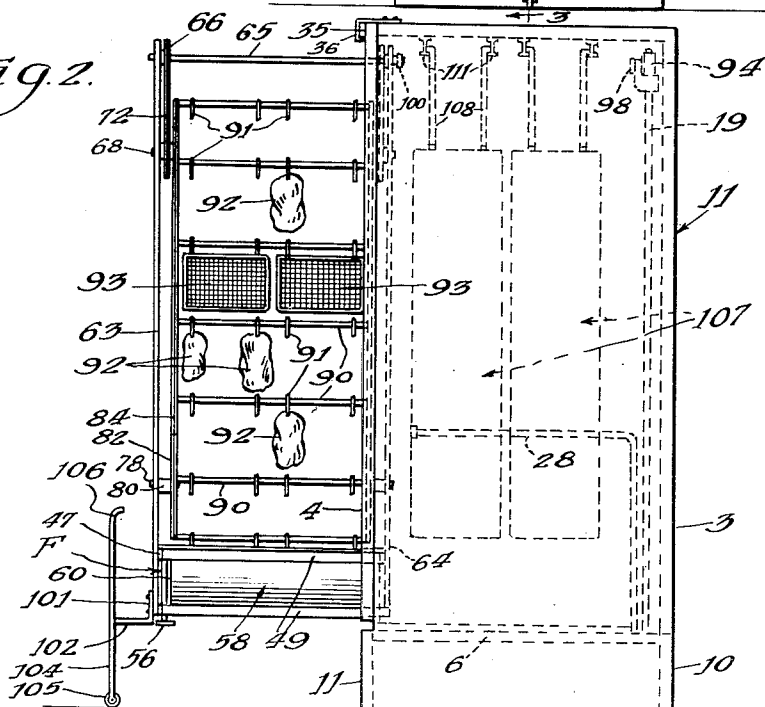
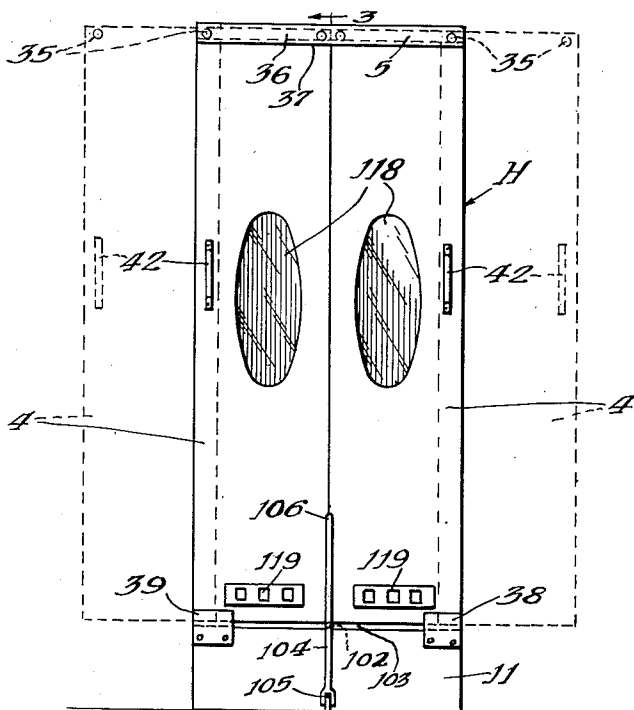


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Inventor:
William G. Alexander
By Louis A. Bisson,
Attorney.

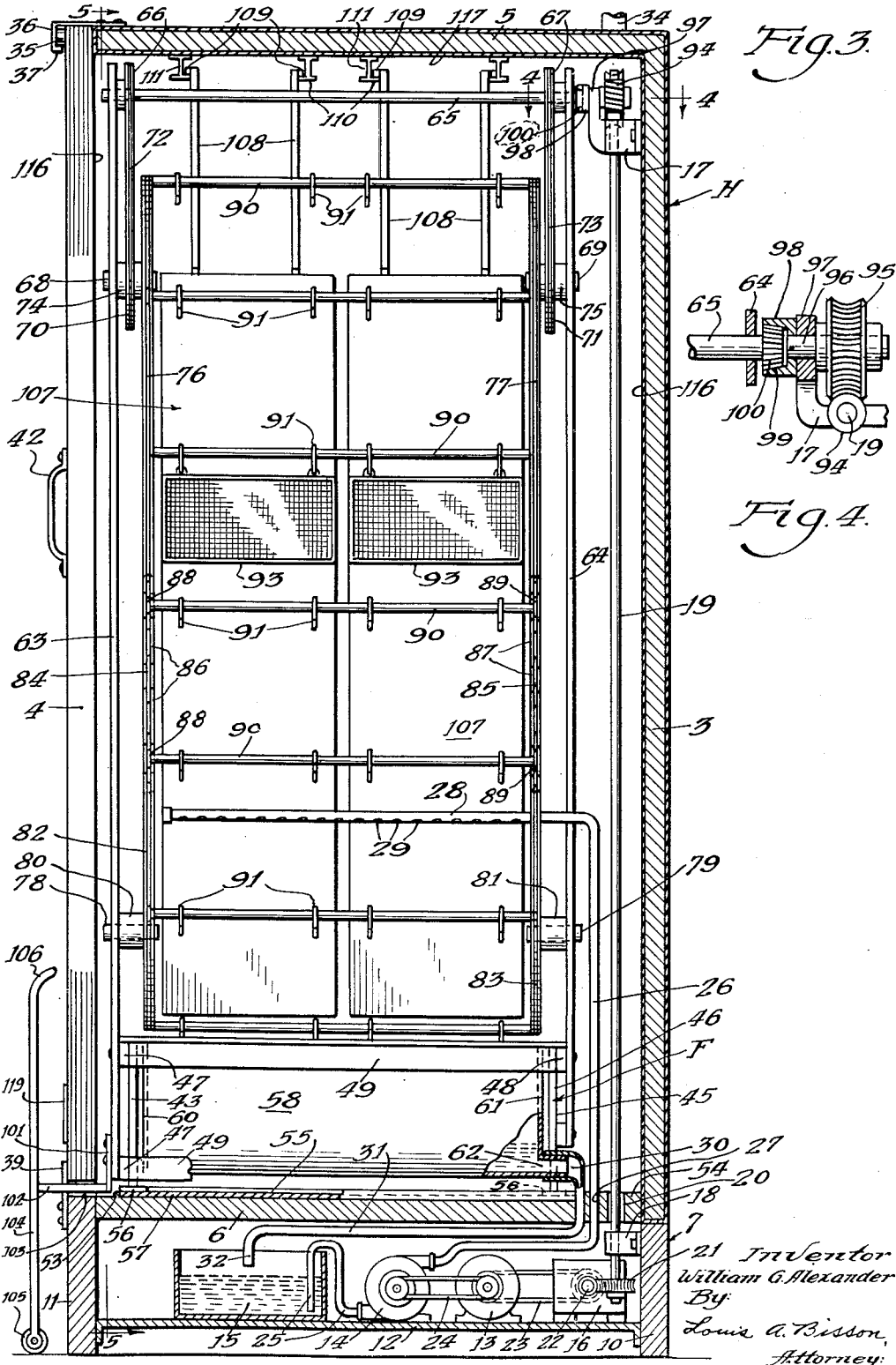
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W. G. ALEXANDER
DEVICE FOR BARBECUING, ROASTING,
BROILING, AND THE LIKE

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21 Inventor
William G. Alexander
By
Louis A. Bisson,
Attorney.

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DEVICE FOR BARBECUING, ROASTING,
BROILING, AND THE LIKE

William G. Alexander, Chicago, Ill.

Application May 23, 1946, Serial No. 671,673

6 Claims. (Cl. 99-443)

1

The present invention relates to a device for barbecuing, roasting, broiling and the like, of foods, or other materials or substances, or the like, as may be desired to be subjected to heat treatment.

Among the objects of the invention is to provide a novel device as above indicated and which is preferably of unitary structure and capable of being readily located in or removed from a housing which may be in the nature of an oven or the like, and which may be automatically operatively connected or associated with suitable operating means associated with the housing; the said housing being so designed as to permit the use of the unit within doors or outside, and to afford confining the gasses, vapors, fumes, or the like, from spreading about, and also to prevent access of dust, dirt, smoke, and the like, to the material being under treatment.

Other objects, advantages, capabilities, features, and the like are comprehended by the invention as will later appear, and as are inherently possessed by the invention.

Referring briefly to the drawings:

Fig. 1 is a view in elevation of an embodiment of the invention when in closed condition;

Fig. 2 is a similar view showing the device in open condition and with the unit in withdrawn position;

Fig. 3 is a vertical sectional view, on an enlarged scale, taken in a plane represented by line 3-3 in Fig. 1 of the drawings;

Fig. 4 is a part sectional view and part elevational view of a detail of the drive means, taken in a plane represented by line 4-4 in Fig. 3 of the drawings;

Fig. 5 is a vertical sectional view, similar to Fig. 3, but taken in a transverse plane represented by line 5-5 in Fig. 3 of the drawings.

Referring more in detail to the drawings, the embodiment elected to illustrate the invention is shown as comprising an upper housing H having side walls 1 and 2, a rear wall 3, front doors 4, 4, a top wall 5, and a floor 6.

The housing H is designed to stand on a base section or pedestal 7 having side walls 8 and 9, a rear wall 10, and a front wall 11. The side and rear walls 1, 2 and 3, are respectively adapted to stand upon the side and rear walls 8, 9 and 10 of the base section 7, as shown, and the lower ends of the doors 4, 4, will have sliding contact with the upper end of the frontal wall 11 of the base section 7. The base 7 is designed to stand on the floor of a building when the device is used indoors, or on the ground when the de-

2

vice is used outdoors. Within the base 7 is suitably supported a floor 12 upon which may be suitably located a motor 13, a pump 14, a tank 15, and a gear box 16, as shown in Figs. 3 and 5.

To the rear walls 3 and 10 are secured bearing brackets 17 and 18 in which is rotatively supported a vertical shaft 19 extending through an opening 20 in the floor 6, the shaft 19 having at its lower end a gear 21 enmeshed with a gear 22 of a gear means in the gear box 16. The gear mechanism is driven by the motor 13 by way of a suitable drive means, such as a belt or chain or the like 23, and the pump 14 is driven by the motor by way of like suitable drive means 24. The pump 14 has an intake duct or pipe 25 leading from the tank 15, and a discharge duct or pipe 26 passing up through a hole 27 in the floor 6 and extending to a spray pipe 28 having a plurality of spray orifices 29. Above the floor 6 is provided a drain bell 30 connected to a duct or pipe 31 passing through the floor 6 and leading to the tank 15 and having a downwardly extending discharge nozzle 32 for draining melted fats, oils, etc. from the unit during its operation. The floor has a depressed portion 33 for acting as a sort of sump for collecting any waste that might occur in the device.

At the upper end of the housing H the top 5 has an exhaust pipe or the like 34, for the escape of vapors, smoke, fumes or the like.

At the front the housing H has an opening which may be closed by a pair of sliding doors 4, 4, these doors being of the hanging type, and each having at its upper end a series of rollers 35, adapted to run or ride on an overhead track 36 having a roller flange 37 upon which the rollers 35 ride. At the lower ends of the doors 4, 4, there are attached to the housing H guide pieces 38 and 39 attached to the front wall 11 of the base section or pedestal 7 at the lower front corners of the housing H, and as shown in Figs. 1 and 3, so that when the doors 4, 4, are in closed condition, they will be held in close to the front edges of the side walls 1 and 2 of the housing H.

To the side walls 8 and 9 of the base section 7 may be attached suitable brackets 40 and 41 (see Fig. 5) to act as supports and strengthening members, as at the corners thereof, for the floor 6. The doors 4, 4 preferably have handles 42 for manually opening and closing the doors 4, 4.

Within the housing H is placeable a unit F for holding and for moving or causing the travel of the material, etc. to be treated, as by heat. This unit F comprises a base means in the form of a frame having upright corner pieces or posts

43, 44, 45 and 46 with upper and lower cross pieces 47, 47 at the front and connected to the posts 43 and 44, and upper and lower cross pieces 48, 48 at the rear and connected to the posts 45 and 46; and likewise at the sides are connected upper and lower longitudinal pieces 49, 49 to the posts 43 and 45, and upper and lower longitudinal pieces 50, 50 to posts 44 and 46.

The lower ends of the corner posts 43, 44, 45 and 46 have feet or sliders 56 which are slideable in channel tracks 57 extending longitudinally on the floor 6. The floor 6, as stated above, has a depression 33 and at the sides and the ends of this depression 33 the floor 6 has raised rim portions 51, 52 at the sides and 53 and 54 at the front and rear respectively. The channel guides 57 are preferably adjacent to the side rim portions 51 and 52 and the guide ways 55 in the tracks 57 and at a level, even with or slightly above the level of the top surface of the front rim portion 53 so that when the frame F is slid out at the front, the feet 56 of the posts 43 will pass or slide over the top of the front rim 53.

Suspended from the top of the frame F, as from the upper brace pieces 47, 48, 49 and 50 is a tank or receptacle 58 having upper side and end flanges to rest on said brace pieces, said tank having a rounded bottom 59, and front and rear end walls 60 and 61. To the rear end wall 61 is connected at a low point an outlet spout or the like 62 (see Fig. 3), adapted to extend a substantial distance into the drain bell 30. The bell 30 is preferably slightly inclined toward the pipe 31 to facilitate the draining of liquid from the bottom of the tank 58 to the bell 30 and thence to the pipe 31 and tank 15.

Secured to mid portions of the upper and lower cross pieces 47, 47 and 48, 48, are upright posts or standards 63 and 64. Rotatively supported at the upper ends of these standards is a shaft 65 and fixed to this shaft are wheels 66 and 67, which may be of the sprocket or pulley type as desired, and at suitable points are secured to these standards 63 and 64 stub shafts 68 and 69 on which are rotatably mounted wheels 70 and 71 which may be of the sprocket or pulley type as desired, and over these wheels operate driving elements 72 and 73 such as chains or belts, or the like, whereby the wheels 66 and 67 effect a driving by way of the elements 72 and 73 of the wheels 70 and 71.

The wheels 70 and 71 have hubs 74 and 75 and to these hubs are fixed wheels 76 and 77 which will rotate with the wheels 70 and 71 and in synchronism at the front and rear of the device.

At lower points of standards 63 and 64 are fixed studs 78 and 79 on which are rotatably supported hubs 80 and 81 of wheels 82 and 83 which may be of the sprocket, pulley or like type as desired. Over wheels 82 and 76, and wheels 83 and 77 operate driving elements 84 and 85, such as chains, belts, or the like. These driving elements have segments or links 86 and 87 having hub brackets 88 and 89 for carrying shafts 90. There is a series of these shafts 90 along the chains or belts 84 and 85 to be carried as in the nature of an endless conveyor. On these shafts 90 may be hung hooks 91 and on these hooks 91 may be suspended articles 92 (see Fig. 2) to be subjected to heat, or may be baskets or trays or the like 93 for holding the material or the like, to be heat treated, as desired, or as the case might be.

Referring to Figs. 3 and 4, the shaft 19 has fixed to it a gear or worm 94 enmeshed with a

gear 95 fixed to a shaft 96 rotatable in an arm 97 of the bracket 17, and to the end of the shaft 96 is secured a matrix type of clutch member 98 having a tapered and ribbed or toothed socket 99. This clutch member 98 is in axial alignment with the shaft 65, and the shaft 65 has fixed to it a matrix type of clutch member 100 also tapered and ribbed or toothed to mesh with the clutch member 98.

At the lower end of the front standard 63 may be secured a bracket 101 having an arm 102 extending through a channel 103 formed in the upper edge of the front wall 11 of the lower section 7 of the device, and fixed to the outer end of the arm 102 is an upright post 104 having at its lower end a wheel or caster 105 adapted to ride on the floor or ground when the unit is slid into or out of the housing H as shown in Figs. 2 and 3. The upper end of the post 104 has a handle 106 by which the unit may be manually moved in and out of the housing H, as shown in Fig. 2.

Within the housing may be located heating members 107 of any suitable type, such as sets of electric resistance coils or the like, gas burners, etc., and these heating members 107 are preferably suspended by hangers 108 connected to the upper ends of the members 107, these hangers having at their upper ends hooks or the like 109 adapted to be hooked over flanges 110 of channels or I pieces 111 suitably secured to the top wall 5 of the housing H, and these hangers 108 may be adjusted along the members 111 as desired to locate the heating members near to or far from the material being carried by the conveyor means 84-85 depending on the kind of heat treatment to be effected on such material. At the ends of the flanges 110 are provided stops 112 to prevent the sliding off of the hooks 109 when adjusting the position of the hangers 108 and the heaters 107.

In some cases it might be desired to shield off some of the heat from the heaters 107, and therefore, a shield means 113 of any suitable kind may be used. It may have an upper hook 114 adapted to overhang a rib or lug 115 at the upper end of the heating member 107. The lower part of the shield 113 may have openings 113a for affording a passage of heated air through such openings, and the upper portion of the shield 113 may be continuous and without any openings.

For the purpose of reflecting the heat of the members 107 to the material being treated, the inner walls of the housing H may have reflecting sheets 116 and 117, which may be of sheets of metal or other material and having glossy or shiny surfaces to reflect the heat rays and the light.

The doors 4, 4, may also have windows 118 as desired. At the lower ends of the doors 4, 4 may be provided air vent means 119 for affording entry of air into the housing H, and these vents may be controlled by any suitable shutter or like means to vary the entry of air or to shut it off entirely, as desired.

Any suitable control means may be used to operate the motor 13, and to operatively connect the driving elements 12 and 24 from the motor 13 to the gear means 16 and the pump 14.

In use and in operation, with the doors 4, 4, in open condition, the conveyor etc. unit may be inserted as a whole into the opening of the housing H and pushed back to a point where the drain spout 62 will extend into the drain bell 30, and the clutch elements 98 and 100 will be in mesh. The doors 4, 4 may be closed, and the motor 13

5

may be started. The shaft 19 will cause the conveyor to travel with the material, etc. carried by it past the heaters 107, and at the same time liquid, such as oil, melted fat or the like, will be pumped from the tank 15 by way of the pump 14 and duct 26 to the sprayer 28 to spray the liquid upon the material etc. being conveyed by the conveyor. Depending on the particular treatment to be effected, the doors 4, 4 may be partly closed or wholly closed. When it is desired to move the unit out or partly out, the doors 4, 4 will be opened and by a manual pull on the handle 196 the unit may be pulled out of the chamber or housing H to facilitate access to the unit and the material carried thereby, and to effect whatever changes or the like that may be desired in respect to the treated material etc., or for removal or for replacement, as the case might be. The excess of liquid sprayed on the material will collect in the tank 58 and will drain down into the tank 15 for re-cycling by way of the pump 14.

While I have herein described and upon the drawings shown a preferred embodiment of the invention, it is to be understood that the invention comprehends some other constructions, arrangements or parts, details, features, and the like, without departing from the spirit of the invention.

Having thus disclosed the invention, I claim:

1. In a device of the character disclosed having a housing provided with supporting means therein, a unitary structure on said supporting means capable of being movably located within the housing on said supporting means or removal therefrom over said supporting means, comprising a frame supported in the housing on said supporting means, a conveyor mechanism carried by the frame, means for operating the conveyor, said conveyor having a series of rods and suspending elements carried by said rods for holding suspended material to be heat treated; and a heating means movably supported in the housing to be located at any predetermined distance relative to said material, and wherein there is carried a receptacle in said frame beneath said conveyor mechanism for catching drippings from said material, and wherein said receptacle has a drain outlet, a container supported in the housing and located below said receptacle, and a drain duct associated with said drain outlet to receive liquid therefrom and leading to said container, said drain outlet and the inlet end of said drain duct being together when said unitary structure is located in operative position in the housing and are separated when said unitary structure is moved from its operative position in the housing.

2. In a device of the character disclosed having a housing provided with supporting means therein, a unitary structure on said supporting means capable of being movably located within the housing on said supporting means or removed therefrom over said supporting means, comprising a frame supported in the housing on said supporting means, a conveyor mechanism carried by the frame, means for operating the conveyor, said conveyor having a series of rods and suspending elements carried by said rods for holding suspended material to be heat treated; and a heating means movably supported in the housing to be located at any predetermined distance relative to said material, and wherein said operating means has a driving shaft supported in the housing, and said conveyor has a driven shaft supported in said frame, and a coupling means be-

6

tween said shafts located for meshing of the coupling means automatically when said unitary structure is moved into the housing and for automatically unmeshing the coupling when said unitary structure is moved from its operative position in the housing, wherein there is carried a receptacle in said frame beneath said conveyor mechanism for catching drippings from said material, wherein said receptacle has a drain outlet, a container supported in the housing and located below said receptacle, and a drain duct associated with said drain outlet to receive liquid therefrom and leading to said container, said drain outlet and the inlet end of said drain duct being together when said unitary structure is located in operative position in the housing and are separated when said unitary structure is moved from its operative position in the housing.

3. In a device of the character disclosed having a housing provided with supporting means therein, a unitary structure on said supporting means capable of being movably located within the housing on said supporting means or removed therefrom over said supporting means, comprising a frame supported in the housing on said supporting means, a conveyor mechanism carried by the frame, means for operating the conveyor, said conveyor having a series of rods and suspending elements carried by said rods for holding suspended material to be heat treated; and a heating means movably supported in the housing to be located at any predetermined distance relative to said material, and wherein the housing has a floor, tracks on said floor, and said frame has feet for sliding along said tracks for moving said unitary structure to and from operative position in the housing, and wherein there is carried a receptacle in said frame beneath said conveyor mechanism for catching drippings from said material, and wherein said receptacle has a drain outlet, a container supported in the housing and located below said receptacle, and a drain duct associated with said drain outlet to receive liquid therefrom and leading to said container, said drain outlet and the inlet end of said drain duct being together when said unitary structure is located in operative position in the housing and are separated when said unitary structure is moved from its operative position in the housing.

4. In a device of the character disclosed having a housing provided with supporting means therein, a unitary structure on said supporting means capable of being movably located within the housing on said supporting means or removed therefrom over said supporting means, comprising a frame supported in the housing on said supporting means, a conveyor mechanism carried by the frame, means for operating the conveyor, said conveyor having a series of rods and suspending elements carried by said rods for holding suspended material to be heat treated; and a heating means movably supported in the housing to be located at any predetermined distance relative to said material, and wherein the housing has a floor, tracks on said floor, and said frame has feet for sliding along said tracks for moving said unitary structure to and from operative position in the housing, and wherein said operating means has a driving shaft supported in the housing, and said conveyor has a driven shaft supported in said frame, and a coupling means between said shafts located for meshing of the coupling means automatically when said unitary structure is moved

into the housing and for automatically unmeshing the coupling when said unitary structure is moved from its operative position in the housing, wherein there is carried a receptacle in said frame beneath said conveyor mechanism for catching drippings from said material, and wherein said receptacle has a drain outlet, a container supported in the housing and located below said receptacle, and a drain duct associated with said drain outlet to receive liquid therefrom and leading to said container, said drain outlet and the inlet end of said drain duct being together when said unitary structure is located in operative position in the housing and are separated when said unitary structure is moved from its operative position in the housing.

5. In a device of the character disclosed having a housing provided with supporting means therein, a unitary structure on said supporting means capable of being movably located within the housing on said supporting means or removed therefrom over said supporting means, comprising a frame supported in the housing on said supporting means, a conveyor mechanism carried by the frame, means for operating the conveyor, said conveyor having a series of rods and suspending elements carried by said rods for holding suspended material to be heat treated; and a heating means movably supported in the housing to be located at any predetermined distance relative to said material, and wherein the housing has a door which when open affords the moving of said unitary structure from within the housing, and wherein the housing has a floor, tracks on said floor, and said frame has feet for sliding along said tracks for moving said unitary structure to and from operative position in the housing through said door, and wherein there is carried a receptacle in said frame beneath said conveyor mechanism for catching drippings from said material, and wherein said receptacle has a drain outlet, a container supported in the housing and located below said receptacle, and a drain duct associated with said drain outlet to receive liquid therefrom and leading to said container, said drain outlet and the inlet end of said drain duct being together when said unitary structure is located in operative position in the housing and are separated when said unitary structure is moved from its operative position in the housing.

6. In a device of the character disclosed having a housing provided with supporting means therein, a unitary structure on said supporting means capable of being movably located within the housing on said supporting means or removed therefrom over said supporting means,

comprising a frame supported in the housing on said supporting means, a conveyor mechanism carried by the frame, means for operating the conveyor, said conveyor having a series of rods and suspending elements carried by said rods for holding suspended material to be heat treated; and a heating means movably supported in the housing to be located at any predetermined distance relative to said material, and wherein the housing has a door which when open affords the moving of said unitary structure from within the housing, and wherein the housing has a floor, tracks on said floor, and said frame has feet for sliding along said tracks for moving said unitary structure to and from operative position in the housing through said door, and wherein said operating means has a driving shaft supported in the housing, and said conveyor has a driven shaft supported in said frame, and a coupling means between said shafts located for meshing of the coupling means automatically when said unitary structure is moved into the housing and for automatically unmeshing the coupling when said unitary structure is moved from its operative position in the housing, and wherein there is carried a receptacle in said frame beneath said conveyor mechanism for catching drippings from said material, and wherein said receptacle has a drain outlet, a container supported in the housing and located below said receptacle, and a drain duct associated with said drain outlet to receive liquid therefrom and leading to said container, said drain outlet and the inlet end of said drain duct being together when said unitary structure is located in operative position in the housing and are separated when said unitary structure is moved from its operative position in the housing.

WILLIAM G. ALEXANDER.

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