July 9, 1946. L. GELBMAN 2,403,433

SINTERING APPARATUS

Filed Feb. 9, 1945 4 Sheets-Sheet 1

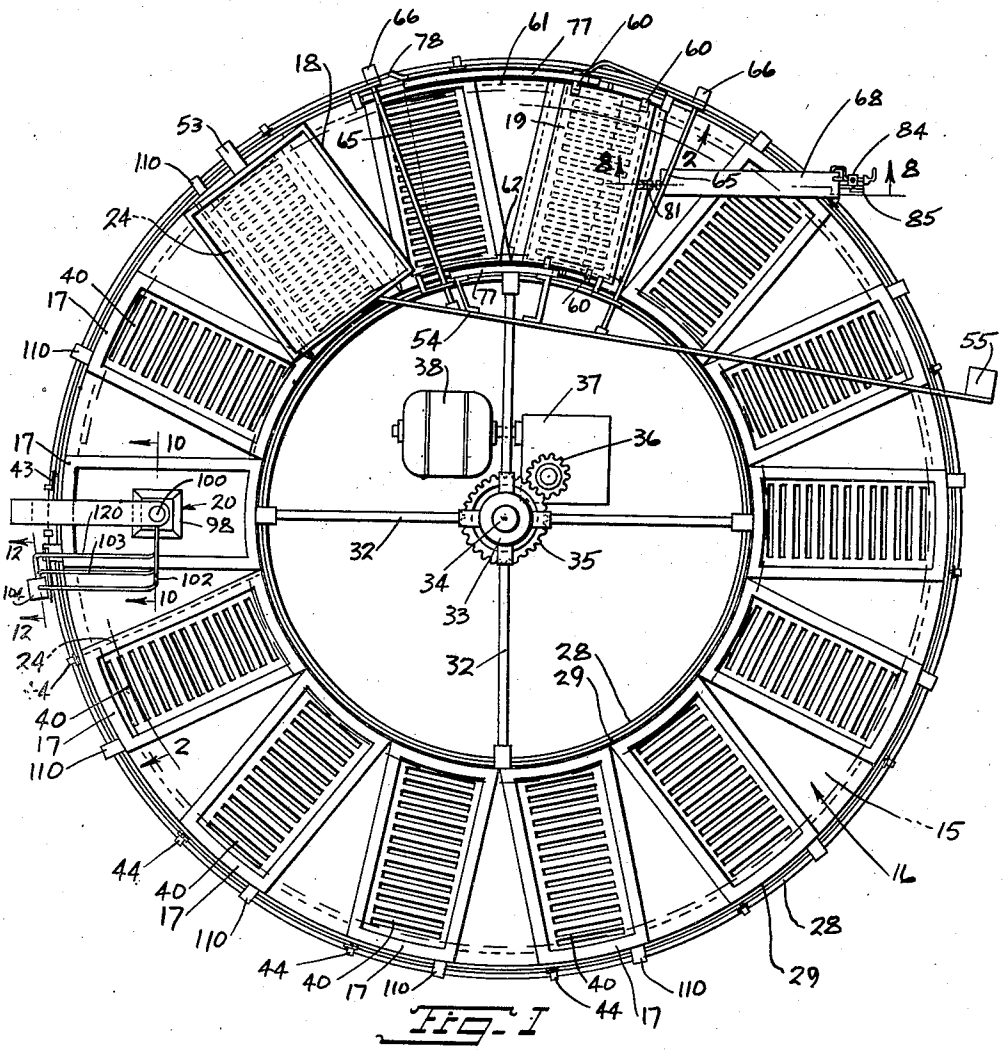


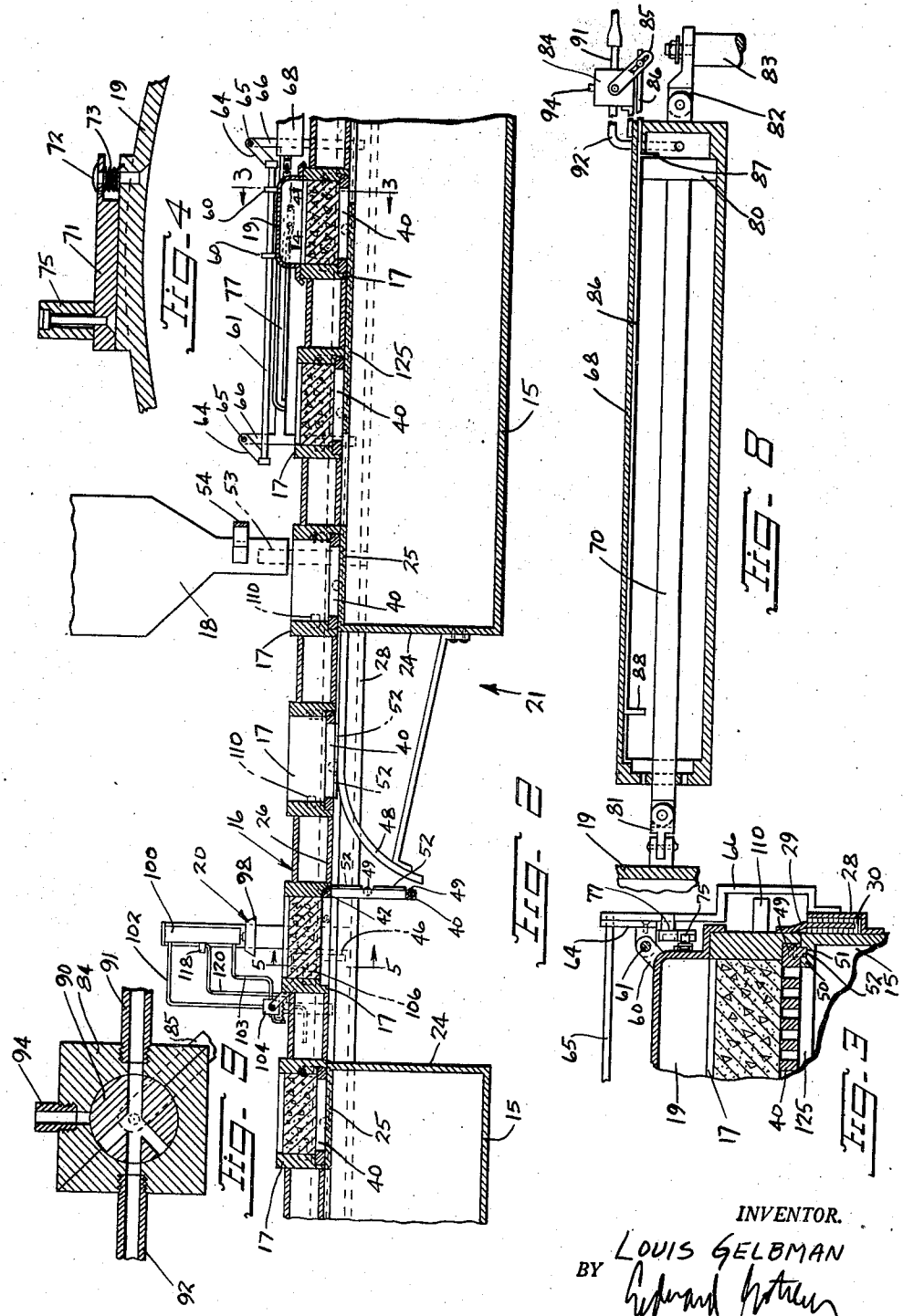
Fig. 1

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SINTERING APPARATUS

Filed Feb. 9, 1945 4 Sheets-Sheet 2



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SINTERING APPARATUS

Filed Feb. 9, 1945 4 Sheets-Sheet 3

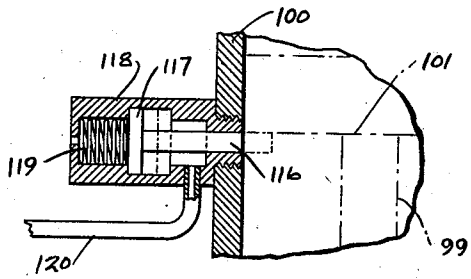


Fig. 11

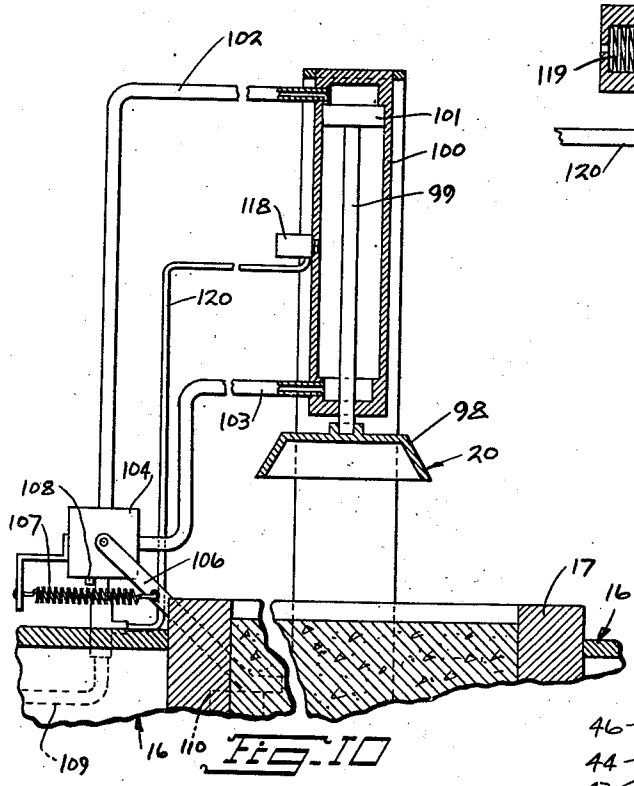


Fig. 10

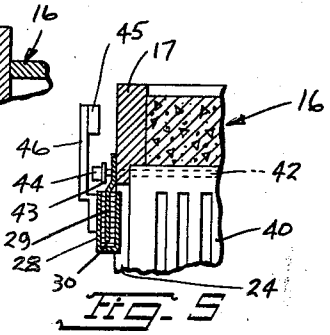


Fig. 5

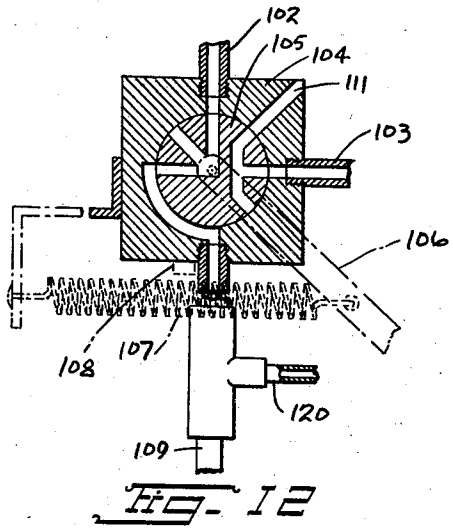


Fig. 12

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SINTERING APPARATUS

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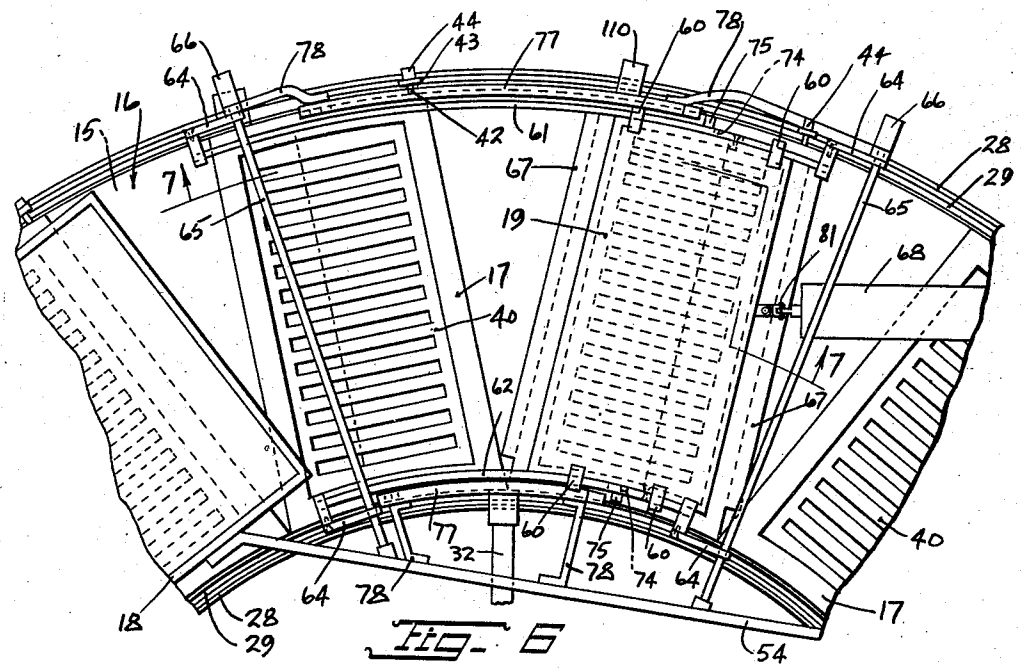


Fig- 6

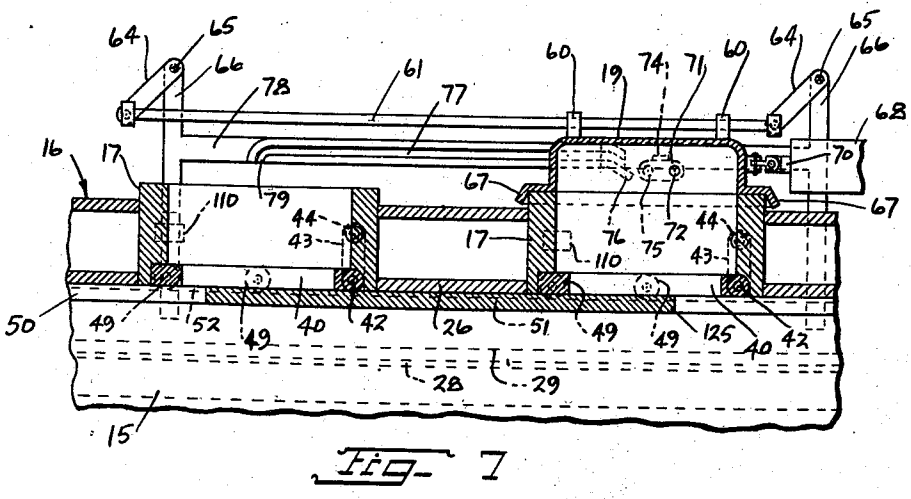


Fig- 7

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Patented July 9, 1946

2,403,433

UNITED STATES PATENT OFFICE

2,403,433

SINTERING APPARATUS

Louis Gelbman, Yonkers, N. Y.

Application February 9, 1945, Serial No. 576,954

18 Claims. (Cl. 266—21)

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This invention relates to new and useful improvements in a sintering apparatus.

More particularly, the invention proposes an improved sintering apparatus which works continuously. It is proposed that the ingredients to be sintered be fed to the apparatus at one point and that the finished sintered material be discharged at another point. It is proposed to so arrange the apparatus that the operation is continuous without any interruption. As long as sintering material is fed to the machine the sintered material will be delivered. This new and improved sintering apparatus is a great improvement over prior devices in which the operation is not continuous. In prior devices it is customary to provide, cars or other reciprocative travelling sinter supply mechanism to feed the sinter furnace portion of the device. With this arrangement the apparatus is not continuous but is being interrupted.

More particularly, the new and improved sintering apparatus is characterized by an annular-like suction box for connection with a suction fan for providing the air draft needed for sintering. It is proposed to arrange the annular-like furnace unit rotatively upon said suction box. It is proposed that said furnace unit be provided with a plurality of radially disposed furnace pan sections. Means for filling said pan sections with material to be sintered, is arranged to fill each pan section as it moves past one point of said suction box. Igniting means is provided for igniting the material in each pan section immediately forwards of the filling position. It is proposed to so design the apparatus that the material in the pan sections continues to burn after the ignition device has been removed, and while the pan sections are still travelling around said annular-like suction box. Means is provided for ejecting the sinter cakes from said pan sections at a point before they again reach said filling position.

The invention proposes a novel means for sealing the open top of said suction box in relation with said furnace unit so that the air draft is forced to pass through the pan sections of the furnace unit.

The invention also contemplates a novel arrangement and operation of the means for ejecting the sintering cakes from the pan sections. The invention also proposes a novel arrangement and operation of the means for igniting the material in each pan section forwards of the filling position of the pan sections. It is proposed to so arrange the igniting means that the

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furnace unit may continue to rotate without interruption during the ignition period.

Still further the invention proposes the construction of a sintering apparatus as briefly described which will be efficient in operation, exceptionally reliable, and which may be manufactured and sold at a reasonable cost.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a plan view of a sintering apparatus, constructed in accordance with this invention.

Fig. 2 is a fragmentary developed vertical sectional view taken on the line 2—2 of Fig. 1, but illustrated provided with sintering material.

Fig. 3 is a fragmentary enlarged transverse vertical sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is a fragmentary enlarged horizontal sectional view taken on the line 4—4 of Fig. 2.

Fig. 5 is a fragmentary enlarged vertical sectional view taken on the line 5—5 of Fig. 2.

Fig. 6 is a fragmentary enlarged detailed view of a portion of Fig. 1.

Fig. 7 is a fragmentary enlarged developed vertical sectional view taken on the line 7—7 of Fig. 6.

Fig. 8 is a fragmentary enlarged vertical sectional view taken on the line 8—8 of Fig. 1.

Fig. 9 is a fragmentary enlarged sectional view of the valve shown at the right hand end of Fig. 8.

Fig. 10 is a fragmentary enlarged vertical sectional view taken on the line 10—10 of Fig. 1, illustrated with sintered material.

Fig. 11 is a fragmentary enlarged vertical sectional view of the central portion of the cylinder shown in Fig. 10, showing in particular the details of the small laterally projecting auxiliary cylinder.

Fig. 12 is a fragmentary enlarged longitudinal sectional view of the valve shown at the left side in Fig. 10.

The sintering apparatus, in accordance with this invention, includes an annular-like wind or suction box 15 for connection with a suction fan for providing the air draft needed in sintering. The fan connected with the box 15 is not disclosed on the drawings, since the arrangement

of a fan in relation to the suction box of a sintering apparatus is well known, and forms no part of this invention. An annular-like furnace unit 16 is rotative upon said suction box 15 and is provided with a plurality of radially disposed furnace pan sections 17. Means is provided for filling said pan sections 17 with material to be sintered, as each pan section 17 moves past a point or area of said suction box 15. This filling means is characterized by a discharge hopper 18. The details of this hopper will not be given in this specification because supply hoppers for filling furnace pans and other devices with granulated material is generally known and forms no part of this invention.

Immediately forwardly past the filling hopper 18, there is an ignition hood 19 for igniting the material in each pan section 17, as each pan section passes this area of the suction box 15. Each pan section 17 is intended to travel all around the annular-like suction box 15, and when they reach a point before the filling position characterized by the hopper 18 they encounter means for ejecting the sintered cakes. This means is characterized by an air ram 20.

The annular-like suction box 15 is not 360 degrees in annular distance. There is a small open segment or section 21 as shown by the arrow on Figure 2. For this reason we may describe the annular-like suction box 15 as being of C-shape. The suction box 15 has an open top. However, its ends 24 are closed. Top flanges 25 extend outwards of the open section 21 from the tops of the ends 24 and are for the purpose of assisting in air sealing the suction box 15. The annular unit 16 has a flat bottom 26 which rests upon and moves across the top flanges 25 and assists in air sealing the suction box 15. This is particularly true when the pan sections 17 are filled with sintering charges, or with the sintered material.

The open top of the suction box 15 is also air sealed in relation to the entire bottom of the furnace unit 16. This is accomplished by sealing troughs 28 mounted around the suction box 15. These troughs 28 are arranged along the inside and outside diameters of the box 15. They extend 360 degrees, passing between the ends 24 of the suction box 15. Downwardly extending flanges 29 are mounted upon the bottom portion of the furnace unit 16, along the inside and outside diameters thereof and extend into the sealing troughs 28. The sealing troughs 28 are filled with a heavy sealing liquid or substance 30. For example, a heavy grease. This grease forms a perfect air seal between the suction box 15 and the furnace unit 16.

The annular furnace unit 16 is provided with several spokes 32 by which it is connected with an axial hub 33. This hub 33 is mounted upon vertical shaft 34 which is provided with a gear 35 engaged by a pinion 36 of a speed reduction transmission 37 which is connected and driven by an electric motor 38. The transmission 37 is so designed that the furnace unit 16 makes one complete revolution for each period of time required to sinter the material in the pan sections 17. At the present time a satisfactory period is approximately 20 minutes. However, this period may be increased, or decreased depending upon design and type of material to be sintered.

Each pan section 17 is provided with a hingedly mounted bottom grate 40 which may pivot downwards to an open position as it passes the ends 24 of the suction box 15, see Fig. 2. Each grate 40 is pivotally supported at its forward side by a

pintle 42, see Figs. 2, 5 and 7. These pintles 42 project from the outside faces of the furnace units 17. The outer ends of the pintles 42 are provided with radially extending levers 43 which have small outwardly extending projections 44 on their outer ends. These projections 44 will strike a complementary projection 45 on a stationary arm 46 mounted upon the side of the outer trough 28. The arm 46 is located at a position slightly past the left hand closed end 24 of the suction box 15, see Fig. 2. With this arrangement each grate 40 will be forced open when it reaches a position between the ends 24 of the suction box 15. This forcing is intended to overcome the sticking tendency of the grates 40.

The air ram 20 is located at a position in which the grates 40 are open. Immediately past this position, there is a track system 48 arranged to close the grates 40. Each grate is provided with several rollers 49 which will engage and ride the tracks 48 causing the grates 40 to close. These tracks 48 are arranged along the inner faces of the troughs 28. The top edge portions of the side walls of the suction box 15 are formed with inwardly directed flanges 50 which are provided with grooves 51 along which the rollers 49 move while the grates 40 are passing around the suction box 15. Small tongues 52, see Figs. 2 and 3 project from the bottom faces of the grates 40 in line with the rollers 49, and air seal the ends of the grooves 51 along the top flanges 25 at the ends 24.

The filling hopper 18 is stationarily supported by support arms 53 and 54. The arm 53 is connected with the outer side of the discharge hopper 18 and connects with the side of one of the troughs 28. The inner arm 54 extends across the one side of the apparatus and is suitably supported by a support arm 55.

The ignition hood 19 is a standard ignition hood having the usual torches not illustrated on the drawing since they form no part of this invention. However the ignition hood 19 is supported and operated in a new way. The hood 19 is provided with side lugs 60 slidably engaging upon arms 61 and 62. These arms are shaped to conform with the curvature of the suction box 15. The arms 61 and 62 form the bottom arms of two parallelograms of arms. The arms 61 and 62 are horizontal but curved as shown in Figure 6. Each of these arms is supported by a pair of parallel upwardly and forwardly extending arms 64. The arms 64 are supported on their top ends upon rods 65. These rods 65 are supported on their inner ends upon the support bar 54. At their outer ends, they are supported on brackets 66. The arrangement is such that when the ignition hood 19 is forced rearwards it will also move upwards. The front and back edges of the ignition hood 19 are formed with flared portions 67. These flared portions 67 assist the ignition hood 19 in properly sitting upon the tops of the pan sections 17. The front flared portion 67 also acts as a cam to force the ignition hood upwards, when the ignition hood is forced rearwards. A cylinder 68 provided with a piston rod 70 is used for this purpose.

On each side of the ignition hood 19, there is a short rearwardly extending arm 71. These arms 71 are pivotally mounted on their front ends on pintle rivets 72. Springs 73 are coaxially mounted on the pintle rivets 72 and act between the arms 71 and the hood 19 for normally urging the arms 71 upwards into horizontal positions against top stop lugs 74 projecting from the sides of the

hood 19. Each arm 72 is provided with a roller 75 on its end. These rollers 75 are adapted to engage downwardly extending front ends 76 of tracks 77 mounted upon side arms 78 connected with the brackets 66 and support bar 54. The tracks 77 are so designed that when the piston rod 70 moves the ignition hood 19 rearwards, the rollers 75 will ride the tracks 77 lifting the ignition hood 19 while it is being moved rearwards, and then the tracks 77 will discharge the ignition hood 19 upon the pan section 17 which is to the back of the pan section 17 upon which the hood 19 is illustrated on the drawings. The rear ends of the tracks 77 have discharge portions 79 for this purpose.

The piston rod 70 connects with a piston 80 slidably mounted in the cylinder 68. The piston rod 70 is connected with the ignition hood 19 by a universal joint 81. The front end of the cylinder 68 is supported by a universal joint 82 upon a support post 83. The piston 80 is controlled by an air valve 84. The air valve 84 has a control lever 85 which is connected with a rod 86 slidably mounted within the cylinder 68 and projecting from the front end of the cylinder. The rod 86 has a front downwardly extending projection 87 and a rear projection 88. The piston 80 engages against these projections 87 and 88 for alternating moving the rod 86 forwards and then rearwards and in this way controls said handle 85 of the valve 84 for operating the valve.

The valve 84 has a turnable valve head 90 which in a forward position of the handle 85 connects the air supply 91 with a pipe 92 which is connected with the front end of the cylinder 68. In this condition of the parts the air coming in from the air supply pipe 91 will drive the piston 80 rearwards. When the piston 80 reaches its complete rear position it will strike the projection 88, moving the rod 86, and so moving the handle 85 through 45 degrees. This will turn the valve head 90 45 degrees so that the air line 91 will be shut off, and the pipe 92 will be connected with a pipe 94 discharging into the atmosphere. Next the piston 80 is moved forwards. It will be moved forwards by the ignition hood 19 which is riding upon one of the pan sections 17.

The air ram 20 is in the nature of a ram head 98 mounted upon a stem 99 which enters a vertical vylinder 100. The stem 99 connects with a piston 101. A pipe 102 connects with the top of the cylinder 100. Another pipe 103 connects with the bottom of the cylinder 100. These pipes are connected up with an air valve 104. The air valve 104 has a valve head 105 which may be turned by a handle 106. The handle 106 is urged rearwards by a spring 107, so as to engage the handle 106 against a stop lug 108. The handle 106 is designed to move through 45 degrees. Each pan section 17 has a projecting lug 110. These lugs 110 will ride against the handle 106 for turning the valve head 105. As illustrated, the handle 106 is in its complete forward position. In this position, the valve head 105 connects an air supply 109 with the pipe 102. The valve head 105 also connects the pipe 103 with an air passage 111 which discharges into the atmosphere. In this condition of the parts, the incoming air from pipe 109 will drive the piston 101 downwards, and the ramming head 98 will enter the top of the pan section 17 striking the sinter cake in this section and breaking the sinter cake free from the pan section causing it to fall through the open bottom of the pan section.

The suitable conveyor, not illustrated on the drawings, is intended to convey away the discharged sinter cakes. When the lug 110 passes the lever 106, the spring 107 will move the lever 106 rearwards turning the valve head 105 through 45 degrees. This causes the air pipe 109 to become connected with the pipe 103 and simultaneously the air pipe 102 becomes connected with the atmosphere discharge passage 111. The piston 101 will therefore move upwards, lifting the ram head 98 to its raised position.

A safety bolt 116 is mounted on an intermediate point of the cylinder 100 and is for the purpose of preventing the ram head 98 from entering one of the pan sections 17 when the pressure supply in the pipe line 109 fails. The bolt 116 is connected with a piston 117 which works in a small auxiliary cylinder 118 mounted on the side of the cylinder 100. A spring 119 urges the piston 117 and the bolt 116 into an extended operative position. A small air tube 120 connects with the front of the cylinder 118 and with the supply pipe 109 so that the air pressure normally keeps the piston 117 and the bolt 116 retracted. This safety bolt 116 will prevent the ram head 98 becoming jammed in one of the pan sections 17, in the event that the air pressure fails, and the furnace unit 16 continues turning.

An air shut-off plate 125 is mounted between the flanges 50 at an area beneath the ignition hood 19. The purpose of the plate 125 is to control the suction through the pan section 17 which is having its material ignited. The suction must not be too strong, or else it will interfere with the flames of the ignition torches.

The operation of the device is as follows:

The annular-like furnace unit 16 is slowly, but continuously being rotated indirectly by the electric motor 38. As the pan sections 17 pass beneath the filling position located by hopper 18, they will be filled with material to be sintered. The material in the pan section 17 at the extreme right, in Fig. 2 is already ignited. The ignition hood 19 is now ready to move rearwards to engage upon the pan section 17 which is second from the right in Fig. 2. At this instant the piston 80 has engaged the projection 87 and has moved the rod 86 towards the right. This has turned the valve handle 85 to the position illustrated in Fig. 8. This has caused the valve head 90 to assume the position shown in Fig. 9. The air supply pipe 91 is now connected with the pipe 92, and the piston 80 starts moving towards the left.

The piston rod 70 forces the ignition hood 19 rearwards. The flange 67 at the right cams up the ignition hood 19. The rollers 75 of the side arms 71 ride into the front portions 76 of the tracks 77 which lift the hood 19 completely upwards off the pan section 17. The piston rod 70 now moves the hood 19 rearwards until the rollers 75 fall from the ends 79 of the tracks 77. The ignition hood is thus dropped on the pan section 17 which is second from the right as illustrated in Fig. 2. Since the furnace unit 16 is rotating clockwise, the pan section 17 with the ignition hood 19 on it, will move towards the right and the torches of the ignition hood 19 will ignite the material in the pan section, to be sintered. Of course, it must be remembered that the suction box 15 is in operation which creates the needed draft for igniting and burning the sinter material. As the pan section 17 with the ignition hood 19 on it reaches the position shown at the right in Fig. 2, the roller 75 will engage beneath the ends 76 of the tracks 77, and the arms 71 will bend

downwards so that the rollers 75 may pass. The springs will return the arms 71 to their horizontal positions.

The pan sections 17 which move past the ignition hood 19, continue to burn as they move around the suction box 15. They will continue to burn for 20 minutes, more or less depending merely upon the speed of operation of the machine. When they reach the position of the air ram 20 they will be discharged. At this position the lug 110 of each pan section 17 will engage the handle 106 of the valve 104 which controls the piston 101. The air ram 98 will move smartly downwardly striking the sinter cake and knocking it from the pan section 17. The grate 40 of the pan section 17 will be opened at this moment. It was opened a short period before this time by the projection 44 of the lever 43 which connects with the pintle 42 of the grate 40, engaging the projection 45 of the arm 46. The grate 40 will be closed by the tracks 48. The emptied pan section 17 is now ready to assume a position beneath the filling hopper 18 so as to be refilled. In this way the cycle repeats.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by United States Letters Patent is:

1. In a rotary sintering apparatus having an annular-like suction box for connection with a suction fan for providing the air draft needed for sintering and an annular-like furnace unit rotative upon said suction box and having a plurality of radially disposed furnace pan sections, means for air sealing the open top of said suction box in relation with said furnace unit, comprising troughs for a sealing substance mounted about said suction box, and flanges mounted on said furnace unit and extending into said troughs.

2. In a rotary sintering apparatus having an annular-like suction box for connection with a suction fan for providing the air draft needed for sintering and an annular-like furnace unit rotative upon said suction box and having a plurality of radially disposed furnace pan sections, means for air sealing the open top of said suction box in relation with said furnace unit, comprising troughs for a sealing substance mounted about said suction box, and flanges mounted on said furnace unit and extending into said troughs, said troughs and flanges being mounted around the inner and outer diameters of said suction box and furnace unit.

3. In a rotary sintering apparatus having an annular-like open top suction box for connection with a suction fan for providing the air draft needed for sintering and an annular-like furnace unit rotative upon said suction box, and means for air sealing the open top of said suction box in relation with said furnace unit including troughs for a sealing material mounted around one of said parts, and flange-like members on the other of said parts and engaging into said troughs.

4. A sintering apparatus, comprising an annular-like suction box for connection with a suction fan for providing the air draft needed for sintering, an annular-like furnace unit rotative upon said suction box and having a plurality of radially disposed furnace pan sections, means for

filling said pan sections with material to be sintered as each pan section moves past one point of said suction box, means for igniting the material in each pan section immediately forwards of said filling position, and means for ejecting the sinter cakes from said pan sections at a point before they again reach said filling position, inincluding a ram for ramming the sinter cakes from the pan sections.

5. A sintering apparatus, comprising an annular-like suction box of C-shape having an open top and closed ends and intended to be connected with a suction fan for providing the air draft needed for sintering material, an annular furnace unit rotative upon said suction box and having a plurality of radially disposed furnace pan sections provided with hingedly mounted bottom grates which may pivot downwards to open positions as they pass the ends of said suction box, means for filling said pan sections with material to be sintered as each pan section moves forwards over one end of said suction box, means for igniting each pan section immediately forwards of said filling position, and means for ramming sinter cakes from said pan sections as each pan section is passing between the ends of said suction box.

6. A sintering apparatus, comprising an annular-like suction box of C-shape having an open top and closed ends and intended to be connected with a suction fan for providing the air draft needed for sintering material, an annular furnace unit rotative upon said suction box and having a plurality of radially disposed furnace pan sections provided with hingedly mounted bottom grates which may pivot downwards to open positions as they pass the ends of said suction box, means for filling said pan sections with material to be sintered as each pan section moves forwards over one end of said suction box, means for igniting each pan section immediately forwards of said filling position, means for ramming sinter cakes from said pan sections, as each pan section is passing between the ends of said suction box, and means for closing said grates between the ends of said suction box.

7. A sintering apparatus, comprising an annular-like suction box of C-shape having an open top and closed ends and intended to be connected with a suction fan for providing the air draft needed for sintering material, an annular furnace unit rotative upon said suction box and having a plurality of radially disposed furnace pan sections provided with hingedly mounted bottom grates which may pivot downwards to open positions as they pass the ends of said suction box, means for filling said pan sections with material to be sintered as each pan section moves forwards over one end of said suction box, means for igniting each pan section immediately forwards of said filling position, means for ramming sinter cakes from said pan sections, as each pan section is passing between the ends of said suction box, and means for opening said grates as each pan section is passing between the ends of said suction box.

8. A sintering apparatus, comprising an annular-like suction box of C-shape having an open top and closed ends and intended to be connected with a suction fan for providing the air draft needed for sintering material, an annular furnace unit rotative upon said suction box and having a plurality of radially disposed furnace pan sections provided with hingedly mounted bottom grates which may pivot downwards to open posi-

tions as they pass the ends of said suction box, means for filling said pan sections with material to be sintered as each pan section moves forwards over one end of said suction box, means for igniting each pan section immediately forwards of said filling position, means for ramming sinter cakes from said pan sections, as each pan section is passing between the ends of said suction box, and means for opening said grates as each pan section is passing between the ends of said suction box, and including radial arms mounted on the hinges of said grates and engageable with a stationary lever.

9. A sintering apparatus, comprising an annular-like suction box of C-shape having an open top and closed ends and intended to be connected with a suction fan for providing the air draft needed for sintering material, an annular furnace unit rotative upon said suction box and having a plurality of radially disposed furnace pan sections provided with hingedly mounted bottom grates which may pivot downwards to open positions as they pass the ends of said suction box, means for filling said pan sections with material to be sintered as each pan section moves forwards over one end of said suction box, means for igniting each pan section immediately forwards of said filling position, means for ramming sinter cakes from said pan sections, as each pan section is passing between the ends of said suction box, means for opening said grates as each pan section is passing between the ends of said suction box, and means for closing said grates after their sinter cakes have been ejected.

10. A sintering apparatus, comprising an annular-like suction box of C-shape having an open top and closed ends and intended to be connected with a suction fan for providing the air draft needed for sintering material, an annular furnace unit rotative upon said suction box and having a plurality of radially disposed furnace pan sections provided with hingedly mounted bottom grates which may pivot downwards to open positions as they pass the ends of said suction box, means for filling said pan sections with material to be sintered as each pan section moves forwards over one end of said suction box, means for igniting each pan section immediately forwards of said filling position, means for ramming sinter cakes from said pan sections, as each pan section is passing between the ends of said suction box, means for opening said grates as each pan section is passing between the ends of said suction box, and means for closing said grates after their sinter cakes have been ejected including tracks for guiding the grates into closed positions.

11. A sintering apparatus, comprising an annular-like suction box of C-shape having an open top and closed end and intended to be connected with a suction fan for providing the air draft needed for sintering material, an annular furnace unit rotative upon said suction box and having a plurality of radially disposed furnace pan sections provided with hingedly mounted bottom grates which may pivot downwards to open positions as they pass the ends of said suction box, means for filling said pan sections with material to be sintered as each pan section moves forwards over one end of said suction box, means for igniting each pan section immediately forwards of said filling position, and means for ramming sinter cakes from said pan sections as each pan section is passing between the ends of said section box, said means for igniting each pan section including an ignition hood, means for lowering and engaging said head upon one of the pan sections to travel along with the pan section for a short distance, and means for raising and returning said ignition hood to its starting position so that it may engage on the next pan section.

12. A sintering apparatus, comprising an annular-like suction box of C-shape having an open top and closed end and intended to be connected with a suction fan for providing the air draft needed for sintering material, an annular furnace unit rotative upon said suction box and having a plurality of radially disposed furnace pan sections provided with hingedly mounted bottom grates which may pivot downwards to open positions as they pass the ends of said suction box, means for filling said pan sections with material to be sintered as each pan section moves forwards over one end of said suction box, means for igniting each pan section immediately forwards of said filling position, and means for ramming sinter cakes from said pan sections as each pan section is passing between the ends of said suction box, said means for igniting each pan section including an ignition head, means for lowering and engaging said head upon one of the pan sections to travel along with the pan section for a short distance, and means for raising and returning said ignition hood to its starting position so that it may engage on the next pan section, said ignition hood being slidably mounted upon the bottom arms of supporting parallelograms of arms.

13. A sintering apparatus, comprising an annular-like suction box of C-shape having an open top and closed ends and intended to be connected with a suction fan for providing the air draft needed for sintering material, an annular furnace unit rotative upon said suction box and having a plurality of radially disposed furnace pan sections provided with hingedly mounted bottom grates which may pivot downward to open positions as they pass the ends of said suction box, means for filling said pan sections with material to be sintered as each pan section moves forwards over one end of said suction box, means for igniting each pan section immediately forwards of said filling position, and means for ramming sinter cakes from said pan sections as each pan section is passing between the ends of said suction box, said igniting means including an ignition hood, means for slidably supporting said hood so that it may travel a short arcuate distance with said furnace unit, a track system for guiding said hood back to its starting position, arms mounted on said hood and having rollers engageable with said track system, and piston means for moving said hood rearwards to engage with said track system and be moved back to its starting position.

14. A sintering apparatus, comprising an annular-like suction box of C-shape having an open top and closed ends and intended to be connected with a suction fan for providing the air draft needed for sintering material, an annular furnace unit rotative upon said suction box and having a plurality of radially disposed furnace pan sections provided with hingedly mounted bottom grates which may pivot downwards to open positions as they pass the ends of said suction box, means for filling said pan sections with material to be sintered as each pan section moves forwards over one end of said suction box, means for igniting each pan section immediately forwards of said filling position, and means for ramming sinter cakes from said pan sections as each pan section

is passing between the ends of said suction box, said igniting means including an ignition hood, means for slidably supporting said hood so that it may travel a short arcuate distance with said furnace unit, a track system for guiding said hood back to its starting position, arms mounted on said hood and having rollers engageable with said track system, and piston means for moving said hood rearwards to engage with said track system and be moved back to its starting position, and valve means for controlling said piston means.

15. A sintering apparatus, comprising an annular-like suction box of C-shape having an open top and closed ends and intended to be connected with a suction fan for providing the air draft needed for sintering material, an annular furnace unit rotative upon said suction box and having a plurality of radially disposed furnace pan sections provided with hingedly mounted bottom grates which may pivot downwards to open positions as they pass the ends of said suction box, means for filling said pan sections with material to be sintered as each pan section moves forwards over one end of said suction box, means for igniting each pan section immediately forwards of said filling position, and means for ramming sinter cakes from said pan sections as each pan section is passing between the ends of said suction box, comprising an air ram, and an air valve for controlling said ram actuated with lugs projecting from said pan sections.

16. A sintering apparatus, comprising an annular-like suction box for connection with a suction fan for providing the air draft needed for sintering, an annular-like furnace unit rotative upon said suction box and having a plurality of radially disposed furnace pan sections, means for filling said pan sections with material to be sintered as each pan section moves past one point

of said suction box, means for igniting the material in each pan section immediately forwards of said filling position, and means for ejecting the sinter cakes from said pan sections at a point before they again reach said filling position, said igniting means including an ignition hood, and a plate stationarily mounted below said ignition hood and below said furnace unit for blocking off excesssive suction from the furnace pan section which is being ignited.

17. In a sintering apparatus, a suction box, a furnace unit having a plurality of furnace pan sections for material to be sintered and movably mounted on said suction box to move in a path along said suction box, means for moving said furnace unit in said path, and means for igniting the material in each of said pan sections at certain points along said path and including an ignition hood for engaging upon one of said pan sections at a starting point and then riding along with said pan section over said certain points, and means for returning said ignition hood to its starting point for engaging another one of said pan sections.

18. In a sintering apparatus, a suction box, a furnace unit having a plurality of furnace pan sections for material to be sintered and movably mounted on said suction box to move in a path along said suction box, means for moving said furnace unit in said path, and means for igniting the material in each of said pan sections at certain points along said path and including an ignition hood, means for engaging and connecting said ignition hood upon one of said pan sections at a starting point for riding along with said pan section over said certain points, and means for disconnecting and returning said ignition hood to its starting position.

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