing mechanism of a trough mixer, which comprises a mixing tank box and also comprises: a supporting mechanism, the supporting mechanism is arranged on the outer side of the mixing tank box: Mixing mechanism, the mixing mechanism comprises a driving component, a rotating rod, a middle cylinder, a middle spiral blade and a variable diameter spiral blade, both ends of the mixing tank box are provided with a rotating hole on the inner wall, the two ends of the rotating rod are rotated respectively installed in two rotating holes, one end of the middle cylinder is fixed with a plurality of connecting rods, one end of the connecting rod is fixed in the mixing tank box. The middle cylinder is arranged with the rotating rod coaxial. The utility model can not only stir the material, but also make the material extruded and broken, so as to improve the mixing degree. Because the rotation direction of the external spiral blade and the rotation direction of the middle spiral blade are opposite, the material can circulate in the box and convective mixing occurs at the same time, so as to further improve the mixing degree.



1. The mixing mechanism of a trough mixer comprises a mixing tank box (4), which is characterized in that it also includes:
A supporting mechanism, the supporting mechanism is arranged on the outside of the mixing tank box (4);

The mixing mechanism (8) comprises a driving component, a rotating rod (9), an intermediate cylinder (17), an intermediate spiral blade (12) and a variable diameter spiral blade (13). Both ends of the mixing tank box (4) are provided with a rotating hole on the inner wall, the two ends of the rotating rod (9) are respectively rotated and installed in two rotating holes, and one end of the middle cylinder (17) is fixed with a plurality of connecting rods (15). One end of the connecting rod (15) is fixed in the mixing tank box (4), the middle cylinder (17) and the rotating rod (9) are coaxial arranged, the variable diameter spiral blade (13) and the middle spiral blade (12) are fixed with the rotating rod (9) simply coaxial, the variable diameter spiral blade (13) and the middle spiral blade as one structure, the variable diameter spiral blade (13) bit In the middle cylinder (17), the drive assembly is arranged on the outer wall of the mixing tank box (4) and is connected with the rotating rod (9).

2. According to the claim 1, the mixing mechanism of a trough mixer is characterized in that the mixing mechanism (8) also includes an external spiral blade (10). The external spiral blade (10) and the rotating rod (9) are coaxial arranged, the variable diameter spiral blade (13), the middle spiral blade (12) and the rotating rod (9) are located in the circle of the external spiral blade (10) and the rotating rod (9) is arranged between the external spiral blade (10) and the rotating rod (9) so that the two are fixed fixed rod (11) The two ends of the external spiral blade (10) are respectively close to the two ends of the mixing tank box (4), and the rotation of the external spiral blade (10) is opposite to the rotation of the middle spiral blade (12).

3. According to the claim 2, the stirring mechanism of a trough mixer is characterized in that the outer ring of the external spiral blade (10) is fixed with a plurality of scraper (14) which is fixed with its central axis.

4. According to the claim 1 of a trough mixer mixing mechanism, which is characterized in that the support mechanism comprises a bottom plate (1) and two are fixed on the bottom plate (1) on the top of the support plate (2), the support plate (2) are fixed with the mixing tank box (4).

5. According to the claim 4, a trough mixer mixing mechanism is characterized in that the drive component includes a transmission mechanism and a servo motor (7). The servo motor (7) output shaft and rotating rod (9) through the transmission mechanism is connected, the transmission mechanism comprises two drive wheel (5) and set in two drive wheel (5) on the drive belt (6), the two drive wheel (5) and the servo motor (7) output shaft and rotating rod (9) coaxial fixed.

6. According to the claims 4 of a trough mixer mixing mechanism, which is characterized in that the bottom four corners of the bottom plate (1) are fixed universal wheel (3).

A trough mixer stirring mechanism according to claim 1 is characterized in that one end of the middle cylinder (17) is inherently provided with a centralized cover (16) arranged with its shaft.

- The mixing mechanism of the trough mixer

Technical field

[0001] The utility model relates to the technical field of a stirring mechanism, in particular to a stirring mechanism of a trough mixer.

Background technology

[0002] Sucrose laurate is a colorless to yellowish thick gel, a soft solid, or a white to yellowish brown powder, depending on the type and degree of esterification of the fatty acid. Using propylene glycol as solvent, sucrose, methyl stearate, sodium stearate and anhydrous sodium carbonate were esterified at 130~150°C, and then at 120°C under reduced pressure distillation to remove propylene glycol, cooling and crushing dissolved in methyl ethyl ketone to remove insoluble matter and so on to obtain sucrose laurate.

[0003] Sucrose laurate basic raw materials (propylene glycol as a solvent, by sucrose, stearate methyl ester, sodium stearate and anhydrous sodium carbonate) need to be mixed before the next esterifying reaction, generally used mixing equipment for the trough mixer, trough mixer mixing mechanism is mainly to play the role of mixing, can make the material mix more fully, in the material mixing mixing plays a role The important role, so people's requirements for the mixing mechanism are getting higher and higher.

[0004] The structure of the existing trough mixer mixing mechanism is relatively simple, the general mixing mechanism is composed of the rotating rod and the upper mixing leaf that is set up the rotating rod. If the stirred material contains caking (some materials absorb moisture), it will reduce the mixing quality.

Utility model content

[0005] Based on the shortcomings of the prior art mentioned in the background technology, the utility model provides a stirring mechanism of a trough mixer.

[0006] The utility model overcomes the above technical problems by adopting the following technical schemes, in particular:

[0007] The mixing mechanism of a trough mixer comprises a mixing tank box, and also comprises:

[0008] The supporting mechanism, the supporting mechanism is arranged on the outside of the mixing tank box;

[0009] Mixing mixing mechanism, the mixing mixing mechanism comprises a driving component, a rotating rod, an intermediate cylinder, an intermediate spiral blade and a variable diameter spiral blade, both ends of the mixing tank box are provided with a rotating hole, both ends of the rotating rod are rotated respectively installed in two rotating holes, one end of the middle cylinder is fixed with a plurality of connecting rods, one end of the connecting rod is fixed in the mixing tank box, The middle cylinder and the rotating rod coaxial setting, the variable diameter spiral blade and the middle spiral blade are fixed with the rotating rod simply coaxial, the variable diameter spiral blade and the middle spiral blade as one structure, the variable diameter spiral blade is located in the middle cylinder, the drive component is set in the mixing tank box outside the wall and connected with the rotating rod.

[0010] As a further scheme of the utility model, the mixing mechanism also comprises an external spiral blade, the external spiral blade and the rotating rod are coaxial arranged, the variable diameter spiral blade, the middle spiral blade and the rotating rod are located in the circle of the external spiral blade, the external spiral blade and the rotating rod are arranged between the external spiral blade and the rotating rod to fix the fixed rod, the external spiral blade Both ends are close to the two ends of the mixing tank box, and the spiral direction of the external spiral blade is opposite to the spiral direction of the middle spiral blade.

[0011] As a further scheme of the utility model, the outer ring of the external spiral blade is fixed with a plurality of scraper plates fixed with its central axis.

[0012] As a further scheme of the utility model, the supporting mechanism comprises a bottom plate and two are fixed on the bottom plate

On the support plate on the top, the support plate is fixed with the mixing tank.

[0013] As a further scheme of the utility model, the drive component comprises a transmission mechanism and a servo motor, the output shaft of the servo motor and the rotating rod are connected through the transmission mechanism, the transmission mechanism comprises two transmission wheels and a transmission belt arranged on the two transmission wheels, the two transmission wheels are respectively fixed with the output shaft of the servo motor and the rotating rod coaxial.

[0014] As a further scheme of the utility model: the bottom four corners of the bottom plate are fixed with a universal wheel.

[0015] As a further scheme of the utility model, one end of the middle cylinder is fixed with a centralized cover arranged coaxial with it.

[0016] After adopting the structure, compared with the prior art, the utility model has the following advantages:

[0017] The stirring mechanism can not only stir the material, but also make the material extruded and broken, so as to improve the mixing degree. Because the rotation direction of the external spiral blade and the rotation direction of the middle spiral blade are opposite, the material can circulate in the box and convective mixing occurs at the same time, so as to further improve the mixing degree.

Attached picture description

[0018] FIG. 1 is a schematic diagram of the overall structure of the utility model.

[0019] FIG. 2 is a schematic diagram of the internal structure of the utility model.

[0020] FIG. 3 is the structure diagram of the mixing and agitating mechanism of the utility model.

[0021] FIG. 4 is the schematic diagram of the enlarged structure at A of FIG. 3

[0022] In the figure :1, bottom plate;2, support plate;3, universal wheel;4, mixing tank box;5, transmission wheel;6, transmission belt;7, servo motor;8, mixing and stirring mechanism;9, rotating rod;10, external spiral blade;11, fixed rod; 12, middle spiral blade; 13, variable diameter spiral blade; 14, scraper;15, connecting rod; 16, centralized cover;17, middle cylinder.

Specific implementation mode

[0023] The technical scheme in the embodiments of the utility model is described clearly and completely in combination with the drawings attached to the embodiments of the utility model. Obviously, the embodiments described are only part of the embodiments of the utility model, but not all embodiments. Based on the embodiments of the utility model, all other embodiments obtained by ordinary technical personnel in the field without making creative labor belong to the scope of protection of the utility model.

[0024] Please refer to FIG. 1-4. In the embodiment of the utility model, a mixing mechanism of a trough mixer comprises a mixing tank box 4, which also comprises:

[0025] The supporting mechanism is arranged on the outer side of the mixing tank box 4;

[0026] Mixing mechanism 8, mixing mechanism 8 comprises a drive assembly, rotating rod 9, middle barrel 17, middle spiral blade 12 and reducer spiral blade 13, mixing tank box 4 both ends of the inner wall are provided with a rotating hole, the two ends of the rotating rod 9 are respectively rotated and installed in two rotating holes, one end of the middle barrel 17 is fixed with a plurality of connecting rod 15, one end of the connecting rod 15 is fixed In the mixing tank box 4, the middle barrel 17 is coaxial with the rotating rod 9, the variable diameter spiral blade 13 and the middle spiral blade 12 are coaxial fixed with the rotating rod 9 barrel, the variable diameter spiral blade 13 and the middle spiral blade as one structure, the variable diameter spiral blade 13 is located in the middle barrel 17, the drive component is set in the mixing tank box 4 outer wall and connected with the rotating rod 9, through the above connection The relationship shows that the drive component is used to make the rotating rod 9 rotate, the middle spiral blade 12 on the rotating rod 9, the middle spiral blade 12 will pass the material into the middle cylinder 17, at this time the variable diameter spiral blade 13 to crush the material.

[0027] Specifically, the mixing mechanism 8 also comprises an external spiral blade 10, which is coaxial with the rotating rod 9

The adjustable spiral blade 13, the middle spiral blade 12 and the rotating rod 9 are located in the circle of the external spiral blade 10, the external spiral blade 10 and the rotating rod 9 are arranged between the two fixed rod 11, the two ends of the external spiral blade 10 are close to the two ends of the mixing tank box 4, the spiral direction of the external spiral blade 10 and the rotation of the middle spiral blade 12 On the contrary, It can be seen from Figure 4 that there is no fixed rod 11 between the middle barrel 17 and the rotating rod 9. According to the above connection relationship, the external spiral blade 10 will drive from the material of the middle barrel 17 to one side. Since the rotation direction of the external spiral blade 10 and the rotation direction of the middle spiral blade 12 are opposite, the material can circulate in the box and convective mixing occurs at the same time.

[0028] Specifically, the outer ring of the external spiral blade 10 is fixed with a plurality of scraper 14 fixed to its central axis. According to the above connection relationship, scraper 14 is used to scrape the inner wall of the mixing tank box 4.

[0029] Specifically, the supporting mechanism comprises a bottom plate 1 and two supporting plates 2 which are fixed on the top of the bottom plate 1, and the supporting plates 2 are fixed with the mixing tank box 4. It can be seen from the above connection relationship that the supporting mechanism is used to stand the whole mixing tank box 4 on the ground.

[0030] Specifically, the drive component includes a transmission mechanism and a servo motor 7, the output shaft of the servo motor 7 and the rotating rod 9 are connected through the transmission mechanism, the transmission mechanism includes two transmission wheels 5 and the transmission belt 6 set on the two transmission wheels 5, the two transmission wheels 5 are respectively fixed with the output shaft of the servo motor 7 and the rotating rod 9, through the connection relationship, the servo electricity Machine 7 through the output shaft drive its fixed drive wheel 5 to rotate, the two drive wheel 5 through the drive belt 6 synchronous rotation, and the rotating rod 9 phase fixed drive wheel 5 to rotate, thus rotating rod 9 to rotate.

[0031] Specifically, the bottom four corners of the bottom plate 1 are fixed for the movement of the universal wheel 3.

[0032] Specifically, one end of the middle barrel 17 is fixed with a centralized cover 16 arranged coaxial with it.

[0033] Working principle: servo motor 7 through the output shaft drive its fixed drive wheel 5 to rotate, two drive wheels 5 through the drive belt 6 synchronous rotation, with the rotation rod 9 phase fixed drive wheel 5 to rotate, thereby rotating rod 9 to rotate, rotating rod 9 on the middle spiral blade 12, the middle spiral blade 12 material into the middle cylinder 17, at this time the diameter of the screw Blade 13 to crush the material, the middle cylinder 17 and rotating rod 9 between the fixed rod 11, through the above connection relationship, it can be seen that the external spiral blade 10 will be driven from the middle cylinder 17 material to one side, because of the external spiral blade 10 and the opposite direction of the middle spiral blade 12, the material can be circulatory flow in the box, at the same time Convection mixing.

[0034] It is obvious to persons skilled in the art that the utility model is not limited to the details of the above-mentioned exemplary embodiments and can be realized in other concrete forms without deviating from the spirit or essential features of the utility model.

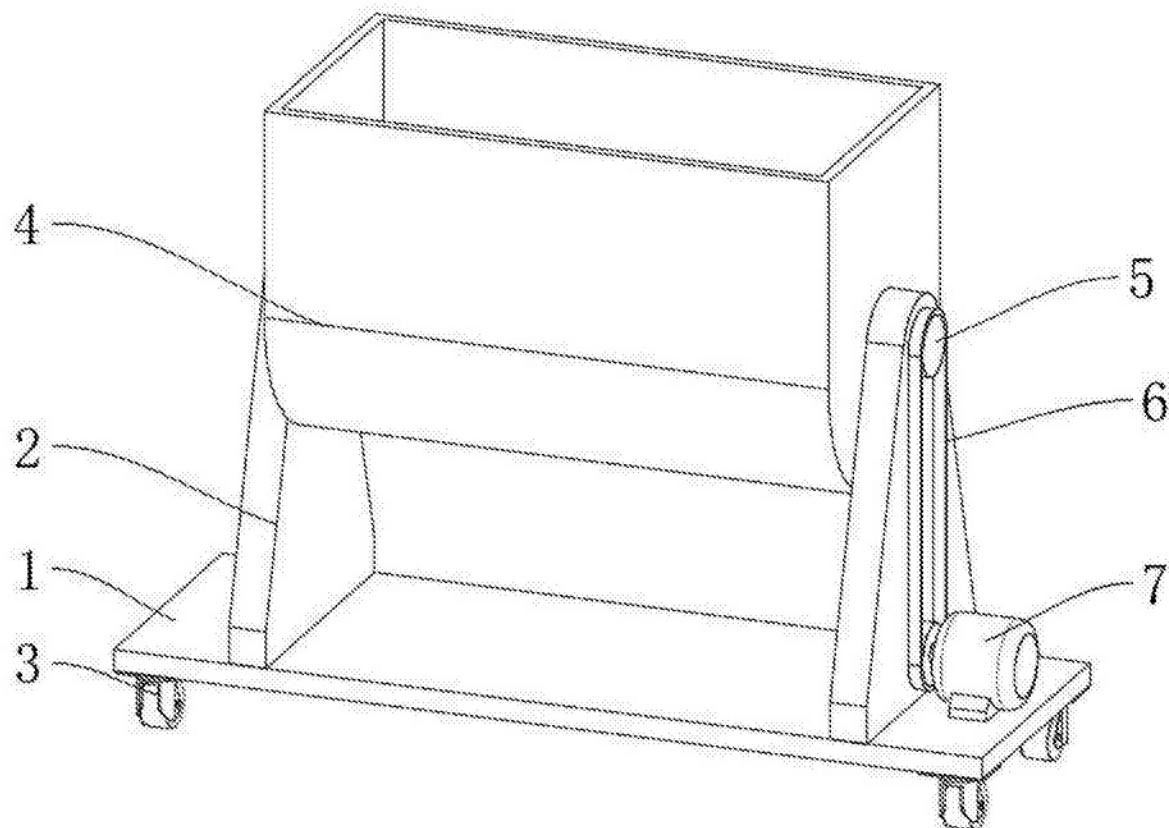


FIG. 1

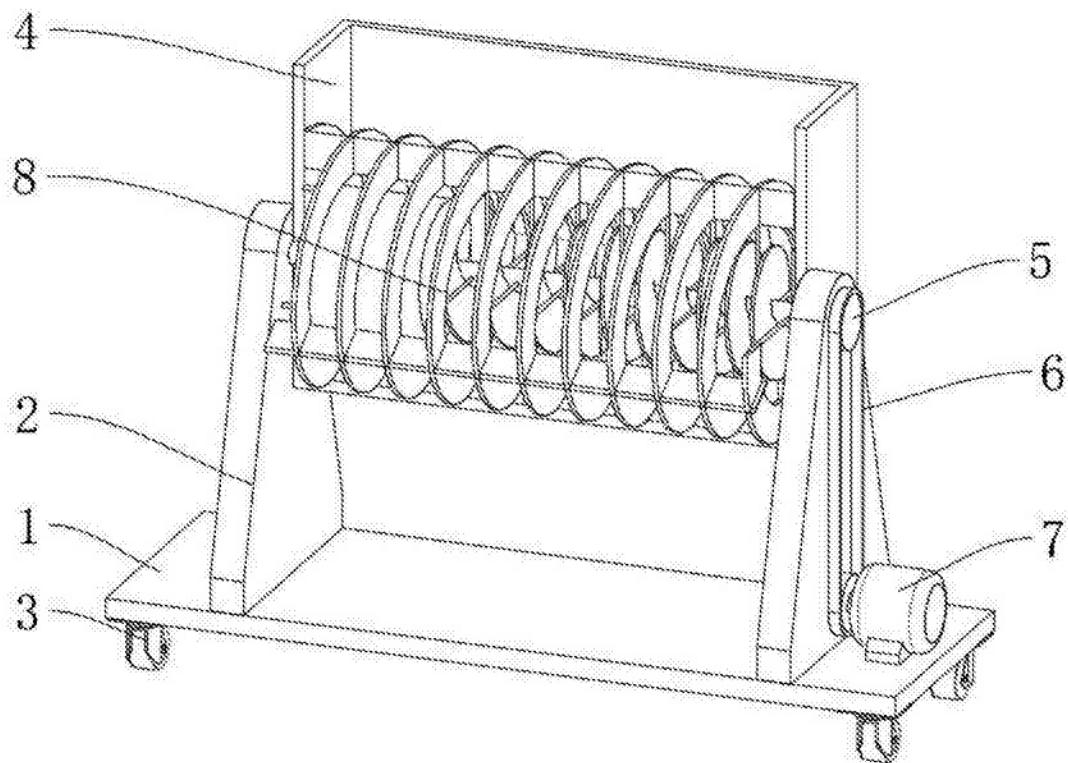


Figure 2

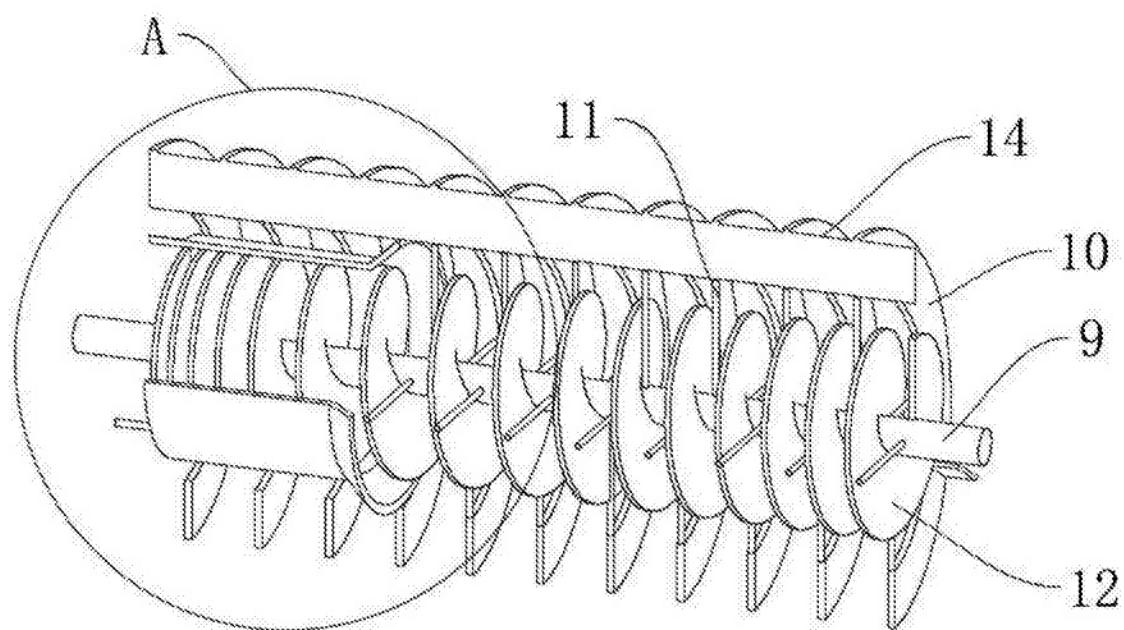


Figure 3

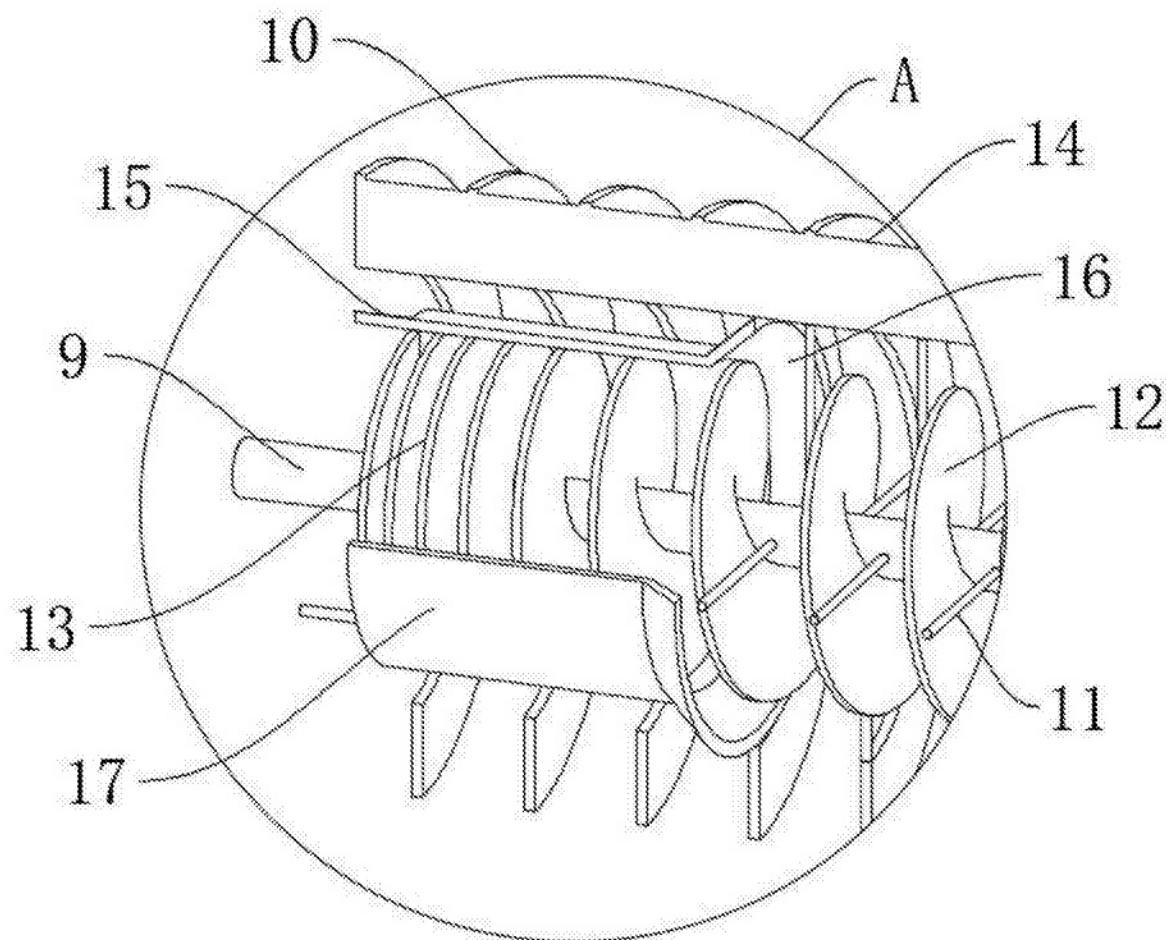


Figure 4