May 20, 1958 W. PEREZ 2,835,480

THERMAL PINS

Filed April 9, 1953 4 Sheets-Sheet 1

Fig. 1

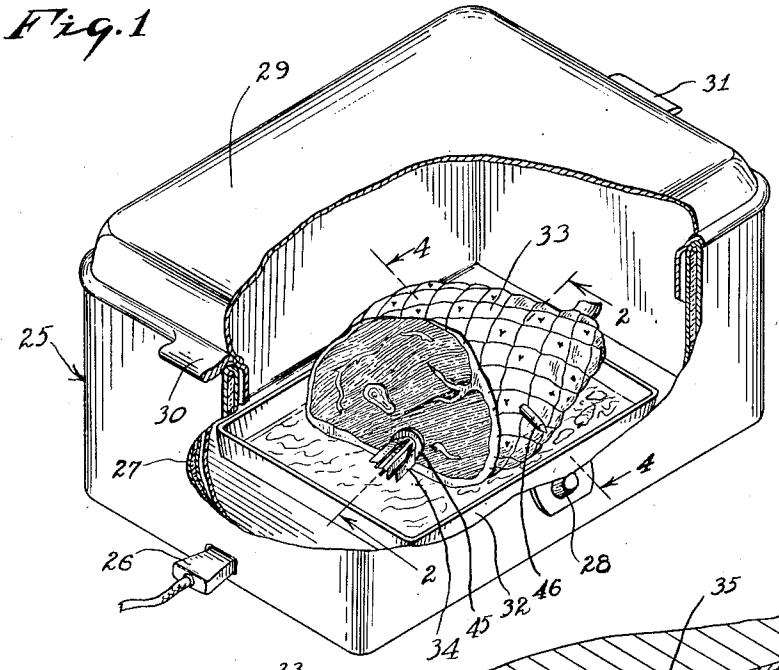


Fig. 2

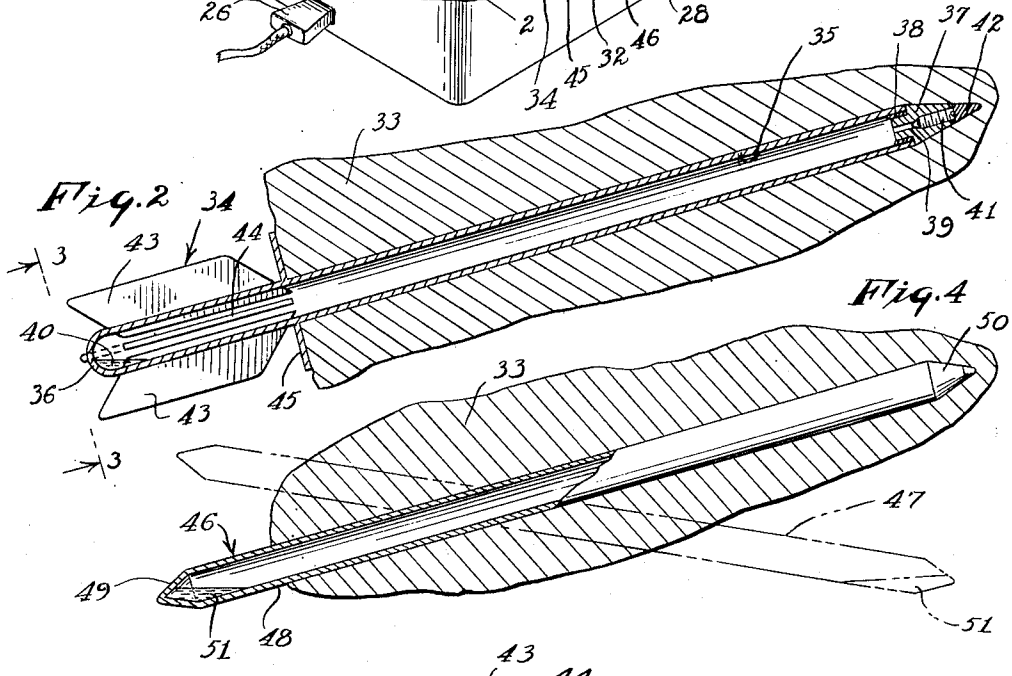
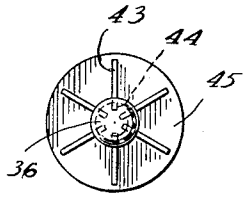


Fig. 4

Fig. 3



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THERMAL PINS

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Fig. 5

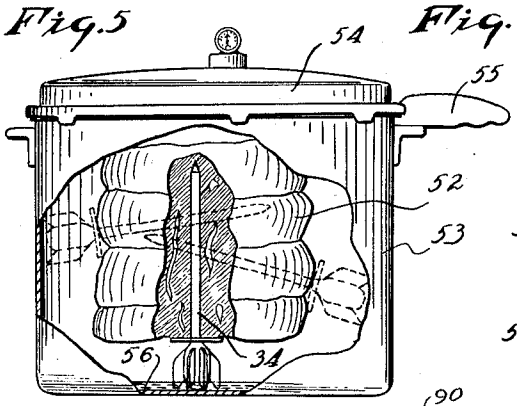


Fig. 6

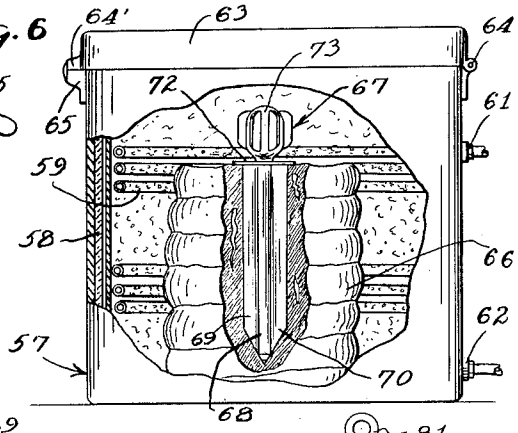


Fig. 7

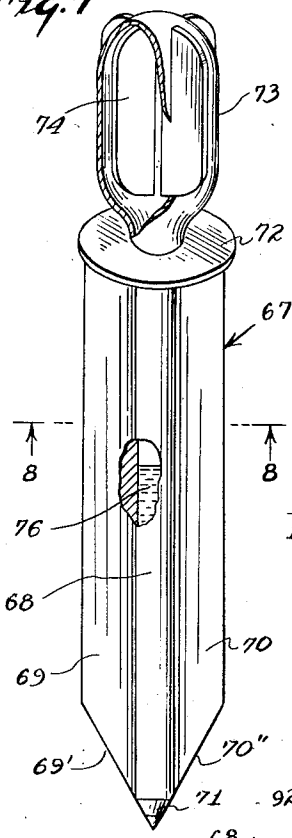


Fig. 9

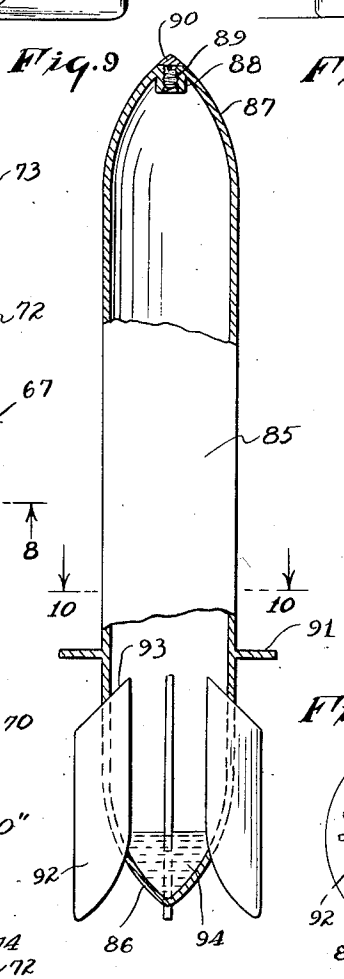


Fig. 11

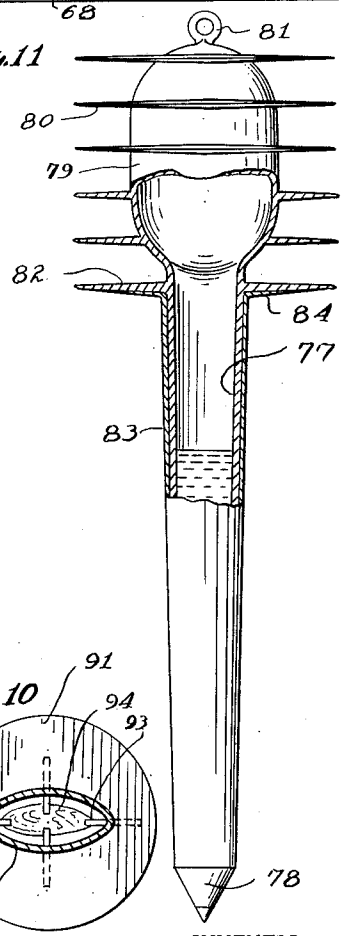
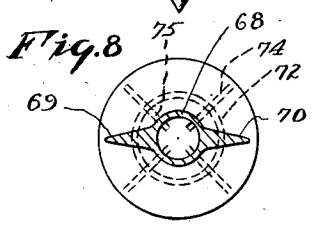


Fig. 10

Fig. 8



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THERMAL PINS

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Fig. 12

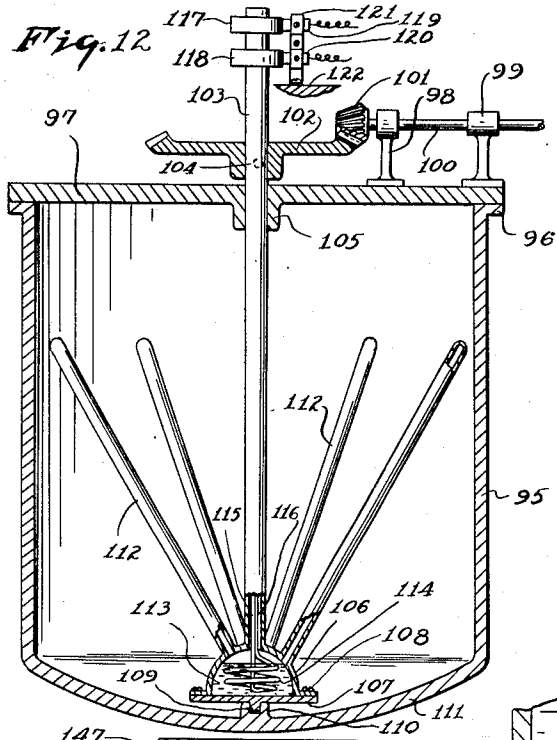


Fig. 13

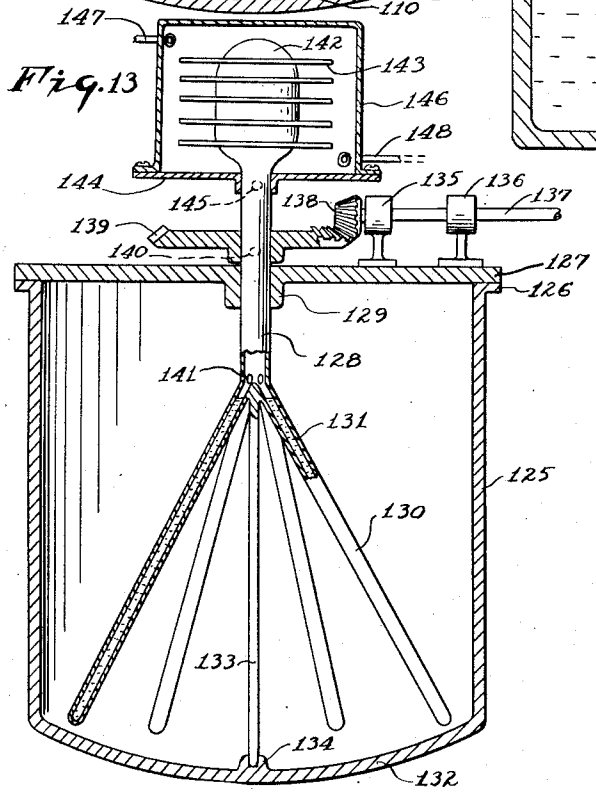
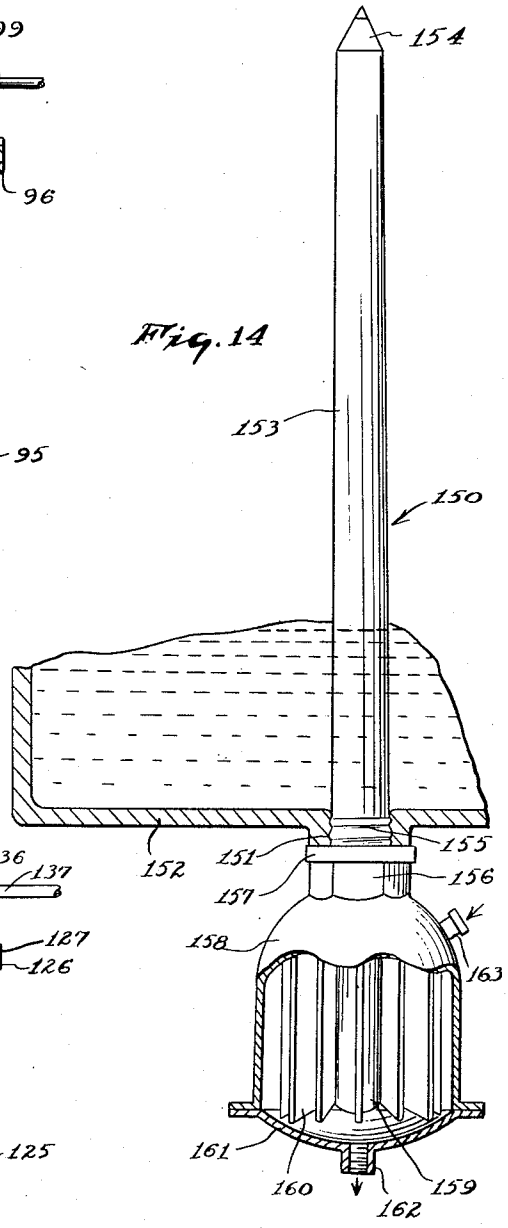


Fig. 14



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THERMAL PINS

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Fig. 15

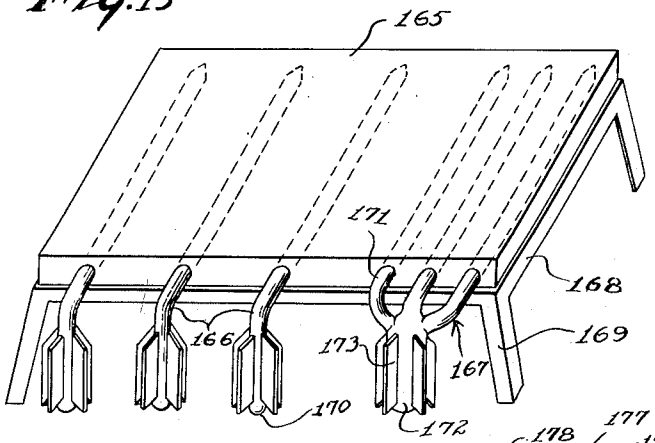
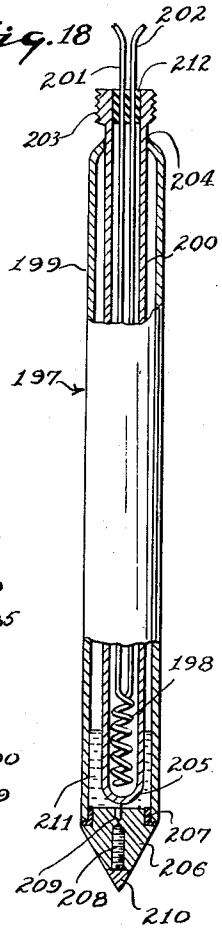


Fig. 18



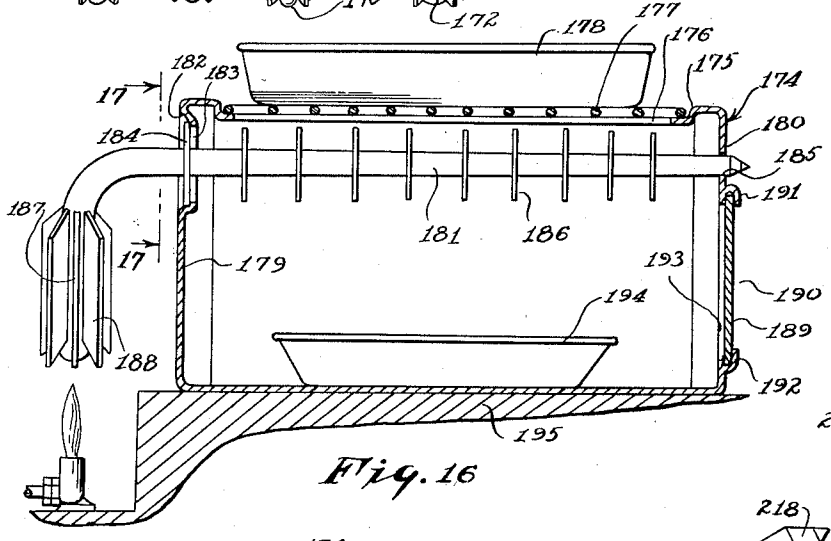


Fig. 16

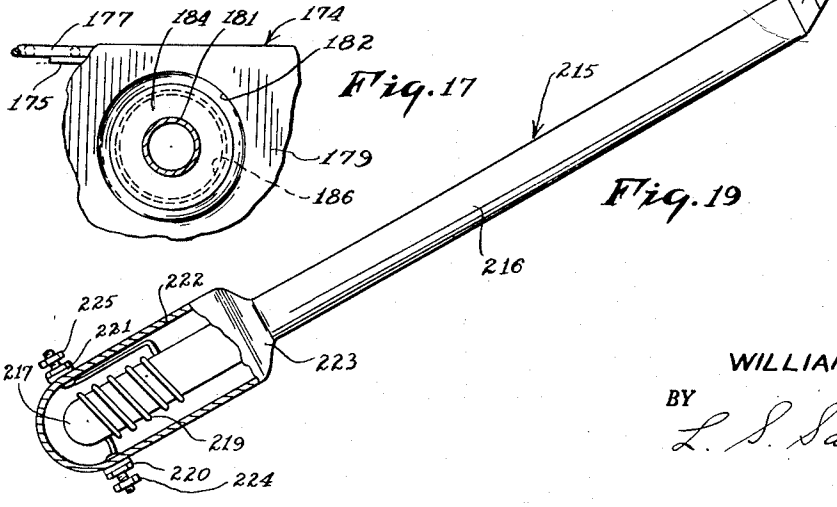


Fig. 17

Fig. 19

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United States Patent Office 2,835,480 Patented May 20, 1958

2,835,480

THERMAL PINS

William Perez, Williston Park, N. Y.

Application April 9, 1953, Serial No. 351,285

3 Claims. (Cl. 257—263)

This invention relates to thermal pins for heating or refrigerating a body mass.

It is an object of the present invention to provide a heating pin adapted to be inserted in a roast of meat, dough or other large mass for the purpose of transmitting heat to the interior of the edible so as to reduce the cooking time and to insure complete cooking throughout the interior of the mass.

It is another object of the invention to provide a heating or thermal pin whereby the heat surrounding the mass being treated will be conducted directly to the interior of the mass.

It is another object of the invention to provide a refrigerating pin adapted to be placed in a mass, which contains a liquid refrigerant that is evaporated by the heat within the mass and conducted to an exterior point within the pin and cooled whereby to lower the temperature of the mass and at times facilitate the freezing thereof.

It is another object to provide a thermal pin arrangement wherein the thermal pins are rotated in a liquid mass to either heat or cool the mass, the thermal pins being aranged on a driving shaft in the form of a cluster and angularly spaced from one another and the shaft with the driving gear being mounted upon a closure plate of the vessel that contains the liquid and wherein provision is made for supplying heating current to the shaft of the closure plate or wherein a cooling chamber is provided on the enlarged upper end of the shaft for conducting away the heat from the liquid refrigerant.

It is another object of the invention to provide a thermal pin with a heating source forming a part of the pin by which heat received from the source can be delivered to the interior of a liquid or edible mass to cook the same from heat delivered by the thermal pin, the thermal pin having an electric heating element embodied in one end thereof or provision whereby a hot liquid can be delivered to the one end of the thermal pin to supply the heat thereto, the heat from the heating medium being transferred to the small liquid within the pin that quickly evaporates for delivery throughout the extent of the pin and which condenses when reaching the cold walls of the pin created by the surrounding mass and then returns for reheating at the opposite end of the pin.

It is another object of the invention to provide a thermal pin which is adapted to be incorporated into a hot plate structure or into an independent oven structure whereby to supply heat either to a cooking surface to cook a mass or to the oven space.

Other objects of the invention are to provide a thermal pin having the above objects in mind which is of simple construction, inexpensive to manufacture, has a minimum number of parts, compact, easily adapted to be extended into a mass to be either heated or cooled, of pleasing appearance and efficient in operation.

For other objects and for a better understanding of the invention, reference may be had to the following detailed

description taken in connection with the accompanying drawing, in which:

Figure 1 is a perspective view of an electric cooker having a roast therein in the process of being cooked and with the thermal pins of the present invention projected into the roast to conduct heat from the air surrounding the roast into the interior thereof;

Fig. 2 is an enlarged fragmentary sectional view of the roast and of the thermal pin, as viewed on line 2—2 of Fig. 1;

Fig. 3 is an end elevational view of the thermal pin, as viewed in the direction of arrows 3—3 of Fig. 2;

Fig. 4 is a fragmentary end elevational view of a simple form of the thermal pin projected into a solid mass for use with portions of the thermal pin being broken away to show the interior construction thereof and illustration being made to show the pin inclined in two directions, the view being taken generally on line 4—4 of Fig. 1;

Fig. 5 is an end elevational view of a pressure cooker with a roast of meat disposed therein and with a cooking pin extended upwardly into the roast and supported in an elevated position with the lower end of the pin engaging with the liquid in the bottom of the cooker and with illustration being made to other cooking pins extended in different directions into the roast, the cooking vessel and the roast being broken away to show the thermal pin within the roast;

Fig. 6 is an elevational view of a cooling vessel having been adapted to quick freeze a piece of meat, the piece of meat being shown within the vessel and with a thermal pin containing a liquid refrigerant thrust into the roast from the top thereof;

Fig. 7 is a perspective view of the thermal pin used to facilitate the quick freezing of meat and as shown in Fig. 6 and with portions of the thermal pin being broken away at different elevations thereof to show the interior construction and the elevation of the liquid refrigerant therein;

Fig. 8 is a transverse sectional view taken on line 8—8 of Fig. 7;

Fig. 9 is an elevational view of a thermal pin of oval section with the lower and upper ends thereof broken away to show the interior construction;

Fig. 10 is a transverse sectional view taken on line 10—10 of Fig. 9 and looking toward the bottom of the pin;

Fig. 11 is an elevational view of a modified form of a thermal pin containing a liquid refrigerant and which is tapered and coated with a special substance to facilitate the removal of the pin from a frozen mass;

Fig. 12 is a vertical sectional view of a heating tank having a plurality of thermal pin projections mounted on a rotatable shaft and an electric heating element extending into the liquid chamber from which the thermal pin projections extend for the purpose of heating the liquid thereof and with a closure plate having driving mechanism for effecting the rotation of the shaft and the thermal pin projections within the heating tank;

Fig. 13 is a vertical sectional view of a cooking tank and with a cluster of thermal pin projections extending into the tank and from a rotatable hollow shaft extending upwardly through a closure plate and into a chamber to which cooling liquid or brine can be passed for the purpose of condensing the vapors of the liquid refrigerant of the thermal pin projections;

Fig. 14 is a fragmentary sectional view of a tank bearing liquid with a thermal pin of a modified form of the construction thrust into the bottom of the tank and secured to an internally threaded boss thereon, the lower end of

the thermal pin having a surrounding chamber adapted to receive heated liquid or steam;

Fig. 15 is a perspective view of a hot plate utilizing the thermal pin elements of the present invention for the heating of the plate mass;

Fig. 16 is a vertical sectional view of a warming oven using the thermal pins of the present invention to supply the heat thereto and provided with a top grill for supporting a vessel;

Fig. 17 is a fragmentary sectional view taken on line 17—17 of Fig. 16;

Fig. 18 is an elevational view of a still further form of a thermal pin in which an enclosed heating element is extended into the forward end of the pin to evaporate the liquid and wherein the pin is adapted for securement to a handle so that the pin may be thrust by hand into a liquid or mass desired to be heated, portions of the pin being broken away at the opposite ends thereof to show the interior construction of the pin;

Fig. 19 is an elevational view of a still further form of thermal pin wherein one end of the pin is heated by an electric heating coil surrounding the same and with terminals being provided on a casing for the connection of electric wires for the conducting of electric current to the heating element.

Referring now particularly to Figs. 1, 2 and 3, there is shown an electric cooking vessel **25** having an electric supply plug **26** in one end thereof for the delivery of current to an electric heating element therein in the usual manner. This vessel **25** is insulated as indicated at **27** and has a temperature control and switch knob **28**. A cover **29** can be fitted on the top of the vessel and can be lifted therefrom in the usual manner by grasping end handles **30** and **31**; on the bottom of the vessel **25** is a tray or basin **32** supporting a ham roast **33**.

Extending into the front face of the ham roast **33** is a thermal pin **34** constructed according to one form of the invention. This thermal pin comprises an elongated tube or sleeve **35** having an integral rounded closed end **36** and its opposite or leading end being closed by a tapered valve plug **37**, heat braised at **38** to the end of the tube **35** and having a central opening with a valve seat **39**.

There is disposed in the tube **35** a small body of liquid, such as water and which can be quickly evaporated and as indicated at **40**. The closed end **36** of the tube **35** is subjected to a heat flame so that the remainder of the tube is filled with steam and evacuated of air. When the air has been removed so that steam leaves through the valve seat opening **39**, a screw valve pin **41** is threaded into the plug **37** to close the valve seat and thereby close off the tube so that upon the tube being permitted to cool and the small body of liquid allowed to condense a vacuum will have been created in the tube. To further prevent any leaking, the end of the valve plug **37** is welded in such a manner as to surround the heat of the pin **41** and is shaped in such a manner as to provide a tip end **42** adapted to facilitate the piercing of the meat body upon the thermal pin **34** being thrust thereinto.

The thermal pin **34** is thrust into the meat or ham **33** in such a manner that the rear end of the tube is lower than the leading end of the tube so that the small body of liquid **40** will fall to the lower point upon its vapors being condensed in the upper or forward regions of the tube. Heat is delivered to the rear end of the tube **35** to evaporate the liquid **40** from the surrounding air within the electric cooker and which air is heated to effect the normal cooking of the roast from its exterior. To facilitate the transmission of the heat from the surrounding air to the interior of the tube **35** and to its body wall are six angularly spaced radially extending fins **43** that extend respectively into the space within the tube and terminate beyond the inner wall surface, as indicated at **44**. To terminate the inward thrust of the thermal pin into the ham roast there is fixed to the tube **35** just forwardly of the forward ends of the radial pins **43** is a stop flange **45** adapted to engage with the surface of the ham when the thermal pin has been thrust the full extent into the ham roast mass.

Along with the thermal pin **34** a more simple thermal pin **46** may be used in the same ham roast **33**. This pin **46** is extended in the manner shown in full lines in Fig. 4, or may be extended in the manner as shown in dot and dash lines indicated at **47**. This thermal pin comprises a tube or sleeve **48** which has an integral closed tapered end **49** and a plug end **50** constructed similarly to the leading end of the thermal pin **34**, as shown in Fig. 2. This sleeve or tube **48** would have been evacuated in the same manner as above described by the heating of liquid **51** which serves as the heat conducting medium for the pin. It has been found that with thermal pins of these types which have been described that when used in a roast in this manner the cooking time for the roast to have the roast well done throughout its mass has been cut in half and thereby greatly reduced.

In Fig. 5 there is shown the thermal pin **34** being used in a rolled roast **52**. This thermal pin **34** serves as a support for the roast **52** within the bottom of a pressure cooking vessel **53** having a top cover **54** and a handle **55**. On the bottom of the vessel **53** is a small supply of water **56** adapted to create the necessary steam for effecting the cooking of the roast, and this steam will heat the lower end of the thermal pin **34** in such a manner as to cause the small liquid body therein to be evaporated so as to send heat upwardly into the center of the roast. Other thermal pins **34** can be extended into the sides of the roast as shown in dotted lines. Meat will be cooked very rapidly and throughout its entire mass when cooked in this manner.

In Fig. 6 there is shown a cooling vessel **57** that is insulated as indicated at **58** and which has internal cooking coils **59** through which cooling brine is passed. Inlet and outlet fittings **61** and **62** are provided on the side of the vessel by which the cooling brine can be delivered to the cooling coils and removed therefrom. The cooling vessel **57** is closed by a hinged cover **63** hinged to one side of the vessel as indicated at **64** and having a handle latch element **64'** engageable with a latch **65** on the upper edge of the cooling vessel **57**. Into this vessel **57** is placed a rolled roast **66** for the purpose of being quickly frozen. To facilitate the freezing of the interior of this roast there has been provided a special thermal pin **67** containing a liquid refrigerant. Details of this pin **67** are shown in Figs. 7 and 8 and comprise a central tube portion **68** having two diametrically opposite radially extending fins **69** and **70** integrally formed thereon to provide a rigid and reinforced tube **68** that can withstand the thrust of the pin into the meat mass. The forward end of the pin has a valve plug arrangement **71** similar to that shown in Fig. 2. The radial portions **69** and **70** are tapered as indicated at **69'** and **70''** respectively to conform to the taper of the valve plug **71**.

Above the radial reinforcing portions **69** and **70** is stop flange **72** to limit the inward thrust of the pin into the meat body.

The upper end of the tube **68** is enlarged and closed and is of bulbous configuration as indicated at **73**.

The enlargement **72** has a plurality of radially extending heat dissipating fins **74** that extend inwardly beyond the inner surface of the enlargement **73** as indicated at **75**. Within the tube **68** is a liquid refrigerant **76**, such as ammonia or sulfur-dioxide that will readily evaporate by heat passing through the walls of the tube **68** and which will expand into the enlargement **73** where it will be cooled or condensed by the cold air within the cooling vessel **57** and created by the cooling coil **59**. The interior of the roast **66** will thus be quickly cooled and upon the roast **66** being removed from the cooling vessel **57** the pin **67** can be removed therefrom before placing the roast in the regular freezer.

In Fig. 11 there is shown a modified form of a refrigerating pin which may be used in the same manner as the pin **67** has been used in the roast **66**. This refrigerating pin comprises a slightly tapered tube portion **77** having a tapered valve head **78** by which the tube can be closed in the manner discussed with reference to the valve plug **37**, Fig. 2. The upper end of the tube **77** is enlarged to provide an expansion chamber into which the refrigerant may expand. This enlargement is indicated at **79** and has a plurality of vertically spaced cooling fins **80** and a top loop **81** by which a hook or cable can be attached for the purpose of extracting the pin from the frozen mass. The stop flange **82** is provided below the enlargement **79** so as to limit the inward thrust of the pin into the meat mass. To further facilitate the removal of the refrigerating pin from the frozen mass, a coating **83** of tetrafluoroethylene is provided on the tapered tube **77** throughout its length thereof and upon the underside of the stop flange **82** as indicated at **84**.

It will thus be seen that a rugged pin has been provided and one which will stand the thrust of its tapered tube portion into the meat mass and as well one which can be easily and readily severed from the meat mass after it has been frozen.

Referring now particularly to Figs. 9 and 10, there is shown another form of the thermal pin. According to this form of the invention there is provided a tube **85** of oval section having a rounded closed end **86** and a rounded and pointed upper end **87** having an internally threaded boss **88** into which is fitted a screw plug **89** when the air has been exhausted from the tube and over which there is fixed welding material **90** whereby the end **87** of the tube is hermetically sealed. A round stop flange **91** is provided on the tube **85** to limit the insertion of the tube into the meat body. On the lower end **86** of the tube are a plurality of heating fins **92** that extend inwardly beyond the inner surface of the tube **85** as indicated at **93** to carry the heat to the space within the tube. A small body of liquid, such as water, and as indicated at **94** is provided in the closed end of the tube **86**. The operation of this pin is the same as with the other heating pins.

In Fig. 12, the principle is shown applied to a heating vessel or pot **95** that may be suspended in a well of a cooking range. The top of the vessel **95** is flanged as indicated at **96** to support the vessel and to this flange there is fixed a cover **97** on which are laterally spaced bearing brackets **98** and **99** in which a drive shaft **100** is journalled. This shaft **100** has a tapered pinion **101** that is engageable with a large bevel gear **102** fixed to a hollow shaft **103** by a pin **104** that is journalled on a bearing portion or boss **105** on the cover **97**.

This hollow shaft **103** has an inverted cup shaped enlargement **106** on its lower end that is connected to a bearing plate **107** by fastening screws **108**. This bearing plate **107** has a pin bearing portion **109** that is seated in a thrust socket bearing **110** extending upwardly from the rounded bottom **111** of the vessel **95**.

Extending upwardly and outwardly and angularly spaced from one another are a plurality of thermal pin projections **112** communicating with the interior of the enlargement **106** on the lower end of the rotatable shaft **103**. Within the enlargement **106** is liquid **113** in which an electric heating coil **114** is immersed and which serves to evaporate the small body of liquid so that vapors will be extended outwardly and upwardly into the thermal pin projections **112**. The vapors will condense after removal of the liquid in the vessel so that the liquid in the vessel will be finally cooled as the pins are rotated in the liquid. The thermal pin projections **112** will be evacuated of air and as well the space in the enlargement **106** will also have been evacuated.

The heating element **114** has wires **115** and **116** extending upwardly through the rotatable shaft **103** and connected with respective conducting rings **117** and **118** that are respectively engaged by brush contacts **119** and **120** adjustably carried in a bracket **121** supported on a surface **122**. Electric current is supplied to said brushes to feed current to the electric heating element **114**. It will be apparent that a very effective cooking vessel has been provided by this arrangement.

In Fig. 13 there is shown a similar arrangement for effecting the cooling of a body of liquid within a vessel. A similar vessel **125** is provided with a cover **127** having a supporting flange **126**. A hollow tube **128** is journalled in a bearing portion **129** of the cover **127**. Extending downwardly from the tube **128** is a plurality of refrigerating pin projections **130** filled with a refrigerant **131**. These pins extend downwardly and outwardly over bottom **132** of the vessel **125**. These pin projections are angularly spaced from each other and provide means by which the stirring of the liquid within the vessel **125** may be effected as it is cooled. An extension **133** depends from the lower end of the tube **128** and lies centrally of the downwardly and outwardly flared pin projections **130**. The lower end of this extension **133** is retained in a thrust bearing portion **134** on the bottom **132**. On the cover **127** are bearing brackets **135** and **136** in which a drive shaft **137** is journalled. This drive shaft has a bevel pinion **138** and meshes with a bevel ring gear **139** that is fixed to the rotatable tube **128** by a pin **140**. As the shaft **137** is turned, the tube **128** will be turned.

The respective pin projections **130** communicate with the center of the tube **128** through holes **141**. The upper end of the tube **128** has an enlargement **142** with a plurality of vertically spaced cooling fins **143** thereon. These fins **143** aid the cooling of the gases that are expanded into the enlargement **142**.

Fixed to the tube **128** is a base **144** by means of a pin **145** so that the base will be rotated with the tube. Fixed to the base **144** is a housing **146** that surrounds the enlargement **142** and to which are connected inlet and outlet pipes **147** and **148**. Cooling brine will be passed into the housing **146** through the pipe **147** and outwardly through the pipe **144**. This brine will flow over the enlargement **142** and the fins **143** whereby to cool the same and thereby cause the expanded gases to be condensed and returned to the finger projections **130**. It should now be apparent that an effective cooling arrangement for liquids has been provided.

In Fig. 14 there is shown a modified form of a heating pin as indicated generally at **150** which is adapted to be secured into a threaded opening **151** in the bottom of a liquid tank **152** for the purpose of heating the liquid therewithin. This pin **150** has a tapered tubular portion **153** on the upper end of which is a pointed valve plug arrangement **154** similar to the valve plug **37** of Fig. 2. At the lower end of the tube **153** there is provided a threaded portion **155** for the engagement of the tube with the threads **151**. Also, there is a hexagonal portion **156** by which the pin can be turned and a washer **157** will make a sealing engagement with the tank.

On the form shown in Fig. 14, this nut portion **156** is fixed to an external casing **158** that surrounds the lower end of the pin tube **153** as indicated at **159** from which radiating fins **160** extend. Fixed to the bottom of the casing **158** is a cover on the bottom **161** having an outlet opening projection **162** thereon. A fitting **163** is provided on the top of the casing **158** and through this fitting steam, hot water or hot oil can be extended in order to deliver heat to the lower end **159** of the tube **153** and to the heating fins **160**.

The tube **153** is provided with a small body of liquid which is quickly evaporated and the vapors will carry the heat to the liquid within the tank **152**. The liquid in the tank will accordingly be heated to the desired temperature. It will be seen from this form of the invention that this invention can be adapted to industrial purposes.

In Fig. 15, there is shown the heating pins applied to a hot plate mass **165**. There are two types of heating pins

embedded in the plate mass **165**, one type as indicated at **166** and the other type as indicated at **167**. The latter type has multiple tube projections. This hot plate mass **165** and the heating pins are supported on a frame **168** having four corner legs **169**. Each of the pins **166** is similar to the pin **34** shown in Fig. 2 except that it is without a stop flange and the rear end of the same is bent down as indicated at **170**.

The heating pin **167**, however, is of different construction. It includes a plurality of pin projections **171** laterally spaced from each other and communicating with an enlarged bulbous end **172** having radially extending heating fins **173**. This enlarged end **172** is bent downwardly from the projections. Heat can be supplied to the downwardly bent ends of the heating pins by locating the hot plate over a heating element on a stove or immersing the bent ends in a hot liquid contained in a tank. The small body of liquid inside of the pins will be evaporated and the heat will be transferred through the pin projections and by conduction delivered to the hot plate **165**. The hot plate mass **165** is of metal which will receive and retain the heat. It will thus be seen that not only may the pins be embedded in liquid or edible masses, but also they may be used for heating of a metal mass in which they may be embedded.

In Fig. 16 there is shown an adaptation of the heating pins for a small oven, indicated generally at **174**. This oven has a depressed top portion **175** with an opening **176** therein. Supported on the top portion **175** is a grill **177** on which a tray **178** or other vessel may be supported. Beneath the opening **176** there is supported between end portions **179** and **180** one or more heating pins **181**.

The end portion **179** has a depression **182** adjacent its upper edge in which there is an opening **183** through which the pin **181** extends. A flange **184** on the pin **181** is supported in the depression **182**. The other end of the pin **181** is supported in a small hole **185** in the end portion **180**.

In order to have the pin **181** transmit more heat, a plurality of radiating fins **186** are provided along the length thereof. Other than the flange **184** and the fins **186**, the pin **181** is similar to the heating pins shown in Fig. 15 and like the pin **34** shown in Fig. 2, except that its end is bent down as indicated at **187** and has a larger number of radiating fins **188**.

The end portion **180** has slide door **189** with a handle **190** supported in upper and lower guide ways **191** and **192**. The slide door **189** covers an opening **193** so that upon the slide door being operated to an open position, a tray **194** can be inserted upon the bottom portion **195** of the oven.

In Fig. 18, there is shown a still further form of the invention in the form of a heating pin **197** that carries its own heating element **198** and which is adapted to be connected to a handle or other support so that it can be portable and easily thrust into a body of liquid to be heated or even into an edible mass for the purpose of cooking the same from the interior thereof. This heating pin or prod **197** includes an outer tube **199** and an inner tube **200** that contains the heating element **198** and wires **201** and **202** extending thereinto. This inner tube extends out through the end of the outer tube **199** and has a threaded enlargement **203** by which the tube **197** can be fixed to a handle or to a plate support, not shown. The outer tube is welded about the inner tube **200** as indicated at **204** so as to maintain the vacuum in the outer tube. The lower end of the inner tube is closed as indicated at **205** and the heating element **198** is disposed therein.

The lower end of the outer tube is closed in the manner as discussed with reference to the form of the invention shown in Fig. 2 and includes a valve plug **206** welded to the outer tube **199** as indicated at **207**. After the air is evacuated from the outer tube **199**, a needle valve element **208** is tightened in a threaded central opening against a seat **209** thereof. On the head of the plug there is welded a pointed closure **210** to make certain that the pin **197** is effectively hermetically sealed. A small body of liquid **211** which will become heated by the heating element **198** and the vapors thereof will extend along the upper portion of the tube **199** so as to heat the wall thereof and the mass into which the pin **197** has been thrust. The wires **201** and **202** extend through an insulating element **212** in the threaded enlarged end **203** of the inner tube **200**. These wires can be connected by means of a plug and cable with any electrical outlet.

In Fig. 19, there is shown a still further form of the invention comprising a heating pin with a heating element surrounding one end of the pin. This heating pin is indicated generally at **215** and comprises a tube **216** closed at one end as indicated at **217** and at the other end with a valve plug arrangement **218** similar to the valve plug arrangement **37** shown in Fig. 2.

Surrounding the closed end of the tube at **217** is a heating coil **219** having its ends connected respectively with terminals **220** and **221** fixed to an outer casing **222** fixed over the end **217** of the tube **216** and secured to the exterior of the tube **216** at its open end **223**. Wires can be attached to the respective terminals **220** and **221** by tightening the respective nuts **224** and **225**. From such wires the pin **215** can be supported in a liquid or the pin can be thrust into a meat mass and supported by the mass. Internal cooking of the meat mass would be effected.

It should now be apparent that there has been provided a great many applications of the present heating or refrigerating pin wherein the pins are self-contained, but which may be adapted for connection with other supports, in cooking or cooling vessels, in an industrial tank, adapted for hot plates or ovens. It will also be apparent that the invention has been adapted and has application for use with pins adapted to be connected to a handle so that the pin can be used in a heating prod and with the heating element contained in the same.

In all of these pins, all air and other gases will have been evacuated from the tube and there remains only the liquid and its vapors within the tube. When the tube is heated at its lower end, the liquid is evaporated so that its vapors rise and the latent heat of these vapors is transmitted to the walls of the tube and taken away by the medium surrounding the upper end of the tube.

While further changes may be made in the detail construction, it shall be understood that such changes shall be within the spirit and scope of the present invention, as defined by the appended claims.

What is claimed is:

1. A thermal pin for aiding the cooking of food mass comprising a hermetically sealed hollow tube of thermally conductive material having a shaft portion, a handle portion, and being partly filled with a vaporizable liquid, said shaft portion being provided with a tapered end to facilitate introduction of the pin into the food mass, said handle portion being provided with radially extending fins for heat transmission on its outer surface from the surrounding air to the interior of the pin, whereby when such pin is inserted into a food mass and subjected to heat, the resulting vapors of the liquid flow toward the tapered end of the tube, condense, and return to the handle portion.

2. A thermal pin for aiding the cooking of a food mass comprising a hermetically sealed hollow tube of thermally conducting material having a shaft portion, a handle portion, and being partially filled with a vaporizable fluid, said shaft portion being provided with a tapered end to facilitate introduction of the pin into the food mass, and said handle portion being provided with radially extending fins for heat transmission on its outer surface from the surrounding air to the interior of said pin, said handle portion also having associated therewith means to prevent the penetration of said pin into the food mass beyond said shaft portion, whereby when such pin is inserted into

a food mass and subjected to heat, the resulting vapors of the liquid flow toward the tapered end of the tube, condense, and return to the handle portion.

3. A thermal pin for aiding the cooking of food mass comprising a hermetically sealed hollow tube of thermally conductive material having a shaft portion, a handle portion, and being partly filled with a vaporizable liquid, such shaft portion being provided with a tapered end to facilitate introduction of the pin into the food mass, and said handle portion being provided with radially extending fins for heat transmission on its outer surface from the surrounding air to the interior of said pin, said fins extending through the handle portion of said pin into the interior of said hollow tube, whereby when such pin is inserted into a food mass and subjected to heat, the resulting vapors of the liquid flow toward the tapered end of the tube, condense, and return to the handle portion.

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